z/VM

Installation Guide

Version 6 Release 4

GC24-6246-04

Note:
Before you use this information and the product it supports, read the information in "Notices" on page 339.

This edition applies to the version 6, release 4, modification 0 of IBM z/VM (product number 5741-A07) and to all subsequent releases and modifications until otherwise indicated in new editions.

This edition replaces GC24-6246-03.

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About this document

This document guides the customer through the installation of version 6 release 4 of IBM® z/VM® using step-by-step installation procedures. The procedures cover traditional installation of a z/VM system, first-level (in a processor's logical partition) or second-level (as a guest operating system hosted by z/VM), from DVD media, and installing z/VM V6.4 as an upgrade to either z/VM V6.2 or z/VM V6.3.

See Chapter 1, "Installation overview," on page 3 for an overview of the techniques available for installing z/VM and guidelines for selecting the technique that will best suit your needs.

For information about servicing your system, see *z/VM: Service Guide*.

Note: See *z/VM: General Information* for a list of the processors supported by z/VM and the guest operating systems hosted by z/VM.

Intended audience

This information is intended for the customer responsible for installing z/VM.

A general knowledge of what z/VM does and an understanding of virtual machine concepts is required for getting the most out of this information. You should also have a general understanding of z/VM and IBM Z(R) data processing techniques and z/VM commands.

Conventions and terminology

Various conventions are used to depict what you should type and what system responses you might see. Procedures will use the following conventions:

- The procedures in this document are in a two-column format. The left column shows the representative sequence of user entries and system responses, the right column contains explanatory comments and instructions about the entries shown in the left column.

  Example:

  ```
  attach dasdaddr *
  DASD dasdaddr ATTACHED TO userid dasdaddr
  .
  .
  .
  Ready; T=n.nn/n.nn hh:mm:ss
  ```

  dasdaddr
  is the address of the DASD volume.

  userid
  is the first-level user ID logged on to in the previous substep.

- Normal font indicates system responses and requests.

  Example: The following shows a system response:

  ```
  IUGIPX8475I THE PRODUCTS YOU SELECTED TO LOAD TO MINIDISK ARE:
              VM  RSCS  TCPIP  OSA  ICKDSF DIRM RACF
              PERFTK  VMHCD
  ```

- Bold font indicates exactly what you should type.

  Example: The following shows a command you would type:

  ```
  disconnect
  ```

- Italic font indicates variable input or output, which can occur in commands you type or in system output.

  Examples: The following are examples in which italics indicate variable input or output:

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  - In the following, you would need to supply the address of a minidisk for *diskaddr* :

    attach *diskaddr* **w**
  - In the following, the system would supply the storage size for *nnn* in its response:

    Query virtual storage
    STORAGE = *nnn* M
- Reverse type indicates special keys you must press.

  Example: The following indicates you must press Enter:

  ENTER
- A vertical bar (|) indicates you will receive or enter one of the values within the braces ({}).

  Example: The following indicates sample output where you might receive one of two responses:

  ```
  {MDREST|ECKDREST}:  WROTE  nnnn {BLOCKS|TRACKS}  ON addr, RC=0
  ```

  In this example, you would actually receive *one* of the following two responses:

  ```
  MDREST: WROTE  nnnn BLOCKS ON addr, RC=0
  ECKDREST: WROTE nnnn TRACKS ON addr, RC=0
  ```

Where to find more information

This document includes all updates available at the time of publication. Any updates to this document will be reflected in the copy available in the IBM: z/VM Internet Library (www.vm.ibm.com/library).

For information about related documents, see “Bibliography” on page 345.

Links to other documents and websites

The PDF version of this document contains links to other documents and websites. A link from this document to another document works only when both documents are in the same directory or database, and a link to a website works only if you have access to the Internet. A document link is to a specific edition. If a new edition of a linked document has been published since the publication of this document, the linked document might not be the latest edition.

How to send your comments to IBM

We appreciate your input on this publication. Feel free to comment on the clarity, accuracy, and completeness of the information or give us any other feedback that you might have.

Use one of the following methods to send us your comments:

1. Send an email to mhvrcfs@us.ibm.com.
2. Go to IBM z/VM Reader's Comments (www.ibm.com/systems/z/os/zvm/zvmforms/webqs.html).

Include the following information:

- Your name
- Your email address
- The publication title and number:
  z/VM V6.4 Installation Guide
  GC24-6246-04
- The topic name or page number related to your comment
- The text of your comment

When you send comments to IBM, you grant IBM a nonexclusive right to use or distribute your comments in any way it believes appropriate without incurring any obligation to you.

IBM or any other organizations will use the personal information that you supply only to contact you about the issues that you submit to IBM.

If you have a technical problem

Do not use the feedback methods listed above. Instead, do one of the following:

- Contact your IBM service representative.
- Contact IBM technical support.
- See IBM: z/VM Service Resources (www.ibm.com/vm/service/).
- Go to IBM Support Portal (www.ibm.com/support/entry/portal/Overview/).

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Summary of changes

This document contains terminology, maintenance, technical, and editorial changes. Technical changes are indicated by a vertical line to the left of the change. Some product changes might be provided through service and might be available for some prior releases.

GC24-6246-04, z/VM Version 6 Release 4 (August 2017)

This edition includes changes to support product changes provided or announced after the general availability of z/VM V6.4.

The following chapters have been updated:

- Chapter 15, "Upgrade installation overview," on page 137
- Chapter 16, "Plan your upgrade installation," on page 139.

Various other updates have been made throughout the document as well.

GC24-6246-03, z/VM Version 6 Release 4

This edition includes changes to support the general availability of z/VM V6.4.

- The upgrade installation process has been extended to allow you to upgrade from z/VM V6.2 or V6.3 to z/VM V6.4.
- Support is added for installation of z/VM on the 3390 Model 27.
- You can no longer order the z/VM product or service for z/VM on 3590/3592 tape media. z/VM V6.4 is available on DVD and through electronic delivery.
- The following new releases of components and features are preinstalled:
  - Directory Maintenance Facility, function level 640 (disabled)
  - Performance Toolkit for VM, function level 640 (disabled)
  - RACF Security Server for z/VM, function level 640 (disabled)
  - RSCS Networking for z/VM, function level 640 (disabled)
  - TCP/IP, function level 640
  - HCD and HCM for z/VM, function level 640

GC24-6246-02, z/VM Version 6 Release 3 (April 2014)

This edition includes changes to support product changes provided or announced after the general availability of z/VM V6.3.

GC24-6246-01, z/VM Version 6 Release 3

This edition includes changes to support the general availability of z/VM V6.3.

- A new upgrade installation process, Upgrade Installation, is described in Part 4, "Upgrade installation," on page 135.
- The following new releases of components and features are preinstalled:
  - Directory Maintenance Facility, function level 630 (disabled)
  - Performance Toolkit for VM, function level 630 (disabled)
  - RACF Security Server for z/VM, function level 630 (disabled)
  - RSCS Networking for z/VM, function level 630 (disabled)

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  - TCP/IP, function level 630
- To ensure that they are available to all members of an SSI cluster containing multiple releases of z/VM, the minidisks associated with the DirMaint™ user IDs DIRMAINT, DIRMSAT*, DATAMOV*, and 6VMDIR30, and the minidisks associated with the VMHCD user ID 6VMHCD20, have all been moved to volumes designated as COMMON.

Part 1. z/VM installation

This part contains an overview of the techniques available for installing z/VM and guidelines for selecting the technique that will best suit your needs.

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Chapter 1. Installation overview

There are two techniques available for installing z/VM.

The first technique, **traditional installation**, installs a new z/VM system or a new SSI cluster on a set of DASD which can then be customized according to your needs. If you are a new customer, or a current customer running z/VM V5.4, this is the installation method you should use. If you are a current customer running z/VM V5.4, there is a traditional migration procedure that can be used only with a non-SSI installation after your new system is installed. If you plan to use this migration procedure, review the requirements for migration in "Step 1. Review and comply with the requirements" on page 99 before you install your new system.

The second installation technique, **upgrade installation**, is used to upgrade from z/VM V6.2 or z/VM V6.3. In an upgrade installation, a new release system to be used as a temporary work system is installed as a second level guest of the current release system that you want to upgrade. The new level of code from the work system is then moved to your current system with minimal impact to your current running system. This current running system can be a non-SSI system, the only member of a single member SSI cluster, or any member of a multimember SSI cluster. In a multimember SSI cluster, you will upgrade one member at a time so that there is minimum impact to the other members. Note that you must complete the upgrade for one member before starting the upgrade of the next member.

Select the installation technique that best meets your needs, as follows:

- For traditional installation, follow all of the steps in Part 2, "Traditional installation," on page 5.
- For upgrade installation, follow all of the steps in Part 4, "Upgrade installation," on page 135.

Within each part, read and follow all the procedures in the order presented.

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Part 2. Traditional installation

This part contains procedures for the traditional installation of z/VM to either a non-SSI or to a SSI cluster. If you received the z/VM product electronically, you must first complete the instructions you downloaded with your order before using the procedures here in Part 2 to install z/VM.

In this part, you will:

- Plan your traditional installation.
- Complete worksheets.
- Install the z/VM system.

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Chapter 2. Plan your traditional installation

In this chapter, you will:

- Plan your installation.
- Complete the traditional installation worksheets and the TCP/IP configuration worksheets.

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Step 1. Select your installation procedure

If your z/VM product was obtained via electronic delivery, you must follow the instructions that accompanied the deliverable to do one of the following before proceeding with your installation:

- Create a physical DVD.
- Load the deliverable into an FTP server directory.

Installation procedures:

- **First-level installation** can be done from:
  - A physical DVD mounted in a DVD drive attached to the Hardware Management Console (HMC).
  - A physical DVD mounted in a DVD drive connected through an FTP server.
  - An FTP server that has access to a directory where the files from the physical DVDs or electronic deliverables have been stored.
- **Second-level installation** can be done from:
  - A physical DVD mounted in a DVD drive connected through an FTP server.
  - An FTP server that has access to a directory where the files from the physical DVDs or electronic deliverables have been stored.
  - A CMS-formatted minidisk that is accessible by your installation user ID.

Step 2. Review and comply with the requirements

Before you install version 6 release 4, you must review the following information and make sure all requirements are satisfied:

Note: For current information affecting installation, see the following topics at z/VM Installation Resources (www.vm.ibm.com/install):
- Important z/VM Installation News
- z/VM Installation Tips
- Preventative Service Planning (PSP) bucket for z/VM 640 installation

z/VM media deliverable requirements

- For delivery through physical DVDs, make sure you have the z/VM product DVD and the installation recommended service upgrade (RSU) DVD.
- For electronic delivery, make sure you have the product and RSU .zip files.
- The RSU that was shipped as part of the z/VM product will be installed during the installation process. If additional service is required, install it after your initial installation is complete.

General requirements

- A processor supported by z/VM version 6 release 4. For a list of processors supported by z/VM, see *z/VM: General Information*.
- A local non-SNA 3270 terminal or equivalent, configured with at least 32 lines, or an integrated 3270 console.
- For z/VM installation on FBA, note that z/VM installation supports only emulated FBA on SCSI volumes. Real FBA volumes are *not* supported.
- For instructions on how to receive current service, see the Program Directory for z/VM.
- If you plan to migrate from another z/VM system, review *z/VM: Migration Guide*.
- If you plan to deploy Linux on z Systems™, see *z/VM: Getting Started with Linux on z Systems* for important planning information about Linux virtual servers.
- The z/VM FTP installation procedure complies with the FTP client protocol standards described in RFC 959 and RFC 1123. Passive FTP data transfers are used in order to minimize the affects of intervening firewall systems, so your FTP server must support the PASV command.
- A Single System Image (SSI) cluster installation requires the IBM z/VM Single System Image Feature, a priced feature whose use is governed by the terms and conditions of the IBM International Program License Agreement and the z/VM License Information Document. Copies of these documents are included with your z/VM order.

  The feature must be appropriately licensed for all machines that contain a member of the single system image cluster. If you need to order this feature, visit www.ibm.com/software/ShopzSeries. In countries where Shop zSeries is not available, contact your IBM representative or IBM Business Partner.
- If you plan to use the IBM migration procedures documented in Part 3, "Post traditional system installation," on page 81 to migrate from a z/VM V5.4 system, you must select a non-SSI installation.

  Note: You *cannot* use the migration procedures in Part 3, "Post traditional system installation," on page 81 to migrate from a z/VM V6.2 or V6.3 system. If you are migrating from z/VM V6.2 or V6.3, you should use Part 4, "Upgrade installation," on page 135.

First-level installation requirements

- Hardware requirements:
  - Access to the integrated 3270 console on the HMC for your LPAR (CONS=SYSG) for use as the console during first-level installation.

  - At least 768 MB of real storage assigned to the LPAR where z/VM will be installed.

    Note: The storage required for installation is not necessarily the amount you should have assigned for running production workloads. See *z/VM: CP Planning and Administration* for information on determining production storage requirements.
  - For the LPAR where you are installing, "Input/output (I/O) configuration control" must be enabled. This can done by enabling this in the image profile which is then used to activate the LPAR. Alternatively, you can use the "Change Logical Partition Security" task to query the current setting and, if necessary, dynamically change the setting.
- If installing from a physical DVD mounted in a DVD drive attached to the Hardware Management Console (HMC):
  - The HMC must communicate with the desired support element. An HMC can communicate only with support element versions that are equal to or lower than the version of the HMC. For example, an HMC version 2.10.1 can communicate with a support element at version 2.10.0, or 2.10.1, but it cannot communicate with a support element at version 2.10.2.
- If installing from a physical DVD mounted in a DVD drive connected through an FTP server:
  - The FTP server must comply with RFC 959 and RFC 1123.
  - The FTP server must be able to communicate with both the HMC and primary SE of the LPAR where you will install. This means that both the HMC and primary SE must be enabled for TCP/IP communication, including any required firewall authorizations, and authorized to use FTP.
  - The FTP server must be able to access to the DVD drive.
- If installing from an FTP server that has access to a directory where the files from the physical DVD or electronic deliverables have been stored:
  - The FTP server must comply with RFC 959 and RFC 1123.
  - The FTP server must be able to communicate with both the HMC and primary SE of the LPAR where you will install. This means that both the HMC and primary SE must be enabled for TCP/IP communication, including any required firewall authorizations, and authorized to use FTP.
  - The FTP server must be able to access the directory where the contents of the DVD will be stored.
  - There must be at least 4 GB of available space to store the contents of the z/VM product DVD and the installation RSU DVD.

Second-level installation requirements

- Hardware requirements:
  - A processor supported by the release of z/VM that is running first level and by the release of z/VM that is being installed second level.
  - Access to a local non-SNA 3270 terminal, or equivalent, configured with at least 32 lines.
- System software requirements:
  - A first-level system running a supported release of z/VM.
- User ID requirements:
  - You must complete the entire installation using a single installation user ID.
  - Access to the INSTPIPE MODULE on your current system. The module was shipped on the MAINT 2CC disk with pre-V6.2 releases. Starting with z/VM V6.2, the INSTPIPE MODULE is shipped on the MAINT*vrm* 4CC disk.
  - Privilege class G.
  - Privilege class B, if installation DASD volumes are not already attached to your installation user ID.
  - At least 128 MB of virtual storage.

    Note: The virtual storage required for installation is not necessarily the amount you should have assigned when running a system second level. For information about determining virtual storage requirements, see *z/VM: CP Planning and Administration*.

  - A 191 read/write minidisk accessed as file mode A.
  - If installing from a CMS-formatted minidisk (referred to as "From a VM Minidisk"), write access to the disk where the files will be loaded.
  - A 2222 read/write minidisk, matching the supported DASD type (3390 or FBA) of your installation media, that is exactly:
    - 10 cylinders (3390)
    - 14400 512-KB blocks (FBA)
  - A 24CC read/write minidisk, matching the supported DASD type (3390 or FBA) of your installation media, that is exactly:
    - 10 cylinders (3390)
    - 14400 512-KB blocks (FBA)
  - A 2CF0 read/write minidisk, matching the supported DASD type (3390 or FBA) of your installation media, that is exactly:
    - 120 cylinders (3390)
    - 172800 512-KB blocks (FBA)
- If installing from a physical DVD mounted in a DVD drive connected through an FTP server:
  - The FTP server must comply with RFC 959 and RFC 1123.
  - The FTP server must have a TCP/IP communication path to the system you are using to install.
  - The FTP server must be able to access a DVD drive.
- If installing from an FTP server that has access to a directory where the files from the physical DVDs or electronic deliverables have been stored:
  - The FTP server must comply with RFC 959 and RFC 1123.
  - The FTP server must have a TCP/IP communication path to the system you are using to install.
  - The FTP server must be able to access the directory where the contents of the DVDs will be stored.
  - The contents of the z/VM product DVD and the installation RSU DVD must be stored in the same directory.
  - There must be at least 4 GB of available space to store the contents of the z/VM product DVD and the installation RSU DVD.
- If installing from a CMS-formatted minidisk where the contents of the physical DVD or electronic deliverable will be uploaded:
  - The CMS-formatted minidisk must be the equivalent of at least 6000 cylinders of 3390 DASD.

Step 3. Complete the installation worksheets

1. Determine the installation method you will use, and record the selected installation method on DVD installation worksheet 1 (Table 1 on page 17).
   - Choose first-level installation if no supported z/VM system is running on the processor or LPAR on which you are installing.
   - Choose second-level installation if you are installing in a virtual machine on a supported z/VM system.
2. Each product on the z/VM product DVD allows file pool directories to be used for service. Using file pool directories for service (the default) could avoid potential service space problems. Determine which products will use the installation file pools for service disks and which products will use minidisks. Record your choices under the **Install To** column on traditional installation worksheet 1 (Table 1 on page 17).
3. Select your default system language and record your choice on traditional installation worksheet 1 (Table 1 on page 17). The choices are:
   - Mixed Case English (AMENG)
   - Uppercase English (UCENG)
   - Kanji (KANJI)
4. Select the DASD type and model you will use to install, and record the DASD information on traditional installation worksheet 1 (Table 1 on page 17).
   - If you are using the FBA (SCSI) DVD:
     - Record FBA on the "DASD type and model" line.
     - Record the size on the "SCSI volume size" line.
       - The size of the FBA volumes must be at least 6.0 GB.
       - All volumes must be at least the size recorded.

     Notes:

     a. FBA cannot be used for an SSI installation.
     b. z/VM installation supports only emulated FBA on SCSI volumes. Real FBA volumes are *not* supported.
     c. The spool and paging volumes will be reallocated for spool and page space up to block 16777214 (approximately 8 GB). Any additional space on those volumes will remain PERM space.
     d. IBM strongly recommends that you *not* use any remaining space on the installation volumes.
   - If you are using the 3390 DVD:
     - On the "DASD type and model" line:
       - Record 3390 Mod 3 if your DASD contains 3339 - 10016 cylinders.
       - Record 3390 Mod 9 if your DASD contains 10017 - 32759 cylinders.
       - Record 3390 Mod 27 if your DASD contains 32760 or more cylinders.

     Notes:

     a. The spool and paging volumes will be reallocated for spool and page space up to cylinder 65519. Any additional space on those volumes will remain PERM space.
     b. IBM strongly recommends that you *not* use any remaining space on the installation volumes.
5. Select a name for the common service filepool and record your choice on traditional installation worksheet 1 (Table 1 on page 17). The common service filepool contains the service minidisks for the products you choose to load into the installation filepools, and will reside on the COMMON volumes. This filepool will exist even if you do not load any product into the filepool. The file ICOMDIR NAMES will be created to map your filepool name to the filepool nickname VMPSFS. If you will *not* be adding this system or SSI cluster to a larger ISFC collection, you can use the name “VMPSFS” as your filepool name. The filepool name:

- Has no default value. You must enter a name.
- Must be 1 to 8 alphanumeric characters (A through Z and 0 through 9).
- Cannot start with the characters "VMSYS".
- Cannot start with a number.
- Cannot be "ALLOW", "ANY", or "SYSTEM".
- Should not match any user ID on the system.

Note, also, that if at some time in the future you plan on adding this system or SSI cluster to a larger ISFC collection, the common service filepool name must not match any filepool name used by any other system or member in the ISFC collection.

6. Select the installation type, Non-SSI or Single System Image (SSI), and record your choice on traditional installation worksheet 1 (Table 1 on page 17). If installing to FBA, you must select Non-SSI.

   For more information on planning for an SSI cluster, see *z/VM: CP Planning and Administration*.

   Note: To select SSI, you must first order the IBM z/VM Single System Image Feature. This feature must be appropriately licensed for all machines that will contain a member of the single system image cluster.

7. If you selected Non-SSI, record the name of your system on traditional installation worksheet 1 (Table 1 on page 17). Note that the system name:
   - Must be 1 to 8 alphanumeric characters
   - Cannot start with a number, that is, the first character must be non-numeric
   - Cannot contain blanks
   - Cannot be NOSSI or NOSYS.

   Attention: The system name you select should be considered a ***permanent*** name. In previous releases, selecting a "test" name and then later changing it to a "production" name was a common practice. However, due to numerous dependencies in the current release, this practice should *not* be used. Changing the system name after installation is a complicated process. If you intend to configure RSCS, the RSCS node ID should match the system name.

   Note: If your current system is z/VM V5.4 and you plan to use the migration procedure:

   If any pre-installed products reside in SFS on your current system, the system name for your new z/VM V6.4 system must be different from the system name of your current z/VM V5.4 system.

8. If you selected SSI:
   a. On traditional installation worksheet 1 (Table 1 on page 17):
      1) Record the number of members you wish to install (must be 1 to 4).
      2) Record the name of your SSI cluster (must be 1 to 8 alphanumeric characters).
   b. On traditional installation worksheet 6 (Table 6 on page 19):
      1) Select "First-level" if you intend to IPL your SSI cluster members in first-level LPARs. Otherwise, select "Second-level". An SSI cluster can be installed to IPL all members in first-level LPARs or to IPL all members second-level from user IDs on an existing z/VM system.
      2) For each SSI member, record the following:
         a) A member name, which:
            - Must be 1 to 8 alphanumeric characters
            - Cannot start with a number, that is, the first character must be non-numeric
            - Cannot contain blanks
            - Cannot be NOSSI or NOSYS
            - Must be unique (from all other member names) in the last 7 characters.

Attention: The system name you select should be considered a ***permanent*** name. In previous releases, selecting a "test" name and then later changing it to a "production" name was a common practice. However, due to numerous dependencies in the current release, this practice should *not* be used. Changing the system name after installation is a complicated process. If you intend to configure RSCS, the RSCS node IDs should match the system names.

b) The LPAR name or the user ID where the SSI member will be IPLed.

Notes:

1. The LPAR name is the name that is defined on the resource statement of the hardware input output control program (IOCP). See your hardware administrator for more information.
2. If you are installing a multimember SSI cluster that will be IPLed second-level, the file SSI2ND DIR-PROF will be generated during installation processing. This file contains the directory definitions and the profile execs needed for these user IDs.

9. Select whether to use an SMAPI client, such as the Cloud Manager Appliance (CMA), or to use other, non-SMAPI system management tools. The installation process can configure and enable your new system to be managed by CMA or some other SMAPI client. With this configuration, you *cannot* use an external security manager program, such as RACF® for VM, or a directory manager program, such as DirMaint. All system management must be performed using SMAPI clients, such as CMA.

   If you intend to use an external security manager product or a directory manager product from IBM or another vendor, or if you do not have access to any SMAPI clients for system management, you should enter No on traditional installation worksheet 2 (Table 2 on page 17).

   If you will *only* be using CMA or some other SMAPI client for system management and will *not* use an external security manager product or a directory manager product from IBM or another vendor, then you may want to enter Yes on DVD installation worksheet 2 (Table 2 on page 17). Keep in mind that if you say Yes, you should *not* attempt to manage your system in any other way.

   If you are not sure how you will be managing your system, you should enter No on DVD installation worksheet 2 (Table 2 on page 17). For additional information on using SMAPI clients and CMA, see *z/VM: Systems Management Application Programming*.

10. If installing to 3390, determine the number of volumes required to install and record that information on traditional installation worksheet 3 (Table 3 on page 18) for non-SSI or DVD installation worksheet 7 (Table 7 on page 19) for SSI.

    a. If you choose:

    - 3390 Model 3:
      - If you choose to load all products to minidisk:
        - For non-SSI, you will need eleven volumes.
        - For SSI, you will need eleven volumes for member 1, plus six volumes for each additional member.
      - If you choose to load all products to filepool, you will *not* need the RELVOL2 or RELVOL3 volumes:
        - For non-SSI, you will need nine volumes.
        - For SSI, you will need nine volumes for member 1, plus six volumes for each additional member.
      - If you choose to load some products to minidisk and some products to filepool, you may or may not need the RELVOL2 or RELVOL3 volumes. Use the following table to make the determination by totalling the cylinders for all of the products that you will load to the filepool. If the products you selected total 1110 or more cylinders, then you will *not* need the RELVOL3 volume. If the products you selected total 4418 or more cylinders, then you will *not* need either the RELVOL2 or RELVOL3 volumes:
        - For non-SSI, you will need nine to eleven volumes.

- For SSI, you will need nine to eleven volumes for member 1, plus six volumes for each additional member.

Product	Cylinders
VM	2129
OSA	0
PERFTK	121
VMHCD	1379
RACF	182
DIRM	0
RSCS	94
ICKDSF	0
TCPIP	749

- 3390 Model 9, you will *not* need multiple common, release, or member volumes:
  - For non-SSI, you will need six volumes.
  - For SSI, you will need six volumes for member 1, plus four volumes for each additional member.
- 3390 Model 27, you will *not* need a member volume or multiple common or release volumes:
  - For non-SSI, you will need five volumes.
  - For SSI, you will need five volumes for member 1, plus three volumes for each additional member.

Notes:

1. INSTPLAN, which is run early in the installation procedure, will tell you exactly how many volumes are required.
2. IBM strongly suggests that you do *not* use any left over space on the installation volumes.

b. Record the address for each 3390 volume in the **Address** column. If you are changing any of the default installation labels, record the new labels in the **New Label** column. Disregard any volumes that you do not need. Note that you must *not* use any of IBM's default volume labels for a volume other than the volume for which it is originally defined.

- Volume labels must be 1 to 6 alphanumeric characters.
- If you selected non-SSI, use traditional installation worksheet 3 (Table 3 on page 18).
- If you selected SSI, use traditional installation worksheet 7 (Table 7 on page 19).

Note: The address of the VMCOM1 volume is written out by the SALIPL command to cylinder 0 of the IPL volume for each member (M0*x*RES), to be used at IPL time to locate the SYSTEM CONFIG file. Because of this, the address of the VMCOM1 volume cannot be redefined to a different address without rerunning SALIPL.

11. If you are installing to FBA (SCSI) volumes, use traditional installation worksheet 4 (Table 4 on page 18). Record the address for each volume in the **Address** column. If you are changing any of the default installation labels, record the new labels in the **New Label** column. Note that you must *not* use any of IBM's default volume labels for a volume other than the volume for which it is originally defined.

- FBA (SCSI) can be used for non-SSI installation only.
- If the size of your FBA volumes is equal to or greater than 9.7 GB:
  - You will need five volumes. You will *not* need the M01W01 volume.
- If the size of your FBA volumes is less than 9.7 GB:
  - You will need six volumes.
- Volume labels must be 1 to 6 alphanumeric characters.

Note: IBM strongly suggests that you do *not* use any left over space on the installation volumes.

12. If you are using FBA (SCSI) disks, and they are already defined, you need only the addresses of the volumes and can continue to the next substep. If they are not already defined, you need to know the WWPN and LUN address for each disk, as well as either the valid FCP address(es) or the channel path (CHPID) they belong to.

    Record each LUN and its corresponding WWPN on traditional installation worksheet 4 (Table 4 on page 18). Also make a note of the valid FCP address(es) or CHPID.
13. If you selected SSI and "First-level" in substep 8b1 on page 13, complete worksheet 8 (Table 8 on page 20):
    a. Enter the real addresses of the COMMON volume as it is defined to each LPAR. The COMMON volume must be available to each LPAR where your SSI cluster will run.
    b. If installing more than one member, specify the CTCA addresses that will be used to communicate between members of the SSI cluster.

       Notes:

       1. Each SSI member must have at least one CTC connection to every other SSI member.
       2. Installation allows you to define up to two connections between any two members. More connections may be defined after installation is complete.
       3. The number of CTC device addresses defined for communication between two members must be the same.

14. If you are installing with an FTP server (using a physical DVD or the server directory), record the path information required to access the DVD drive or FTP directory on DVD installation worksheet 5 (Table 5 on page 18).
    a. Record the IP address or host name of the FTP server.
    b. Record the user ID and password of the FTP server.
    c. Record the DVD or FTP directory path name for the FTP server.
15. If you are installing from a VM minidisk, record the VM user ID and address of the VM minidisk where contents of the z/VM product DVD will be uploaded on DVD installation worksheet 5 (Table 5 on page 18).

What to do next

Go to "Step 4. Complete the basic TCP/IP connectivity worksheets" on page 21.

Table 1. Traditional installation worksheet 1

Installation method (first-level or second-level): _____

Record an "M" if you will load the product to a minidisk or an "F" if you will load the product to the VMPSFS file pool in the **Install To** column.

Install To	Product	Install To	Product	Install To	Product
	VM		DIRM		ICKDSF
	OSA		PERFTK		RACF
	RSCS		TCPIP		VMHCD

Default system language: _____

DASD type and model: _____

SCSI volume size: _____

Common service filepool name: _____

Installation Type:

__ Non-SSI System Name*: _____

__ SSI Number of Members: ___ SSI Cluster Name: _____

* The system name you select should be considered a ***permanent*** name. Changing the system name after installation is a complicated process.

Table 2. Traditional installation worksheet 2

Would you like to have your system automatically configured to be managed by an SMAPI client for system management, such as the Cloud Manager Appliance (CMA)? (Yes/No) _____

Keep the following in mind:

If you say **Yes**, you should not attempt to manage your system in any other way.

If you'd like to manage your own system, or use a purchased external security manager or a purchased directory manager, say **No**.

Complete the installation worksheets

Table 3. Traditional installation worksheet 3 (3390 Non-SSI Only)

Volume Type	Default Label	New Label	Address
COMMON	VMCOM1		
COMMON2	VMCOM2		
RELVOL	640RL1		
RELVOL2	640RL2		
RELVOL3	640RL3		
RES	M01RES		
SPOOL	M01S01		
PAGE	M01P01		
MEMBER	M01W01		
MEMBER	M01W02		
MEMBER	M01W03		
Note: You must *not* use any of IBM's default volume labels for a volume other than the volume for which it is originally defined.			

Table 4. Traditional installation worksheet 4 (FBA Non-SSI Only)

Volume Type	Default Label	New Label	Address	FCP Address	WWPN	LUN
COMMON	VMCOM1					
RELVOL	640RL1					
RES	M01RES					
SPOOL	M01S01					
PAGE	M01P01					
MEMBER	M01W01					

Channel path (CHPID): _____

Valid FCP addresses: _____

Note: You must *not* use any of IBM's default volume labels for a volume other than the volume for which it is originally defined.

Table 5. Traditional installation worksheet 5

IP address or host name: _____

FTP server user ID and password: _____

DVD/FTP directory path name: _____

VM user ID and address of VM minidisk to upload DVD: _____

Table 6. Traditional installation worksheet 6 (3390 SSI Only)

After installation is complete, SSI will be IPLed:
__ First-Level
__ Second-Level

SSI Member Name(s) / IPL LPAR Name(s) or User ID Name(s):		
Slot Number	**Member Name***	**IPL LPAR/User ID**
1		
2		
3		
4		

* The member names you select should be considered ***permanent*** names. Changing a member name after installation is a complicated process.

Table 7. Traditional installation worksheet 7 (3390 SSI Only)

Volume Type	**Default Label**	**New Label**	**Address**
COMMON	VMCOM1		
COMMON2	VMCOM2		
RELVOL	640RL1		
RELVOL2	640RL2		
RELVOL3	640RL3		

Volume Type	**Default Label**	**New Label**	**Address**	**Volume Type**	**Default Label**	**New Label**	**Address**
Member 1:				**Member 2:**			
RES	M01RES			RES	M02RES		
SPOOL	M01S01			SPOOL	M02S01		
PAGE	M01P01			PAGE	M02P01		
MEMBER	M01W01			MEMBER	M02W01		
MEMBER	M01W02			MEMBER	M02W02		
MEMBER	M01W03			MEMBER	M02W03		
Member 3:				**Member 4:**			
RES	M03RES			RES	M04RES		
SPOOL	M03S01			SPOOL	M04S01		
PAGE	M03P01			PAGE	M04P01		
MEMBER	M03W01			MEMBER	M04W01		
MEMBER	M03W02			MEMBER	M04W02		
MEMBER	M03W03			MEMBER	M04W03		

Note: You must *not* use any of IBM's default volume labels for a volume other than the volume for which it is originally defined.

Complete the installation worksheets

Table 8. Traditional installation worksheet 8 (SSI First-Level Configuration Only)

Real addresses for the COMMON volume on each member LPAR:			
Member 1 Address	**Member 2 Address**	**Member 3 Address**	**Member 4 Address**

CTC device addresses:

From: Member 1			From: Member 2		
To: Member 1	N/A		To: Member 1	_____	_____
To: Member 2	_____	_____	To: Member 2	N/A	
To: Member 3	_____	_____	To: Member 3	_____	_____
To: Member 4	_____	_____	To: Member 4	_____	_____
From: Member 3			From: Member 4		
To: Member 1	_____	_____	To: Member 1	_____	_____
To: Member 2	_____	_____	To: Member 2	_____	_____
To: Member 3	N/A		To: Member 3	_____	_____
To: Member 4	_____	_____	To: Member 4	N/A	

Step 4. Complete the basic TCP/IP connectivity worksheets

1. This step is optional. If you do not wish to create a minimal TCP/IP configuration that establishes basic connectivity to your IP network, skip to "Step 5. Choose your next step" on page 22.
2. After you have completed your z/VM installation, you can optionally create a minimal TCP/IP configuration that establishes basic connectivity to your IP network. If you choose to perform this configuration, you must gather the necessary information from your network system administrator and record the information in the tables in Appendix K, "Basic TCP/IP Connectivity Worksheets," on page 273.

   If you are installing a multimember SSI, the TCP/IP configuration must be done separately on each SSI member. Fill out a set of configuration worksheets for each member on which you will create a minimal TCP/IP configuration. Configuration worksheets can be found in Appendix K, "Basic TCP/IP Connectivity Worksheets," on page 273.

Step 5. Choose your next step

What to do next

Base your choice on the installation method that fits your situation.

If you chose the. . .	Then go to. . .
First-level installation method	Chapter 3, “Traditional installation for first level,” on page 23
Second-level installation method	Chapter 4, “Traditional installation for second level,” on page 29

Chapter 3. Traditional installation for first level

In this chapter, you will:

- Use step-by-step procedures to IPL the RAMDISK and run DVDPRIME.

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Step 1. Load the RAMDISK

Before you begin: You need to complete traditional installation worksheets 1 (Table 1 on page 17) through 8 (Table 8 on page 20). If you have not done so, return to Chapter 2, "Plan your traditional installation," on page 7.

1. Prepare to access the installation files.

   If you are installing from:

   - An HMC DVD drive, load the z/VM product DVD in the HMC DVD drive.
   - An FTP server DVD drive, load the z/VM product DVD in the FTP connected DVD drive.
   - An FTP server directory, if you have not already done so, upload the contents of each DVD to a new directory on the FTP server. After the contents of the z/VM product DVD have been uploaded, upload the contents of the installation RSU DVD to the same directory, overwriting any duplicate files.

     a. Create a new directory on the FTP server. The maximum length of the directory path name is 40 characters. The FTP server will need at least 4 GB of free space.

     b. Load the contents of the z/VM product DVD and the installation RSU DVD to the directory. When copying the files, make sure the case is preserved.

2. On the HMC, open an integrated 3270 console for the LPAR you are going to use for installation.

   a. In the Hardware Management Console, select the LPAR you are going to use for installation.

   b. Under Recovery, click on **Integrated 3270 Console**. The Integrated 3270 Console window for that LPAR opens. Messages are displayed in the Integrated 3270 Console window when the system IPLs.

3. Select **Load from Removable Media or Server** under Recovery for the LPAR you are going to use for installation. The **Load from Removable Media or Server** window is displayed.

4. In the load window, select one of the following:

   - Hardware Management Console CD / DVD-ROM
   - FTP Source

   Attention: Do *not* select **Hardware Management Console CD / DVD-ROM and assign for operating system use**.

   If you are installing from the HMC DVD drive, select **Hardware Management Console CD / DVD-ROM**. If you are installing from an FTP server DVD drive or from an FTP server directory, select **FTP Source**.

   Note: If you are installing from an FTP server directory, the z/VM product DVD and the installation RSU DVD must have been copied into the same directory on the FTP server.

5. Fill in the fields in the task window.

   - If you selected **Hardware Management Console CD-ROM / DVD**, enter /CPDVD as the file location.
   - If you selected **FTP Source** and you are using an FTP server DVD drive:
     - Specify the FTP connection information for the server (host computer, user ID, and password).
     - Enter the path information required by your FTP server (e.g. DVD drive letter or blank) to access the DVD drive, followed by /CPDVD.
   - If you selected **FTP Source** and you are using an FTP server directory:
     - Specify the FTP connection information for the server (host computer, user ID, and password).
     - Enter the path to the directory where you uploaded the z/VM product DVD as the file location.

   Note: If using a DVD drive, wait until the light on the drive goes out or stops blinking before continuing.

6. Click OK to continue. The **Load from Removable Media or Server - Select Software to Install** task window will be displayed.
7. Load the RAMDISK.
   a. In the task window, select **640VM.ins**, and click **OK**. One or more **Confirm the Action** prompts are displayed.
   b. Click **Yes** to continue.
   c. Messages indicating the status of the load are displayed in the task progress window. When a message is displayed indicating the load is successful, click **OK** to close the window and return to the Integrated 3270 Console window for the LPAR you are going to use for installation.
8. The RAMDISK IPLs and the system loads with the MAINT user ID logged on. System messages are displayed in the Integrated 3270 Console window.

```
hh:mm:ss z/VM V6 R4.0
          SERVICE LEVEL nnnn (64-BIT)

hh:mm:ss SYSTEM NUCLEUS CREATED ON yyyy-mm-dd AT hh:mm:ss, LOADED FROM $RAMD$
hh:mm:ss
hh:mm:ss ************************************************************
hh:mm:ss * LICENSED MATERIALS - PROPERTY OF IBM*                      *
hh:mm:ss * 5741-A07 (C) COPYRIGHT IBM CORP. 1983, 2016. ALL RIGHTS    *
hh:mm:ss * RESERVED. US GOVERNMENT USERS RESTRICTED RIGHTS - USE      *
hh:mm:ss * DUPLICATION OR DISCLOSURE RESTRICTED BY GSA ADP SCHEDULE   *
hh:mm:ss * CONTRACT WITH IBM CORP.                                    *
hh:mm:ss *                                                           *
hh:mm:ss * * TRADEMARK OF INTERNATIONAL BUSINESS MACHINES            *
hh:mm:ss ************************************************************
hh:mm:ss
hh:mm:ss HCPZCO6718I Using parm disk 1 on volume $RAMD$ (device nnnn).
hh:mm:ss HCPZCO6718I Parm disk resides on blocks nnn through nnn.
⋮
hh:mm:ss HCPCRC8082I Accounting records are accumulating for userid OPERACCT
hh:mm:ss HCPCRC8082I EREP records are accumulating for userid OPERACCT
DMSIND2015W Unable to access the Y-disk. File mode Y (19E) not accessed
DMSWSP327I The installation saved segment could not be loaded
z/VM V6.4.0    yyyy-mm-dd hh:mm
DMSDCS1083E Saved segment CMSPIPES does not exist
DMSDCS1083E Saved segment CMSPIPES does not exist
DMSDCS1083E Saved segment CMSVMLIB does not exist
Ready; T=n.nn/n.nn hh:mm:ss
```

Step 2. Run DVDPRIME

1. Run DVDPRIME with the *dasdtype* and *source* you are using to install.

```
dvdprime dasdtype (source
```

dasdtype
3390 or **FBA**

source
One of the following:
dvd if installing from a physical DVD loaded in an HMC or FTP server drive
server if installing from an FTP server that has access to a directory where the files from the physical DVD or electronic deliverables have been stored

```
IUGDVP8327I ** NOW EXECUTING DVDPRIME EXEC ON date AT time **
IUGDVP8440I NOW LOADING 4CC DISK
DVDLOAD: LOADING FILE 'FBA22200 IMAGE *'
DVDLOAD: RC=0
MDREST: WROTE 1800 BLOCKS ON 04CC, RC=0
IUGDVP8392I DVDPRIME EXEC ENDED SUCCESSFULLY
Ready; T=n.nn/n.nn hh:mm:ss
```

Step 3. Choose your next step

What to do next

If this is a. . .	Then. . .
Non-SSI install	Continue with Chapter 5, “Non-SSI traditional installation method,” on page 47.
SSI install	Go to Chapter 6, “SSI traditional installation method,” on page 61.

Choose your next step

Chapter 4. Traditional installation for second level

In this chapter, you will:

- Set up the user ID for installation.
- Use DVDPRIME to load the 24CC and 2CF0 minidisks.

Base your choice on which source you will use to perform a second-level installation.

If you chose to install from a . . .	Then see . . .
Physical DVD	"From a DVD drive" on page 30
FTP server directory	"From an FTP server directory" on page 34
VM minidisk	"From a VM minidisk" on page 38

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From a DVD drive

Step 1. Set up the user ID for installation

Before you begin: You need to complete traditional installation worksheets 1 (Table 1 on page 17) through 8 (Table 8 on page 20). If you have not done so, return to Chapter 2, "Plan your traditional installation," on page 7.

1. Load the z/VM product DVD in the DVD drive of the FTP server you are using for installation. Wait until the light on the DVD drive goes out or stops blinking to continue.
2. Log on to the first-level user ID that you will use for installation. Make sure the user ID meets the user ID requirements listed under "Second-level installation requirements" on page 10.
3. Spool the console to make sure it is empty, started, and spooled to the reader.

```
spool console close start *
RDR FILE filenum  SENT FROM userid  CON WAS nnnn RECS nnnn CPY  nnn T NOHOLD NOKEEP
Ready;
```

4. Verify you have a 2222 read/write minidisk with exactly 10 cylinders if installing to 3390 or 14400 512-KB blocks if installing to FBA.

```
query v 2222
DASD 2222 3390 xxxxxx  R/W        10 CYL ON DASD  nnnn SUBCHANNEL = nnnn
Ready; T=n.nn/n.nn hh:mm:ss
```

5. Access the minidisk (*diskaddr*) that contains the INSTPIPE MODULE as file mode C. The INSTPIPE MODULE was shipped on the MAINT 2CC disk with pre-V6.2 releases. Starting with z/VM V6.2, the INSTPIPE MODULE is shipped on the MAINT*vrm* 4CC disk.

```
access diskaddr c
Ready; T=n.nn/n.nn hh:mm:ss
```

6. Copy the files needed to run DVDPRIME from the DVD to the 2222 minidisk.
   a. Run INSTPIPE.

```
instpipe
Ready; T=n.nn/n.nn hh:mm:ss
```

   b. Copy the files from the DVD to the 2222 minidisk.

      Note: The information for *host*, *userid*, *password*, and *ftpdir* was recorded in DVD installation worksheet 5 (Table 5 on page 18).

```
pipe ftpget -h host -u userid -p password -d ftpdir/CPDVD
 -v BEF -DVDEOF -f ddd222* |UNPACK| restcmd 2222
```

host
IP address or FTP host name. An IP address is in dotted-decimal form for your IP version 4 interface. For example:

```
129.42.16.99
```

A host name must begin with a letter, and may contain only alphanumeric characters (A-Z,a-z,0-9) or hyphens (-). For example:

```
MyOrg-VM01
```

userid
User ID used to log on to the FTP server. Must be 40 or less alphanumeric characters.

password
Password for the user ID used to log on to the FTP server. Must be 40 or less alphanumeric characters.

ftpdir
Path to the DVD drive with /CPDVD appended to the end of the path. The maximum length is 40 characters. For example:

```
mydvddrive/CPDVD
cpdvd
e:/cpdvd
vmftpdir/CPDVD
```

ddd
CKD for 3390 or **FBA** for FBA. They must be entered in uppercase.

restcmd
ECKDREST for 3390 or **MDREST** for FBA.

Note: In the above PIPE command you may use a different stage separator by including the **stagesep** keyword. For example:

pipe (stagesep !) ftpget -h *host* **-u** *userid* **-p**
password **-d** *ftpdir*/**CPDVD -v BEF -DVDEOF -f**
*ddd*222* **!UNPACK!** *restcmd* **2222**

```
{FBA222*|CKD222*}
DMSRXS1408W File TCPIP DATA * not found          You might not receive this message.
{MDREST|ECKDREST}: WROTE nnn {BLOCKS|TRACKS} ON 2222, RC=0
Ready; T=n.nn/n.nn hh:mm:ss
```

Step 2. Run DVDPRIME

1. IPL CMS to remove the old INSTPIPE MODULE from storage.

   ```
   ipl cms
   z/VM Vv.r.m     yyyy-mm-dd hh:mm

    ENTER
   Ready; T=n.nn/n.nn hh:mm:ss
   ```

2. Access the 2222 minidisk as file mode C.

   ```
   access 2222 c
   Ready; T=n.nn/n.nn hh:mm:ss
   ```

3. Verify that the first occurrence of the INSTPIPE MODULE is on the minidisk accessed as file mode C. Remove or rename all other copies.

   ```
   listfile instpipe module *
   INSTPIPE MODULE C1
   Ready; T=n.nn/n.nn hh:mm:ss
   ```

4. Run DVDPRIME with the *dasdtype* you are using to install.

   dvdprime *dasdtype* **(dvd**

   dasdtype
   3390 or **FBA**.

   ```
   IUGDVP8327I ** NOW EXECUTING DVDPRIME EXEC  ON date AT time **
   ```

5. Complete the DVDPRIME panel by filling in the information for your FTP server.

   Note: The information for HOSTNAME OR IP ADDRESS, FTP USERID, FTP PASSWORD, and DVD PATHNAME was recorded in traditional installation worksheet 5 (Table 5 on page 18).

```
                      *** DVDPRIME PANEL ***

 Enter information in empty fields and press F5 to process.

HOSTNAME OR IP ADDRESS:      ____________________________________________

FTP USERID:                  ____________________________________________

FTP PASSWORD:                ____________________________________________

DVD PATHNAME:                ____________________________________________

PORT NUMBER:                 21__________________________________________

     F1 = HELP   F3/F12 = QUIT   F5 = Process   ENTER = Refresh
```

Figure 1. DVDPRIME Panel

HOSTNAME OR IP ADDRESS:

This field should be filled in with the IP ADDRESS or HOSTNAME of your FTP server. A host name must begin with a letter, and may contain only alphanumeric characters (A-Z,a-z,0-9) or hyphens (-). For example: **MyOrg-VM01**

Specify an IP address in dotted-decimal form for your IP version 4 interface. For example: **129.42.16.99**

FTP USERID:

User ID used to log on to the FTP server. Must be 40 or less alphanumeric characters.

FTP PASSWORD:

Password used to log on to the FTP server. Must be 40 or less alphanumeric characters.

DVD PATHNAME:

Enter the path to the DVD drive according to the conventions used by your server and append CPDVD to the end of your path. This should be the same path name used on the ftpget command in Step 1, substep 6 on page 30. The maximum length is 40 characters. For example:

```
mydvddrive/CPDVD
cpdvd
e:/cpdvd
vmftpdir/CPDVD
```

PORT NUMBER:

The FTP server's port number. The default port number is 21.

6. Press F5 to process.

```
F5

IUGDVP8440I NOW LOADING 24CC DISK
{FBA222*|CKD222*}
DMSRXS1408W File TCPIP DATA * not found          You might not receive this message.

{MDREST|ECKDREST}: WROTE nnnn {BLOCKS|TRACKS} ON 24CC, RC=0

IUGDVP8440I NOW LOADING 2CF0 DISK
{FBACF0*|CKDCF0*}
DMSRXS1408W File TCPIP DATA * not found          You might not receive this message.

{MDREST|ECKDREST}: WROTE nnnn {BLOCKS|TRACKS} ON 2CF0, RC=0

IUGDVP8392I DVDPRIME EXEC ENDED SUCCESSFULLY
Ready; T=n.nn/n.nn hh:mm:ss
```

What to do next

Go to “Step 3. Choose your next step” on page 46.

From an FTP server directory

Step 1. Set up the user ID for installation

Before you begin: You need to complete traditional installation worksheets 1 (Table 1 on page 17) through 8 (Table 8 on page 20). If you have not done so, return to Chapter 2, "Plan your traditional installation," on page 7.

The RSU that is shipped as part of the z/VM product will be installed during the installation process. Do not attempt to skip installing the RSU during upgrade. If additional service is required, install the additional service after installation of your system is complete.

1. Upload the contents of each DVD to the directory. After the contents of the z/VM product DVD have been uploaded, upload the contents of the installation RSU DVD to the same directory, overwriting any duplicate files.
   a. Create a new directory on the FTP server. The maximum length of the directory path name is 40 characters. The FTP server will need at least 4 GB of free space.
   b. Load the contents of the z/VM product DVD and the installation RSU DVD to the directory. When copying the files, make sure the case is preserved.
2. Log on to the first-level user ID that you will use for installation. Make sure the user ID meets the "Second-level installation requirements" on page 10.
3. Spool the console to make sure it is empty, started, and spooled to the reader.

```
spool console close start *
RDR FILE filenum  SENT FROM userid  CON WAS nnnn RECS nnnn CPY  nnn T NOHOLD NOKEEP
Ready;
```

4. Verify you have a 2222 read/write minidisk with exactly 10 cylinders if installing to 3390 or 14400 512-KB blocks if installing to FBA.

```
query v 2222
DASD 2222 3390 xxxxxx  R/W        10 CYL ON DASD  nnnn SUBCHANNEL = nnnn
Ready; T=n.nn/n.nn hh:mm:ss
```

5. Access the minidisk (*diskaddr*) that contains the INSTPIPE MODULE as file mode C. The INSTPIPE MODULE was shipped on the MAINT 2CC disk with pre-V6.2 releases. Starting with z/VM V6.2, the INSTPIPE MODULE is shipped on the MAINT*vrm* 4CC disk.

```
access diskaddr c
Ready; T=n.nn/n.nn hh:mm:ss
```

6. Copy the files needed to run DVDPRIME to the 2222 minidisk from the FTP server.
   a. Run INSTPIPE.

```
instpipe
Ready; T=n.nn/n.nn hh:mm:ss
```

   b. Copy the files from the FTP server to the 2222 minidisk.

   Note: The information for *host*, *userid*, *password*, and *ftpdir* was recorded in DVD installation worksheet 5 (Table 5 on page 18).

```
pipe ftpget -h host -u userid -p password -d ftpdir
 -v BEF -DVDEOF -f ddd222* |UNPACK| restcmd 2222
```

host
IP address or FTP host name. An IP address is in dotted-decimal form for your IP version 4 interface. For example:

```
129.42.16.99
```

A host name must begin with a letter, and may contain only alphanumeric characters (A-Z,a-z,0-9) or hyphens (-). For example:

```
MyOrg-VM01
```

userid
User ID used to log on to the FTP server. Must be 40 or less alphanumeric characters.

password
Password for the user ID used to log on to the FTP server. Must be 40 or less alphanumeric characters.

ftpdir
Path to the FTP server directory where you loaded the contents of the DVD in substep 1 on page 34. The maximum length is 40 characters.

ddd
CKD for 3390 or **FBA** for FBA. These must be entered in uppercase.

restcmd
ECKDREST for 3390 or **MDREST** for FBA.

Note: In the above PIPE command you may use a different stage separator by including the **stagesep** keyword. For example:

```
pipe ( stagesep ! ) ftpget -h host -u userid -p
password -d ftpdir -v BEF -DVDEOF -f ddd222*
!UNPACK! restcmd 2222
```

```
{FBA222*|CKD222*}
DMSRXS1408W File TCPIP DATA * not found
```

You might not receive this message.

```
{MDREST|ECKDREST}: WROTE nnn {BLOCKS|TRACKS} ON 2222, RC=0
Ready; T=n.nn/n.nn hh:mm:ss
```

Step 2. Run DVDPRIME

1. IPL CMS to remove the old INSTPIPE MODULE from storage.

   ```
   ipl cms
   z/VM V.r.m     yyyy-mm-dd hh:mm

    ENTER
   Ready; T=n.nn/n.nn hh:mm:ss
   ```

2. Access the 2222 minidisk as file mode C.

   ```
   access 2222 c
   Ready; T=n.nn/n.nn hh:mm:ss
   ```

3. Verify that the first occurrence of the INSTPIPE MODULE is on the minidisk accessed as file mode C. Remove or rename all other copies.

   ```
   listfile instpipe module *
   INSTPIPE MODULE C1
   Ready; T=n.nn/n.nn hh:mm:ss
   ```

4. Run DVDPRIME with the *dasdtype* you are using to install.

   dvdprime *dasdtype* **(server**

   dasdtype
   3390 or **FBA**.

   ```
   IUGDVP8327I ** NOW EXECUTING DVDPRIME EXEC  ON date AT time **
   ```

5. Complete the DVDPRIME panel by filling in the information for your FTP server.

   Note: The information for HOSTNAME OR IP ADDRESS, FTP USERID, FTP PASSWORD, and DVD PATHNAME was recorded in traditional installation worksheet 5 (Table 5 on page 18).

```
                    *** DVDPRIME PANEL ***

 Enter information in empty fields and press F5 to process.

HOSTNAME OR IP ADDRESS:     _____________________________________

FTP USERID:                 _____________________________________

FTP PASSWORD:               _____________________________________

DVD PATHNAME:               _____________________________________

PORT NUMBER:                21___________________________________

     F1 = HELP   F3/F12 = QUIT   F5 = Process   ENTER = Refresh
```

Figure 2. DVDPRIME Panel

HOSTNAME OR IP ADDRESS:

This field should be filled in with the IP ADDRESS or HOSTNAME of your FTP server. A host name must begin with a letter, and may contain only alphanumeric characters (A-Z,a-z,0-9) or hyphens (-). For example: **MyOrg-VM01**

Specify an IP address in dotted-decimal form for your IP version 4 interface. For example: **129.42.16.99**

FTP USERID:

User ID used to log on to the FTP server. Must be 40 or less alphanumeric characters.

FTP PASSWORD:

Password used to log on to the FTP server. Must be 40 or less alphanumeric characters.

DVD PATHNAME:

Enter the path to the FTP server directory according to the conventions used by your server. The maximum length is 40 characters. For example:

```
mydvddrive/ftpdir
e:/dirname
vmftpdir
```

PORT NUMBER:

The FTP server's port number. The default port number is 21.

6. Press F5 to process.

```
F5

IUGDVP8440I NOW LOADING 24CC DISK
{FBA222*|CKD222*}
DMSRXS1408W File TCPIP DATA * not found          You might not receive this message

{MDREST|ECKDREST}: WROTE nnnn {BLOCKS|TRACKS} ON 24CC, RC=0

IUGDVP8440I NOW LOADING 2CF0 DISK
{FBACF0*|CKDCF0*}
DMSRXS1408W File TCPIP DATA * not found          You might not receive this message.

{MDREST|ECKDREST}: WROTE nnnn {BLOCKS|TRACKS} ON 2CF0, RC=0

IUGDVP8392I DVDPRIME EXEC ENDED SUCCESSFULLY
Ready; T=n.nn/n.nn hh:mm:ss
```

What to do next

Go to “Step 3. Choose your next step” on page 46.

From a VM minidisk

Step 1. Set up the user ID for installation

Before you begin: You need to complete traditional installation worksheets 1 (Table 1 on page 17) through 8 (Table 8 on page 20). If you have not done so, return to Chapter 2, "Plan your traditional installation," on page 7.

The RSU that is shipped as part of the z/VM product will be installed during the installation process. Do not attempt to skip installing the RSU during upgrade. If additional service is required, install the additional service after installation of your system is complete.

1. Log on to the first-level user ID that you will use for installation. Make sure the user ID meets the user ID requirements listed under "Second-level installation requirements" on page 10.
2. Link to the VM minidisk where you will load the files from the DVDs. The VM minidisk needs to have the equivalent of at least 6000 cylinders of available 3390 DASD space. The minidisk must not contain any other image files. You must link the minidisk in write mode.

   Note: The information for *userid* and *diskaddr* was recorded in traditional installation worksheet 5 (Table 5 on page 18).

   ```
   link userid diskaddr diskaddr MR
   Ready; T=n.nn/n.nn hh:mm:ss
   ```

3. Access the VM minidisk as file mode W.

   ```
   access diskaddr w
   Ready; T=n.nn/n.nn hh:mm:ss
   ```

   diskaddr
   Address of the CMS-formatted VM minidisk where the DVD files are to be copied.

4. If the z/VM product and RSU files have already been loaded to the minidisk you are using, skip to substep 16 on page 43.
5. Link to the 592 TCP/IP client code minidisk.

   ```
   link tcpmaint 592 592 rr
   Ready; T=n.nn/n.nn hh:mm:ss
   ```

6. Access the 592 TCP/IP client code minidisk as file mode Z.

   ```
   access 592 z
   Ready; T=n.nn/n.nn hh:mm:ss
   ```

7. Set the terminal to alert you one second after CP issues the `MORE...` status and to clear one second after the alert.

   ```
   terminal more 1 1
   Ready;
   ```

8. Copy the contents of the z/VM product DVD to the VM minidisk accessed as file mode W.

   Note: If you have an FTP server with access to a DVD drive, continue with this substep. If you do not have an FTP server with access to a DVD drive, you can use the upload function of your terminal emulator to copy the contents of the z/VM product DVD to the minidisk. See Appendix J, "Using a terminal emulator to upload files from a DVD," on page 271. After uploading the files using your terminal emulator, continue with substep 15 on page 43.

a. Load the z/VM product DVD in the DVD drive of the FTP server you are using for installation. Wait until the light on the DVD drive goes out or stops blinking before continuing.

b. Start an FTP session.

```
ftp
VM TCP/IP FTP Level nnn
```

c. Connect to the FTP server. Enter the FTP server IP address or host name (*host*), the user ID used to log on to the FTP server (*userid*), and the password for the user ID used to log on to the FTP server (*password*).

Note: The information for *host*, *userid*, *password*, and *ftpdir* was recorded in DVD installation worksheet 5 (Table 5 on page 18).

```
OPEN (name of foreign host):
host

Connecting to host
220 FTP Server ready...
USER (identify yourself to the host):
userid

>>>USER userid
331 User name okay, need password.
Password:
password

>>>PASS ********
230 User logged in, proceed
```

d. Change the remote directory to the FTP path of the DVD drive (*ftpdir*) with /CPDVD appended to the end of the path. For example, e:/CPDVD.

```
Command:
cd ftpdir/CPDVD

>>>CWD ftpdir/CPDVD
250 Directory changed to ftpdir/CPDVD
```

e. Change the local directory to W.

```
Command:
lcd w

Local directory mode is 'W'
```

f. Set the file transfer mode to **binary**, the record format to **fixed**, and the record length to **1028**.

```
Command:
binary f 1028

>>>TYPE i
200 Type set to I.
Command:
```

g. Copy all required files from the z/VM product DVD.

```
mget ddd*
```

ddd
: This value must be entered in uppercase - **CKD** for 3390 or **FBA** for FBA (SCSI).

```
>>>TYPE a
200 Type set to A
>>>PORT host
200 PORT Command successful.
>>>NLST ddd*
150 Opening ASCII mode data connection for /bin/ls.
226 Transfer complete.
>>>TYPE i
200 Type set to I.
>>>PORT host
200 PORT Command successful.
>>>RETR dddnnnnn
150 Opening BINARY mode data connection for dddnnnnn (nnnnnnn Bytes).
nnnnnnn bytes transferred.
226 Transfer complete.
nnnnnnn bytes transferred in nn.nnn seconds. Transfer rate nnn.nn Kbytes/sec.
⋮
```

h. When all files have been transferred, quit the FTP session.

```
Command:
quit

>>>QUIT
221 Goodbye!
Ready;
```

9. Verify that all of the files copied from the z/VM product DVD have a **fixed** (F) file format and a logical record length (LRECL) of **1028**.

   If the file format or logical record length of any file is incorrect, then the files were copied incorrectly. Erase all of the files from the minidisk and copy the contents of the z/VM product DVD again, using the correct parameters. Repeat substep 8 on page 38.

```
filelist * $default w

Cmd   Filename Filetype Fm Format Lrecl    Records     Blocks   Date     Time
      xxx22200 $DEFAULT W1 F      1028     nnnn        nnn      dddd     ttttt

⋮
```

10. Verify that all of the files were copied from the z/VM product DVD.

```
filelist * $default w

 userid   FILELIST W0  V 169  Trunc=169 Size=nnnn Line=1 Col=1 Alt=0
Cmd   Filename Filetype Fm Format Lrecl    Records     Blocks   Date     Time
      xxx22200 $DEFAULT W1 F      1028     nnnn        nnn      dddd     ttttt
⋮
```

In the **Size=***nnnn* field, *nnnn* is the number of $DEFAULT files on the minidisk. The DVD contains the 640PROD DVDIMAGE file, which lists the number of image files that should have been copied.

Verify that the numbers are the same. If the numbers are not the same, there are files missing. In this case, you can do one of the following:

a. Copy the missing files.
   1) Determine which files are missing. The 640PROD DVDIMAGE file contains a list of all of the files that should have been copied.

2) Copy each of the the missing files from the z/VM product DVD by repeating substep 8 on page 38, replacing:

```
mget ddd* (replace
```

with:

```
get  filename   filename.$default
```

b. Copy the contents of the z/VM product DVD again by repeating substep 8 on page 38.

11. If you used your terminal emulator to upload the contents of the z/VM installation RSU DVD, skip to substep 15 on page 43. Otherwise, copy the contents of the z/VM installation RSU DVD to the same VM minidisk used for the z/VM product DVD.

a. Load the z/VM installation RSU DVD in the DVD drive of the FTP server you are using for installation. Wait until the light on the DVD drive goes out or stops blinking before continuing.

b. Start an FTP session:

```
ftp
VM TCP/IP FTP Level nnn
```

c. Connect to the FTP server. Enter the FTP server's IP address or host name (*host*), the user ID used to log on to the FTP server (*userid*), and the password for the user ID used to log on to the FTP server (*password*).

Note: The information for *host*, *userid*, *password*, and *ftpdir* was recorded in DVD installation worksheet 5 (Table 5 on page 18).

```
OPEN (name of foreign host):
host

Connecting to host
220 FTP Server ready...
USER (identify yourself to the host):
userid

>>>USER userid
331 User name okay, need password.
Password:
password

>>>PASS ********
230 User logged in, proceed
```

d. Change the remote directory to the FTP path of the DVD drive (*ftpdir*) with /CPDVD appended to the end of the path (e:/CPDVD, for example).

```
Command:
cd ftpdir/CPDVD

>>>CWD ftpdir/CPDVD
250 Directory changed to ftpdir/CPDVD
```

e. Change the local directory to W.

```
Command:
lcd w

Local directory mode is 'W'
```

f. Set the file transfer mode to **binary**, the record format to **fixed**, and the record length to **1028**.

```
Command:
binary f 1028

>>>TYPE i
200 Type set to I.
Command:
```

g. Copy all required files from the z/VM installation RSU DVD.

```
mget ddd* (replace
```

ddd
This value must be entered in uppercase - **CKD** for 3390 or **FBA** for FBA (SCSI).

```
>>>TYPE a
200 Type set to A
>>>PORT host
200 PORT Command successful.
>>>NLST ddd*
150 Opening ASCII mode data connection for /bin/ls.
226 Transfer complete.
>>>TYPE i
200 Type set to I.
>>>PORT host
200 PORT Command successful.
>>>RETR dddnnnnn
150 Opening BINARY mode data connection for dddnnnnn (nnnnnnn Bytes).
nnnnnnn bytes transferred.
226 Transfer complete.
nnnnnnn bytes transferred in nn.nnn seconds. Transfer rate nnn.nn Kbytes/sec.
⋮
```

h. When all files have been transferred, quit the FTP session.

```
Command:
quit

>>>QUIT
221 Goodbye!
Ready;
```

12. Verify that all of the files copied from the z/VM installation RSU DVD have a **fixed** (F) file format and a logical record length (LRECL) of **1028**.

    If the file format or logical record length of any file is incorrect, the files were copied incorrectly. Erase all of the new $DEFAULT files from the minidisk and copy the contents of the z/VM installation RSU DVD again, using the correct parameters. Repeat substep 11 on page 41.

```
filelist ddd500* $default w
```

ddd
- **CKD** for 3390 or **FBA** for FBA.

```
Cmd   Filename Filetype Fm Format Lrecl    Records     Blocks   Date     Time
      xxx50000 $DEFAULT W1 F      1028     nnnn        nnn      dddd     ttttt
⋮
```

13. Verify that all of the files were copied from the z/VM installation RSU DVD.

```
filelist ddd500* $default w
```

ddd
- **CKD** for 3390 or **FBA** for FBA.

```
userid   FILELIST W0  V 169  Trunc=169 Size=nnnn Line=1 Col=1 Alt=0
Cmd   Filename Filetype Fm Format Lrecl    Records     Blocks   Date     Time
      xxx22200 $DEFAULT W1 F      1028     nnnn        nnn      dddd     ttttt
⋮
```

In the **Size=***nnnn* field, *nnnn* is the number of $DEFAULT files from the RSU DVD on the minidisk. The DVD contains the 64CKDRSU and 64FBARSU DVDIMAGE files, which list the number of image

files that should have been copied for each DASD type.

Verify that the numbers are the same. If the numbers are not the same, there are files missing. In this case, you can do one of the following:

a. Copy the missing files.
   1) Determine which files are missing. The 64*ddd*RSU DVDIMAGE file contains a list of all of the files that should have been copied.
   2) Copy each of the the missing files from the z/VM installation RSU DVD by repeating substep 11 on page 41, replacing:

      ```
      mget ddd* (replace
      ```

      with:

      ```
      get  filename   filename.$default
      ```

b. Copy the contents of the z/VM installation RSU DVD again by repeating substep 11 on page 41.

14. The FTP MGET command copied the files with a file type of $DEFAULT. The file type needs to be renamed to IMAGE.

    ```
    rename * $default w = image =
    Ready;
    ```

15. Set the terminal to alert you 50 seconds after CP issues the MORE... status and to clear 10 seconds after the alert.

    ```
    terminal more 50 10
    Ready;
    ```

16. Spool the console to make sure it is empty, started, and spooled to the reader.

    ```
    spool console close start *
    RDR FILE filenum  SENT FROM userid  CON WAS nnnn RECS nnnn CPY  nnn T NOHOLD NOKEEP
    Ready;
    ```

17. Verify you have a 2222 read/write minidisk of exactly 10 cylinders if installing to 3390 or 14400 512-KB blocks if installing to FBA .

