



@server

iSeries

Install the OS/400 release and related software





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Chapter 1. Install the OS/400 release and related software

Use the information in this topic to install the iSeries^(TM) OS/400^(R) release, part of the OS/400 release, or licensed programs. If you are installing software as part of an upgrade, be sure to go to the Upgrades topic in the Information Center.

The following topics represent the spectrum of tasks pertaining to software installation and upgrades:

Chapter 4, “Concepts for software installation” on page 7

Find out the basics of installing software: your software order, what to do when you skip a release, software installation scenarios, the types of devices used to install, globalization considerations, and how some conversions could affect your installation time.

Chapter 5, “Install the OS/400 release” on page 21

The process of installing the OS/400 release involves three phases: (1) Plan to install the OS/400 release (in the Information Center). (2) Critical preparation tasks (also in the Information Center). (3) Tasks for actually doing the installation (in PDF format and also the printed version of the *Software Installation* manual).

Chapter 9, “Install software other than the OS/400 release” on page 61

The procedures for installing software other than the OS/400 operating system include installing licensed programs, installing a new secondary logical partition, installing a secondary language, or changing a primary language.

Chapter 10, “Software reference” on page 63

This topic contains a collection of supporting information about the concepts and tasks described in the category. Topics include licensed programs releases and sizes, OS/400 interoperability, and other licensed program reference information.

Chapter 11, “Troubleshoot software installation problems” on page 83

This information describes common problem scenarios, recovery methods, and ways to get help if you encounter a problem during software installation.

See the Chapter 2, “What’s new for V5R2 software installation information” on page 3 topic for the new and changed information for software installation and the Chapter 3, “Print this topic” on page 5 topic if you want to print the PDF for this entire topic.

Before you begin to install software

Successful software installation requires knowledge of the following iSeries tasks and topics:

- Familiarization with Operations Console or twinaxial console connections. To perform the software installation steps, you need to know how your server is connected.
- Understand how to use the control panel. Examine the control panel for your new server. Ensure that you and the operators who perform the software

installation know how to use the control panel functions. Basic system operations contains information on how to operate the control panel.

- Familiarization with the different “Types of software installation devices” on page 16 (CD-ROMs, DVDs, and virtual optical devices). The installation tasks are different based on the media that you use.
- Be able to perform server administration tasks (basic system operations): restart your server, sign on and off, use the command interface and iSeries Navigator, install fixes, change the system operation mode and initial program load (IPL) source on the system unit control panel, and analyze server problems.

Once your software installation is complete, you will need to develop a strategy for managing and maintaining your software. For information about software fixes (or program temporary fixes, PTFs), software licenses and license keys, and software distribution, go to the Software and licensed programs topic in the Information Center.

Chapter 2. What's new for V5R2 software installation information

Certain information that was in the Software Installation manual is being reengineered for delivery over the Web. For this release, the Chapter 1, "Install the OS/400 release and related software" on page 1 topic contains many of the concepts regarding software installation and the preparation tasks to consider before you schedule your iSeries installation. Troubleshooting information, licensed-program release and size information, and other software reference information are also included.


The following changes that relate to software installation were made this release:

- **Image catalog installation**

In addition to using optical media, tape, or an alternate installation device to install a new release, you now have the option of using "Scenario: Prepare to install from an image catalog" on page 53. Image catalog installation is particularly useful for optical media verification, for unattended installations, and for upgrading software within a network.

- **Online software agreements**


If you have non-IBM licensed programs to install on your server, you might see an online software agreement. If you accept the software agreement, you can continue to install the program. Software and licensed programs describes how to use, manage, and generate software agreements.

To find other information about what's new or changed this release, see the Memo to Users .

Chapter 3. Print this topic

To view or download the PDF version of this topic, select Install the OS/400 release and related software (about 230 KB or 75 pages). A printed version of this PDF is also sent with software upgrade orders or new hardware orders.


The “Software installation readiness checklist” on page 26 within this topic contains a summary of the major task categories that you need to do before you begin to install your software. You can print just this page by using the print function of your browser.

Use the Software Installation  manual (about 250 pages) together with this Information Center topic. This manual is also shipped in printed format with your software order and contains the procedures to install OS/400 and licensed programs. It also contains procedures to add secondary languages, additional licensed programs, and to change the primary language on the server.

You can view or download these related topics in the Information Center:

- Basic system operations (about 230 KB) contains the following topics:
 - iSeries basic operations
 - OS/400 concepts
 - Analyzing and reporting system problems
- The Software and licensed programs (about 224 KB or 65 pages) category in the Information Center indicates how you can manage and maintain fixes and licensed programs in your network.
- The Backup and recovery print these topics contains several PDFs on how to plan a backup and recovery strategy, how to set up disk protection for your data, how to back up your system, and how to control your system shutdown in the event of a failure. It also includes information about the Backup, Recovery, and Media Services plug-in to iSeries^(TM) Navigator.

The related manual to the Backup and recovery category, Backup and Recovery

Guide , provides general information about recovery and availability options for the iSeries server. It describes the options available on the system, compares and contrasts them, and tells where to find more information about them.

Saving PDF files

To save a PDF on your workstation for viewing or printing:

1. Right-click the PDF in your browser (right-click the link above).
2. Click **Save Target As...**
3. Navigate to the directory in which you would like to save the PDF.
4. Click **Save**.

Downloading Adobe Acrobat Reader

If you need Adobe Acrobat Reader to view or print these PDFs, you can download a copy from the Adobe Web site

(www.adobe.com/products/acrobat/readstep.html) .

Chapter 4. Concepts for software installation

You and IBM^(R) together manage the use, documentation, and transfer of licensed programs. Following is a conceptual look at iSeries software installation.

“Software installation terminology”

Ensure that you are familiar with the new terms introduced this release.

“Information resources” on page 9

Find out what resources you can expect to receive with your software orders and how the materials are to be used.

“Contents of a software order” on page 9

When you order software from IBM, you can expect to receive the media distribution set, software license key sheet, and a series of software licensing documents including the International Program License Agreement (IPLA).

“Considerations for skipping a release” on page 12

If you plan to skip a release, such as performing an upgrade from V4R5 to V5R2 and skipping V5R1, you need to be aware of changes from the skipped release that could affect your programs and system operations.

“Considerations for software installation” on page 12

Use this information to understand basic considerations of the server during installation processes.

“Software installation scenarios” on page 15

Use this information to understand the various procedure paths that are included within software installation.

“Types of software installation devices” on page 16

Understand the different devices used to upgrade or install the new release on the server.

“Globalization considerations” on page 16

Find out about the installation of national languages on your iSeries server.

“Object conversions” on page 18

When you install the operating system, you need to plan time for certain object conversions from previous releases. The amount of time that is required could be significant depending on the number and size of the object types that you have on your server.