    ```
    query v 2222
    DASD 2222 3390 xxxxxx  R/W        10 CYL ON DASD  nnnn SUBCHANNEL = nnnn
    Ready; T=n.nn/n.nn hh:mm:ss
    ```

18. Access the minidisk (*diskaddr*) that contains the INSTPIPE MODULE as file mode C. The INSTPIPE MODULE was shipped on the MAINT 2CC disk with pre-V6.2 releases. Starting with z/VM V6.2, the INSTPIPE MODULE is shipped on the MAINT*vrm* 4CC disk.

    ```
    access diskaddr c
    Ready; T=n.nn/n.nn hh:mm:ss
    ```

19. Copy the files needed to run DVDPRIME to the 2222 minidisk.
    a. Run INSTPIPE.

       ```
       instpipe
       Ready; T=n.nn/n.nn hh:mm:ss
       ```

    b. Decode, unpack, and write the files needed to run DVDPRIME to the 2222 minidisk.

       ```
       pipe dvddecod ddd222 image w |UNPACK| restcmd 2222

       {MDREST|ECKDREST}: WROTE nnn {BLOCKS|TRACKS} ON 2222, RC=0
       Ready; T=n.nn/n.nn hh:mm:ss
       ```

ddd
This value must be entered in uppercase - **CKD** for 3390 or **FBA** for FBA.

restcmd
ECKDREST for 3390 or **MDREST** for FBA.

Note: In the above PIPE command you can use a different stage separator by including the **stagesep** keyword. For example:

```
pipe ( stagesep ! ) dvddecod ddd222 image w
!UNPACK! restcmd 2222
```

Step 2. Run DVDPRIME

1. IPL CMS to remove the old INSTPIPE MODULE from storage.

```
ipl cms
z/VM V.r.m     yyyy-mm-dd hh:mm

 ENTER
Ready; T=n.nn/n.nn hh:mm:ss
```

2. Access the minidisk that contains the image files as file mode W.

```
access diskaddr w
Ready; T=n.nn/n.nn hh:mm:ss
```

diskaddr
Address of the minidisk where the image files were copied.

3. Access the 2222 minidisk as file mode C.

```
access 2222 c
Ready; T=n.nn/n.nn hh:mm:ss
```

4. Verify that the first occurrence of the INSTPIPE MODULE is on the minidisk accessed as file mode C. Remove or rename all other copies.

```
listfile instpipe module *
INSTPIPE MODULE C1
Ready; T=n.nn/n.nn hh:mm:ss
```

5. Run DVDPRIME with the *dasdtype* you are using to install.

```
dvdprime dasdtype (disk
```

dasdtype
3390 or **FBA**.

```
IUGDVP8327I ** NOW EXECUTING DVDPRIME EXEC  ON date AT time **
IUGDVP8440I NOW LOADING 24CC DISK
DMSRXS1408W File TCPIP DATA * not found
```

You might not receive this message.

```
{MDREST|ECKDREST}: WROTE nnnn {BLOCKS|TRACKS} ON 24CC, RC=0
IUGDVP8440I NOW LOADING 2CF0 DISK
DMSRXS1408W File TCPIP DATA * not found
```

You might not receive this message.

```
{MDREST|ECKDREST}: WROTE nnnn {BLOCKS|TRACKS} ON 2CF0, RC=0
IUGDVP8392I DVDPRIME EXEC ENDED SUCCESSFULLY
Ready; T=n.nn/n.nn hh:mm:ss
```

Step 3. Choose your next step

What to do next

If this is a. . .	Then. . .
Non-SSI install	Continue with Chapter 5, “Non-SSI traditional installation method,” on page 47.
SSI install	Go to Chapter 6, “SSI traditional installation method,” on page 61.

Chapter 5. Non-SSI traditional installation method

In this chapter, you will:

- Install a non-SSI z/VM system

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Step 1. Run INSTPLAN for non-SSI

Before you begin: You need to complete traditional installation worksheets 1 (Table 1 on page 17) through 8 (Table 8 on page 20). If you have not done so, return to Chapter 2, "Plan your traditional installation," on page 7.

1. Verify that the correct minidisk (VDEV) is accessed as file mode C. If installing second-level, the disk address is 24CC. If installing first-level, the disk address is 4CC.

   ```
   query disk c

   LABEL   VDEV   M   ...
   MNT4CC  addr   C    ...
   Ready; T=n.nn/n.nn hh:mm:ss
   ```

2. If you are installing to FBA (SCSI) volumes, see traditional installation worksheet 4 (Table 4 on page 18) and query each address to verify it is not already defined for a different device (see example below). If the address is already in use, either detach the device or choose a different *dasdaddr* and verify that address does not exist.

   For each address:

   ```
   query voladdr
   HCPQVD040E Device voladdr does not exist
   Ready(00040);
   ```

   Record any changed addresses in the **Address** column in traditional installation worksheet 4 (Table 4 on page 18).

3. Run INSTPLAN with the DVD operand.

   ```
   instplan DVD
   ```

   The installation planning panels are displayed.

```
                    *** z/VM INSTALLATION PLANNING ***

Mark the product(s) selected to be installed into the filepool with an "F"
and those selected to be installed to minidisks with an "M"
    F        VM              F        DIRM            F        ICKDSF
    F        OSA             F        PERFTK          F        RACF
    F        RSCS            F        TCPIP           F        VMHCD

Select a System Default Language.
    _ AMENG        _ UCENG        _ KANJI

Select a System DASD model. FBA size can be changed.
    _ 3390 Mod 3      _ 3390 Mod 9      _ 3390 Mod 27      _ FBA DASD 6.0

Enter the name of the common service filepool.
    Filepool Name: ________

Select a System Type: Non-SSI or SSI (SSI requires the SSI feature)
    _ Non-SSI Install:    System Name ________
    _ SSI Install:        Number of Members _     SSI Cluster Name ________



     F1 = HELP     F3/F12 = QUIT    F5 = Process   ENTER = Refresh
```

Figure 3. z/VM Traditional Installation Planning Panel

   a. See traditional installation worksheet 1 (Table 1 on page 17) and enter:

- "M" in the **Install To** column for each product you selected to be installed onto minidisks.
- "F" in the **Install To** column for each product you selected to be installed into the file pool.

b. Place a nonblank character next to the *System Default Language* you selected for your system on DVD installation worksheet 1 (Table 1 on page 17).

c. Place a nonblank character in front of the DASD model that matches the *DASD type and model* you will use, recorded on traditional installation worksheet 1 (Table 1 on page 17). For FBA, update the volume size if you are using an FBA volume other than 6.0 GB.

d. Fill in the *Filepool Name* for the common service filepool.

e. Place a nonblank character in front of the type of install you selected for your system on traditional installation worksheet 1 (Table 1 on page 17) – in this case, *Non-SSI Install*.

f. Fill in the *System Name*.

g. Press F5 to process your selections.

F5

```
                *** z/VM INSTALLATION PLANNING PANEL 2 ***


_   Would you like to have your system automatically configured to be
    managed by a SMAPI client for system management, such as the
    Cloud Manager Appliance (CMA)? Enter Y or N

    Keep the following in mind:

       If you say YES, you should not attempt to manage your system in
       any other way.

       If you'd like to manage your own system, or use a purchased
       external security manager or a purchased directory manager, say NO.









    F1 = HELP     F3/F12 = QUIT    F5 = Process   ENTER = Refresh
```

Figure 4. z/VM Traditional Installation Planning Panel 2

h. Refer to traditional installation worksheet 2 (Table 2 on page 17):

- If you will be using the System Management Application Programming Interface (SMAPI) function, enter Y. Otherwise, enter N.

i. Press F5 to process your selections.

F5

Note: The output you see may be different due to your planning choices.

```
IUGIPX8475I FINAL SELECTIONS DISPLAY
            THE PRODUCTS YOU SELECTED TO LOAD TO MINIDISK ARE:
            VM OSA PERFTK VMHCD RACF DIRM RSCS ICKDSF TCPIP

            THE PRODUCTS YOU SELECTED TO LOAD TO SFS ARE:
            NONE

            THE SYSTEM DEFAULT LANGUAGE SELECTED:
            AMENG

            THE COMMON SERVICE FILEPOOL NAME IS:
            poolname

            THE INSTALL TYPE YOU SELECTED IS:
            Non-SSI

            SYSTEM NAME IS:
            sysname

            THE DASD TYPE YOU SELECTED TO LOAD ON IS:
            type model

            THE VOLUMES NEEDED TO LOAD z/VM ARE:
               COMMON:  VMCOM1 VMCOM2
               RELEASE: 640RL1 640RL2 640RL3
               SYSTEM:  M01RES M01S01 M01P01 M01W01 M01W02 M01W03

DO YOU WANT TO CONTINUE ? (Y|N)
```

Compare the information listed in the response from the INSTPLAN command to the information listed in your traditional installation worksheets. Ensure that the information filled in on the worksheets matches what is listed in this response.

```
y
```

4. Continue with the following steps to fill in the Installation Volume Definition panel.

```
                  *** z/VM INSTALLATION VOLUME DEFINITION ***
      TYPE      LABEL      ADDRESS                      FORMAT (Y/N)
      COMMON    VMCOM1      ____                              _
      COMMON2   VMCOM2      ____
      RELVOL    640RL1      ____
      RELVOL2   640RL2      ____
      RELVOL3   640RL3      ____

      TYPE      LABEL      ADDRESS
sysname
      RES       M01RES      ____
      SPOOL     M01S01      ____
      PAGE      M01P01      ____
      MEMBER    M01W01      ____
      MEMBER    M01W02      ____
      MEMBER    M01W03      ____




       F1 = HELP     F3/F12 = QUIT     F5 = Process    ENTER = Refresh
```

Figure 5. z/VM Traditional Installation Volume Definition (Non-SSI Only)

a. If you do not want to use a default volume label, enter a new label in the **LABEL** field (recorded on traditional installation worksheet 3, Table 3 on page 18 for 3390, or on traditional installation worksheet 4, Table 4 on page 18 for FBA).

b. Fill in the volume addresses using the information from traditional installation worksheet 3 (Table 3 on page 18) for 3390, or traditional installation worksheet 4 (Table 4 on page 18) for FBA. For more information and help, press F1.

c. Fill in the **FORMAT (Y/N)** column with **Y** to CP format your installation volumes or **N** to not format your installation volumes. Specify **N** only if you have already CP formatted your volumes for this installation using ICKDSF or CPFMTXA. If you specify **N**, the volumes will be labeled, but not formatted.

d. Press F5 to process.

Note: The output you see may be different due to your planning choices.

```
F5

IUGIIX8377R YOU HAVE SELECTED TO FORMAT YOUR DASD.
            DASD SELECTED ARE:

IUGIIX8377R YOU HAVE SELECTED NOT TO FORMAT YOUR DASD.
            THIS ASSUMES THEY HAVE ALREADY BEEN FORMATTED.
            DASD SELECTED ARE:
            lblcom     dasdaddr
            lblcm2     dasdaddr
            lblrl1     dasdaddr
            lblrl2     dasdaddr
            lblrl3     dasdaddr
            lblres     dasdaddr
            lblspl     dasdaddr
            lblpag     dasdaddr
            lblw01     dasdaddr
            lblw02     dasdaddr
            lblw03     dasdaddr

IUGINP8392I INSTPLAN EXEC ENDED SUCCESSFULLY
Ready; T=n.nn/n.nn hh:mm:ss
```

Depending on whether you chose to format your DASD, you will receive either version of message IUGIIX8377R.

5. Compare the information listed in the response from the INSTPLAN command to the information on your traditional installation worksheets. Ensure that the information filled in on the worksheets matches what is listed in this response.

Step 2. Verify the volumes needed for installation are available

1. If you are installing to 3390 skip to substep 8 on page 53.
2. If the SCSI volumes you are installing to are defined as minidisks on your installation user ID, skip to substep 7 on page 53.
3. If the SCSI volumes you are installing to have already been defined, either in the SYSTEM CONFIG or by using the SET EDEVICE command, skip to substep 6. If not yet defined, continue with the next substep.
4. To define the SCSI volumes, you need to know which FCP addresses are valid for your SCSI volumes.

   If you know the FCP address or the range of addresses associated with your SCSI volume addresses skip this substep.

   If only the channel path id is known, issue the Query CHPID command to display all FCP addresses associated with the path. For example, if the channel path is X'66', issue:

   ```
   query chpid 66
   Path 66 online to devices 517C 5319 550D 8100 8101 8102 8103 8104
   Path 66 online to devices 8105 8106 8107 8108 8109 810A 810B 810C
   Path 66 online to devices 810D 810E 810F 8110 8111 8112 8113 8114
   Path 66 online to devices 8115 8116 8117 8118 8119 811A 811B 811C
   Path 66 online to devices 811D 811E 811F
   ```

5. To define the SCSI volumes, use the information recorded in traditional installation worksheet 4 (Table 4 on page 18).

   See *z/VM: CP Planning and Administration* for information on defining SCSI disks. The following information will provide each SCSI volume with a basic definition.

   For each SCSI volume:

   a. Select and record a free FCP address for each *edevice*. You should use one FCP device for the 640RES and a different (or multiple different) FCPs for the other volumes.

      ```
      query fcp free
      ```

      Choose a device from the output. Record a FCP address for each edevice in the **FCP Address** column on DVD installation worksheet 7 (Table 7 on page 19).

   b. Define the device address.

      ```
      set edevice dasdaddr type fba attr scsi fcp_dev fcpn wwpn www lun lll
      ```

      dasdaddr
      The edevice address from traditional installation worksheet 7 (Table 7 on page 19).

      fcpn
      FCP address (you should use one FCP device for the 640RES and a different, or multiple different, FCPs for the other disks).

      www
      World Wide port number.

      lll
      LUN address.

6. Vary on any SCSI volumes not already online. Repeat this substep for each volume.

   ```
   vary on dasdaddr
   ```

7. The following changes might be needed in the SYSTEM CONFIG file for future IPLs.
   - When performing a second-level installation to SCSI volumes, the EDEV statements are added to the SYSTEM CONFIG as comments. If you want to IPL the system first-level, remove the '/*...*/' pairs from the EDEV statements in the SYSTEM CONFIG file.
   - If the SCSI volumes you are installing to are defined as minidisks on your installation user ID, they cannot be IPLed first-level; therefore the SYSTEM CONFIG file is not updated to include any EDEV statements.
   - If you are installing on a second-level (or higher) system, the edevice details of the SCSI volumes to which you are installing cannot be determined; therefore, the SYSTEM CONFIG file is not updated to include any EDEV statements.

   For information about updating the SYSTEM CONFIG file, see *z/VM: CP Planning and Administration*.
8. Attach each DASD volume listed on traditional installation worksheet 3 (Table 3 on page 18) or 4 (Table 4 on page 18) that is not already attached. Enter the following ATTACH command for each volume:

```
attach dasdaddr *
DASD dasdaddr ATTACHED TO userid dasdaddr
⋮
Ready; T=n.nn/n.nn hh:mm:ss
```

dasdaddr
: Address of the DASD volume.

userid
: First-level user ID logged on to previously.

Attention: Issue the QUERY DASD ATTACH * command to verify there are no volumes attached to your user ID with the same label as those being used for installation. You must detach any duplicate-labeled volumes from your user ID to prevent bringing them online.

Step 3. Run INSTALL to install your new system

1. Run INSTALL to install your new system.

   Note: You must *not* disconnect your installation user ID. The installation procedure will IPL the z/VM system a number of times and these will fail if the user ID is running disconnected.

```
install
IUGIIS8490I NOW FORMATTING|LABELING VOLUME dasdaddr (1 OF n)

⋮
IUGIIS8490I NOW FORMATTING|LABELING VOLUME dasdaddr (n OF n)

⋮
IUGIIS8380I RESTORING IIS TO lblcom lblrl1 lblres and lblspl

IUGIIS8341I LOAD OF THE SYSTEM IIS TO COMMON VOLUME COMPLETED SUCCESSFULLY

⋮
IUGIIS8490I NOW ALLOCATING DASD dasdaddr (COMMON VOLUME)

⋮
IUGIIS8341I WRITING OWNERSHIP FOR sysname TO spladdr lblspl COMPLETED SUCCESSFULLY
IUGIIS8341I WRITING OWNERSHIP FOR sysname TO pagaddr lblpag COMPLETED SUCCESSFULLY
IUGIDV8341I CREATION OF USER DIRECTORY COMPLETED SUCCESSFULLY

IUGILB8440I NOW LOADING userid  cuu  (alias) DISK   1 OF nnn
IUGILB8440I NOW LOADING userid  cuu  (alias) DISK   2 OF nnn
IUGILB8440I NOW LOADING userid  cuu  (alias) DISK   3 OF nnn

⋮
IUGILB8440I NOW LOADING userid  cuu  (alias) DISK nnn OF nnn
```

| **Note:** If you receive one of the following messages:

```
| IUGILB8300E FILE ddd50000 IMAGE W NOT FOUND
|
| IUGILB8342E THE COMMAND 'PIPE DVDDECOD ddd500 FAILED WITH RC=rc'
```

| make sure you load the installation RSU DVD to your installation minidisk or FTP server before restarting.

Messages received if installing from a physical DVD:

```
HCPIRU8484R PLEASE PLACE THE INSTALLATION RSU DVD
IN THE DRIVE, THEN TYPE GO TO
CONTINUE OR TYPE EXIT TO QUIT.
```

Place the installation RSU DVD in the DVD drive and wait until the light on the DVD drive goes out or stops blinking, then enter go.

Do not attempt to skip installing the RSU during upgrade.

If you enter exit, your installation will not be complete. You must rerun the INSTALL command and enter go to load the RSU files before you can continue to the next step.

If the installation fails while loading the installation RSU DVD, issue INSTALL to try again.

```
HCPIRU8440I NOW LOADING MAINTvrm 500 DISK
HCPIRU8341I LOAD OF INSTALLATION RSU COMPLETED SUCCESSFULLY
```

Messages received if installing first-level:

```
IUGIDV8341I USER DIRECTORY HAS BEEN BROUGHT ONLINE SUCCESSFULLY
IUGIDV8341I SALIPL COMMAND HAS COMPLETED SUCCESSFULLY

⋮
IUGIWF8338I NOW EXECUTING COPY OF CF0 and 4CC STEP

⋮
IUGIDV8392I INSTDVD EXEC ENDED SUCCESSFULLY
```

Messages received if installing second-level:

```
IUGIDV8341I USER DIRECTORY HAS BEEN BROUGHT ONLINE SUCCESSFULLY
IUGIDV8341I SALIPL COMMAND HAS COMPLETED SUCCESSFULLY
IUGIWF8341I {MDDUMP|ECKDDUMP} OF 2CF0 COMPLETED SUCCESSFULLY
IUGIWF8338I NOW EXECUTING COPY OF 24CC TO 4CC STEP
IUGIWF8341I {MDDUMP|ECKDDUMP} OF 24CC COMPLETED SUCCESSFULLY
IUGIDV8392I INSTDVD EXEC ENDED SUCCESSFULLY
```

Run INSTALL to install your new system

```
****************************************
*        NOW IPLing VOLUME dasdaddr      *
*               WITH COMMAND:            *
*        CP SYSTEM CLEAR                 *
*        TERMINAL CONMODE 3270           *
*        SET MACHINE ESA                 *
*        IPL dasdaddr CLEAR              *
****************************************



hh:mm:ss z/VM V6 R4.0 SERVICE LEVEL 0000 (64-BIT)

hh:mm:ss SYSTEM NUCLEUS CREATED ON yyyy-mm-dd AT hh:mm:ss, LOADED FROM lblres
hh:mm:ss
hh:mm:ss ************************************************************
hh:mm:ss * LICENSED MATERIALS - PROPERTY OF IBM*                      *
hh:mm:ss * 5741-A07 (C) COPYRIGHT IBM CORP. 1983, 2016. ALL RIGHTS    *
hh:mm:ss * RESERVED. US GOVERNMENT USERS RESTRICTED RIGHTS - USE      *
hh:mm:ss * DUPLICATION OR DISCLOSURE RESTRICTED BY GSA ADP SCHEDULE   *
hh:mm:ss * CONTRACT WITH IBM CORP.                                    *
hh:mm:ss *                                                           *
hh:mm:ss * * TRADEMARK OF INTERNATIONAL BUSINESS MACHINES             *
hh:mm:ss ************************************************************
hh:mm:ss
hh:mm:ss HCPZCO6718I Using parm disk 1 on volume lblcom (device nnnn).
hh:mm:ss HCPZCO6718I Parm disk resides on cylinders nnn through nnn.
:
hh:mm:ss HCPCRC8082I Accounting records are accumulating for userid DISKACNT


 z/VM V6.4.0    yyyy-mm-dd hh:mm

hh:mm:ss AUTO LOGON *** OP1 USERS = 2 BY MAINT640
hh:mm:ss HCPCLS6056I XAUTOLOG information for OP1: The IPL command is verified by the
  IPL command processor.
```

```
IUGPLD8341I POSTLOAD PROCESSING STARTED

DMSACC724I 4CC replaces C (4CC)
IUGIFP8493I ISSUING XAUTOLOG FOR VMSERVU
AUTO LOGON  ***       VMSERVU  USERS = n
HCPCLS6056I XAUTOLOG information for VMSERVU: The IPL command is verified by the IPL
  command processor.

IUGIFP8493I ISSUING XAUTOLOG FOR VMSERVR
AUTO LOGON  ***       VMSERVR  USERS = n
HCPCLS6056I XAUTOLOG information for VMSERVR: The IPL command is verified by the IPL
  command processor.

IUGIFP8493I ISSUING XAUTOLOG FOR VMSERVS
AUTO LOGON  ***       VMSERVS  USERS = n
HCPCLS6056I XAUTOLOG information for VMSERVS: The IPL command is verified by the IPL
  command processor.

USER DSC   LOGOFF AS  VMSERVR  USERS = n     FORCED BY MAINT640
IUGIFP8493I ISSUING XAUTOLOG FOR VMSERVR
AUTO LOGON  ***       VMSERVR  USERS = n
HCPCLS6056I XAUTOLOG information for VMSERVR: The IPL command is verified by the IPL
  command processor.

IUGIFP8493I ISSUING XAUTOLOG FOR VMSERVP
AUTO LOGON  ***       VMSERVP  USERS = n
HCPCLS6056I XAUTOLOG information for VMSERVP: The IPL command is verified by the IPL
  command processor.


IUGIFP8338I UPDATING SYSTEM TABLES AND CLEANING UP FILEPOOL DIRECTORIES
```

You will receive these messages if you did *not* select VMPSFS as the common service filepool name.

```
USER DSC LOGOFF AS VMSERVP USERS = n FORCED BY MAINT640
DASD 917 DETACHED
IUGIFP8493I ISSUING XAUTOLOG FOR VMSERVP
AUTO LOGON *** VMSERVP USERS = n
HCPCLS6056I XAUTOLOG information for VMSERVP: The IPL command is verified by the
  IPL command processor.

DASD 0193 DETACHED
z/VM V6.4.0    yyyy-mm-dd hh:mm
DMSWSP100W Shared S-STAT not available

AUTO LOGON *** BLDCMS USERS = n
HCPCFX6768I SECUSER of BLDCMS initiated for you by BLDCMS.
HCPNSD440I The Named Saved System (NSS) CMS was successfully defined in fileid nnnn
BLDCMS : CONNECT= nn:nn:nn VIRTCPU= nnn:nn:nn TOTCPU= nnn:nn:nn
BLDCMS : LOGOFF AT hh:mm:ss EST MONDAY mm/dd/yy BY MAINT640
USER DSC LOGOFF AS BLDCMS USERS = n FORCED BY MAINT640

AUTO LOGON *** BLDCMS USERS = n
HCPCFX6768I SECUSER of BLDCMS initiated for you by BLDCMS.
DMSACC724I 493 replaces Z (493)
HCPNSD440I The Named Saved System (NSS) ZCMS was successfully defined in fileid nnnn
BLDCMS : CONNECT= nn:nn:nn VIRTCPU= nnn:nn:nn TOTCPU= nnn:nn:nn
BLDCMS : LOGOFF AT hh:mm:ss EST MONDAY mm/dd/yy BY MAINT640
USER DSC LOGOFF AS BLDCMS USERS = n FORCED BY MAINT640
```

Run INSTALL to install your new system

```
*********************************************************
*  NOW EXECUTING SERVICE ALL   rsuname
*********************************************************

*****  SERVICE messages  *****************

*********************************************************
*               NOW EXECUTING PUT2PROD         *
*********************************************************


******  PUT2PROD messages  ***************


*******************************************************************************
*          INSTCOMP NOW ISSUING SHUTDOWN REIPL                                *
*******************************************************************************


SYSTEM SHUTDOWN STARTED
Ready; T=n.nn/n.nn hh:mm:ss



hh:mm:ss HCPWRP963I SHUTDOWN STEP USOAC - JOURNAL USER TERMINATION

.
.
.
hh:mm:ss z/VM SYSTEM RESTART FROM SHUTDOWN REIPL
hh:mm:ss z/VM V6 R4.0  SERVICE LEVEL nnnn (64-BIT)



hh:mm:ss SYSTEM NUCLEUS CREATED ON yyyy-mm-dd AT hh:mm:ss, LOADED FROM lblres
hh:mm:ss
hh:mm:ss ************************************************************
hh:mm:ss * LICENSED MATERIALS - PROPERTY OF IBM*                      *
hh:mm:ss * 5741-A07 (C) COPYRIGHT IBM CORP. 1983, 2016. ALL RIGHTS    *
hh:mm:ss * RESERVED. US GOVERNMENT USERS RESTRICTED RIGHTS - USE      *
hh:mm:ss * DUPLICATION OR DISCLOSURE RESTRICTED BY GSA ADP SCHEDULE   *
hh:mm:ss * CONTRACT WITH IBM CORP.                                    *
hh:mm:ss *                                                           *
hh:mm:ss * * TRADEMARK OF INTERNATIONAL BUSINESS MACHINES            *
hh:mm:ss ************************************************************
hh:mm:ss
hh:mm:ss HCPZCO6718I Using parm disk 1 on volume volid (device nnnn).
hh:mm:ss HCPZCO6718I Parm disk resides on cylinders nn through nn.
.
.
.
hh:mm:ss HCPCRC8082I Accounting records are accumulating for userid DISKACNT
hh:mm:ss DISCONNECT AT hh:mm:ss timezone weekday mm/dd/yy
hh:mm:ss Press enter or clear key to continue
ENTER                                          Press Enter or the Clear key to continue.
```

Step 4. Log on to the new system

1. Log on as MAINT640.

```
logon maint640
⋮
Ready; T=n.nn/n.nn hh:mm:ss
```

The default password for MAINT640 is WD5JU8QP.

Step 5. IPL the new system

1. If this is a first-level installation, you are done with the RAMDISK.
   a. Shut down the new system.

      ```
      shutdown
      ```

   b. Shut down the RAMDISK system.

      ```
      shutdown system ibmvmram
      ```

   c. IPL the new system from the HMC.
2. If this is a second-level installation, and this is *not* where you plan to run your new system, shut down the system and then IPL where you wish the new system to run.

   Note: The default SYSTEM CONFIG file allows the following console addresses: 20, 21, 22, 23, F20, F21, 1020. If your console is *not* one of these addresses, either redefine your console or IPL with the **LOADPARM** *consaddr* option. If you use the **LOADPARM** option, include **cons=***consaddr* as an IPL parameter on the z/VM Stand Alone Program Loader (SAPL) panel.

What to do next

Go to Part 3, “Post traditional system installation,” on page 81.

Chapter 6. SSI traditional installation method

In this chapter, you will:

- Install a z/VM SSI cluster.

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Step 1. Run INSTPLAN for SSI

Before you begin: You need to complete traditional installation worksheets 1 (Table 1 on page 17) through 8 (Table 8 on page 20). If you have not done so, return to Chapter 2, "Plan your traditional installation," on page 7.

1. Verify that the correct minidisk (VDEV) is accessed as file mode C. If second-level, the disk address is 24CC. If first-level, the disk address is 4CC.

```
query disk c

LABEL   VDEV   M   ...
MNT4CC  addr   C    ...
Ready; T=n.nn/n.nn hh:mm:ss
```

2. Run INSTPLAN with the DVD operand.

```
instplan DVD
```

   The installation planning panels are displayed.

```
                    *** z/VM INSTALLATION PLANNING ***

Mark the product(s) selected to be installed into the filepool with an "F"
and those selected to be installed to minidisks with an "M"
    F        VM              F        DIRM            F        ICKDSF
    F        OSA             F        PERFTK          F        RACF
    F        RSCS            F        TCPIP           F        VMHCD

Select a System Default Language.
    _ AMENG        _ UCENG        _ KANJI

Select a System DASD model. FBA size can be changed.
    _ 3390 Mod 3      _ 3390 Mod 9      _ 3390 Mod 27      _ FBA DASD 6.0

Enter the name of the common service filepool.
    Filepool Name: ________

Select a System Type: Non-SSI or SSI (SSI requires the SSI feature)
    _ Non-SSI Install:    System Name ________
    _ SSI Install:        Number of Members _     SSI Cluster Name ________



     F1 = HELP     F3/F12 = QUIT    F5 = Process   ENTER = Refresh
```

Figure 6. z/VM Traditional Installation Planning Panel

   a. See traditional installation worksheet 1 (Table 1 on page 17) and enter:
      - "M" in the **Install To** column for each product you selected to be installed onto minidisks.
      - "F" in the **Install To** column for each product you selected to be installed into the file pool.
   b. Place a nonblank character next to the *System Default Language* you selected for your system on DVD installation worksheet 1 (Table 1 on page 17).
   c. Place a nonblank character in front of the DASD model that matches the *DASD type and model* you will use, recorded on traditional installation worksheet 1 (Table 1 on page 17).
   d. Fill in the *Filepool Name* for the common service filepool.
   e. Place a nonblank character in front of the type of install you selected for your system on traditional installation worksheet 1 (Table 1 on page 17) – in this case *SSI Install*.
   f. Fill in the *Number of Members* and the *SSI Cluster Name*.
   g. Press F5 to process your selections.

3. Continue with the following step to confirm that you have ordered the IBM z™/VM Single System Image Feature, and to accept the licensing terms and conditions.

```
                Single System Image (SSI) Cluster Installation

You have chosen to install z/VM in a single system image cluster.  This
requires the IBM z/VM Single System Image Feature, a priced feature
whose use is governed by the terms and conditions of the IBM
International Program License Agreement and the z/VM License Information
Document, copies of which were included with your z/VM order.

The feature must be appropriately licensed for all machines that contain
a member of the single system image cluster. If you need to order this
feature, visit http://www.ibm.com/software/ShopzSeries.  In countries
where Shop zSeries is not available, contact your IBM representative or
IBM Business Partner.

If you have ordered this feature and accept the licensing terms and
conditions referenced above, press F5 to accept.  If you are accepting
these terms on behalf of another person or a company or other legal
entity, you represent and warrant that you have full authority to bind
that person, company or legal entity to these terms.

If you do not agree to these terms, press F3 to cancel the installation
and refer to the Installation Guide to plan a non-SSI install.

                    F1 = HELP     F3/F12 = QUIT    F5 = I Accept
```

Figure 7. z/VM Traditional Single System Image Cluster Installation Panel (SSI Only)

a. Press F5 to accept these terms and continue processing.

4. Complete the Installation Planning Panel 2, as appropriate to your system.

```
                *** z/VM INSTALLATION PLANNING PANEL 2 ***


_   Would you like to have your system automatically configured to be
    managed by a SMAPI client for system management, such as the
    Cloud Manager Appliance (CMA)? Enter Y or N

    Keep the following in mind:

       If you say YES, you should not attempt to manage your system in
       any other way.

       If you'd like to manage your own system, or use a purchased
       external security manager or a purchased directory manager, say NO.









    F1 = HELP     F3/F12 = QUIT    F5 = Process   ENTER = Refresh
```

Figure 8. z/VM Traditional Installation Planning Panel 2

a. Refer to traditional installation worksheet 2 (Table 2 on page 17):
   - If you will be using the System Management Application Programming Interface (SMAPI) function, enter Y. Otherwise, enter N.

b. Press F5 to process your selections.

   F5

5. Continue with the following steps to fill in the Installation Planning Panel 3.

```
                *** z/VM INSTALLATION PLANNING PANEL 3 ***


SSI Cluster Name:   ssiclustername


After installation is complete, the SSI cluster will be IPLed :

_    First-Level
_    Second-Level


SSI Member Name(s):

SLOT #     MEMBER NAME     IPL LPAR/USERID
======     ===========     ===============
  1         ________        ________
  2         ________        ________
  3         ________        ________
  4         ________        ________


    F1 = HELP   F3/F12 = QUIT   F5 = Process   ENTER = Refresh
```

Figure 9. z/VM Traditional Installation Planning Panel 3 (SSI Only)

a. See traditional installation worksheet 6 (Table 6 on page 19) and enter a nonblank character next to:
   - *First-Level* if the SSI will be IPLed first-level after installation is complete.
   - *Second-Level* if the SSI will continue to be IPLed second-level after installation is complete.

b. Fill in the member name for each member.

c. If, after installation is complete, the SSI will be IPLed:
   - First-level, fill in the LPAR name for each member.
   - Second-level, fill in the user ID that will be used to IPL each member.

d. Press F5 to process your selections.

   F5

   Note: The output you see may be different due to your planning choices.

```
IUGIPX8475I FINAL SELECTIONS DISPLAY
            THE PRODUCTS YOU SELECTED TO LOAD TO MINIDISK ARE:
            VM OSA PERFTK VMHCD RACF DIRM RSCS ICKDSF TCPIP

            THE PRODUCTS YOU SELECTED TO LOAD TO SFS ARE:
            NONE

            THE SYSTEM DEFAULT LANGUAGE SELECTED:
            AMENG

            THE COMMON SERVICE FILEPOOL NAME IS:
            poolname

            THE INSTALL TYPE YOU SELECTED IS:
            SSI

            THE SSI CLUSTER NAME IS:
            ssiname

            THE NUMBER OF MEMBERS IS:
            n
              MEMBER NAME 1: memname    LPAR/USERID 1: lparname
              MEMBER NAME 2: memname    LPAR/USERID 2: lparname
              MEMBER NAME 3: memname    LPAR/USERID 3: lparname
              MEMBER NAME 4: memname    LPAR/USERID 4: lparname

             AFTER INSTALLATION IS COMPLETE, MEMBERS WILL BE IPLed FROM:
             level

             THE DASD TYPE YOU SELECTED TO LOAD ON IS:
             3390 model

             THE VOLUMES NEEDED TO LOAD z/VM ARE:
                COMMON:  VMCOM1 VMCOM2
                RELEASE: 640RL1 640RL2 640RL3
                MEMBER1: M01RES M01S01 M01P01 M01W01 M01W02 M01W03
                MEMBER2: M02RES M02S01 M02P01 M02W01 M02W02 M02W03
                MEMBER3: M03RES M03S01 M03P01 M03W01 M03W02 M03W03
                MEMBER4: M04RES M04S01 M04P01 M04W01 M04W02 M04W03

DO YOU WANT TO CONTINUE ? (Y|N)
```

Compare the information listed in the response from the INSTPLAN command to the information listed on your traditional installation worksheets. Ensure that the information filled in on the worksheets matches what is listed in this response.

```
y
```

6. Continue with the following steps to fill in the Installation Volume Definition panel.

```
              *** z/VM INSTALLATION VOLUME DEFINITION ***
       TYPE      LABEL      ADDRESS                       FORMAT (Y/N)
       COMMON    VMCOM1      ____                                 _
       COMMON2   VMCOM2      ____
       RELVOL    640RL1      ____
       RELVOL2   640RL2      ____
       RELVOL3   640RL3      ____

       TYPE      LABEL      ADDRESS          TYPE      LABEL      ADDRESS
mem1nam                                   mem2nam
       RES       M01RES      ____            RES       M02RES      ____
       SPOOL     M01S01      ____            SPOOL     M02S01      ____
       PAGE      M01P01      ____            PAGE      M02P01      ____
       MEMBER    M01W01      ____            MEMBER    M02W01      ____
       MEMBER    M01W02      ____            MEMBER    M02W02      ____
       MEMBER    M01W03      ____            MEMBER    M02W03      ____
mem3nam                                   mem4nam
       RES       M03RES      ____            RES       M04RES      ____
       SPOOL     M03S01      ____            SPOOL     M04S01      ____
       PAGE      M03P01      ____            PAGE      M04P01      ____
       MEMBER    M03W01      ____            MEMBER    M04W01      ____
       MEMBER    M03W02      ____            MEMBER    M04W02      ____
       MEMBER    M03W03      ____            MEMBER    M04W03      ____

       F1 = HELP     F3/12 = QUIT     F5 = Process    ENTER = Refresh
```

Figure 10. z/VM Traditional Installation Volume Definition (SSI Only)

a. If you do not want to use a default volume label, enter a new label (recorded on traditional installation worksheet 7, Table 7 on page 19) in the **LABEL** field.

b. Fill in the volume addresses using the information from traditional installation worksheet 7 (Table 7 on page 19). For more information and help, press F1.

c. Fill in the **FORMAT (Y/N)** column with **Y** to CP format your installation volumes or **N** to not format your installation volumes. Specify **N** only if you have already CP formatted your volumes for this installation using ICKDSF or CPFMTXA. If you specify **N**, the volumes will be labeled, but not formatted.

d. Press F5 to process your selections.

   F5

7. If you selected "Second_Level" in answer to the question "After installation is complete, the SSI cluster will be IPLed:" on the z/VM Installation Planning panel 3 (in substep 5 on page 64), proceed to substep 8 on page 67.

   If you selected "First_Level" in answer to the question "After installation is complete, the SSI cluster will be IPLed:" on the z/VM Installation Planning panel 3 (in substep 5 on page 64), continue with this step to fill in the First-Level Configuration panel.

```
            *** z/VM INSTALLATION FIRST-LEVEL CONFIGURATION ***

Real addresses for the common volume on each member LPAR:

  VOLUME    DASD       mem1name    mem2name    mem3name    mem4name
   TYPE     LABEL      ADDRESS     ADDRESS     ADDRESS     ADDRESS
  =======  ========   =========   =========   =========   =========
  COMMON    lblcom     ____        ____        ____        ____

CTC device addresses:

  From: mem1nam                       From: mem2nam
        To: mem1name    N/A                 To: mem1name ____ ____
        To: mem2name ____ ____              To: mem2name    N/A
        To: mem3name ____ ____              To: mem3name ____ ____
        To: mem4name ____ ____              To: mem4name ____ ____

  From: mem3nam                       From: mem4nam
        To: mem1name ____ ____              To: mem1name ____ ____
        To: mem2name ____ ____              To: mem2name ____ ____
        To: mem3name    N/A                 To: mem3name ____ ____
        To: mem4name ____ ____              To: mem4name    N/A

  F1 = HELP      F3/F12 = QUIT     F5 = Process    ENTER = Refresh
```

Figure 11. z/VM Traditional Installation DASD Definitions 2 (SSI Only)

a. Fill in the real address of the VMCOM1 volume as it is defined on each LPAR. Use the information from traditional installation worksheet 8 (Table 8 on page 20).
b. Fill in the CTC device addresses for each member using the information from traditional installation worksheet 8 (Table 8 on page 20).
c. Press F5 to process your selections.

   F5

8.

Note: The output you see may be different due to your planning choices.

```
IUGIIX8377R YOU HAVE SELECTED TO FORMAT YOUR DASD.
            DASD SELECTED ARE:

IUGIIX8377R YOU HAVE SELECTED NOT TO FORMAT YOUR DASD.
            THIS ASSUMES THEY HAVE ALREADY BEEN FORMATTED.
            DASD SELECTED ARE:
            lblcom     dasdaddr
            lblcm2     dasdaddr
            lblrl1     dasdaddr
            lblrl2     dasdaddr
            lblrl3     dasdaddr
            lblres     dasdaddr
            lblspl     dasdaddr
            lblpag     dasdaddr
            lblw01     dasdaddr
            lblw02     dasdaddr
            lblw03     dasdaddr
```

Depending on whether you chose to format your DASD, you will receive either version of message IUGIIX8377R.

⋮

```
IUGIIX8377R YOU HAVE SELECTED THE FOLLOWING CTC ADDRESSES:

MEMBER membnam TO MEMBER membnam       ctcaddr  ctcaddr
MEMBER membnam TO MEMBER membnam       ctcaddr  ctcaddr
MEMBER membnam TO MEMBER membnam       ctcaddr  ctcaddr
MEMBER membnam TO MEMBER membnam       ctcaddr  ctcaddr

⋮

IUGINP8392I INSTPLAN EXEC ENDED SUCCESSFULLY
Ready; T=n.nn/n.nn hh:mm:ss
```

You will receive the CTC address messages only if you selected "IPL from 1st level after installation is complete" .

9. Compare the information listed in the response from the INSTPLAN command to the information listed on your traditional installation worksheets. Ensure that the information filled in on the worksheets matches what is listed in this response.

Step 2. Run INSTALL to install your new system

1. Attach each volume listed on traditional installation worksheet 7 (Table 7 on page 19) that is not already attached. Enter the following ATTACH command for each volume:

```
attach dasdaddr *
DASD dasdaddr ATTACHED TO userid dasdaddr

⋮
Ready; T=n.nn/n.nn hh:mm:ss
```

dasdaddr
Address of the DASD volume.

userid
First-level user ID logged on to previously.

Attention: If there are any DASD volumes or minidisks attached to this user ID (other than the volumes being used for this installation) with the same labels that you are using for your installation volumes, they must be detached from this user ID to prevent bringing them online. Use the QUERY VIRTUAL DASD command to list the DASD volumes and minidisks attached to this user ID.

2. Run INSTALL to install your new system.

Note: You must *not* disconnect your installation user ID. The installation procedure will IPL the z/VM system a number of times and these will fail if the user ID is running disconnected.

```
install
```

```
IUGIIS8490I NOW FORMATTING|LABELING VOLUME dasdaddr (1 OF n)

⋮
IUGIIS8490I NOW FORMATTING|LABELING VOLUME dasdaddr (n OF n)

⋮
IUGIIS8380I RESTORING IIS TO lblcom lblrl1 lblres and lblspl

IUGIIS8341I LOAD OF THE SYSTEM IIS TO COMMON VOLUME COMPLETED SUCCESSFULLY

⋮
IUGIIS8490I NOW ALLOCATING DASD dasdaddr (COMMON VOLUME)

⋮
IUGIIS8341I WRITING OWNERSHIP ssiname NOSYS TO comaddr lblcom COMPLETED SUCCESSFULLY
IUGIIS8341I WRITING OWNERSHIP ssiname mem1name TO resaddr lblres COMPLETED SUCCESSFULLY
IUGIIS8341I WRITING OWNERSHIP ssiname mem1name TO spladdr lblspl COMPLETED SUCCESSFULLY
IUGIIS8341I WRITING OWNERSHIP ssiname mem1name TO pagaddr lblpag COMPLETED SUCCESSFULLY
IUGIIS8341I CREATING PDR ON comaddr COMPLETED SUCCESSFULLY
IUGIDV8341I CREATION OF USER DIRECTORY COMPLETED SUCCESSFULLY

IUGILB8440I NOW LOADING userid  cuu  (alias) DISK   1 OF nnn
IUGILB8440I NOW LOADING userid  cuu  (alias) DISK   2 OF nnn
IUGILB8440I NOW LOADING userid  cuu  (alias) DISK   3 OF nnn

⋮
IUGILB8440I NOW LOADING userid  cuu  (alias) DISK nnn OF nnn
```

Note: If you receive one of the following messages:

```
IUGILB8300E FILE ddd50000 IMAGE W NOT FOUND

IUGILB8342E THE COMMAND 'PIPE DVDDECOD ddd500 FAILED WITH RC=rc'
```

make sure you load the installation RSU DVD to your installation minidisk or FTP server before restarting.

Messages received if installing from a physical DVD:

```
HCPIRU8484R PLEASE PLACE THE INSTALLATION RSU DVD
IN THE DRIVE, THEN TYPE GO TO
CONTINUE OR TYPE EXIT TO QUIT.
```

Place the installation RSU DVD in the DVD drive and wait until the light on the DVD drive goes out or stops blinking, then enter go.

Do not attempt to skip installing the RSU during upgrade.

If you enter exit, your installation will not be complete. You must rerun the INSTALL command and enter go to load the RSU files before you can continue to the next step.

If the installation fails while loading the installation RSU DVD, issue INSTALL to try again.

```
HCPIRU8440I NOW LOADING MAINTvrm 500 DISK
HCPIRU8341I LOAD OF INSTALLATION RSU COMPLETED SUCCESSFULLY
```

Messages received if installing first-level:

```
IUGIDV8341I USER DIRECTORY HAS BEEN BROUGHT ONLINE SUCCESSFULLY
IUGIDV8341I SALIPL COMMAND HAS COMPLETED SUCCESSFULLY

⋮
IUGIWF8338I NOW EXECUTING COPY OF CF0 and 4CC STEP

⋮

IUGIDV8392I INSTDVD EXEC ENDED SUCCESSFULLY
```

Messages received if installing second-level:

```
IUGIDV8341I USER DIRECTORY HAS BEEN BROUGHT ONLINE SUCCESSFULLY
IUGIDV8341I SALIPL COMMAND HAS COMPLETED SUCCESSFULLY
IUGIWF8341I {MDDUMP|ECKDDUMP} OF 2CF0 COMPLETED SUCCESSFULLY
IUGIWF8338I NOW EXECUTING COPY OF 24CC TO 4CC STEP
IUGIWF8341I {MDDUMP|ECKDDUMP} OF 24CC COMPLETED SUCCESSFULLY
IUGIDV8392I INSTDVD EXEC ENDED SUCCESSFULLY
```

```
******************************************
*        NOW IPLing VOLUME dasdaddr      *
*               WITH COMMAND:            *
*        CP SYSTEM CLEAR                 *
*        TERMINAL CONMODE 3270           *
*        SET MACHINE ESA                 *
*        IPL dasdaddr CLEAR              *
******************************************
```

```
hh:mm:ss z/VM V6 R4.0 SERVICE LEVEL 0000 (64-BIT)

hh:mm:ss SYSTEM NUCLEUS CREATED ON yyyy-mm-dd AT hh:mm:ss, LOADED FROM lblres
hh:mm:ss
hh:mm:ss ************************************************************
hh:mm:ss * LICENSED MATERIALS - PROPERTY OF IBM*                      *
hh:mm:ss * 5741-A07 (C) COPYRIGHT IBM CORP. 1983, 2016. ALL RIGHTS    *
hh:mm:ss * RESERVED. US GOVERNMENT USERS RESTRICTED RIGHTS - USE      *
hh:mm:ss * DUPLICATION OR DISCLOSURE RESTRICTED BY GSA ADP SCHEDULE   *
hh:mm:ss * CONTRACT WITH IBM CORP.                                    *
hh:mm:ss *                                                           *
hh:mm:ss * * TRADEMARK OF INTERNATIONAL BUSINESS MACHINES            *
hh:mm:ss ************************************************************
hh:mm:ss
hh:mm:ss ************************************************************
hh:mm:ss * IBM z/VM Single System Image Feature is enabled and active.
hh:mm:ss ************************************************************

hh:mm:ss HCPZCO6718I Using parm disk 1 on volume lblcom (device nnnn).
hh:mm:ss HCPZCO6718I Parm disk resides on cylinders nnn through nnn.
:
:
hh:mm:ss HCPCRC8082I Accounting records are accumulating for userid DISKACNT



z/VM V6.4.0    yyyy-mm-dd hh:mm

hh:mm:ss AUTO LOGON *** OP1 USERS = 2 BY MAINT640
hh:mm:ss HCPCLS6056I XAUTOLOG information for OP1: The IPL command is verified by the
  IPL command processor.


IUGPLD8341I POSTLOAD PROCESSING STARTED

DMSACC724I 4CC replaces C (4CC)
IUGIFP8493I ISSUING XAUTOLOG FOR VMSERVU
AUTO LOGON  ***       VMSERVU  USERS = n
HCPCLS6056I XAUTOLOG information for VMSERVU: The IPL command is verified by the IPL
  command processor.

IUGIFP8493I ISSUING XAUTOLOG FOR VMSERVR
AUTO LOGON  ***       VMSERVR  USERS = n
HCPCLS6056I XAUTOLOG information for VMSERVR: The IPL command is verified by the IPL
  command processor.

IUGIFP8493I ISSUING XAUTOLOG FOR VMSERVS
AUTO LOGON  ***       VMSERVS  USERS = n
HCPCLS6056I XAUTOLOG information for VMSERVS: The IPL command is verified by the IPL
  command processor.

USER DSC   LOGOFF AS  VMSERVR  USERS = n     FORCED BY MAINT640
IUGIFP8493I ISSUING XAUTOLOG FOR VMSERVR
AUTO LOGON  ***       VMSERVR  USERS = n
HCPCLS6056I XAUTOLOG information for VMSERVR: The IPL command is verified by the IPL
  command processor.

IUGIFP8493I ISSUING XAUTOLOG FOR VMSERVP
AUTO LOGON  ***       VMSERVP  USERS = n
HCPCLS6056I XAUTOLOG information for VMSERVP: The IPL command is verified by the IPL
  command processor.


IUGIFP8338I UPDATING SYSTEM TABLES AND CLEANING UP FILEPOOL DIRECTORIES
```

You will receive these messages if you did *not* select VMPSFS as the common service filepool name.

```
USER DSC LOGOFF AS VMSERVP USERS = n FORCED BY MAINT640
DASD 917 DETACHED
IUGIFP8493I ISSUING XAUTOLOG FOR VMSERVP
AUTO LOGON *** VMSERVP USERS = n
HCPCLS6056I XAUTOLOG information for VMSERVP: The IPL command is verified by the
  IPL command processor.
DASD 0193 DETACHED
z/VM V6.4.0    yyyy-mm-dd hh:mm
DMSWSP100W Shared S-STAT not available

AUTO LOGON *** BLDCMS USERS = n
HCPCFX6768I SECUSER of BLDCMS initiated for you by BLDCMS.
HCPNSD440I The Named Saved System (NSS) CMS was successfully defined in fileid nnnn
BLDCMS : HCPNSS440I Named Saved System (NSS) CMS was successfully saved
BLDCMS : CONNECT= nn:nn:nn VIRTCPU= nnn:nn:nn TOTCPU= nnn:nn:nn
BLDCMS : LOGOFF AT hh:mm:ss EST MONDAY mm/dd/yy BY MAINT640
USER DSC LOGOFF AS BLDCMS USERS = n FORCED BY MAINT640

AUTO LOGON *** BLDCMS USERS = n
HCPCFX6768I SECUSER of BLDCMS initiated for you by BLDCMS.
DMSACC724I 493 replaces Z (493)
HCPNSD440I The Named Saved System (NSS) ZCMS was successfully defined in fileid nnnn
BLDCMS : HCPNSS440I Named Saved System (NSS) ZCMS was successfully saved
BLDCMS : CONNECT= nn:nn:nn VIRTCPU= nnn:nn:nn TOTCPU= nnn:nn:nn
BLDCMS : LOGOFF AT hh:mm:ss EST MONDAY mm/dd/yy BY MAINT640
USER DSC LOGOFF AS BLDCMS USERS = n FORCED BY MAINT640


************************************************************
*  NOW EXECUTING SERVICE ALL   rsuname
************************************************************

*****  SERVICE messages  *****************

************************************************************
*               NOW EXECUTING PUT2PROD         *
************************************************************


******  PUT2PROD messages  ***************


*******************************************************************************
*          INSTCOMP NOW ISSUING SHUTDOWN REIPL                                *
*******************************************************************************


SYSTEM SHUTDOWN STARTED
Ready; T=n.nn/n.nn hh:mm:ss

hh:mm:ss HCPWRP963I SHUTDOWN STEP PLMLL - LEAVE THE SSI CLUSTER

.
.
.
hh:mm:ss z/VM SYSTEM RESTART FROM SHUTDOWN REIPL
hh:mm:ss z/VM V6 R4.0  SERVICE LEVEL nnnn (64-BIT)
```

```
hh:mm:ss SYSTEM NUCLEUS CREATED ON yyyy-mm-dd AT hh:mm:ss, LOADED FROM lblres
hh:mm:ss
hh:mm:ss ****************************************************************
hh:mm:ss * LICENSED MATERIALS - PROPERTY OF IBM*                         *
hh:mm:ss * 5741-A07 (C) COPYRIGHT IBM CORP. 1983, 2016. ALL RIGHTS      *
hh:mm:ss * RESERVED. US GOVERNMENT USERS RESTRICTED RIGHTS - USE        *
hh:mm:ss * DUPLICATION OR DISCLOSURE RESTRICTED BY GSA ADP SCHEDULE     *
hh:mm:ss * CONTRACT WITH IBM CORP.                                      *
hh:mm:ss *                                                              *
hh:mm:ss * * TRADEMARK OF INTERNATIONAL BUSINESS MACHINES               *
hh:mm:ss ****************************************************************
hh:mm:ss
hh:mm:ss ****************************************************************
hh:mm:ss * IBM z/VM Single System Image Feature is enabled and active.
hh:mm:ss ****************************************************************

hh:mm:ss HCPZCO6718I Using parm disk 1 on volume volid (device nnnn).
hh:mm:ss HCPZCO6718I Parm disk resides on cylinders nn through nn.
⋮
hh:mm:ss HCPCRC8082I Accounting records are accumulating for userid DISKACNT
```

What to do next

If this is a. . .	Then. . .
One-member SSI install	Continue with “Step 3. One-member SSI” on page 75
Multimember SSI install	Go to “Step 4. Multimember SSI” on page 76.

Step 3. One-member SSI

1. Processing continues.

```
hh:mm:ss DISCONNECT AT hh:mm:ss timezone weekday mm/dd/yy
hh:mm:ss Press enter or clear key to continue
ENTER                                                    Press Enter or the Clear key to continue.
```

2. Log on as MAINT640.

```
logon maint640                                           The default password for MAINT640 is WD5JU8QP.
:
Ready; T=n.nn/n.nn hh:mm:ss
```

3. If this is a first-level installation, you are done with the RAMDISK.
   a. Shut down the new system.

```
shutdown
```

   b. Shut down the RAMDISK system.

```
shutdown system ibmvmram
```

   c. IPL the new system from the HMC.
4. If this is a second-level installation, and this is *not* where you plan to run your new system, shut down the system and then IPL where you wish the new system to run.

   Note: The default SYSTEM CONFIG file allows the following console addresses: 20, 21, 22, 23, F20, F21, 1020. If your console is *not* one of these addresses, either redefine your console or IPL with the **LOADPARM** *consaddr* option. If you use the **LOADPARM** option, include **cons=***consaddr* as an IPL parameter on the z/VM Stand Alone Program Loader (SAPL) panel.

What to do next

Go to Part 3, “Post traditional system installation,” on page 81.

Step 4. Multimember SSI

1. Processing continues.

```
z/VM V6.4.0    yyyy-mm-dd hh:mm
hh:mm:ss AUTO LOGON  ***       OP1      USERS = 2     BY MAINT640

hh:mm:ss HCPCLS6056I XAUTOLOG information for OP1: The IPL command is verified by the
           IPL command processor.
IUGIMB8380I DDRing CYLINDERS 0 - nnnn FROM lbl1res TO lbl2res
DDR OF lbl1res TO lbl2res SUCCESSFUL
IUGIMB8380I DDRing CYLINDERS 0 - nnnn FROM lbl1wrk1 TO lbl2wrk1
DDR OF lbl1wrk1 TO lbl2wrk1 SUCCESSFUL

IUGIMB8380I DDRing CYLINDERS 0 - nnnn FROM lbl1wrk2 TO lbl2wrk2
DDR OF lbl1wrk2 TO lbl2wrk2 SUCCESSFUL
IUGIMB8380I DDRing CYLINDERS 0 - nnnn FROM lbl1wrk3 TO lbl2wrk3
DDR OF lbl1wrk3 TO lbl2wrk3 SUCCESSFUL

IUGIMB8380I DDRing CYLINDERS 0 - nnnn FROM lbl1res TO lbl3res
DDR OF lbl1res TO lbl3res SUCCESSFUL
⋮

IUGIMB8380I DDRing CYLINDERS 0 - nnnn FROM lbl1res TO lbl4res
DDR OF lbl1res TO lbl4res SUCCESSFUL
⋮


CPFMTXA LABEL VOLUME FOR lbl2res SUCCESSFUL
CPFMTXA LABEL VOLUME FOR lbl2wrk1 SUCCESSFUL
CPFMTXA LABEL VOLUME FOR lbl2wrk2 SUCCESSFUL
CPFMTXA LABEL VOLUME FOR lbl2wrk3 SUCCESSFUL

CPFMTXA LABEL VOLUME FOR lbl3res SUCCESSFUL
⋮

CPFMTXA LABEL VOLUME FOR lbl4res SUCCESSFUL
⋮

DASD 0550 DETACHED

CPFMTXA OWNERSHIP FOR lbl2res SUCCESSFUL
CPFMTXA OWNERSHIP FOR lbl2spl SUCCESSFUL
CPFMTXA OWNERSHIP FOR lbl2pag SUCCESSFUL

CPFMTXA OWNERSHIP FOR lbl3res SUCCESSFUL
CPFMTXA OWNERSHIP FOR lbl3spl SUCCESSFUL
CPFMTXA OWNERSHIP FOR lbl3pag SUCCESSFUL

CPFMTXA OWNERSHIP FOR lbl4res SUCCESSFUL
CPFMTXA OWNERSHIP FOR lbl4spl SUCCESSFUL
CPFMTXA OWNERSHIP FOR lbl4pag SUCCESSFUL
DASD 0550 DETACHED

SALIPL FOR addr SUCCESSFUL
SALIPL FOR addr SUCCESSFUL
SALIPL FOR addr SUCCESSFUL
```

You will receive these messages for each member (except member 1) that you selected to install.

Step 5. Initialize members 2-4

1. Processing continues.

```
*********************************************************
*     PROCESSING UPDATE FOR MEMBER nextmemb
*********************************************************
IUGISC8403I SYSTEM CONFIG has been updated to allow member nextmemb to be IPL'ed.

            member nextmemb will be IPLed by issuing the command:
            SHUTDOWN REIPL dasdaddr

EXECUTING SHUTDOWN REIPL dasdaddr


hh:mm:ss HCPWRP963I SHUTDOWN STEP PLMLV - LEAVE THE SSI CLUSTER

⋮
hh:mm:ss z/VM SYSTEM RESTART FROM SHUTDOWN REIPL

hh:mm:ss z/VM V6 R4.0 SERVICE LEVEL nnnn (64-BIT)

hh:mm:ss SYSTEM NUCLEUS CREATED ON yyyy-mm-dd AT hh:mm:ss, LOADED FROM lblres
hh:mm:ss
hh:mm:ss ********************************************************************
hh:mm:ss * LICENSED MATERIALS - PROPERTY OF IBM*                          *
hh:mm:ss * 5741-A07 (C) COPYRIGHT IBM CORP. 1983, 2016. ALL RIGHTS      *
hh:mm:ss * RESERVED. US GOVERNMENT USERS RESTRICTED RIGHTS - USE        *
hh:mm:ss * DUPLICATION OR DISCLOSURE RESTRICTED BY GSA ADP SCHEDULE     *
hh:mm:ss * CONTRACT WITH IBM CORP.                                      *
hh:mm:ss *                                                              *
hh:mm:ss * * TRADEMARK OF INTERNATIONAL BUSINESS MACHINES               *
hh:mm:ss ********************************************************************
hh:mm:ss *
hh:mm:ss ********************************************************************
hh:mm:ss * IBM z/VM Single System Image Feature is enabled and active.  *
hh:mm:ss ********************************************************************
hh:mm:ss
hh:mm:ss HCPZCO6718I Using parm disk n on volume lblcom (device nnnn).
hh:mm:ss HCPZCO6718I Parm disk resides on cylinders nnn through nnn.
⋮
hh:mm:ss HCPCRC8082I Accounting records are accumulating for userid DISKACNT


DMSWSP327I The installation saved segment could not be loaded
z/VM V6.4.0    yyyy-mm-dd hh:mm

DMSDCS1083E Saved segment CMSPIPES does not exist
DMSDCS1083E Saved segment CMSPIPES does not exist
DMSDCS1083E Saved segment CMSVMLIB does not exist

hh:mm:ss AUTO LOGON  ***       OP1      USERS = n     BY MAINT640
hh:mm:ss HCPCLS6056I XAUTOLOG information for OP1: The IPL command is verified by the
           IPL command processor.

AUTO LOGON  ***       BLDCMS   USERS = n
HCPCFX6768I SECUSER of BLDCMS initiated for you by BLDCMS.
HCPNSD440I The Named Saved System (NSS) CMS was successfully defined in fileid nnnn.
BLDCMS  : HCPNSS440I Named Saved System (NSS) CMS was successfully saved
BLDCMS  : CONNECT= 00:00:nn VIRTCPU= 000:00.nn TOTCPU= 000:00.nn
BLDCMS  : LOGOFF AT hh:mm:ss EST WEDNESDAY mm/dd/yy BY MAINT640
USER DSC   LOGOFF AS  BLDCMS   USERS = n     FORCED BY MAINT640
```

```
************************************************************
* PROCESSING MEMBER membername                             *
************************************************************

IUGINI8493I ISSUING XAUTOLOG FOR VMSERVR
AUTO LOGON  ***       VMSERVR  USERS = n
HCPCLS6056I XAUTOLOG information for VMSERVR: The IPL command is verified by the
  IPL command processor.

USER DSC   LOGOFF AS  VMSERVR  USERS = n     FORCED BY MAINT640
IUGINI8493I ISSUING XAUTOLOG FOR VMSERVR
AUTO LOGON  ***       VMSERVR  USERS = n
HCPCLS6056I XAUTOLOG information for VMSERVR: The IPL command is verified by the
  IPL command processor.

IUGINI8493I ISSUING XAUTOLOG FOR VMSERVP
AUTO LOGON  ***       VMSERVP  USERS = n
HCPCLS6056I XAUTOLOG information for VMSERVP: The IPL command is verified by the
  IPL command processor.

IUGINI8493I ISSUING XAUTOLOG FOR VMSERVS
AUTO LOGON  ***       VMSERVS  USERS = n
HCPCLS6056I XAUTOLOG information for VMSERVS: The IPL command is verified by the
  IPL command processor.

IUGINI8493I ISSUING XAUTOLOG FOR VMSERVU
AUTO LOGON  ***       VMSERVU  USERS = n
HCPCLS6056I XAUTOLOG information for VMSERVU: The IPL command is verified by the
  IPL command processor.

************************************************************
*         NOW EXECUTING PUT2PROD SEGMENTS ALL              *
************************************************************
   .
   .
******  PUT2PROD messages  ***************
   .
   .
************************************************************
*          NOW EXECUTING SERVICE GCS BLDNUC                *
************************************************************
   .
   .
******  SERVICE messages  ***************
   .
   .
************************************************************
*               NOW EXECUTING PUT2PROD                     *
************************************************************
   .
   .
******  PUT2PROD messages  ***************
   .
   .
```

2. Substep 1 on page 77 will repeat for members 3-4, if applicable.
3. Once all members have been initialized, processing will finish.

```
IUGMLP8392I INSTALLATION ENDED SUCCESSFULLY
Ready; T=n.nn/n.nn hh:mm:ss
```

Step 6. Update the system configuration file

When "Step 5. Initialize members 2-4" on page 77 has completed for each installed member (2-4):

1. Run INSTSCID to update the system configuration with the final System_Identifier information. At the completion of "Step 5. Initialize members 2-4" on page 77, the SYSTEM CONFIG file is set up to IPL only the last member you installed. In order to successfully IPL all members of your SSI cluster, the SYSTEM CONFIG file must be updated to include the correct `System_Identifier` statement for each member. Once the SYSTEM CONFIG file is updated, you will only be able to IPL the members on their respective LPARs/user IDs.

```
instscid remove

************************************************************
* PROCESSING REMOVE FOR ALL MEMBERS
************************************************************
IUGISC8404I SYSTEM CONFIG has been updated to allow all members
            to be ipled only from the LPAR/userid
            defined for each member at install time.

IUGISC8392I INSTSCID EXEC ENDED SUCCESSFULLY
Ready; T=n.nn/n.nn hh:mm:ss
```

   Note: If you attempt to IPL any member except the last member installed before running INSTSCID, your system will not IPL with the correct member volumes and results will be unexpected.

2. Perform a system shutdown.

```
shutdown
SYSTEM SHUTDOWN STARTED
Ready; T=n.nn/n.nn hh:mm:ss


hh:mm:ss HCPWRP963I SHUTDOWN STEP PLMLV - LEAVE THE SSI CLUSTER

⋮
hh:mm:ss HCPWRP961W SYSTEM SHUTDOWN COMPLETE
HCPGIR450W CP entered; disabled wait PSW 00020000 00000000 00000000 00000961
```

3. IPL the CMS saved segment if it exists. Otherwise, IPL 190.

```
ipl cms

⋮
 ENTER
Ready; T=n.nn/n.nn hh:mm:ss
```

Step 7. IPL the new SSI cluster

1. If you indicated that the SSI cluster members would be IPLed second-level:
   a. Retrieve the SSI2ND DIR-PROF file from the 191 (A) disk of the user ID you used for installation. This file also exists on the new system's MAINT640 4CC disk. This file contains sample user directory information for the user IDs where you will IPL your SSI members.

      Attention: Make sure to use the DEVNO statement as documented in this file to allow all members access to the other members' volumes.

   b. On the system where you plan to IPL your SSI members, add or update the user directory information for the user IDs according to the information defined in the SSI2ND DIR-PROF file.
   c. Detach all installation volumes from your installation user ID.
   d. Log on to each of the IPL user IDs as defined in SSI2ND DIR-PROF and create or update the PROFILE EXEC according to the information in the SSI2ND DIR-PROF file.
   e. Run the PROFILE EXEC on each user ID.
2. If this is a first-level installation, you are done with the RAMDISK.
   a. Shut down the RAMDISK system.

      ```
      shutdown system ibmvmram
      ```

3. IPL each member from its corresponding user ID or LPAR.

   Note: The default SYSTEM CONFIG file allows the following console addresses: 20, 21, 22, 23, F20, F21, 1020. If your console is *not* one of these addresses, either redefine your console or IPL with the **LOADPARM** *consaddr* option. If you use the **LOADPARM** option, include **cons=***consaddr* as an IPL parameter on the z/VM Stand Alone Program Loader (SAPL) panel.

What to do next

Go to Part 3, “Post traditional system installation,” on page 81.

Part 3. Post traditional system installation

This part contains the following:

- Default system information
- Procedures for creating IPLable utility tapes
- Procedures for configuring a basic TCP/IP network connection
- Procedures for backing up the z/VM system
- Procedures for migrating customized files and service for products that are preinstalled on the z/VM installation media
- Information about the licensed products and features that are preinstalled on the z/VM installation media.

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Chapter 7. Default system information

This section provides a summary of important information about your default system setup. Additional information can also be found in Appendix C, "Contents of the z/VM system," on page 249. Detailed information about configuring your system can be found in *z/VM: CP Planning and Administration*.

User directory defaults passwords

The USER DIRECT file contains default passwords for all user IDs defined by the installation process. All passwords that are not NOLOG, AUTOONLY, or LBYONLY have been set to the default of WD5JU8QP.

Default information for IPLing your system

The SYSTEM CONFIG file resides on the CF0 PARM disk, owned by PMAINT.

In an SSI cluster, the installation default is to have a single SYSTEM CONFIG file that is shared by all member systems.

The CPLOAD MODULE resides on the CF1 PARM disk, owned by MAINT.

During installation, the system is set up to IPL the CPLOAD MODULE from MAINT's CF1 PARM disk (extent 1 on the M0xRES volume) and to read the SYSTEM CONFIG file from PMAINT's CF0 PARM disk (for 3390, parm disk 1 on the VMCOM1 volume; for FBA, parm disk 4 on the M01RES volume).

The following SALIPL record was written to the IPL volume:

- **For 3390:**

  ```
  SALIPL m0xresaddr (EXTENT 1 IPLPARMS fn=SYSTEM ft=CONFIG pdnum=1 pdvol=vmcom1addr
  ```

- **For FBA:**

  ```
  SALIPL m0xresaddr (EXTENT 1 IPLPARMS fn=SYSTEM ft=CONFIG pdnum=4
  ```

For 3390: If you change the address of the VMCOM1 volume, you will need to run SALIPL to rewrite the IPL record for the system to point to the new VMCOM1 volume address:

```
SALIPL m0xresaddr (EXTENT 1 IPLPARMS fn=SYSTEM ft=CONFIG pdnum=1 pdvol=newvmcom1addr
```

For FBA: If you IPL first level, enter the edevice number of the RES volume (M01RES address) in the IPL PARAMETERS section with the `PDVOL=edevicenumber` statement

Where you can IPL your systems

When installation is complete the following `System_Identifier` statements exist in the SYSTEM CONFIG file on the CF0 PARM disk:

- **Non-SSI:**

  ```
  System_Identifier * * systemname
  ```

  This statement allows the system to be IPLed from any LPAR or user ID.

- **One-member SSI:**

  ```
  /* System_Identifier LPAR system1 member1name */
  /* System_Identifier LPAR @@LU-2 @@MEMSLOT2 */
  ```

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Default system information

```
/* System_Identifier LPAR @@LU-3 @@MEMSLOT3 */
/* System_Identifier LPAR @@LU-4 @@MEMSLOT4 */

System_Identifier * * member1name
```

The SYSTEM CONFIG file contains a `System_Identifier` statement that allows the member to be IPLed from any LPAR or user ID. To prevent the member from being IPLed from anywhere else except on the LPAR/user ID you designated during installation, remove the comments from the appropriate `System_Identifier` statement and add comments around the `System_Identifier * * member1name` statement.

- **Multimember SSI:**

```
System_Identifier LPAR lpar1  member1
System_Identifier LPAR lpar2  member2
System_Identifier LPAR lpar3  member3
System_Identifier LPAR lpar4  member4

/*   System_Identifier * * member4   */
```

For a multimember SSI, the members can be IPLed only from the LPAR/user ID designated during installation.

For emergency purposes, the CF0 also contains the file INSTALL CONFIG, which will allow member one to be IPLed anywhere:

```
INSTALL  CONFIG

System_Identifier LPAR lpar1  member1
System_Identifier LPAR lpar2  member2
System_Identifier LPAR lpar3  member3
System_Identifier LPAR lpar4  member4

System_Identifier * * member1
```

Default PARM disk information

The default PARM disks are owned and utilized as follows:

CF1 Owned by MAINT, allocated on M01RES, holds the default production CPLOAD MODULE.

CF3 Owned by MAINT, allocated on M01RES, used as a backup of the CF1 PARM disk.

CFD Owned by MAINT, allocated on M01RES, a dummy parm disk designed to maintain the EXTENT 1 and 3 values for CF1 and CF3.

CF2 Owned by MAINT640, allocated on 640RL1, used by SERVICE to hold the test CPLOAD MODULE.

CF0 Owned by PMAINT, allocated on VMCOM1, holds the SYSTEM CONFIG file.

Volume ownership

z/VM allows DASD volumes to be owned by an SSI cluster or by a specific member of a SSI cluster or non-SSI system. Installation volumes contain the following ownership information:

- **Non-SSI:**

VMCOM1	No ownership
VMCOM2	No ownership
640RL1	No ownership
640RL2	No ownership

640RL3	No ownership
M01RES	No ownership
M01W01	No ownership
M01W02	No ownership
M01W03	No ownership
M01S01	VM SSI owner: none System owner: *systemname*
M01P01	VM SSI owner: none System owner: *systemname*

- **SSI:**

VMCOM1	VM SSI owner: *SSIname* System owner: none
VMCOM2	No ownership
640RL1	No ownership
640RL2	No ownership
640RL3	No ownership
M0*x*RES	VM SSI owner: *SSIname* System owner: *memberxname*
M0*x*W01	No ownership
M0*x*W02	No ownership
M0*x*W03	No ownership
M0*x*S01	VM SSI owner: *SSIname* System owner: *memberxname*
M0*x*P01	VM SSI owner: *SSIname* System owner: *memberxname*

For more information on volume ownership, see *z/VM: CP Planning and Administration*.

Full-pack minidisk definitions

Each volume used for installation, except those used for paging space, has a full-pack minidisk defined in the default user directory. Full-pack minidisk definitions are required for DDR backups. The 123 minidisk is required to create the object user directory.

- **MAINT**

```
MDISK 122 3390 000 END M01S01 MR
MDISK 123 3390 000 END M01RES MR
MDISK 124 3390 000 END M01W01 MR
MDISK 125 3390 000 END M01W02 MR
MDISK 126 3390 000 END M01W03 MR
```

- **MAINT640**

```
MDISK 131 3390 000 END 640RL1 MR
MDISK 132 3390 000 END 640RL2 MR
MDISK 133 3390 000 END 640RL3 MR

LINK MAINT 122 122 MR
LINK MAINT 123 123 MR
LINK MAINT 124 124 MR
LINK MAINT 125 125 MR
LINK MAINT 126 126 MR
LINK PMAINT 141 141 MR
LINK PMAINT 142 142 MR
```

- **PMAINT**

Default system information

```
MDISK 141 3390 000 END VMCOM1 MR
MDISK 142 3390 000 END VMCOM2 MR
```

Miscellaneous

A new user ID, OPNCLOUD, was included on your 640 system. The OPNCLOUD 100 and 101 minidisks are defined but not initialized. These disks will be used by the IBM z/VM Cloud Manager Appliance and will be initialized when CMA is installed.

Chapter 8. Create IPLable utilities

In this chapter, you will:

- Create IPLable utilities.

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Step 1. Create a stand-alone dump device

z/VM includes a stand-alone dump utility that you tailor according to your installation's configuration, using CMS. After you install z/VM, you should create the stand-alone dump utility and place it on DASD for emergency use. If, after a system failure, CP cannot create an abend dump, you can use the stand-alone dump on DASD to dump all of storage.

For instructions on creating a stand-alone dump utility, see *z/VM: CP Planning and Administration*.

Note: Do not use a stand-alone dump from a previous release of z/VM to attempt to dump your V6.4 system.

Step 2. Create an IPLable DDR utility tape

You can optionally create an IPLable DDR utility tape. This tape can be used to IPL DDR stand-alone if you need to run DDR when CMS (and the DDR Module) is not available. If you choose to create the IPLable DDR utility tape, continue with this step. Otherwise, go to "Step 3. Create an IPLable ICKDSF utility tape" on page 90.

Note: IBM has included the DDR MODULE on the MAINT CF1 minidisk. This DDR MODULE can be selected and IPLed from the SALIPL screen. For information, see *z/VM: System Operation*.

1. Attach a tape drive (*tapeaddr*) to MAINT640 at virtual device address 181.

```
attach tapeaddr * 181
TAPE 0181 ATTACHED
Ready; T=n.nn/n.nn hh:mm:ss
```

2. Mount a tape, to be used for the IPLable DDR utility, on the tape drive attached at virtual device address 181.
3. Access the 193 minidisk in read/write mode as file mode Z.

```
access 193 z
Ready; T=n.nn/n.nn hh:mm:ss
```

4. Load the DDRXA utility to tape.

```
utility utiltape ddrxa
Rewind complete
IUGWUT8317I MOVING IPL DDRXA TO TAPE
IUGWUT8318I THE IPL DDRXA PROGRAM IS
             ON TAPE FILE NUMBER 1
Ready; T=n.nn/n.nn hh:mm:ss
```

5. Rewind the DDR utility tape attached at virtual device address 181.

```
rewind 181
Rewind complete
```

6. IPL the tape and answer the prompts from DDRXA to verify the tape contents. For information about DDRXA, see *z/VM: CP Commands and Utilities Reference* and *z/VM: System Operation*.

```
ipl 181 clear
```

CLEAR is necessary. Do not omit it.

Wait a few moments for DDRXA to prompt you. If a prompt does not appear, press Enter.

```
z/VM DASD DUMP/RESTORE PROGRAM
ENTER CARD READER ADDRESS OR CONTROL STATEMENTS
ENTER:
```

This message verifies that IPLable DDRXA has been written to the tape.

7. IPL CMS.

```
#cp ipl cms
z/VM V6.4.0    yyyy-mm-dd hh:mm

 ENTER
Ready; T=n.nn/n.nn hh:mm:ss
```

8. Rewind the tape and store for future use.

```
tape run
```

Step 3. Create an IPLable ICKDSF utility tape

You can optionally create an IPLable ICKDSF utility tape. This tape can be used to IPL ICKDSF stand-alone if you need to run ICKDSF when the ICKDSF module is not available. If you choose to create the IPLable ICKDSF utility tape. continue with this step. Otherwise, go to "Step 1. Create a stand-alone dump device" on page 88.

Note: IBM has included the ICKDSF MODULE on the MAINT CF1 minidisk. This ICKDSF MODULE can be selected and IPLed from the SALIPL screen. For information, see *z/VM: System Operation*.

1. Attach a tape drive (*tapeaddr*) to MAINT640 at virtual device address 181.

```
attach tapeaddr * 181
TAPE     0181 ATTACHED
Ready; T=n.nn/n.nn hh:mm:ss
```

2. Mount a tape, to be used for the IPLable ICKDSF utility, on the tape drive attached at virtual device address 181.
3. Access the 193 minidisk in read/write mode as file mode Z.

```
access 193 z
Ready; T=n.nn/n.nn hh:mm:ss
```

4. Load the ICKDSF utility to tape.

```
utility utiltape dsf
Rewind complete
IUGWUT8317I MOVING ICKSADSF COREIMAG TO TAPE
IUGWUT8318I THE ICKSADSF COREIMAG PROGRAM IS
ON TAPE FILE NUMBER 1
Ready; T=n.nn/n.nn hh:mm:ss
```

5. Rewind the ICKDSF utility tape attached at virtual device address 181.

```
rewind 181
Rewind complete
```

6. IPL the tape and answer the prompts from ICKDSF to verify the tape contents. For information about ICKDSF, see *Device Support Facilities: User's Guide and Reference*.

```
ipl 181 clear
```

CLEAR is necessary. Do not omit it.

Wait a few moments for ICKDSF to prompt you. If a prompt does not appear, press Enter.

```
ICK005E DEFINE INPUT DEVICE, REPLY
          'DDDD,CUU' OR 'CONSOLE'
ENTER INPUT/COMMAND:
```

This message tells you that the Device Support Facilities (ICKDSF) is loaded and ready.

```
console
CONSOLE
ICK006E DEFINE OUTPUT DEVICE, REPLY
          'DDDD,CUU' or 'CONSOLE'
ENTER INPUT/COMMAND:
console
CONSOLE
ICK006E DEFINE OUTPUT DEVICE, REPLY
          'DDDD,CUU' or 'CONSOLE'
ENTER INPUT/COMMAND:
```

7. IPL CMS.

```
#cp ipl cms
z/VM V6.4.0    yyyy-mm-dd hh:mm

 ENTER
Ready; T=n.nn/n.nn hh:mm:ss
```

8. Rewind the tape and store for future use.

```
tape run
```

Create an IPLable ICKDSF utility tape

Chapter 9. Configure an initial network connection and back up the system

In this chapter, you will:

- Configure a basic TCP/IP network connection.
- Optionally back up the system.

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Step 1. Configure TCP/IP for an initial network connection

You can optionally create a minimal TCP/IP configuration that establishes basic connectivity to your IP network. The TCP/IP configuration created in this step provides only a basic IP network connection for your z/VM host. In addition, this configuration is suitable for installations that employ only static (as opposed to dynamic) network routes.

Note: The IP configuration wizard supports real network devices only. If you plan on using virtual network devices for TCP/IP, they must be configured manually. See *z/VM: TCP/IP Planning and Customization*.

If you choose to configure a basic IP network connection for your z/VM host at this time, continue with this step. Otherwise, go to "Step 2. Optionally back up the system" on page 96.

Note: If you are using QDIO Layer 2 for the network interface in IPWIZARD, you need to add or update the VMLAN MACPREFIX statement in your SYSTEM CONFIG file to define a unique MAC address prefix for this system. If you are installing a multimember SSI, the VMLAN MACPREFIX and USERPREFIX must be configured in each SSI member. For more information, see "Media Access Control (MAC) Address" in *z/VM: Connectivity*, and the VMLAN statement in *z/VM: CP Planning and Administration*. If changes are made to your SYSTEM CONFIG file, the z/VM image must be re-IPLed so that the statements take effect.

For details about any DTCIPW messages you might receive while running IPWIZARD, see *z/VM: TCP/IP Messages and Codes*.

To establish a TCP/IP configuration that provides more comprehensive TCP/IP services, after you have completed your z/VM installation, see *z/VM: TCP/IP Planning and Customization*.

If you are going to use *z/VM: Getting Started with Linux on z Systems* to set up your Linux on z Systems images, skip this step and go to "Step 2. Optionally back up the system" on page 96.

If you came to this step from *z/VM: Getting Started with Linux on z Systems*, continue with this step and then return to *z/VM: Getting Started with Linux on z Systems*.

Perform the following steps to configure TCP/IP for an initial network connection.

Before you begin: You should have completed the TCP/IP configuration worksheets in Appendix K, "Basic TCP/IP Connectivity Worksheets," on page 273. If you have not done so, gather the necessary information from your network system administrator and complete the worksheets before you continue.

1. Log on to the system/member you are going to configure as MAINT640.

```
logon maint640
⋮
Ready; T=n.nn/n.nn hh:mm:ss
```

2. Access the minidisk 193 as file mode E.

```
access 193 e
Ready; T=n.nn/n.nn hh:mm:ss
```

3. Run IPWIZARD.

```
ipwizard
```

```
              *** z/VM TCP/IP Configuration Wizard ***

  The items that follow describe your z/VM host.

  User ID of VM TCP/IP stack virtual machine: TCPIP___

  Host name: ____________________
  Domain name: _____________________________

  Gateway IP address: _____________________________

  DNS IP Addresses:
  1) _____________________________
  2) _____________________________
  3) _____________________________

:
  PF1 = HELP PF3 = QUIT PF8 = Continue ENTER = Refresh
```

4. Using the information you gathered in the TCP/IP configuration worksheets (in Appendix K, "Basic TCP/IP Connectivity Worksheets," on page 273), fill in the z/VM TCP/IP Configuration Wizard panel and press F8 to continue.
5. Fill in the General Interface Configuration Panel and press F8 to continue. The panel content will depend on whether IPv4 or IPv6 is to be used.
6. Fill in the Interface Configuration Panel and press F5 to process. The panel content will depend on which interface type is to be used.
7. IPWIZARD attempts to create the TCP/IP configuration files. If the TCPIP user ID is logged on, IPWIZARD asks if you want to restart TCP/IP and continue processing.

   ```
   DTCIPW2508I DTCIPWIZ EXEC is attempting to create the necessary
   DTCIPW2508I configuration files
   The TCP/IP stack (TCPIP) must be restarted as part of this procedure. Would
   you like to restart TCPIP and continue?
   Enter 0 (No), 1 (Yes)
   ```

   If you continue, IPWIZARD tests the information you provided and returns any errors that occurred. If no errors are encountered, TCP/IP configuration files containing the network information you provided are created. For additional information on configuring TCP/IP, see *z/VM: TCP/IP Planning and Customization*.
8. The PROFILE EXEC on the AUTOLOG1 191 minidisk contains a commented-out XAUTOLOG statement for TCPIP. Removing the comment characters around the statement will autolog the TCPIP server during CP IPL.

   ```
   link autolog1 191 999 wr
   access 999 z
   xedit profile exec z
   ```

   Remove the comment characters from this line:

   ```
   /*  "PIPE CP XAUTOLOG TCPIP"  */
   ```

   The line should now look like this:

   ```
   "PIPE CP XAUTOLOG TCPIP"
   ```

   Then:

   ```
   file
   release z (detach
   ```
9. If you have a multimember SSI cluster, log on as MAINT640 on each member and repeat substeps 2 on page 94 through 8 to configure a basic IP network connection for each member, using the corresponding tables from Appendix K, "Basic TCP/IP Connectivity Worksheets," on page 273.

Step 2. Optionally back up the system

If you choose to back up your system at this time, use your site backup procedures or else see one of the following:

- Appendix D, "Back up the named saved systems and segments to tape," on page 255
- Appendix E, "Back up the z/VM system to tape," on page 257
- Appendix F, "Back up the z/VM system to DASD," on page 261.

What to do next

If you wish to use the IBM migration procedure, continue to Chapter 10, "Plan your traditional migration," on page 97. Otherwise, skip to Chapter 14, "Preinstalled licensed products and features," on page 131.

Chapter 10. Plan your traditional migration

In this chapter, you will:

- Review migration requirements for a traditional migration.
- Complete migration worksheets.

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Traditional migration overview

Rather than starting from scratch when you upgrade from your current system, you probably want to transfer and adjust your current information for use on the new system. Migration is the transfer and adjustment of information required to upgrade from one release to another.

Information you might want to transfer includes:

- Customized files
- Local modifications
- Service
- User-created files
- Saved segment definitions
- Spool files
- User directory entries
- SFS file pool servers
- Application programs

The z/VM migration procedure automates the transfer of the following types of files from the current to new system:

- Customized files as defined in the product's migration part table (*prodid* MIGP*vrm*)
- Local modifications for all products
- Service for products that are at the same release level in the new z/VM deliverable
- User-created files that reside on selected disks as defined in the product's migration disks table (*prodid* MIGD*vrm*)

During the migration process, you will be informed of additional actions required to complete migration (such as reworking local modifications and customized parts) to reconcile differences between the two releases.

Additional tasks must be performed after this procedure completes in order to migrate the following:

- Parm disks
- User directory
- Networking and connectivity
- Segments
- Spool space
- Security manager databases
- Directory manager databases
- Products and databases not preinstalled on the z/VM installation media

For more information, see *z/VM: Migration Guide* and product-specific program directories.

Step 1. Review and comply with the requirements

Restrictions:

| The z/VM traditional migration procedure is supported only to migrate a V5.4 system to V6.4. To migrate your V5.4 system to an SSI, using the MIGRATE procedure requires a two-step process. First, you must install a non-SSI system and use this procedure to migrate to the new non-SSI system. Once you have completed the migration, you can convert your non-SSI z/VM system to the first member of a z/VM SSI cluster. (See *z/VM: CP Planning and Administration* for more information.)

The z/VM migration procedure supports only the components and products that comprise the z/VM deliverable and can be used only to transfer files from a V5.4 system. The procedure should be run immediately after completing your traditional installation, prior to enabling or customizing any components on the new system.

If you are not going to use this procedure or do not satisfy these restrictions, skip to Chapter 14, "Preinstalled licensed products and features," on page 131.

1. To use this migration procedure you must meet these requirements on your first-level V5.4 system (referred to as your current system).
   - General
     - Each customizable file must reside on the disk specified for that part in the product documentation.
     - Unless specifically documented to do otherwise, the VMSES/E local modification procedures must have been used to customize any IBM-supplied parts. The VMSES/E LOCALMOD command, which simplifies creation and reworking of local modifications, has been provided with past releases of z/VM to assist with such changes.
     - If you use a storage management tool (for example DFSMS) you need to make sure that the auto-recall function is turned on so that stored files are available before running these procedures.
     - You must not have removed any user IDs, minidisks, products, or components shipped with z/VM.
   - PPFs
     - The variable labels in the DCL section of a product's PPF must not be changed.
     - If you have changed a user ID, minidisk address, or SFS directory definition you must override all PPFs that contain the user ID, minidisk address, or SFS directory.
     - If you created PPF overrides for the preinstalled components, products or features of z/VM, then you must override the P2P component in the SERVP2P $PPF file. Your PPF override names must be in the VM SYSSUF software inventory file.
   - If any preinstalled products reside in SFS on your current system:
     - A TSAF collection will be used to allow file pool access.
     - The system name for your new z/VM V6.4 system must be different from the system name of your current z/VM V5.4 system.
     - If the user ID TSAFVM is running (either online or disconnected), then it will be used for the TSAF collection. If it is not running you will be prompted for a user ID to use for the TSAF collection.
     - The TSAF collection user ID must have a 191 minidisk, accessed as file mode A. An SFS directory cannot be used.
     - Enroll the user ID MAINT640 as an administrator of the filepool where your products are installed. (The default is VMSYS.)
2. Requirements for the user ID on your current system where you will run these procedures.

- The user ID must be MAINT or a user ID with privilege classes and authorizations equivalent to MAINT.
- The VMSES/E software inventory disk needs to be linked (default is 51D).
- The user ID must have a 191 minidisk, accessed as file mode A. An SFS directory cannot be used.
- If any preinstalled products reside in SFS, the user ID must have SFS administration authority to all file pools that contains these products. Use the command QUERY ENROLL ADMIN *filepool* to determine which user IDs are enrolled as administrators for filepool *filepool*.

3. Considerations for the version 6 release 4 system (referred to as your new system).
   - The new system must be running second-level on the current system in order to run the migration tools.
   - If any pre-installed products reside in SFS on your current system, the system name for your new z/VM V6.4 system must be different from the system name of your current z/VM V5.4 system.
   - If you have increased the size of any disk shipped on the z/VM installation media on the current system (unless instructed to do so by IBM Service), you might need to increase the size of that disk on the new system before migration.
   - Do not make any changes to your new system before using these migration procedures other than applying an RSU. Do not customize servers or file pools. Do not customize files or enable products or features on the new system before you use this migration procedure. The one exception is customizing files using the IPWIZARD.
4. To maintain migration compliance and be able to use the z/VM migration procedure in the future:
   - Always use the VMSES/E local modification procedures to alter, modify or customize any IBM-supplied parts, unless it is specifically documented to do otherwise. The LOCALMOD command, which simplifies the creation and reworking of local modifications, is supplied with VMSES/E to assist with making such changes.
   - If you want to use an IBM-supplied SFS for your own data, use VMSYSU. Do not use VMSYS, VMPSFS, or VMSYSR.
   - Additional minidisks should not be defined on the DASD volumes used for the installation defined volumes. The default labels for:
     – z/VM V5.4 are 540RES, 540W01, and 540W02
     – z/VM V6.4 are M01RES, M01W01, M01W02, M01W03, 640RL1, 640RL2, 640RL3, VMCOM1, and VMCOM2.

Step 2. Complete the migration worksheet

1. Record the addresses of your V6.4 DASD .
2. Select the current system user ID you will use to run these procedures. Verify that this user ID meets the following requirements :
   - The user ID must be MAINT or a user ID with privilege classes and authorizations equivalent to MAINT
   - The user ID must have a 191 minidisk, accessed as file mode A. An SFS directory cannot be used.
   - If any preinstalled products reside in SFS on your current system, the first-level user ID must have SFS administration authority to all file pools that contain these products.
3. If no preinstalled products reside in SFS on your current system, record *no* in the table and skip to substep 4. Otherwise record *yes* and complete the SFS section of the Migration Table
4. If you use a storage management tool, record a *yes* in the table and complete the auto-recall question; otherwise record *no* in the table

Complete the migration worksheet

Table 9. Migration Worksheet

z/VM V6.4 system DASD addresses: _____		
Current system user ID you will use to run these procedures	_____	
SFS questions: (current system)		
Preinstalled products reside in SFS (yes or no)	_____	If yes, answer the remaining SFS questions.
TSAF collection user ID	_____	
TSAF user ID has a 191 (A) on minidisk not in SFS (yes or no)	_____	If no, a 191 disk must be defined before continuing.
Additional questions:		
Do you use a storage management tool? (yes or no)	_____	
If yes, is the auto-recall function turned on so that stored files are available? (yes or no)	_____	If no, the function must be turned on before continuing

Chapter 11. Set up for traditional migration

In this chapter, you will:

- IPL the new z/VM V6.4 system.
- Set up for migration.
- Run MIGLINK.

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Step 1. IPL the new z/VM system

Before you begin: You need to complete the migration worksheet (Table 9 on page 102) and review all migration requirements listed in "Step 1. Review and comply with the requirements" on page 99.

1. Log on to the current system user ID you have selected to use for the migration process. Make sure the user ID meets the migration user ID requirements in "Step 1. Review and comply with the requirements" on page 99, substep 2 on page 99.
2. Attach the DASD used to install the new z/VM V6.4 system.

   Issue the following ATTACH command for each DASD listed on the migration worksheet (Table 9 on page 102):

   ```
   attach dasdaddr *
   DASD dasdaddr ATTACHED TO userid dasdaddr

   .
   .
   .
   Ready; T=n.nn/n.nn hh:mm:ss
   ```

3. IPL the new z/VM V6.4 system.
   a. Reset the virtual machine.

      ```
      system clear
      Storage cleared - system reset.
      ```

   b. Make sure the z/VM system will recognize your terminal as a 3277, 3278, or 3279.

      ```
      terminal conmode 3270
      ```

   c. Verify that you have 128 MB of virtual storage. If you have less than 128 MB of virtual storage, issue the DEFINE command to set your virtual storage to 128 MB.

      ```
      query virtual storage
      STORAGE = nnnnM

      define storage 128M
      STORAGE =   128M
      Storage cleared - system reset
      ```

   d. Set the virtual machine mode to ESA.

      ```
      set machine esa
      ```

   e. Query the console to determine the virtual console address (*consaddr*). This address is required in the next substep.

      ```
      query console
      CONS consaddr ON LDEV nnnn   TERM START
           consaddr CL T NOCONT NOHOLD COPY 001    READY FORM STDN
           consaddr TO userid   dev DIST nnnn      FLASHC 000 DEST OFF
           consaddr FLASH       CHAR       MDFY       0 FCB       LPP OFF
           consaddr 3270   NOEOF OPEN nnnn NOKEEP NOMSG NONAME
           consaddr SUBCHANNEL = nnnn
      ```

   f. Define the console to virtual address 20.

      ```
      define consaddr 20
      CONS 0020 DEFINED
      ```

g. IPL the new z/VM system that was loaded to system residence device (M01RES).

```
ipl dasdaddr clear
```

CLEAR is necessary. Do not omit it.

dasdaddr
Address of the system residence device (M01RES).

```
hh:mm:ss z/VM V6 R4.0, SERVICE LEVEL nnnn (64-BIT)

hh:mm:ss SYSTEM NUCLEUS CREATED ON yyyy-mm-dd AT hh:mm:ss, LOADED FROM lblres
hh:mm:ss
hh:mm:ss ************************************************************
hh:mm:ss * LICENSED MATERIALS - PROPERTY OF IBM*                      *
hh:mm:ss * 5741-A07 (C) COPYRIGHT IBM CORP. 1983, 2016. ALL RIGHTS    *
hh:mm:ss * RESERVED. US GOVERNMENT USERS RESTRICTED RIGHTS - USE      *
hh:mm:ss * DUPLICATION OR DISCLOSURE RESTRICTED BY GSA ADP SCHEDULE   *
hh:mm:ss * CONTRACT WITH IBM CORP.                                    *
hh:mm:ss *                                                           *
hh:mm:ss * * TRADEMARK OF INTERNATIONAL BUSINESS MACHINES            *
hh:mm:ss ************************************************************
hh:mm:ss
hh:mm:ss HCPZCO6718I Using parm disk 1 on volume lblres (device xxxx).
hh:mm:ss HCPZCO6718I Parm disk resides on cylinders xxx through xxx.
hh:mm:ss HCPMLM3016I Management by the Unified Resource Manager is not available for this system
```

⋮

You might receive an informational message, HCPISU951I, about volumes not mounted. If you are not using those volume labels, ignore this message.

Attention: If you received informational message HCPIIS954I, you have volumes with duplicate labels. You must correct this error before continuing.

To correct this error:

1. Make a note of the DASD addresses of the volumes with duplicate labels.
2. At the start prompt, issue SHUTDOWN.
3. Detach or relabel the volumes with duplicate labels that are not to be used.
4. IPL the system again. See substep 3a on page 104.

```
hh:mm:ss Start ((Warm|Force|COLD|CLEAN) (DRain) (DIsable) (NODIRect)
hh:mm:ss       (NOAUTOlog)) or (SHUTDOWN)
```

h. Start the system using FORCE NOAUTOLOG.

```
force noautolog
```

i. Do not set the TOD clock at this time. Enter **no** at the prompt.

```
NOW hh:mm:ss timzone weekday yyyy-mm-dd
Change TOD clock (yes|no)
no
```

CP logs on the primary system operator user ID (OPERATOR).

```
hh:mm:ss The directory on volume lblres at address nnnn has been brought online.
⋮
hh:mm:ss HCPCRC8082I Accounting records are accumulated for userid DISKACNT
```

j. Disconnect from the OPERATOR user ID.

```
disconnect
DISCONNECT AT hh:mm:ss timezone weekday mm/dd/yy

Press enter or clear key to continue
ENTER
```

k. Log on as MAINT640.

```
logon maint640
⋮
Ready; T=n.nn/n.nn hh:mm:ss
```

The default password for MAINT640 is WD5JU8QP.

Step 2. Set up for migration

1. Run MIGSETUP to copy migration tools to the 191 disk of your current system user ID. If you receive any error messages during MIGSETUP processing, look up the message in *z/VM: CP Messages and Codes*, take the appropriate action, and run the command again.

```
access 493 c
DMSACC724I 493 replaces C(2CC)
Ready;

migsetup
IUGMSU8392I MIGSETUP EXEC ENDED SUCCESSFULLY
Ready;
```

2. Update the SYSTEM NETID file on the MAINT 190 disk. If you have components on your current or new system installed in the Shared File System, you need to update the SYSTEM NETID file on your new system to include the name of your new system. This name must be different from the name of your current system.
3. Shut down the V6.4 system.

```
shutdown
SYSTEM SHUTDOWN STARTED
HCPWRP963I STARTING SHUTDOWN STEP ...... -  ......

⋮
HCPWRP963I STARTING SHUTDOWN STEP ...... -  ......

HCPWRP962I VM SHUTDOWN COMPLETED IN n SEC
HCPWRP963I STARTING SHUTDOWN STEP SVADV - DEACTIVATE TERMINATION SAVE AREAS
HCPWRP961W SYSTEM SHUTDOWN COMPLETE
HCPGIR450W CP entered; disabled wait PSW 00020000 00000000 00000000 00000961
```

4. IPL CMS on your current system user ID.

```
ipl cms
z/VM Vn.n.0

 ENTER
Ready;
```

Step 3. Run MIGLINK

1. Access the VMSES/E system inventory disk.

```
access 51D d
Ready; T=n.nn/n.nn hh:mm:ss
```

2. Run MIGLINK to establish the appropriate minidisk or SFS environment on your current system. If you receive any error messages during MIGLINK processing, look up the message in *z/VM: CP Messages and Codes*, take the appropriate action, and run the command again.

```
miglink
(You get the following prompt only if products reside in
 SFS on your current system)

IUGMLK8309R A TSAF COLLECTION NEEDS TO BE ESTABLISHED.
            ONLY ONE TSAF COLLECTION CAN BE ACTIVE AT A
            TIME. IF TSAF IS CURRENTLY RUNNING ON A
            USERID DIFFERENT THAN 'TSAFVM' YOU NEED TO
            ENTER THAT USERID.
            ENTER:

            0 TO QUIT
            1 TO USE TSAFVM
            OR
            YOUR TSAF USERID

         {0|1|userid}
IUGMLK8392I MIGLINK EXEC ENDED SUCCESSFULLY
Ready;
```

Note: If you log off your current system user ID at this point, when you log back on, you must attach your new system DASD and run MIGLINK again to establish your environment.

Step 4. IPL the new z/VM system

1. Reset the virtual machine.

```
system clear
Storage cleared - system reset.
```

2. Make sure the z/VM system will recognize your terminal as a 3277, 3278, or 3279.

```
terminal conmode 3270
```

3. Verify that you have 128 MB of virtual storage. If you have less than 128 MB of virtual storage, issue the DEFINE command to set your virtual storage to 128 MB.

```
query virtual storage
STORAGE = nnnnM

define storage 128M
STORAGE =   128M
Storage cleared - system reset
```

4. Set the virtual machine mode to ESA.

```
set machine esa
```

5. Query the console to determine the virtual console address (*consaddr*). This address is required in the next substep.

```
query console
CONS consaddr ON LDEV nnnn   TERM START
     consaddr CL T NOCONT NOHOLD COPY 001    READY FORM STDN
     consaddr TO userid   dev DIST nnnn      FLASHC 000 DEST OFF
     consaddr FLASH       CHAR       MDFY       0 FCB       LPP OFF
     consaddr 3270   NOEOF OPEN nnnn NOKEEP NOMSG NONAME
     consaddr SUBCHANNEL = nnnn
```

6. Define the console to virtual address 20.

```
define consaddr 20
CONS 0020 DEFINED
```

7. IPL the new z/VM system that was loaded to the system residence device (M01RES).

```
ipl dasdaddr clear
```

CLEAR is necessary. Do not omit it.

dasdaddr
: Address of the system residence device (M01RES).

```
hh:mm:ss z/VM V6 R4.0, SERVICE LEVEL nnnn (64-BIT)

hh:mm:ss SYSTEM NUCLEUS CREATED ON yyyy-mm-dd AT hh:mm:ss, LOADED FROM lblres
hh:mm:ss
hh:mm:ss ************************************************************
hh:mm:ss * LICENSED MATERIALS - PROPERTY OF IBM*                      *
hh:mm:ss * 5741-A07 (C) COPYRIGHT IBM CORP. 1983, 2016. ALL RIGHTS    *
hh:mm:ss * RESERVED. US GOVERNMENT USERS RESTRICTED RIGHTS - USE      *
hh:mm:ss * DUPLICATION OR DISCLOSURE RESTRICTED BY GSA ADP SCHEDULE   *
hh:mm:ss * CONTRACT WITH IBM CORP.                                    *
hh:mm:ss *                                                           *
hh:mm:ss * * TRADEMARK OF INTERNATIONAL BUSINESS MACHINES            *
hh:mm:ss ************************************************************
hh:mm:ss
hh:mm:ss HCPZCO6718I Using parm disk 1 on volume lblres (device xxxx).
hh:mm:ss HCPZCO6718I Parm disk resides on cylinders xxx through xxx.
hh:mm:ss HCPMLM3016I Management by the Unified Resource Manager is not available for this system
```

You might receive an informational message, HCPISU951I, about volumes not mounted. If you are not using those volume labels, ignore this message.

Attention: If you received informational message HCPIIS954I, you have volumes with duplicate labels. You must correct this error before continuing.

To correct this error:

1. Make a note of the DASD addresses of the volumes with duplicate labels.
2. At the start prompt, issue SHUTDOWN.
3. Detach or relabel the volumes with duplicate labels that are not to be used.
4. IPL the system again. See substep 1 on page 109.

```
hh:mm:ss Start ((Warm|Force|COLD|CLEAN) (DRain) (DIsable) (NODIRect)
hh:mm:ss       (NOAUTOlog)) or (SHUTDOWN)
```

8. Start the system using FORCE DRAIN NOAUTOLOG.

```
force drain noautolog
```

Use NOAUTOLOG because you cannot have the servers and all user IDs logged on.

9. Do not set the TOD clock at this time. Enter **no** at the prompt.

```
NOW hh:mm:ss timzone weekday yyyy-mm-dd
Change TOD clock (yes|no)
no
```

CP logs on the primary system operator user ID (OPERATOR).

```
hh:mm:ss The directory on volume lblres at address nnnn has been brought online.
hh:mm:ss HCPCRC8082I Accounting records are accumulated for userid DISKACNT
```

10. Disconnect from the OPERATOR user ID.

```
disconnect
DISCONNECT AT hh:mm:ss timezone weekday mm/dd/yy

Press enter or clear key to continue
 ENTER
```

11. Log on as MAINT640.

```
logon maint640
:
Ready; T=n.nn/n.nn hh:mm:ss
```

The default password for MAINT640 is WD5JU8QP.

IPL the new z/VM system

Chapter 12. Migrate

In this chapter, you will:

- Run MIGRATE.
- View the MIGRATE message log.

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Step 1. Run MIGRATE

Run MIGRATE to migrate minidisk and shared file data for all preinstalled products.

```
migrate all 540
Ready;
```

Note: The MIGRATE command copies two obsolete files from z/VM 540 to the new 640 CP samples disk. These two files should be erased from the MAINT640 2C2 disk (VMPSFS:MAINT640.CPDV.SAMPLE).

- SCSIDISC SAMPEXEC
- RXSCSIFM SAMPMOD

Messages received from MIGRATE are logged in the $VMFMIG $MSGLOG file.

If you receive a return code of zero, skip to Chapter 13, "Place migrated parts into production," on page 117. Otherwise, continue with "Step 2. View the MIGRATE message log" on page 115.

Step 2. View the MIGRATE message log

View the MIGRATE message log and handle any nonzero return codes. Base your actions on the following table:

If you received . . .	Then . . .
Return code 4	1. Issue VMFVIEW MIGRATE. You can ignore any warning messages that appear in the notes below. Take appropriate action based on other warning messages you receive. Messages that start with 'VMF' are documented in *z/VM: Other Components Messages and Codes* and messages that start with 'DTC' are documented in *z/VM: TCP/IP Messages and Codes*. Messages that start with 'VMF' may be viewed by issuing HELP followed by the message number. 2. Go to Chapter 13, "Place migrated parts into production," on page 117.
Return code 6	1. Issue VMFVIEW MIGRATE. You can ignore any warning messages that appear in the notes below. Take appropriate action based on other warning messages you receive. Messages that start with 'VMF' are documented in *z/VM: Other Components Messages and Codes* and messages that start with 'DTC' are documented in *z/VM: TCP/IP Messages and Codes*. Messages that start with 'VMF' may be viewed by issuing HELP followed by the message number. For messages VMFMGR2308I and VMFSUI2308W for CP local modification 99999, simply mark them reworked with the VMFUPDAT SYSLMOD command. 2. Use the VMFUPDAT SYSLMOD command to see which customized parts and local modifications you need to rework. Rework the customized parts and local modifications that were identified. For more information, see *z/VM: VMSES/E Introduction and Reference*. 3. If any pre-installed products reside in SFS on your current system, verify that the SYSTEM NETID file on the MAINT 190 minidisk contains the name of your new system, or has all records commented out. 4. After you complete the rework, use the VMFUPDAT SYSLMOD command to flag the customized parts and local modification as REWORKED. 5. Return to "Step 1. Run MIGRATE" on page 114 and reissue the MIGRATE ALL command.
A return code greater than 6	1. Issue VMFVIEW MIGRATE and check for warning and error messages. You can ignore any warning messages in the notes below. Take appropriate action based on other warning messages you receive. Messages that start with 'VMF' are documented in *z/VM: Other Components Messages and Codes* and messages that start with 'DTC' are documented in *z/VM: TCP/IP Messages and Codes*. Messages that start with 'VMF' may be viewed by issuing HELP followed by the message number. 2. Correct all errors reported in the error messages. 3. If any pre-installed products reside in SFS on your current system, verify that the SYSTEM NETID file on the MAINT 190 minidisk contains the name of your new system, or has all records commented out. 4. Return to "Step 1. Run MIGRATE" on page 114 and reissue the MIGRATE ALL command.

Note: You can ignore the following messages and their associated VMF1966W message:

- `DMSLIO201W The following names are undefined: ISPLINK ARIPRDI`
- `DMSLIO201W The following names are undefined: DMSDSCSC`
- `DMSLIO201W The following names are undefined: DMSUSRX1 DMSUSRX2`

View the MIGRATE message log

- DMSLIO202W Duplicate identifier messages associated with object IOACMAIN MODULE.
- DMSLKD004W Warning messages issued messages associated with objects ILBONBL, ILBONTR, ILBOREC, ILBORNT, ILBOSND, ILBOSNT, and ILBOSSN.
- DMSLIO994W Restrictive RMODE encountered in CSECT CEEM@VOU
- DMSLIO994W Restrictive RMODE encountered in CSECT CEEBLIIA

Chapter 13. Place migrated parts into production

In this chapter, you will:

- Run PUT2PROD, MIGCLEAN, and MIGR51D.

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Step 1. Run PUT2PROD

1. Log on as MAINT640.

   ```
   logon maint640
   ⋮
   Ready; T=n.nn/n.nn hh:mm:ss
   ```

   The default password for MAINT640 is WD5JU8QP.

2. IPL CMS.

   ```
   ipl cms
   z/VM V6.4.0    yyyy-mm-dd hh:mm

    ENTER
   Ready; T=n.nn/n.nn hh:mm:ss
   ```

3. Run PUT2PROD.

   ```
   put2prod
   VMFP2P2760I PUT2PROD processing started

   ⋮
   VMFP2P2760I PUT2PROD processing completed successfully
   Ready; T=n.nn/n.nn hh:mm:ss
   ```

4. Handle a nonzero return code. Base your action on the following table:

If you received . . .	Then . . .
Return code 4	• Issue VMFVIEW PUT2PROD. You can ignore any warning messages in the notes below. Take appropriate action based on other warning messages you receive.
A return code greater than 4	1. Issue VMFVIEW PUT2PROD and check for warning and error messages. 2. You can ignore any warning messages in the notes below. Take appropriate action based on other warning messages you receive. 3. Correct all errors reported in the error messages. 4. Issue IPL CMS. 5. Issue PUT2PROD. 6. If you receive a nonzero return code, repeat substep 4.

Note: You can ignore the following:

- `DMSDCS1083E Saved segment $$DMY$$ does not exist`
- `DMSWLG292W Text data will be loaded at '20000'x in user area; user data may be overwritten.`

Step 2. Run PUT2PROD to re-save CMS

1. Log on as MAINT640.

```
logon maint640                                  The default password for MAINT640 is WD5JU8QP.
⋮
Ready; T=n.nn/n.nn hh:mm:ss
```

2. IPL CMS.

```
ipl cms
z/VM V6.4.0    yyyy-mm-dd hh:mm

 ENTER
Ready; T=n.nn/n.nn hh:mm:ss
```

3. Run PUT2PROD to re-save CMS.

```
put2prod savecms
VMFP2P2760I PUT2PROD processing started

⋮
VMFP2P2760I PUT2PROD processing completed successfully
Ready; T=n.nn/n.nn hh:mm:ss
```

4. Handle a nonzero return code. Base your action on the following table:

If you received . . .	Then . . .
Return code 4	• Issue VMFVIEW PUT2PROD. You can ignore any warning messages in the notes below. Take appropriate action based on other warning messages you receive.
A return code greater than 4	1. Issue VMFVIEW PUT2PROD and check for warning and error messages. 2. You can ignore any warning messages in the notes below. Take appropriate action based on other warning messages you receive. 3. Correct all errors reported in the error messages. 4. Issue IPL CMS. 5. Issue PUT2PROD. 6. If you receive a nonzero return code, repeat substep 4.

Note: You can ignore the following:

- `DMSDCS1083E Saved segment $$DMY$$ does not exist`
- `DMSWLG292W Text data will be loaded at '20000'x in user area; user data may be overwritten.`

Step 3. Shut down the new system

1. Shut down the system.

```
shutdown
SYSTEM SHUTDOWN STARTED

HCPWRP963I STARTING SHUTDOWN STEP ...... -  ......

⋮
HCPWRP963I STARTING SHUTDOWN STEP ...... -  ......

HCPWRP962I VM SHUTDOWN COMPLETED IN nn SEC
HCPWRP963I STARTING SHUTDOWN STEP SVADV - DEACTIVATE TERMINATION SAVE AREAS
HCPWRP961W SYSTEM SHUTDOWN COMPLETE
HCPGIR450W CP entered; disabled wait PSW 00020000 00000000 00000000 00000961
```

2. IPL CMS on your current system user ID.

```
ipl cms
z/VM V.r.m   yyyy-mm-dd hh:mm

 ENTER
Ready;
```

Step 4. Run MIGCLEAN

Run MIGCLEAN to establish your original minidisk and SFS environment.

If you receive any error messages during MIGCLEAN processing, look up the message in *z/VM: CP Messages and Codes*, take the appropriate action, and run the command again.

```
migclean
IUGMCL8392I MIGCLEAN EXEC ENDED SUCCESSFULLY
Ready;
```

Step 5. Access the current system software inventory disk

1. Link to the software inventory disk.

```
link maint 51d 51d rr
Ready; T=n.nn/n.nn hh:mm:ss
```

The default owner and disk address are MAINT and 51D. If your software inventory disk has a different user ID or address, substitute that user ID and address for MAINT and 51D respectively.

2. Define the current software inventory disk as address FFF.

```
define 51D FFF
DASD 0FFF DEFINED
Ready; T=n.nn/n.nn hh:mm:ss
```

If your software inventory disk has an address other than 51D, substitute that disk address for 51D.

Step 6. IPL the new z/VM system

1. Reset the virtual machine.

   ```
   system clear
   Storage cleared - system reset.
   ```

2. Make sure the z/VM system will recognize your terminal as a 3277, 3278, or 3279.

   ```
   terminal conmode 3270
   ```

3. Verify that you have 128 MB of virtual storage. If you have less than 128 MB of virtual storage, issue the DEFINE command to set your virtual storage to 128 MB.

   ```
   query virtual storage
   STORAGE = nnnnM

   define storage 128M
   STORAGE =   128M
   Storage cleared - system reset
   ```

4. Set the virtual machine mode to ESA.

   ```
   set machine esa
   ```

5. Query the console to determine the virtual console address (*consaddr*). This address is required in the next substep.

   ```
   query console
   CONS consaddr ON LDEV nnnn   TERM START
        consaddr CL T NOCONT NOHOLD COPY 001    READY FORM STDN
        consaddr TO userid   dev DIST nnnn      FLASHC 000 DEST OFF
        consaddr FLASH       CHAR       MDFY       0 FCB       LPP OFF
        consaddr 3270   NOEOF OPEN nnnn NOKEEP NOMSG NONAME
        consaddr SUBCHANNEL = nnnn
   ```

6. Define the console to virtual address 20.

   ```
   define consaddr 20
   CONS 0020 DEFINED
   ```

7. IPL the new z/VM system that was loaded to the system residence device (M01RES).

   ipl *dasdaddr* **clear**

   CLEAR is necessary. Do not omit it.

   dasdaddr
   Address of the system residence device (M01RES).

```
hh:mm:ss z/VM V6 R4.0, SERVICE LEVEL nnnn (64-BIT)

hh:mm:ss SYSTEM NUCLEUS CREATED ON yyyy-mm-dd AT hh:mm:ss, LOADED FROM lblres
hh:mm:ss
hh:mm:ss ************************************************************
hh:mm:ss * LICENSED MATERIALS - PROPERTY OF IBM*                      *
hh:mm:ss * 5741-A07 (C) COPYRIGHT IBM CORP. 1983, 2016. ALL RIGHTS    *
hh:mm:ss * RESERVED. US GOVERNMENT USERS RESTRICTED RIGHTS - USE      *
hh:mm:ss * DUPLICATION OR DISCLOSURE RESTRICTED BY GSA ADP SCHEDULE   *
hh:mm:ss * CONTRACT WITH IBM CORP.                                    *
hh:mm:ss *                                                           *
hh:mm:ss * * TRADEMARK OF INTERNATIONAL BUSINESS MACHINES            *
hh:mm:ss ************************************************************
hh:mm:ss
hh:mm:ss HCPZCO6718I Using parm disk 1 on volume lblres (device xxxx).
hh:mm:ss HCPZCO6718I Parm disk resides on cylinders xxx through xxx.
hh:mm:ss HCPMLM3016I Management by the Unified Resource Manager is not available for this system
```

You might receive an informational message, HCPISU951I, about volumes not mounted. If you are not using those volume labels, ignore this message.

Attention: If you received informational message HCPIIS954I, you have volumes with duplicate labels. You must correct this error before continuing.

To correct this error:

1. Make a note of the DASD addresses of the volumes with duplicate labels.
2. At the start prompt, issue SHUTDOWN.
3. Detach or relabel the volumes with duplicate labels that are not to be used.
4. IPL the system again. See substep 1 on page 123.

```
hh:mm:ss Start ((Warm|Force|COLD|CLEAN) (DRain) (DIsable) (NODIRect)
hh:mm:ss       (NOAUTOlog)) or (SHUTDOWN)
```

8. Start the system using FORCE DRAIN.

```
force drain
```

9. Do not set the TOD clock at this time. Enter **no** at the prompt.

```
NOW hh:mm:ss timezone weekday yyyy-mm-dd
Change TOD clock (yes|no)
no
```

CP logs on the primary system operator user ID (OPERATOR).

```
hh:mm:ss The directory on volume ZVMSVS at address nnnn has been brought online.
hh:mm:ss HCPCRC8082I Accounting records are accumulated for userid DISKACNT
```

10. Disconnect from the OPERATOR user ID.

disconnect
DISCONNECT AT *hh:mm:ss timezone weekday mm/dd/yy*

Press enter or clear key to continue

ENTER

Step 7. Run MIGR51D

1. Log on as MAINT640.

   ```
   logon maint640                                  The default password for MAINT640 is WD5JU8QP.
   .
   .
   .
   Ready; T=n.nn/n.nn hh:mm:ss
   ```

2. Create a backup copy of the your new system software inventory disk (default is 51D) using your site's normal backup procedures.
3. Attach the software inventory disk (defined on your current system user ID as FFF) from your current system.

   ```
   attach FFF *
   Ready; T=n.nn/n.nn hh:mm:ss
   ```

4. Access the software inventory FFF minidisk as file mode Z.

   ```
   access FFF z
   Ready; T=n.nn/n.nn hh:mm:ss
   ```

5. Access the new system 51D minidisk as file mode D.

   ```
   access 51D d
   Ready; T=n.nn/n.nn hh:mm:ss
   ```

6. Access the 493 minidisk as file mode W.

   ```
   access 493 w
   Ready; T=n.nn/n.nn hh:mm:ss
   ```

7. Run MIGR51D to update the system software inventory files.

   ```
   migr51d
   IUGMIX8478R Please enter filemode letter of the
               Software Inventory Disk (51D) from
               the previous release.  Press enter
               to Exit.
   z
   ```

   The VM Software Inventory Disk (51D) Product Migration panel is displayed.

```
           *** VM Software Inventory Disk (51D) Product Migration ***

Set action code AC to D = Do Not Migrate or to M = Migrate product.  Action
code I means product is already installed on new 51D and cannot be migrated.


AC Compname         Prodid   Status    Description
-- ---------------- -------- --------- --------------------------------
M  DITTO            5654029C NONE      DITTO/ESA VM 1.2.0

D                   5735NFSQ ENABLED

D  CMS              5VMCMS40 BUILT     CMS component for z/VM 5.4.0

D  CP               5VMCPR40 BUILT     CP component for z/VM 5.4.0

D  TCPIP            5VMTCP40 BUILT     TCP/IP LEVEL 540 - TCP/IP Feature

I  ICKDSF           5684042J BUILT     ICKDSF DEVICE SUPPORT FACILITIES
                                       R17 for CMS

                                                          Page 1 of 1

            PF1=HELP  PF3/PF12=Quit  PF5=Process  PF8=Forward
```

a. Enter an action code (AC) for each product listed. For information about the panel and action codes, press F1.

   Notes:

   1. This Product Migration panel is only a sample. Your panels will not list the same products, action codes, status, and description.
   2. Products that are preselected as **D** (Do Not Migrate) should not be changed.
   3. If a product is not supported on the new z/VM release, you should enter **D** (Do Not Migrate) for that product.
   4. Before you delete any product, you must determine whether any product that you intend to migrate is dependent on this product. You can use VMFINFO or VMFSIM SYSDEP to determine product dependencies.

b. Press F8 to select action codes for all Software Inventory Migration panels before continuing to the next step.
c. Press F5 to process the product migration information and display the Segment Migration panel. Depending on the size of your software inventory files, it may take several minutes to process.

```
          *** VM Software Inventory Disk (51D) Segment Migration ***

Set action code AC to D = Do Not Migrate or to M = Migrate segment. Action
code P means segment will be migrated due to product migration.  If ========
or ******** appears under Segname, enter a new name to change the segment
name upon migration ( ========  Must  be changed, ********  May  be changed ).

AC Segname        Prodid   Compname         Defparms         Bldparms
-- --------       -------- ---------------- ---------------- ----------------
D  CMSBAM   Old-> 5VMCMS40 CMS              B0D-B37 SR       PPF(ZVM
            New-> 6VMCMS40 CMS              B0D-B37 SR       PPF(SERVP2P
   ******** Mig-> 6VMCMS40 CMS              B0D-B37 SR       PPF(SERVP2P
D  CMSDOS   Old-> 5VMCMS40 CMS              B00-B0C SR       PPF(ZVM
            New-> 6VMCMS40 CMS              B00-B0C SR       PPF(SERVP2P
   ******** Mig-> 6VMCMS40 CMS              B00-B0C SR       PPF(SERVP2P
D  CMSFILES Old-> 5VMCMS40 CMS              1900-1BFF SR     PPF(ZVM
            New-> 6VMCMS40 CMS              1900-1BFF SR     PPF(SERVP2P
   ******** Mig-> 6VMCMS40 CMS              1900-1BFF SR     PPF(SERVP2P
D  CMSPIPES Old-> 5VMCMS40 CMS              1800-18FF SR     PPF(ZVM
            New-> 6VMCMS40 CMS              1800-18FF SR     PPF(SERVP2P
   ******** Mig-> 6VMCMS40 CMS              1800-18FF SR     PPF(SERVP2P
                                                            Page 1 of 4

             PF1=HELP  PF3/PF12=Quit  PF5=Process  PF8=Forward
```

d. Enter an action code for each segment listed. For information about the panel and action codes, press F1.

   This Segment Migration panel is only a sample. Your panels will not list the same segments, action codes, status, and description.

e. Press F8 to select action codes for all Software Inventory Segment Migration panels before continuing to the next step.

   Note: As of z/VM V6.3, segments HELPSEG and NLSAMENG have been deleted. You should *not* migrate these segments from your current system.

f. Press F5 to process. Depending on the size of your software inventory files, it may take several minutes to process.

8. Release the software inventory disk for your current system (attached as FFF and accessed as filemode Z.

   ```
   release z
   ```

9. MIGR51D updated the V6.4 VMSES/E system software inventory files on your new 51D minidisk to reflect the licensed products installed on your old system that you chose to migrate. You must now migrate all code, user IDs, minidisks, and segments associated with each licensed product reflected in the new system software inventory files. See the documentation for each licensed product for information on the code, user IDs, minidisks, and segments required.

   If the licensed product segments are built by VMSES/E, you must sign on to MAINT640 and enter the following to update some of the other segment files on the system software inventory disk:

   a. Issue VMFSGMAP.

      ```
      vmfsgmap segbld esasegs segblist
      ```

      At this time, you can make further changes to any segment.

   b. On the first panel, enter:

      ```
      segmerge
      ```

   c. Press F5 to save your changes and exit from VMFSGMAP.

The VMFSGMAP and SEGMERGE commands only need to be done once, from one user ID. At this point, the appropriate files on the system software inventory disk are updated.

Now you can use the VMFBLD command to build the licensed product segments from the corresponding licensed product installation user IDs. Follow the information in the licensed product program directories.

For example:

```
vmfbld ppf segbld esasegs segblist myseg (serviced
```

To rebuild the CMS segments, see the "Running stand-alone builds" chapter of *z/VM: Service Guide*.

For example:

```
put2prod segments all
```

Note: You need to rebuild all of the segments on the new system to update the SYSTEM SEGID file.

You have now completed the automated migration procedure. Continue on to "Step 8. Additional information" on page 130 for additional migration information.

Step 8. Additional information

Additional migration information that you should be aware of:

1. In addition to the customizable files that were moved from your current system to your new z/VM V6.4 system, some minidisks were migrated. When a minidisk is migrated, all of the files that exist on the minidisk on your current system that did *not* exist on the minidisk on your new system are copied to the minidisk on the new system. When these files are migrated, message VMFMGR1319W is included in the migration message log, $VMFMIG $MSGLOG.

   The following are general guidelines for disk migration:

   - Local and sample disks are migrated.
   - Help disks are not migrated.
   - Base disks are not migrated.
   - PARM disks (MAINTs CF1, CF2, CF3) are not migrated.
   - Apply and delta disks:
     - If the product on the new system is the same release as the current system (OSASF, ICKDSF), the apply and delta disks are migrated.
     - If the product on the new system is a different release than the current system (CP/DV, CMS/REXX, DIRMAINT, GCS, LE, PERFTK, RACF, RSCS, TCPIP, TSAF/AVS, VMHCD, VMSES), the apply and delta disks are not migrated.
   - DirMaint database disks are not migrated.
   - RACF database disks are not migrated.
2. Additional tasks must be performed after this procedure completes in order to migrate the following:
   - Parm disks
   - User directory
   - Networking and connectivity
   - Segments
   - Spool space
   - Security manager databases
   - Directory manager databases
   - Products and databases not preinstalled on the z/VM installation media
   - PROFILE EXEC (files on server machines such as AUTOLOG1 and AUTOLOG2).

   See *z/VM: Migration Guide* and product-specific Program Directories for additional information on migration.

Chapter 14. Preinstalled licensed products and features

Note: Some of the preinstalled product and features require additional installation steps. You must complete these steps for the product or feature to be completely installed.

The z/VM installation media was built incorporating the following licensed products and features.

Table 10. Preinstalled Licensed Products and Features

Product name	Release level	Program number	Is product or feature installed disabled or enabled?	Do I need to configure before using the product or feature?
Directory Maintenance Facility	6.4.0	5741-A07	Disabled[1]	Yes[2]
EREP	3.5.0	5654-260	Enabled	No
HCD and HCM for z/VM	6.4.0	5741-A07	Enabled	No[3]
ICKDSF	1.17.0	5684-042	Enabled	No
OSA/SF	4.4.0	5741-A07	Enabled	Yes[2]
Performance Toolkit for VM	6.4.0	5741-A07	Disabled[1]	Yes[2]
RACF Security Server for z/VM	6.4.0	5741-A07	Disabled[1]	Yes[2]
RSCS Networking for z/VM	6.4.0	5741-A07	Disabled[1]	Yes[2]
TCP/IP	6.4.0	5741-A07	Enabled	Yes[2]

Notes:

1. This product or feature is not available for customer use unless you have a license for it. To use this product or feature, you must order it as documented in the appropriate program directory.
2. To use this product or feature, it must be configured. For configuration information, see the appropriate program directory.
3. This product can be customized.

For detailed information about a product or feature, see its own documentation. See the "Bibliography" on page 345.

Directory Maintenance Facility

Directory Maintenance Facility provides support for all the z/VM directory statements. DirMaint also provides additional utilities to help manage minidisk assignments and allocations, and provides a level of security regarding command authorizations and password monitoring.

Installation Instructions: The installation of DirMaint is complete. To use DirMaint, it must be enabled and configured. See section "6.0 Installation Instructions" in Directory Maintenance Facility program directory.

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Environmental Record Editing and Printing Program

The Environmental Record Editing and Printing Program (EREP) is a diagnostic application program that runs under the MVS™, VM, and VSE operating systems. The purpose of EREP is to help IBM service representatives maintain your data processing installations.

Installation Instructions: No additional installation instructions are required.

Hardware Configuration Definition and Hardware Configuration Manager for z/VM

Hardware Configuration Definition and Hardware Configuration Manager for z/VM (HCD and HCM for z/VM) provides a comprehensive I/O configuration management environment, similar to that available with the z/OS® operating system.

HCM runs on a Microsoft Windows-based personal computer connected to the z/VM system through a TCP/IP network connection. HCM provides a graphical user interface as well as commands to help you configure your system. You supply the needed I/O configuration information to HCM, which processes the information and passes it to HCD.

HCD runs in a z/VM server virtual machine and performs the work of actually creating and changing the hardware and software aspects of your I/O configuration. While HCM provides the primary user interface to HCD, HCD also provides a backup user interface on your z/VM host for certain I/O configuration tasks, in case HCM is not available.

z/VM's original dynamic I/O configuration capabilities are still valid. These consist of a set of system operator commands for changing the IBM Z server's I/O configuration while the system continues to run, or for managing the hardware I/O configuration of all of the logical partitions in your IBM Z server. You now have the choice of either using these commands or else using HCM and HCD to manage your I/O configuration. Note, however, that the use of HCM and HCD is incompatible with the original dynamic I/O configuration capabilities. You should select one method to use for the duration of any given IPL of your z/VM system.

Installation Instructions: The installation of the HCD host code is complete. To **install** the workstation code (user interface) and customize HCD, see section “6.0 Installation Instructions” in the Hardware Configuration Definition and Hardware Configuration Manager program directory and follow the installation instructions.

Device Support Facilities (ICKDSF)

Device Support Facilities (ICKDSF) is a program you can use to perform functions needed for the installation, use, and maintenance of IBM DASD. You can also use it to perform service functions, error detection, and media maintenance.

Installation Instructions: No additional installation instructions are required.

Open Systems Adapter Support Facility

Open Systems Adapter Support Facility (OSA/SF) lets you customize the integrated Open Systems Adapter (OSA) hardware feature for the OSA modes, change the settable OSA port parameters, and obtain status about the OSA.

OSA/SF has a Java™-based interface, which is called the OSA/SF Graphical User Interface (OSA/SF GUI).

Through the System Authorization Facility (SAF) interface of the system image on which it is running, OSA/SF lets you use the RACF Security Server for z/VM (RACF), or equivalent, to authorize or deny access to OSA/SF commands.

Installation Instructions: The installation of the OSA/SF host code is complete. To **install** the workstation code (OSA/SF user interface) and configure OSA/SF, see section "6.0 Installation Instructions" in the Open Systems Adapter Support Facility program directory and follow the installation instructions.

Performance Toolkit for VM

Performance Toolkit for VM provides performance management capabilities for VM systems. It is a performance analysis tool for z/VM systems that can be used to detect and diagnose performance problems, analyze system performance, and provide printed reports that show the utilization and response times of key system components. You can also use Performance Toolkit for VM to improve operator efficiency and productivity.

Installation Instructions: The installation of Performance Toolkit for VM is complete. To use Performance Toolkit for VM, it must be enabled and configured. See section "6.0 Installation Instructions" in Performance Toolkit for VM program directory.

RACF Security Server for z/VM

RACF Security Server for z/VM (RACF) is a product that works together with the existing system features of z/VM to provide improved data security for an installation.

Installation Instructions: The installation of RACF is complete. To use RACF, it must be enabled and configured. See section "1.0 Introduction" in Resource Access Control Facility (RACF) Security Server program directory.

RACF database requirements:

- For z/VM non-Single System Image (SSI) installation, the primary and backup RACF databases were defined during the install.
- For z/VM SSI installation, you must *manually* define the primary and backup RACF databases as two 3390 full-pack minidisks. For SSI, it is required that the RACF database be shared between the members of an SSI cluster. See the Sharing RACF Databases in a z/VM Single System Image Cluster section of the *z/VM: RACF Security Server System Programmer's Guide*. See also *z/VM: CP Planning and Administration* for more information on DASD sharing.

Remote Spooling Communications Subsystem (RSCS) Networking for z/VM

Remote Spooling Communications Subsystem (RSCS) Networking for z/VM lets users send messages, files and mail to coworkers at other systems on their TCP/IP, SNA, or non-SNA network. They can also use RSCS to print documents and issue commands on other systems.

RSCS uses z/VM spooling facilities to store and retrieve data. RSCS can transfer data to other systems (such as z/VM, z/OS, OS/400®, VSE/ESA, UNIX, Linux on z Systems, and AIX/ESA®) that support Network Job Entry (NJE) protocols. NJE connectivity options include TCP/IP, SNA, ESCON, channel to channel, and Binary Synchronous Communication.

RSCS also supports secure data transfer between z/VM spool and a system that is a workstation that supports Remote Job Entry (RJE) or Multileaving RJE (MRJE) protocols. RJE/MRJE connectivity options include SNA, and Binary Synchronous Communication.

Preinstalled licensed products and features

RSCS provides the full range of all possible print service connectivity options. Instead of LPSERVE, the RSCS server may be chosen to provide an enhanced level of TCP/IP print support, including LPR and LPD. These services allow for intranet and internet print delivery for a system, and also accept print output from those networks. The ability to print data at a workstation printer in a transparent manner is available to end users regardless of how the printer is accessed.

The enhanced level of TCP/IP print support provided by RSCS (LPR, LPD, UFT, and TN3270E) may be used without obtaining a license for RSCS and enabling RSCS. All other RSCS features can only be used after obtaining a license and enabling RSCS.

Installation Instructions: The installation of RSCS is complete. To use RSCS, it must be enabled and configured. See section "6.0 Installation Instructions" in Remote Spooling Communications Subsystem (RSCS) Networking program directory.

Transmission Control Protocol/Internet Protocol for z/VM

Transmission Control Protocol/Internet Protocol for z/VM (TCP/IP) enables z/VM customers to participate in a multivendor, open networking environment using the TCP/IP protocol suite for communications and interoperability. The applications provided in TCP/IP include the ability to transfer files, send mail, log on a remote host, allow access from any other TCP/IP node in the network, and perform other network client and server functions.

Installation Instructions: The installation of TCP/IP is complete. To use TCP/IP, it must be configured. See section "6.0 Installation" in TCP/IP program directory for more information. If you used the IPWIZARD command to initially configure TCP/IP, additional modifications may be required depending on the needs of your installation.

Congratulations!

You have completed z/VM installation. Your system will need to be tailored and there are several planning and administration guides available to aid you. See "Bibliography" on page 345.