Software installation terminology

The following terms are new for V5R2. For more terms and concepts, you can access the Information Center glossary.

image catalog

An object on the server that can contain up to 64 image catalog entries. Each catalog is associated with one user-specified integrated file system directory. The system-recognized identifier for the object type is *IMGCLG. Image catalogs can have the following statuses:

ready Pertaining to a status where all the loaded and mounted image catalog entries are available for use by the active virtual optical device. Any image catalog entry with a status of unloaded is not available for use by the virtual optical device. The image catalog can be made *ready* by using the LODIMGCLG (Load Image Catalog) command with OPTION(*LOAD).

not ready

Pertaining to a status where all images in the image catalog are not available for use by the virtual optical device. The status of the individual image catalog entry images in the image catalog reflects either the last status for the catalog before being made *not ready* from *ready* or the future status for catalogs about to be made ready. The image catalog can be made *not ready* by using the LODIMGCLG command with OPTION(*UNLOAD).

image catalog entry

A position (index) within an image catalog that contains information about an optical image file (byte-stream file) that is located in the image catalog directory. Examples of image catalog entry information include optical image file name, volume identifier, index position in the catalog, and a text description of the image. Image catalog entries can have the following statuses:

loaded

Pertaining to a status where the optical image associated with the selected image catalog entry is active or loaded in the selected virtual optical device. The installation software will be able to access this image during the installation process.

mounted

Pertaining to a status where the optical image associated with the selected image catalog entry is active or loaded in the active virtual optical device. The mounted image is the currently available optical image that can be seen by using the Work with Optical Volumes (WRKOPTVOL) command. One optical image can be in mounted status at a time. The installation software will start with this image during the installation process.

unloaded

Pertaining to a status where the optical image associated with the selected image catalog entry that is not active or not loaded in the active virtual optical device. Only image catalog entries with a status of mounted or loaded can be accessed through the virtual optical device.

index A relative number (1-64) of an image catalog entry within an image catalog.

optical image file




A byte-stream file that contains a bit-for-bit mapping of an ISO9660 format CD-ROM or Universal Disk Format (UDF) DVD.

virtual optical device

An optical device of type 632B that supports virtual optical images. This device can be created with the Create Device Description (Optical) (CRTDEVOPT) command by using a resource name (RSRCNAME) of *VRT. Only one virtual optical device can be active at a time on the server.

Information resources

The following resources pertain to the installation of your new software. Some resources are shipped with the distribution media for your new software. “Identify and review information resources” on page 28 contains information on how to access all the software installation resources.

- **Software Installation** 
This manual is your primary source. The Prerequisite and Related Information section in the Software Installation manual describes other publications that may be useful.
- **Memo to Users** 
This document provides information about software and hardware changes that could potentially affect your system operations. The *Memo to Users* describes only significant changes in the new release that could potentially affect your programs or system operations. This document has also been referred to as the *Memorandum to Application System/400 Users* or the *Memo to AS/400 Users*.
- **Setup and Operations CD-ROM**
With every new hardware order, you receive *iSeries Setup and Operations*, SK3T-4098. This CD-ROM contains IBM  iSeries Access for Windows and the EZ-Setup wizard.
- “Use Preventive Service Planning (PSP) information” on page 35
To keep informed of the latest information about conditions that could impede your software installation, you need the most recent edition of the preventive service planning information.
- **iSeries PTF shipping information letter**
This letter contains the instructions for installing the cumulative program temporary fix (PTF) package. The letter and the cumulative (CUM) PTF package ship with the software media for the new release. IBM highly recommends that you Install the cumulative PTF package. For information about the most recent CUM package, refer to the Order fixes topic.

Contents of a software order

This information describes what you can expect to receive with your software orders and how the materials are to be used.

“Software licensing documents” on page 10

The various documents that you receive with your software release order, such as the software license key sheet, Proof of Entitlement, International Program License Agreement, and the Licensed Information Document.

“Media distribution set” on page 11

Software products that you receive for the release.

“Cumulative PTF packages” on page 38

IBM ships a cumulative PTF (fix) package when you specify this on your order for a release upgrade.

“Individual product documentation” on page 11

You might have received material that contains information unique to the installation of a certain product on your server.

Software licensing documents

The following describes the agreements and documents for IBM products that might come with your software order. These documents contain important information concerning the use, management, and transfer of licensed programs.

Ensure that you read and understand all software license agreements and documents before you use the programs.

Store the agreements and documents in a secure location and be sure to pass them on if you ever transfer a program.

Proof of Entitlement

The Proof of Entitlement (POE) serves as transferable evidence of product licensure with use restrictions noted either on the POE or on the original invoice (depending on the country or region). The POE is evidence of the owner’s authorization to use the program. It is evidence of eligibility for any version or release updates under software subscription, warranty services, future upgrade program prices (if announced), and potential special or promotional opportunities. A POE is included with new customer orders only. You will not receive a POE with a software upgrade.

The International Program License Agreement

The International Program License Agreement (IPLA) provides a non-exclusive license to use a software product that has a warranty.

International License Agreement for Non-Warranted Programs

This agreement is similar to the IPLA but is used for IBM licensed programs that have no warranty.

Licensed Information Document

The Licensed Information Document (LID) contains specific license information and additional restrictions for a product.

International License Agreement for Evaluation of Programs

The Evaluation of Programs provides a nonexclusive, nontransferable license to use a program only for internal evaluation, testing, or demonstration purposes, on a trial or “try-and-buy” basis.

Software license key sheet

For each keyed IBM product or keyed IBM product option that you order, you receive a software license key sheet. This applies to both new and upgraded software.

See Software agreements and licensing concepts for a general description of how software license keys are used. For unique licensing applications regarding logical partitions, see Software licensing and licensed programs for logical partitions.

Media distribution set

Following is a description of the media distribution set that you receive with your software order.

The licensed programs on the standard set and keyed set (iSeries keyed products) come in your primary language. If you order secondary languages, they come on extra secondary language media.

If you order other licensed programs, which are in addition to the standard set and keyed set, they come on their own separate media. In this case, all supported languages, not just one secondary language, come on this same media.

Standard set

The “Standard set products” on page 76 comes with every server software or upgrade order. It contains the hardware and software components to install on your server. This includes Licensed Internal Code, OS/400, its no-charge options, and no-charge (bonus) licensed programs and options. The OS/400 operating system has all the applications necessary for the basic operations of your server. In addition, it may contain more programs than you want.

Keyed set

The “Keyed set products” on page 78 comes with the standard set. It contains keyed products and program options. You can evaluate these programs for a 70-day trial period. Within 70 days, you must apply license keys to keep the programs operational. Once you purchase the use of a licensed program and load the license key, the licensed program will remain in operation for continual use.

Single products (if ordered)

When specifically ordered, licensed programs that are not part of the standard set and keyed set arrive on separate media with your software order. You may install these licensed programs using the automatic installation procedure. Some of these licensed programs might come with their own installation instructions, and some might have limited language support.

Secondary languages (if ordered)

You can order secondary languages separately from the primary language. Each language comes on separate optical media or as a set of optical media. You specify the secondary language during the installation procedure.

Fixes (or program temporary fixes, PTFs, if ordered)

IBM ships a cumulative PTF package when you order a release upgrade.

Informational set

IBM provides technical and setup information on optical media with your software order. This information includes the Information Center and the PDF versions of iSeries manuals (an online version of iSeries books).

Individual product documentation

You might have received additional letters to users for individual products. Such material may contain information unique for that product that could affect its installation. Be sure to check these additional sources. When you install a product

for the first time, you may need to customize the product or complete additional actions before the product will work. Look for this type of information in your product order.

Considerations for skipping a release

If you are skipping a release level of OS/400, you should review the *Memo to Users* for the release that you are skipping. This will ensure that you are aware of changes that occurred in the skipped release that could also affect your programs and system operations. See “Identify and review information resources” on page 28 for directions on how to get access to the *Read This First and Memo to Users* from previous releases. (The *Read This First* is not available separately after V4R5.)

Object conversions

Conversions that occur when you install a new release provide improved performance, reliability, and support. The number and type of conversions that occur, however, can have a significant effect on your installation time and storage requirements.

More conversions occur if you are skipping a release. Consider both the conversions in the release that you are skipping and the new release. “Object conversions” on page 18 contains more information on the impacts to your server.