Return to the z/VM System Delivery Offering program directory when you are ready to install other licensed products.

Part 4. Upgrade installation

This part contains the procedures to be followed if you are upgrading either an z/VM V6.2 or z/VM 6.3 system or member of an SSI cluster to z/VM V6.4.

Attention: This procedure can only be used to upgrade from either z/VM V6.2 or z/VM 6.3. If you wish to migrate from z/VM V5.4, you must use Part 2, "Traditional installation," on page 5 to install a z/VM V6.4 system and then follow the migration procedures in Part 3, "Post traditional system installation," on page 81, referring to the *z/VM: Migration Guide*, as necessary.

In this part, you will:

- Plan your upgrade installation.
- Complete the upgrade installation worksheets.
- Install the z/VM V6.4 work system.
- Upgrade your current system to V6.4.

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Chapter 15. Upgrade installation overview

An upgrade installation is used to upgrade a z/VM V6.2 or z/VM V6.3 system or a member of an SSI cluster to z/VM V6.4.

In a *traditional installation*, a new z/VM release system is installed on a separate set of volumes, after which the data and users from the current running system are migrated to the newly-installed system running the new release.

In an *upgrade installation*, a work system is installed as a second-level guest of the system that you want to upgrade. The new level of code from the work system is then moved to the system that is being upgraded.

The system to be upgraded can be a non-SSI system, the only member of a single-member SSI cluster, or any member of a multimember SSI cluster.

In a multimember SSI cluster, you will upgrade one member at a time so that there is minimal impact to the other members. Note that you must complete the upgrade for one member before starting the upgrade of the next member.

Restrictions on using the upgrade installation procedure:

- Upgrading from a mixed-release SSI cluster is not allowed. Before beginning the upgrade of a multimember SSI cluster, all members must be running the same release level.
- After one member of the SSI cluster has been upgraded to the new release, no member can be upgraded to a previous release level. For example, if you have a 3-member SSI with all members running z/VM 6.2.0, after you upgrade one member to z/VM 6.4.0, you cannot then upgrade another member to z/VM 6.3.0.

Furthermore, this procedure cannot be used if any of the following changes were made to the system that is to be upgraded:

- The format of the user directory shipped by IBM was changed by replacing identity/subconfig definitions with user entries.
- IBM-supplied USER or IDENTITY names were changed or deleted.
- IBM-supplied minidisk addresses were changed or deleted.
- IBM-supplied minidisks were moved under different user IDs or moved from the subconfig section to the identity section of the user ID.
- The default values in the VMSESE PROFILE file or the VMFINS DEFAULTS file were changed.

Note: The list of IBM-supplied user IDs can be found in Appendix M, "IBM-supplied user IDs with upgrade restrictions," on page 285.

An upgrade installation is performed using a 2-stage approach, with two separate sets of changes being defined and then made to the system that is being upgraded. The first set of changes, STAGE1, can be made to the system that is being upgraded without disrupting your production workload, other than restarting the IBM-supplied filepools.

After the STAGE1 changes are made, you must stop all normal production work on the system that is being upgraded or move that workload to another system. In an SSI cluster environment, you can relocate production Linux on z Systems workloads from the system that is being upgraded to other members of your cluster before performing STAGE2 activities.

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Upgrade installation overview

After you have relocated or stopped your workloads, you should create a backup of the system you are upgrading, using your normal backup procedures. You will then be ready to proceed to STAGE2.

When the STAGE2 changes are complete, you will IPL the upgraded system with the new level of z/VM and restart your normal workloads.

The overall workflow of an upgrade installation is as follows:

- **Plan your upgrade installation** for this system and complete the upgrade installation worksheets.
- **Install a z/VM V6.4 work system** for your upgrade installation. Run INSTPLAN, verify your upgrade installation volumes, and then run INSTALL.
- **Create a backup** of the system that is to be upgraded, following your normal backup procedures.
- **Generate the STAGE1 changes file.** Run INSTUPGR with the STAGE1 operand and the PRIME option to create a file containing the specific STAGE1 changes to be made to the system or member that is being upgraded.
- **Make the STAGE1 changes.** Run INSTUPGR with the STAGE1 operand and the COMMIT option to update the system or member that is being upgraded with the changes identified previously. Note that you have the option to complete these changes manually. The VMPSFS, VMSYS, VMSYSU, and VMSYSR servers will be recycled during the STAGE1 commit process.
- **Finish the STAGE1 upgrade.** Before running STAGE2, you will need to review security manager and user directory considerations. If you have any local modifications to components that are upgraded to the new release, you will also need to rework them.
- **Back up the system** that is being upgraded. At this point, all production work running on the system or member that is being upgraded must be stopped or relocated to another member of your cluster and a backup of the system that you are upgrading must be created.
- **Generate the STAGE2 changes file.** Run INSTUPGR with the STAGE2 operand and the PRIME option to create a file containing the specific STAGE2 changes to be made to the system or member that is being upgraded.
- **Make the STAGE2 changes.** Run INSTUPGR with the STAGE2 operand and the COMMIT option to update the system or member that is being upgraded with the STAGE2 changes identified previously. Note that, as with the STAGE1 changes, you have the option to complete these changes manually.
- **Finish the upgrade of your system.** To complete the upgrade, you will review updates and considerations, IPL your upgraded system or member, migrate LPs, and perform manual updates.
- **Resume your normal production work.**

If you are upgrading a single system or a single-member SSI cluster, you are done.

If you have additional members in an SSI cluster to upgrade, when you are ready, repeat the process outlined previously, starting with Chapter 16, “Plan your upgrade installation,” on page 139, for each additional member. z/VM supports running multiple levels of z/VM in one cluster, so you can run the new level of VM on one member until you are satisfied. When you are ready, you can upgrade the next member.

When all members of your cluster have been upgraded to the new level of z/VM, follow the procedure in Chapter 26, “Remove the obsolete release,” on page 241.

Chapter 16. Plan your upgrade installation

In this chapter, you will:

- Plan your upgrade installation.
- Complete the upgrade installation worksheets.

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Step 1. Select your upgrade installation source

1. The z/VM 6.4.0 product was obtained by ordering electronic delivery or by ordering physical DVDs.
   - If your z/VM product was obtained through electronic delivery:
     - You must follow the instructions that accompanied the deliverable to do one of the following before starting your upgrade installation:
       - Create two physical DVDs, one that contains the product and one that contains the RSU.
       - Load the product and the RSU deliverables into the same FTP server directory.
   - If your z/VM product was obtained on physical DVDs:

     Make sure you have the z/VM product DVD and the installation RSU DVD.
2. An upgrade installation can be done from one of the following sources:
   - A physical DVD mounted in a DVD drive connected through an FTP server (referred to as "From a DVD Drive").
   - An FTP server that has access to a directory where the files from the the physical DVDs or electronic deliverable have been or will be stored (referred to as "From an FTP Server").
   - A CMS-formatted minidisk (referred to as "From a VM Minidisk") where the files will be uploaded from the physical DVDs or the FTP server. This CMS-formatted minidisk must be accessible by the installation user ID MIGMAINT.
3. Select your upgrade installation source, keeping in mind the following requirements:
   - If installing from a physical DVD mounted in a DVD drive connected through an FTP server:
     - The FTP server must comply with RFC 959 and RFC 1123.
     - The z/VM FTP installation procedure complies with the FTP client protocol standards described in RFC 959 and RFC 1123. Passive FTP data transfers are used in order to minimize the effects of intervening firewall systems, so your FTP server must support the PASV command.
     - The FTP server must have a TCP/IP communication path to the system you are upgrading.
     - The FTP server must be able to access the DVD drive.
   - If installing from an FTP server that has access to a directory where the files from the physical DVDs or electronic deliverables have been stored:
     - The FTP server must comply with RFC 959 and RFC 1123.
     - The z/VM FTP installation procedure complies with the FTP client protocol standards described in RFC 959 and RFC 1123. Passive FTP data transfers are used in order to minimize the effects of intervening firewall systems, so your FTP server must support the PASV command.
     - The FTP server must have a TCP/IP communication path to the system you are upgrading.
     - The FTP server must be able to access the directory where the contents of the DVDs will be stored.
     - The contents of the z/VM product DVD and the installation RSU DVD must be stored in the same directory.
     - There must be at least 4 GB of available space to store the contents of the z/VM product DVD and the installation RSU DVD.
   - If installing from a CMS-formatted minidisk where the contents of the physical DVD or electronic deliverable will be uploaded:
     - The CMS-formatted minidisk must be the equivalent of at least 6000 cylinders of 3390 DASD space.
     - You must be able to write to the CMS-formatted minidisk to load the files.
     - If you are performing multiple upgrades, you can load the image files to the minidisk once and use those image files for all upgrades. The minidisk must be shared across the systems you are upgrading. For each upgrade, you must install a new work system.
     - This CMS-formatted minidisk must be accessible by the installation user ID MIGMAINT.

Step 2. Review the requirements for using the upgrade procedure

Before performing the z/VM V6.4 upgrade procedure, you must review the following information and make sure all requirements are satisfied.

1. Hardware requirements:
   - A processor supported by the release of z/VM that is running first level and by the release of z/VM that is being installed second level. For a list of processors supported by z/VM, see *z/VM: General Information*.
   - Access to a local non-SNA 3270 terminal, or equivalent, configured with at least 32 lines.
2. System software requirements:
   - z/VM V6.2 or V6.3 running in the LPAR you are upgrading.
   - You must make sure you have the appropriate licenses for z/VM V6.4 and for all of the optional features that are enabled in your z/VM V6.2 or V6.3 environment before you upgrade your system. You will be required to verify that you have the licenses needed during upgrade installation processing for:
     – Directory Maintenance Facility (DirMaint).
     – Performance Toolkit for z/VM (PERFTK).
     – RACF Security Server for z/VM (RACF).
     – RSCS Networking for z/VM (RSCS).
     – IBM z/VM Single System Image Feature (SSI).
   - Language Environment (LE): The level of LE on z/VM V6.2 and V6.3 is LE 6.2.0. The LE 6.2.0 APAR VM65718 (PTF UM34668) must be applied to your system before starting the upgrade. PTF UM34668 can be found on the 6306 RSU; however, the PTF is not on a 620 RSU. To verify that the APAR is installed on your system:

     Log on to MAINT*vrm* and enter the following command:

     ```
     SERVICE LE STATUS VM65718
     ```
   - DirMaint (DIRM): If upgrading from z/VM V6.2 and you are running DirMaint, the DirMaint APAR VM65297 (PTF UV61200) must be applied to your system before starting the upgrade. This PTF is on the 6205 RSU. To verify that the APAR is installed on your system:

     Log on to MAINT*vrm* and enter the following command:

     ```
     SERVICE DIRM STATUS VM65297
     ```
   - RACF/VM: The 640 level of RACF/VM contains a new level of the RACF database template. Before you begin your upgrade, you should verify that your existing RACF database does not contain any corruption. The process for doing this can be found on the z/VM Security and Integrity Resources web page (www.vm.ibm.com/security) in a white paper entitled "Validating and Repairing RACF Database Integrity on z/VM".
3. System requirements:
   - If upgrading a multimember SSI:
     – There must be a shared source for the user directory file.
     – There must be a shared SYSTEM CONFIG file for all members of the cluster.
4. MIGMAINT user ID requirements:
   - You must complete the upgrade installation from the MIGMAINT user ID logged on to the system/member you are upgrading.

     Note: The default MIGMAINT user ID defined with z/VM V6.2 or V6.3 meets all of the requirements defined in this substep.
     The MIGMAINT user ID requirements are:
     – Privilege classes of at least B and G.
     – Authority to issue the DEFINE MDISK command.

- The default privilege class for this command is class A and the directory entry for MIGMAINT must include DEVMAINT on the OPTION statement.

– Administrator authority for the VMSYS, VMPSFS, and VMSYSU filepools.
– Access to the INSTPIPE MODULE that was shipped with your current release of z/VM. The module was shipped on the MAINTvrm 4CC minidisk.
– At least 256 MB of virtual storage.
– A 191 read/write minidisk accessed as file mode A.
– A 2222 read/write minidisk, matching the installation DASD type (3390 or FBA) of the system you are upgrading, that is exactly:
  - 10 cylinders (3390).
  - 14400 512-KB blocks (FBA).
– A 24CC read/write minidisk, matching the installation DASD type (3390 or FBA) of the system you are upgrading. This minidisk cannot be defined on a temporary disk and must be exactly:
  - 10 cylinders (3390).
  - 14400 512-KB blocks (FBA).

- A 2CF0 read/write minidisk, matching the installation DASD type (3390 or FBA) of the system you are upgrading. This minidisk cannot be defined on a temporary disk and must be exactly:
  - 120 cylinders (3390).
  - 172800 512-KB blocks (FBA).

5. Conditional requirements for the MIGMAINT user ID:
   • If you will install your work system using a CMS-formatted minidisk (referred to as "From a VM Minidisk"):
     – MIGMAINT will need to be able to access the CMS-formatted minidisk where the installation files are or will be loaded. If you will be loading the files to the minidisk from MIGMAINT, MIGMAINT must have read/write access to the minidisk.
   • If you are using a directory manager program, such as DirMaint:
     – MIGMAINT must be authorized to issue directory manager commands on behalf of other users without the need to supply a password.
     – Refer to your directory manager documentation for additional requirements.
       - If you are using DirMaint, review the upgrade requirements in the Program Directory for Directory Maintenance Facility for z/VM function level 640, Appendix C.
   • If you are using a security manager program, such as RACF:
     – MIGMAINT must be authorized to link to any minidisk in write mode on the system without the need to supply a password (by specifying ATTRIBUTE=OPERATIONS in the RACF profile for MIGMAINT, for example).
     – Refer to your security manager documentation for additional requirements.
   • If the system being upgraded has products loaded to the VMPSFS filepool and you are upgrading a non-SSI, a one-member SSI, or the first member of a multimember SSI:
     – MIGMAINT needs a 2191 read/write minidisk, which:
       - Must be formatted with 4K blocks.
       - Cannot be defined on a temporary disk.
       - Has enough free space to hold all required SFS files from the work system. The amount of space needed on the 2191 minidisk is determined by which products you have installed to the VMPSFS filepool.
     – Calculate the size needed for the 2191 minidisk, using the following table. Total the number of cylinders or FBA blocks needed for all of the products that the system being upgraded has loaded to the filepool.
     – Make a note of the disk size needed.

Product	3390 cylinders needed	FBA blocks needed
VM	1167	1680480
OSA	0	0
PERFTK	26	37440
VMHCD	417	600480
RACF	78	112320
DIRM	32	46080
RSCS	46	66240
ICKDSF	0	0
TCPIP	206	296640

- Using your normal directory update procedures, define a 2191 minidisk for MIGMAINT that is the size in cylinders or FBA blocks noted previously.

Step 3. Review the DASD requirements

1. For upgrade installation purposes, there are three kinds of DASD volumes: COMMON, RELEASE, and MEMBER.
   - COMMON volumes:
     - A set of volumes shared across an entire SSI cluster. The COMMON volumes that were defined when you installed z/VM have default labels of VMCOM1 and VMCOM2. You might have added additional COMMON (shared) volumes to your cluster.
   - RELEASE volumes:
     - A set of shared volumes for each release of z/VM on your system or in your cluster.
     - Each release of z/VM has its own set of volumes.
     - The default labels for RELEASE volumes are *vrm*RL1, *vrm*RL2 and *vrm*RL3, where *vrm* is the release level for a specific set of volumes (620, 630, or 640, for example).
     - When upgrading to a new release, a new set of RELEASE volumes will be added to your system or SSI cluster.
   - MEMBER volumes:
     - One set of system volumes for each member, some of which are shared with other members in an SSI cluster.
     - This set of volumes consists of:
       - A system residence volume.
         - The default volume label is M0*m*RES, where *m* is the number of the member in the member list on the SSI configuration statement (M01RES for member 1, for example). This volume contains member-specific data such as the warm start and checkpoint areas, the object directory, and member-specific minidisks, and is not shared in an SSI cluster.
       - If the system residence volume is not large enough to contain all of the system/member specific minidisks, more MEMBER volumes are required.
         - The default volume labels are M0*m*W0*n*, where *m* is the number of the member and *n* is the number of the volume (M01W01 and M01W02, for example). These volumes are not shared in an SSI cluster.
       - Volumes that contain paging space:
         - The CP-owned volumes for paging space are also member- specific and nonshared.
         - The default volume labels are M0*m*P*nn* (M01P01 for member 1 and M02P01 for member 2, for example).
       - Volumes that contain spool space:
         - The spool volumes owned by each member are shared with the other members.
         - The default volume labels are M0*m*S*nn* (M01S01 for member 1 and M02S01 for member 2, for example).
2. Upgrade installation requires DASD volumes to install a work system. During the upgrade of a non-SSI, a one-member SSI, or the first member of a multimember SSI, the new RELEASE volumes created on the work system will be added to the system that is being upgraded. All DASD volumes that are used to install the work system, except for these RELEASE volumes, will no longer be needed after the upgrade is complete.
3. When upgrading the first member of a multimember SSI, the DASD volumes that will be used as the release volumes for your work system should be volumes that can be attached to all members of your cluster. After the upgrade of the first member of a cluster is complete, the release volumes become permanent volumes in your cluster and should not be reused.
   - If any members of your cluster are running as a second-level guest, you should use MDISK statements with the DEVNO option in the user directory definitions to attach the DASD volumes to all members of your cluster in write mode at the end of your upgrade. See *z/VM: CP Planning and Administration* for more information about the MDISK statement in the user directory.

4. DASD volumes needed to install work systems:
   - For each system you are upgrading, you will need DASD volumes to install a work system. The DASD type (3390 or FBA) must match the installation DASD type of the system you are upgrading.
   - The number of FBA DASD volumes needed to install the work system:
     - If volume size is equal to or greater than 9.7 GB:
       - Five volumes are needed.
       - One volume is the permanent release volume.
       - The other 4 volumes are temporary.
     - If volume size is less than 9.7 GB:
       - Six volumes are needed.
       - One volume is the permanent release volume.
       - The other 5 volumes are temporary.
     - Note that z/VM installation supports only emulated FBA on SCSI volumes. Real FBA volumes are not supported.
   - The number of 3390 DASD volumes needed for each work system:
     - For non-SSI or one-member SSI
       - 3390 Mod 3
         - Eleven volumes are needed if all products were loaded to minidisk.
         - Three volumes are the permanent release volumes.
         - The other 8 volumes are temporary.

         Note: If products were loaded to SFS, you might need fewer volumes. The exact number of volumes needed will be calculated in "Upgrade installation worksheets" on page 159.
       - 3390 Mod 9
         - Six volumes are needed.
         - One volume is the permanent release volume.
         - The other 5 volumes are temporary.
       - 3390 Mod 27
         - Five volumes are needed.
         - One volume is the permanent release volume.
         - The other 4 volumes are temporary.
     - For multimember SSI - reuse some work system volumes:

       When upgrading a multimember SSI, most of the DASD volumes used to install the work system for the first system upgraded can be reused. The following numbers reflect reuse of the volumes.

       Warning: The release volumes created when the first member is upgraded *cannot* be reused. These permanent volumes will be attached to all of the systems that are being upgraded.
       - 3390 Mod 3
         - Fourteen volumes are needed if all products were loaded to minidisk.
         - Three volumes are the permanent release volumes.
         - The other 11 volumes are temporary.

         Note: If products were loaded to SFS, you might need fewer volumes.
       - 3390 Mod 9
         - Seven volumes are needed.
         - One volume is the permanent release volume.

- The other 6 volumes are temporary.
- 3390 Mod 27
  - Six volumes are needed.
  - One volume is the permanent release volume.
  - The other 5 volumes are temporary.

5. DASD space needed on the system being upgraded:
   - DASD space is also required for new and changed minidisks that do not reside on the RELEASE volumes. This space must be defined on volumes that are attached to the system being upgraded.
   - On each system you are upgrading, you will need space on one or more MEMBER volumes. These volumes should be attached to the system you are upgrading before you begin your upgrade. Part of this space includes a large amount of contiguous free space, as follows:
     – For each 3390 system you are upgrading, for part of the MEMBER volume space, you will need one MEMBER volume on the system being upgraded that contains at least 6677 cylinders of contiguous free space.
     – For each FBA system you are upgrading, for part of the MEMBER volume space, you will need one MEMBER volume on the system being upgraded that contains at least 9614880 FB-512 blocks of contiguous free space.
   - When upgrading a non-SSI, a one-member SSI, or the first member of a multimember SSI, space is also needed on a COMMON volume. This volume should be attached to the system you are upgrading before you begin your upgrade.
   - The total space needed on the MEMBER and COMMON volumes that belong to the system being upgraded will be calculated in “Upgrade installation worksheets” on page 159.

Step 4. Update the system before you start the upgrade process

Before performing the z/VM V6.4 upgrade installation, you must review the following information and make any required updates.

1. Review the following topics at z/VM Installation Resources (www.vm.ibm.com/install) for current information affecting installation:
   - Important z/VM Installation News
   - z/VM Installation Tips
   - Preventative Service Planning (PSP) bucket for z/VM 640 installation
2. The IDENTIFY command must return the system name that matches the system you are upgrading. The IDENTIFY command gets the system name from the SYSTEM NETID file, if the SYSTEM NETID file contains a system name; otherwise, it uses the system name in the SYSTEM CONFIG file.
3. Verify that the VMSES/E control files contain correct system information. The system name returned by the IDENTIFY command must match the system name contained in the following VMSES/E files found on the system to be upgraded:
   - VM SYSSUF file, found on the MAINT*vrm* 51D minidisk
     - In the VM SYSSUF file, verify that the system name (or one of the system names in a multimember SSI) on each :PRODLEV tag matches the system name returned by the IDENTIFY command. If the names do not match or the name is missing on any of the :PRODLEV tags for any of the components, contact IBM service for assistance in correcting this information.
   - VM SYSPINV file, found on the PMAINT 41D minidisk
     - In the VM SYSPINV file, verify that the system name (or one of the system names in a multimember SSI) on each :SYSTEM tag matches the system name returned by the IDENTIFY command. If the names do not match or the name is missing on any of the :SYSTEM tags for any of the components, contact IBM service for assistance in correcting this information.
4. Complete any SERVICE processing, PUT2PROD processing, or both that has been started for this system before upgrading. If upgrading a multimember SSI, complete all SERVICE and PUT2PROD processing that has been started for all members of the SSI cluster. Do not start any new service until the upgrade is complete.
5. If upgrading a non-SSI, a one-member SSI, or the first member of a multimember SSI, the upgrade installation will add the following user IDs to the system. If you have any of these user IDs already defined on your system, you must rename them:
   - MAINT640
   - 6VMPTK40
   - 6VMRAC40
   - 6VMRSC40
   - 6VMTCP40
   - 6VMDIR40
   - 6VMHCD40
   - OPNCLOUD
   - DTCVSW3
   - DTCVSW4
6. If upgrading a non-SSI, a one-member SSI, or the first member of a multimember SSI, and your system being upgraded has products loaded to the VMPSFS filepool:
   - The VMPSFS filepool needs free space to hold the new release files.
     - Determine how much space is available in storage group 1 and storage group 2 for the VMPSFS filepool, by doing the following:
       - QUERY FILEPOOL STORGRP VMPSFS
       - **Storage group 1**

- Make sure storage group 1 for VMPSFS has enough free space to hold the additional index records for the new data that is being added to VMPSFS. If you are using more than 40% of the space in storage group 1, you should add an additional 50-cylinder minidisk (for FBA, 72000 512 blocks) to storage group 1.

- **Storage group 2**
  - The amount of free space needed in storage group 2 is determined by which products you have installed to the VMPSFS filepool. To calculate the amount of free space needed in the VMPSFS filepool, use the following table. Total the 4K blocks needed for all of the products that the system being upgraded has loaded to the filepool.
  - Make a note of the number of free 4K blocks needed in storage group 2.

Product	4K blocks needed
VM	320000
OSA	0
PERFTK	22000
VMHCD	90000
RACF	42000
DIRM	17000
RSCS	16000
ICKDSF	0
TCPIP	65000

  - If more space is needed in storage group 2, follow the procedures in *z/VM: CMS File Pool Planning, Administration, and Operation* to add additional space to the VMPSFS filepool.

7. Complete any directory manager tasks.
   - If you are *not* using a directory manager program:
     – INSTUPGR will remove sequence numbers from the directory, if they exist.
   - If you *are* using a directory manager program:
     – Check with your software vendor to determine whether your directory manager program provides the upgrade installation exit required for upgrade installation.
       - DirMaint supplies an installation upgrade exit that is shipped with the z/VM product. No installation of the exit program is needed.
       - CA VM:Director supplies an installation upgrade exit. Refer to the product documentation for CA VM:Director for information about installing the upgrade exit.
       - If your directory manager program supplies an installation upgrade exit, refer to the program's documentation for program-specific requirements to use the exit provided.
         - For installation upgrade requirements related to DirMaint, review Appendix C of the *Program Directory for Directory Maintenance Facility for z/VM function level 640*.
         - For installation upgrade requirements related to CA VM:Director, refer to the Administrators section of the CA VM:Director wiki.
       - If your directory manager program does *not* supply an installation upgrade exit, you will need to perform one of the following tasks:
         a. Make the required directory changes yourself during STAGE1 and STAGE2 commit processing.

b. Suspend your directory manager temporarily and create a CP user directory file that the upgrade procedure can update with the xedit option.

– Directory changes must be made available (or put online) to all systems immediately.

– If your directory manager has minidisk password checking enabled, you might need to disable it during the upgrade because user IDs will be added to the directory that might have minidisk passwords that are considered trivial.

– If you are using DirMaint as your directory manager, you must have DATAMOV* servers configured and available.

– If upgrading a non-SSI, a one-member SSI, or the first member of a multimember SSI:

- The DASD volumes you will use for the release volumes when installing the work system must be included in the control files that define the DASD pool available to the directory manager. If possible, this should be done before you begin your upgrade. The default labels for these volumes are:
  - 640RL1
  - 640RL2
  - 640RL3
- The appropriate directory manager control files must be configured so that the directory manager will ignore fullpack minidisk definitions for user IDs MAINT, PMAINT, MAINT620, MAINT630, MAINT640, SYSDUMP1, SYSDMP-1, SYSDMP-2, SYSDMP-3, and SYSDMP-4.

8. If you are using an external security manager (ESM) program (such as RACF):
   - Make sure the MIGMAINT user ID is authorized to perform security authorizations on behalf of other users.
   - If you are managing SFS with your security manager, MIGMAINT must be authorized to perform all SFS administration functions.
   - If your external security manager has minidisk password checking enabled, you might need to disable it during the upgrade because user IDs will be added to the directory that might have minidisk passwords that are considered trivial.

Step 5. Complete upgrade installation worksheet 1

1. Print or copy the upgrade installation worksheets (Table 13 on page 160 through Table 17 on page 161).
2. If you are installing from a physical DVD or an FTP server directory, record the path information required to access the DVD drive or FTP directory on upgrade installation worksheet 1 (Table 13 on page 160):
   a. The IP address or host name of the FTP server.
   b. The user ID and password of the FTP server.
   c. The DVD or FTP directory path name for the FTP server.
3. If you are installing from a VM minidisk, on upgrade installation worksheet 1 (Table 13 on page 160), record the VM user ID and address of the VM minidisk where contents of the z/VM product DVD and the installation RSU DVD will be uploaded.

Step 6. Complete upgrade installation worksheet 2

1. Determine the file name, file type, and location of the system configuration file for the system that is being upgraded.

   Note: The default file name and location of the system configuration file are:
   - Name: SYSTEM CONFIG
   - User ID: PMAINT
   - Minidisk: CF0
   - Record the file name and file type of your system configuration file on upgrade installation worksheet 2 (Table 14 on page 160).
   - Record the user ID that owns the minidisk and the minidisk address where the file is located on upgrade installation worksheet 2 (Table 14 on page 160).
2. Determine how the upgrade installation procedure will update the CP user directory.
   a. If you do *not* use a directory manager program to update your CP user directory and instead edit your CP user directory file manually (XEDIT):
      - Record YES on the "Do you edit your CP directory file manually?" line on upgrade installation worksheet 2 (Table 14 on page 160) and skip to substep 3.

   b. If you use a directory manager program that supplies an installation upgrade exit:
      - Record NO on the "Do you edit your CP directory file manually?" line on upgrade installation worksheet 2 (Table 14 on page 160).

   c. If you use a directory manager program that does *not* supply an installation upgrade exit, you will need to perform one of the following tasks:
      1) Use your directory manager to make the directory changes yourself during commit processing.
         - Record NO on the "Do you edit your CP directory file manually?" line on upgrade installation worksheet 2 (Table 14 on page 160).

      2) Create a CP user directory file that can be updated with the xedit option.
         - Record YES in the "Do you edit your CP directory file manually?" line on upgrade installation worksheet 2 (Table 14 on page 160).
         - To create a CP user directory file:
           – Disable the directory manager program so that no updates can be made to the directory.
           – Use your directory manager procedure to create a CMS file that contains the directory (such as USER DIRECT) on a minidisk that is available to MIGMAINT in write mode (such as PMAINT 2CC).
           – The directory file (such as USER DIRECT) must have all of the subconfigs directly following the IDENTITY sections and before any other user or identity starts.
           – No updates can be made to the directory until upgrade is complete.
           – After the upgrade is completed, use your directory manager procedure to replace the updated directory in your directory manager database.
3. If you recorded YES on the "Do you edit your CP directory file manually?" line on upgrade installation worksheet 2 (Table 14 on page 160):
   - Determine the file name and file type of your user directory file, the minidisk address where it is located, and the user ID that owns the minidisk.

     Note: The default file name and location of the user directory file are:
     – Name: USER DIRECT
     – User ID: PMAINT
     – Minidisk: 2CC

Complete upgrade installation worksheet 2

- Record the CP directory file information on upgrade installation worksheet 2 (Table 14 on page 160).

4. Determine whether you are running a security manager other than RACF on your system. Record YES or NO on upgrade installation worksheet 2 (Table 14 on page 160).
5. Select the DASD type you will use to install your z/VM work system.
   - The DASD type (3390 or FBA) must match the installation DASD type of the system you are upgrading.
6. Select the DASD model or size you will use to install your z/VM work system.
   - The DASD model and size do not have to match the size of the installation DASD on the system you are upgrading.
     - If you are using 3390, on the "3390 DASD Model" line:
       - Record Mod 3 if your DASD contains 3339 - 10016 cylinders.
       - Record Mod 9 if your DASD contains 10017 - 32759 cylinders.
       - Record Mod 27 if your DASD contains 32760 or more cylinders.
     - If you are using FBA (SCSI):
       - Record the size on the "SCSI volume size" line. The size of the volumes must be at least 6.0 GB.

       Note: All FBA volumes must be at least the size recorded on the "SCSI volume size" line.

Step 7. Complete upgrade installation worksheet 3

If you are installing your z/VM work system to FBA DASD, skip to "Step 8. Complete upgrade installation worksheet 4" on page 155.

If you are installing your z/VM work system to 3390 DASD, determine the number of volumes required to install a single work system and record that information on upgrade installation worksheet 3 (Table 15 on page 160):

1. If you choose:
   - 3390 Model 3:
     - If the system being upgraded has all products loaded to minidisk, you will need 11 volumes.
     - If the system being upgraded has all products loaded to the filepool, you will need 9 volumes. You will not need:

       `RELVOL2 xxxRL2`
       `RELVOL3 xxxRL3`
     - If the system being upgraded has some products loaded to minidisk and some products loaded to the filepool, you will need 9 to 11 volumes. Using the following table, total the cylinders for all of the products that are loaded to the filepool.
       - If the number of cylinders for products loaded to the filepool total 1110 - 4417 cylinders, you will need 10 volumes. You will not need:

         `RELVOL3 xxxRL3`
       - If the products you selected total 4418 or more cylinders, you will need 9 volumes. You will not need:

         `RELVOL2 xxxRL2`
         `RELVOL3 xxxRL3`

Product	Cylinders
VM	2129
OSA	0
PERFTK	121
VMHCD	1379
RACF	182
DIRM	0
RSCS	94
ICKDSF	0
TCPIP	749

   - 3390 Model 9:
     - You will need the following 6 volumes:

       ```
       COMMON  IBMCM1
       RELVOL  xxxRL1
       RES     IBMRES
       SPOOL   IBMS01
       PAGE    IBMP01
       MEMBER  IBMWK1
       ```
   - 3390 Model 27:

– You will need the following 5 volumes:

```
COMMON  IBMCM1
RELVOL  xxxRL1
RES     IBMRES
SPOOL   IBMS01
PAGE    IBMP01
```

2. Record the address for each 3390 volume required in the Address column on the upgrade installation worksheet 3 (Table 15 on page 160). If you are changing any of the default installation labels, record the new labels in the New Label column. Disregard any spaces in the worksheet for volumes that you do not need. Note that you must not use any of IBM's default volume labels for a volume other than the volume for which it is originally defined.
   - Volume labels must be 1 to 6 alphanumeric characters.

   Notes:

   a. If you are upgrading a non-SSI, a one-member SSI, or the first member of a multimember SSI, the volumes where the new release code is installed on your z/VM work system (default labels 640RL1, 640RL2, and 640RL3) will be added to the system that is being upgraded. You should choose labels for these volumes that adhere to any local policies for volume labels for your organization. All other volumes used for the work system (COMMON, RES, SPOOL, PAGE, and MEMBER) can be returned to your DASD pool after the upgrade installation of this system is complete.
   b. In a multimember SSI cluster, only the first member upgraded to V6.4 will add the release volumes to the system that is being upgraded. For subsequent members, you need to specify DASD addresses for the release volumes that are not the release volumes you used for your first member. These new DASDs will be formatted and used to install a work system, but they will not be added to the system that is being upgraded. The default labels displayed on the INSTPLAN panel will be IBMRL1, IBMRL2, and IBMRL3.
   c. In a multimember SSI cluster, when upgrading the second, third or fourth member, the release volumes used in the first member upgrade should be attached to all members of your SSI (including the system you are now upgrading) before the upgrade is started.

Step 8. Complete upgrade installation worksheet 4

If you are installing your z/VM work system to 3390 DASD, skip to "Step 9. Complete upgrade installation worksheet 5" on page 156.

If you are installing your work system to FBA (SCSI) volumes, follow these steps.

1. Determine the number of volumes required to install a single work system.
   - If the DASD size of your FBA volumes is equal to or greater than 9.7 GB:
     - You will need 5 volumes. You will not need the IBMWK1 volume.
   - If the DASD size of your FBA volumes is less than 9.7 GB:
     - You will need 6 volumes.
2. On upgrade installation worksheet 4 (Table 16 on page 161), record the address for each volume in the Address column. If you are changing any of the default installation labels, record the new labels in the New Label column. Note that you must not use any of IBM's default volume labels for a volume other than the volume for which it is originally defined.
   - Volume labels must be 1 to 6 alphanumeric characters.
   - For z/VM installation on FBA: note that z/VM installation supports only emulated FBA on SCSI volumes. Real FBA volumes are not supported.

   Note: The volume where the new release code is installed on your z/VM work system (default label 640RL1) will be added to the system that is being upgraded. You should choose a label for this volume that adheres to any local policies for volume labels for your organization. All other volumes used for the work system (COMMON, RES, SPOOL, PAGE, and MEMBER) can be returned to your DASD pool after the upgrade installation of this system is complete.
3. If you are using FBA (SCSI) disks and they are already defined, you need only the addresses of the volumes and can continue to the next substep. If they are not already defined, you need to know the WWPN and LUN address for each disk, as well as the valid FCP address (or addresses) or the channel path (CHPID) to which they belong. Record each LUN and its corresponding WWPN on upgrade installation worksheet 4 (Table 16 on page 161). Also make a note of the valid FCP address (or addresses) or CHPID.

Step 9. Complete upgrade installation worksheet 5

1. Additional space needs to be allocated on the system being upgraded for new and changed minidisks that do not reside on the RELEASE volumes. This space needs to be on volumes that already belong to the system being upgraded, not on the volumes being used to install the work system.

   Some of the space must be defined on volumes that are designated as MEMBER volumes for the system you are upgrading and some of the space must be defined on volumes that are designated as COMMON volumes.

   - A MEMBER volume is one that is assigned to and is usually accessible to just one member of an SSI cluster (such as the MEMBER volume with default labels M01W01 and M01W02). On a non-SSI system, these volumes might also be referred to as SYSTEM volumes.
   - A COMMON volume is one that is not assigned to any specific member and is accessible by all members of an SSI cluster (such as the COMMON volume with default label VMCOM1 and VMCOM2).
   - If the system you are upgrading is not a member of an SSI cluster, you should still allocate this new space on volumes that would be considered MEMBER volumes and COMMON volumes in an SSI cluster to minimize rework in case you decide in the future to convert your non-SSI system to a single member SSI cluster.

2. Space that will be needed on MEMBER volumes is listed in Table 11 on page 157. You must allocate the space for these minidisks on the same type of DASD you used when you installed your z/VM system.

   - Table 11 on page 157 lists the user IDs that own the minidisks, the product associated with each user ID, and the minimum amount of space needed on a MEMBER volume.
   - The amount of space needed is dependent on where the associated product is installed (on minidisks or in the VMPSFS filepool) on the system being upgraded.
   - Determine where each product was loaded and record an M (for minidisks) or an F (for filepool) in the Location column in upgrade installation worksheet 5 (Table 17 on page 161).
   - Use Table 11 on page 157 to determine the amount of space needed for each user ID and record the space needed on upgrade installation worksheet 5 (Table 17 on page 161) in the Minimum column.
   - Determine which MEMBER volumes assigned to the system you are upgrading have sufficient contiguous space available to define each user ID's minidisks. All of the user IDs do not need to be on the same MEMBER volume, but all of the space for each user ID must be on one volume and must be contiguous.

     Note: If there is not enough free space on any of the MEMBER volumes on the system being upgraded, you should add a new MEMBER volume to your system. See *z/VM: CP Planning and Administration* for more information about adding additional MEMBER volumes to your system.
   - On upgrade installation worksheet 5 (Table 17 on page 161), for each user ID, record the label of the MEMBER volume where that user ID's minidisks should be defined.
     - If you edit your CP user directory file manually, that is, you recorded YES on upgrade installation worksheet 2 (Table 14 on page 160), also record the start and end cylinders or block extents where the user ID's minidisks are to be defined.
       - The lowest value for the START cylinder extent is 1.
       - The lowest value for the START block extent is 1200.
     - If you use a directory manager product, that is, you recorded NO on upgrade installation worksheet 2 (Table 14 on page 160), the directory manager will define the minidisks on these volumes.
       - You must make sure all member volumes you are using are included in the control files that define the DASD pool for your directory manager product.
       - Each volume must have enough contiguous space to define the minidisks assigned to that volume.

Table 11. Minimum space requirements for MEMBER volumes

MEMBER volumes installing on:		Minimum space needed:			
		3390 (cylinders)		FBA (512K blocks)	
User ID	**Product/ component**	**Product in filepool**	**Product on minidisk**	**Product in filepool**	**Product on minidisk**
DTCVSW3[2]	TCPIP	5	5	7200	7200
DTCVSW4[2]	TCPIP	5	5	7200	7200
TCPMAINT[2]	TCPIP	400	400	576000	576000
PERFSVM[2]	PERFTK	40	40	57600	57600
OPNCLOUD[2]	VM	6677	6677	9614880	9614880
VSMGUARD[1]	VM	5	5	7200	7200
VSMWORK1[1]	VM	5	5	7200	7200
VSMWORK2[1]	VM	5	5	7200	7200
VSMWORK3[1]	VM	5	5	7200	7200

[1] V6.2 to V6.4 upgrade only
[2] V6.2 to V6.4 and V6.3 to V6.4 upgrades

3. If you are upgrading a member of an SSI cluster and this is not the first member to be upgraded, you do not need to allocate any additional space on COMMON volumes.
   - Make sure the common volume you used for previous upgrades is available to this member.
   - Skip the next substep and continue to Chapter 17, "Set up for your upgrade installation," on page 163.
4. If you are upgrading a non-SSI, a one-member SSI, or the first member of a multimember SSI, space that will be needed on COMMON volumes is listed in Table 12 on page 158. You must allocate the space for these minidisks on the same type of DASD you used when you installed your z/VM system.
   - Table 12 on page 158 lists the user IDs that own the minidisks, the product associated with each user ID, and the minimum amount of space needed on a COMMON volume.
   - The amount of space needed is dependent on where the associated product is installed (on minidisks or in the VMPSFS filepool) on the system being upgraded,
   - Determine where each product was loaded and record an M (for minidisks) or an F (for filepool) in the Location column in upgrade installation worksheet 5 (Table 17 on page 161).
   - Use Table 12 on page 158 to determine the amount of space needed for each user ID and record the space needed on upgrade installation worksheet 5 (Table 17 on page 161) in the Minimum column.
   - Determine which COMMON volumes assigned to the system you are upgrading have sufficient contiguous space available to define each user ID's minidisks. All of the user IDs do not need to be on the same COMMON volume, but all of the space for each user ID must be on one volume and must be contiguous.

     Note: If there is not enough free space on any of COMMON volumes on the system being upgraded, you should add a new COMMON volume to your system. See *z/VM: CP Planning and Administration* about adding additional COMMON volumes to your system.
   - On upgrade installation worksheet 5 (Table 17 on page 161, for each user ID, record the label of the COMMON volume where that user ID's minidisks should be defined.
     - If you edit your CP user directory file manually, that is, you recorded YES on upgrade installation worksheet 2 (Table 14 on page 160), also record the start and end cylinders or block extents where the user ID's minidisks are to be defined.
       - The lowest value for the START cylinder extent is 1.
       - The lowest value for the START block extent is 1200.

– If you use a directory manager product, that is, you recorded NO on upgrade installation worksheet 2 (Table 14 on page 160), the directory manager will define the minidisks on these volumes.
  - You must make sure all COMMON volumes you are using are included in the control files that define the DASD pool for your directory manager product.
  - Each volume must have enough contiguous space to define the minidisks assigned to that volume.

Table 12. Minimum space requirements for COMMON volumes

COMMON volumes installing on:		Minimum space needed:			
		3390 (cylinders)		FBA (512K blocks)	
User ID	**Product/ component**	**Product in filepool**	**Product on minidisk**	**Product in filepool**	**Product on minidisk**
6VMDIR40	DirMaint	69	172	99360	247680
5684042J	ICKDSF	0	40	0	57600
Note: Needed for V6.2 to V6.4 and V6.3 to V6.4 upgrades					

What to do next

Go to Chapter 17, “Set up for your upgrade installation,” on page 163.

Upgrade installation worksheets

Upgrade installation worksheets

Table 13. Upgrade Installation Worksheet 1

IP address or host name: _____

FTP server user ID and password: _____

DVD/FTP directory path name: _____

VM user ID and address of VM minidisk to upload DVD: _____

Table 14. Upgrade Installation Worksheet 2

Current System Information:

System configuration file:
Name: _____ _____ User ID: _____ Address: _____

Do you edit your CP directory file manually? _____
If YES, then CP directory file:
Name: _____ _____ User ID: _____ Address: _____

Are you using a security manager other than RACF? _____

3390 DASD model: _____

SCSI volume size: _____

Table 15. Upgrade Installation Worksheet 3 (3390 Only)

Installation Volumes for z/VM Work System (3390):			
Volume Type	**Default Label**	**New Label**	**Address**
COMMON	IBMCM1		
COMMON2	IBMCM2		
RELVOL	*xxx*RL1		
RELVOL2	*xxx*RL2		
RELVOL3	*xxx*RL3		
RES	IBMRES		
SPOOL	IBMS01		
PAGE	IBMP01		
MEMBER	IBMWK1		
MEMBER	IBMWK2		
MEMBER	IBMWK3		

Notes:

- *xxx* will be 640 for the first member that is upgraded and will be IBM for the second, third, and fourth members.
- You must *not* use any of IBM's default volume labels for a volume other than the volume for which it is originally defined.

Table 16. Upgrade Installation Worksheet 4 (FBA Only)

Installation Volumes for z/VM Work System (FBA):						
Volume Type	**Default Label**	**New Label**	**Address**	**FCP Address**	**WWPN**	**LUN**
COMMON	IBMCM1					
RELVOL	640RL1					
RES	IBMRES					
SPOOL	IBMS01					
PAGE	IBMP01					
MEMBER	IBMWK1					
Channel path (CHPID): _____ Valid FCP addresses: _____						
Note: You must *not* use any of IBM's default volume labels for a volume other than the volume for which it is originally defined.						

Table 17. Upgrade Installation Worksheet 5

Additional Space Needed on Current System:						
Space is needed in your existing environment to create minidisks for the following user IDs: **MEMBER volume(s):**						
User ID	**Product**	**Location (M/F)**	**Minimum**	**Label**	**Start**	**End**
DTCVSW3[2]	TCPIP					
DTCVSW4[2]	TCPIP					
TCPMAINT[2]	TCPIP					
PERFSVM[2]	PERFTK					
OPNCLOUD[2]	VM					
VSMGUARD[1]	VM					
VSMWORK1[1]	VM					
VSMWORK2[1]	VM					
VSMWORK3[1]	VM					
COMMON volume(s):						
User ID	**Product**	**Location (M/F)**	**Minimum**	**Label**	**Start**	**End**
6VMDIR40[2]	DirMaint					
5684042J[2]	ICKDSF					
[1] V6.2 to V6.4 upgrade only [2] V6.2 to V6.4 and V6.3 to V6.4 upgrades						

Upgrade installation worksheets

Chapter 17. Set up for your upgrade installation

In this chapter, you will:

- Set up the environment for an upgrade installation.

Choose your next step based on which source you will use to perform your installation.

If you chose to install from a. . .	Then see. . .
Physical DVD	"Step 1. Set up to install from a DVD drive" on page 164
FTP server directory	"Step 2. Set up to install from an FTP server directory" on page 168
VM minidisk	"Step 3. Set up to install from a VM minidisk" on page 172

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Step 1. Set up to install from a DVD drive

Before you begin: You should have completed the upgrade installation worksheets 1 (Table 13 on page 160) through 5 (Table 17 on page 161). If you have not done so, return to Chapter 16, "Plan your upgrade installation," on page 139.

1. Load the z/VM product DVD in the DVD drive of the FTP server you are using for installation. Wait until the light on the DVD drive goes out or stops blinking to continue.
2. Log on to the MIGMAINT user ID on the system being upgraded. Make sure the user ID meets the MIGMAINT user ID requirements.
3. Spool the console to make sure it is empty, started, and spooled to the reader.

```
spool console close start *
RDR FILE filenum  SENT FROM userid  CON WAS nnnn RECS nnnn CPY  nnn T NOHOLD NOKEEP
Ready;
```

4. Verify you have a 2222 read/write minidisk with exactly 10 cylinders if installing to 3390 or 14400 512-KB blocks if installing to FBA.

```
query v 2222
DASD 2222 3390 xxxxxx  R/W        10 CYL ON DASD  nnnn SUBCHANNEL = nnnn
Ready; T=n.nn/n.nn hh:mm:ss
```

5. Access the minidisk (*diskaddr*) that contains the INSTPIPE MODULE as file mode C. Starting with z/VM V6.2, the INSTPIPE MODULE is shipped on the MAINT*vrm* 4CC disk.

```
access diskaddr c
Ready; T=n.nn/n.nn hh:mm:ss
```

6. Copy the files needed to run DVDPRIME from the DVD to the 2222 minidisk.
   a. Run INSTPIPE.

```
instpipe
Ready; T=n.nn/n.nn hh:mm:ss
```

   b. Copy the files from the DVD to the 2222 minidisk.

   Note: The information for *host*, *userid*, *password*, and *ftpdir* was recorded in upgrade installation worksheet 1 (Table 13 on page 160).

```
pipe ftpget -h host -u userid -p password -d ftpdir/CPDVD
 -v BEF -DVDEOF -f ddd222* |UNPACK| restcmd 2222
```

host
IP address or FTP host name. An IP address is in dotted-decimal form for your IP version 4 interface. For example:

```
129.42.16.99
```

A host name must begin with a letter, and may contain only alphanumeric characters (A-Z,a-z,0-9) or hyphens (-). For example:

```
MyOrg-VM01
```

userid
User ID used to log on to the FTP server. Must be 40 or less alphanumeric characters.

password
Password for the user ID used to log on to the FTP server. Must be 40 or less alphanumeric characters.

ftpdir
Path to the DVD drive with /CPDVD appended to the end of the path. The maximum length is 40 characters. For example:

```
mydvddrive/CPDVD
cpdvd
e:/cpdvd
vmftpdir/CPDVD
```

ddd
CKD for 3390 or **FBA** for FBA. They must be entered in uppercase.

restcmd
ECKDREST for 3390 or **MDREST** for FBA.

Note: In the above PIPE command you may use a different stage separator by including the **stagesep** keyword. For example:

pipe (stagesep !) ftpget -h *host* **-u** *userid* **-p** *password* **-d** *ftpdir*/**CPDVD -v BEF -DVDEOF -f** *ddd*222* **!UNPACK!** *restcmd* **2222**

```
{FBA222*|CKD222*}
DMSRXS1408W File TCPIP DATA * not found
{MDREST|ECKDREST}: WROTE nnn {BLOCKS|TRACKS} ON 2222, RC=0
Ready; T=n.nn/n.nn hh:mm:ss
```

You might not receive this message.

7. IPL CMS to remove the old INSTPIPE MODULE from storage.

```
ipl cms

:
ENTER
Ready; T=n.nn/n.nn hh:mm:ss
```

8. Access the 2222 minidisk as file mode C.

```
access 2222 c
Ready; T=n.nn/n.nn hh:mm:ss
```

9. Verify that the first occurrence of the INSTPIPE MODULE is on the minidisk accessed as file mode C. Remove or rename all other copies.

```
listfile instpipe module *
INSTPIPE MODULE C1
Ready; T=n.nn/n.nn hh:mm:ss
```

10. Run DVDPRIME with the *dasdtype* you are using to install.

```
dvdprime dasdtype (dvd
                                                dasdtype
                                                    3390 or FBA.
IUGDVP8327I ** NOW EXECUTING DVDPRIME EXEC  ON date AT time **
```

11. Complete the DVDPRIME panel by filling in the information for your FTP server.

    Note: The information for HOSTNAME OR IP ADDRESS, FTP USERID, FTP PASSWORD, and DVD PATHNAME was recorded in upgrade installation worksheet 1 (Table 13 on page 160).

```
                     *** DVDPRIME PANEL ***

 Enter information in empty fields and press F5 to process.

HOSTNAME OR IP ADDRESS:      ____________________________________

FTP USERID:                  ____________________________________

FTP PASSWORD:                ____________________________________

DVD PATHNAME:                ____________________________________

PORT NUMBER:                 21__________________________________

     F1 = HELP   F3/F12 = QUIT   F5 = Process   ENTER = Refresh
```

Figure 12. DVDPRIME Panel

HOSTNAME OR IP ADDRESS:

This field should be filled in with the IP ADDRESS or HOSTNAME of your FTP server. A host name must begin with a letter, and may contain only alphanumeric characters (A-Z,a-z,0-9) or hyphens (-). For example: **MyOrg-VM01**

Specify an IP address in dotted-decimal form for your IP version 4 interface. For example: **129.42.16.99**

FTP USERID:

User ID used to log on to the FTP server. Must be 40 or less alphanumeric characters.

FTP PASSWORD:

Password used to log on to the FTP server. Must be 40 or less alphanumeric characters.

DVD PATHNAME:

Enter the path to the DVD drive according to the conventions used by your server and append CPDVD to the end of your path. This should be the same path name used on the ftpget command in substep 6 on page 164. The maximum length is 40 characters. For example:

```
mydvddrive/CPDVD
cpdvd
e:/cpdvd
vmftpdir/CPDVD
```

PORT NUMBER:

The FTP server's port number. The default port number is 21.

12. Press F5 to process.

```
F5

IUGDVP8440I NOW LOADING 24CC DISK
{FBA222*|CKD222*}
DMSRXS1408W File TCPIP DATA * not found          You might not receive this message.

{MDREST|ECKDREST}: WROTE nnnn {BLOCKS|TRACKS} ON 24CC, RC=0

IUGDVP8440I NOW LOADING 2CF0 DISK
{FBACF0*|CKDCF0*}
DMSRXS1408W File TCPIP DATA * not found          You might not receive this message.

{MDREST|ECKDREST}: WROTE nnnn {BLOCKS|TRACKS} ON 2CF0, RC=0

IUGDVP8392I DVDPRIME EXEC ENDED SUCCESSFULLY
Ready; T=n.nn/n.nn hh:mm:ss
```

What to do next

Go to Chapter 18, “Install a z/VM V6.4 work system for your upgrade installation,” on page 181.

Step 2. Set up to install from an FTP server directory

Before you begin: You should have completed the upgrade installation worksheets 1 (Table 13 on page 160) through 5 (Table 17 on page 161). If you have not done so, return to Chapter 16, "Plan your upgrade installation," on page 139.

The RSU that is shipped as part of the z/VM product will be installed during the installation process. Do not attempt to skip installing the RSU during upgrade. If additional service is required, install the additional service after installation of your system is complete.

1. Upload the contents of each DVD to the directory. After the contents of the z/VM product DVD have been uploaded, upload the contents of the installation RSU DVD to the same directory, overwriting any duplicate files.
   a. Create a new directory on the FTP server. The maximum length of the directory path name is 40 characters. The FTP server will need at least 4 GB of free space.
   b. Load the contents of the z/VM product DVD and the installation RSU DVD to the directory. When copying the files, make sure the case is preserved.
2. Log on to the MIGMAINT user ID on the system being upgraded. Make sure the user ID meets the MIGMAINT user ID requirements.
3. Spool the console to make sure it is empty, started, and spooled to the reader.

```
spool console close start *
RDR FILE filenum  SENT FROM userid  CON WAS nnnn RECS nnnn CPY  nnn T NOHOLD NOKEEP
Ready;
```

4. Verify you have a 2222 read/write minidisk with exactly 10 cylinders if installing to 3390 or 14400 512-KB blocks if installing to FBA.

```
query v 2222
DASD 2222 3390 xxxxxx  R/W        10 CYL ON DASD  nnnn SUBCHANNEL = nnnn
Ready; T=n.nn/n.nn hh:mm:ss
```

5. Access the minidisk (*diskaddr*) that contains the INSTPIPE MODULE as file mode C. Starting with z/VM V6.2, the INSTPIPE MODULE is shipped on the MAINT*vrm* 4CC disk.

```
access diskaddr c
Ready; T=n.nn/n.nn hh:mm:ss
```

6. Copy the files needed to run DVDPRIME to the 2222 minidisk from the FTP server.
   a. Run INSTPIPE.

```
instpipe
Ready; T=n.nn/n.nn hh:mm:ss
```

   b. Copy the files from the FTP server to the 2222 minidisk.

   Note: The information for *host*, *userid*, *password*, and *ftpdir* was recorded in upgrade installation worksheet 1 (Table 13 on page 160).

```
pipe ftpget -h host -u userid -p password -d ftpdir
 -v BEF -DVDEOF -f ddd222* |UNPACK| restcmd 2222
```

host
IP address or FTP host name. An IP address is in dotted-decimal form for your IP version 4 interface. For example:

```
129.42.16.99
```

A host name must begin with a letter, and may contain only alphanumeric characters (A-Z,a-z,0-9) or hyphens (-). For example:

```
MyOrg-VM01
```

userid
User ID used to log on to the FTP server. Must be 40 or less alphanumeric characters.

password
Password for the user ID used to log on to the FTP server. Must be 40 or less alphanumeric characters.

ftpdir
Path to the FTP server directory where you loaded the contents of the DVD in substep 1 on page 168. The maximum length is 40 characters.

ddd
CKD for 3390 or **FBA** for FBA. These must be entered in uppercase.

restcmd
ECKDREST for 3390 or **MDREST** for FBA.

Note: In the above PIPE command you may use a different stage separator by including the **stagesep** keyword. For example:

```
pipe ( stagesep ! ) ftpget -h host -u userid -p
password -d ftpdir -v BEF -DVDEOF -f ddd222*
!UNPACK! restcmd 2222
```

```
{FBA222*|CKD222*}
DMSRXS1408W File TCPIP DATA * not found          You might not receive this message.
{MDREST|ECKDREST}: WROTE nnn {BLOCKS|TRACKS} ON 2222, RC=0
Ready; T=n.nn/n.nn hh:mm:ss
```

7. IPL CMS to remove the old INSTPIPE MODULE from storage.

```
ipl cms
⋮
 ENTER
Ready; T=n.nn/n.nn hh:mm:ss
```

8. Access the 2222 minidisk as file mode C.

```
access 2222 c
Ready; T=n.nn/n.nn hh:mm:ss
```

9. Verify that the first occurrence of the INSTPIPE MODULE is on the minidisk accessed as file mode C. Remove or rename all other copies.

```
listfile instpipe module *
INSTPIPE MODULE C1
Ready; T=n.nn/n.nn hh:mm:ss
```

10. Run DVDPRIME with the *dasdtype* you are using to install.

    dvdprime *dasdtype* **(server**
    dasdtype
    3390 or **FBA**.

    ```
    IUGDVP8327I ** NOW EXECUTING DVDPRIME EXEC  ON date AT time **
    ```

11. Complete the DVDPRIME panel by filling in the information for your FTP server.

    Note: The information for HOSTNAME OR IP ADDRESS, FTP USERID, FTP PASSWORD, and DVD PATHNAME was recorded in upgrade installation worksheet 1 (Table 13 on page 160).

```
                    *** DVDPRIME PANEL ***

 Enter information in empty fields and press F5 to process.

HOSTNAME OR IP ADDRESS:     _____________________________________

FTP USERID:                 _____________________________________

FTP PASSWORD:               _____________________________________

DVD PATHNAME:               _____________________________________

PORT NUMBER:                21___________________________________

     F1 = HELP   F3/F12 = QUIT   F5 = Process   ENTER = Refresh
```

Figure 13. DVDPRIME Panel

HOSTNAME OR IP ADDRESS:

This field should be filled in with the IP ADDRESS or HOSTNAME of your FTP server. A host name must begin with a letter, and may contain only alphanumeric characters (A-Z,a-z,0-9) or hyphens (-). For example: **MyOrg-VM01**

Specify an IP address in dotted-decimal form for your IP version 4 interface. For example: **129.42.16.99**

FTP USERID:

User ID used to log on to the FTP server. Must be 40 or less alphanumeric characters.

FTP PASSWORD:

Password used to log on to the FTP server. Must be 40 or less alphanumeric characters.

DVD PATHNAME:

Enter the path to the FTP server directory according to the conventions used by your server. The maximum length is 40 characters. For example:

```
mydvddrive/ftpdir
e:/dirname
vmftpdir
```

PORT NUMBER:

The FTP server's port number. The default port number is 21.

12. Press F5 to process.

F5

```
IUGDVP8440I NOW LOADING 24CC DISK
{FBA222*|CKD222*}
DMSRXS1408W File TCPIP DATA * not found          You might not receive this message.

{MDREST|ECKDREST}: WROTE nnnn {BLOCKS|TRACKS} ON 24CC, RC=0

IUGDVP8440I NOW LOADING 2CF0 DISK
{FBACF0*|CKDCF0*}
DMSRXS1408W File TCPIP DATA * not found          You might not receive this message.

{MDREST|ECKDREST}: WROTE nnnn {BLOCKS|TRACKS} ON 2CF0, RC=0

IUGDVP8392I DVDPRIME EXEC ENDED SUCCESSFULLY
Ready; T=n.nn/n.nn hh:mm:ss
```

What to do next

Go to Chapter 18, “Install a z/VM V6.4 work system for your upgrade installation,” on page 181.

Step 3. Set up to install from a VM minidisk

Before you begin: You should have completed the upgrade installation worksheets 1 (Table 13 on page 160) through 5 (Table 17 on page 161). If you have not done so, return to Chapter 16, "Plan your upgrade installation," on page 139.

The RSU that is shipped as part of the z/VM product will be installed during the installation process. Do not attempt to skip installing the RSU during upgrade. If additional service is required, install the additional service after installation of your system is complete.

1. Log on to the MIGMAINT user ID on the system being upgraded. Make sure the user ID meets the MIGMAINT user ID requirements.
2. Link to the VM minidisk where you will load the files from the DVDs. The VM minidisk needs to have the equivalent of at least 6000 cylinders of available 3390 DASD space. The minidisk must not contain any other files with filetype IMAGE. You must link the minidisk in write mode.

   Note: The information for *userid* and *diskaddr* was recorded in upgrade installation worksheet 1 (Table 13 on page 160).

   ```
   link userid diskaddr diskaddr MR
   Ready; T=n.nn/n.nn hh:mm:ss
   ```

3. Access the VM minidisk as file mode W.

   ```
   access diskaddr w
   Ready; T=n.nn/n.nn hh:mm:ss
   ```

   diskaddr
   Address of the CMS-formatted VM minidisk where the DVD files are to be copied.

4. If the z/VM product and RSU files have already been loaded to the minidisk you are using, skip to substep 16 on page 177.
5. Link to the 592 TCP/IP client code minidisk.

   ```
   link tcpmaint 592 592 rr
   Ready; T=n.nn/n.nn hh:mm:ss
   ```

6. Access the 592 TCP/IP client code minidisk as file mode Z.

   ```
   access 592 z
   Ready; T=n.nn/n.nn hh:mm:ss
   ```

7. Set the terminal to alert you one second after CP issues the `MORE...` status and to clear one second after the alert.

   ```
   terminal more 1 1
   Ready;
   ```

8. Copy the contents of the z/VM product DVD to the VM minidisk accessed as file mode W.

   Note: If you have an FTP server with access to a DVD drive, continue with this substep. If you do not have an FTP server with access to a DVD drive, you can use the upload function of your terminal emulator to copy the contents of the z/VM product DVD to the minidisk. See Appendix J, "Using a terminal emulator to upload files from a DVD," on page 271. After uploading the files using your terminal emulator, continue with substep 15 on page 177.

   a. Load the z/VM product DVD in the DVD drive of the FTP server you are using for installation. Wait until the light on the DVD drive goes out or stops blinking before continuing.

b. Start an FTP session.

```
ftp
VM TCP/IP FTP Level nnn
```

c. Connect to the FTP server. Enter the FTP server IP address or host name (*host*), the user ID used to log on to the FTP server (*userid*), and the password for the user ID used to log on to the FTP server (*password*).

Note: The information for *host*, *userid*, *password*, and *ftpdir* was recorded in upgrade installation worksheet 1 (Table 13 on page 160).

```
OPEN (name of foreign host):
host

Connecting to host
220 FTP Server ready...
USER (identify yourself to the host):
userid

>>>USER userid
331 User name okay, need password.
Password:
password

>>>PASS ********
230 User logged in, proceed
```

d. Change the remote directory to the FTP path of the DVD drive (*ftpdir*) with /CPDVD appended to the end of the path. For example, e:/CPDVD.

```
Command:
cd ftpdir/CPDVD

>>>CWD ftpdir/CPDVD
250 Directory changed to ftpdir/CPDVD
```

e. Change the local directory to W.

```
Command:
lcd w

Local directory mode is 'W'
```

f. Set the file transfer mode to **binary**, the record format to **fixed**, and the record length to **1028**.

```
Command:
binary f 1028

>>>TYPE i
200 Type set to I.
Command:
```

g. Copy all required files from the z/VM product DVD.

```
mget ddd*
```

ddd
This value must be entered in uppercase - **CKD** for 3390 or **FBA** for FBA (SCSI).

```
>>>TYPE a
200 Type set to A
>>>PORT host
200 PORT Command successful.
>>>NLST ddd*
150 Opening ASCII mode data connection for /bin/ls.
226 Transfer complete.
>>>TYPE i
200 Type set to I.
>>>PORT host
200 PORT Command successful.
>>>RETR dddnnnnn
150 Opening BINARY mode data connection for dddnnnnn (nnnnnnn Bytes).
nnnnnnn bytes transferred.
226 Transfer complete.
nnnnnnn bytes transferred in nn.nnn seconds. Transfer rate nnn.nn Kbytes/sec.
⋮
```

h. When all files have been transferred, quit the FTP session.

```
Command:
quit

>>>QUIT
221 Goodbye!
Ready;
```

9. Verify that all of the files copied from the z/VM product DVD have a **fixed** (F) file format and a logical record length (LRECL) of **1028**.

   If the file format or logical record length of any file is incorrect, then the files were copied incorrectly. Erase all of the files from the minidisk and copy the contents of the z/VM product DVD again, using the correct parameters. Repeat substep 8 on page 172.

```
filelist * $default w

Cmd   Filename Filetype Fm Format Lrecl    Records     Blocks   Date     Time
      xxx22200 $DEFAULT W1 F      1028     nnnn        nnn      dddd     ttttt
⋮
```

10. Verify that all of the files were copied from the z/VM product DVD.

```
filelist * $default w

 userid   FILELIST W0  V 169  Trunc=169 Size=nnnn Line=1 Col=1 Alt=0
Cmd   Filename Filetype Fm Format Lrecl    Records     Blocks   Date     Time
      xxx22200 $DEFAULT W1 F      1028     nnnn        nnn      dddd     ttttt
⋮
```

In the **Size=***nnnn* field, *nnnn* is the number of $DEFAULT files on the minidisk. The DVD contains the 640PROD DVDIMAGE file, which lists the number of image files that should have been copied.

Verify that the numbers are the same. If the numbers are not the same, there are files missing. In this case, you can do one of the following:

a. Copy the missing files.
   1) Determine which files are missing. The 640PROD DVDIMAGE file contains a list of all of the files that should have been copied.

2) Copy each of the the missing files from the z/VM product DVD by repeating substep 8 on page 172, replacing:

```
mget ddd* (replace
```

with:

```
get  filename   filename.$default
```

b. Copy the contents of the z/VM product DVD again by repeating substep 8 on page 172.

11. If you used your terminal emulator to upload the contents of the z/VM installation RSU DVD, skip to substep 15 on page 177. Otherwise, copy the contents of the z/VM installation RSU DVD to the same VM minidisk used for the z/VM product DVD.

a. Load the z/VM installation RSU DVD in the DVD drive of the FTP server you are using for installation. Wait until the light on the DVD drive goes out or stops blinking before continuing.

b. Start an FTP session:

```
ftp
VM TCP/IP FTP Level nnn
```

c. Connect to the FTP server. Enter the FTP server's IP address or host name (*host*), the user ID used to log on to the FTP server (*userid*), and the password for the user ID used to log on to the FTP server (*password*).

Note: The information for *host*, *userid*, *password*, and *ftpdir* was recorded in upgrade installation worksheet 1 (Table 13 on page 160).

```
OPEN (name of foreign host):
host

Connecting to host
220 FTP Server ready...
USER (identify yourself to the host):
userid

>>>USER userid
331 User name okay, need password.
Password:
password

>>>PASS ********
230 User logged in, proceed
```

d. Change the remote directory to the FTP path of the DVD drive (*ftpdir*) with /CPDVD appended to the end of the path (e:/CPDVD, for example).

```
Command:
cd ftpdir/CPDVD

>>>CWD ftpdir/CPDVD
250 Directory changed to ftpdir/CPDVD
```

e. Change the local directory to W.

```
Command:
lcd w

Local directory mode is 'W'
```

f. Set the file transfer mode to **binary**, the record format to **fixed**, and the record length to **1028**.

```
Command:
binary f 1028

>>>TYPE i
200 Type set to I.
Command:
```

g. Copy all required files from the z/VM installation RSU DVD.

```
mget ddd* (replace
```

ddd
This value must be entered in uppercase - **CKD** for 3390 or **FBA** for FBA (SCSI).

```
>>>TYPE a
200 Type set to A
>>>PORT host
200 PORT Command successful.
>>>NLST ddd*
150 Opening ASCII mode data connection for /bin/ls.
226 Transfer complete.
>>>TYPE i
200 Type set to I.
>>>PORT host
200 PORT Command successful.
>>>RETR dddnnnnn
150 Opening BINARY mode data connection for dddnnnnn (nnnnnnn Bytes).
nnnnnnn bytes transferred.
226 Transfer complete.
nnnnnnn bytes transferred in nn.nnn seconds. Transfer rate nnn.nn Kbytes/sec.
⋮
```

h. When all files have been transferred, quit the FTP session.

```
Command:
quit

>>>QUIT
221 Goodbye!
Ready;
```

12. Verify that all of the files copied from the z/VM installation RSU DVD have a **fixed** (F) file format and a logical record length (LRECL) of **1028**.

    If the file format or logical record length of any file is incorrect, the files were copied incorrectly. Erase all of the new $DEFAULT files from the minidisk and copy the contents of the z/VM installation RSU DVD again, using the correct parameters. Repeat substep 11 on page 175.

```
filelist ddd500* $default w
```

ddd
- **CKD** for 3390 or **FBA** for FBA.

```
Cmd   Filename Filetype Fm Format Lrecl    Records     Blocks   Date     Time
      xxx50000 $DEFAULT W1 F      1028     nnnn        nnn      dddd     ttttt
⋮
```

13. Verify that all of the files were copied from the z/VM installation RSU DVD.

```
filelist ddd500* $default w
```

ddd
- **CKD** for 3390 or **FBA** for FBA.

```
userid   FILELIST W0  V 169  Trunc=169 Size=nnnn Line=1 Col=1 Alt=0
Cmd   Filename Filetype Fm Format Lrecl    Records     Blocks   Date     Time
      xxx22200 $DEFAULT W1 F      1028     nnnn        nnn      dddd     ttttt
⋮
```

In the **Size=***nnnn* field, *nnnn* is the number of $DEFAULT files from the RSU DVD on the minidisk. The DVD contains the 64CKDRSU and 64FBARSU DVDIMAGE files, which list the number of image

files that should have been copied for each DASD type.

Verify that the numbers are the same. If the numbers are not the same, there are files missing. In this case, you can do one of the following:

a. Copy the missing files.
   1) Determine which files are missing. The 64*ddd*RSU DVDIMAGE file contains a list of all of the files that should have been copied.
   2) Copy each of the the missing files from the z/VM installation RSU DVD by repeating substep 11 on page 175, replacing:

      ```
      mget ddd* (replace
      ```

      with:

      ```
      get  filename   filename.$default
      ```

b. Copy the contents of the z/VM installation RSU DVD again by repeating substep 11 on page 175.

14. The FTP MGET command copied the files with a file type of $DEFAULT. The file type needs to be renamed to IMAGE.

    ```
    rename * $default w = image =
    Ready;
    ```

15. Set the terminal to alert you 50 seconds after CP issues the `MORE...` status and to clear 10 seconds after the alert.

    ```
    terminal more 50 10
    Ready;
    ```

16. Spool the console to make sure it is empty, started, and spooled to the reader.

    ```
    spool console close start *
    RDR FILE filenum  SENT FROM userid  CON WAS nnnn RECS nnnn CPY  nnn T NOHOLD NOKEEP
    Ready;
    ```

17. Verify you have a 2222 read/write minidisk of exactly 10 cylinders if installing to 3390 or 14400 512-KB blocks if installing to FBA .

    ```
    query v 2222
    DASD 2222 3390 xxxxxx  R/W        10 CYL ON DASD  nnnn SUBCHANNEL = nnnn
    Ready; T=n.nn/n.nn hh:mm:ss
    ```

| 18. Verify that INSTPIPE MODULE exists in your search order.

    ```
    listfile instpipe module *

    INSTPIPE MODULE fm
    ```

    If you receive:

    ```
    DMSLST002E  file not found
    ```

    access the disk that contains the INSTPIPE MODULE.

    Note: The INSTPIPE MODULE was shipped on the MAINT*vrm* 4CC disk.

19. Copy the files needed to run DVDPRIME to the 2222 minidisk.

    a. Run INSTPIPE.

       ```
       instpipe
       Ready; T=n.nn/n.nn hh:mm:ss
       ```

    b. Decode, unpack, and write the files needed to run DVDPRIME to the 2222 minidisk.

```
pipe dvddecod ddd222 image w |UNPACK| restcmd 2222

{MDREST|ECKDREST}: WROTE nnn {BLOCKS|TRACKS} ON 2222, RC=0
Ready; T=n.nn/n.nn hh:mm:ss
```

ddd
: This value must be entered in uppercase - **CKD** for 3390 or **FBA** for FBA.

restcmd
: **ECKDREST** for 3390 or **MDREST** for FBA.

Note: In the above PIPE command you may use a different stage separator by including the **stagesep** keyword. For example:

```
pipe ( stagesep ! ) dvddecod ddd222 image w
!UNPACK! restcmd 2222
```

20. IPL CMS to remove the old INSTPIPE MODULE from storage.

```
ipl cms

.
.
.
ENTER
Ready; T=n.nn/n.nn hh:mm:ss
```

21. Access the minidisk that contains the image files as file mode W.

```
access diskaddr w
Ready; T=n.nn/n.nn hh:mm:ss
```

diskaddr
: Address of the minidisk where the image files were copied.

22. Access the 2222 minidisk as file mode C.

```
access 2222 c
Ready; T=n.nn/n.nn hh:mm:ss
```

23. Verify that the first occurrence of the INSTPIPE MODULE is on the minidisk accessed as file mode C. Remove or rename all other copies.

```
listfile instpipe module *
INSTPIPE MODULE C1
Ready; T=n.nn/n.nn hh:mm:ss
```

24. Run DVDPRIME with the *dasdtype* you are using to install.

```
dvdprime dasdtype (disk
```

dasdtype
: **3390** or **FBA**.

```
IUGDVP8327I ** NOW EXECUTING DVDPRIME EXEC  ON date AT time **
IUGDVP8440I NOW LOADING 24CC DISK
DMSRXS1408W File TCPIP DATA * not found          You might not receive this message.
{MDREST|ECKDREST}: WROTE nnnn {BLOCKS|TRACKS} ON 24CC, RC=0
IUGDVP8440I NOW LOADING 2CF0 DISK
DMSRXS1408W File TCPIP DATA * not found          You might not receive this message.
{MDREST|ECKDREST}: WROTE nnnn {BLOCKS|TRACKS} ON 2CF0, RC=0
IUGDVP8392I DVDPRIME EXEC ENDED SUCCESSFULLY
Ready; T=n.nn/n.nn hh:mm:ss
```

What to do next

Go to Chapter 18, “Install a z/VM V6.4 work system for your upgrade installation,” on page 181.

Chapter 18. Install a z/VM V6.4 work system for your upgrade installation

In this chapter, you will:

- Run INSTPLAN.
- Verify your upgrade installation volumes.
- Run INSTALL.

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Step 1. Run INSTPLAN

Before you begin: You should have completed the upgrade installation worksheets 1 (Table 13 on page 160) through 5 (Table 17 on page 161). If you have not done so, return to Chapter 16, "Plan your upgrade installation," on page 139.

1. From the MIGMAINT userid, verify that the installation tools minidisk, 24CC, is accessed as (C):

   ```
   query disk c

   LABEL VDEV M  ...
   MNT4CC 24CC C ...

   Ready; T=n.nn/n.nn hh:mm:ss
   ```

2. If you are installing to FBA (SCSI) volumes, see upgrade installation worksheet 4 (Table 16 on page 161) and query each address to verify it is not already defined for a different device (see example below). If the address is already in use, either detach the device or choose a different *dasdaddr* and verify that address does not exist.

   For each address:

   ```
   query voladdr
   HCPQVD040E Device voladdr does not exist
   Ready(00040);
   ```

   Record any changed addresses in the **Address** column in upgrade installation worksheet 4 (Table 16 on page 161).

3. Run INSTPLAN with the DVD operand, and the UPGRADE option.

   ```
   instplan dvd (upgrade
   ```

   The installation planning panels are displayed.

```
         *** z/VM UPGRADE - EXISTING ENVIRONMENT INFORMATION ***

System Type: type     System/Member Name: name     Cluster Name: name

Members in this cluster:
   SLOT #     MEMBER NAME    RELEASE LEVEL
   ------     -----------    -------------
     1         Member1          vrm
     2         Member2          vrm
     3         Member3          vrm
     4         Member4          vrm

Common Service Filepool Name:  fpname

Current z/VM Product Information for name:
  COMPONENT LOCATION  ENABLEMENT         COMPONENT LOCATION  ENABLEMENT
  --------- --------- ----------         --------- --------- ----------
   VM        MINIDISK                     DIRM      FILEPOOL  ENABLED
   ICKDSF    FILEPOOL                     OSA       FILEPOOL
   PERFTK    FILEPOOL  ENABLED            RACF      FILEPOOL  ENABLED
   RSCS      FILEPOOL  ENABLED            TCPIP     FILEPOOL
   VMHCD     FILEPOOL

   F1 = HELP      F3/12 = QUIT     F5 = Process     ENTER = Refresh
```

Figure 14. z/VM Upgrade - Existing Environment Information Panel

The Existing Environment Information panel is displayed. Review this information to verify that this is the system you are intending to upgrade.

a. The system type is either SSI or Non-SSI. If the system being that is upgraded is a member of an SSI cluster, *System Type* is SSI and the other fields displayed are *Member Name*, which contains the name of the member being upgraded, and *Cluster Name*, which contains the name of the SSI cluster.

   If the system that is being upgraded is not a member of an SSI cluster, *System Type* is Non-SSI and the other field displayed is *System Name*, which contains the name of the system being upgraded.

b. If the system that is being upgraded is a member of an SSI cluster, the *Members in this Cluster* fields are displayed. For each member in the cluster, the slot number, member name, and current release level of that member are displayed

c. The *Common Service Filepool Name* field contains the name of the common service filepool, as defined to the system being upgraded. This is either the IBM default name VMPSFS or the name you selected in ICOMDIR NAMES to map your filepool name to the filepool nickname VMPSFS.

d. The *Current z/VM Product Information* fields display the z/VM pre-installed products and where they are installed (filepool or minidisk). It also indicates which products are enabled or disabled. A blank in this field indicates that enabled/disabled does not apply to that product.

e. Press F5 to continue if this is the system you intend to upgrade.

   F5

4. The License Validation panel will be displayed if you have priced components or features enabled on your current system. If you do, a list of the features that are enabled on the system you intend to upgrade will be displayed. Upgrade installation will enable these same features on the new level of z/VM. Confirm that you have all the necessary licenses for each pre-installed component and feature that is enabled on your system. If you do not have any IBM pre-installed products or features enabled on your system, the license validation panel will not be displayed and you should skip to substep 5 on page 184.

```
                  *** z/VM UPGRADE - LICENSE VALIDATION ***

Upgrade Installation will automatically enable the same features for your
new system that are enabled on your current system.  The features that are
enabled on your current system are listed below.  The new features must be
appropriately licensed for all machines that will run your new system.

If you have ordered these features and accept the licensing terms and
conditions, press F5 to acknowledge your agreement and acceptance of the
terms and conditions.  If you are accepting these terms on behalf of
another person or company or other legal entity, you represent and
warrant that you have full authority to bind that person, company, or legal
entity to these conditions.

If you do not agree to these terms, or you do not have licenses for all the
features listed below, press F3 to cancel the installation.
 SSI Feature: ENABLED
 DirMaint:    ENABLED
 PERFTK:      ENABLED
 RACF:        ENABLED
 RSCS:        ENABLED

 F1 = HELP      F3/12 = QUIT     F5 = I Agree
```

Figure 15. z/VM Upgrade - License Validation Panel

a. This panel shows which z/VM components and features are enabled on the system that is being upgraded. You must verify that you have appropriate licenses for each of these components and features for the release to which you are upgrading.

b. Press F5 to agree that you have appropriate licenses on the new release of z/VM.

   F5

If you do not have all the required licenses, press F3 or F12 to exit. Rerun the upgrade procedure once you have obtained the necessary licenses.

5. Complete the User Supplied Environment Information panel using the information you entered in Upgrade Planning Worksheet 2 (Table 14 on page 160).

```
        *** z/VM UPGRADE - USER SUPPLIED ENVIRONMENT INFORMATION ***

Select a System DASD size.
 _ 3390 Mod 3         _ 3390 Mod 9         _ 3390 Mod 27

If you changed the name or location of your system configuration file,
change the values below.
 System Configuration Name: SYSTEM   CONFIG    UserID: PMAINT    Addr: CF0


Do you edit your CP directory file manually?
 _ YES  User Directory Name: USER     DIRECT    UserID: PMAINT    Addr: 2CC
 _ NO

RACF is disabled for the system you are upgrading.
Are you using a different security manager?
 _ YES
 _ NO




     F1 = HELP     F3/F12 = QUIT    F5 = Process   ENTER = Refresh
```

Figure 16. z/VM Upgrade - User Supplied Environment Information Panel

a. The *Select a System DASD size* field will display only the installation DASD type for the system you are upgrading.

   If your IBM installed minidisks reside on 3390 volumes: You may select either 3390 Mod 3, 3390 Mod 9, or 3390 Mod 27. Place any nonblank character in front of the DASD model where the new upgrade work system will be loaded. Only one DASD model can be selected.

   If your IBM installed minidisks reside on FBA volumes: FBA DASD with the default minimum DASD size of 6.0 gigabytes will be displayed. Place any nonblank character in front of the FBA DASD field. If you are using FBA DASD with a size larger than the default minimum, change the size field.

b. The *System Configuration Name* fields are preloaded with the default filename, filetype, and location of the file as shipped by IBM. If the system you are upgrading changed any of these values, enter the actual filename, filetype and/or location of your system configuration file.

c. If you make changes to the user definitions on your system by directly editing the CP user directory file, place a nonblank character in front of YES. If you have changed the defaults shipped by IBM, update the filename, filetype and/or location of your user directory with the actual file information. Otherwise, enter a nonblank character in front of NO.

d. If the RACF/VM Security Server is enabled on the system you are upgrading, this panel will not display any information related to the security manager. If you are using any security manager other than RACF, place a nonblank character in front of YES. If you are not using a security manager, place a nonblank character in front of NO.

e. Press F5 to process your selections.

   F5

6. Complete the Installation Volume Definition panel using the information you entered on Upgrade Installation Worksheet 3 for 3390 (Table 15 on page 160) or Upgrade Installation Worksheet 4 for FBA (Table 16 on page 161).

```
             *** z/VM UPGRADE - INSTALLATION VOLUME DEFINITION ***

COMMON AND RELEASE VOLUMES
       TYPE     LABEL      ADDRESS                      FORMAT (Y/N)
      =======  ========   =========                     ============
      COMMON    IBMCM1      ____                             _
      COMMON2   IBMCM2      ____
      RELVOL    xxxRL1      ____
      RELVOL2   xxxRL2      ____
      RELVOL3   xxxRL3      ____



MEMBER VOLUMES
       TYPE     LABEL      ADDRESS
      =======  ========   =========
      RES       IBMRES      ____
      SPOOL     IBMS01      ____
      PAGE      IBMP01      ____
      MEMBER    IBMWK1      ____
      MEMBER    IBMWK2      ____
      MEMBER    IBMWK3      ____



       F1 = HELP      F3/F12 = QUIT     F5 = Process    ENTER = Refresh
```

Figure 17. z/VM Upgrade - Installation Volume Definition Panel

a. If you do not want use a default volume label, then enter a new label in the *LABEL* field. See upgrade installation worksheet 3 (Table 15 on page 160) or upgrade installation worksheet 4 (Table 16 on page 161) for the labels you selected during planning.
b. Fill in the volume addresses in the *ADDRESS* fields. See upgrade installation worksheet 3 (Table 15 on page 160) or upgrade installation worksheet 4 (Table 16 on page 161) for the addresses you selected during planning.
c. Fill in the *FORMAT (Y/N)* column with Y to let the installation program format your installation volumes or N to not format your installation volumes. Specify N only if you have already CP formatted your volumes for this installation using ICKDSF or CPFMTXA. If you specify N, the volumes will be labeled but not formatted.
d. Press F5 to process your selections.

   F5

7. Complete the Additional Space Requirements panel.

   Note: If you are upgrading from V6.3 to V6.4, you will *not* see all of these user IDs shown.

```
         *** z/VM UPGRADE - ADDITIONAL SPACE REQUIREMENTS ***

Space is needed in your existing environment to load minidisks for the
following user IDs.  Supply the volume label and free space on each volume.

MEMBER VOLUME
      USER ID    MINIMUM       LABEL       START         END
     --------    --------     -------   ----------   ----------
     DTCVSW3         nnnn      ______   __________   __________
     DTCVSW4         nnnn      ______   __________   __________
     TCPMAINT        nnnn      ______   __________   __________
     PERFSVM         nnnn      ______   __________   __________
     OPNCLOUD        nnnn      ______   __________   __________
     VSMGUARD        nnnn      ______   __________   __________
     VSMWORK1        nnnn      ______   __________   __________
     VSMWORK2        nnnn      ______   __________   __________
     VSMWORK3        nnnn      ______   __________   __________

COMMON VOLUME
      USER ID    MINIMUM       LABEL       START         END
     --------    --------     -------   ----------   ----------
     6VMDIR40        nnnn      ______   __________   __________
     5684042J        nnnn      ______   __________   __________

     F1 = HELP      F3/12 = QUIT     F5 = Process     ENTER = Refresh
```

Figure 18. z/VM Upgrade - Additional Space Requirements Panel

a. Using Upgrade Installation Worksheet 5 (Table 17 on page 161), fill in:
   - The labels of the volumes where the space for each user ID will be allocated.

b. If you edit your CP user directory file manually, using upgrade installation worksheet 5 (Table 17 on page 161), fill in:
   - The starting cylinder or block where the minidisks for this user ID will be defined.
   - The ending cylinder or block where the minidisks for this user ID will be defined.
   - The space available between the *START* and *END* values must be equal to or larger than the value displayed in the *MINIMUM* column.

c. Press F5 to process.

   F5

8. A summary of your upgrade information is displayed. The output you see may be different due to your planning choices and your current system environment. Review the output displayed to verify your planning choices. If any of the information displayed is not correct, rerun the INSTPLAN command and supply corrected information.

   Notes:

   a. You may *not* see message IUGPUX8418W.

   b. If you are upgrading from V6.3 to V6.4, you will *not* see all of these user IDs shown.

```
IUGPUX8475I SYSTEM UPGRADE INFORMATION
  EXISTING MEMBER INFORMATION:
    SYSTEM TYPE: SSI    SYSTEM/MEMBER NAME: name  CLUSTER NAME: name
           COMMON SERVICE FILEPOOL: fpname
           z/VM PRODUCTS/FEATURES ENABLED:
              SSI    PERFTK    RSCS  RACF  DIRMAINT

           ADDITIONAL SPACE REQUIREMENTS:

 MEMBER        USER ID       MIN      LABEL      START        END
 VOLUME        ----------   --------   ------  ----------   ----------
               DTCVSW3          nnnn   label         nnnn         nnnn
               DTCVSW4          nnnn   label         nnnn         nnnn
               TCPMAINT         nnnn   label         nnnn         nnnn
               PERFSVM          nnnn   label         nnnn         nnnn
               OPNCLOUD         nnnn   label         nnnn         nnnn
               VSMGUARD         nnnn   label         nnnn         nnnn
               VSMWORK1         nnnn   label         nnnn         nnnn
               VSMWORK2         nnnn   label         nnnn         nnnn
               VSMWORK3         nnnn   label         nnnn         nnnn


 COMMON        USER ID       MIN      LABEL      START        END
 VOLUME        ----------   --------   ------  ----------   ----------
               6VMDIR40         nnnn   label         nnnn         nnnn
               5684042J         nnnn   label         nnnn         nnnn


|          WORK SYSTEM INFORMATION:
               DASD TYPE SELECTED: type model
               FORMAT VOLUMES: y/n
               VOLUME LABELS AND ADDRESSES:
                 lblcm1    addr
                 lblcm2    addr
                 lblrl1    addr
                 lblrl2    addr
                 lblrl3    addr
                 lblres    addr
                 lblspl    addr
                 lblpag    addr
                 lblwk1    addr
                 lblwk2    addr
                 lblwk3    addr


IUGPUX8418W Not enough space available in filepool fpname
            Your existing fpname filepool has nnnnnnnn blocks available.
            You need nnnnnnnn blocks in storage group 2 to load the new filespaces.
            You must increase your filepool by nnnnnn blocks before running INSTUPGR

IUGINP8392I INSTPLAN EXEC ENDED SUCCESSFULLY
Ready; T=n.nn/n.nn hh:mm:ss
```

9. Verify that the information listed in the response from the INSTPLAN command matches the system you are upgrading and the information listed on your upgrade installation worksheets.

Step 2. Verify your upgrade installation volumes

1. Log on to the MIGMAINT user ID on the system being upgraded.
2. If you are installing to 3390, skip to substep 8 on page 189.
3. If the SCSI volumes you are installing to are defined as minidisks on your installation user ID, skip to substep 8 on page 189.
4. If the SCSI volumes you are installing to have already been defined, either in the SYSTEM CONFIG or by using the SET EDEVICE command, skip to substep 7. If not yet defined, continue with the next substep.
5. To define the SCSI volumes, you need to know which FCP addresses are valid for your SCSI volumes.

   If you know the FCP address or the range of addresses associated with your SCSI volume addresses skip this substep.

   If only the channel path id is known, issue the Query CHPID command to display all FCP addresses associated with the path. For example, if the channel path is X'66', issue:

   ```
   query chpid 66
   Path 66 online to devices 517C 5319 550D 8100 8101 8102 8103 8104
   Path 66 online to devices 8105 8106 8107 8108 8109 810A 810B 810C
   Path 66 online to devices 810D 810E 810F 8110 8111 8112 8113 8114
   Path 66 online to devices 8115 8116 8117 8118 8119 811A 811B 811C
   Path 66 online to devices 811D 811E 811F
   ```

6. To define the SCSI volumes, use the information recorded in upgrade installation worksheet 4 (Table 16 on page 161).

   See *z/VM: CP Planning and Administration* for information on defining SCSI disks. The following information will provide each SCSI volume with a basic definition.

   For each SCSI volume:

   a. Select and record a free FCP address for each *edevice*. You should use one FCP device for the 640RES and a different (or multiple different) FCPs for the other volumes.

      ```
      query fcp free
      ```

      Choose a device from the output. Record a FCP address for each edevice in the **FCP Address** column in upgrade installation worksheet 4 (Table 16 on page 161).

   b. Define the device address.

      set edevice *dasdaddr* **type fba attr scsi fcp_dev** *fcpn* **wwpn** *www* **lun** lll

      dasdaddr
      : The edevice address from traditional installation worksheet 5 (Table 7 on page 19).

      fcpn
      : FCP address (you should use one FCP device for the 640RES and a different, or multiple different, FCPs for the other disks).

      www
      : World Wide port number.

      lll
      : LUN address.

7. Vary on any SCSI volumes not already online. Repeat this substep for each volume.

   vary on *dasdaddr*

8. Attach each DASD volume listed on upgrade installation worksheet 3 (Table 15 on page 160) or upgrade installation worksheet 4 (Table 16 on page 161) that is not already attached. Enter the following ATTACH command for each volume:

```
attach dasdaddr *
DASD dasdaddr ATTACHED TO userid dasdaddr

.
.
.
Ready; T=n.nn/n.nn hh:mm:ss
```

dasdaddr
Address of the DASD volume.

userid
First-level user ID logged on to previously.

Attention: Issue the QUERY DASD ATTACH * command to verify there are no DASD attached to your user ID with the same label as those being used for installation. You must detach any duplicate-labeled DASD from your user ID to prevent bringing them online.

Step 3. Run INSTALL

1. From the MIGMAINT userid, access the 24CC minidisk as file mode C.

```
access 24cc c
Ready; T=n.nn/n.nn hh:mm:ss
```

2. Run INSTALL to install your new V6.4 work system for your upgrade installation.

   Note: You must *not* disconnect your MIGMAINT user ID. The installation procedure will IPL the z/VM system a number of times and these will fail if MIGMAINT is running disconnected.

```
install
```

   At this point, messages related to activities performed by installation, such as formatting and allocation DASD, restoring data, IPLing the system, and running SERVICE and PUT2PROD will be displayed.

   If you receive one of the following messages:

```
IUGILB8300E FILE ddd50000 IMAGE W NOT FOUND

IUGILB8342E THE COMMAND 'PIPE DVDDECOD ddd500 FAILED WITH RC=rc'
```

   make sure you load the installation RSU DVD to your installation minidisk or FTP server before restarting.

   If you are installing from a physical DVD, you will receive the following prompt:

```
HCPIRU8484R PLEASE PLACE THE INSTALLATION RSU DVD
            IN THE DRIVE, THEN TYPE GO TO
            CONTINUE OR TYPE EXIT TO QUIT.
```

   Place the installation RSU DVD in the DVD drive and wait until the light on the DVD drive goes out or stops blinking, then enter go.

   Do not attempt to skip installing the RSU during upgrade.

   If you enter exit, your installation will not be complete. You must rerun the INSTALL command and enter go to load the RSU files before you can continue to the next step.

   If the installation fails while loading the installation RSU DVD, issue INSTALL to try again.

```
HCPIRU8440I NOW LOADING MAINTvrm 500 DISK
HCPIRU8341I LOAD OF INSTALLATION RSU COMPLETED SUCCESSFULLY
```

   When the INSTALL exec completes, there will be one additional IPL, the system will come back up logged on to MAINT640, and the following will be displayed:

```
*************************************************************
*                                                           *
*  The installation of your upgrade work system is complete.  *
*  This system will be SHUTDOWN and you will be returned to   *
*  MIGMAINT on the system you are upgrading.                *
*                                                           *
*  Once the system shutdown is complete:                    *
*                                                           *
*   IPL CMS on MIGMAINT                                     *
*   Continue with the instructions in the Installation Guide. *
*                                                           *
*************************************************************


*************************************************************
*                                                           *
*  Type GO to continue                                      *
*                                                           *
*************************************************************


go
.
.
.
```

3. IPL CMS on the MIGMAINT user ID.

```
ipl cms

.
.
.
ENTER
Ready; T=n.nn/n.nn hh:mm:ss
```

What to do next

Go to Chapter 19, “Generate the STAGE1 changes file,” on page 193.

Chapter 19. Generate the STAGE1 changes file

In this chapter, you will:

- Create a backup copy of the system being upgraded.
- Run INSTUPGR to create the STAGE1 changes file.

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Step 1. Create a backup copy of the system being upgraded

Before you begin to upgrade your system, you should create a backup copy of the system to be upgraded following your normal backup procedures.

If updates are made to the system being upgraded that cannot be backed out, this backup can be used to restore the system to the state it was in before the installation upgrade STAGE1 procedure started.

Step 2. Generate the STAGE1 table

1. Make sure any user IDs that have write links to the system inventory and service disks, such as PMAINT, MAINT, MAINT620, MAINT630, MAINT640, and product installation IDs 6VM*xxx*20, 6VM*xxx*30, and 6VM*xxx*40, are logged off the system you are upgrading and all other members of your cluster before logging onto MIGMAINT.
2. Log on to the MIGMAINT user ID on the system being upgraded. Make sure the user ID meets the MIGMAINT user ID requirements.
3. Access the 24CC minidisk as file mode C.

```
access 24cc c
Ready; T=n.nn/n.nn hh:mm:ss
```

4. Run INSTUPGR to generate the $STAGE1$ $TABLE$ file, which will list the STAGE1 changes needed to upgrade your system.

```
instupgr stage1 (prime
IUGUPG8392I INSTUPGR ended successfully
Ready; T=n.nn/n.nn hh:mm:ss
```

5. If INSTUPGR completes with warnings, they will be displayed on the screen and also logged in the file $STAGE1$ $WRNFILE on the MIGMAINT 2CF0 disk (accessed as filemode E). Review the warnings and resolve any issues before continuing to Chapter 20, "Update your current system with the STAGE1 changes," on page 197.
6. If any errors occur, review the error messages in file INSTUPGR $CONSLOG on the MIGMAINT 2CF0 minidisk (accessed as filemode E), correct the condition that is causing the error, and then go back to substep 4.

What to do next

Go to Chapter 20, "Update your current system with the STAGE1 changes," on page 197.

Note: During the next step, the IBM-supplied filepools are restarted.

Generate the STAGE1 table

Chapter 20. Update your current system with the STAGE1 changes

In this chapter, you will:

- Make the changes to your current system identified in the $STAGE1$ $TABLE$.

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Step 1. Choose your update option

In the previous step a file named $STAGE1$ $TABLE$ was generated on the MIGMAINT 2CF0 disk by the INSTUPGR command. This table contains a list of actions to be taken on your current system in order to complete the first stage of your system upgrade. Each entry in the table consists of one or more comment lines that describe an action to be taken and then one or more lines with more detailed information so that a program or a person could read the information and perform the action on a specific system.

There are three ways to complete these actions:

1. Run the INSTUPGR command with operand STAGE1 and option COMMIT. The programs supplied by IBM will read the $STAGE1 $TABLE$ and perform all the actions listed. If you are using a directory manager program on your system and that program has provided an exit to work with the IBM upgrade code, that exit will be called to perform directory functions. If you edit your CP user directory manually, INSTUPGR will make the necessary changes to your CP user directory file, using the information you provided when you ran the INSTPLAN command. In either case, INSTUPGR will generate a file that will allow you to back out the changes made to this point. If you edit your CP user directory manually, backout will consist of restoring the user directory that existed before running INSTUPGR STAGE1 (COMMIT. Any changes made to the user directory by your normal procedures after STAGE1 (COMMIT begins would be lost. You need to document any changes made by your normal procedures so they can be restored after backout.
2. Manually update your system with the changes listed in the $STAGE1$ $TABLE$. You can perform all of the changes listed in the table and edit the table to mark them as complete. Note that some changes are dependent on earlier entries being complete. You must complete all entries in the order they appear in the table.

   Note: If you choose this option, no backout file is created. If you decide *not* to use the upgrade installation procedure after you have made changes to your system, you will need to remove the changes manually.

3. Use a combination of options 1 and 2. If you prefer, you can make some of the required changes manually and allow the INSTUPGR program to make the rest. Note that some changes are dependent on earlier entries being complete. You must complete all entries in the order they appear in the table and you must complete all the entries that precede the changes you select to make manually. To use this method, make the changes you wish to make yourself first and update the $STAGE1$ $TABLE$ to mark just those changes as complete. Then run the INSTUPGR command with operand STAGE1 and option COMMIT. The INSTUPGR program will make any changes to your system that you have not marked as completed and it will update the $STAGE1$ $TABLE$ and all other required status tables. It will also generate a backout file. This backout file will only contain records for the changes that were made by the INSTUPGR program. If you decide *not* to use the upgrade installation procedure after you have made changes to your system, you will need to remove the changes you made manually.

No matter which option you choose, the changes listed in the $STAGE1$ $TABLE$ file must be completed *before* moving on to STAGE2.

To use the INSTUPGR command to make your system changes, follow “Step 2. Use the INSTUPGR command to make your STAGE1 system changes” on page 199.

To make some of the changes to your system manually, follow “Step 3. Make some of the STAGE1 changes to your system manually” on page 200.

To make all of the changes to your system manually, follow “Step 4. Make all of the STAGE1 changes to your system manually” on page 201.

Step 2. Use the INSTUPGR command to make your STAGE1 system changes

1. Log on to the MIGMAINT user ID on the system being upgraded. Make sure the user ID meets the MIGMAINT user ID requirements.
2. Access the 24CC minidisk as file mode C.

```
access 24cc c
Ready; T=n.nn/n.nn hh:mm:ss
```

3. Run INSTUPGR to upgrade your system with STAGE1 changes defined in the $STAGE1$ $TABLE$ file.

```
instupgr stage1 (commit
Now processing line 10 of nnn
Now processing line 20 of nnn

.
.
.
IUGUPG8392I INSTUPGR ended successfully
Ready; T=n.nn/n.nn hh:mm:ss
```

4. If any errors occur, review the error messages in file INSTUPGR $CONSLOG on the MIGMAINT 2CF0 minidisk (accessed as filemode E), correct the condition that is causing the error, and then go back to substep 3.

   Note: For some error conditions, you may need to remove the changes that have been made on your system up to this point. If this is the case, see Appendix P, “Removing changes made by STAGE1 (optional),” on page 317.

What to do next

Go to Chapter 21, “Finish the STAGE1 upgrade,” on page 203.

Step 3. Make some of the STAGE1 changes to your system manually

1. Log on to the MIGMAINT user ID on the system being upgraded. Make sure the user ID meets the MIGMAINT user ID requirements.
2. Access the 24CC minidisk as file mode C.

```
access 24cc c
Ready; T=n.nn/n.nn hh:mm:ss
```

3. Access the 2CF0 minidisk as file mode E.

```
access 2cf0 e
Ready; T=n.nn/n.nn hh:mm:ss
```

4. Review the entries in the $STAGE1$ $TABLE$ to determine which changes you want to perform yourself.

   Some changes are dependent on earlier entries being complete. You must complete all entries in the order they appear in the table, so you must also manually complete all the entries that precede the changes you select to make manually.

   For each entry in the $STAGE1$ $TABLE$ that you selected to manually update on your system:

   a. See Appendix N, "$STAGE1$ $TABLE$ entry definitions," on page 287 for a description of the changes required for that entry.
   b. Make the changes to your system. You should document the changes you made, for potential backout purposes.
   c. Once an entry has been completed, update the entry in the $STAGE1$ $TABLE$ with a dash (-) in the first column to indicate that the entry has been completed.
5. Once you have completed all of the changes you selected and you have updated the $STAGE1$ $TABLE$, go to "Step 2. Use the INSTUPGR command to make your STAGE1 system changes" on page 199 to complete the rest of the entries.

Note: If you decide not to use the upgrade installation to upgrade this system, you should refer to Appendix P, "Removing changes made by STAGE1 (optional)," on page 317 for information on removing the changes made up to this point.

Step 4. Make all of the STAGE1 changes to your system manually

1. Log on to the MIGMAINT user ID on the system being upgraded. Make sure the user ID meets the MIGMAINT user ID requirements.
2. Access the 24CC minidisk as file mode C.

```
access 24cc c
Ready; T=n.nn/n.nn hh:mm:ss
```

3. Access the 2CF0 minidisk as file mode E.

```
access 2cf0 e
Ready; T=n.nn/n.nn hh:mm:ss
```

4. Review the entries in the $STAGE1$ $TABLE$.

   Some changes are dependent on earlier entries being complete. You must complete all entries in the order they appear in the table.

   For each entry in the $STAGE1$ $TABLE$:

   a. See Appendix N, "$STAGE1$ $TABLE$ entry definitions," on page 287 for a description of the changes required for that entry.
   b. Make the changes to your system. You should document the changes you made, for potential backout purposes.
   c. Once an entry has been completed, update the entry in the $STAGE1$ $TABLE$ with a dash (-) in the first column to indicate that the entry has been completed.

5. Once all the changes are complete and you have updated the $STAGE1$ $TABLE$, run the INSTUPGR command to update the appropriate status tables so that you can proceed with the second stage of your upgrade installation.

```
instupgr stage1 (commit done
IUGUPG8392I INSTUPGR ended successfully
Ready; T=n.nn/n.nn hh:mm:ss
```

Note: If you decide not to use the upgrade installation to upgrade this system, you should refer to Appendix P, "Removing changes made by STAGE1 (optional)," on page 317 for information on removing the changes made up to this point.

What to do next

Go to Chapter 21, "Finish the STAGE1 upgrade," on page 203.

Chapter 21. Finish the STAGE1 upgrade

In this chapter, you will:

- Review external security manager (ESM) considerations.
- Review directory considerations.
- Rework your local modifications.

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Step 1. Review external security manager (ESM) considerations

If you are *not* running an external security manager (ESM), skip to "Step 2. Review directory considerations" on page 210.

If you are upgrading a multimember SSI cluster and this is *not* the first member to be upgraded to z/VM V6.4, skip this step and go to "Step 2. Review directory considerations" on page 210.

Refer to the documentation for your security manager to perform the following steps, as necessary:

1. Make sure the MAINT640 user ID is authorized to:
   - Link to any minidisk on the system without the need to supply a password.
   - Perform security authorizations on behalf of other users.
   - Perform all SFS administration functions, if you are managing SFS with your security manager.
2. If you are upgrading from z/VM V6.2 or V6.3 to z/VM V6.4 and you are using an ESM to manage logon authorizations:
   - The following user IDs were added to the user directory with the default password. Make sure your ESM will allow these user IDs to be logged on:

     MAINT640
     6VMDIR40
     6VMPTK40
     6VMRAC40
     6VMRSC40
     6VMTCP40
     6VMHCD40
     DTCVSW3
     DTCVSW4
   - The following user IDs were added to the user directory with the AUTOONLY password. Make sure your ESM will allow this user ID to be autologged:
     OPNCLOUD
3. If you are using an ESM to manage disk access:
   - The following component user IDs were added for the new release:
     – The user IDs for the new release need to have the same disk authorizations as the corresponding user IDs for the old release.
     – User IDs that are currently authorized to access resources owned by the user IDs from the old release must now be authorized for the same resources as the user IDs for the new release.
       - If you are using RACF, you can use the RACF command RLIST for each user ID and minidisk from the old release to determine the current disk authorization.

New release	**Old release**
MAINT640	MAINT6*x*0
6VMDIR40	6VMDIR*x*0
6VMPTK40	6VMPTK*x*0
6VMRAC40	6VMRAC*x*0
6VMRSC40	6VMRSC*x*0
6VMTCP40	6VMTCP*x*0
6VMHCD40	6VMHCD*x*0

   - If you are upgrading from z/VM V6.2 or V6.3 to z/VM V6.4, the following new user IDs were added and need the following link authorizations:

User ID	Link authorization
OPNCLOUD	MAINT 190 RR MAINT 19E RR MAINT 193 RR MAINT640 400 RR
DTCVSW3	6VMTCP40 491 RR 6VMTCP40 492 RR TCPMAINT 591 RR TCPMAINT 592 RR TCPMAINT 198 RR
DTCVSW4	6VMTCP40 491 RR 6VMTCP40 492 RR TCPMAINT 591 RR TCPMAINT 592 RR TCPMAINT 198 RR

- If you are upgrading from z/VM V6.2 to z/VM V6.4, current users need authorizations for the following links that were added for this release:

User ID	Link authorization
DIRMAINT	TCPMAINT 592 RR
MAINT	MAINT640 400 RR
LOHCOST	MAINT640 400 RR MAINT 193 RR
SYSADMIN	PMAINT 551 RR

- If you are upgrading from z/VM V6.2 or z/VM V6.3 to z/VM V6.4, current users need authorizations for the following links that were added for this release:

User ID	Link authorization
MAINT	MAINT640 400 RR
MAINT	MAINT640 5E6 RR
BLDSEG	MAINT 5E6 RR
RACFSMF	RACFVM 301 MR
RACFSMF	RACFVM 302 MR

4. The following user IDs have links that were changed during the upgrade installation. These user IDs need to be authorized to link to the new disks for the link mode indicated:

User ID	Old link (with mode)	New link (with mode)
RACMAINT	6VMRAC*x*0 191 RR 6VMRAC*x*0 29E RR 6VMRAC*x*0 505 MR 6VMRAC*x*0 590 MR	6VMRAC40 191 RR 6VMRAC40 29E RR 6VMRAC40 505 MR 6VMRAC40 590 MR
TCPMAINT	6VMTCP*x*0 491 RR 6VMTCP*x*0 492 RR	6VMTCP40 491 RR 6VMTCP40 492 RR
DIRMAINT	6VMDIR*x*0 11F MR 6VMDIR*x*0 41F MR 6VMDIR*x*0 491 MR 6VMDIR*x*0 492 MR	6VMDIR40 11F MR 6VMDIR40 41F MR 6VMDIR40 491 MR 6VMDIR40 492 MR

User ID	Old link (with mode)	New link (with mode)
MAINT	MAINT6*x*0 201 RR MAINT6*x*0 490 RR MAINT6*x*0 493 RR MAINT6*x*0 5E5 RR MAINT6*x*0 51D RR MAINT6*x*0 890 RR	MAINT640 201 RR MAINT640 490 RR MAINT640 493 RR MAINT640 5E5 RR MAINT640 51D RR MAINT640 890 RR

If z/VM or Performance Toolkit was loaded to filepool, the links in the following table do not exist. If z/VM or Performance Toolkit was loaded to minidisk, the user IDs listed need authorization to the new disks:

User ID	Old link (with mode)	New link (with mode)
MAINT	MAINT6*x*0 194 RR MAINT6*x*0 2A2 RR MAINT6*x*0 2A4 RR MAINT6*x*0 2A6 RR MAINT6*x*0 2C4 RR MAINT6*x*0 2D2 RR	MAINT640 194 RR MAINT640 2A2 RR MAINT640 2A4 RR MAINT640 2A6 RR MAINT640 2C4 RR MAINT640 2D2 RR
PERFSVM	6VMPTK*x*0 200 RR 6VMPTK*x*0 29D RR	6VMPTK40 200 RR 6VMPTK40 29D RR

5. The following user IDs have links to a disk that is actually owned by a different user ID (an indirect resource). The user IDs listed in the table need to be authorized to link to the indirect resource for the link mode indicated:

Table 18. Links to indirect resources, Part 1 of 3

User ID	Directory link (with mode)	Indirect resource (with mode)
EREP	MAINT 201 RR	MAINT640 201 RR
LOHCOST	MAINT 400 RR	MAINT640 400 RR
MIGMAINT	MAINT 5E5 RR MAINT 51D MR	MAINT640 5E5 RR MAINT640 51D MR
4OSASF40	MAINT 5E5 RR MAINT 51D MR TCPMAINT 492 RR	MAINT640 5E5 RR MAINT640 51D MR 6VMTCP40 492 RR
5684042J	MAINT 5E5 RR MAINT 51D MR	MAINT640 5E5 RR MAINT640 51D MR
PERSMAPI	PERFSVM 200 RR PERFSVM 29D RR	6VMPTK40 200 RR [1] 6VMPTK40 29D RR [1]
IBMUSER	RACMAINT 29E RR RACMAINT 305 RR RACMAINT 192 RR	6VMRAC40 29E RR 6VMRAC40 505 RR 6VMRAC40 191 RR
[1] If PERFTK was loaded to filepool, this disk does not exist. No authorization is necessary.		

Table 19. Links to indirect resources, Part 2 of 3

User ID	Directory link (with mode)	Indirect resource (with mode)
DATAMOVE	DIRMAINT 191 RR DIRMAINT 192 RR DIRMAINT 11F RR DIRMAINT 21F RR	6VMDIR40 491 RR 6VMDIR40 492 RR 6VMDIR40 11F RR 6VMDIR40 41F RR

Table 19. Links to indirect resources, Part 2 of 3 (continued)

User ID	Directory link (with mode)	Indirect resource (with mode)
DATAMOV2	DIRMAINT 191 RR DIRMAINT 192 RR DIRMAINT 11F RR DIRMAINT 21F RR	6VMDIR40 491 RR 6VMDIR40 492 RR 6VMDIR40 11F RR 6VMDIR40 41F RR
DATAMOV3	DIRMAINT 191 RR DIRMAINT 192 RR DIRMAINT 11F RR DIRMAINT 21F RR	6VMDIR40 491 RR 6VMDIR40 492 RR 6VMDIR40 11F RR 6VMDIR40 41F RR
DATAMOV4	DIRMAINT 191 RR DIRMAINT 192 RR DIRMAINT 11F RR DIRMAINT 21F RR	6VMDIR40 491 RR 6VMDIR40 492 RR 6VMDIR40 11F RR 6VMDIR40 41F RR
DIRMSAT	DIRMAINT 191 RR DIRMAINT 192 RR DIRMAINT 11F RR DIRMAINT 21F RR	6VMDIR40 491 RR 6VMDIR40 492 RR 6VMDIR40 11F RR 6VMDIR40 41F RR
DIRMSAT2	DIRMAINT 191 RR DIRMAINT 192 RR DIRMAINT 11F RR DIRMAINT 21F RR	6VMDIR40 491 RR 6VMDIR40 492 RR 6VMDIR40 11F RR 6VMDIR40 41F RR
DIRMSAT3	DIRMAINT 191 RR DIRMAINT 192 RR DIRMAINT 11F RR DIRMAINT 21F RR	6VMDIR40 491 RR 6VMDIR40 492 RR 6VMDIR40 11F RR 6VMDIR40 41F RR
DIRMSAT4	DIRMAINT 191 RR DIRMAINT 192 RR DIRMAINT 11F RR DIRMAINT 21F RR	6VMDIR40 491 RR 6VMDIR40 492 RR 6VMDIR40 11F RR 6VMDIR40 41F RR
TCPIP	TCPMAINT 491 RR TCPMAINT 492 RR	6VMTCP40 491 RR 6VMTCP40 492 RR
DTCVSW1	TCPMAINT 491 RR TCPMAINT 492 RR	6VMTCP40 491 RR 6VMTCP40 492 RR
DTCVSW2	TCPMAINT 491 RR TCPMAINT 492 RR	6VMTCP40 491 RR 6VMTCP40 492 RR
DTCVSW3	TCPMAINT 491 RR TCPMAINT 492 RR	6VMTCP40 491 RR 6VMTCP40 492 RR
DTCVSW4	TCPMAINT 491 RR TCPMAINT 492 RR	6VMTCP40 491 RR 6VMTCP40 492 RR
FTPSERVE	TCPMAINT 491 RR TCPMAINT 492 RR	6VMTCP40 491 RR 6VMTCP40 492 RR
IMAP	TCPMAINT 491 RR TCPMAINT 492 RR	6VMTCP40 491 RR 6VMTCP40 492 RR
IMAPAUTH	TCPMAINT 491 RR TCPMAINT 492 RR	6VMTCP40 491 RR 6VMTCP40 492 RR
LDAPSRV	TCPMAINT 491 RR TCPMAINT 492 RR	6VMTCP40 491 RR 6VMTCP40 492 RR
MPROUTE	TCPMAINT 491 RR TCPMAINT 492 RR	6VMTCP40 491 RR 6VMTCP40 492 RR

Table 20. Links to indirect resources, Part 3 of 3

User ID	Directory link (with mode)	Indirect resource (with mode)
PORTMAP	TCPMAINT 491 RR TCPMAINT 492 RR	6VMTCP40 491 RR 6VMTCP40 492 RR
REXECD	TCPMAINT 491 RR TCPMAINT 492 RR	6VMTCP40 491 RR 6VMTCP40 492 RR
RXAGENT1	TCPMAINT 491 RR TCPMAINT 492 RR	6VMTCP40 491 RR 6VMTCP40 492 RR
SMTP	TCPMAINT 491 RR TCPMAINT 492 RR	6VMTCP40 491 RR 6VMTCP40 492 RR
SNMPD	TCPMAINT 491 RR TCPMAINT 492 RR	6VMTCP40 491 RR 6VMTCP40 492 RR
SNMPQE	TCPMAINT 491 RR TCPMAINT 492 RR	6VMTCP40 491 RR 6VMTCP40 492 RR
SNMPSUBA	TCPMAINT 491 RR TCPMAINT 492 RR	6VMTCP40 491 RR 6VMTCP40 492 RR
UFTD	TCPMAINT 491 RR TCPMAINT 492 RR	6VMTCP40 491 RR 6VMTCP40 492 RR
VMNFS	TCPMAINT 491 RR TCPMAINT 492 RR	6VMTCP40 491 RR 6VMTCP40 492 RR
GSKADMIN	TCPMAINT 491 RR TCPMAINT 492 RR	6VMTCP40 491 RR 6VMTCP40 492 RR
SSLDCSSM	TCPMAINT 491 RR TCPMAINT 492 RR	6VMTCP40 491 RR 6VMTCP40 492 RR
DTCSMAPI	TCPMAINT 491 RR TCPMAINT 492 RR	6VMTCP40 491 RR 6VMTCP40 492 RR

6. If you configured RACF, you should have given the following user IDs operation authority. If you have defined operation authority for these IDs, no additional authorizations are needed for these disks and you can go to the next substep.

Table 21. Links to indirect resources

User ID	Directory link (with mode)	Indirect resource (with mode)
BLDNUC	MAINT 490 MW MAINT 890 MW	MAINT640 490 MW MAINT640 890 MW
BLDSEG	MAINT 194 MR MAINT 2A2 MR MAINT 2A4 MR MAINT 2A6 MR MAINT 2C4 MR MAINT 2D2 MR MAINT 5E5 RR MAINT 5E6 RR MAINT 51D MR	MAINT640 194 MR [1] MAINT640 2A2 MR [1] MAINT640 2A4 MR [1] MAINT640 2A6 MR [1] MAINT640 2C4 MR [1] MAINT640 2D2 MR [1] MAINT640 5E5 RR MAINT640 5E6 RR MAINT640 51D MR
BLDRACF	RACMAINT 490 MW RACMAINT 305 RR	6VMRAC40 590 MW 6VMRAC40 505 RR
[1] If z/VM was loaded to filepool, this disk does not exist. No authorization is necessary.		

7. If you are using an ESM to manage your shared filepool administrator authorizations, give ADMIN authority for the following filepools to the user IDs listed:

File pool	User IDs
VMPSFS	MAINT640[2] VSMGUARD[1] VSMWORK1[1] VSMWORK2[1] VMSWORK3[1]
VMSYS	MAINT640[2] VSMWORK1[1] VSMWORK2[1] VMSWORK3[1] 6VMTCP40[2]
VMSYSR	MAINT640[2]
VMSYSU	MAINT640[2]
[1] V6.2 to V6.4 upgrade only [2] V6.2 to V6.4 and V6.3 to V6.4 upgrades	

8. If you are upgrading from z/VM V6.2 or V6.3 to z/VM V6.4 and you are using an ESM to manage command authorizations, the new user IDs should be authorized for appropriate VM commands following your normal site procedures:

User ID	Authorization
MAINT640	Same as MAINT6*x*0
6VMDIR40	Same as 6VMDIR*x*0
6VMPTK40	Same as 6VMPTK*x*0
6VMRAC40	Same as 6VMRAC*x*0
6VMRSC40	Same as 6VMRSC*x*0
6VMTCP40	Same as 6VMTCP*x*0
6VMHCD40	Same as 6VMHCD*x*0
OPNCLOUD	Class G
DTCVSW3	Class G
DTCVSW4	Class G

9. If you are upgrading from z/VM V6.2 or V6.3 to z/VM V6.4 and you are using an ESM to manage any other system resources, review the user directory entries for the following new user IDs to identify any other security authorization that may be required for your environment:

   MAINT640
   6VMDIR40
   6VMPTK40
   6VMRAC40
   6VMRSC40
   6VMTCP40
   6VMHCD40
   OPNCLOUD
   DTCVSW3
   DTCVSW4

Step 2. Review directory considerations

1. If you are upgrading a member of a multimember SSI cluster, the user directory needs to be brought online for all members of the cluster.
   a. If you indicated that you xedit your directory and allowed INSTUPGR to make the directory changes, you need to run DIRECTXA on all other members of the cluster.
   b. If you used DirMaint as your directory manager to make upgrade changes, the directory was already brought online for all members.
   c. If you used a different directory manager or made the directory updates manually, you need to make sure the directory is brought online for all other members of the cluster.
2. If you are upgrading a non-SSI system, a one member SSI cluster, or the first member of a multimember SSI cluster and DirMaint is enabled as your directory manager, copy any configured files from 6VMDIR*x*0's minidisks to the new 6VMDIR40's disks and then recycle DirMaint.
   a. Copy only the configured files from:
      - 6VMDIR*x*0 491 to 6VMDIR40 491
      - 6VMDIR*x*0 492 to 6VMDIR40 492
      - 6VMDIR*x*0 11F to 6VMDIR40 11F
      - 6VMDIR*x*0 41F to 6VMDIR40 41F
   b. Also copy the DVHPROFA DIRMSAT*, DVHPROFA DATAMOV*, and DVHPROFM DATADVH files, if they exist, from 6VMDIR*x*0 491 and 492 to 6VMDIR40 491 and 492.
   c. Update configuration files, such as AUTHFOR CONTROL and DVHNAMES DATADVH, with the new user IDs that were added for z/VM V6.4, as appropriate:
      MAINT640
      6VMDIR40
   d. If you are using an ESM, user IDs AUTOLOG1 and AUTOLOG2 need access the the 6VMDIR40 11F minidisk. Make sure these user IDs have been given read authority to the 11F minidisk.
   e. Recycle all of the DirMaint servers:
      1) Attach the new release volume (or volumes) from your work system to all of the other members of your SSI.
      2) Determine which member the user ID DIRMAINT is logged on to.
      3) From that member, log off DIRMAINT.
      4) From that member, XAUTOLOG DIRMAINT.

      Repeat these three steps for DIRMSAT, DIRMSAT2, DIRMSAT3, DIRMSAT4, DATAMOVE, DATAMOV2, DATAMOV3, and DATAMOV4, as necessary.

      Your DirMaint servers are now running the upgraded release level of DirMaint.
3. Log off MIGMAINT.

Step 3. Rework your local modifications

1. If you are upgrading a multimember SSI cluster and this is *not* the first member to be upgraded to z/VM V6.4, skip this step and go to Chapter 22, "Stop your production workload and back up your system," on page 213.
2. If your system has local modifications to any components that are upgraded with the new release, the local modification files were copied over to the new release service disks and the VM SYSLMOD table was updated to allow those local modifications to be applied to the new release. You need to review your local modifications and either rework them for the new release or else remove them. You must then update the VM SYSLMOD table with the status of each local modification listed. This must be completed before continuing to the second stage of your upgrade installation.
3. Log on to the maintenance userid for your new release, MAINT640.

   ```
   logon maint640                                  The default password for MAINT640 is WD5JU8QP.
   .
   .
   .
   Ready; T=n.nn/n.nn hh:mm:ss
   ```

4. Determine if you have any local modifications by using the VMFUPDAT SYSLMOD command. If there are *no* local modifications that require rework, you'll see one of the responses shown here:

   ```
   vmfupdat syslmod

   VMFUTL2767I Reading VMFINS DEFAULTS B for additional options
   VMFUPX2309I There are no local modifications that require rework
   Ready; T=n.nn/n.nn hh:mm:ss
   ```

   OR:

   ```
   VMFUTL2767I Reading VMFINS DEFAULTS B for additional options
   DMSCPY002E INPUT file VM SYSLMOD D not found
   VMFUPX0002E File VM SYSLMOD D not found
   Ready (00028); T=n.nn/n.nn hh:mm:ss
   ```

   If you receive one of these responses (meaning there are *no* local modifications that require rework), skip to substep 7 on page 212.

   If there are local modifications that require rework, you'll see this panel:

```
                    *** Update SYSLMOD Table Entries ***

Set action code AC to C when rework is Complete.  Action code N means rework
is Not Complete.  Use the lines at the bottom of the panel to mark rework
complete for: ALL Localmods ( press PF6 ), any Localmods with ***** ( fill in
a Modid ), or any Localmods for ********** ( fill in a Compname ).

AC  Compname         Prodid      Modid    Part Fn  Part Fta    VVT Ft
--  ---------------- --------    -----    -------- --------    --------
N   CMS              6VMCMS40    0002     DMSNGP   TXT         VVTLCL









All local modifications PF6
All local modifications with Modid *****
All local modifications for Compname **********
                                                          Page 1 of 1



             PF1=HELP  PF3/PF12=Quit  PF5=Process  PF6=All_Mods
```

Figure 19. Update SYSLMOD Table Entries Panel

Review the information displayed on this panel and make a note of any parts with local modifications that you need to rework. Also make a note of any local modifications that should be removed. Press F3 or F12 to exit.

| **Note:** The "Part Fta" displayed is an abbreviation for the generated object file type.

5. Use the LOCALMOD command to rework any local modifications. See the *z/VM: Service Guide* for instructions on using LOCALMOD for rework. If any local modifications need to be removed, use the VMFREM command. See the *z/VM: VMSES/E Introduction and Reference* for details on the VMFREM EXEC.

   Note: Do *not* run the SERVICE or PUT2PROD commands. The parts will be rebuilt during a later step.

6. Once all local modifications have been reworked or removed, update the status in the VM SYSLMOD table by once again invoking the VMFUPDAT SYSLMOD command.

   ```
   vmfupdat syslmod
   ```

   Mark each part according to the instructions on the panel (as shown in Figure 19). When all parts are marked, press F5 to process the status updates.

7. Log off MAINT640.

What to do next

Go to Chapter 22, “Stop your production workload and back up your system,” on page 213.

Chapter 22. Stop your production workload and back up your system

In this chapter, you will:

- Stop your production workload and back up your system.

You are now ready to run the second stage of upgrade. In STAGE2, the new release code will be moved into production. You should shut down all your production workloads on the system you are upgrading (stop application servers, have end users log off, and so on) or move your production workload to another system or to another member of your SSI cluster. You must *not* shut down your shared file system servers, and you must *not* shut down your directory manager or security manager servers, if you are running these products. You should then create a backup copy of your entire current system following your normal backup procedures.

Because backing out STAGE2 requires that you restore the backup copy of your system, you should *not* make any directory or security changes on your system or any member of your SSI cluster after you create your backup.

Note: After you have created your backup, do not restart your production workloads on the member you are upgrading until you have completed your upgrade.

What to do next

Go to Chapter 23, “Generate the STAGE2 changes file,” on page 215.

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Chapter 23. Generate the STAGE2 changes file

In this chapter, you will:

- Run INSTUPGR to create the STAGE2 changes file.

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Step 1. Generate the STAGE2 table

1. Make sure any user IDs that have write links to the system inventory and service disks, such as MAINT, MAINT620, MAINT630, MAINT640, and product installation IDs 6VM*xxx*20, 6VM*xxx*30, and 6VM*xxx*40 are logged off of the system you are upgrading and all other members of your cluster before logging onto MIGMAINT.
2. Log on to the MIGMAINT user ID on the system being upgraded. Make sure the user ID meets the MIGMAINT user ID requirements. You must log off of MIGMAINT after STAGE1 processing is complete and log back on to MIGMAINT before running STAGE2 processing.
3. Access the 24CC minidisk as file mode C:

   ```
   access 24cc c
   Ready; T=n.nn/n.nn hh:mm:ss
   ```

4. Run INSTUPGR to generate the $STAGE2$ $TABLE$ file, which will list the STAGE2 changes needed to upgrade your system. If you have not logged off non-essential user IDs, you will receive message IUGUPG8541 regarding users you might want to log off. Follow the instructions provided in the message.

   ```
   instupgr stage2 (prime

   IUG2FC8535I Creating temporary work copy of MAINT 190 minidisk
   z/VM DASD DUMP/RESTORE PROGRAM
   COPYING   MNT190
   COPYING DATA  01/06/13 AT 20.33.21  GMT FROM MNT190 TO MNT190

   INPUT {CYLINDER|BLOCK} EXTENTS      OUTPUT {CYLINDER|BLOCK} EXTENTS
         START       STOP              START        STOP
             0       nnnn                  0        nnnn


   END OF COPY
   END OF JOB

   IUGUPG8392I INSTUPGR ended successfully
   Ready; T=n.nn/n.nn hh:mm:ss
   ```

5. If INSTUPGR completes with warnings, they will be displayed on the screen and also logged in the file $STAGE2$ $WRNFILE on MIGMAINT's 2CF0 disk (accessed as filemode E). Review the warnings and resolve any issues before continuing to Chapter 24, “Update your current system with the STAGE2 changes,” on page 219.

   Note: If you receive any of the following warnings, they can be ignored.

```
* The following files found on your MAINT 193 minidisk
* were not listed in the VM PARTCAT for prodid 6VMCPRx0%CP, but
* will be overwritten during COMMIT processing.
  CPLOAD MODULE
*
* The following files found on your MAINT 193 minidisk
* were not listed in the VM PARTCAT for prodid 6VMCPRx0%CP, but
* will be overwritten during COMMIT processing.

  GCSNUC MAP
*
* The following files found on your MAINT 190 minidisk
* were not listed in the VM PARTCAT for prodid 6VMCMSx0%CMS, but
* will be overwritten during COMMIT processing.
  NOTICES FILE
*
IUG2CE8554W Product 6VMHCD20 file CBDSDPRF SAMPPROF not found on BASE
resource(s ):
IUG2CE8554W 6VMHCD20 2B2 (VMPSFS:6VMHCD20.VMHCD.OBJECT)
IUG2CE8553W System-level changes for part CBDSDPRF SAMPPROF cannot be
evaluated
*
```

If you are upgrading a member of a multimember SSI cluster and this is *not* the first member, you may get warning messages regarding the DirMaint help files. You can ignore these messages.

6. If any errors occur, review the error messages in file INSTUPGR $CONSLOG on MIGMAINT's 2CF0 minidisk (accessed as filemode E), correct the condition that is causing the error, and then go back to substep 4 on page 216.

What to do next

Go to Chapter 24, "Update your current system with the STAGE2 changes," on page 219.

Chapter 24. Update your current system with the STAGE2 changes

In this chapter, you will:

- Make the changes to your current system identified in the $STAGE2$ $TABLE$.

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Step 1. Choose your update option

In the previous step a file named $STAGE2$ $TABLE$ was generated on MIGMAINT's 2CF0 disk by the INSTUPGR command. This table contains a list of actions to be taken on your current system in order to complete the second stage of your system upgrade. Each entry in the table consists of one or more comment lines that describe an action to be taken and then one or more lines with more detailed information so that a program or a person could read the information and perform the action on a specific system.

There are three ways to complete these actions:

- Run the INSTUPGR command with operand STAGE2 and option COMMIT. The programs supplied by IBM will read the $STAGE2 $TABLE$ and perform all the actions listed. If you are using a directory manager program on your system and that program has provided an exit to work with the IBM upgrade code, that exit will be called to perform directory functions. If you edit your CP user directory manually, INSTUPGR will make the necessary changes to your CP user directory file, using the information you provided when you ran the INSTPLAN command.
- Manually update your system with the changes listed in the $STAGE2$ $TABLE$. You can perform all of the changes listed in the table and edit the table to mark them as complete. Note that some changes are dependent on earlier entries being complete. You must complete all entries in the order they appear in the table.
- Use a combination of the above two options. If you prefer, you can make some of the required changes manually and allow the INSTUPGR program to make the rest. Note that some changes are dependent on earlier entries being complete. You must complete all entries in the order they appear in the table and you must complete all the entries that precede the changes you select to make manually. To use this method, make the changes you wish to make yourself first and update the $STAGE2$ $TABLE$ to mark just those changes as complete. Then run the INSTUPGR command with operand STAGE2 and option COMMIT. The INSTUPGR program will make any changes to your system that you have not marked as completed and it will update the $STAGE2$ $TABLE$ and all other required status tables.

No matter which option you choose, the changes listed in the $STAGE2$ $TABLE$ file must be completed *before* moving on to Chapter 25, “Finish your upgrade installation,” on page 225.

To use the INSTUPGR command to make your system changes, follow “Step 2. Use the INSTUPGR command to make your STAGE2 system changes” on page 221.

To make some of the changes to your system manually, follow “Step 3. Make some of the STAGE2 changes to your system manually” on page 223.

To make all of the changes to your system manually, follow “Step 4. Make all of the STAGE2 changes to your system manually” on page 224.

Step 2. Use the INSTUPGR command to make your STAGE2 system changes

1. Log on to the MIGMAINT user ID on the system being upgraded. Make sure the user ID meets the MIGMAINT user ID requirements.
2. Access the 24CC minidisk as file mode C.

```
access 24cc c
Ready; T=n.nn/n.nn hh:mm:ss
```

3. Run INSTUPGR to upgrade your system with STAGE2 changes defined in the $STAGE2$ $TABLE$ file. If you have not logged off non-essential user IDs, you will receive message IUGUPG8541 regarding users you might want to log off. Follow the instructions provided in the message.

```
instupgr stage2 (commit
Now processing line 10 of nnn
Now processing line 20 of nnn

.
.
.
IUGUPG8529I The 190 disk on the current system has been upgraded.
IUGUPG8529I You must IPL the 190 disk to reaccess the new files,
IUGUPG8529I To complete commit processing:
IUGUPG8529I IPL 190
IUGUPG8529I ACCESS 24CC C
IUGUPG8529I and then re-issue:
IUGUPG8529I INSTUPGR STAGE2 (COMMIT
Ready; T=n.nn/n.nn hh:mm:ss
```

4. If any errors occur, review the error messages in file INSTUPGR $CONSLOG on MIGMAINT's 2CF0 minidisk (accessed as filemode E), correct the condition that is causing the error, and then go back to substep 3.

   Note: Do *not* run SERVICE RESTART.
5. IPL the 190 disk to reaccess the files on your updated 190 disk. You might receive messages DMSWSP327I and DMSDCS1083E, related to segments. These messages can be ignored.

```
ipl 190

.
.
.
Ready; T=n.nn/n.nn hh:mm:ss
```

6. Access the 24CC minidisk as filemode C.

```
acc 24cc c
Ready; T=n.nn/n.nn hh:mm:ss
```

7. Reissue INSTUPGR to finish upgrading your system with STAGE2 changes defined in the $STAGE2$ $TABLE$ file.

```
instupgr stage2 (commit
Now processing line 10 of nnn
Now processing line 20 of nnn

.
.
.
IUGUPG8392I INSTUPGR ended successfully
Ready; T=n.nn/n.nn hh:mm:ss
```

Use the INSTUPGR command to make your STAGE2 system changes

8. If any errors occur, review the error messages in file INSTUPGR $CONSLOG on MIGMAINT's 2CF0 minidisk (accessed as filemode E), correct the condition that is causing the error, and then go back to substep 7 on page 221.

What to do next

Go to Chapter 25, "Finish your upgrade installation," on page 225.

Step 3. Make some of the STAGE2 changes to your system manually

1. Log on to the MIGMAINT user ID on the system being upgraded. Make sure the user ID meets the MIGMAINT user ID requirements.
2. Access the 24CC minidisk as file mode C.