Performance data collection

With any software release, the support for new functions can cause an incremental change (increase or decrease) in performance for some workloads. IBM makes a significant effort to minimize negative effects, and in most cases a change in performance is not observed. However, in a skip-release upgrade, there is a higher potential that the compound effect of incremental performance differences will be observed.

To understand the performance characteristics of an upgrade, collect performance data both before and after the upgrade is complete. Following are two recommended performance collections:

- Collect general performance data for one or more days by using Collection Services. “Gather performance data for benchmark” on page 45 contains information on ways to start Collection Services.
- Collect specific profile data for approximately an hour by running the following program in a batch job during a period of high activity on the server:

```
PGM (mypgm)
ADDPEXDFN DFN(myprof) TYPE(*trace) JOB(*all) TASK(*all) INTERVAL(1)
TRCTYPE(*prfdta) MAXSTG(10000) TRCFULL(*stoptrc)
MONMSG CPF10 /*definition myprof already exists*/
STRPEX SESSION(myprofssn) DFN(myprof)
DLYJOB 3600
ENDPEX SESSION(myprofssn) OUTPUT(*LIB)
ENDPGM
```

Save this data from both collections for future reference.

Considerations for software installation

This topic provides an overview of special considerations for software installation when you replace a release.

“Installation and IBM-supplied objects”

When you replace your software with the new release, the iSeries server keeps changes that you made to some IBM-supplied objects.

“Compressed objects and storage space” on page 14

All of the licensed programs and some objects of the operating system ship in a compressed form. This requires less storage space on your server. The server decompresses objects according to certain criteria, which could affect the performance of the server.

“Files that the server deletes during installation” on page 14

Logical files that were created over IBM-supplied physical files in QSYS are affected when you replace a release.

Installation and IBM-supplied objects

When you replace your software with the new release, the system keeps the changes that you made to some IBM-supplied objects. Certain job descriptions and subsystem descriptions are restored during the installation process. The installation process creates these libraries (if they do not already exist):

- QINSYS
- QINMEDIA
- QINPRIOR

The system saves your customized descriptions in library QINSYS. When the descriptions are installed into QSYS, the system compares those values with the descriptions in QINSYS. If there are any differences, the system uses your customized value from QINSYS. If there are conflicts in certain values, the system uses the value from the installation media, and the conflicting value remains in QINSYS. QINMEDIA holds the description from the installation media. QINPRIOR holds the descriptions from the prior release level so that you can compare the current and previous release descriptions.

Use the PRTSYSINF command before you upgrade to have a copy of the IBM-supplied objects. After the upgrade you can change these objects back to the previous customization.

IBM-supplied objects that retain customized information

If you have made changes to any of the IBM-supplied descriptions shown in the following table, the system keeps your changes.

Job descriptions	Subsystem descriptions
QCTL (Controlling subsystem job description)	QBASE (Basic controlling)
QCTLIJBD (Controlling subsystem ICG job description)	QBATC (Batch)
QESAUTON (Automatic problem notification)	QCMN (Communications)
QFSIOPWK (File server I/O processor)	QCTL (Controlling subsystem)
QMSF (Used by QPGMF job)	QINTER (Interactive)
QPDAUTOPAR (Used for automatic problem analysis)	QPGMR (Programmer)

Job descriptions	Subsystem descriptions
QQQTEMPS (DB2 for UDB for iSeries job description used by QSYSWRK)	QSNADS (Systems Network Architecture (SNA) Distribution)
QSPLERROR (Spooling error)	QSPL (Spooling subsystem)
QSTRUPJD (Auto start)	QSYSWRK (System subsystem)
QSYSWRK (System subsystem job description)	QUSRWRK (User subsystem)
QTMSNMP (Simple Network Management Protocol (SNMP) job description)	
QZMFEJBD (QSYSWRK autostart job entry)	


Compressed objects and storage space

All of the licensed programs and some objects of the operating system ship in a compressed form which requires less storage space on your system. System jobs (QDCPOBJx, where x is a number) automatically decompress these objects during the installation process if your system has sufficient unused disk storage. If enough storage space is not available, the system decompresses the objects when you use them, which could affect the performance of the system.

The server decompresses objects according to the following criteria:

- Greater than 750MB available storage
The system submits jobs to decompress all system objects just installed.
- 250-750MB available storage
The server decompresses only frequently-used objects automatically. Object-usage information (the number of days an object has been used and the last-used date) is used to identify frequently used objects. The server decompresses any object that was used at least five times when the last use was within the last 14 days. The server leaves the remaining low-use objects in compressed form.
 - This does not include decompression of objects that are shipped in the operating system and in library QSYS. The system resets usage information for those objects during the installation process. For all other licensed programs, the object usage information is kept during the installation process.
 - A call to a system program does not update its usage information; the system does not automatically decompress programs in constrained storage mode. However, high-use programs ship in decompressed form and are not considered able to be compressed.
- Less than 250MB available storage
The system does not submit the jobs and decompresses the objects as they are used.

Note: The QDCPOBJx system jobs may run for some time after the installation process completes. More information about compressing and decompressing

objects is available in the book CL Programming .

Files that the server deletes during installation

If you have created logical files over IBM-supplied physical files in QSYS, the logical files will be deleted during the installation process.

Software installation scenarios

The procedure that you use for software installation depends on what you plan to install.

Install software on a new server

If you just received a new server, the operating system might or might not be installed already.

Replace existing software

If you are replacing your existing software, you can use either automatic installation or manual installation to do this.

Automatic installation replaces your existing release with minimal user interaction. The language feature code on the distribution media is installed as the primary language on the server. The automatic installation process keeps the current environment and system values. The process adds all nonconfigured disk units to the system auxiliary storage pool (ASP) and retains the ASP configuration of previously configured disk units. The automatic installation process is recommended for use with most iSeries servers.

Manual installation interactively replaces your existing release by using the Work with Licensed Programs menu. Displays that require responses appear on the console. During a manual installation, you can change installation options. Use the manual installation process if you are doing any of the following installation procedures:

- Adding a disk device using mirrored protection, device parity protection, or user auxiliary storage pools.
- Keeping a disk device as a nonconfigured device. (The automatic installation will add all nonconfigured disk devices to the system storage pool.)
- Changing the environment (OS/400 or System/36), system values, language feature code, or configuration values.
- Planning to use an alternate installation device when you upgrade.
- Creating logical partitions during the installation process.
- Using tapes created with the Save System (SAVSYS) command. (The SAVSYS command creates tapes that are meant for recovery.)

Add licensed programs

When you add additional licensed programs (in addition to those done already in the methods mentioned above) or optional parts of licensed programs, you use the method done through option 11 (Install licensed programs) of the Work with Licensed Programs (LICPGM) menu. Typically you use option 11 when you need to install a new licensed program or to replace a single licensed program.

Add or change globalization support

When you add a secondary language, you add additional language objects for the licensed programs that are installed on your system.

When you change the primary language, you replace the existing language objects. Depending on the procedure that you use, you could also be replacing program objects.

Types of software installation devices

Following are the different devices that you can use to install software:

- **Optical media**

The software distribution media that is shipped to customers is optical media (CD-ROM). This CD-ROM media can be used in CD-ROM, DVD-ROM, or DVD-RAM devices.

- **Image catalog**

You can use an image catalog to perform a software upgrade, install PTFs (fixes), or install single licensed programs that you receive on media. Installing with an image catalog has significant advantages when you want to do the following tasks:

- Validate your optical media before you install the release.
- Eliminate the handling of individual media during the installation (unattended installations).
- Upgrade software from an installation image delivered from a network or generated from IBM-supplied CD-ROM media.