   ```
   access 24cc c
   Ready; T=n.nn/n.nn hh:mm:ss
   ```

3. Access the 2CF0 minidisk as file mode E.

   ```
   access 2cf0 e
   Ready; T=n.nn/n.nn hh:mm:ss
   ```

4. Review the entries in the $STAGE2$ $TABLE$ to determine which changes you want to perform yourself.

   Some changes are dependent on earlier entries being complete. You must complete all entries in the order they appear in the table, so you must also manually complete all the entries that precede the changes you select to make manually.

   For each entry in the $STAGE2$ $TABLE$ that you selected to manually update on your system:

   a. See Appendix O, "$STAGE2$ $TABLE$ entry definitions," on page 303 for a description of the changes required for that entry.
   b. Make the changes to your system.
   c. Once an entry has been completed, update the entry in the $STAGE2$ $TABLE$ with a dash (-) in the first column to indicate that the entry has been completed.
5. Once you have completed all of the changes you selected and you have updated the $STAGE2$ $TABLE$, go to "Step 2. Use the INSTUPGR command to make your STAGE2 system changes" on page 221 to complete the rest of the entries.

Step 4. Make all of the STAGE2 changes to your system manually

1. Log on to the MIGMAINT user ID on the system being upgraded. Make sure the user ID meets the MIGMAINT user ID requirements.
2. Access the 24CC minidisk as file mode C.

   ```
   access 24cc c
   Ready; T=n.nn/n.nn hh:mm:ss
   ```

3. Access the 2CF0 minidisk as file mode E.

   ```
   access 2cf0 e
   Ready; T=n.nn/n.nn hh:mm:ss
   ```

4. Review the entries in the $STAGE2$ $TABLE$.

   Some changes are dependent on earlier entries being complete. You must complete all entries in the order they appear in the table.

   For each entry in the $STAGE2$ $TABLE$:

   a. See Appendix O, "$STAGE2$ $TABLE$ entry definitions," on page 303 for a description of the changes required for that entry.
   b. Make the changes to your system.
   c. Once the entry has been completed, update the entry in the $STAGE2$ $TABLE$ with a dash (-) in the first column to indicate that the entry has been completed.

5. Once all the changes are complete and you have updated the $STAGE2$ $TABLE$, run the INSTUPGR command to update the appropriate status tables.

   ```
   instupgr stage2 (commit done
   IUGUPG8392I INSTUPGR ended successfully
   Ready; T=n.nn/n.nn hh:mm:ss
   ```

What to do next

Go to Chapter 25, "Finish your upgrade installation," on page 225.

Chapter 25. Finish your upgrade installation

In this chapter, you will:

- Review directory considerations.
- Review SYSTEM CONFIG changes.
- Review *sysname* $WRNFILE messages.
- Delete obsolete saved segments.
- Shut down and re-IPL.
- Migrate LPs.
- Review post upgrade installation tasks.

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Step 1. Review directory considerations

1. If you are upgrading a member of a multimember SSI cluster, the user directory needs to be brought online for all members of the cluster.
   a. If you indicated that you edit your directory and allowed INSTUPGR to make the directory changes, you need to run DIRECTXA on all other members of the cluster.
   b. If you used DirMaint as your directory manager to make upgrade changes, the directory was already brought online for all members.
   c. If you used a different directory manager or made the directory updates manually, you need to make sure the directory is brought online for all other members of the cluster.
2. If you disabled minidisk password checking before starting the upgrade installation, you should verify that the disks added to the directory have minidisk passwords that adhere to your password guidelines, then re-enable minidisk password checking.

   New user IDs with disks:
   MAINT640[2]
   6VMDIR40[2]
   6VMPTK40[2]
   6VMRAC40[2]
   6VMRSC40[2]
   6VMTCP40[2]
   6VMHCD40[2]
   OPNCLOUD[2]
   DTCVSW3[2]
   DTCVSW4[2]

   New disks added to current user IDs:
   VSMGUARD A91[1]
   VSMWORK1 A91[1]
   VSMWORK2 A91[1]
   VSMWORK3 A91[1]

   [1] V6.2 to V6.4 upgrade only
   [2] V6.2 to V6.4 and V6.3 to V6.4 upgrades

3. The following minidisks were changed during INSTUPGR STAGE2 processing:
   TCPMAINT 591
   TCPMAINT 592
   PERFSVM 201
   5684042J 2D2

   Verify that the security authorizations for these minidisks are still correct.

Step 2. Review SYSTEM CONFIG changes

If you are upgrading member 2, 3, or 4 of a multimember SSI, skip to "Step 3. Review *sysname* $WRNFILE messages" on page 229. Otherwise, continue with this step.

1. Access the disk where your SYSTEM CONFIG file resides. The default is PMAINT's CF0 disk.
2. Review the changes made to the SYSTEM CONFIG file to verify that they meet the conventions for your site.

   Changes were added to the end of the file and start with the block comment:

```
/*******************************************************/
/*           UPGRADE STATEMENTS for 640                */
/* Any statements that follow this comment have been   */
/* added by the UPGRADE process. Do not add or remove  */
/* statements beyond this comment. Doing so will       */
/* negate your ability to use the upgrade backout      */
/* automation or functions.                            */
/*******************************************************/
```

   Each statement added is delineated by the comments:

```
/*  UPGRn Statement was added by INSTUPGR STAGE1 (COMMIT  */
:
/*  UPGRn END       */
```

   There are three types of statements that may have been added:

   - The addition of the release volumes to the User_Volume_List:

```
User_Volume_List  640RL1
```

   - An edevice statement, if your system is installed in FBA DASD. If the device details could be determined, a real edevice statement was added:

```
edevice 4076  type fba attr SCSI fcp_dev 4F60,
wwpn 5005076306134411 lun 4011407600000000
```

     If the details could not be determined, a comment was added:

```
/* edevice 4087 is not an emulated device */
```

     Review the edevice statements to verify they are correct for your DASD.
   - A PRODUCT statement was added for the new release products and features. The state of the new products and features is the same as the state of the equivalent product or feature from your old release. For example, if Performance Toolkit was not enabled on z/VM V6.3, it will not be enabled on z/VM V6.4:

```
PRODUCT PRODID 6VMPTK40 STATE DISABLED DESCRIPTION
'00/00/00.00:00:00.$UPGRADE PERFORMANCE TOOLKIT FOR VM'
```

3. When you have reviewed the upgrade statements that were added to the SYSTEM CONFIG file, you can leave the statements where they are or you can move them up, to match your organization of the file. After you have moved the statements, you can delete the following comments:

Review SYSTEM CONFIG changes

```
|     /************************************************/
|     /* UPGRADE STATEMENTS for 640                   */
|     /* Any statements that follow this comment have been */
|     /* added by the UPGRADE process. Do not add or remove*/
|     /* statements beyond this comment. Doing so will   */
|     /* negate your ability to use the upgrade backout   */
|     /* automation or functions.              */
|     /************************************************/
|
|     /* UPGRn Statement was added by INSTUPGR STAGE1 (COMMIT */ ...
|     /* UPGRn END */
```

Step 3. Review *sysname* $WRNFILE messages

Note: If the PARTNOTIFY keyword entries were done manually, you were instructed to make a note of the messages received, to be addressed after the upgrade was complete. This is the point at which you should make any necessary changes.

1. Log on to the MIGMAINT user ID on the system being upgraded.
2. Access the 2CF0 minidisk as file mode E.

```
access 2cf0 e
Ready; T=n.nn/n.nn hh:mm:ss
```

3. Review the *sysname* $WRNFILE file on the 2CF0 disk (where *sysname* is the system name of the system you are upgrading).

   The *sysname* $WRNFILE file might contain the following messages:

   IUG1EX8301W
   Device details could not be determined to add an edevice statement to the SYSTEM CONFIG file. Review the statement in the SYSTEM CONFIG file and, if needed, add the real edevice statement details.

   IUG1EX8528W
   An APAR exists to a part that resides on the PMAINT 551 disk on your current system that is not included in the part on the new release. After the upgrade installation is complete, apply the APAR to the new release, if required.

   IUG2EX8536W
   A customizable file was not copied because the target disk could not be obtained in write mode. Access the source and target disks and copy the file.

   IUG2EX8555W
   A customizable file that was changed on your current system from the IBM default has been updated by IBM on the new release. Review the current and new files and merge your current file with the new file updated by IBM.

   Notes:

   a. If you received message IUG2EX8555W for AUTOLOG1 SAMPPROF and your system is running RACF, you might need to merge the new file into the PROFILE EXEC for AUTOLOG2.

   b. If you received message IUG2EX8536W for the PROFILE SAMPLE exec for RACF and your system is running RACF, you will move the new PROFILE SAMPLE to the RACFVM 191 disk in "Step 5. Shut down and IPL your upgraded system" on page 231. You can ignore this message.

4. If the *sysname* $WRNFILE contains any of these messages, review the actions described in *z/VM: CP Messages and Codes* and decide if you need to make any additional changes to your upgraded system before moving to the next step.

Step 4. Delete obsolete saved segments

In z/VM V6.3, three segments previously shipped with z/VM were deleted. If you are upgrading a V6.2 system, these segments need to be deleted from the system as they contain obsolete information.

1. Purge the HELPSEG segment.

```
purge nss name helpseg
0001 FILE  PURGED
Ready; T=n.nn/n.nn hh:mm:ss
```

2. Purge the NLSAMENG segment.

```
purge nss name nlsameng
0001 FILE  PURGED
Ready; T=n.nn/n.nn hh:mm:ss
```

3. Purge the AMENG segment.

```
purge nls name ameng
0001 FILE  PURGED
Ready; T=n.nn/n.nn hh:mm:ss
```

Note: If you received the following messages, the NSS will be purged when the system is IPLed in the next step:

```
NO FILES PURGED
0001 FILE  PENDING PURGE
```

Step 5. Shut down and IPL your upgraded system

1. If you are not running with a security manager:
   a. Shut down this system or member.
   b. IPL the upgraded system or member.
   c. Go to "Step 6. Migrate LPs" on page 234.
2. If you are running with a security manager other than RACF/VM:
   a. Consult the documentation for your security manager to see if there are any special requirements before IPLing.
   b. Shut down this system or member.
   c. IPL the upgraded system or member.
   d. Go to "Step 6. Migrate LPs" on page 234.
3. If you are running with the RACF/VM security manager, note that the test disks for RACF/VM were updated with the new level of code. To complete the upgrade of RACF/VM, you will need to perform the following steps:
   a. Log on to the RACMAINT user ID on the system you are upgrading.
   b. Make sure the PROFILE EXEC on the A-disk is the version that was shipped with the new release of VM. The new PROFILE EXEC will be dated July 2016 or later and will contain this comment line:

      ```
      D - Remove access to 190 disk
      ```

      If the file PROFILE EXC$$001 exists on the A-disk, you should:
      1) Erase or rename the current PROFILE EXEC.
      2) Rename PROFILE EXC$$001 to PROFILE EXEC.
   c. Log off RACMAINT.
   d. Log on to an authorized user (such as MAINT or OPERATOR) and force RACFVM.
   e. Use the XAUTOLOG command to log on the test RACF/VM server, RACMAINT:

      ```
      XAUTOLOG RACMAINT
      ```
   f. If you are upgrading the first LPAR that is sharing a RACF database with other systems or if you are upgrading the first member of a multimember SSI cluster, you must force RACFVM off on all of the systems sharing that database, to avoid database corruption.

      For standalone VM systems:

      Issue FORCE RACFVM from the OPERATOR user ID of each system.

      For an SSI cluster, log on to OPERATOR and enter the following command for each member system:

      ```
      AT system-name CMD FORCE RACFVM
      ```

      For non-VM systems:

      Follow your normal procedures to force RACFVM.
   g. Disconnect from OPERATOR.
   h. If this is a non-SSI system, a single-member SSI cluster, the first member of a multimember SSI cluster, or the first LPAR that is sharing a RACF database with other systems, you must convert your RACF database to the new format.
      1) Log on to RACMAINT and run the RACFCONV utility to convert the RACF database:

         ```
         IPL 190
         RACFCONV
          ENTER
         200
         yes
         ```

```
RACFCONV
 ENTER
300
yes
```

If RACFCONV receives RC=0, RACFCONV upgraded the RACF templates successfully.

If RACFCONV receives RC=4, you will see the following messages:

```
An Error occurred during 'IRRMIN00' processing
Return code from 'IRRMIN00' = 4
Ready(00004);
```

A return code of 4 means that your templates are already at the correct level. You can ignore these messages.

If RACFCONV ends with any other return code, you should review the information on running RACFCONV in the *z/VM: RACF Security Server System Programmer's Guide* and take any corrective actions necessary.

Continue upgrading your z/VM system only when you are sure that your RACF database templates are at the correct level.

2) Restart RACMAINT by IPLing 490:

```
IPL 490
RACSTART

#CP DISC
```

3) If the RACF database is shared, restart the RACF servers on all systems that share the RACF database.

Log on to OPERATOR on the other LPARs or on the other members of your cluster and autolog RACFVM. Because RACF services are not available, you might need to enter the password for OPERATOR that is currently listed in your CP user directory. The passwords for OPERATOR that were shipped in the default z/VM 620 and z/VM 630 user directories are OPERATOR and WD5JU8QP, respectively:

```
XAUTOLOG RACFVM
```

i. Log on to the MIGMAINT user ID on the system you are upgrading.

j. Copy the PROFILE EXEC from the RACMAINT 191 to the RACFVM 191 disk:

1) `link racmaint 191 1191 rr`
2) `access 1191 x`
3) `link racfvm 191 2191 mr`
4) `access 2191 z`
5) `rename profile exec z profile oldexec z`
6) `copy profile exec x profile exec z (olddate`
7) `release x (detach`
8) `release z (detach`

k. Using DDR and VMFCOPY, copy the RACF/VM test build disks to the RACF/VM production disks:

1) Use DDR to copy the 6VMRAC40 590 disk to the RACFVM 490 disk:

```
LINK 6VMRAC40 590 1590 RR
LINK RACFVM   490 1490 MR
DDR
     SYSPRINT CONS
     INPUT  1590 DASD RAC590
     OUTPUT 1490 DASD RCF490
     COPY ALL
      ENTER
ACCESS 1490 G
FORMAT 1490 G (LABEL
```

```
RCF490
QUERY DISK G
RELEASE G (DETACH
DETACH 1590
```

2) Use VMFERASE and VMFCOPY to update the RACFVM 305 disk. In the VMFERASE command, substitute 6VMRAC20 or 6VMRAC30, depending on the release from which you are upgrading:

```
LINK 6VMRAC40 505 1505 RR
LINK RACFVM 305 1305 MR
ACCESS 1505 G
ACCESS 1305 H
VMFERASE PROD 6VMRACx0%RACF FROM H
VMFCOPY * * G = = H (PRODID 6VMRAC40%RACF SPRODID 6VMRAC40%RACF OLDDATE REPLACE
RELEASE G (DETACH
RELEASE H (DETACH
```

l. Shut down your system.

m. IPL the upgraded system.

n. While logged on to an authorized user ID such as OPERATOR, force RACFVM.

o. XAUTOLOG RACMAINT.

p. Log on to MAINT640.

q. Run PUT2PROD for RACF:

```
put2prod racf
```

r. Log off MAINT640.

s. Log on to OPERATOR and restart the production RACF server, RACFVM:

```
LOGON OPERATOR
FORCE RACMAINT
XAUTOLOG RACFVM
```

Step 6. Migrate LPs

If you are upgrading the second, third, or fourth member of a multimember SSI cluster, skip to "Step 7. Post-upgrade installation" on page 238.

The 51D disk that is owned by MAINT640 has not been updated for LPs that were not pre-installed with z/VM (for example, C/C++, or the High Level Assembler). You will need to use MIGR51D to move the VMSES/E inventory files for the LPs from MAINT6*x*0's 51D disk to MAINT640's 51D disk.

1. Log on as MAINT640.

   ```
   logon maint640                                  The default password for MAINT640 is WD5JU8QP.
   .
   .
   .
   Ready; T=n.nn/n.nn hh:mm:ss
   ```

2. Create a backup copy of the your new system software inventory disk (default is 51D) using your site's normal backup procedures.
3. Link to the MAINT6*x*0 51D disk (where MAINT6*x*0 corresponds to the release of z/VM you are migrating from (for instance, MAINT630).

   ```
   link maint6x0 51d fff rr
   Ready; T=n.nn/n.nn hh:mm:ss
   ```

4. Access the software inventory FFF minidisk as file mode Z.

   ```
   access FFF z
   Ready; T=n.nn/n.nn hh:mm:ss
   ```

5. Access the new system 51D minidisk as file mode D.

   ```
   access 51D d
   Ready; T=n.nn/n.nn hh:mm:ss
   ```

6. Access the 493 minidisk as file mode W.

   ```
   access 493 w
   Ready; T=n.nn/n.nn hh:mm:ss
   ```

7. Run MIGR51D to update the system software inventory files.

   ```
   migr51d
   IUGMIX8478R Please enter filemode letter of the
               Software Inventory Disk (51D) from
               the previous release.  Press enter
               to Exit.
   z
   ```

   The VM Software Inventory Disk (51D) Product Migration panel is displayed.

```
           *** VM Software Inventory Disk (51D) Product Migration ***

Set action code AC to D = Do Not Migrate or to M = Migrate product.  Action
code I means product is already installed on new 51D and cannot be migrated.


AC Compname         Prodid   Status    Description
-- ---------------- -------- --------- --------------------------------
M  CCXXSFS          5654A22C BUILT     IBM XL C/C++ for z/VM Compiler in
                                       SFS
M  DFSMSVM          VSM221B  BUILT     DFSMSVM FOR VM/ESA 1.2

M  HLASM            5696234J BUILT     High Level Assembler for z/OS &
                                       z/VM & z/VSE
D  AVS              6VMAVSx0 APPLIED   AVS component for z/VM 6.x.0

D  CMS              6VMCMSx0 APPLIED   CMS component for z/VM 6.x.0

D  CP               6VMCPRx0 APPLIED   CP component for Z/VM 6.x.0

D  DIRM             6VMDIRx0 BUILT     Install/service DirMaint using
                                       minidisk
                                                          Page 1 of 3

             PF1=HELP  PF3/PF12=Quit  PF5=Process  PF8=Forward
```

a. Enter an action code (AC) for each product listed. For information about the panel and action codes, press F1.

   Notes:

   1. This Product Migration panel is only a sample. Your panels will not list the same products, action codes, status, and description.
   2. Products that are preselected as **D** (Do Not Migrate) should not be changed.
   3. If a product is not supported on the new z/VM release, you should enter **D** (Do Not Migrate) for that product.
   4. Before you delete any product, you must determine whether any product that you intend to migrate is dependent on this product. You can use VMFINFO or VMFSIM SYSDEP to determine product dependencies.

b. Press F8 to select action codes for all Software Inventory Migration panels before continuing to the next step.
c. On the final panel, press F5 to process the product migration information and display the Segment Migration panel. Depending on the size of your software inventory files, it may take several minutes to process.

```
          *** VM Software Inventory Disk (51D) Segment Migration ***

Set action code AC to D = Do Not Migrate or to M = Migrate segment. Action
code P means segment will be migrated due to product migration.  If ========
or ******** appears under Segname, enter a new name to change the segment
name upon migration ( ======== Must be changed, ******** May be changed ).

AC Segname        Prodid   Compname         Defparms         Bldparms
-- --------       -------- ---------------- ---------------- ----------------
P  CCNSEG   Old-> 5654A22C CCXXSFS          3000-7BFF SR     PPF(CCPLUS
            New->
   ******** Mig-> 5654A22C CCXXSFS          3000-7BFF SR     PPF(CCPLUS
D  CMSBAM   Old-> 6VMCMSx0 CMS              B0D-B37 SR       PPF(SERVP2P
            New-> 6VMCMS40 CMS              B0D-B37 SR       PPF(SERVP2P
   ******** Mig-> 6VMCMS40 CMS              B0D-B37 SR       PPF(SERVP2P
D  CMSDOS   Old-> 6VMCMSx0 CMS              B00-B0C SR       PPF(SERVP2P
            New-> 6VMCMS40 CMS              B00-B0C SR       PPF(SERVP2P
   ******** Mig-> 6VMCMS40 CMS              B00-B0C SR       PPF(SERVP2P
D  CMSFILES Old-> 6VMCMSx0 CMS              1900-1BFF SR     PPF(SERVP2P
            New-> 6VMCMS40 CMS              1900-1BFF SR     PPF(SERVP2P
   ******** Mig-> 6VMCMS40 CMS              1900-1BFF SR     PPF(SERVP2P
                                                            Page 1 of 5

            PF1=HELP  PF3/PF12=Quit  PF5=Process  PF8=Forward
```

d. Enter an action code for each segment listed. For information about the panel and action codes, press F1.

   This Segment Migration panel is only a sample. Your panels will not list the same segments, action codes, status, and description.

   Note: With z/VM V6.3, segments HELPSEG and NLSAMENG were deleted. If these segments are present on your current system, you should not migrate them.

e. Press F8 to select action codes for all Software Inventory Segment Migration panels before continuing to the next step.

f. On the final panel, press F5 to process. Depending on the size of your software inventory files, it may take several minutes to process.

8. Release the software inventory disk for your current system (attached as FFF and accessed as filemode Z.

   ```
   release z
   ```

9. MIGR51D updated the V6.4 VMSES/E system software inventory files on your new 51D minidisk to reflect the licensed products installed on your old system that you chose to migrate. You may need to migrate the segments associated with each licensed product reflected in the new system software inventory files. See the documentation for each licensed product for information on the segments required.

   If the licensed product segments are built by VMSES/E, you must sign on to MAINT640 and enter the following to update some of the other segment files on the system software inventory disk:

   a. Issue VMFSGMAP.

      ```
      vmfsgmap segbld esasegs segblist
      ```

      At this time, you can make further changes to any segment.

   b. On the first panel, enter:

      ```
      segmerge
      ```

   c. Press F5 to save your changes and exit from VMFSGMAP.

The VMFSGMAP and SEGMERGE commands only need to be done once, from one user ID. At this point, the appropriate files on the system software inventory disk are updated.

Now you can use the VMFBLD command to build the licensed product segments from the corresponding licensed product installation user IDs. Follow the information in the licensed product program directories.

For example:

```
vmfsetup ccplus ccxx
vmfbld ppf segbld esasegs segblist ccnseg (serviced
```

If you receive message VMFBDS2003W indicating that the SYSTEM SEGID file has been updated, you should do the following to update the MAINT 190 disk and re-save CMS:

```
link maint 190 190 mr
acc 190 t
copy system segid d = = t (olddate replace
PUT2PROD SAVECMS
```

Step 7. Post-upgrade installation

1. Review the latest installation information in the Preventative Service Planning (PSP) bucket to make sure all required tasks are completed.
2. **User directory default passwords:** The new user IDs that are added to the USER DIRECT during upgrade installation all have the default password WD5JU8QP, except for the user ID OPNCLOUD, which has the default password of AUTOONLY.
3. A new user ID, OPNCLOUD, was included on your 640 system. The OPNCLOUD 100 and 101 minidisks are defined but not initialized. These disks will be used by the IBM z/VM Cloud Manager Appliance and will be initialized when CMA is installed.
4. The new VSWITCH controllers (DTCVSW3 and DTCVSW4) were added to your user directory with a share relative value of at least 3000. The existing VSWITCH controllers (DTCVSW1 and DTCVSW2) should also have a share relative value of at least 3000.

   If you are upgrading a non-SSI, a one-member SSI, or the first member of a multimember SSI, update the IDENTITY section of the user IDs DTCVSW1 and DTCVSW2 to add the following statement after any OPTION statements if needed:

   ```
   SHARE RELATIVE 3000
   ```
5. z/VM includes a stand-alone dump utility that you tailor according to your installation's configuration, using CMS. After you install z/VM, you should create the stand-alone dump utility and place it on DASD for emergency use. If, after a system failure, CP cannot create an abend dump, you can use the stand-alone dump on DASD to dump all of storage.

   For instructions on creating a stand-alone dump utility, see *z/VM: CP Planning and Administration*.

   Note: Do not use a stand-alone dump created from a previous release of z/VM to attempt to dump your V6.4 system.
6. If you added links in existing user definitions to disks owned by current release-specific user IDs, such as MAINT6*x*0, 6VMTCP*x*0, or 6VMDIR*x*0, you need to evaluate if any of these links need to be updated in the existing user definitions for the new release-specific user IDs, such as MAINT640, 6VMTCP40, 6VMDIR40, and so on.
7. Review program directories for the pre-installed licensed products and features to determine if any additional configuration is required by the new release.
8. Any volumes used to install the work system that were not added to your current system can be returned to the DASD pool.
   a. If you are upgrading the second, third, or fourth member of a multimember SSI, then all of the volumes used to install the work system can be returned to the DASD pool.
   b. If you are upgrading a non-SSI, a one-member SSI, or the first member of a multimember SSI, then all of the volumes used to install the work system except the release volumes, default labels 640RL*x*, can be returned to the DASD pool.
9. If you are upgrading the first member of a multimember SSI, you should ensure that all release volumes, default labels 640RL*x*, are available to the remaining members of the SSI.
10. If your SSI cluster runs second level and if this was the first member of a multimember SSI cluster to be upgraded to this release, add the new release volumes to the directory entries for the user IDs where you IPL your SSI members, in the same manner as the current release volumes.

    For each release volume added:

    a. Add an MDISK statement to the directory entry for the userid of the SSI member that will own the DASD.
    b. Add a LINK statement to the directory entries for each of the user IDs where you IPL your additional SSI members.

    After you have updated the directory entries for all of the user IDs where you IPL your SSI members:

    a. Shut down all members of your SSI

b. Log off the user IDs
c. Log the user IDs back on
d. IPL the members of your SSI.

This will pick up the new release volumes. When you IPL the members of your SSI, they will have access to the new volumes.

11. If you upgraded a non-SSI, a one-member SSI, or the first member of a multimember SSI, and you are using DirMaint as your directory manager, your system or SSI cluster has been updated to run DirMaint function level 640 on all members. You should now disable the prior DirMaint function level, 6*x*0.
    a. Set 6VMDIR*x*0 to disabled on the currently running system.

    ```
    SET PRODUCT 6VMDIRx0 STATE DISABLED
    ```

    b. Edit the SYSTEM CONFIG file and change the PRODUCT statement for 6VMDIR*x*0 from enabled to disabled.
    c. In a multimember SSI disable 6VMDIR*x*0 on all additional members of the SSI cluster.

    ```
    AT membername CMD SET PRODUCT 6VMDIRx0 STATE DISABLED
    ```

12. If this was the first member of a multimember SSI to be upgraded to this release, the help disks (MAINT 19D, 401, and 402) were updated on the member being upgraded with the new release help files for DirMaint. Although all members were upgraded to use the new level of DirMaint, the DirMaint help files on the other members do not match the new level. You can either leave the help disks as the are and they will be upgraded as you upgrade each of the remaining members, or you can manually upgrade the help disks. To manually upgrade the help disks, do the following on each member:
    a. Log on to MAINT640.
    b. Link and access the DirMaint test help disk as X.

    ```
    LINK 6VMDIR40 29D 29D RR
    ACCESS 29D X
    ```

    c. For each help disk to be updated (19D, 401, and 402):
        1) Link and access the disk to be updated as Z, in write mode.

        ```
        LINK MAINT addr addr MR
        ACCESS addr Z
        ```

        2) Use VMFERASE to erase the 6*x*0 DirMaint help files.

        ```
        VMFERASE PROD 6VMDIRx0%DIRM FROM Z
        ```

        3) Use VMFCOPY to copy the new release DirMaint help files. If updating the 19D disk, do *not* include the UPCASE option on the VMFCOPY command.

        ```
        VMFCOPY * * X = = Z (PRODID 6VMDIR40%DIRM SPRODID 6VMDIR40%DIRM OLDDATE REPLACE UPCASE
        ```

13. Changes made to the Stand Alone Program Loader in z/VM 6.4.0 require that the SALIPL record be rewritten to the IPL volume. Rewrite your SALIPL record using the z/VM 6.4.0 level of the SALIPL MODULE. See Chapter 2, "Using the Stand-Alone Program Loader", in *z/VM: System Operation* for instructions on rewriting the SALIPL record.
14. To be able to back out changes made by the upgrade installation process, the following disks that were deleted or moved during the upgrade installation process were not formatted to remove residual data:

- Disks deleted:
  ```
  IDENTITY DHCPD   191[1]
  IDENTITY LPSERVE 191[1]
  IDENTITY DTCENS1 191[2]
  IDENTITY DTCENS2 191[2]
  IDENTITY VSMREQIM 191[2]
  IDENTITY VSMPROXY 191[2]
  IDENTITY ZVMLXAPP 191[2]
  IDENTITY ZHCP 191[3]
  IDENTITY ZHCP 100[3]
  ```
- Disks with size change:
  ```
  IDENTITY  PERFSVM  201[2]
  IDENTITY  TCPMAINT 591[2]
  IDENTITY  TCPMAINT 592[2]
  ```
- Disks moved (if ICKDSF was loaded to minidisks):
  ```
  USER 5684042J 2D2[2]
  ```

[1] V6.2 to V6.4 upgrade only
[2] V6.2 to V6.4 and V6.3 to V6.4 upgrades
[3] V6.3 to V6.4 upgrade only

15. If you are upgrading a non-SSI, a one-member SSI, or the last member of a multimember SSI, if you did not use XCAT in 630, delete the user ID from your directory. If you did use XCAT in 630, after you have migrated any configured files to OPNCLOUD, delete the user ID from your directory. For information about migrating XCAT to OPNCLOUD, see *z/VM: Systems Management Application Programming*.
16. The file CPB640 MODULE was copied to the MAINT CF1 minidisk. This is the z/VM V6.4 GA base CPLOAD MODULE. The old release CPBASE MODULE should be erased from the MAINT CF1 minidisk.
17. Pre-installed products that did *not* change release levels from z/VM V6.*x* to z/VM V6.4, were *not* updated on your upgraded system. Any service on the 640 installation RSU for these products was not applied to your system. These products are:
    LE 6.2.0
    OSASF 4.4.0
    ICKDSF 1.17.0

    You should compare the GA service levels with the service levels for these products on your current system. For any products with GA service levels that are higher, you should install the additional service for those products.
    - For LE and OSA, information about the level of service shipped on the base is available on the z/VM Installation Resources web page (www.vm.ibm.com/install). The installation level of service is contained in the installation RSU servlink, which was copied to the MAINT640 500 minidisk by the upgrade procedure.
    - For ICKDSF, use your normal service ordering and installation procedures.
18. By default, the EREP 3.5.0 production code resides on the MAINT*vrm* 201 minidisk. This disk contains the level of EREP that was shipped with z/VM 6.4.0 (EREP 3.5.0, SDO-1600). If you had previously installed service beyond SDO-1600, you need to reinstall it on your upgraded system or copy the files from your prior-release MAINT*vrm* 201 minidisk.
19. You should create a backup copy of your current system, following your normal backup procedures.

Chapter 26. Remove the obsolete release

In this chapter, you will:

- Remove the obsolete release.

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Step 1. Remove an obsolete release

If this was the last member to be upgraded from the old release, once you are positive you will no longer be using the old release:

1. The user IDs associated with the old release level of the products that will no longer be used can be removed from the user directory and from the VMPSFS and VMSYS filepools:
   MAINT6*x*0
   6VMDIR*x*0
   6VMPTK*x*0
   6VMRAC*x*0
   6VMRSC*x*0
   6VMTCP*x*0
   6VMHCD*x*0

   Note:
   Do *not* delete 6VMLEN20.

2. Old release volumes should be checked to see if any required disks remain on the volumes before they are returned to the DASD pool.
3. Any products associated with the old release that will no longer be used should be set to disabled. Because the old release components have been removed from the VMSES/E control files, you should:
   - Use the SET PRODUCT command to set the status on your running system.
   - Edit the SYSTEM CONFIG file to update the PRODUCT statement to set the old release components to DISABLED or delete the PRODUCT statement.
     6VMDIR*x*0
     6VMPTK*x*0
     6VMRAC*x*0
     6VMRSC*x*0
4. The system configuration files can be updated to remove the old release volumes and products.

Part 5. Appendixes

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Appendix A. Determining the RSU level for ordering service

Use the SERVICE command with the STATUS operand to determine the current RSU service level for a component or product. The SERVICE command queries the system-level service update facility (VM SYSSUF) table, which contains a list of all products and components that are installed on the system.

Table 22 lists the component names for components, features, and products supported by the SERVICE and the PUT2PROD commands.

Table 22. Component names for components, features, and products supported by SERVICE and PUT2PROD

Product	Component Name
VMSES/E	VMSES
REXX/VM	REXX
Language Environment	LE
CMS	CMS
CP	CP
GCS	GCS
Dump Viewing Facility	DV
TSAF	TSAF
AVS	AVS
RSCS Networking for z/VM	RSCS
TCP/IP	TCPIP
OSA/SF for VM	OSA
Directory Maintenance Facility	DIRM
RACF Security Server for z/VM	RACF
Performance Toolkit for VM	PERFTK
HCD and HCM for z/VM	VMHCD

Before you begin: You must have the software inventory disk accessed. By default, the software inventory disk is the 51D disk and it is accessed as D.

To determine the RSU level of a component, issue the SERVICE command as follows:

service *compname* **status**

compname
A component listed in Table 22 or any other component defined in the VM SYSSUF table.

Example: In this example, "1601" represents the RSU level that you would use when ordering service for CP.

```
VMFSRV2195I SERVICE CP STATUS
VMFSRV2760I SERVICE processing started
VMFSRV1225I CP (6VMCPR40%CP) status:
VMFSRV1225I    Service Level     RSU-1601
VMFSRV1225I    Production Level  sysname.RSU-1601
VMFSRV2760I SERVICE processing completed successfully
```

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For more information, see the SERVICE command in *z/VM: VMSES/E Introduction and Reference*.

Appendix B. Migrate 51D from the old system

You can use the MIGR51D command to migrate your current system inventory disk to your new system.

You should only use this appendix if you did *not* use the traditional migration procedure and did *not* use the upgrade installation procedure.

If your current system is z/VM 5.4 and you are installing a non-SSI z/VM V6.4, you can migrate the 51D disk as part of the traditional migration procedure (documented in Chapter 10, "Plan your traditional migration," on page 97 through Chapter 13, "Place migrated parts into production," on page 117).

If you are performing an upgrade installation, the 51D will be migrated as part of those procedures.

If you do *not* follow either the traditional migration or the upgrade installation procedures, you can run MIGR51D independently.

To run MIGR51D as an independent activity, complete the steps listed here.

1. Create a backup of the z/VM version 6 release 4 system software inventory disk (default is MAINT640 51D) using your site's normal backup procedures.
2. On your new system, obtain access to the system software inventory files (MAINT 51D) on your current system.

   If your new system can be IPLed as a second level system on your current system, then go to Chapter 13, "Place migrated parts into production," on page 117 and complete "Step 5. Access the current system software inventory disk" on page 122 through "Step 7. Run MIGR51D" on page 126.

   If your new system is running first level, see your system programmer for assistance in making a copy of the current system software inventory files accessible on your new system. On your new system, create a new minidisk owned by the MAINT640 user ID, FFF, to store the software inventory files from your current system. Once the current system software inventory files are stored on minidisk FFF on your new system, go to Chapter 13, "Place migrated parts into production," on page 117, "Step 7. Run MIGR51D" on page 126.

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Migrate 51D from the old system

Appendix C. Contents of the z/VM system

Products loaded from the z/VM system installation media

Products installed on the z/VM system are:

- z/VM
  - Control Program (CP)
  - Dump Viewing Facility (DV)
  - Conversational Monitor System (CMS)
  - REstructured eXtended eXecutor/VM (REXX)
  - Virtual Machine Serviceability Enhancements Staged/Extended (VMSES)
  - Group Control System (GCS)
  - Transparent Services Access Facility (TSAF)
  - APPC/VM VTAM® Support (AVS)
  - Language Environment (LE release level 6.2.0)
  - 3800 Model-3 Printer Image Library
  - UCENG Help - Uppercase English Help minidisk
  - Kanji Help - Japanese Help minidisk
- Environmental Record Editing and Printing Program (EREP)
- Device Support Facilities (ICKDSF)
- Remote Spooling Communications Subsystem (RSCS) Networking for z/VM
- Transmission Control Protocol/Internet Protocol (TCPIP)
- Open Systems Adapter Support Facility (OSA)
- Directory Maintenance Facility (DIRM)
- RACF Security Server for z/VM (RACF)
- Performance Toolkit for VM (PERFTK)
- Hardware Configuration Definition and Hardware Configuration Manager for z/VM (VMHCD)

CMS defaults

The CMS nucleus was built with a local mod to DMSNGP. This local mod updates the CYLADDR, which defines where to write the CMS nucleus on the System disk (the recomp value).

CP defaults

1. The LOGO CONFIG and SYSTEM CONFIG files are located on the common parm disk (PMAINT CF0). These files contain the system configuration data used by CP.

   The CP system control file (SYSTEM CONFIG) describes the system residence device (M0*x*RES) and various system parameters, defining the configuration of your system.
2. For detailed information about the CP system configuration function, CP nucleus options, and CP planning, see *z/VM: CP Planning and Administration*.
3. The CP nucleus on the z/VM system is a module. The module resides on the system parm disks (MAINT CF1 and CF3 disks).
4. The CP nucleus is IPLed with the system default language, mixed case American English (AMENG), uppercase English (UCENG), or Kanji (KANJI), which was selected during installation.

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5. The default USER DIRECT file on the PMAINT 2CC minidisk contains entries defining each virtual machine (user) permitted to log on to your system.

   If there is no machine mode defined for a user ID, the default machine mode definition is ESA. However, issuing the SET MACHINE command overrides the default setting. The USER DIRECT file which was built during installation contains a SET MACHINE XA, SET MACHINE ESA, or SET MACHINE XC command for all user IDs.
6. The USER DIRECT file contains a common profile section, PROFILE IBMDFLT. An INCLUDE statement for this profile has been added to each user ID that previously linked to the AMENG HELP disk (19D). The PROFILE IBMDFLT section contains a link to each HELP disk. Each user you add to the directory that needs access to a HELP disk must have an INCLUDE statement to the PROFILE IBMDFLT section or a LINK statement for each of the three help disks.
7. The USER DIRECT file contains default passwords for all user IDs defined by the installation process. All passwords that are not NOLOG, AUTOONLY, or LBYONLY have been set to the default of WD5JU8QP. Before moving your system into production, you should ensure all passwords conform to your corporate security policies.

   The following user IDs have a password of NOLOG, AUTOONLY, or LBYONLY:

   NOLOG
   6VMLEN20

   AUTOONLY
   VSMWORK1
   VSMWORK2
   VSMWORK3
   RXAGENT1
   DATAMOVE
   DATAMOV2
   DATAMOV3
   DATAMOV4
   DIRMAINT
   DIRMSAT
   DIRMSAT2
   DIRMSAT3
   DIRMSAT4
   VSMGUARD
   PERSMAPI
   DTCSMAPI
   LOHCOST
   ZVMLXTS
   OPNCLOUD

   LBYONLY
   SSL
   SSLDCSSM
8. The z/VM system contains system definition files with sample information and default parameters. You can modify the files to define your system configuration. See “Configuring Your System” in *z/VM: CP Planning and Administration* for more information.
9. CP ships several CP Sample Utility Programs to help you configure your system once installation is complete. They are located on the MAINT*vrm* 2C2 minidisk or in the VMPSFS:MAINT*vrm*.CPDV.SAMPLE. directory. For additional information on these programs, see appendix A in *z/VM: CP Planning and Administration*.

GCS defaults

1. The GCS nucleus was built with mixed case American English (AMENG) as the system default language.

2. The GCS nucleus was built with a system name of GCS and is loaded at storage locations X'400'-X'5FF' and X'1000'-X'11FF'.
3. The GCS nucleus was also built with the following defaults:

   Default Item
   Description

   Saved System Name
   GCS

   Authorized VM User IDs
   VTAM GCS MAINT NETVIEW OPERATNS RSCS AVSVM PDMREM1 PDMGRP4 SNALNKA PVMG NVAS IHVOPER CMEOSI NPM VSCS

   Saved System Information
   Recovery machine user ID: GCS

   User ID to receive storage dumps: OPERATNS

   GCS Trace Table Size: 16KB

   Common storage above 16MB line (YES or NO): YES

   Single user environment: no

   Maximum number of VM machines: 14

   System ID: GCS

   Name of the VSAM segment: CMSVSAM

   Name of the BAM segment: CMSBAM

   GCS saved system is restricted: yes

   Trace table in private storage: yes

   Saved System links
   VTAM NETVSG00

   User IDs needing VSAM storage
   NETVIEW NVAS CMEOSI

Saved segments on the z/VM system

1. CMS improves system performance and storage usage by placing heavily used execs in the CMS installation segment, CMSINST. CMSINST is a logical segment within the INSTSEG physical segment. If you want to add or delete an exec from CMSINST, you should identify the changes to VMSES/E using the local modification procedure. A local modification allows VMSES/E to track the changes and to ensure the CMSINST segment is rebuilt when any of the execs in it are serviced. To see a local modification example for CMSINST, see *z/VM: Service Guide*.
2. The QUERY NSS ALL MAP command displays the saved segments and saved systems defined on your system. The segments might be displayed in a different order.

   ```
   query nss all map
   ```

```
⋮
FILE FILENAME FILETYPE MINSIZE  BEGPAG ENDPAG TYPE CL #USERS PARMREGS VMGROUP
nnnn ZCMS     NSS      0000256K 00000  0000D   EW  A  nnnnn   00-15     NO
                                00020  00023   EW
                                00F00  013FF   SR
nnnn CMS      NSS      0000256K 00000  0000D   EW  A  nnnnn   00-15     NO
                                00020  00023   EW
                                00F00  013FF   SR
nnnn GCS      NSS      0000256K 00000  0000C   EW  R  nnnnn   OMITTED   YES
                                00400  0044E   SR
                                0044F  0044F   SW
                                00450  005FF   SN
                                01000  0101A   SR
                                0101B  011FF   SN
nnnn CMSDOS   DCSS-M     N/A    00B00  00B0C   SR  A  nnnnn   N/A       N/A
nnnn CMSBAM   DCSS-M     N/A    00B0D  00B37   SR  A  nnnnn   N/A       N/A
nnnn DOSBAM   DCSS-S     N/A    00B00  00B37   --  A  nnnnn   N/A       N/A
nnnn MONDCSS  CPDCSS     N/A    09000  0CFFF   SC  R  nnnnn   N/A       N/A
nnnn GUICSLIB DCSS       N/A    01F00  01FFF   SR  A  nnnnn   N/A       N/A
nnnn CMSFILES DCSS       N/A    01900  01BFF   SR  A  nnnnn   N/A       N/A
nnnn SVM      DCSS       N/A    01900  019FF   SR  A  nnnnn   N/A       N/A
nnnn CMSPIPES DCSS       N/A    02100  022FF   SR  A  nnnnn   N/A       N/A
nnnn CMSVMLIB DCSS       N/A    01700  017FF   SR  A  nnnnn   N/A       N/A
nnnn INSTSEG  DCSS       N/A    01400  016FF   SR  A  nnnnn   N/A       N/A
nnnn PERFOUT  DCSS       N/A    08A00  08FFF   SN  A  nnnnn   N/A       N/A
nnnn DOSINST  DCSS       N/A    00900  0090F   SR  A  nnnnn   N/A       N/A
nnnn SCEE     DCSS       N/A    00900  009FF   SR  A  nnnnn   N/A       N/A
nnnn SCEEX    DCSS       N/A    02100  029FF   SR  A  nnnnn   N/A       N/A
nnnn NLSKANJI DCSS       N/A    02000  020FF   SR  A  nnnnn   N/A       N/A
nnnn NLSUCENG DCSS       N/A    02000  020FF   SR  A  nnnnn   N/A       N/A
nnnn SMAPIOUT DCSS       N/A    08400  089FF   SN  A  nnnnn   N/A       N/A
Ready; T=n.nn/n.nn hh:mm:ss
```

VMSYS, VMSYSU, VMSYSR, and VMPSFS file pool defaults

The z/VM system incorporates four prebuilt file pools:

VMSYS

- System/member specific file pool
  - BFS directories defined for Shell and Utilities, and for SSL
  - System specific work disks in SFS
- Managed by the VMSERVS server machine
- Administrators – MAINT, MAINT640, MIGMAINT, VSMGUARD, VSMWORK1, VSMWORK2, VSMWORK3, and 6VMTCP40

Note: User IDs always enrolled in the VMSYS file pool are: DTCSMAPI, GSKADMIN, GSKSSLDB, LDAPSRV, MAINT, MAINT640, OPERATNS, PERSMAPI, ROOT, SSLSERV, SSL00001, SSL00002, SSL00003, SSL00004, SSL00005, TCPMAINT, VMRMSVM, VSMEVSRV, VSMGUARD, VSMREQIN, VSMREQI6, VSMREQIU, VSMWORK1, VSMWORK2, and VSMWORK3.

VMSYSU

- User data repository file pool
  - SFS storage space for general use by the system user population
  - SFS directories defined for use by SSL pool servers
- Managed by the VMSERVU server machine

- Administrators – MAINT, MAINT640, and MIGMAINT

Note: User IDs always enrolled in the VMSYSU file pool are: ETC, MAINT, MAINT640, TMP, and VAR.

VMSYSR
- Coordinated resource recovery (CRR) file pool
- Managed by the VMSERVR server machine
- Administrators – MAINT, MAINT640, and MIGMAINT

VMPSFS
- Product service file pool
- Managed by the VMSERVP server machine
- Administrators – MAINT, MAINT640, AUTOLOG1, AUTOLOG2, MIGMAINT, VSMGUARD, VSMWORK1, VSMWORK2, and VSMWORK3
- MAINT640's default file pool is set to VMPSFS

Note: User IDs always enrolled in the VMPSFS file pool are: BLDSEG, DATAMOVE, DATAMOV2, DATAMOV3, DATAMOV4, DIRMAINT, DIRMSAT, DIRMSAT2, DIRMSAT3, DIRMSAT4, MAINT, MAINT640, and VSMGUARD.

Each of these file pools has two definition files associated with it:
- *filename* POOLDEF, which defines the configuration of the file pool. *filename* is the name of the file pool.
- *filename* DMSPARMS, which contains startup parameters for the file pool server machine. *filename* is the user ID of the server machine.

For more information and examples on tailoring these files and on BFS root directory definitions, see *z/VM: CMS File Pool Planning, Administration, and Operation*.

Additional file pool enrollments

If you chose to load these products into the file pool, the following user IDs are also enrolled in the following file pools:

Table 23. VMSYS/VMPSFS File Pool User IDs

Product	File Pool	User IDs
VM		
	VMPSFS	6VMLEN20
RSCS		
	VMPSFS	6VMRSC40
	VMPSFS	RSCSAUTH
	VMPSFS	RSCSDNS
	VMPSFS	XCHANGE
	VMSYS	6VMRSC40
	VMSYS	XCHANGE
OSA/SF		
	VMPSFS	4OSASF40
	VMPSFS	OSADMIN1
	VMPSFS	OSADMIN2
	VMPSFS	OSADMIN3
	VMPSFS	OSAMAINT
	VMPSFS	OSASF

Table 23. VMSYS/VMPSFS File Pool User IDs (continued)

Product	File Pool	User IDs
TCP/IP		
	VMPSFS	6VMTCP40
ICKDSF		
	VMPSFS	5684042J
DIRM		
	VMPSFS	6VMDIR40
RACF		
	VMPSFS	6VMRAC40
PERFTK		
	VMPSFS	6VMPTK40
	VMPSFS	PERFSVM
	VMPSFS	PERSMAPI
	VMSYS	PERFSVM
VMHCD		
	VMPSFS	6VMHCD40
	VMPSFS	CBDIODSP

Appendix D. Back up the named saved systems and segments to tape

1. Log on the system or member you are backing up as MAINT640.

```
logon maint640
⋮
Ready; T=n.nn/n.nn hh:mm:ss
```

The default password for MAINT640 is WD5JU8QP.

2. Attach a tape drive (*tapeaddr*) to MAINT640 at virtual device address 181.

```
attach tapeaddr * 181
TAPE 0181 ATTACHED
Ready; T=n.nn/n.nn hh:mm:ss
```

3. Mount a tape, to be used for back up, on the tape drive attached at virtual device address 181.
4. Spool the console.

```
spool console * start
```

5. Enter the SPXTAPE command to dump the named saved systems and segments to tape.

```
spxtape dump tapeaddr sdf all run
SPXTAPE DUMP   INITIATED ON VDEV tapeaddr
Ready; T=n.nn/n.nn hh:mm:ss

DUMPING  tapeaddr  :         nnn  FILES,  PAGES      nnnn   nn% COMPLETE

⋮
DUMPING  tapeaddr  :         nnn  FILES,  PAGES      nnnn   nn% COMPLETE
RDR FILE fileno1 SENT FROM MAINT640 CON WAS fileno1 RECS nnnn CPY  001 T NOHOLD NOKEEP
SPXTAPE DUMP COMMAND COMPLETED  ON VDEV tapeaddr
TIME STARTED:        hh:mm:ss
TIME ENDED:          hh:mm:ss
TAPE COUNT:               nnn
FILES PROCESSED:          nnn
SPOOL PAGES:             nnnn
RDR FILE fileno2 SENT FROM MAINT640 CON WAS fileno2 RECS nnnn CPY  001 T NOHOLD NOKEEP
```

The operand RUN specifies that the SPXTAPE rewinds and unloads the tape after the operation.

tapeaddr
: Address of the tape drive attached to MAINT640.

The messages from SPXTAPE tell you that the files are being dumped to tape.

fileno1
: File number of the volume log file. The volume log file records information about the files processed by the SPXTAPE DUMP command that are associated with a particular tape volume.

fileno2
: File number of the command summary log file. The command summary log file records the progress and status of the SPXTAPE DUMP operation.

6. Store the tape for emergency use. If it is ever necessary, you can use this tape and the SPXTAPE command to restore the CMS system data file. For more information about the SPXTAPE command,

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see *z/VM: CP Commands and Utilities Reference*. For information on how to restore this tape to your system, see Appendix G, "Restore the named saved systems and segments from tape," on page 263.

7. If you have a multimember SSI cluster, repeat substeps 1 on page 255-6 on page 255 for each remaining member to back up the NSSs and segments for that member.

Appendix E. Back up the z/VM system to tape

If you do not have a tape drive or if you wish to back up to DASD, see Appendix F, "Back up the z/VM system to DASD," on page 261.

1. Log on the system or member you are going to back up to tape as MAINT640.

   ```
   logon maint640                                  The default password for MAINT640 is WD5JU8QP.
   .
   .
   .
   Ready; T=n.nn/n.nn hh:mm:ss
   ```

2. Ensure you have a link to all of the full-pack minidisks for all of the volumes you are backing up, as per the following table.

Default Label	Full-pack Minidisk	Owner	Member Specific or Common
M01RES	123	MAINT	Member Specific
M01W01	124	MAINT	Member Specific
M01W02	125	MAINT	Member Specific
M01W03	126	MAINT	Member Specific
640RL1	131	MAINT640	Common
640RL2	132	MAINT640	Common
640RL3	133	MAINT640	Common
VMCOM1	141	PMAINT	Common
VMCOM2	142	PMAINT	Common

```
q v 123-142
DASD 0123 3390 M01RES R/O       3339 CYL ON DASD  nnnn SUBCHANNEL = nnnn
DASD 0124 3390 M01W01 R/O       3339 CYL ON DASD  nnnn SUBCHANNEL = nnnn
DASD 0125 3390 M01W02 R/O       3339 CYL ON DASD  nnnn SUBCHANNEL = nnnn
DASD 0126 3390 M01W03 R/O       3339 CYL ON DASD  nnnn SUBCHANNEL = nnnn

.
.
.
DASD 0131 3390 640RL1 R/W       3339 CYL ON DASD  nnnn SUBCHANNEL = nnnn
DASD 0132 3390 640RL2 R/W       3339 CYL ON DASD  nnnn SUBCHANNEL = nnnn
DASD 0133 3390 640RL3 R/W       3339 CYL ON DASD  nnnn SUBCHANNEL = nnnn
DASD 0141 3390 VMCOM1 R/O       3339 CYL ON DASD  nnnn SUBCHANNEL = nnnn
DASD 0142 3390 VMCOM2 R/O       3339 CYL ON DASD  nnnn SUBCHANNEL = nnnn
Ready; T=n.nn/n.nn hh:mm:ss
```

3. Attach a tape drive (*tapeaddr*) to MAINT640 at virtual device address 181.

   ```
   attach tapeaddr * 181
   TAPE 0181 ATTACHED
   Ready; T=n.nn/n.nn hh:mm:ss
   ```

4. Mount a tape, to be used for back up, on the tape drive attached at virtual device address 181.
5. Access the 193 minidisk as file mode Z.

   ```
   access 193 z
   Ready; T=n.nn/n.nn hh:mm:ss
   ```

6. Load the DDRXA utility to tape.

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```
utility utiltape ddrxa
Rewind complete
IUGWUT8317I MOVING IPL DDRXA TO TAPE
IUGWUT8318I THE IPL DDRXA PROGRAM IS
             ON TAPE FILE NUMBER 1
Ready; T=n.nn/n.nn hh:mm:ss
```

7. Rewind the backup tape attached at virtual device address 181.

```
rewind 181
Rewind complete
```

8. IPL the tape and answer the prompts from DDRXA. For information about DDRXA, see the *z/VM: CP Commands and Utilities Reference* and *z/VM: System Operation*.

ipl 181 clear
```
z/VM DASD DUMP/RESTORE PROGRAM
ENTER CARD READER ADDRESS OR CONTROL STATEMENTS
ENTER:
```

CLEAR is necessary. Do not omit it.

Wait a few moments for DDRXA to prompt you. If a prompt does not appear, press Enter.

sysprint cons
```
ENTER:
```

This first control statement tells DDRXA that you want program messages sent to your console.

input *devno* **dasd** *volid*
```
ENTER:
```

The second control statement is the input control statement.

You must back up all your installation volumes, except the paging volume.

devno
: Full-pack minidisk address of the volume you are backing up.

volid
: Volume label – for example M01RES.

output 181 tape (compact
```
ENTER:
```

This control statement specifies the device to which you are dumping the system. You can specify one alternate tape drive for additional tape volumes.

Example: If you had a tape attached at virtual device address 181 and an alternate tape attached at virtual device address 182, the OUTPUT control statement would be:

```
output 181 tape 182 (compact
```

If you are using a 3590 tape, you can use the leave option to dump multiple DASD on one tape volume. The output control statement would be:

```
output 181 tape (compact leave
```

dump all
```
DUMPING volid
DUMPING DATA mm/dd/yy
  AT hh.mm.ss GMT FROM volid
```

This control statement dumps the specified volume to the tape.

The informational messages that follow will vary according to your use of device types.

The exact cylinder extents vary according to the device type.

```
INPUT CYLINDER EXTENTS           OUTPUT CYLINDER EXTENTS
      START       STOP                 START        STOP
   nnnnnnnn   nnnnnnnn              nnnnnnnn     nnnnnnnn

⋮
END OF DUMP
BYTES IN nnnnnnnnnn BYTES OUT nnnnnnnnnn
TRACKS NOT COMPACTED ON TAPE - nnnnnnnnnn
ENTER:                                          DDRXA prompts when finishes dumping the
                                                volume.
```

Note: When DDRXA encounters the end of a tape, and there is more data to dump, the program prompts you to mount the next tape.

- If you are using the same tape drive, mount the next tape and DDRXA continues.
- If you are using an alternate tape drive, DDRXA uses the alternate tape drive, then alternates between the tape drives for additional tapes. That is, if there are more than two tapes, you are prompted for the third tape on the first tape drive, the fourth tape on the second tape drive, and so forth.

9. If you have additional DASD volumes to back up, mount a new tape, if necessary, and repeat the INPUT, OUTPUT, and DUMP ALL statements for each volume.
10. Press Enter to end the program.

    ```
    ENTER
     END OF JOB
    ```

11. IPL CMS.

    ```
    #cp ipl cms
    z/VM V6.4.0    yyyy-mm-dd hh:mm

    ENTER
    Ready; T=n.nn/n.nn hh:mm:ss
    ```

    For information on how to restore your system from tape, see Appendix H, “Restore the z/VM system backup from tape,” on page 265.
12. If you have a multimember SSI cluster, repeat substeps 1 on page 257-11 for each remaining member to back up the member-specific volumes.

Back up the z/VM system to tape

Appendix F. Back up the z/VM system to DASD

If you wish to store a back up to tape, see Appendix E, "Back up the z/VM system to tape," on page 257.

1. Log on the system or member you are going to back up to DASD as MAINT640.

```
logon maint640                                  The default password for MAINT640 is WD5JU8QP.
⋮
Ready; T=n.nn/n.nn hh:mm:ss
```

2. Ensure you have a link to all of the full-pack minidisks for all of the volumes you are backing up, as per the following table.

Default Label	Full-pack Minidisk	Owner	Member Specific or Common
M01RES	123	MAINT	Member Specific
M01W01	124	MAINT	Member Specific
M01W02	125	MAINT	Member Specific
M01W03	126	MAINT	Member Specific
640RL1	131	MAINT640	Common
640RL2	132	MAINT640	Common
640RL3	133	MAINT640	Common
VMCOM1	141	PMAINT	Common
VMCOM2	142	PMAINT	Common

```
q v 123-142
DASD 0123 3390 M01RES R/O       3339 CYL ON DASD  nnnn SUBCHANNEL = nnnn
DASD 0124 3390 M01W01 R/O       3339 CYL ON DASD  nnnn SUBCHANNEL = nnnn
DASD 0125 3390 M01W02 R/O       3339 CYL ON DASD  nnnn SUBCHANNEL = nnnn
DASD 0126 3390 M01W03 R/O       3339 CYL ON DASD  nnnn SUBCHANNEL = nnnn

⋮
DASD 0131 3390 640RL1 R/W       3339 CYL ON DASD  nnnn SUBCHANNEL = nnnn
DASD 0132 3390 640RL2 R/W       3339 CYL ON DASD  nnnn SUBCHANNEL = nnnn
DASD 0133 3390 640RL3 R/W       3339 CYL ON DASD  nnnn SUBCHANNEL = nnnn
DASD 0141 3390 VMCOM1 R/O       3339 CYL ON DASD  nnnn SUBCHANNEL = nnnn
DASD 0142 3390 VMCOM2 R/O       3339 CYL ON DASD  nnnn SUBCHANNEL = nnnn
Ready; T=n.nn/n.nn hh:mm:ss
```

3. Access the 193 minidisk as file mode Z.

```
access 193 z
Ready; T=n.nn/n.nn hh:mm:ss
```

4. Run DDR and answer the prompts. For information about DDR, see the *z/VM: CP Commands and Utilities Reference* and *z/VM: System Operation*.

```
DDR
z/VM DASD DUMP/RESTORE PROGRAM
ENTER CARD READER ADDRESS OR CONTROL STATEMENTS
ENTER:
```

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```
sysprint cons
ENTER:
```

This first control statement tells DDR that you want program messages sent to your console.

```
input devno dasd volid
ENTER:
```

The second control statement is the input control statement.

You must back up all your installation volumes, except the paging volume.

devno
Full-pack minidisk address of the volume you are backing up.

volid
Volume label – for example M01RES.

```
output devno dasd scratch
ENTER:
```

You need a separate volume for each volume you are backing up.

devno
Full-pack minidisk address of the volume you are using to backup.

```
copy all
```

This control statement dumps the specified volume to the new DASD.

```
DUMPING volid
DUMPING DATA mm/dd/yy
  AT hh.mm.ss GMT FROM volid
```

These are informational messages that will vary according to your use of device types.

The exact cylinder extents vary according to the device type.

```
INPUT CYLINDER EXTENTS           OUTPUT CYLINDER EXTENTS
      START       STOP                 START        STOP
   nnnnnnnn   nnnnnnnn               nnnnnnnn    nnnnnnnn

⋮
END OF DUMP
BYTES IN nnnnnnnnnn BYTES OUT nnnnnnnnnn
TRACKS NOT COMPACTED ON TAPE - nnnnnnnnnn
ENTER:
```

When DDR finishes dumping the volume, it prompts.

5. If you have any more DASD volumes to back up, repeat the INPUT, OUTPUT, and COPY ALL statements for each volume.
6. Press Enter to end the program.

   ENTER

   ```
   END OF JOB
   ```

7. If you have a multimember SSI cluster, repeat substeps 1 on page 261-6 for each remaining member to back up the member-specific volumes.

Appendix G. Restore the named saved systems and segments from tape

If you created a loadable tape of the named saved systems and segments during your system installation, perform the following steps to restore the named saved system and segments.

1. Log on as MAINT640.

```
logon maint640
⋮
Ready; T=n.nn/n.nn hh:mm:ss
```

The default password for MAINT640 is WD5JU8QP.

2. Attach a tape drive (*tapeaddr*) to MAINT640.

```
attach tapeaddr *
Ready; T=n.nn/n.nn hh:mm:ss
```

3. Mount the backup tape on the attached tape drive (*tapeaddr*).
4. Spool the console.

```
spool console *
```

5. Enter the SPXTAPE command to load the system data files.

```
spxtape load tapeaddr sdf all run

SPXTAPE LOAD   INITIATED ON VDEV tapeaddr
Ready; T=n.nn/n.nn hh:mm:ss

LOADING  tapeaddr     :       nnn  FILES,  PAGES      nnnn

⋮
LOADING  tapeaddr     :       nnn  FILES,  PAGES      nnnn
SPXTAPE LOAD END-OF-TAPE ON VDEV tapeaddr;
MOUNT NEXT TAPE
TAPE NUMBER:         tapeaddr-001
FILES PROCESSED:           nnn
SPOOL PAGES:              nnnn
LOADING  tapeaddr     :       nnn  FILES,  PAGES      nnnn

⋮
LOADING  tapeaddr     :       nnn  FILES,  PAGES      nnnn
RDR FILE fileno1 SENT FROM MAINT640 CON WAS fileno RECS nnnn CPY  001 T NOHOLD NOKEEP
```

tapeaddr
: Address of the tape drive attached to MAINT640.

fileno1
: File number of the volume log file.

The volume log file records information about the files processed by the SPXTAPE LOAD command that are associated with a particular tape volume.

6. When all volumes have been loaded, use the SPXTAPE END command to end the SPXTAPE load.

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```
spxtape end tapeaddr
SPXTAPE END    INITIATED ON VDEV tapeaddr
SPXTAPE LOAD COMMAND ENDED      ON VDEV tapeaddr
TIME STARTED:        hh:mm:ss
TIME ENDED:          hh:mm:ss
TAPE COUNT:               nnn
FILES PROCESSED:          nnn
SPOOL PAGES:             nnnn
```

The SPXTAPE END command ends the SPXTAPE LOAD operation at the completion of the current file.

```
Ready; T=n.nn/n.nn hh:mm:ss
```

The CMS ready message may occur between the messages.

```
RDR FILE fileno2 SENT FROM MAINT640 CON WAS fileno RECS nnnn CPY  001 T NOHOLD NOKEEP
```

fileno2
File number of the command summary log file.

The command summary log file records the progress and status of the SPXTAPE LOAD operation.

For more information on the SPXTAPE command, see *z/VM: CP Commands and Utilities Reference*.

7. IPL the CMS named saved system.

```
ipl cmsname

⋮
z/VM V6.4.0    yyyy-mm-dd hh:mm

 ENTER
Ready; T=n.nn/n.nn hh:mm:ss
```

cmsname
Either the IBM supplied system name (CMS) or the name you defined in DMSNGP on the SYSNAME statement.

If you have changed the version heading, your own heading will appear.

Appendix H. Restore the z/VM system backup from tape

Note: This procedure requires a full-pack minidisk be defined in the CP directory, USER DIRECT, for each volume you are restoring.

If you created a backup of your new z/VM system on tape during your system installation, perform the following steps to restore the system.

1. Mount the backup tape on a tape drive.
2. IPL the tape drive, to restore the system to DASD.

   ipl *tapeaddr* **clear**

   tapeaddr
   Address of the tape drive.

3. This will invoke DDRXA, which will restore the contents of the tape to DASD.

   ```
   z/VM DASD DUMP/RESTORE PROGRAM
   ENTER CARD READER ADDRESS OR CONTROL STATEMENTS
   ENTER:
   ```

   sysprint cons
   ENTER:

   This first control statement tells DDRXA that you want program messages sent to your console.

   input *tapeaddr* **tape**
   ENTER:

   The second control statement is the input control statement.

   tapeaddr
   Device number where the backup tape is mounted.

   You can specify one alternate tape drive for additional tape volumes.

   Example: If you had a tape attached at virtual device address 181 and an alternate tape attached at virtual device address 182, the INPUT control statement would be:

   ```
   input 181 tape 182
   ```

   If you are using a 3590 tape, and multiple DASD volumes were dumped on one tape volume, use the leave option to position the tape for the next restore. The input control statement would be:

   ```
   input 181 tape (leave
   ```

   output *devaddr* **dasd** *volid*
   ENTER:

   This output statement specifies the DASD device to which you are restoring the system.

   devaddr
   Full-pack minidisk address of the volume to which you are restoring this tape.

   The full-pack minidisk addresses for the default DASD are 122 (M0*x*S01), 123 (M0*x*RES), 124 (M0*x*W01), 125 (M0*x*W02), ...

   By typing **dasd**, the device type (3390) is automatically identified by the DDRXA program.

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```
restore all                                          The RESTORE ALL statement tells DDRXA to restore
                                                     the whole tape to the output device.
RESTORING volid
DATA DUMPED mm/dd/yy
  AT hh.mm.ss GMT FROM volid
  RESTORED TO volid
INPUT CYLINDER EXTENTS       OUTPUT CYLINDER EXTENTS
      START       STOP           START        STOP
   nnnnnnnn   nnnnnnnn       nnnnnnnn    nnnnnnnn

⋮
END OF RESTORE
BYTES RESTORED nnnnnnnnnn

                                                     The exact cylinder extents vary according to the
                                                     device type.
ENTER:                                               Repeat INPUT, OUTPUT, and RESTORE statements
                                                     for each DASD you are restoring.
⋮

ENTER:                                               When DDRXA finishes, it prompts you with ENTER.
                                                     Press Enter to end the program.
 ENTER
END OF JOB
```

Note: When DDRXA encounters the end of a tape, and there is more data to restore, the program prompts you to mount the next tape.

- If you are using the same tape drive, mount the next tape and DDRXA continues.
- If you are using an alternate tape drive, DDRXA uses the alternate tape drive, then alternates between the tape drives for additional tapes. That is, if there are more than two tapes, you are prompted for the third tape on the first tape drive, the fourth tape on the second tape drive, and so forth.