- **Tape**

There may be times when tape media is used for installation. Examples include distribution media creation or certain backup and recovery scenarios.

- **Alternate installation device**

Certain situations in which older tape devices are used require that the alternate installation device function be used.

“Prepare the installation device and media” on page 52 contains further information on what you need to do with your media before you install a release.

Globalization considerations

The **primary language** is the national language that is installed on the system as the default language used to display and print information. The primary language is also used to service the system.

If you are planning to change your primary language only and not upgrade at the same time, use the manual installation process. To determine which installation process will work best for your situation, compare reasons in “Software installation scenarios” on page 15.

If the primary language is uppercase English (2938 or 2950), you need to type uppercase characters when you respond to system messages.

Secondary languages are one or more additional national languages that can be installed on the system to display and print information.

OS/400 Globalization contains more information about planning for and using national languages on your iSeries server.

Feature codes for your primary or secondary languages are listed in the topic, “National Language Version feature codes” on page 80.

- “Considerations for changing a primary language” on page 17
- “Considerations for installing additional secondary languages” on page 17


Considerations for changing a primary language

You can change the primary language of your system in these two ways:

- By using secondary language media to replace the language objects.
- While replacing a release using the manual installation process.

You cannot change your primary language to a language you currently have installed as a secondary language on your system. You must delete the secondary language before you can change it to your primary language. Use Option 22 from the Work with Licensed Programs menu to delete a secondary language.

If you do the tasks from the chapter on changing your primary language in

Software Installation  , the release and modification of your system must be the same as the release and modification of your secondary language media. You need both the media that contains OS/400 (B29xx_01) and the media that contains the secondary language (N29xx).

When changing your primary language from a single-byte character set (SBCS) to a double-byte character set (DBCS) or from a DBCS to SBCS, refer to OS/400 globalization. The installation process takes significantly more time than a typical software installation.


Make sure that you configure your console device to support the default code page of the primary language you are going to install. Change the console device to one that supports the code page of the new primary language before you install a new release.

While F type keyboards are supported for many national language versions, they are not supported for Czech, Farsi, Hungarian, Russian, Polish, Slovakian, or Thai. If you change your primary language to one of these national language versions, the system console cannot have an F type keyboard. Change the system console to a device that does not have an F type keyboard before installing any of these national language versions as a primary language. If you do not, an error occurs and the installation fails.

Considerations for installing additional secondary languages

Attention: If you are installing a double-byte character set (DBCS) secondary language, you must have a DBCS primary language installed on your system. You can install a single-byte character set (SBCS) secondary language on a system with a DBCS primary language.

The process to add a secondary language installs only one secondary language at a time. If you need to add more than one secondary language, you need to perform the procedure to install a secondary language multiple times. Chapter 10 of the

Software Installation  manual contains the following two procedures to install secondary languages:

- Using the Work with Licensed Programs Menu shows how to install secondary language objects for OS/400 and installed licensed programs. Use this procedure when you are installing a secondary language after installing the new release or when you are adding additional secondary languages to the system.
- Using the Restore Licensed Program Command shows how to restore a secondary language for only one licensed program or optional part. Use this procedure when you want to restore a secondary language for only one licensed

program and when you are installing secondary language objects for licensed programs that you installed using the RSTLICPGM command.

Only the secondary language objects for the installed licensed programs are installed. If you add a licensed program or an optional part after the secondary language is installed, you will not have the secondary language objects for licensed programs you add later. To get the new language objects, install the secondary language for the added licensed program.

Before you replace a release

When you plan to install a new release, consider the following:

- Plan to install the new release of any secondary language you have currently installed on your system.

To save storage space, delete secondary languages you no longer need. If your system was shipped from a different country or region, you may not need the secondary languages that are installed on the system.

If you want to delete a secondary language for all of the licensed programs installed on your system, use option 22 on the Work with Licensed Program menu. If you want to delete a secondary language for only one licensed program, use the Delete Licensed Program (DLTLICPGM) command.

- If you are changing the primary language to a language that is already installed as a secondary language, **delete the secondary language** before you install it as a primary language.
- The QSECOFR user profile cannot have a secondary language library at a previous release in its library list when you install a new release. If you have an initial program for the QSECOFR user profile, be sure it does not add a secondary language library to the system library list. (“Check the QSECOFR user profile” on page 43 ensures that you do this.)
- If you added a secondary language library (QSYS29xx) to the system values QSYSLIBL or QUSRLIBL, use the WRKSYSVAL command to remove the library from the library list before you install a new release. (“Change certain system values (QSYSLIBL, QUSRLIBL, QALWOBJRST, or QVfyOBRST)” on page 41 ensures that you do this.) OS/400 globalization also contains more information about secondary language libraries in user profiles.

Object conversions

Object conversions that occur when you install a new release provide improved performance, reliability, and support. The number and type of conversions that occur can have a significant effect on your installation time and storage requirements. Before you install a new release, you might need to gather information about specific object types on your server.

More conversions occur if you are skipping a release. Consider both the conversions in the release that you are skipping and the new release.

If you are replacing the V5R1 release with V5R2, only the information on database cross-reference files in this topic pertains. This entire topic pertains if you are skipping V5R1 and are replacing the V4R5 release with V5R2.

For V5R1, a number of structural changes to object types on the iSeries server occurred that require conversions when you replace the V4R5 release with V5R2 and consequently skip V5R1. In addition, if your system has database

cross-reference files from an earlier release, these files will need to be converted before you install the new release. When you install the operating system, you need to plan time for these object conversions. The amount of time that is required could be significant depending on the number and size of the object types that you have on your server.

The following table lists the object conversion types affected and the system reference codes (SRCs) that refer to the conversions taking place.

Conversion type	System reference code
Database cross-reference files	C900 2950
Spooled files	C900 29B0
User profiles	C600 4055
Directory files	C900 2AAC

The topic, “Install fixes used to estimate installation time (if upgrading from V4R5)” on page 40, describes the steps to apply the PTFs on your server before you upgrade. These PTFs contain estimator tools to help you predict how some of the V5R1 conversions might affect your installation time. The tool for spooled-file conversions also includes information on storage requirements.

More information on estimating the time for conversions is in Estimating Installation Time (Appendix D in the *Software Installation* manual).

Integrated-file-system conversion

In V5R2, an integrated file system *TYPE2 directory format is available. While the conversion from *TYPE1 to the *TYPE2 format is not going to automatically occur when replacing a previous release with V5R2, it might occur when you install a future release. Therefore, consider performing this conversion during the installation of V5R2 or sometime before you install a future release. *TYPE2 directories includes more information on the directory format.

Chapter 5. Install the OS/400 release

The iSeries software installation process involves the following three phases:

Chapter 6, “Plan to install the OS/400 release” on page 23

Create a software plan for your server.

Chapter 7, “Prepare to install the OS/400 release” on page 25

Perform these preparatory tasks before you schedule your software installation.

Chapter 8, “Complete the installation of the OS/400 release” on page 59

Install your software and licensed programs.

These three phases include all possibilities of software installation. Depending on what you need to install, your installation process might not include all these steps.

Chapter 6. Plan to install the OS/400 release




To save a considerable amount of time and help your installation run smoothly, follow the recommended planning tasks before you install the operating system.

Complete the “Server planning: Software” checklist tasks as part of the overall steps to create a software plan for your server:

- Identify release-to-release impacts to your server.
- Evaluate disk storage space requirements.
- Identify available licensed programs and their sizes.
- Identify possible upgrade paths for licensed programs.
- Evaluate release interoperability.