Appendix I. Recover a file or minidisk

1. Log on as MAINT640.

   ```
   logon maint640
   ⋮
   Ready; T=n.nn/n.nn hh:mm:ss
   ```

   The default password for MAINT640 is WD5JU8QP.

2. If you want to recover an entire minidisk, skip this step and go to step 3.

   To recover an individual file, you must first determine on which minidisk the file is located. If you already know on which minidisk the file is located, go to step 3. Otherwise, check the minidisk map file. If you loaded z/VM to the file pool, the minidisk map file is on the directory VMPSFS:MAINT640.CPDV.OBJECT. Access this directory in place of the 194 disk.

   ```
   access 194 z
   Ready; T=n.nn/n.nn hh:mm:ss

   xedit minidisk map z

   ⋮
   quit
   Ready; T=n.nn/n.nn hh:mm:ss
   ```

   The MINIDISK MAP file lists the minidisks shipped on the z/VM system and the files contained on each minidisk. Look at MINIDISK MAP to determine which minidisk contains the file you want to recover.

3. If you want to recover an individual file or recover the entire minidisk to a temporary disk, you need to define a temporary disk. The temporary disk must be the same DASD type that is provided by your installation media and the same size as the minidisk you want to recover. (See the $ITEMMD$ $TABLE$ on the 4CC disk for the size of the minidisk you want to recover.)

   ```
   define [t3390 or vfb-512]  loadaddr mdisksize
   DASD loadaddr DEFINED
   Ready; T=n.nn/n.nn hh:mm:ss
   ```

   loadaddr
   Address of the temporary disk.

   mdisksize
   Size of the minidisk you want to restore.

   If you receive the following message:

   ```
   HCPLNM091E DASD loadaddr not defined; temp space not available
   ```

   you must add additional temporary disk space to your system or define a minidisk with the address *loadaddr*. If you define a minidisk, it must be the same DASD type that is provided by your installation media and the same size as the minidisk you want to recover.

4. Recover the minidisk.

   If your installation media was DVD, you could have installed from the DVD or uploaded the contents of the DVD to either an FTP server or VM minidisk. You can use the FTP server or VM minidisk if they are still available, otherwise use the DVD.

   a. Run INSTPIPE

      ```
      instpipe
      ```

   b. Recover from the DVD or FTP server:

      ```
      pipe ftpget -h IPaddress  -u userid -p password -d ftpdrct -v BEF -DVDEOF -f dddcuu* |UNPACK|
      restcmd loadaddr
      ```

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IPaddress
IP address or FTP HOSTNAME.

userid
password
User ID and password used to log on to the FTP server.

ftpdrct
Path to the DVD drive or server directory. If using a DVD drive, append **/CPDVD** to the end of the path.

ddd
CKD for 3390 or **FBA** for FBA.

*cuu**
Address of the minidisk to be recovered from the DVD, with an asterisk (*) appended to the end.

restcmd
ECKDREST for 3390 or **MDREST** for FBA.

loadaddr
Address to which you are restoring the minidisk.

Notes:

1. To recover a minidisk and overlay the existing disk, you must link the existing minidisk in write mode. For example, enter the `LINK CMSBATCH 195 801 WR` command.
2. If the minidisk belongs to MAINT640, *cuu* is the actual minidisk address. If the minidisk does not belong to MAINT640, *cuu* is the alias address. See the $ITEMMD$ $TABLE$ on the 4CC disk to determine the alias address.
3. If you want to recover an entire minidisk and overlay the existing minidisk, *loadaddr* is the address at which you have the existing disk linked. If *loadaddr* is not specified, a temporary disk (T-disk) is created.

c. Recover from a VM minidisk. Access the VM minidisk address as file mode C.

```
access diskaddr c
Ready; T=n.nn/n.nn hh:mm:ss
pipe dvddecod dddcuu image c |UNPACK| restcmd loadaddr
```

ddd
CKD for 3390 or **FBA** for FBA.

cuu
Address of the minidisk to be recovered from the DVD.

restcmd
ECKDREST for 3390 or **MDREST** for FBA.

loadaddr
Address to which you are recovering the minidisk.

Notes:

1. To recover a minidisk and overlay the existing disk, you must link the existing minidisk in write mode. For example, enter the `LINK CMSBATCH 195 801 WR` command.
2. If the minidisk belongs to MAINT640, *cuu* is the actual minidisk address. If the minidisk does not belong to MAINT640, *cuu* is the alias address. See the $ITEMMD$ $TABLE$ on the 4CC disk to determine the alias address.
3. If you want to recover an entire minidisk and overlay the existing minidisk, *loadaddr* is the address at which you have the existing disk linked. If *loadaddr* is not specified, a temporary disk (T-disk) is created.

5. If you restored the minidisk to a temporary disk, copy the file or files that you want to recover from the temporary disk to the target disk.

```
access loadaddr fm-1
Ready; T=n.nn/n.nn hh:mm:ss
```

loadaddr
Address of the temporary disk.

fm-1
Any available file mode.

```
access mdiskaddr fm-2
Ready; T=n.nn/n.nn hh:mm:ss
```

mdiskaddr
Address of the target minidisk. If you loaded z/VM to the file pool, *mdiskaddr* is the directory to which the minidisks were copied. See MOVE2SFS $TABLE$ for a list of minidisks and directories.

fm-2
Any available file mode.

```
copyfile fn ft fm-1 = = fm-2 (olddate
Ready; T=n.nn/n.nn hh:mm:ss
```

fn File name of the file you want to recover.

ft File type of the file you want to recover. Repeat the COPYFILE command for each file you want to recover.

Recover a file or minidisk

Appendix J. Using a terminal emulator to upload files from a DVD

Note: Using a terminal emulator to upload files from a DVD can take several hours to complete.

The following procedure will guide you through using IBM Personal Communications to upload files from the z/VM product DVD and the z/VM installation RSU DVD to a VM minidisk. If Personal Communications is not your preferred terminal emulator, this procedure can be used as a model for using the upload function provided with your preferred terminal emulator.

Requirement: Files must be uploaded with a **fixed** record format, a logical record length of **1028**, and a **binary** transfer type. These options must be used to ensure file attributes are maintained.

1. Start a new Personal Communications session and log on to a user ID with access to the minidisk where you will transfer the DVD files.
2. If you have already set up a "dvdbinary" transfer type, skip to substep 3. Otherwise, create a new transfer type called "dvdbinary ".
   a. From the **Edit** menu, click **Preferences** then **Transfer**.
   b. In the File Transfer Settings window, click the **General** tab and verify that the **Host Type** is **VM/CMS**. If not, select **VM/CMS** from the **Host Type** list.
   c. Click the **VM** tab.
      1) In the **Transfer Type** field, enter "dvdbinary".
      2) Select **Fixed** in the **Record Format** list.
      3) In the **Logical Record Length** field, enter "1028".
      4) Click **Save**.
      5) Click **OK**.
3. Load the z/VM product DVD in the DVD drive.

   Note: If your DVD drive is not labeled drive letter D, copy the 640prod.srl file from the DVD to your workstation. Open the file, and change "D:" to match your DVD drive letter for each entry. Save the modified file and use it instead of the copy on the DVD for the following steps.

4. Upload the contents of the DVD to the VM minidisk (previously accessed as file mode W).
   a. Set messages off in your VM session:

      ```
      set msg off
      set emsg off
      set imsg off
      set wng off
      ```

   b. From the **Actions** menu, click **Send File To Host**.
   c. In the Send Files to Host window, click **Open List**.
      1) In the Open File-Transfer List File window, navigate to the CPDVD directory on the DVD and select the 640prod.srl file.

         Note: If you created a modified 640prod.srl file in the previous substep, navigate to the location on your workstation where the modified file is saved and select it instead.

      2) Click **Open**. Each file to be copied is added to the transfer list.
   d. Click **Send**.

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5. Repeat this procedure using the z/VM installation RSU DVD. Substitute one of the following .srl files in place of the 640prod.srl file used for the z/VM product DVD.

If installing to:	Substitute:
3390	64ckdrsu.srl
FBA	64fbarsu.srl

6. When all files have been transferred, restore your message settings in your VM session:

```
set msg on
set emsg on
set imsg on
set wng on
```

7. Verify that all of the files transferred have a **fixed** (F) file format and a logical record length (LRECL) of **1028**.

   If the file format or logical record length of any file is incorrect, then the files were uploaded incorrectly. Erase all of the files from the minidisk and upload the contents of the z/VM product DVD and the z/VM installation RSU DVD again, using the correct parameters:

```
filelist * image w

Cmd Filename Filetype Fm Format Lrecl Records Blocks Date Time
    xxx22200 IMAGE    W1 F      1028  nnnn    nnn    dddd ttttt

⋮
```

8. Return to Chapter 7, From a VM Minidisk, Step 1, Substep 15 on page 43.

Appendix K. Basic TCP/IP Connectivity Worksheets

Gather the TCP/IP configuration information from your network system administrator and record the information in the following tables.

If you are installing a multimember SSI, the TCP/IP configuration must be done separately on each SSI member. Therefore, you will need a separate set of configuration worksheets for each member (1-4) on which you will create a minimal TCP/IP configuration.

In these worksheets, a number in parentheses following a field description – for example, Host name (20) – is the maximum length for that field.

QDID layer 2: If using QDIO layer 2 for the network interface in IPWIZARD, you need to add or update the VMLAN MACPREFIX statement in your SYSTEM CONFIG file to define a unique MAC address prefix for this system. If you are installing a multimember SSI, the VMLAN MACPREFIX and USERPREFIX must be configured in each SSI member. For more information, see "Media Access Control (MAC) Address" in *z/VM: Connectivity*, and the VMLAN statement in *z/VM: CP Planning and Administration*. If changes are made to your SYSTEM CONFIG file, the z/VM image must be re-IPLed so that the statements take effect.

Note: The IP configuration wizard supports real network devices only. If you plan on using virtual network devices for TCP/IP, they must be configured manually. See *z/VM: TCP/IP Planning and Customization*.

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Member 1

Table 24. Installation TCP/IP Configuration Worksheet – Member 1

Member 1:	
z/VM user ID of the z/VM TCP/IP stack virtual machine: (The default user ID is TCPIP. If you change this user ID, you must define the user ID in your user directory before issuing IPWIZARD.)	
Host name (20):	
Domain name (40):	
DNS IP address (up to three addresses):	1) _____ 2) _____ 3) _____
Gateway IP address :	
Interface name (16):	
Device number:	
IP address:	
IPv4 subnet mask (15) or IPv6 prefix length (3):	
(IPv4 only) Path MTU discovery:	__ Enabled __ Disabled
Choose the interface you will be using (select one):	__ QDIO (layer 2) – see “QDIO layer 2” on page 273 __ QDIO (layer 3) __ LCS __ HiperSockets™ __ CTC See the appropriate interface worksheet to record additional information. IPv6 is available only for QDIO and HiperSockets devices.

Table 25. QDIO Interface Worksheet – Member 1

Member 1:	
Router type (select one):	__ Primary __ Secondary __ None Router type is not available for layer 2 transport.
(IPv6 only) Router advertisements:	__ On __ Off
Maximum transmission unit (MTU) size:	
(Optional) Port number:	
(Optional) VLAN ID:	
Note: As of V6.2, only Ethernet network types are allowed.	

Table 26. LCS Interface Worksheet – Member 1

Member 1:	
Port/adapter number:	
Maximum transmission unit (MTU) size:	
Note: As of V6.2, only Ethernet network types are allowed.	

Table 27. HiperSockets Interface Worksheet – Member 1

Member 1:	
(IPv6 only) Router advertisements:	__ On __ Off
Maximum frame size (MFS) in kilobytes:	
(Optional) VLAN ID:	

Table 28. CTC Interface Worksheet – Member 1

Member 1:	
Write channel device number (select one):	__ This choice contains the device number specified on the main z/VM TCP/IP Configuration Wizard panel. __ This choice contains the device number specified on the main z/VM TCP/IP Configuration Wizard panel plus one.
Maximum transmission unit (MTU) size:	
Peer IP address:	

Member 2

Table 29. Installation TCP/IP Configuration Worksheet – Member 2

Member 2:	
z/VM user ID of the z/VM TCP/IP stack virtual machine: (The default user ID is TCPIP. If you change this user ID, you must define the user ID in your user directory before issuing IPWIZARD.)	
Host name (20):	
Domain name (40):	
DNS IP address (up to three addresses):	1) _____ 2) _____ 3) _____
Gateway IP address :	
Interface name (16):	
Device number:	
IP address:	
IPv4 subnet mask (15) or IPv6 prefix length (3):	
(IPv4 only) Path MTU discovery:	__ Enabled __ Disabled
Choose the interface you will be using (select one):	__ QDIO (layer 2) – see “QDIO layer 2” on page 273 __ QDIO (layer 3) __ LCS __ HiperSockets __ CTC See the appropriate interface worksheet to record additional information. IPv6 is available only for QDIO and HiperSockets devices.

Table 30. QDIO Interface Worksheet – Member 2

Member 2:	
Router type (select one):	__ Primary __ Secondary __ None Router type is not available for layer 2 transport.
(IPv6 only) Router advertisements:	__ On __ Off
Maximum transmission unit (MTU) size:	
(Optional) Port number:	
(Optional) VLAN ID:	
Note: As of V6.2, only Ethernet network types are allowed.	

Table 31. LCS Interface Worksheet – Member 2

Member 2:	
Port/adapter number:	
Maximum transmission unit (MTU) size:	
Note: As of V6.2, only Ethernet network types are allowed.	

Table 32. HiperSockets Interface Worksheet – Member 2

Member 2:	
(IPv6 only) Router advertisements:	__ On __ Off
Maximum frame size (MFS) in kilobytes:	
(Optional) VLAN ID:	

Table 33. CTC Interface Worksheet – Member 2

Member 2:	
Write channel device number (select one):	__ This choice contains the device number specified on the main z/VM TCP/IP Configuration Wizard panel. __ This choice contains the device number specified on the main z/VM TCP/IP Configuration Wizard panel plus one.
Maximum transmission unit (MTU) size:	
Peer IP address:	

Member 3

Table 34. Installation TCP/IP Configuration Worksheet – Member 3

Member 3:	
z/VM user ID of the z/VM TCP/IP stack virtual machine: (The default user ID is TCPIP. If you change this user ID, you must define the user ID in your user directory before issuing IPWIZARD.)	
Host name (20):	
Domain name (40):	
DNS IP address (up to three addresses):	1) _____ 2) _____ 3) _____
Gateway IP address :	
Interface name (16):	
Device number:	
IP address:	
IPv4 subnet mask (15) or IPv6 prefix length (3):	
(IPv4 only) Path MTU discovery:	__ Enabled __ Disabled
Choose the interface you will be using (select one):	__ QDIO (layer 2) – see “QDIO layer 2” on page 273 __ QDIO (layer 3) __ LCS __ HiperSockets __ CTC See the appropriate interface worksheet to record additional information. IPv6 is available only for QDIO and HiperSockets devices.

Table 35. QDIO Interface Worksheet – Member 3

Member 3:	
Router type (select one):	__ Primary __ Secondary __ None Router type is not available for layer 2 transport.
(IPv6 only) Router advertisements:	__ On __ Off
Maximum transmission unit (MTU) size:	
(Optional) Port number:	
(Optional) VLAN ID:	
Note: As of V6.2, only Ethernet network types are allowed.	

Table 36. LCS Interface Worksheet – Member 3

Member 3:	
Port/adapter number:	
Maximum transmission unit (MTU) size:	
Note: As of V6.2, only Ethernet network types are allowed.	

Table 37. HiperSockets Interface Worksheet – Member 3

Member 3:	
(IPv6 only) Router advertisements:	__ On __ Off
Maximum frame size (MFS) in kilobytes:	
(Optional) VLAN ID:	

Table 38. CTC Interface Worksheet – Member 3

Member 3:	
Write channel device number (select one):	__ This choice contains the device number specified on the main z/VM TCP/IP Configuration Wizard panel. __ This choice contains the device number specified on the main z/VM TCP/IP Configuration Wizard panel plus one.
Maximum transmission unit (MTU) size:	
Peer IP address:	

Member 4

Table 39. Installation TCP/IP Configuration Worksheet – Member 4

Member 4:	
z/VM user ID of the z/VM TCP/IP stack virtual machine: (The default user ID is TCPIP. If you change this user ID, you must define the user ID in your user directory before issuing IPWIZARD.)	
Host name (20):	
Domain name (40):	
DNS IP address (up to three addresses):	1) _____ 2) _____ 3) _____
Gateway IP address :	
Interface name (16):	
Device number:	
IP address:	
IPv4 subnet mask (15) or IPv6 prefix length (3):	
(IPv4 only) Path MTU discovery:	__ Enabled __ Disabled
Choose the interface you will be using (select one):	__ QDIO (layer 2) – see “QDIO layer 2” on page 273 __ QDIO (layer 3) __ LCS __ HiperSockets __ CTC See the appropriate interface worksheet to record additional information. IPv6 is available only for QDIO and HiperSockets devices.

Table 40. QDIO Interface Worksheet – Member 4

Member 4:	
Router type (select one):	__ Primary __ Secondary __ None Router type is not available for layer 2 transport.
(IPv6 only) Router advertisements:	__ On __ Off
Maximum transmission unit (MTU) size:	
(Optional) Port number:	
(Optional) VLAN ID:	
Note: As of V6.2, only Ethernet network types are allowed.	

Table 41. LCS Interface Worksheet – Member 4

Member 4:	
Port/adapter number:	
Maximum transmission unit (MTU) size:	
Note: As of V6.2, only Ethernet network types are allowed.	

Table 42. HiperSockets Interface Worksheet – Member 4

Member 4:	
(IPv6 only) Router advertisements:	__ On __ Off
Maximum frame size (MFS) in kilobytes:	
(Optional) VLAN ID:	

Table 43. CTC Interface Worksheet – Member 4

Member 4:	
Write channel device number (select one):	__ This choice contains the device number specified on the main z/VM TCP/IP Configuration Wizard panel. __ This choice contains the device number specified on the main z/VM TCP/IP Configuration Wizard panel plus one.
Maximum transmission unit (MTU) size:	
Peer IP address:	

Appendix L. IPLing z/VM from an SCSI device

When IPLing z/VM from an SCSI device, the following parameters need to be entered in the HMC Load window

1. Select the **radio button for SCSI**.
2. In the **Load address** field, enter the address of the FCP device (that is, the FCP address, not the EDEV address) used to define the residence volume for the system you are IPLing.
3. In the **Load parameter** field, enter the address of your system console – either SYSG for the Integrated 3270 Console on the HMC, or some other address (for example, 20) that represents your system console.
4. In the **Worldwide port name** field, enter the world wide port name (WWPN) used to define the residence volume for the system you are IPLing.
5. In the **Logical unit number** field, enter the 16-character logical unit number (LUN) of the residence volume for the system you are IPLing.
6. In the **Boot program selector** field, enter 0 (zero).
7. In the **Boot record logical block address** field, enter the 16-character value 00000000000000C8.
8. Click **OK**. Confirmation prompts will be displayed.

Once you have confirmed your IPL, the z/VM Stand Alone Program Loader (SAPL) panel will be displayed on the console that you specified.

1. Verify that your FCP device address is displayed in the **DEVICE NUMBER** field.
2. In the **IPL PARAMETERS** area, enter "**cons=**" followed by your console address, and "**pdvol=**" followed by the EDEVICE number used to define the residence volume for the system you are IPLing.
3. When you have entered all your data, press F10 to complete your IPL.

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IPLing z/VM from an SCSI device

Appendix M. IBM-supplied user IDs with upgrade restrictions

Upgrade installation restricts changes for the user IDs included in this appendix. The following lists contain user IDs shipped with z/VM V6.2 and z/VM V6.3 with ID names and minidisk addresses that should not be changed.

- User IDs defined with the USER statement:

BLDCMS	DIRMAINT	SYSADMIN	6VMPTK20[1]
BLDNUC	DIRMSAT	SYSMAINT	6VMPTK30[2]
BLDRACF	DIRMSAT2	VMSERVP	6VMRAC20[1]
BLDSEG	DIRMSAT3	4OSASF40	6VMRAC30[2]
CMS1	DIRMSAT4	5684042J	6VMRSC20[1]
DATAMOVE	IBMUSER	6VMDIR20[1]	6VMRSC30[2]
DATAMOV2	MAINT620[1]	6VMDIR30[2]	6VMTCP20[1]
DATAMOV3	MAINT630[2]	6VMHCD20	6VMTCP30[2]
DATAMOV4	PMAINT	6VMLEN20	

- User IDs defined with the IDENTITY statement:

AUDITOR	LOHCOST	REXECD	VMSERVR
AUTOLOG1	LPSERVE[1]	RSCS	VMSERVS
AUTOLOG2	MAINT	RSCSAUTH	VMSERVU
AVSVM	MIGMAINT	RSCSDNS	VMUTIL
CBDIODSP	MONWRITE	RXAGENT1	VSMEVSRV
CMSBATCH	MPROUTE	SMTP	VSMGUARD
DHCPD[1]	OPERATNS	SNMPD	VSMPROXY
DISKACNT	OPERATOR	SNMPQE	VSMREQIM
DTCENS1	OPERSYMP	SNMPSUBA	VSMREQIN
DTCENS2	OP1	SSL	VSMREQIU
DTCSMAPI	OSADMIN1	SSLDCSSM	VSMREQI6
DTCVSW1	OSADMIN2	SYSDUMP1	VSMWORK1
DTCVSW2	OSADMIN3	SYSMON	VSMWORK2
EREP	OSAMAINT	TCPIP	VSMWORK3
FTPSERVE	OSASF	TCPMAINT	XCAT[2]
GCS	PERFSVM	TSAFVM	XCHANGE
GSKADMIN	PERSMAPI	UFTD	ZHCP[2]
IMAP	PORTMAP	VMNFS	ZVMLXAPP
IMAPAUTH	RACFSMF	VMRMADMN	ZVMLXTS
LDAPSRV	RACFVM	VMRMSVM	ZVMMAPLX
LGLOPR	RACMAINT		

Notes:

[1] User ID on z/VM V6.2 only

[2] User ID on z/VM V6.3 only

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IBM-supplied user IDs with upgrade restrictions

Appendix N. $STAGE1$ $TABLE$ entry definitions

This appendix lists the keywords that can found in the entries in the $STAGE1$ $TABLE$ and describes the steps to manually update your system with the changes listed for each entry.

Note that the order of the entries in the $STAGE1$ $TABLE$ is the order in which the actions should be performed.

```
 1 ATTVOLS
 2 DDRMDISK DEFMDISK
 3 DDRMDISK EXT3MDISK
 4 DIRECT   ADDMDISK
 5 DIRECT   ADDMDISKNB
 6 DIRECT   ADDMEMIDENT
 7 DIRECT   ADDMEMSUB
 8 DIRECT   ADDNEWUSER
 9 DIRECT   ADDRELLINK
10 DIRECT   COMMON
11 DIRECT   DELRELLINK
12 FILEPOOL ADDADMIN
13 FILEPOOL ADDRELFS
14 FILEPOOL ADDSPACE
15 FILEPOOL CREATDIR
16 FILEPOOL ENROLLUSR
17 FILEPOOL GRANTAUTH
18 LOCALMOD COPYLCL
19 LOCALMOD UPDTSLMOD
20 SETPRODUCT
21 SYSCONF ADDEDEV
22 SYSCONF ADDPRODUCT
23 SYSCONF ADDRELVOL
```

These entries are described below:

1 The ATTVOLS keyword attaches a new volume to your running system.

Syntax:

```
ATTVOLS ATTACH dasdaddr SYSTEM label
```

Example: Attach the new volume with address CECB and label UGT3R1 to the system:

```
ATTVOLS ATTACH CECB SYSTEM UGT3R1
```

Manual Instructions: Issue the attach command that follows the ATTVOLS keyword. In this example:

```
ATTACH CECB SYSTEM UGT3R1
```

---

2 The DDRMDISK DEFMDISK keywords copy a minidisk from the work system to a disk that was added on the system being upgraded, using the DDR command. The disk on the work system is accessed by using the DEFINE MDISK command, and then the contents are copied to the extents defined for the new disk on the system being upgraded.

Syntax:

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```
DDRMDISK DEFMDISK USER|IDENTITY useriddiskaddr
```

Example: Copy the contents of the VSMGUARD A91 minidisk from the work system volume to the VSMGUARD A91 minidisk that was added to the system being upgraded:

```
DDRMDISK DEFMDISK IDENTITY VSMGUARD A91
```

Manual Instructions:

1. Issue the DEFINE MDISK command to define a minidisk overlay to the disk on the work system volume:
   a. Locate the minidisk statement in the user directory file for the work system (INSTUPGR $USERDIR) located on the MIGMAINT 2CF0 disk. If the user type is IDENTITY, locate the minidisk statement contained in the SUBCONFIG that corresponds to the system being upgraded.
   b. Note the start location, disk size, and volume label for the disk. For example, if the MDISK statement for the MAINT 491 disk looks like this:

      ```
      MDISK 491 3390 3298 030 IBMCM1 MR
      ```

      the start location for the 491 disk is 3298, the size is 30, and the volume label is IBMCM1.
   c. Attach the address associated with the noted volume label (refer to Table 15 on page 160 or Table 16 on page 161 for addresses and volume labels) to your current system. In this example, if the address for the volume with label IBMCM1 is C11:

      ```
      ATTACH C11 TO SYSTEM
      ```

   d. Issue the DEFINE MDISK command:

      ```
      DEFINE MDISK linkaddr start size vollabel
      ```

      In this example:

      ```
      DEFINE MDISK 1491 3298 30 IBMCM1
      ```

2. Link to the disk that was added to the upgrade system, in write mode. In this example:

   ```
   LINK 6VMDIR40 491 2491 WR
   ```

3. Use DDR to copy from the overlay disk on the work system to the disk that was added on the system being upgraded. In this example:

   ```
   DDR
   SYSPRINT CONS
   INPUT 1491 DASD
   OUTPUT 2491 DASD
   COPY ALL
   ```

   ENTER

4. Detach the overlay and new minidisks:

   ```
   DETACH 2491
   DETACH 1491
   ```

5. Detach the work system volume from the system you are upgrading. In this example:

```
DETACH VOLID IBMCM1 FROM SYSTEM
```

---

3 The DDRMDISK EXT3MDISK keywords initialize a minidisk that was added on the system being upgraded by using DDR to restore a binary file that is shipped on the MAINT*vrm* 400 minidisk.

Syntax:

```
DDRMDISK EXT3MDISK USER|IDENTITY name
```

Example: Initialize the contents of the NEWID 100 minidisk that was added to the system being upgraded:

```
DDRMDISK EXT3MDISK IDENTITY NEWID 100
```

Manual Instructions:

1. Link MAINT640 400 disk and access as X
2. Link MAINT640 493 disk and access as Z
3. Link to the disk to be initialized (in this example NEWID 100) as *vaddr* in write mode:

   ```
   LINK NEWID 100 100 WR
   ```

4. Run the DDRREST EXEC to initialize the disk using the image file for either 3390 or FBA DASD.

   For 3390:

   ```
   DDRREST vaddr ECKD100 IMAGE X
   ```

   In this example, if your system is installed on 3390 DASD:

   ```
   DDRREST 100 ECKD100 IMAGE X
   ```

   For FBA:

   ```
   DDRREST vaddr FBA100 IMAGE X
   ```

   In this example, if system is installed on FBA DASD:

   ```
   DDRREST 100 FBA100 IMAGE X
   ```

5. Detach the minidisk that was initialized. In this example:

   ```
   DETACH 100
   ```

---

4 The DIRECT ADDMDISK keywords update the user directory to add a new minidisk to an existing user ID.

Syntax:

```
DIRECT ADDMDISK {USER username *} | {SUBCONFIG UNKNOWNSUB identname}
       mdaddr BK|NOBK {NOFMT | FMT label blocksize} mdiskstatement
```

BK Need to keep track for backout.

NOBK	Do not need to keep track for backout.
FMT	Format the disk with label and block size indicated.
NOFMT	Do not format the disk.

Example: Update the user directory to add a new minidisk, A91, to the existing SUBCONFIG entry for IDENTIY VSMWORK1 that is associated with the system you are upgrading:

```
DIRECT ADDMDISK SUBCONFIG UNKNOWNSUB VSMWORK1 A91 BK NOFMT
       MDISK A91 3390 2728 005 UG1W01 MR ALL ALL ALL
```

Manual Instructions: Using your site's procedures to update the user directory, add the A91 minidisk statement shown to the SUBCONFIG for VSMWORK1 that is built on the system being upgraded. You should include this disk in your backout log (BK option) and you do not need to format this minidisk (NOFMT).

1. Determine the name of the SUBCONFIG for this system by examining the `BUILD ON` statement for the system you are upgrading in the IDENTITY entry in the USER DIRECT file for VSMWORK1:

   ```
   BUILD ON * | systemname USING SUBCONFIG VSMWK1-1
   ```

   In this example, VSMWK1-1 is the name of the SUBCONFIG.
2. Add the MDISK statement that was included on the entry in the $STAGE1$ $TABLE$ to the SUBCONFIG entry for VSMWK1-1.

   If you edit your USER DIRECT file directly, the MDISK statement includes the correct extent information for the new disk:

   ```
   MDISK A91 3390 2728 005 UG1W01 MR ALL ALL ALL
   ```

   If you use a directory manager product, the MDISK statement contains the word `NULL` instead of a starting extent, followed by the disk size, volume label and password information. Use this information to have your directory manager product define the new disk:

   ```
   MDISK A91 3390 NULL 005 UG1W01 MR ALL ALL ALL
   ```

3. If you edit your user directory directly, put the new version of the directory online:

   ```
   DIRECTXA USER DIRECT
   ```

   If you use a directory manager product, ensure that the directory manager puts the updated information online immediately.

---

5 The DIRECT ADDMDISKNB keywords update the user directory to add a new minidisk. No backout is needed for the disk because the user or subconfig this disk belongs to was also just added, and the disk will be removed when the user/subconfig added is backed out. The disk should not be formatted.

Syntax:

```
DIRECT ADDMDISKNB USER username mdiskstatement
DIRECT ADDMDISKNB SUBCONFIG subconfname membername identname mdiskstatement
```

Example: Add new minidisk 191 for new subconfig NEWID-1 to the user directory:

```
DIRECT ADDMDISKNB SUBCONFIG NEWID-1 UPGRMEM1 NEWID
       MDISK 191 3390 1 001 UG1W02 MR READ WRITE MULTIPLE
```

Manual Instructions: Using your site's procedures to add minidisks, add the 191 minidisk statement shown to new SUBCONFIG NEWID-1. You should *not* need to include this disk in your backout log because if you delete the new SUBCONFIG, the new disk will be deleted at the same time. You do *not* need to format this minidisk.

1. Add the MDISK statement that was included on the entry in the $STAGE1$ $TABLE$ to the SUBCONFIG entry for NEWID-1.

   If you edit your USER DIRECT file directly, the MDISK statement includes the correct extent information for the new disk:

   ```
   MDISK 191 3390 1 001 UG1W02 MR READ WRITE MULTIPLE
   ```

   If you use a directory manager product, the MDISK statement contains the word NULL instead of a starting extent, followed by the disk size, volume label and password information. Use this information to have your directory manager product define the new disk:

   ```
   MDISK 191 3390 NULL 001 UG1W02 MR READ WRITE MULTIPLE
   ```

2. If you edit your user directory directly, put the new version of the directory online:

   ```
   DIRECTXA USER DIRECT
   ```

   If you use a directory manager product, ensure that the directory manager puts the updated information online immediately.

---

6 The DIRECT ADDMEMIDENT keywords update the user directory to add a new IDENTITY entry. The information for the new IDENTITY entry is contained in a file named *identname* $DIRADD$, which is found on the MIGMAINT 2CF0 minidisk.

Syntax:

```
DIRECT ADDMEMIDENT identname $DIRADD$ 2CF0
```

Example: Add a new IDENTITY entry, in this example NEWID, to the user directory using the contents of the NEWID $DIRADD$ file that was created on the MIGMAINT 2CF0 disk:

```
DIRECT ADDMEMIDENT NEWID $DIRADD$ 2CF0
```

Manual Instructions: Following your site's procedures to update the user directory, use the information in the NEWID $DIRADD$ file to add the new IDENTITY NEWID to your user directory. You should include this task in your backout log. If you edit your user directory directly, put the new version of the directory online:

```
DIRECTXA USER DIRECT
```

If you use a directory manager product, ensure that the directory manager puts the updated information online immediately.

---

7 The DIRECT ADDMEMSUB keywords update the user directory to add a new SUBCONFIG entry and associate the SUBCONFIG entry with an existing IDENTITY entry. The information for the new SUBCONFIG entry is contained in a file named *subconfigname* $DIRADD$, which is found on the MIGMAINT 2CF0 minidisk.

Syntax:

```
DIRECT ADDMEMSUB subconfname $DIRADD$ 2CF0 membername identity
```

Example: Add the new subconfig, in this example NEWID-1, to the user directory using the contents of the NEWID-1 $DIRADD$ file that was created on the MIGMAINT 2CF0 disk and associate the new SUBCONFIG with system UPGRMEM1 in IDENTITY NEWID:

```
DIRECT ADDMEMSUB NEWID-1 $DIRADD$ 2CF0 UPGRMEM1 NEWID
```

Manual Instructions: Following your site's procedures to update your user directory. You should include this task in your backout log.

If you edit your user directory directly:

1. Add a BUILD ON statement to the IDENTITY for this system:
   - If UPGRMEM1 is a member of an SSI cluster:

     ```
     BUILD ON UPGRMEM1 USING SUBCONFIG NEWID-1
     ```
   - If UPGRMEM1 is *not* a member of an SSI cluster:

     ```
     BUILD ON * USING SUBCONFIG NEWID-1
     ```
2. Add the SUBCONFIG NEWID-1 to the user directory. The subconfig definition is in the file NEWID-1 $DIRADD$, which is located on MIGMAINT's 2CF0 disk.
3. Put the new version of the directory online:

   ```
   DIRECTXA USER DIRECT
   ```

   If you use a directory manager product, use the information in the NEWID-1 $DIRADD$ file to update the user directory and to associate the new SUBCONFIG with IDENTITY NEWID and make sure the directory manager puts the updated information online immediately.

---

8 The DIRECT ADDNEWUSER keywords update the user directory to add a new USER entry. The information for the new USER entry is contained in a file named *username* $DIRADD$, which is found on the MIGMAINT 2CF0 minidisk. Regardless of whether you use a directory manager, you should use all of the information in the *username* $DIRADD$ file exactly as it appears, including all minidisk definitions.

Syntax:

```
DIRECT ADDNEWUSER username $DIRADD$ 2CF0
```

Example: Add the new USER, in this example MAINT640, to the user directory using the contents of the MAINT640 $DIRADD$ file that was created on the MIGMAINT 2CF0 disk:

```
DIRECT ADDNEWUSER MAINT640 $DIRADD$ 2CF0
```

Manual Instructions: Following your site's procedures to update the user directory, use the information in the MAINT640 $DIRADD$ file to add the new USER MAINT640 entry to your user directory. You should include this task in your backout log. These disks should *not* be formatted if you need to back out this task. If you edit your user directory directly, put the new version of the directory online:

```
DIRECTXA USER DIRECT
```

If you use a directory manager product, use the contents of the MAINT640 $DIRADD$ file as input to your directory manager, including the minidisk definitions. Ensure that the directory manager puts the updated information online immediately.

---

9 The DIRECT ADDRELLINK keywords update the user directory to add a link statement to an existing directory entry (USER, IDENTITY or SUBCONFIG). You should include this link change in your backout log.

Syntax:

```
DIRECT ADDRELLINK USER|IDENTITY|SUBCONFIG  username|identname linkstatement
```

Example: Add the link statement, in this example, LINK MAINT640 201 201 RR, to the directory entry for the SUBCONFIG for IDENTITY MAINT that is associated with the system being upgraded:

```
DIRECT ADDRELLINK SUBCONFIG MAINT LINK MAINT640 201 201 RR
```

Manual Instructions: Using your site's procedures to update the user directory, add the link statement shown to the SUBCONFIG for MAINT that is built on the system being upgraded. You should include this link in your backout log.

1. Determine the name of the SUBCONFIG for this system by examining the BUILD ON statement for the system you are upgrading in the IDENTITY entry in the USER DIRECT file for MAINT:

   ```
   BUILD ON * | systemname USING SUBCONFIG MAINT-1
   ```

   In this example, MAINT-1 is the name of the SUBCONFIG.
2. Add the LINK statement that was included on the entry in the $STAGE1$ $TABLE$ to the SUBCONFIG entry for MAINT-1:

   ```
   LINK MAINT640 201 201 RR
   ```

3. If you edit your user directory directly, put the new version of the directory online:

   ```
   DIRECTXA USER DIRECT
   ```

   If you use a directory manager product, ensure that the directory manager puts the updated information online immediately.

---

10 The DIRECT COMMON keywords update the user directory to change a statement on an existing directory entry (USER, IDENTITY or SUBCONFIG).

Syntax:

```
DIRECT COMMON action uptype USER|IDENTITY|SUBCONFIG userid input
```

where *action* is ADD, DELETE, or REPLACE, *uptype* is OPTION, NAMESAVE, VSTOR, or IPL, and *input* contains the information that will be added to, deleted from, or replaced in the directory entry for *userid*. If the *uptype* is OPTION, combine the *uptype* and the *input* to develop the directory statement. If the *uptype* is NAMESAVE or IPL, then *input* contains the required directory statement. If the *uptype* is VSTOR then *input* contains the new storage value to be replaced on the current statement.

Example: ADD the following OPTION to the user directory entry for IDENTITY VSMGUARD:

```
DIRECT COMMON ADD OPTION IDENTITY VSMGUARD LNKNOPAS
```

Manual Instructions: Using your site's procedures to update the user directory, add, delete, or replace the directory statement defined by the $STAGE1$ $TABLE$ entry. In this example, you should add an OPTION statement to the directory entry for IDENTITY VSMGUARD that includes option LNKNOPAS.

1. Add the OPTION statement that was defined on the entry in the $STAGE1$ $TABLE$ to the IDENTITY entry for VSMGUARD:

   ```
   OPTION LNKNOPAS
   ```

2. If you edit your user directory directly, put the new version of the directory online:

   ```
   DIRECTXA USER DIRECT
   ```

   If you use a directory manager product, ensure that the directory manager puts the updated information online immediately.

---

11 The DIRECT DELRELLINK keywords update the user directory to delete a link statement from an existing directory entry (USER, IDENTITY or SUBCONFIG). You should include this link change in your backout log.

Syntax:

```
DIRECT DELRELLINK USER|IDENTITY|SUBCONFIG  username|identname linkstatement
```

Example: Delete the link statement, in this example, `LINK MAINT6x0 201 201 RR`, from the directory entry for the SUBCONFIG for IDENTITY MAINT that is associated with the system being upgraded:

```
DIRECT DELRELLINK SUBCONFIG MAINT LINK MAINT6x0 201 201 RR
```

Manual Instructions: Using your site's procedures to update the user directory, delete the link statement shown from the SUBCONFIG for MAINT that is built on the system being upgraded. You should include this link change in your backout log.

1. Determine the name of the SUBCONFIG for this system by examining the `BUILD ON` statement for the system you are upgrading in the IDENTITY entry in the USER DIRECT file for MAINT:

   ```
   BUILD ON * | systemname USING SUBCONFIG MAINT-1
   ```

   In this example, MAINT-1 is the name of the SUBCONFIG.
2. Delete the LINK statement that was included on the entry in the $STAGE1$ $TABLE$ to the SUBCONFIG entry for MAINT-1:

   ```
   LINK MAINT6x0 201 201 RR
   ```

3. If you edit your user directory directly, put the new version of the directory online:

   ```
   DIRECTXA USER DIRECT
   ```

   If you use a directory manager product, ensure that the directory manager puts the updated information online immediately.

---

12 The FILEPOOL ADDADMIN keywords update a DMSPARMS file to add a new administrator to an existing filepool. You should include this task in your backout log.

Syntax:

```
FILEPOOL ADDADMIN  fpoolname fpooluid users2add
```

Example: Add the user IDs listed in the FILEPOOL ADDADMIN entry in the $STAGE1$ $TABLE$, in this example, MAINT640, to the DMSPARMS file for the filepool listed, in this example, VMSYSU running on server user ID VMSERVU. The DMSPARMS file is named *filepoolid* DMSPARMS and is found on the 191 disk for the *filepoolid*. In this example, the file VMSERVU DMSPARMS will be found on the 191 disk for user ID VMSERVU:

```
FILEPOOL ADDADMIN VMSYSU VMSERVU MAINT640
```

Manual Instructions:

1. Force the filepool user ID off the system:

   ```
   FORCE VMSERVU
   ```

2. Link, in write mode, the filepool's server user ID's 191 minidisk. In this example, VMSERVU's 191 minidisk:

   ```
   LINK VMSERVU 191 1191 WR
   ```

3. Access the filepool's server user ID 191 minidisk you linked above:

   ```
   ACCESS 1191 Z
   ```

4. Xedit the *fpooluid* DMSPARMS file. In this example VMSERVU DMSPARMS:

   ```
   XEDIT VMSERVU DMSPARMS Z
   ```

5. Add the users indicated to the ADMIN statement and file the changes. In this example, MAINT640.
6. Release and detach the filepool's server user ID 191 minidisk.

   ```
   RELEASE Z (DETACH
   ```

7. Restart the filepool by autologging the *filepoolid*, in this example, VMSERVU:

   ```
   XAUTOLOG VMSERVU
   ```

---

13 The FILEPOOL ADDRELFS keywords add a new filespace to an existing filepool. You should include this task in your backout log.

Syntax:

```
FILEPOOL ADDRELFS fpname filespacename UNLOAD 2191
```

Example: Load the new filespace, 6VMDIR40, to the VMPSFS filepool:

```
FILEPOOL ADDRELFS VMPSFS 6VMDIR40 UNLOAD 2191
```

Manual Instructions:

1. Access MIGMAINT 2191 Z.
2. Link and access MAINT 193:

   ```
   LINK MAINT 193 193 RR
   ACCESS 193 X
   ```

3. Enter the FILEWAIT command:

   ```
   SET FILEWAIT ON
   ```

4. Enter the FILEDEF command to define the input file *fspacename* UNLOAD Z. In this example:

```
FILEDEF RELOAD DISK 6VMDIR40 UNLOAD Z
```

5. Enter the FILEPOOL command to load the *fspacename* into *fpoolname*. In this example:

```
FILEPOOL RELOAD FILESPACE 6VMDIR40 VMPSFS
```

6. Reply '1' to the prompt.

---

14 The FILEPOOL ADDSPACE keywords increase the storage space available for a user that is enrolled in a filepool.

Syntax:

```
FILEPOOL ADDSPACE BK|NOBK fpoolname filespaceid fpoolcmd
```

BK	Need to keep track for backout.
NOBK	Do not need to keep track for backout.

Example: Increase the amount of storage space that can be used in the VMSYS filepool by user VSMWORK1:

```
FILEPOOL ADDSPACE BK VMSYS VSMWORK1 MODIFY USER +1000 FOR VSMWORK1 VMSYS
```

Manual Instructions: Increase the amount of space that can be used by user VSMWORK1 by issuing the MODIFY USER command as specified by the FILEPOOL ADDSPACE entry in the $STAGE1$ $TABLE$. In this example, enter the following command:

```
MODIFY USER +1000 FOR VSMWORK1 VMSYS
```

---

15 The FILEPOOL CREATDIR keywords update a filepool to create a new directory in an existing filepool.

Syntax:

```
FILEPOOL CREATDIR BK|NOBK fpoolname filespacename fpoolcmd
```

BK	Need to keep track for backout.
NOBK	Do not need to keep track for backout.

Example: Update the VMSYS filepool to create the new directory VMSYS:VSMWORK1.STATUS:

```
FILEPOOL CREATDIR BK VMSYS VSMWORK1 CREATE DIRECTORY VMSYS:VSMWORK1.STATUS
```

Manual Instructions: Create the directory indicated by issuing the CREATE DIRECTORY command as specified by the FILEPOOL CREATDIR entry in the $STAGE1$ $TABLE$. In this example, enter the following command:

```
CREATE DIRECTORY VMSYS:VSMWORK1.STATUS
```

---

16 The FILEPOOL ENROLLUSR keywords update a filepool to enroll a new user in an existing filepool.

Syntax:

```
FILEPOOL ENROLLUSR BK|NOBK fpoolname username fpoolcmd
```

BK	Need to keep track for backout.
NOBK	Do not need to keep track for backout.

Example: Update the VMPSFS filepool to enroll the new user MAINT640:

```
FILEPOOL ENROLLUSR BK VMPSFS MAINT640  ENROLL USER MAINT640 VMPSFS:
```

Manual Instructions: Enroll a new user in an existing filepool by issuing the ENROLL USER command as specified by the FILEPOOL ENROLLUSR entry in the $STAGE1$ $TABLE$. In this example, enter the following command:

```
ENROLL USER MAINT640 VMPSFS:
```

---

17 The FILEPOOL GRANTAUTH keywords update a filepool to grant authority to a user in an existing filepool.

Syntax:

```
FILEPOOL GRANTAUTH BK|NOBK fpoolname username fpoolcmd
```

BK	Need to keep track for backout.
NOBK	Do not need to keep track for backout.

Example: Update the VMSYS filepool to grant authority to VSMGUARD in the VMSYS:VSMWORK1.STATUS directory:

```
FILEPOOL GRANTAUTH BK VMSYS VSMWORK1 GRANT AUTHORITY
        VMSYS:VSMWORK1.STATUS TO VSMGUARD ( WRITE NEWWRITE
```

Manual Instructions: Grant authority to a user in an existing filepool by issuing the GRANT AUTHORITY command as specified by the FILEPOOL GRANTAUTH entry in the $STAGE1$ $TABLE$. In this example, enter the following command:

```
GRANT AUTHORITY VMSYS:VSMWORK1.STATUS TO VSMGUARD ( WRITE NEWWRITE
```

---

18 The LOCALMOD COPYLCL keywords copy local modifications from the local modification disks for the current z/VM release to the new release local modifications disk. There are two versions of this entry: one to copy the VVTLCL file and one to copy the local modifications files.

Version 1: Copy the *sourceprodid* VVTLCL file to the new local mod disk as *targetprodid* VVTLCL.

Version 1 Syntax:

```
LOCALMOD COPYLCL FROM sourceuserid sourcedisk sourceprodid VVTLCL
        TO targetuserid targetdisk targetprodid VVTLCL
```

Version 1 Example: Copy the 6VMCMS*x*0 VVTLCL file to the new local mod disk as 6VMCMS40 VVTLCL:

```
LOCALMOD COPYLCL FROM MAINT6x0 3C4 6VMCMSx0 VVTLCL TO MAINT640 3C4
         6VMCMS40 VVTLCL
```

Version 1 Manual Instructions:

1. Link and access the *sourceuserid sourcedisk*. In this example: link and access MAINT6*x*0 3C4:

   ```
   LINK MAINT6x0 3C4 13C4 RR
   ACCESS 13C4 G
   ```

2. Link and access the *targetuserid targetdisk* in write mode. In this example: link and access MAINT640 3C4:

   ```
   LINK MAINT640 3C4 23C4 WR
   ACCESS 23C4 H
   ```

3. Copy the VVTLCL file from the *sourceuserid* disk to the *targetuserid* disk, changing the filename to the *targetprodid*. In this example:

   ```
   COPYFILE 6VMCMSx0 VVTLCL G 6VMCMS40 VVTLCL H (OLDDATE
   ```

4. Release and detach the disks that were linked and accessed:

   ```
   RELEASE G (DETACH
   RELEASE H (DETACH
   ```

Version 2: Copy the local mod files to the new local mod disk.

Version 2 Syntax:

```
LOCALMOD COPYLCL FROM sourceuserid sourcedisk pfn * TO targetuserid targetdisk pfn =
```

Version 2 Example:

```
LOCALMOD COPYLCL FROM MAINT6x0 3C4 TELL * TO MAINT640 3C4 TELL =
```

Version 2 Manual Instructions:

1. Link and access the *sourceuserid sourcedisk*. In this example: link and access MAINT6*x*0 3C4:

   ```
   LINK MAINT6x0 3C4 13C4 RR
   ACCESS 13C4 G
   ```

2. Link and access the *targetuserid targtdisk* in write mode. In this example: link and access MAINT640 3C4:

   ```
   LINK MAINT640 3C4 23C4 WR
   ACCESS 23C4 H
   ```

3. Copy the local mod files from the *soruceuserid* disk to the *tragetuserid* disk. In this example:

   ```
   COPYFILE TELL * G TELL = H (OLDDATE
   ```

4. Release and detach the disks that were linked and accessed:

```
RELEASE G (DETACH
RELEASE H (DETACH
```

---

19 The LOCALMOD UPDTSLMOD keywords update the SYSLMOD table on MAINT640's 51D disk to indicate local mods have been added.

Syntax:

```
LOCALMOD UPDTSLMOD ADD VMFSIM MODIFY VM SYSLMOD Z TDATA
         :LMOD lmoddata :STAT statdata :CUSTYPE custdata
```

Example: Update the VM SYSLMOD table on MAINT640's 51D disk:

```
LOCALMOD UPDTSLMOD ADD VMFSIM MODIFY VM SYSLMOD Z TDATA
         :LMOD 6VMCMS40%CMS.TELL.SXE.0002.VVTLCL
         :STAT REWORK.UPDDATE.UPDTIME.MIGMAINT
         :CUSTYPE LOCALMOD (ADD
```

Manual Instructions:

1. Link MAINT640's 51D disk in write mode:

   ```
   LINK MAINT640 51D 151D WR
   ```

2. Access MAINT640's 51D disk as Z.
3. Update the SYSLMOD table by issuing the VMFSIM MODIFY command as specified by the LOCALMOD UPDTSLMOD entry. In this example, enter the following command:

   ```
   VMFSIM MODIFY VM SYSLMOD Z TDATA :LMOD 6VMCMS40%CMS.TELL.SXE.0002.VVTLCL
          :STAT REWORK.UPDDATE.UPDTIME.MIGMAINT :CUSTYPE LOCALMOD (ADD
   ```

4. Release and detach the disk that was linked and accessed:

   ```
   RELEASE Z (DETACH
   ```

---

20 The SETPRODUCT keyword issues the SET PRODUCT command to set the enablement status (ENABLED or DISABLED) of a product on your running system.

Syntax:

```
SETPRODUCT SET PRODUCT prodid STATE prodstat
```

Example: Set the status for product 6VMPTK40 to ENABLED on the running system:

```
SETPRODUCT SET PRODUCT 6VMPTK40 STATE ENABLED
```

Manual Instructions: Set the status of the product on your running system by issuing the SET PRODUCT command as specified by the SETPRODUCT entry. In this example:

```
SET PRODUCT 6VMPTK40 STATE ENABLED
```

---

21 The SYSCONF ADDEDEV keywords update the system configuration file to add an edevice

statement for a new volume. There are two versions of this entry. Use Version 1 if the edevice details were available during INSTUPGR STAGE1 (PRIME. Use Version 2 if the edevice details were not available.

Version 1 Syntax:

```
SYSCONF ADDEDEV 1 edevice addr type fba attr SCSI fcp_dev fcpaddr
                wwpn wwpnaddr lun lunaddr
```

Version 2 Syntax:

```
SYSCONF ADDEDEV 2 edevice addr is not an emulated device
```

Example: Add the edevice statement to your system configuration file.

Version 1:

```
SYSCONF ADDEDEV 1 edevice 6505 type fba attr SCSI fcp_dev 1F01
                wwpn 500507630B00C038 lun 401140F100000000
```

Version 2:

```
SYSCONF ADDEDEV 2 edevice 6505 is not an emulated device
```

Manual Instructions:

1. Link and access the disk containing your system configuration file:

   ```
   LINK PMAINT CF0 CF0 WR
   ACCESS CF0 Z
   ```

2. Update the system configuration file to add the new edevice statement. In this example:
   Version 1:

   ```
   edevice 6505 type fba attr SCSI fcp_dev 1F01 wwpn 500507630B00C038
           lun 401140F100000000
   ```

   Version 2:
   a. If a real edevice statement is required, you should determine the details of the device and add an edevice statement with the correct attributes.
   b. If a real edevice statement is not required, do one of the following:
      - Add the entry (commented out) to document the device added:

        ```
        /* edevice 6505 is not an emulated device */
        ```

      - Choose to skip adding an edevice statement.
3. Save the changes you made to the system configuration file and release and detach the disk that was linked and accessed:

   ```
   RELEASE Z (DETACH
   ```

---

22 The SYSCONF ADDPRODUCT keywords update the system configuration file to permanently set the enablement status (ENABLED or DISABLED) of a product on your system.

Syntax:

```
SYSCONF ADDPRODUCT product prodstat
```

Example: Add the PRODUCT statement for 6VMPTK40 to your system configuration file. The entire PRODUCT statement is documented in the comments preceding the SYSCONF ADDPRODUCT entry in the $STAGE1$ $TABLE$. For example:

```
*  Add the following product statement for 6VMPTK40 to SYSTEM CONFIG
*  PRODUCT PRODID 6VMPTK40 STATE DISABLED DESCRIPTION
*  '00/00/00.00:00:00.$UPGRADE PERFORMANCE TOOLKIT FOR VM'
SYSCONF ADDPRODUCT 6VMPTK40 DISABLED
*


SYSCONF ADDPRODUCT 6VMPTK40 ENABLED
```

Manual Instructions:

1. Link and access the disk containing your system configuration file:

   ```
   LINK PMAINT CF0 CF0 WR
   ACCESS CF0 Z
   ```

2. Update the system configuration file to permanently set the status of the product on your system by adding the PRODUCT statement with the STATE specified by the SYSCONF ADDPRODUCT entry. In this example:

   ```
   PRODUCT PRODID 6VMPTK40 STATE DISABLED DESCRIPTION '00/00/00.00:00:00.$UPGRADE
           PERFORMANCE TOOLKIT FOR VM'
   ```

3. Save the changes you made to the system configuration file and release and detach the disk that was linked and accessed:

   ```
   RELEASE Z (DETACH
   ```

---

23 The SYSCONF ADDRELVOL keywords update the system configuration file to add a new User_Volume_List statement that includes the labels for the new release volumes.

Syntax:

```
SYSCONF ADDRELVOL User_Volume_List volumelabels
```

Example: Add the release volumes to your system configuration file by adding the User_Volume_List statement:

```
SYSCONF ADDRELVOL User_Volume_List UGT3R1 UGT3R2
```

Manual Instructions:

1. Link and access the disk containing your system configuration file:

   ```
   LINK PMAINT CF0 CF0 WR
   ACCESS CF0 Z
   ```

2. Update the system configuration file to add the new release volumes statement listed in the SYSCONF ADDRELVOL entry in the $STAGE1$ $TABLE$. In this example:

```
User_Volume_List UGT3R1 UGT3R2
```

Appendix O. $STAGE2$ $TABLE$ entry definitions

This appendix lists the keywords that can found in the entries in the $STAGE2$ $TABLE$ and describes the steps to manually update your system with the changes listed for each entry.

Note that the order of the entries in the $STAGE2$ $TABLE$ is the order in which the actions should be performed.

```
 1 CPYFIL
 2 DDRMDISK MDISK
 3 DIRECT DELENTRY
 4 DIRECT DELRELLINK
 5 DIRECT MOVEMDISK
 6 MIGDISK COPY
 7 MIGDISK ERASE
 8 PARTNOTIFY
 9 SESCMD
10 SESMOVE COPY
11 SESMOVE ERASE
12 UPDDISK COPY
13 UPDDISK ERASE
```

These entries are described below:

1 The CPYFIL keyword copies a file. CPYFIL REPLace replaces the file if it exists. CPYFIL NOREPL returns an error if the file already exists.

Syntax:

```
CPYFIL REPLace|NOREPL sourcelinktype sourcefname sourceftype * sourceuserid sourcedisk
       targetlinktype targetfname targetftype * targetuserid targetdisk
```

sourcelinktype
Method used to access the disk where the file resides: LINKACC | ACCDIR | MDISK. LINKACC is specified if the source location is a minidisk, accessed using the LINK and ACCESS commands. ACCDIR is specified if the source location is an SFS directory which is just accessed with the ACCESS command. MDISK is specified if the source location is located on a work system volume that must be accessed using the DEFINE MDISK command. For instructions on how to access a disk using DEFINE MDISK, see the DDRMDISK keyword.

sourcefname
File name of the file to be copied.

sourceftype
File type of the file to be copied.

sourceuserid
User ID that owns the disk where the file resides. If the file is in an SFS directory the value of this field is “DIR”.

sourcedisk
Minidisk or SFS directory where the file resides.

targetlinktype
Method used to access the disk where the file will be copied: LINKACC | ACCDIR | MDISK. LINKACC is specified if the target (“to”) location is a minidisk, accessed using the LINK and ACCESS commands. ACCDIR is specified if the target location is an SFS directory which is just accessed with the ACCESS command. MDISK is specified if the target location must be

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accessed using the DEFINE MDISK command. For instructions on how to access a disk using DEFINE MDISK, see the DDRMDISK keyword.

targetfname
File name given to the file when it is copied.

targetftype
File type given to the file when it is copied.

targetuserid
User ID that owns the disk where the file will be copied. If the file is in an SFS directory the value of this field is "DIR".

targetdisk
Minidisk or SFS directory where the file will be copied.

Example:

```
CPYFIL REPL ACCDIR  LDAPDS SAMPENVR * DIR VMPSFS:6VMTCP40.TCPIP.OBJECT
            LINKACC LDAPDS SAMPENVR * TCPMAINT  198
```

Manual Instructions:

1. Link and access the source disk.

   If the *sourcelinktype* is LINKACC, link and access the minidisk.

   If the *sourcelinktype* is ACCDIR, access the SFS directory. In this example:

   ```
   ACCESS VMPSFS:6VMTCP40.TCPIP.OBJECT G
   ```

2. Link and access the target ("to") disk in write mode.

   If the *targetlinktype* is LINKACC, link and access the minidisk. In this example:

   ```
   LINK TCPMAINT 198 1198 WR
   ACCESS 1198 H
   ```

   If the *targetlinktype* is ACCDIR, access the SFS directory.

3. Copy the file from the source disk to the target disk, using REPLACE if it was specified on the CPYFIL entry. In this example:

   ```
   COPYFILE IBM DTCPARMS G IBM DTC++001 H (OLDDATE REPLACE
   ```

   Note: The OLDDATE parameter should always be specified on the COPYFILE command.

4. Release and detach, if necessary, the SFS directories and minidisks accessed above. In this example:

   ```
   RELEASE G
   RELEASE H (DETACH
   ```

---

2 The DDRMDISK MDISK keywords copy a minidisk from a work system volume to a disk on the current system. The disk on the work system volume is accessed using the DEFINE MDISK command, then the contents of the disk are copied using the DDR command to the disk on the current system.

Syntax:

```
DDRMDISK MDISK IDENTITY sourceusername sourcedisk LINK IDENTITY targetusername targetdisk
```

Example: DDR the MAINT 190 disk on the work system to the MAINT 190 disk on the system being upgraded:

```
DDRMDISK MDISK IDENTITY MAINT 190 LINK IDENTITY MAINT 190
```

Manual Instructions:

1. Issue the DEFINE MDISK command to define a minidisk overlay to the source disk on the work system:
   a. Locate the minidisk statement in the work directory file (INSTUPGR $USERDIR) located on the MIGMAINT 2CF0 disk for the *sourceusername* and *sourcedisk* in the $STAGE2$ $TABLE$ entry. If the *sourcetype* is SUBCONFIG, locate the minidisk statement contained in the SUBCONFIG that corresponds to the system being upgraded.
   b. Note the start location, size and volume label. In this example, if the MDISK statement for the MAINT 190 disk looks like this:

      ```
      MDISK 190 3390 280 214 IBMRES
      ```

      then the start location for the 190 disk is 280, the size is 214, and the volume label is IBMRES.
   c. Attach the address associated with the noted volume label (refer to Table 15 on page 160 or Table 16 on page 161 for addresses and volume labels) to your current system. In this example, if the address for the volume with label IBMRES is C10:

      ```
      ATTACH C10 TO SYSTEM
      ```

   d. Issue the DEFINE MDISK command for the *sourcedisk*:

      ```
      DEFINE MDISK vaddr start size vollabel
      ```

      In this example:

      ```
      DEFINE MDISK 1190 280 214 IBMRES
      ```

2. Link, in write mode, to the *targetdisk* owned by *targetusername* on your current system. In this example:

   ```
   LINK MAINT 190 2190 WR
   ```

3. Use the DDR command to copy from the *sourcedisk* (*vaddr*) on the work system volume to the *targetdisk* that is being updated on the system being upgraded. In this example:

   ```
   DDR
   SYSPRINT CONS
   INPUT 1190 DASD
   OUTPUT 2190 DASD
   COPY ALL
   <answer any prompts, then press enter to end DDR>
   ENTER
   ```

4. Detach the disks you linked to and defined. In this example:

   ```
   DETACH 1190
   DETACH 2190
   ```

5. Detach the work system volume from the current system. In this example:

```
DETACH C10 FROM SYSTEM
```

---

3 The DIRECT DELENTRY keywords update the user directory to delete a USER, IDENTITY, or SUBCONFIG definition. For SUBCONFIG, only the SUBCONFIG definition associated with the system or member that is being updated is deleted.

Syntax:

```
DIRECT DELENTRY USER|IDENTIY|SUBCONFIG identusername membername
```

Example: Delete the SUBCONFIG definition for IDENTITY DHCPD that is associated with the system being upgraded, UPGRMEM1.