Server planning: Software


This information introduces the tasks that are recommended for software planning. More specifically, this topic helps you plan to install a new release of the iSeries OS/400 operating system, and it links to more detailed information. Before you begin your planning tasks, be sure you have completed the items in the following checklist:

Before you begin
<input type="checkbox"/> Ensure that this release can be installed on your hardware. The System Handbook  describes current hardware models for the release and describes the software releases that can be installed on them.
<input type="checkbox"/> Know the minimum release requirements for each server or logical partition. A load-source disk unit of 2 GB or larger must be installed and the minimum memory size is 128 MB.
<input type="checkbox"/> Become familiar with changes in the release that could affect your programs or system operations. These are described in the Memorandum to Users  .
<input type="checkbox"/> Become familiar with the Chapter 1, “Install the OS/400 release and related software” on page 1 topic in the Information Center.
<input type="checkbox"/> Be sure you have the latest iSeries Access service packs installed on the PC you are using as a console. More information on service packs is on the iSeries Access Service Packs  Web page.
<input type="checkbox"/> Be sure you have the latest fixes installed. More information on fixes is available in the “Ensure you have required software fixes (or PTFs)” on page 35 topic.

Software planning tasks

Use the following resources to build a complete plan for the OS/400 release and any additional licensed programs. Refer to the checklist at the conclusion of this page for the required elements of your software plan.

1. Identify release-to-release impacts to your server.

Read the Memorandum to Users  to understand changes that could affect the operating system and existing licensed program functions.

2. **Evaluate disk storage space requirements.**
 “Ensure the server meets disk storage requirements” on page 30 before you start to install or replace software.
3. **Identify available licensed programs and their sizes.**
 Use the “Licensed program releases and sizes” on page 63 topic in the Information Center to identify the current compatible releases and storage requirements for available licensed programs.
4. **Identify possible upgrade paths for licensed programs.**
 Use the “Licensed programs no longer supported at V5R2” on page 80 topic to identify licensed programs that are no longer available at this release and their replacements where applicable.
5. **Evaluate release interoperability.**
 Review the “Release interoperability” on page 72 topic if you have several iSeries servers in a network, if data is exchanged between servers, or if you save and restore objects.


When you have completed the tasks identified in this topic, you should have constructed a software plan that identifies the following elements:

When you are finished
<input type="checkbox"/> Record a plan for disk capacity to handle storage requirements of your software solution. This analysis might cause changes to your software or hardware order.
<input type="checkbox"/> Record a strategy for eliminating hardware that is not compatible with your target software release.


Chapter 7. Prepare to install the OS/400 release

Careful, complete, and early preparation saves a considerable amount of time and can help make your software installation for a complete software release upgrade on your system run smoothly.

Before you begin your preparation tasks, make sure that you have evaluated the following:

- “Release interoperability” on page 72
- The server model requirements for installing this release. This information is included in the iSeries Handbook .
- “Ensure the server meets disk storage requirements” on page 30

Perform these preparatory tasks before you schedule your installation. To do the tasks in this topic, you will need to sign on as security officer (QSECOFR user profile). Allow ample time (a few weeks or days before the installation) to

complete these tasks and then go to the Software Installation  manual to perform the actual installation tasks.

If you are setting up logical partitions, you will need to plan in advance of your installation and have a basic understanding of logical partitions plus your software and hardware requirements. Refer to Plan for logical partitions. You can also have different release levels on different partitions. For directions on how to do these correctly, see Manage logical partitions.

To help consolidate and verify that you have completed all the preparation tasks for software installation, use the “Software installation readiness checklist” on page 26.

Consider all aspects of the following major tasks and do not overlook any item.

1. **“Verify the contents of your software order” on page 27**
Verify that you have received everything for the installation.
2. **“Ensure the server meets disk storage requirements” on page 30**
To make more efficient use of your storage, clear your system of items you no longer require before you estimate how much storage you need. To allow for expansion on your server, ensure that you have adequate disk storage.
3. **“Prepare the server for software installation” on page 34**
Follow these steps to ensure your server is ready for installation.
4. **“Complete required initial installation tasks” on page 47**
Verify that your installation will go smoothly by following these final steps before you save your system and start the installation.
5. **“Save the server” on page 57**
Perform this step before you begin to install the OS/400 release or other software.

The appendixes in the Software Installation  manual also provide useful general information on software installation.

Software installation readiness checklist

Following is a summary of the major task categories that you need to do before you begin to install your software.

Before you begin
<input type="checkbox"/> Know your current strategy for connecting to iSeries. Your current connection strategy will influence your planning activities. Refer to the Connecting to iSeries topic in the Information Center for information about iSeries clients and consoles.
<input type="checkbox"/> Understand server administration tasks (basic system operations). To perform software installation tasks, you need to be able to restart your server, sign on and off, use the command interface and iSeries Navigator, install fixes, change the system operation mode and initial program load (IPL) source on the system unit control panel, and analyze server problems.
<input type="checkbox"/> Understand the different "Types of software installation devices" on page 16 (CD-ROMs, DVDs, and virtual optical devices). The installation tasks are different based on the optical media that you use.

Software installation tasks

Use the following resources to successfully prepare for and install the OS/400 release and other related software.

Software installation checklist
<input type="checkbox"/> "Verify the contents of your software order" on page 27.
<input type="checkbox"/> "Identify and review information resources" on page 28.
<input type="checkbox"/> "Verify that you have the correct optical distribution media" on page 29.
<input type="checkbox"/> "Media labels and their contents" on page 74.
<input type="checkbox"/> "Verify license key sheets for keyed products" on page 30.
<input type="checkbox"/> "Ensure the server meets disk storage requirements" on page 30.
<input type="checkbox"/> "Clean up disk storage space" on page 30.
<input type="checkbox"/> "Determine storage space required" on page 33.
<input type="checkbox"/> "Licensed program releases and sizes" on page 63.
<input type="checkbox"/> "Prepare the server for software installation" on page 34.
<input type="checkbox"/> "Ensure you have required software fixes (or PTFs)" on page 35.
<input type="checkbox"/> "Use Preventive Service Planning (PSP) information" on page 35.
<input type="checkbox"/> "Fix cross-reference summary lists" on page 37.
<input type="checkbox"/> "Cumulative PTF packages" on page 38.
<input type="checkbox"/> "Fix groups" on page 39.
<input type="checkbox"/> "Permanently apply program temporary fixes (PTFs)" on page 39.
<input type="checkbox"/> "Install fixes used to estimate installation time (if upgrading from V4R5)" on page 40.
<input type="checkbox"/> "Work with critical system values before you install software" on page 41.