```
DIRECT DELENTRY SUBCONFIG DHCPD UPGRMEM1
```

Manual Instructions: Following your site's normal procedures to update the user directory, delete the USER, IDENTITY, or SUBCONFIG definition specified in the $STAGE2$ $TABLE$ entry, as follows:

USER Delete the entire USER definition.

IDENTITY
Delete the IDENTITY definition. All SUBCONFIG definitions associated with this IDENTITY definition should have already been deleted.

SUBCONFIG
Delete the SUBCONFIG definition that is associated with this member. Also, delete the BUILD ON statement in the IDENTITY definition that refers to this SUBCONFIG.

1. Determine the name of the SUBCONFIG to be deleted by examining the BUILD ON statement for system you are upgrading in the IDENTITY specified on the $STAGE2$ $TABLE$ entry. In this example:

   ```
   BUILD ON UPGRMEM1 USING SUBCONFIG DHCPD-1
   ```

   The name of the SUBCONFIG is DHCPD-1.
2. Follow your site's normal process to delete the named SUBCONFIG.
3. If you edit your user directory directly, put the new version of the directory online:

   ```
   DIRECTXA USER DIRECT
   ```

   If you use a directory manager product, ensure that the directory manager puts the updated information online immediately.

---

4 The DIRECT DELRELLINK keywords update the user directory to delete a link statement from an existing directory entry (USER, IDENTITY or SUBCONFIG).

Syntax:

```
DIRECT DELRELLINK USER|IDENTITY|SUBCONFIG username|identname linkstatement
```

Example: Delete the link statement, in this example, `LINK MAINT6x0 201 201 RR`, from the directory entry for the SUBCONFIG for IDENTITY MAINT that is associated with the system being upgraded:

```
DIRECT DELRELLINK SUBCONFIG MAINT LINK MAINT6x0 201 201 RR
```

Manual Instructions: Using your site's procedures to update the user directory, delete the link statement shown from the SUBCONFIG for MAINT that is built on the system being upgraded.

1. Determine the name of the SUBCONFIG for this system by examining the BUILD ON statement for the system you are upgrading in the IDENTITY entry in the USER DIRECT file for MAINT:

   ```
   BUILD ON * | systemname USING SUBCONFIG MAINT-1
   ```

   In this example, MAINT-1 is the name of the SUBCONFIG.
2. Delete the LINK statement that was included on the entry in the $STAGE1$ $TABLE$ to the SUBCONFIG entry for MAINT-1:

   ```
   LINK MAINT6x0 201 201 RR
   ```

3. If you edit your user directory directly, put the new version of the directory online:

   ```
   DIRECTXA USER DIRECT
   ```

   If you use a directory manager product, ensure that the directory manager puts the updated information online immediately.

---

5 The DIRECT MOVEMDISK keywords update the user directory to move an existing minidisk from its current location to a new location. MOVEDISK COPY indicates that the data on the current disk should be copied to the disk at its new location. MOVEDISK NOCOPY indicates that the disk should be defined at the new location specified on the $STAGE2$ $TABLE$ entry, but no data from the current disk should be copied to the new location.

Syntax:

```
DIRECT MOVEMDISK idtype userid membername COPY|NOCOPY mdiskstmtdata
```

Example: Move the 191 minidisk owned by user 6VMHCD20 to a new location specified as cylinder 1958 for a length of 50 on the volume labeled UGCOM2. The data from the existing minidisk should be copied to the new minidisk location:

```
DIRECT MOVEMDISK USER 6VMHCD20 UPGRMEM1 COPY 191 3390 1958 050 UGCOM2
```

Manual Instructions: Following your site's normal procedures to update the user directory, move the minidisk listed from its current location to the location defined in the DIRECT MOVEMDISK entry. If COPY is specified on the MOVEMDISK entry, transfer all data to the new location.

---

6 The MIGDISK COPY keywords use the VMFCOPY command to copy files for the specified product ID from the source location to the target location on the system being upgraded.

Syntax:

```
MIGDISK COPY {fname ftype|* *} targetlinktype targetprodid targettype targetuid targetaddr
            sourcelinktype sourceprodid sourcetype sourceuid sourceaddr EXCL|NOEXCL
```

fname ftype|* *
: When *fname ftype* is * *, use VMFCOPY to copy all files on *sourceuid sourceaddr* that are associated with the *sourceprodid* to *targetuid targetaddr*, associating them with *sourceprodid*.

When *fname ftype* is a filename and filetype, the named file will be found on the MIGMAINT 2CF0 disk. Use VMFCOPY to copy only the files listed in *fname ftype* from *sourceuid sourceaddr* that are associated with the *sourceprodid* to *targetuid targetaddr*, associating them with *sourceprodid*.

targetlinktype
Method used to access the location where the files will be copied. LINK is specified if the target location is a minidisk, accessed using the LINK and ACCESS commands. ACCDIR is specified if the target location is an SFS directory which is just accessed with the ACCESS command. MDISK is specified if the target location is located on a work system volume that must be accessed using the DEFINE MDISK command.

targetprodid
For the MIGDISK COPY keywords, this field should be ignored. Only the *sourceprodid* is used.

targettype
USER, IDENTITY, or SUBCONFIG.

targetuid
User ID that owns the target location. If the files will be copied to an SFS directory the value of this field is "DIR".

targetaddr
Minidisk or SFS directory where the files will be copied.

sourcelinktype
Method used to access the source location of the files to be copied. LINK is specified if the source location is a minidisk, accessed using the LINK and ACCESS commands. ACCDIR is specified if the source location is an SFS directory which is just accessed with the ACCESS command. MDISK is specified if the source location is located on a work system volume that must be accessed using the DEFINE MDISK command.

sourceprodid
The VMSES/E prodid that is associated with the files to be copied.

sourcetype
USER, IDENTITY, or SUBCONFIG.

sourceuid
User ID that owns the source location. If the files to be copied are in an SFS directory the value of this field is "DIR".

sourceaddr
Minidisk or SFS directory that contains the files to be copied.

EXCL|NOEXCL
This field should be ignored.

Example 1, when *fname ftype* is * *:

```
MIGDISK COPY * * LINK 6VMPTK30%PERFTK IDENTITY PERFSVM 201 ACCDIR 6VMPTK40%PERFTK USER DIR
            VMPSFS:6VMPTK40.PERFTK.TBUILD NOEXCL
```

Example 2, when *fname ftype* is a file, 6VMCMS40 C493CMS, on the MIGMAINT 2CF0 disk:

```
MIGDISK COPY 6VMCMS40 C493CMS LINK 6VMCMS30%CMS IDENTITY MAINT 193 LINK 6VMCMS40%CMS USER
            MAINT640 493 EXCL
```

Manual Instructions:

1. Access the source location.

   If the *sourcelinktype* is LINK, link and access the *sourceuid sourceaddr*.

If the *sourcelinktype* is ACCDIR, access the SFS directory specified. In Example 2:

```
ACCESS VMPSFS:6VMPTK40.PERFTK.TBUILD G
```

If the *sourcelinktype* is MDISK, the disk must be defined issuing the DEFINE MDISK command, as follows:

a. Locate the minidisk statement in the work directory file (INSTUPGR $USERDIR) located on the MIGMAINT 2CF0 disk for the *sourceuid* and *sourceaddr* in the $STAGE2$ $TABLE$ entry. If the *sourcetype* is SUBCONFIG, locate the minidisk statement contained in the SUBCONFIG that corresponds to the system being upgraded.

b. Note the start location, size, and volume label. For example, if the MDISK statement for the MAINT 491 disk looks like this:

   ```
   MDISK 491 3390 3298 030 IBMCM1 MR
   ```

   the start location for the 491 disk is 3298, the size is 30, and the volume label is IBMCM1.

c. Attach the address associated with the noted volume label (refer to Table 15 on page 160 or Table 16 on page 161 for addresses and volume labels) to your current system. In this example, if the address for the volume with label IBMCM1 is C11:

   ```
   ATTACH C11 TO SYSTEM
   ```

d. Issue the DEFINE MDISK command for the *sourceaddr*:

   ```
   DEFINE MDISK linkaddr start size vollabel
   ```

   In this example:

   ```
   DEFINE MDISK 1491 3298 30 IBMCM1
   ```

e. Access the MDISK defined for *sourceaddr*:

   ```
   ACCESS linkaddr fm
   ```

   In this example:

   ```
   ACCESS 1491 H
   ```

2. Access the target location in write mode.

   If the *targetlinktype* is LINK, link and access *targetuid targetaddr* with *linkmode* of WR. In Example 1:

   ```
   LINK PERFSVM 201 1201 WR
   ACCESS 1201 H
   ```

   If the *targetlinktype* is ACCDIR, access the SFS directory specified, specifying the option FORCERW on the ACCESS command. For example:

   ```
   ACCESS dirname fm (FORCERW
   ```

   If the *targetlinktype* is MDISK, the disk must be defined issuing the DEFINE MDISK command, as follows:

   a. Locate the minidisk statement in the work directory file (INSTUPGR $USERDIR) located on the MIGMAINT 2CF0 disk for the *targetuid* and *targetaddr* in the $STAGE2$ $TABLE$ entry. If the *sourcetype* is SUBCONFIG, locate the minidisk statement contained in the SUBCONFIG that corresponds to the system being upgraded.

b. Note the start location, size, and volume label. For example, if the MDISK statement for the MAINT 190 disk looks like this:

```
MDISK 190 3390 280 214 IBMRES
```

the start location for the 190 disk is 280, the size is 214, and the volume label is IBMRES.

c. Attach the address associated with the noted volume label (refer to Table 15 on page 160 or Table 16 on page 161 for addresses and volume labels) to your current system. In this example, if the address for the volume with label IBMRES is C10:

```
ATTACH C10 TO SYSTEM
```

d. Issue the DEFINE MDISK command:

```
DEFINE MDISK linkaddr start size vollabel
```

In this example:

```
DEFINE MDISK 2190 280 214 IBMRES
```

e. Access the MDISK defined for *targetaddr*:

```
ACCESS linkaddr fm
```

In this example:

```
ACCESS 2190 H
```

3. Issue the VMFCOPY command to copy the files from the *sourceaddr* to the *targetaddr*.

When *fname ftype* **is * *,** use the VMFCOPY command to copy all the files in the VMSES PARTCAT for *targetprodid* on *sourceaddr* to *targetaddr*:

```
VMFCOPY * * sourcefm = = targetfm ( PRODID sourceprodid
       SPRODID sourceprodid OLDDATE REPLACE
```

In Example 1:

```
VMFCOPY * * G = = H ( PRODID 6VMPTK40%PERFTK SPRODID 6VMPTK40%PERFTK OLDDATE REPLACE
```

Note: If the target disk is MAINT's 402 disk, add the UPCASE operand to the end of the VMFCOPY command.

When *fname ftype* **is a file on the MIGMAINT 2CF0 disk,** use the VMFCOPY command to copy only the files listed in the file *fname ftype*. Issue the following command for each entry in the named file:

```
VMFCOPY entryfilename entryfiletype sourcefm = = targetfm
       ( PRODID sourceprodid SPRODID sourceprodid OLDDATE REPLACE
```

In Example 2, for each *filename filetype* entry in file 6VMCMS40 C493CMS, enter the following command:

```
VMFCOPY filename filetype G = = H ( PRODID 6VMCMS40%CMS SPRODID
               6VMCMS40%CMS (OLDDATE REPLACE
```

Note: If the target disk is MAINT's 402 disk, add the UPCASE operand to the end of the VMFCOPY command.

---

7 The MIGDISK ERASE keywords use the VMFERASE command to erase files for the specified product ID from the target location.

Syntax:

```
MIGDISK ERASE {fname ftype|* *} targetlinktype targettype targetuid
        targetaddr targetprodid EXCL|NOEXCL
```

fname ftype|*** ***
When *fname ftype* is * *, use VMFERASE to erase all files from the *targetuid targetaddr* that are associated with *targetprodid*.

When *fname ftype* is a filename and filetype, the named file will be found on the MIGMAINT 2CF0 disk. Use VMFERASE to erase only the files listed in *fname ftype* from the *targetuid targetaddr* that are associated with *targetprodid*.

targetlinktype
Method used to access the location from which the files will be erased. LINK is specified if the target location is a minidisk, accessed using the LINK and ACCESS commands. ACCDIR is specified if the target location is an SFS directory which is just accessed with the ACCESS command. MDISK is specified if the target location is located on a work system volume that must be accessed using the DEFINE MDISK command.

targettype
USER, IDENTITY, or SUBCONFIG.

targetuid
User ID that owns the target location. If the files will be erased from an SFS directory the value of this field is “DIR”.

targetaddr
Minidisk or SFS directory from which the files will be erased.

targetprodid
The VMSES/E prodid that is associated with the files to be erased.

EXCL|NOEXCL
This field should be ignored.

Example 1, when *fname ftype* is * *:

```
MIGDISK ERASE * * LINK IDENTITY PERFSVM 201 6VMPTKx0%PERFTK NOEXCL
```

Example 2, when *fname ftype* is a file on the MIGMAINT 2CF0 disk, in this example 6VMCMS*x*0 E490CMS:

```
MIGDISK ERASE 6VMCMSx0 E490CMS MDISK IDENTITY MAINT 190 6VMCMSx0%CMS EXCL
```

Manual Instructions:

1. Access the target location in write mode.

   If the *targetlinktype* is LINK, link and access *targetuid targetaddr* with *linkmode* of WR. In Example 1:

```
LINK PERFSVM 201 1201 WR
ACCESS 1201 H
```

If the *targetlinktype* is ACCDIR, access the SFS directory specified, specifying the option FORCERW on the ACCESS command. For example:

```
ACCESS dirname fm (FORCERW
```

If the *targetlinktype* is MDISK, the disk must be defined issuing the DEFINE MDISK command, as follows:

a. Locate the minidisk statement in the work directory file (INSTUPGR $USERDIR) located on the MIGMAINT 2CF0 disk for the *targetuid* and *targetaddr* in the $STAGE2$ $TABLE$ entry. If the *sourcetype* is SUBCONFIG, locate the minidisk statement contained in the SUBCONFIG that corresponds to the system being upgraded.

b. Note the start location, size, and volume label. For example, if the MDISK statement for the MAINT 190 disk looks like this:

   ```
   MDISK 190 3390 280 214 IBMRES
   ```

   the start location for the 190 disk is 280, the size is 214, and the volume label is IBMRES.

c. Attach the address associated with the noted volume label (refer to Table 15 on page 160 or Table 16 on page 161 for addresses and volume labels) to your current system. In this example, if the address for the volume with label IBMRES is C10:

   ```
   ATTACH C10 TO SYSTEM
   ```

d. Issue the DEFINE MDISK command:

   ```
   DEFINE MDISK linkaddr start size vollabel
   ```

   In this example:

   ```
   DEFINE MDISK 2190 280 214 IBMRES
   ```

e. Access the MDISK defined for *targetaddr*:

   ```
   ACCESS linkaddr fm
   ```

   In this example:

   ```
   ACCESS 2190 H
   ```

2. Issue the VMFERASE command to erase the files from the *targetaddr*.

   When *fname ftype* **is * ***, use VMFERASE to erase all the files in the VMSES PARTCAT for *targetprodid* on *targetaddr*:

   ```
   VMFERASE PROD targetprodid FROM targetfm
   ```

   In Example 1:

   ```
   VMFERASE PROD 6VMPTKx0%PERFTK FROM H
   ```

   When *fname ftype* **is a file on the MIGMAINT 2CF0 disk, use the**, use VMFERASE to erase only the files listed in the file *fname ftype*. Issue the following command for each entry in the named file:

   ```
   VMFERASE FILE filename filetype targetfm
   ```

In Example 2, for each *filename filetype* entry in file 6VMCMS*x*0 E490CMS, enter the following command:

```
VMFERASE FILE filename filetype H
```

---

8 The PARTNOTIFY keyword writes a message to the *systemname* $WRNFILE file on the MIGMAINT 2CF0 disk that needs to be addressed after the upgrade is complete.

Syntax:

```
PARTNOTIFY msgnumber formatnumber substitutiondata
```

Example:

```
PARTNOTIFY 8555 1 MPROUTE SCF++002 , 6VMTCP40 491 , MPROUTE SCONFIG
```

Manual Instructions: Make a note of the messages specified by the PARTNOTIFY keyword and refer to *z/VM: CP Messages and Codes* for explanations of the messages. The actions indicated by these messages should be addressed after the upgrade is complete.

---

9 The SESCMD keyword issues the command specified after the *keyword*.

Syntax:

```
SESCMD keyword sescommand
```

Example:

```
SESCMD FINSBLD VMFINS BUILD PPF SERVP2P REXX (SERVICED LINK
```

Manual Instructions: Ignore the value specified in *keyword* and issue the command specified in *sescommand*. In this example:

```
VMFINS BUILD PPF SERVP2P REXX (SERVICED LINK
```

---

10 The SESMOVE COPY keywords use the VMFCOPY command to copy a file from the MIGMAINT 2CF0 disk to the PMAINT 550 OR 551 disk.

Syntax:

```
SESMOVE COPY prodid targetfname targetftype LINK USER PMAINT 550|551
            sourcefnamesourceftype LINK IDENTITY MIGMAINT 2CF0
```

Example: Use the VMFCOPY command to copy the file CPFMTXA EXEC from the MIGMAINT 2CF0 disk to the file CPFMTXA EXEC on the PMAINT 551 disk, associating the file with *prodid* 6VMCPR40%CP:

```
SESMOVE COPY 6VMCPR40%CP CPFMTXA EXEC LINK USER PMAINT 551
            CPFMTXA EXEC LINK IDENTITY MIGMAINT 2CF0
```

Manual Instructions:

1. Link and access the PMAINT 550 or 551 disk in write mode. In this example:

```
LINK PMAINT 551 551 WR
ACCESS 551 H
```

2. Link and access the MIGMAINT 2CF0 disk. In this example:

```
LINK MIGMAINT 2CF0 2CF0 MR
ACCESS 2CF0 G
```

3. Issue the VMFCOPY command:

```
VMFCOPY sourcefname sourceftype fm_2CF0 targetfname targetftype fm_550|fm_551
        ( PRODID sourceprodid OLDDATE REPLACE
```

In this example:

```
VMFCOPY CPFMTXA EXEC G CPFMTXA EXEC H ( PRODID 6VMCPR40%CP OLDDATE REPLACE
```

---

11 The SESMOVE ERASE keywords use the VMFERASE command to erase a file from the PMAINT 550 or 551 disk.

Syntax:

```
SESMOVE ERASE fname ftype LINK USER PMAINT 550|551
```

Example: Use the VMFERASE command to erase the file CPFMTXA EXEC from the PMAINT 551 disk:

```
SESMOVE ERASE CPFMTXA EXEC LINK USER PMAINT 551
```

Manual Instructions:

1. Link and access PMAINT's 550 or 551 disk in write mode. In this example:

```
LINK PMAINT 551 551 WR
ACCESS 551 G
```

2. Issue the VMFERASE command:

```
VMFERASE FILE fname ftype fm_550|fm_551
```

In this example:

```
VMFERASE FILE CPFMTXA EXEC G
```

---

12 The UPDDISK COPY keywords copy either a single file or an entire disk. UPDDISK COPY uses COPYFILE with the OLDDATE REPLACE options.

Syntax:

```
UPDDISK COPY sourcelinktype sourceidtype sourceuserid sourceaddrdir sourcefname sourceftype
             targetlinktype targetidtype targetuserid targetaddrdir targetfname targetftype
```

sourcelinktype
Method used to access the disk where the file resides: LINKACC, ACCDIR, or MDISK. LINKACC is specified if the source location is a minidisk, accessed using the LINK and

ACCESS commands. ACCDIR is specified if the source location is an SFS directory which is just accessed with the ACCESS command. MDISK is specified if the source location is located on a work system volume that must be accessed using the DEFINE MDISK command. For instructions on how to access a disk using DEFINE MDISK, see the DDRMDISK keyword.

sourceidtype
Type of userid: USER or IDENTITY.

sourceuserid
User ID that owns the disk where the file resides. If the file is in an SFS directory, the value of this field is "DIR".

sourceaddrdir
Minidisk or SFS directory where the file resides.

sourcefname
File name of the file to be copied or NOFN if the entire disk is to be copied.

sourceftype
File type of the file to be copied or NOFT if the entire disk is to be copied.

targetlinktype
Method used to access the disk where the file will be copied: LINKACC, ACCDIR, or MDISK. LINKACC is specified if the target ("to") location is a minidisk, accessed using the LINK and ACCESS commands. ACCDIR is specified if the target location is an SFS directory which is just accessed with the ACCESS command. MDISK is specified if the target location must be accessed using the DEFINE MDISK command. For instructions on how to access a disk using DEFINE MDISK, see the DDRMDISK keyword.

targetidtype
Type of userid: USER or IDENTITY.

targetuserid
User ID that owns the disk where the file will be copied. If the file is in an SFS directory, the value of this field is "DIR".

targetaddrdir
Minidisk or SFS directory where the file will be copied.

targetfname
File name given to the file when it is copied or NOFN if the entire disk is to be copied.

targetftype
File type given to the file when it is copied or NOFT if the entire disk is to be copied.

Example:

```
UPDDISK COPY LINKACC USER PMAINT 550 CPFMTXA EXEC LINKACC USER PMAINT 551 CPFMTXA EXEC
```

Manual Instructions:

1. Link and access the source disk. In this example:

   ```
   LINK PMAINT 550 1550 RR
   ACCESS 1550 H
   ```

2. Link and access the target ("to") disk in write mode. In this example:

   ```
   LINK PMAINT 551 1551 WR
   ACCESS 1551 H
   ```

3. Copy the file from the source disk to the target disk, using OLDDATE REPLACE. In this example:

```
COPYFILE CPFMTXA EXEC G CPFMTXA EXEC A H (OLDDATE REPLACE
```

4. Release and detach, if necessary, the SFS directories and minidisks accessed above. In this example:

```
RELEASE G
RELEASE H (DETACH
```

---

13 The UPDDISK ERASE keywords erase either a single file or an entire disk.

Syntax:

```
UPDDISK ERASE sourcelinktype sourceidtype sourceuserid sourceaddrdir sourcefname sourceftype
```

sourcelinktype
Method used to access the disk where the file resides: LINKACC, ACCDIR, or MDISK. LINKACC is specified if the source location is a minidisk, accessed using the LINK and ACCESS commands. ACCDIR is specified if the source location is an SFS directory which is just accessed with the ACCESS command. MDISK is specified if the source location is located on a work system volume that must be accessed using the DEFINE MDISK command. For instructions on how to access a disk using DEFINE MDISK, see the DDRMDISK keyword.

sourceidtype
Type of userid: USER or IDENTITY.

sourceuserid
User ID that owns the disk where the file resides. If the file is in an SFS directory, the value of this field is “DIR”.

sourceaddrdir
Minidisk or SFS directory where the file resides.

sourcefname
File name of the file to be copied or NOFN if the entire disk is to be copied.

sourceftype
File type of the file to be copied or NOFT if the entire disk is to be copied.

Example:

```
UPDDISK ERASE ACCDIR * DIR VMPSFS:6VMTCP40.TCPIP.OBJECT LDAPDS SAMPENVR
```

Manual Instructions:

1. Link, if necessary, and access the disk. In this example:

```
ACCESS VMPSFS:6VMTCP40.TCPIP.OBJECT G
```

2. Erase the file from the source disk. In this example:

```
ERASE LDAPDS SAMPENVR G
```

3. Release and detach, if necessary, the SFS directory or minidisk accessed above. In this example::

```
RELEASE G
```

Appendix P. Removing changes made by STAGE1 (optional)

This appendix provides instructions on how to undo any changes that have been made to your current system during STAGE1 of the upgrade installation procedure.

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Step 1. Back out changes made in Chapter 21, "Finish the STAGE1 Upgrade"

If you did not complete any steps in Chapter 21, “Finish the STAGE1 upgrade,” on page 203, go on to “Step 2. Choose your backout option” on page 319. If you did complete steps in Chapter 21, “Finish the STAGE1 upgrade,” on page 203, you must back out some of those changes by hand.

1. During the backout process, the MAINT640 user ID will be deleted. If you had local modifications to rework, you might want to save any files you reworked on a different user ID, for future reuse.
2. If you are upgrading a non-SSI system, a one-member SSI cluster, or the first member of a multimember SSI cluster, the 6VMDIR40 user ID will be deleted during the backout process. If DirMaint is enabled as your directory manager and you made changes to configuration files, authorization files, or both, those changes will be lost if they were saved on a minidisk that is owned by 6VMDIR40.
3. If you are using an external security manager (ESM), you should review the documentation for your ESM to determine whether any authorizations you added need to be removed prior to backing out, because the user IDs that were added will be deleted during backout processing. If you are using RACF as your ESM, you do not need to remove any authorizations.
4. Before you begin to back out the remainder of the changes made during STAGE1, you should make sure that the MIGMAINT userid is not linked to any MAINT640 minidisks. Enter the QUERY MDISK command for the 5E5 and 51D minidisks (QUERY MDISK 5E5 and QUERY MDISK 51D) and check the owing user ID. If the OwnerID is MAINT640, detach the minidisks (DETACH 51D and DETACH 5E5). Then link and access your current system (620 or 630) 51D and 5E5 disks:

   ```
   LINK MAINT6x0 51D 51D MR
   ACCESS 51D D
   LINK MAINT6x0 5E5 5E5 RR
   ACCESS 5E5 B
   ```

5. If you are using DirMaint as your directory manager and you are backing out changes to a non-SSI system, a one-member SSI cluster, or the first member of a multimember SSI cluster, the automated BACKOUT process might encounter an error using DirMaint after the 6VMDIR40 user ID is deleted. If this happens, recycle your DirMaint server user IDs (DIRMAINT, DIRMSAT*x*, and DATAMOV*x*) and restart the backout by re-entering this command:

   ```
   INSTUPGR STAGE1 (BACKOUT
   ```

6. If you are backing out a member of a multimember SSI cluster, you should make sure your directory changes are online for all members of your SSI cluster. If you are using a directory manager, this should have been done automatically by the directory manager. If you are not using a directory manager, follow your normal procedures to put the updated directory online everywhere.

Step 2. Choose your backout option

If you used the INSTUPGR command with the COMMIT option to make changes to your system, a file named $BACKOUT $TABLE$ was created. This file contains entries that will undo the changes made by the INSTUPGR command. If you made some or all of the STAGE1 changes manually, you should have documented those changes and you must remove those changes yourself.

If you made all or some changes to your system using the INSTUPGR command, go to “Step 3. Undo STAGE1 changes using INSTUPGR” on page 320.

If you made all the STAGE1 changes to your system yourself, go to “Step 4. Undo STAGE1 changes manually” on page 321.

Step 3. Undo STAGE1 changes using INSTUPGR

1. Log on to the MIGMAINT user ID on the system being upgraded. Make sure the user ID meets the MIGMAINT user ID requirements.
2. Access the 24CC minidisk as file mode C.

```
access 24cc c
Ready; T=n.nn/n.nn hh:mm:ss
```

3. Run INSTUPGR to undo the changes made by INSTUPGR STAGE1 (COMMIT.

```
instupgr stage1 (backout
* Now processing $BACKOUT $TABLE$ E. File is processed from the
* last record to the first to assure proper backout.
Now processing line nnn of nnn
Now processing line nnn of nnn

.
.
.
IUGUPG8392I INSTUPGR ended successfully
Ready; T=n.nn/n.nn hh:mm:ssReady; T=n.nn/n.nn hh:mm:ss
```

4. If any error conditions occur, review the error messages in file INSTUPGR $CONSLOG on the MIGMAINT 2CF0 minidisk (accessed as filemode E) and correct the condition that is causing the error. Then return to substep 3.
5. If you also made changes to your system manually, refer to the backout document that you created to manually undo your changes. Remember that the order in which you made the $STAGE1$ updates is the reverse order in which the updates should be removed.
6. Log off the MIGMAINT user ID.

If you undid the STAGE1 changes to your system because you need to correct errors, correct the errors now and then return to Chapter 19, “Generate the STAGE1 changes file,” on page 193. If you are not continuing with the upgrade installation at this time, IBM recommends that you log back on to MIGMAINT and erase all of the files on the MIGMAINT 24CC and the 2CF0 disks. This will prevent accidental use of out-of-date information should you decide to use the upgrade installation procedure later. You may return the volumes you used to install the work system to your DASD pool. If you decide later to use the upgrade installation procedure for this system, you should start over again, at the beginning of Part 4, “Upgrade installation,” on page 135.

Step 4. Undo STAGE1 changes manually

1. Log on to the MIGMAINT user ID on the system being upgraded. Make sure the user ID meets the MIGMAINT user ID requirements.
2. Refer to the backout documentation you created while making the STAGE2 updates manually to undo your changes.
3. Access the 24CC minidisk as file mode C.

```
access 24cc c
Ready; T=n.nn/n.nn hh:mm:ss
```

4. Once all the changes are complete, run the INSTUPGR command to update the appropriate status tables so that you can restart your upgrade installation when you are ready.

```
instupgr stage1 (backout done
IUGUPG8392I INSTUPGR ended successfully
Ready; T=n.nn/n.nn hh:mm:ss
```

5. Log off the MIGMAINT user ID.

If you undid the STAGE1 changes to your system because you need to correct errors, correct the errors now and then return to Chapter 19, “Generate the STAGE1 changes file,” on page 193. If you are not continuing with the upgrade installation at this time, IBM recommends that you log back on to MIGMAINT and erase all of the files on the MIGMAINT 24CC and the 2CF0 disks. This will prevent accidental use of out-of-date information should you decide to use the upgrade installation procedure later. You may return the volumes you used to install the work system to your DASD pool. If you decide later to use the upgrade installation procedure for this system, you should start over again, at the beginning of Part 4, “Upgrade installation,” on page 135.

Appendix Q. Upgrade installation directory manager exit interface

This appendix defines a program interface that can be used by a directory manager program to code an upgrade exit program. This exit program is provided by a directory manager product to allow upgrade installation processing to use the directory manager functions. Upgrade installation processing will call the exit with the defined syntax. The exit will then invoke the directory manager commands and return the appropriate return code to the calling program.

An exit that is coded for a release of z/VM will need to be made available to run on any release of z/VM that can be upgraded. So an exit coded for V6.4 will need to be made available on V6.2 and V6.3. The exit will need to incorporate release and version information (as discussed below) to allow verification that it is compatible with the level of z/VM to which an upgrade is being performed.

If updates are necessary for the directory manager to operate with a newer level of z/VM, a customer will first need to upgrade the directory manager to the required level (by applying any necessary service updates, or installation of a new level) before the customer can upgrade the system.

The exit needs to be named UPGDMIXT EXEC and must be installed on the MAINT 19E disk.

Requirements

1. File modes C and E are reserved for z/VM installation use.
2. The exit must contain a version indicator in the format *vrm.nn*, where: *vrm* is a z/VM version, release and modification level (for instance 640), and *nn* is an exit version number (for example, 01). The installation upgrade utilities will make an initial call to the exit to confirm that the exit version indicator is suitable for use with the current system upgrade.
3. For a given release of z/VM, the exit must run in all prior releases of z/VM that can be upgraded to the given release using the upgrade installation process.
4. If a failure occurs while performing the function requested by the installation upgrade utilities, the exit will need to:
   - Roll back any changes that had been made during a given function request. For example, if the exit must issue multiple commands to complete a requested function and several of those commands are completed prior to a command failure, then the exit will need to roll back the completed commands before returning control to the installation upgrade utilities.
   - Return one of the defined failure codes to the calling installation upgrade utility.
5. The exit must generate a log file named UPGDMIXT $LOGFILE E (the appropriate disk will have been accessed by the installation upgrade utilities prior to any exit calls). It should be appended with information appropriate for each invocation of the exit.

   At a minimum, the $LOGFILE should include the following:
   - Name of the calling exec
   - A date/time stamp
   - The function request made by the calling exec
   - Actual command(s) issued to complete the request
   - Successful or failed status
   - If necessary, pointers to additional data or logs (such as server-base logs)
6. The exit will be able to use the A-disk for work space. It will need to clean up any files created on the A-disk before returning control to the calling installation upgrade utility.
7. Whenever possible, the exit should suppress output to the user's console.

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Syntax of the call to the exit

The exit is called with a parameter list containing four tokens and a data stem, as follows:

token1
The name of the program calling the exit.

token2
A keyword.

token3
The exit interface data stem variable name (*stem_name*).

token4
An integer value that indicates the number of records loaded into the exit interface data stem.

The data stem is a REXX stem variable. The records that make up the data stem are as follows:

stem_name.0
The number of records loaded into the data stem. This value can be compared to **token4** to confirm the correct/expected number of records have been acquired.

stem_name.1
Keyword.

stem_name.2
Object type.

stem_name.3
Object modifier.

stem_name.4
Action.

stem_name.5-*n*
Data records.

Example of a call to the exit:

```
"PIPE COMMAND EXEC UPGDMIXT" pgm_name keyword stem_name count
```

Contents of the exit interface data stem

The exit interface data stem will contain at least one record. Records 2-*n* are optional, depending on the function to be performed by the exit.

Record 1: Keyword (Required)
Valid keywords:
- SETUP
- VERIFY
- CLEANUP
- ENTRY
- LINK
- MDISK
- VSTOR
- PRIV
- OPTION
- IUCV
- COMMAND
- IPL
- LOADDEV

- NAMESAVE

Record 2: Object type (Optional)

Valid object types:

- USER
- IDENTITY
- SUBCONFIG
- PROFILE
- VERSION

Record 3: Object modifier (Optional)

Valid object modifiers:

- If the object type is VERSION, the exit version indicator (*vrm.nn*).
- If the object type is SUBCONFIG, the name of the subconfig, node, and identity (*subname node identname*).
- Otherwise, the name of the affected object type (*name*). The name can be any valid name for an object type, as defined by the CP user directory

Record 4: Action (Optional)

Valid actions:

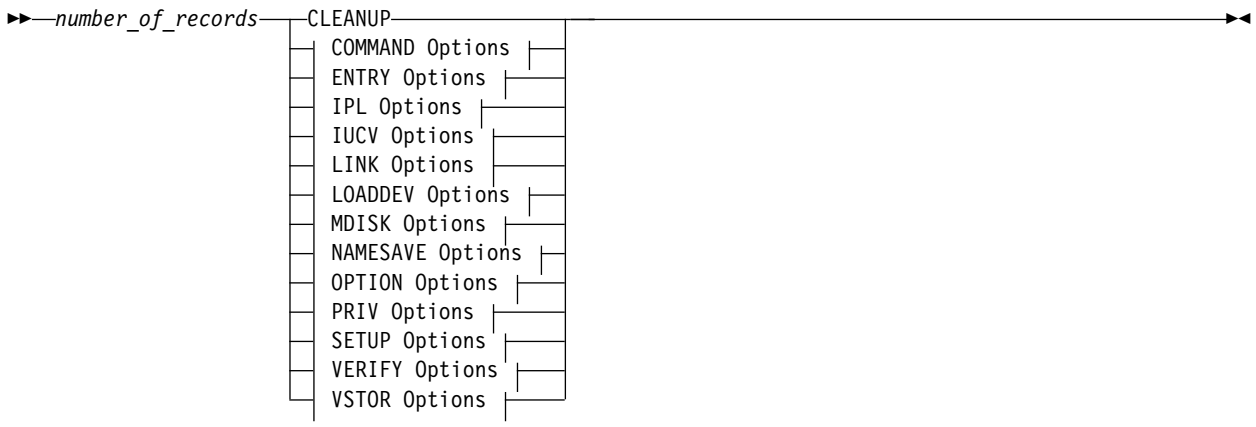
- ADD
- DELETE
- REPLACE
- COPY
- GET
- UNLOCK

Records 5-*n*: Data (Optional)

The data necessary to perform a given function. The data will vary based on the action/object being manipulated.

Exit interface data stem options

Main Syntax Diagram



CLEANUP

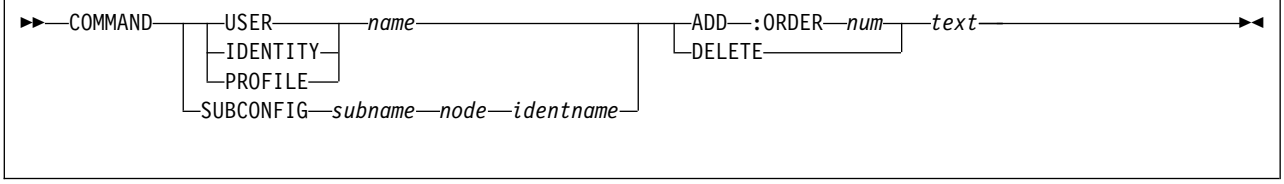
Use the CLEANUP options to clean up directory manager environment and files left on the work (A) disk.

It is anticipated that only one CLEANUP call will be made to an exit, during a given processing stage. Cleanup processing can be used to restore/undo SETUP environment changes made for handling directory change requests. There are no arguments for this keyword.

COMMAND

Use the COMMAND options to either add a new COMMAND statement or delete an existing COMMAND statement.

COMMAND Options Syntax



where:

name
is the user, identity, or profile name.

subname
is the subconfig name. If the subconfig name is UNKNOWNSUB, the name must be determined from the *node* and *identname*.

node
is the name of the member that owns the subconfig, if running in an SSI, or an asterisk (*), if running on a non-SSI (only valid with SUBCONFIG object type).

identname
is the name of the IDENTITY for the subconfig (only valid for SUBCONFIG object type).

:ORDER
indicates the ordinal value of the command follows (ADD only).

num
is the ordinal placement of the COMMAND statement (ADD only).

text
is the information to be appended to the keyword "COMMAND" to derive the statement to be added to or deleted from the directory.

Notes:

1. Only one command statement can be added or deleted at a time.
2. A new statement must be created for each command. Statements cannot be added to existing COMMAND statements.
3. The statement will be inserted as the *num*th COMMAND statement in the directory entity.
4. If there are no COMMAND statements in the directory entity, this statement will be added as the first COMMAND statement.
5. If *num* is larger than the number of COMMAND statements in the directory entity, this statement will be added following the last COMMAND statement.

Examples:

```
COMMAND USER pmaint ADD :ORDER 1 SET RUN ON
COMMAND IDENTITY zvmlxapp ADD :ORDER 9 SET D8ONECMD * OFF
COMMAND PROFILE tcpcmsu ADD :ORDER 3 SET RUN ON
COMMAND SUBCONFIG lohcos-1 memb2 lohcost ADD :ORDER 4 TERM LINEND #
COMMAND USER pmaint DELETE SET RUN ON
COMMAND PROFILE ibmdflt DELETE SPOOL CONS START *
COMMAND IDENTITY zvmlxapp DELETE SET D8ONECMD * OFF
COMMAND SUBCONFIG UNKNOWNSUB memb2 vmservr DELETE SET RUN ON
```

ENTRY

Use the ENTRY options to add a new USER, IDENTITY, or SUBCONFIG, exactly as defined, to delete an existing USER, IDENTITY, or SUBCONFIG, or to get, replace, lock, or unlock a userid entry.

If ADD is specified, the records passed on the call contain the exact directory entry that should be added. No changes should be made to the records. If there are MDISK statements in the file, add the MDISK statements just as they are.

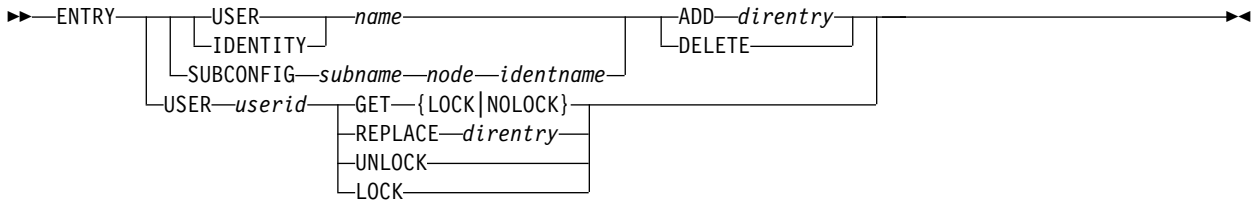
If GET is specified, the specified userid entry from the user directory will be obtained and written to the E disk as *userid* DIRECT. If LOCK is specified, the userid entry will be locked in the user directory. If NOLOCK is specified, the userid entry will *not* be locked.

If REPLACE is specified, the existing userid directory entry will be replaced with the directory entry passed on the call, and the userid will be unlocked.

If UNLOCK is specified, the userid will be unlocked.

If LOCK is specified, the user ID will be locked.

ENTRY Options Syntax



where:

name
is the user or identity name.

subname
is the subconfig name. If the subconfig name is UNKNOWNSUB, the name must be determined from the *node* and *identname*.

node
is the name of the member that owns the subconfig, if running in an SSI, or an asterisk (*), if running on a non-SSI (only valid with SUBCONFIG object type).

identname
is the name of the IDENTITY for the subconfig (only valid for SUBCONFIG object type).

direntry
is the complete directory entry.

userid
is the user ID.

Notes:

1. For IDENTITY:
   a. When adding, the BUILD ON statement will not be included in the definition.
   b. When deleting, an IDENTITY with a SUBCONFIG will never be deleted. The SUBCONFIG will always be deleted first.
2. For SUBCONFIG:
   a. When adding, the BUILD ON statement will be added to the IDENTITY when the SUBCONFIG is defined.
   b. When deleting, the BUILD ON statement will be removed from the IDENTITY when the SUBCONFIG is deleted.
3. For DELETE, the files on any disks that are deleted must *not* be erased.

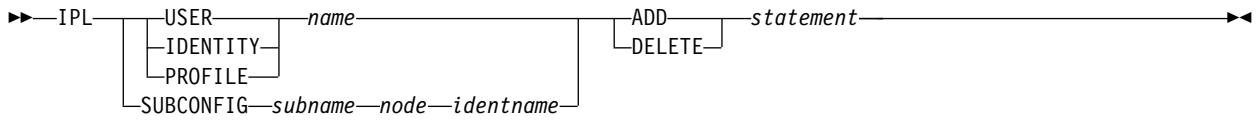
Examples:

```
ENTRY USER MAINT640 ADD direntry
ENTRY IDENTITY OPERNEW ADD direntry
ENTRY SUBCONFIG OPER-2 MEMB2 OPERNEW ADD direntry
ENTRY USER MAINT640 DELETE
ENTRY IDENTITY OPERNEW DELETE
ENTRY SUBCONFIG OPER-2 MEMB2 OPERATOR DELETE
ENTRY SUBCONFIG UNKNOWNSUB MEMB2 SERVERW DELETE
ENTRY USER 5684042J GET LOCK
ENTRY USER 5684042J REPLACE direntry
ENTRY USER 5684042J UNLOCK
ENTRY USER 5684042J LOCK
```

IPL

Use the IPL options to add a new IPL control statement or delete an existing IPL control statement.

IPL Options Syntax



where:

name
is the user, identity, or profile name.

subname
is the subconfig name. If the subconfig name is UNKNOWNSUB, the name must be determined from the *node* and *identname*.

node
is the name of the member that owns the subconfig, if running in an SSI, or an asterisk (*), if running on a non-SSI (only valid with SUBCONFIG object type).

identname
is the name of the IDENTITY for the subconfig (only valid for SUBCONFIG object type).

statement
is the IPL COMMAND statement to be added or deleted.

Examples:

```
IPL SUBCONFIG lohcos-1 memb2 lohcost ADD IPL 190
IPL SUBCONFIG UNKNOWNSUB memb2 lohcost ADD IPL CMS
IPL USER pmaint ADD IPL 190 PARM AUTOCR
IPL IDENTITY avsvm ADD IPL CMS PARM AUTOCR
IPL PROFILE ibmdflt ADD IPL CMS
IPL SUBCONFIG lohcos-1 memb2 lohcost DELETE IPL 190
IPL SUBCONFIG UNKNOWNSUB memb2 lohcost DELETE IPL CMS
IPL USER pmaint DELETE IPL 190 PARM AUTOCR
IPL IDENTITY avsvm DELETE IPL CMS PARM AUTOCR
IPL PROFILE ibmdflt DELETE IPL CMS
```

IUCV

Use the IUCV options to add a new IUCV statement or delete an existing IUCV statement.

IUCV Options Syntax

where:

name
is the user, identity or profile name.

text
is the information to be appended to the keyword "IUCV" to derive the statement to be added to or deleted from the directory.

Notes:

1. Only one IUCV statement can be added or deleted at a time.
2. When adding, a new IUCV statement must be created. The new information cannot be added to an existing statement.

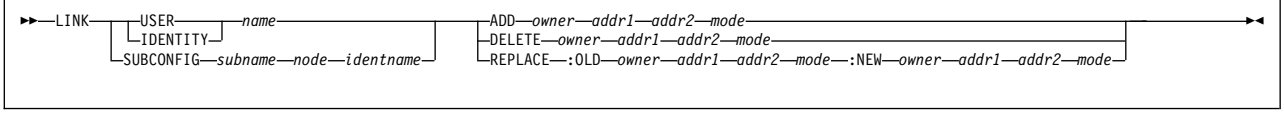
Examples:

```
IUCV USER pmaint ADD *IDENT GATEANY GATEWAY REVOKE
IUCV IDENTITY avsvm ADD *MSG
IUCV PROFILE tcpcmsu ADD ALLOW
IUCV IDENTITY avsvm DELETE *IDENT GATEANY GATEWAY REVOKE
IUCV USER pmaint DELETE *MSG
IUCV PROFILE tcpcmsu DELETE ALLOW
```

LINK

Use the LINK options to add, delete, or replace a LINK statement.

LINK Options Syntax



where:

name
is the user or identity name.

subname
is the subconfig name. If the subconfig name is UNKNOWNSUB, the name must be determined from the *node* and *identname*.

node
is the name of the member that owns the subconfig, if running in an SSI, or an asterisk (*), if running on a non-SSI (only valid with SUBCONFIG object type).

identname
is the name of the IDENTITY for the subconfig (only valid for SUBCONFIG object type).

owner
is the user whose disk will be linked (for ADD), or whose disk is currently being linked (for DELETE or REPLACE).

addr1
is the disk that will be linked (for ADD), or is currently being linked (for DELETE or REPLACE).

addr2
is the address at which the disk will be linked (for ADD), or is currently being linked (for DELETE or REPLACE).

mode
is the link mode to be used (for ADD), or is the current link mode (for DELETE or REPLACE).

:OLD
indicates the start of the information to be replaced (REPLACE only).

:NEW
indicates the start of the replacement information (REPLACE only).

naddr2
is the new address at which the disk will be linked (REPLACE only).

nmode
is the new link mode to be used (REPLACE only).

Note: The *owner* and *addr1* cannot change in a LINK REPLACE statement. Only the *addr2* and *mode* can be changed (to *naddr2* and *nmode*).

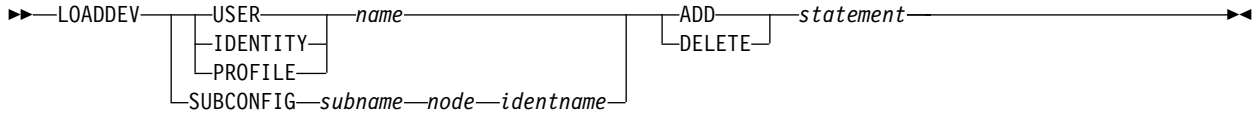
Examples:

```
LINK USER cms1 ADD pmaint 2cc 2cc wr
LINK SUBCONFIG maint-3 memb2 maint ADD maint640 201 201 rr
LINK SUBCONFIG UNKNOWNSUB memb2 maint ADD maint640 201 201 rr
LINK USER bldcms DELETE maint 407 407 rr
LINK SUBCONFIG maint-3 memb2 maint DELETE maint630 201 201 rr
LINK SUBCONFIG UNKNOWNSUB memb2 maint DELETE maint630 201 201 rr
LINK USER bldcms REPLACE OLD maint 407 407 rr :NEW maint 407 409 rr
LINK SUBCONFIG maint-3 memb2 maint REPLACE :OLD maint630 201 201 rr :NEW maint630 201 201 wr
LINK SUBCONFIG UNKNOWNSUB memb2 maint REPLACE :OLD maint630 201 201 rr :NEW maint630 201 199 rr
```

LOADDEV

Use the LOADDEV options to add a new LOADDEV control statement or delete an existing LOADDEV control statement.

LOADDEV Options Syntax



where:

name
is the user, identity, or profile name.

subname
is the subconfig name. If the subconfig name is UNKNOWNSUB, the name must be determined from the *node* and *identname*.

node
is the name of the member that owns the subconfig, if running in an SSI, or an asterisk (*), if running on a non-SSI (only valid with SUBCONFIG object type).

identname
is the name of the IDENTITY for the subconfig (only valid for SUBCONFIG object type).

statement
is the LOADDEV control statement to be added or deleted.

Examples:

```
LOADDEV SUBCONFIG lohcos-1 memb2 lohcost ADD LOADDEV PORT 0
LOADDEV SUBCONFIG UNKNOWNSUB memb2 lohcost ADD LOADDEV BOOT 0
LOADDEV USER pmaint ADD LOADDEV LUN 0
LOADDEV IDENTITY zvmlxapp ADD LOADDEV SCPDATA 'text'
LOADDEV PROFILE ibmdflt ADD LOADDEV BR_LBA 0600
LOADDEV SUBCONFIG lohcos-1 memb2 lohcost DELETE LOADDEV PORT 0
LOADDEV SUBCONFIG UNKNOWNSUB memb2 lohcost DELETE LOADDEV BOOT 0
LOADDEV USER pmaint DELETE LOADDEV LUN 0
LOADDEV IDENTITY zvmlxapp DELETE LOADDEV SCPDATA 'text'
LOADDEV PROFILE ibmdflt DELETE LOADDEV BR_LBA 0600
```

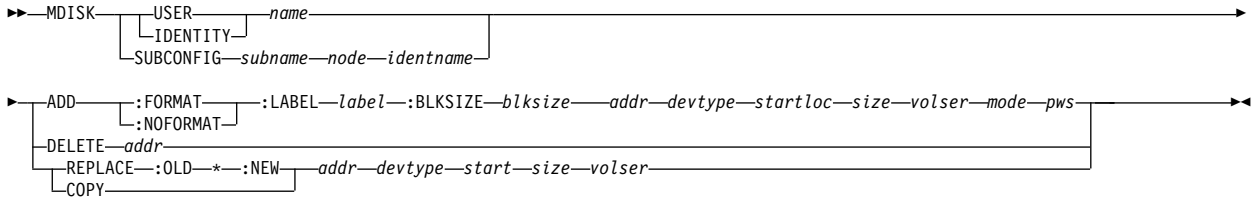
Note: In the above examples, *text* could be anything up to 4096 (4K) characters of data.

MDISK

Use the MDISK options to:

- Add a new MDISK.
- Delete an existing MDISK.
- Redefine the placement of an existing minidisk (to increase the size or move it to a different volume), with no data copied.
- Redefine the placement of an existing minidisk (to increase the size or move it to a different volume), with all data copied.

MDISK Options Syntax



where:

name
is the user or identity name.

subname
is the subconfig name. If the subconfig name is UNKNOWNSUB, the name must be determined from the *node* and *identname*.

node
is the name of the member that owns the subconfig, if running in an SSI, or an asterisk (*), if running on a non-SSI (only valid with SUBCONFIG object type).

identname
is the name of the IDENTITY for the subconfig (only valid for SUBCONFIG object type).

:FORMAT
specifies the disk should be formatted (ADD only).

:NOFORMAT
specifies the disk should be unformatted (ADD only).

:LABEL *label*
specifies the label to put on the minidisk when formatting (ADD only).

:BLKSIZE *blksize*
specifies the blocksize to use when formatting (ADD only).

addr
is the virtual device address of the minidisk being added, deleted, or defined.

devtype
is the device type of the minidisk to be added or defined (ADD, REPLACE, or COPY only).

startloc
is a starting cylinder/block number of the disk (ADD, REPLACE, or COPY only). If *startloc* is an integer, the provided extents will be used. If startloc is NULL, the directory manager will define the extents.

size
is the size in cylinders or blocks of the disk (ADD, REPLACE, or COPY only).

volser
is the label of the volume where the minidisk will reside (ADD, REPLACE, or COPY only).

mode
specifies the user's mode of access at logon (ADD only).

pws
optionally specifies the string to be used as passwords (ADD only).

:OLD * :NEW
specifies to replace all old information with the new information that follows (REPLACE ONLY).

Notes:

1. For REPLACE and COPY, the *label* and *blksize* for the new minidisk should be the same as for the current minidisk. The access mode and passwords should also be the same as for the current minidisk.
2. For REPLACE, the contents of the current disk will *not* be copied to the new disk. For COPY, the contents of the current disk will be copied to the new disk.
3. For DELETE, the files on any disks that are deleted must *not* be erased.

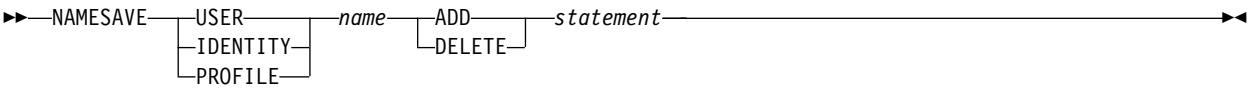
Examples:

```
MDISK USER pmaint ADD :NOFORMAT 199 3390 1050 20 m01w01 MR R199 W199 M199
MDISK SUBCONFIG lohcos-1 memb2 lohcost ADD :FORMAT :LABEL loh199 :BLKSIZE 2K
      111 FB-512 18000 14400 vmc0m1 MR R111 W111 M111
MDISK SUBCONFIG UNKNOWNSUB memb2 lohcost ADD :FORMAT :LABEL loh199 :BLKSIZE 2K
      111 FB-512 180000 14400 vmc0m1 MR R111 W111 M111
MDISK SUBCONFIG lohcos-1 memb2 lohcost ADD :FORMAT :LABEL loh199 :BLKSIZE 2K
      199 3390 NULL 20 m01w01 MR R199 W199 M199
MDISK SUBCONFIG UNKNOWNSUB memb2 lohcost ADD :FORMAT :LABEL loh199 :BLKSIZE 2K
      199 3390 NULL 20 m01w01 MR R199 W199 M199
MDISK USER pmaint ADD :NOFORMAT 111 FB-512 NULL 14400 vmc0m1 MR R111 W111 M111
MDISK USER pmaint DELETE 199
MDISK SUBCONFIG lohcos-1 memb2 lohcost DELETE 111
MDISK SUBCONFIG UNKNOWNSUB memb2 lohcost DELETE 111
MDISK SUBCONFIG lohcos-1 memb2 lohcost REPLACE :OLD * :NEW 199 3390 1050 20 m01w01
MDISK SUBCONFIG UNKNOWNSUB memb2 lohcost REPLACE :OLD * :NEW 199 3390 1050 20 m01w01
MDISK USER pmaint REPLACE :OLD * :NEW 111 FB-512 18000 1440 vmc0m1
MDISK SUBCONFIG lohcos-1 memb2 lohcost REPLACE :OLD * :NEW 199 3390 NULL 20 m01w01
MDISK SUBCONFIG UNKNOWNSUB memb2 lohcost REPLACE :OLD * :NEW 199 3390 NULL 20 m01w01
MDISK USER pmaint REPLACE :OLD * :NEW 111 FB-512 NULL 14400 vmc0m1
MDISK SUBCONFIG lohcos-1 memb2 lohcost COPY 199 3390 20 m01w01
MDISK SUBCONFIG UNKNOWNSUB memb2 lohcost COPY 199 3390 20 m01w01
MDISK USER pmaint COPY FB-512 14400 vmc0m1
MDISK SUBCONFIG lohcos-1 memb2 lohcost COPY 199 3390 NULL 20 m01w01
MDISK SUBCONFIG UNKNOWNSUB memb2 lohcost COPY 199 3390 NULL 20 m01w01
MDISK USER pmaint COPY 111 FB-512 NULL 14400 vmc0m1
```

NAMESAVE

Use the NAMESAVE options to add a new NAMESAVE statement or delete an existing NAMESAVE statement.

NAMESAVE Options Syntax



where:

name
is the user, identity or profile name.

statement
is the NAMESAVE statement to be added or deleted.

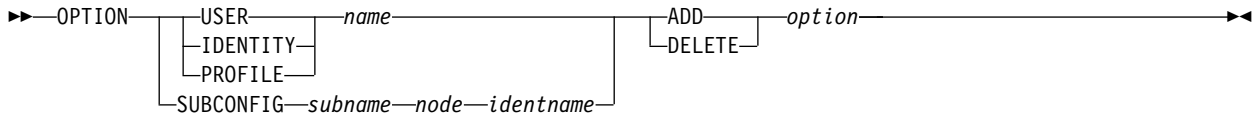
Examples:

```
NAMESAVE USER pmaint ADD NAMESAVE GCS
NAMESAVE IDENTITY avsvm ADD NAMESAVE VTAM
NAMESAVE PROFILE tcpcmsu ADD NAMESAVE MONDCSS
NAMESAVE USER pmaint DELETE NAMESAVE MONDCSS
NAMESAVE IDENTITY avsvm DELETE NAMESAVE TCPIP
NAMESAVE PROFILE tcpcmsu DELETE NAMESAVE VSMDCSS
```

OPTION

Use the OPTION options to add a new option to a directory entry or profile, or delete an existing option from a directory entry or profile.

OPTION Options Syntax



where:

name
is the user, identity, or profile name.

subname
is the subconfig name. If the subconfig name is UNKNOWNSUB, the name must be determined from the *node* and *identname*.

node
is the name of the member that owns the subconfig, if running in an SSI, or an asterisk (*), if running on a non-SSI (only valid with SUBCONFIG object type).

identname
is the name of the IDENTITY for the subconfig (only valid for SUBCONFIG object type).

option
is the option to be added to or deleted from the directory entry or profile.

Notes:

1. Only one option may be added or deleted at a time.
2. When adding, if there is no existing OPTION statement in the entity that is being updated, the entire OPTION statement will be added. If an OPTION STATEMENT already exists, the new option can be added to the existing OPTION statement, or else a new statement can be added.
3. When deleting, if this is the last option on an OPTION statement, the entire statement should be removed.

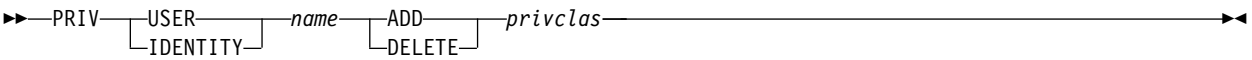
Examples:

```
OPTION SUBCONFIG lohcos-1 memb2 lohcost ADD LANG AMENG
OPTION SUBCONFIG UNKNOWNSUB memb2 lohcost ADD DIAG88
OPTION USER pmaint ADD MAINTCCW
OPTION IDENTITY avsvm ADD LNKS
OPTION PROFILE ibmdflt ADD MAINTCCW
OPTION SUBCONFIG vsmwrk-1 memb2 vsmwork1 DELETE MAXCONN 2000
OPTION SUBCONFIG UNKNOWNSUB memb2 lohcost DELETE DIAG88
OPTION USER pmaint DELETE QUICKDSP
OPTION IDENTITY tsafvm DELETE COMSRV
OPTION PROFILE tcpsslu DELETE MAXCONN 1024
```

PRIV

Use the PRIV options to add a privilege class to a user or identity, or delete a privilege class from a user or identity.

PRIV Options Syntax



where:

name
is the user or identity name.

privclas
is the privilege class to be added or deleted.

Notes:

1. Only one privilege class may be added or deleted at a time.
2. If a privilege class to be added is already in the directory entry, the calling program will be returned to with RC=1.
3. If a privilege class to be deleted is *not* in the directory entry, the calling program will be returned to with RC=1.

Examples:

```
PRIV IDENTITY lohcost ADD B
PRIV IDENTITY cmsuser ADD C
PRIV USER vmservp ADD F
PRIV IDENTITY lohcost DELETE B
PRIV IDENTITY cmsuser DELETE C
PRIV USER vmservp DELETE F
```

SETUP

Use the SETUP options to set up and validate the environment necessary for the exit to perform directory update functions.

It is anticipated that only one SETUP call will be made to an exit, during a given processing stage. Setup processing can be used to establish a persistent environment for handling ensuing directory change requests. Actions performed would include:

- Validating the version.
- Validating that any required resources (such as disks) are available.
- Ensuring that the directory manager is running.
- Ensuring that the requesting user ID is authorized to perform directory functions.

SETUP Options Syntax

where:

vrm.nn
is the release and update level of the exit (for example, 640.01).

Note: Upgrade processing will not preserve the exit's operating environment between calls to the exit. If the exit must link and access specific disks, that must be done every time the exit is called.

VERIFY

Use the VERIFY options to verify that the exit supports the version level provided.

It is anticipated that only one VERIFY call will be made to an exit, to confirm compatibility for use during the upgrade process as a whole.

VERIFY Options Syntax

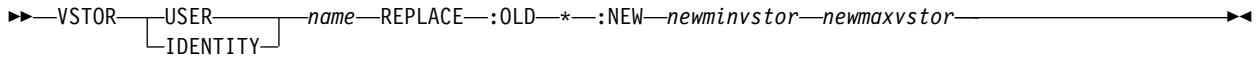
where:

vrm.nn
is the release and update level of the exit (for example, 640.01).

VSTOR

Use the VSTOR options to modify the virtual storage size of a user or identity.

VSTOR Options Syntax



where:

name
is the user or identity name.

:OLD * :NEW
specifies to replace all old information with the new information that follows.

newminvstor
is the new minimum virtual storage value.

newmaxvstor
is the new maximum virtual storage value.

Note: If the current VSTOR values are larger than the new VSTOR values, they will not be changed. The calling program will be returned to with RC=1

Return codes

These are the return codes that the exit program should use when returning control to the calling installation upgrade utility. In general, 0 is a successful return code, return codes 1-7 are reserved for warning messages, and return codes of 8 and higher are used for an error condition that requires the upgrade process to stop.

The following defines the return codes that should be returned by the exit to the calling program. No other return codes should be used.

0 Function requested completed successfully.

1 Directory update was already in place so no action taken.

2-7 Reserved for future use. Do not use.

8 General error (not defined by the installation upgrade utilities).

9 Version not compatible.

10 Directory manager not functional.

11 Userid not authorized for directory manager command(s).

12 The requested update is not recognized.

13 Setup processing failed.

14 Rollback failure.

15 Logging failure.

19 Insufficient space.

20 Directory manager timeout.

21 Userid not found in directory.

22 Userid already locked.

23 Userid was not locked.

24 Unexpected error trying to GET userid.

Coding sample for acquiring the contents of a data stem

The content of the data stem can be acquired using a CMS PIPELINE command, as illustrated in this REXX coding sample:

```
/*--------------------------------------------------------------------------*/
/* Obtain input arguments.                                                  */
/*--------------------------------------------------------------------------*/
Parse Arg Input 1 CallerName Keyword DataStem DataCount .
...
/*--------------------------------------------------------------------------*/
/* Acquire the data that pertains to the given keyword, via a CMS PIPELINE  */
/* command, and perform basic confirmation that this command has succeeded. */
/*--------------------------------------------------------------------------*/
'PIPE' '(Name Get_Stem_Data)' ,
  'Stem' DataStem '1' ,
  '| Stem DMX_data.'
If (rc <> 0) | (Symbol('DMX_DATA.0') <> 'VAR')
  Then Do
   /* Error Handling...*/
  End
```

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Glossary

For a list of z/VM terms and their definitions, see *z/VM: Glossary*.

The z/VM glossary is also available through the online z/VM HELP Facility, if HELP files are installed on your z/VM system. For example, to display the definition of the term "dedicated device", issue the following HELP command:

```
help glossary dedicated device
```

While you are in the glossary help file, you can do additional searches:

- To display the definition of a new term, type a new HELP command on the command line:

  `help glossary` *`newterm`*

  This command opens a new help file inside the previous help file. You can repeat this process many times. The status area in the lower right corner of the screen shows how many help files you have open. To close the current file, press the Quit key (PF3/F3). To exit from the HELP Facility, press the Return key (PF4/F4).
- To search for a word, phrase, or character string, type it on the command line and press the Clocate key (PF5/F5). To find other occurrences, press the key multiple times.

  The Clocate function searches from the current location to the end of the file. It does not wrap. To search the whole file, press the Top key (PF2/F2) to go to the top of the file before using Clocate.

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Bibliography

See the following publications for additional information about z/VM. For abstracts of the z/VM publications, see *z/VM: General Information*, GC24-6193.

Where to Get z/VM Information

z/VM product documentation and other z/VM information is available in IBM Knowledge Center - z/VM (www.ibm.com/support/knowledgecenter/SSB27U).

You can also obtain z/VM product publications from IBM Publications Center (www.ibm.com/e-business/linkweb/publications/servlet/pbi.wss).

z/VM Base Library

Overview

- *z/VM: License Information*, GC24-6200
- *z/VM: General Information*, GC24-6193
- *z/VM: Glossary*, GC24-6195

Installation, Migration, and Service

- *z/VM: Installation Guide*, GC24-6246
- *z/VM: Migration Guide*, GC24-6201
- *z/VM: Service Guide*, GC24-6247
- *z/VM: VMSES/E Introduction and Reference*, GC24-6243

Planning and Administration

- *z/VM: CMS File Pool Planning, Administration, and Operation*, SC24-6167
- *z/VM: CMS Planning and Administration*, SC24-6171
- *z/VM: Connectivity*, SC24-6174
- *z/VM: CP Planning and Administration*, SC24-6178
- *z/VM: Enabling z/VM for OpenStack (Support for OpenStack Liberty Release)*, SC24-6251
- *z/VM: Getting Started with Linux on z Systems*, SC24-6194
- *z/VM: Group Control System*, SC24-6196
- *z/VM: I/O Configuration*, SC24-6198
- *z/VM: Running Guest Operating Systems*, SC24-6228
- *z/VM: Saved Segments Planning and Administration*, SC24-6229
- *z/VM: Secure Configuration Guide*, SC24-6230
- *z/VM: TCP/IP LDAP Administration Guide*, SC24-6236
- *z/VM: TCP/IP Planning and Customization*, SC24-6238
- *z/OS and z/VM: Hardware Configuration Manager User's Guide*, SC34-2670

Customization and Tuning

- *z/VM: CP Exit Customization*, SC24-6176
- *z/VM: Performance*, SC24-6208

Operation and Use

- *z/VM: CMS Commands and Utilities Reference*, SC24-6166
- *z/VM: CMS Primer*, SC24-6172
- *z/VM: CMS User's Guide*, SC24-6173
- *z/VM: CP Commands and Utilities Reference*, SC24-6175
- *z/VM: System Operation*, SC24-6233
- *z/VM: TCP/IP User's Guide*, SC24-6240
- *z/VM: Virtual Machine Operation*, SC24-6241
- *z/VM: XEDIT Commands and Macros Reference*, SC24-6244
- *z/VM: XEDIT User's Guide*, SC24-6245

Application Programming

- *z/VM: CMS Application Development Guide*, SC24-6162
- *z/VM: CMS Application Development Guide for Assembler*, SC24-6163
- *z/VM: CMS Application Multitasking*, SC24-6164
- *z/VM: CMS Callable Services Reference*, SC24-6165
- *z/VM: CMS Macros and Functions Reference*, SC24-6168
- *z/VM: CMS Pipelines User's Guide and Reference*, SC24-6252
- *z/VM: CP Programming Services*, SC24-6179
- *z/VM: CPI Communications User's Guide*, SC24-6180
- *z/VM: Enterprise Systems Architecture/Extended Configuration Principles of Operation*, SC24-6192

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- *z/VM: Language Environment User's Guide*, SC24-6199
- *z/VM: OpenExtensions Advanced Application Programming Tools*, SC24-6202
- *z/VM: OpenExtensions Callable Services Reference*, SC24-6203
- *z/VM: OpenExtensions Commands Reference*, SC24-6204
- *z/VM: OpenExtensions POSIX Conformance Document*, GC24-6205
- *z/VM: OpenExtensions User's Guide*, SC24-6206
- *z/VM: Program Management Binder for CMS*, SC24-6211
- *z/VM: Reusable Server Kernel Programmer's Guide and Reference*, SC24-6220
- *z/VM: REXX/VM Reference*, SC24-6221
- *z/VM: REXX/VM User's Guide*, SC24-6222
- *z/VM: Systems Management Application Programming*, SC24-6234
- *z/VM: TCP/IP Programmer's Reference*, SC24-6239
- *Common Programming Interface Communications Reference*, SC26-4399
- *Common Programming Interface Resource Recovery Reference*, SC31-6821
- *z/OS: IBM Tivoli Directory Server Plug-in Reference for z/OS*, SA76-0169
- *z/OS: Language Environment Concepts Guide*, SA22-7567
- *z/OS: Language Environment Debugging Guide*, GA22-7560
- *z/OS: Language Environment Programming Guide*, SA22-7561
- *z/OS: Language Environment Programming Reference*, SA22-7562
- *z/OS: Language Environment Run-Time Messages*, SA22-7566
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- *z/OS MVS Program Management: Advanced Facilities*, SA23-1392
- *z/OS MVS Program Management: User's Guide and Reference*, SA23-1393

Diagnosis

- *z/VM: CMS and REXX/VM Messages and Codes*, GC24-6161
- *z/VM: CP Messages and Codes*, GC24-6177
- *z/VM: Diagnosis Guide*, GC24-6187
- *z/VM: Dump Viewing Facility*, GC24-6191
- *z/VM: Other Components Messages and Codes*, GC24-6207
- *z/VM: TCP/IP Diagnosis Guide*, GC24-6235
- *z/VM: TCP/IP Messages and Codes*, GC24-6237
- *z/VM: VM Dump Tool*, GC24-6242
- *z/OS and z/VM: Hardware Configuration Definition Messages*, SC34-2668

z/VM Facilities and Features

Data Facility Storage Management Subsystem for VM

- *z/VM: DFSMS/VM Customization*, SC24-6181
- *z/VM: DFSMS/VM Diagnosis Guide*, GC24-6182
- *z/VM: DFSMS/VM Messages and Codes*, GC24-6183
- *z/VM: DFSMS/VM Planning Guide*, SC24-6184
- *z/VM: DFSMS/VM Removable Media Services*, SC24-6185
- *z/VM: DFSMS/VM Storage Administration*, SC24-6186

Directory Maintenance Facility for z/VM

- *z/VM: Directory Maintenance Facility Commands Reference*, SC24-6188
- *z/VM: Directory Maintenance Facility Messages*, GC24-6189
- *z/VM: Directory Maintenance Facility Tailoring and Administration Guide*, SC24-6190

Open Systems Adapter/Support Facility

- *Open Systems Adapter-Express Customer's Guide and Reference*, SA22-7935
- *Open Systems Adapter-Express Integrated Console Controller User's Guide*, SA22-7990
- *Open Systems Adapter-Express Integrated Console Controller 3215 Support*, SA23-2247
- *Open Systems Adapter-Express3 Integrated Console Controller Dual-Port User's Guide*, SA23-2266

Performance Toolkit for VM

- *z/VM: Performance Toolkit Guide*, SC24-6209
- *z/VM: Performance Toolkit Reference*, SC24-6210

RACF Security Server for z/VM

- *z/VM: RACF Security Server Auditor's Guide*, SC24-6212
- *z/VM: RACF Security Server Command Language Reference*, SC24-6213

- *z/VM: RACF Security Server Diagnosis Guide*, GC24-6214
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- *z/VM: RACF Security Server Messages and Codes*, GC24-6217
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Remote Spooling Communications Subsystem Networking for z/VM

- *z/VM: RSCS Networking Diagnosis*, GC24-6223
- *z/VM: RSCS Networking Exit Customization*, SC24-6224
- *z/VM: RSCS Networking Messages and Codes*, GC24-6225
- *z/VM: RSCS Networking Operation and Use*, SC24-6226
- *z/VM: RSCS Networking Planning and Configuration*, SC24-6227

Prerequisite Products

Device Support Facilities

- *Device Support Facilities: User's Guide and Reference*, GC35-0033

Environmental Record Editing and Printing Program

- *Environmental Record Editing and Printing Program (EREP): Reference*, GC35-0152
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