Software installation checklist	
<input type="checkbox"/>	“Record and print all system values before you install software” on page 41.
<input type="checkbox"/>	“Change certain system values (QSYSLIBL, QUSRLIBL, QALWOBJRST, or QVIFYOBJRST)” on page 41.
<input type="checkbox"/>	“Verify the integrity of user-modified system objects” on page 42.
<input type="checkbox"/>	“Verify user profiles and check cross-reference files” on page 43.
<input type="checkbox"/>	“Check the QSECOFR user profile” on page 43.
<input type="checkbox"/>	“Ensure that the IBM-supplied product libraries are in the system ASP” on page 43.
<input type="checkbox"/>	“Remove user-created subdirectories in iSeries Access” on page 44.
<input type="checkbox"/>	“Ensure two-phase commit integrity before you install software” on page 44.
<input type="checkbox"/>	“Review considerations for minimizing software installation time” on page 45.
<input type="checkbox"/>	“Gather performance data for benchmark” on page 45.
<input type="checkbox"/>	“Complete required initial installation tasks” on page 47.
<input type="checkbox"/>	“Choose a software installation method and device” on page 48.
<input type="checkbox"/>	“Prepare for globalization” on page 48.
<input type="checkbox"/>	“Create a custom list of software to install” on page 48.
<input type="checkbox"/>	“Estimate installation time” on page 52.
<input type="checkbox"/>	“Prepare your console for software installation” on page 52.
<input type="checkbox"/>	“Prepare the installation device and media” on page 52.
<input type="checkbox"/>	“Stop the Integrated Netfinity Server and other application servers” on page 57.
<input type="checkbox"/>	“Save the server” on page 57
<input type="checkbox"/>	Chapter 8, “Complete the installation of the OS/400 release” on page 59.
<input type="checkbox"/>	Chapter 9, “Install software other than the OS/400 release” on page 61.

Verify the contents of your software order

To save you time and avoid frustration, verify that the contents of your software order are correct before you start installation.

“Identify and review information resources” on page 28

Become familiar with the important resources pertaining to the installation of your new software. Use these documents to plan your installation process.

“Verify that you have the correct optical distribution media” on page 29


If you are planning for a complete software release upgrade, ensure you have the correct media for your upcoming tasks.

“Verify license key sheets for keyed products” on page 30

Make sure that you have received a separate license key sheet for each of the the keyed IBM products or keyed IBM product options that you have ordered.

Identify and review information resources

The following resources pertain to the installation of your new software. Many of these resources are shipped with the distribution media in your software order. You need to use these documents to plan parts of your installation process. Read the material that applies to your server.



The Software Installation  manual is your primary source. The Prerequisite and Related Information section in the Software Installation manual describes other publications that may be useful.

Memo to Users  .

This document provides information about software and hardware changes that could potentially affect your system operations.

The *Memo to Users* describes significant changes in the new release that could potentially affect your programs or system operations. Use the *Memo to Users* to prepare for changes on the release and to use the new release. Be sure to read each section that pertains to licensed programs that you currently have installed or plan to install on your server. This document has also been referred to as the *Memorandum to Application System/400 Users* or the *Memo to AS/400 Users*.

Locating the Memo to Users

In addition to the Memo to Users in the Information Center, you can access the Memo to Users from the IBM  iSeries Support  Web site (www.ibm.com/eserver/iseries/support).

Follow these links (in order):


1. Technical Databases
2. Preventive Service Planning - PSP
3. All Preventive Service Planning Documents by Release
4. R520
5. SF98076: iSeries Read This First & Memorandum to Users

The *Memo to Users* is also available to customers who use electronic customer support. You can order this document for V5R2M0 by using the Send PTF Order (SNDPTFORD) command and specifying program temporary fix (PTF) number SF98076.

If you are skipping a release level of OS/400, you should also order the *Read This First and Memorandum to Users* for the release that you are skipping. (The *Read This First* is not separately available after V4R5.) This will ensure that you are aware of changes that occurred in the skipped release that could also affect your programs and system operations. You can order these documents by specifying the appropriate program temporary fix (PTF) number:

Skipped release	Command to order PTF
V4R5M0	SNDPTFORD SF98056
V5R1M0	SNDPTFORD SF98066

Setup and Operations CD-ROM

With every new hardware order, you receive iSeries Setup and Operations, SK3T-4098. This CD-ROM contains IBM  iSeries Access for Windows and the EZ-Setup wizard.

PSP information

To keep informed of the latest information about conditions that could impede your software installation, you need the most recent edition of the “Use Preventive Service Planning (PSP) information” on page 35.

iSeries PTF shipping information letter

This letter contains the instructions for installing the cumulative program temporary fix (PTF) package. The letter and the cumulative (CUM) PTF package (if ordered) ship with the software media for the new release. IBM highly recommends that you install the cumulative PTF package. For information about the most recent CUM package, refer to the Order fixes topic.

Verify that you have the correct optical distribution media

If you are planning for a complete software release upgrade, do the following to ensure you have the correct media for your upcoming tasks.

1. Locate the software distribution media. Verify that the optical media for Licensed Internal Code and OS/400 are for V5R2M0. Arrange the optical media in the order that is shown in “Media labels and their contents” on page 74.
When you receive software for a new release, you should receive optical media for at least Licensed Internal Code, OS/400, licensed programs, and the cumulative PTF package (if ordered). You may also receive optical media for secondary languages and other types of software products, such as Programming Requests for Price Quotation (PRPQs) and licensed program offerings (LPOs). Use the product tables (“Standard set products” on page 76, “Keyed set products” on page 78, and “Licensed program releases and sizes” on page 63) to check for the name and product identifier of individual licensed programs that you ordered.
2. Verify that the media you received is in the correct primary and secondary languages. Do the following to determine the feature number for the national language version (NLV) for your system’s primary language and any installed secondary languages:
 - a. From the Work with Licensed Programs command menu (type GO LICPGM and press Enter). Select option 20 (Display secondary languages).
 - b. The Display Installed Secondary Languages display appears. This display identifies the primary language of the system and any installed secondary languages.
Compare the OS/400 media label with the primary language of your system. If the system uses secondary languages, compare the secondary language media that you have received with the secondary languages listed on your system.
 - c. Press the F3 (Exit) key twice.

Verify license key sheets for keyed products

Your license key sheets for the keyed IBM products or keyed IBM product options that you have ordered arrive in the box with your software order. Verify that you have received a separate license key sheet for each keyed item. A software license key sheet lists the following:

- 18-character license key information
- Product identification number
- Product name
- Version, release, and modification
- System serial number
- Usage limit
- Other pertinent information

Contact your software provider when either of the following is true:

- You do not have the correct distribution media, release, or national language.
- You do not have a license key sheet for each keyed item that you have ordered. To verify which products required a license key sheet, see “Keyed set products” on page 78.

If for some reason you lose your license key or need an emergency license key, you can order these through the software key center contact for your country or region. The software license key sheet lists a toll-free number for assistance. For these special situations, you can receive the license key through electronic mail (e-mail), telephone, facsimile, or the Internet.

Refer to Software license keys for general information on license keys.

For a comprehensive list of products, refer to “Licensed program releases and sizes” on page 63.

Ensure the server meets disk storage requirements

You must ensure that you will have adequate disk storage before you start to install or replace software. To make more efficient use of your storage, clear your system of items that you no longer require before you estimate how much storage you will need.

“Clean up disk storage space”

Cleaning up your system before you begin to install a new release makes more storage space available for the installation process.

“Determine storage space required” on page 33

Before you schedule a time to install this release, determine the available storage space and the storage space that is required for this release.

Clean up disk storage space

Cleaning up your server before you begin to install a new release makes more storage space available for the installation process. To keep your server running smoothly, see Basic system operations.

Consider the following tasks that you can do to clean up your system and make more disk space available:

- Use the automatic clean-up option in Operational Assistant to keep your system free of unnecessary clutter.
- “Permanently apply program temporary fixes (PTFs)” on page 39 that are temporarily applied on your system if you have not already done so.
- Delete PTF save files and cover letters that are no longer needed.
- Delete any software applications that you installed from software sampler CD-ROMs.
- “Delete licensed programs during cleanup” or optional parts that you no longer use. Also read the topics on deleting licensed programs in the appendix on licensed program information in the Software Installation manual for additional information.
- Have each user “Clean up user profiles” on page 32. Delete any user profiles that you no longer need.
- If you have not already done so, delete the enrollment for any user who is no longer with your organization or who is no longer using OfficeVision functions. Also, delete old mail, calendars, documents, and folders that you no longer need. For information about how to do these tasks, refer to the book *Managing OfficeVision/400*, SH21-0699.

Note: Beginning in V5R1, OfficeVision for AS/400 is removed from the system when you perform an upgrade.

Free up space in the load-source disk unit

Image catalog installation requires at least 1 gigabyte of free space on the load-source disk unit of your server. If you using an image catalog to install software, perform the following steps to verify how much free space you have available:

Attention:

- A system IPL turns off end allocations for the load-source disk unit storage. Do these steps just before you start your image catalog installation.
- Information about image catalog installation for upgrading from V5R1 to V5R2 will be made available through V5R1 PTF SI03120, Optical Support.

Use the Work with Disk Status (WRKDSKSTS) command to determine if your load-source disk unit (unit 1) has at least 1 gigabyte of free space. If you do not have 1 gigabyte of free space, continue with the following steps:

1. Use the Start ASP Balance (STRASPBAL) command to end the allocation for storage in the load-source disk unit:
STRASPBAL TYPE(*ENDALC) UNIT(1)
2. Use the Check ASP Balance (CHKASPBAL) command to view the previous end allocations and see these messages:
 - Unit 1 is selected for end allocation.
 - ASP balancing is not active for ASP 1.
3. Use the STRASPBAL command to move data off of the load-source disk unit:
STRASPBAL TYPE(*MOVDTA) TIMLMT(30)
4. Use the WRKDSKSTS command to monitor when the disk unit has 1 gigabyte of free space. Repeat the previous step until you have 1 gigabyte of free space.

Delete licensed programs during cleanup

Cleaning up your system before installing a new release of software can include deleting products. You may no longer need some licensed programs, or you may

plan to not replace them. Occasionally, the system may require that you delete an obsolete product before you install a new release. The Work with Licensed Programs (LICPGM) menu option, Prepare for install, provides an easy way for you to identify and delete licensed programs when you are preparing to install a new release of software. Do the following:

1. Select option 5 (Prepare for install) from the Work with Licensed Programs display and press Enter. The Prepare for Install display appears.
2. Ensure that you have a customized installation list of software. If you do not have one, go to "Create a custom list of software to install" on page 48; then return to this step.

Select the option *Work with Licensed Programs to Delete* and press Enter. The Work with Licensed Programs to Delete display appears.

The display shows a list of installed products that should be deleted from the system. Licensed programs may appear in this list for the following reasons:

- The licensed program should not remain on the system because it is not supported in the target release.
- The licensed program is installed, but no replacement product was found on the optical distribution media.
- A preselected licensed program was removed from the installation list so its associated installed product appears on this display. If the installed product remains on the system, it will be replaced by the licensed program that is on the distribution media.

Press F11 (Display reasons), then press the Help key to display the reason each product is included in the list for deletion. Carefully review the reason for deletion before you take any action.

3. When you are sure of which products to delete, save a copy of the products, using option 1 (Save) in case you might need them again. Then use option 4 (Delete) to delete the products before you install the target release of software. Option 4 immediately deletes the product from your system.

Clean up user profiles

Cleaning up user profiles and the objects that are owned by user profiles before installing a new release is good system hygiene.

Attention: Do not delete any IBM-supplied user profiles (profiles that start with the letter Q). Have each user sign on and do the following:

1. Type the command **WRKOBJOWN**. The Work with Objects by owner display is shown. It lists all of the objects that are owned by the user. Use option 4 (Delete) to delete objects that are no longer needed.
2. Type the command **WRKSPLF** to list all of the spooled files that are owned by the user. Delete spooled files that are no longer needed.

Note: spooled files are being converted this release to increase the limitation on the number of files per job and also to allow for future growth of the spooled files and their attributes. "Install fixes used to estimate installation time (if upgrading from V4R5)" on page 40 provides estimator tools to help you predict how the conversion might affect your installation time.

If the users cannot do this, you can do it as follows:

1. Sign on as security officer (QSECOFR user profile).
2. From the Work with Licensed programs menu (type GO LICPGM), select option 5 (Prepare for install).

3. Select the option to work with user profiles from the Prepare for Install display. The Work with User Profiles display appears.
4. Use option 12 (Work with objects by owner) to display the objects that are owned by a user profile. First, use the F21 key (F21=Select Assistance level) to change your assistance level to Intermediate. Do the following:
 - For each user profile, delete objects that are no longer needed.
 - Use the WRKSPLF SELECT(*ALL) command to delete spooled files that are no longer needed.
5. Delete the user profiles that you no longer need.

Determine storage space required

Before you schedule a time to install this release, determine the available storage space and the storage space that is required for this release.

Notes:

- Load-source disk unit requirements:

You must have a load-source disk unit of 2 gigabytes or larger on each server or logical partition. (This unit is disk unit number 1 in auxiliary storage pool (ASP) number 1.)

If you are using an image catalog to install, the load-source disk unit must be 4 gigabytes.


- The procedures in this topic might not include all requirements for storage that you have on your server. The topic, "Install fixes used to estimate installation time (if upgrading from V4R5)" on page 40, describes the steps to apply PTFs on your server before you upgrade. The tool for spooled-file conversions includes information on storage requirements.

1. Type **GO LICPGM**. The Work with Licensed Programs display appears.
2. Choose option 5 (Prepare for Install).
3. Type **1** next to Estimated storage requirements for system ASP. The Estimated Storage Requirements for System ASP display appears.

Enter the total storage that is needed for additional applications. Include storage for single licensed programs that were not included on your customized installation list, and storage for Programming Request for Price Quotations (PRPQs), licensed program offerings (LPOs), or third-party software.

Round up to the nearest whole number. Refer to the product documentation to determine how much additional storage is required. The system uses this number to calculate the disk storage that is required to install the target release.

Note: Include third-party software only when you intend to store it in the

system ASP. Refer to the Backup and Recovery  manual or Backup and recovery in the Information Center for more information about system ASPs.

4. Press Enter to continue to the next display. The second Estimated Storage Requirements for System ASP display appears.

This display shows you information that you will need to determine whether enough disk storage is available to complete the installation.

5. Compare the value for *Storage required to install target release* with the value for *Current supported system capacity*. If the value for *Current supported system capacity* is greater than the value for *Storage required to install target release*, you

can continue with the installation process. If the system capacity is less than the storage required, you may need to add additional disk units or install fewer optional programs.

6. Press Enter to return to the Prepare for Install display.

Repeat this process whenever you make any changes to your system that affect the available disk storage space.

Storage considerations for image catalog installation

If you are planning to use image catalogs to install, the amount of system disk-unit storage that you need varies based on what you are installing. The IBM-supplied media set uses the following storage:

Media	Allocated size (megabytes)
I_Base_01	464
B29xx_01	481
B29xx_02	558
B29xx_03	534
B29xx_04	545
B29xx_05	449
B29xx_06	482
B29xx_07	451
B29xx_08	349
B29xx_09	340
L29xx_01	538
L29xx_02	390
Total	5581

To calculate the size of any media not listed in this table, load your media into an iSeries optical device and enter the Work with Optical Volumes (WRKOPTVOL) command. Select option 5 and use the value for *Volume capacity (bytes)* and add 1 megabyte to get the approximate size allocated for that optical media.

To understand how the system decompresses objects, see “Compressed objects and storage space” on page 14.

Prepare the server for software installation

To prepare the iSeries server for software installation, review and perform the tasks that pertain to your server:

“Ensure you have required software fixes (or PTFs)” on page 35

Before you begin the installation process, make sure that your server is ready by ensuring you have the required program temporary fixes (PTFs).

“Work with critical system values before you install software” on page 41

Record and print system values. Check the QSYSLIBL, QUSRLIBL, QALWOBJRST, and QVFYOBJRST system values.

“Verify the integrity of user-modified system objects” on page 42

When you replace your software with the new release, the system keeps changes you made to some IBM-supplied objects. Check these system objects before you begin the software installation process.

“Remove user-created subdirectories in iSeries Access” on page 44

Ensure that your system does not have any user-created subdirectories if you are migrating to a newer iSeries Access package or you plan to delete or replace Client Access products.

“Ensure two-phase commit integrity before you install software” on page 44

Complete or cancel all pending resynchronizations of commitment control definitions before you replace your software.

“Review considerations for minimizing software installation time” on page 45

Minimize the time required to install your software.

“Gather performance data for benchmark” on page 45

Establish system benchmarks before installing a new version of OS/400 or making a major system configuration change, such as adding a new software application.

Ensure you have required software fixes (or PTFs)

Before you begin the installation process, make sure that your server is ready by performing the following tasks relating to program temporary fixes (PTFs).

- **Find the latest available PSP information**

Keep informed on the most recent information about conditions that could impede your software installation process by reviewing the most recent edition of the “Use Preventive Service Planning (PSP) information”.

- **Identify required software fixes**

“Fix cross-reference summary lists” on page 37 allows you to analyze the program temporary fixes (PTFs) and Licensed Internal Code fixes you currently have installed on your system. With this information, you can determine which fixes you need to order to maintain the same or higher PTF and Licensed Internal Code fix level as you update to the new level of software. These summaries are updated each working day with the latest information as new PTFs and Licensed Internal Code fixes are released.

- **Order current cumulative fix packages and required group fixes**

If some time has passed since you received your release, “Cumulative PTF packages” on page 38 and also “Fix groups” on page 39 that pertain to your environment.

- **Permanently apply software fixes**

Make sure your system is ready by “Permanently apply program temporary fixes (PTFs)” on page 39 that were previously temporarily applied.

- **Install fixes used to estimate installation time (if upgrading from V4R5)**

Install these “Install fixes used to estimate installation time (if upgrading from V4R5)” on page 40 to help you predict how required object conversions might affect your installation time.

Use Preventive Service Planning (PSP) information



Effective use of preventive service planning (PSP) information is an important element of your fix management strategy. PSP information is provided by the IBM software support center for you to use when installing a licensed program,

cumulative PTF packages, or hardware. You should review this information before you do any software installations to stay informed about potential conditions that could impede your software installation process. You can also use the PSP information to order preventive service planning information and review the recommended High Impact PERvasive (HIPER) fixes periodically or you can order the HIPER PTF group. The HIPER PTF group is updated on a weekly basis. Be sure to use the most recent edition of the PSP information as the IBM software support center provides frequent updates.

How do I obtain PSP information?

You can obtain PSP information using any of the following methods:

- **Obtain PSP information on the Web**

You can go directly to the PSP Web site  or you can access the iSeries and AS/400 Technical Support  home page. If you go to the iSeries and AS/400 Technical Support Web site, you can find the PSP information in the Technical Databases category of information.

- **Order PSP information with scheduled cumulative PTF packages**

Cumulative PTF packages are released on a scheduled basis for those users who want to install fixes for preventive purposes; in other words, to minimize potential problems. If you choose to order and install the cumulative PTF package on a regular basis, the recommended time is that you do it on a quarterly basis. To order PSP information that is associated with the current cumulative PTF package, use the following commands:

For Licensed programs: SNDPTFORD SF98vrm

where vrm is version, release, and modification level. For Version 5 Release 2 Modification 0, use 520. You can also use the following:

PSP Document	Command to Order PTF
V4R5M0 software installation	SNDPTFORD SF98050
V5R1M0 software installation	SNDPTFORD SF98060
V5R2M0 software installation	SNDPTFORD SF98070

For Licensed Internal Code: SNDPTFORD MF98vrm

where vrm is version, release, and modification level. For Version 5 Release 2 Modification 0, use 520.

- **Obtain PSP information using electronic customer support**

You can download PSP information to your iSeries server using electronic customer support.

- **Obtain PSP information from your software service provider**

If you do not have access to the Internet and do not have electronic customer support on your iSeries server, contact your software service provider for the latest PSP information.

What does the PSP information contain?

Preventive service planning information is available for:

- Licensed program installation
- Licensed Internal Code
- System equipment
- Cumulative PTF packages

- PTFs (fixes) in error (PE)
- High impact or pervasive (HIPER) problems
- General information
- Pre-hiper text

PSP documents are categorized by topic as shown below. Review at least the software installation document and the general document for the release of the iSeries OS/400 operating system that applies to you. The general document lists topics that are covered in other preventive service planning information documents that you may want to order if they apply to your system. PSP topics include the following:

Installation information

Information concerning upgrade and new installation, including information about cumulative PTF package installation. For more information, see the “Cumulative PTF packages” on page 38 topic.

General information

Hints or tips for working with fix packages or products. Typically, this information is not documented in other places. The information provided here was discovered after the release became available.

PTFs in error

Information about all fixes found to have a problem, the users that will be affected by the problem, and recommendations on how to avoid the problem. This section contains a list of fixes that are included on this cumulative package that, since shipment, have been found to be defective. You have two options: install the cumulative package without applying the fixes in error, or you can install the corrective fixes for the PTFs in error, if available. This section lists the defective fix, the users affected, the reason the fix is defective, and the recommended action to take.

Service recommendations

Detailed information about critical fixes you need to install. This section lists those High Impact Pervasive (HIPER) problems that have been discovered in the base code since shipment and not included in this cumulative package. As before, these recommendations should be reviewed based on your system’s setup and configuration. For more information, see the High Impact Pervasive (HIPER) fixes topic.

The PSP information also contains a list of fix identifiers to order PSP information for Licensed Internal Code and system equipment, licensed programs installation, and PSP documents for older cumulative packages.

Printing PSP information on your server

To print PSP information you have ordered and downloaded to your iSeries server, use the instructions for printing and displaying fix cover letters. The PSP information is placed in QAPZCOVER when it is sent to you.

Fix cross-reference summary lists

The fix cross-reference summary list itemizes fixes from an earlier release that are included in the current release. Use this list to make sure you order any fixes for the new release that you had at the previous release, but are not included in the list. These fixes will not have the same number, but they correct the same problem.

Here is sample text from a fix cross-reference summary list:

SF97043

VERSION 4 REL 5.0 TO VERSION 5 REL 1.0 PTF/FIX CROSS-REFERENCE SUMMARY

VERSION 4 REL 5.0 TO VERSION 5 REL 1.0
PTF/FIX CROSS-REFERENCE SUMMARY - SF97043

DATE OF LAST UPDATE: 5 Dec 2001

S E C T I O N 1

USE THIS SECTION IF YOU ARE INSTALLING CUMULATIVE PTF PACKAGE C1302510.

	VERSION 4	VERSION 5
	REL 5.0	REL 1.0
PRODUCT	PTF/FIX	PTF/FIX
-----	-----	-----
5798RZG	SF66641	PENDING
	SF66550	SF66643
5769999	MF27526	MF27527
	MF27498	PENDING
	MF27491	MF27474
	MF27487	MF27488
	MF27480	PENDING

To order this list electronically, select the version and release you are moving from and use the corresponding command. See SNDPTFORD command table for the fix cross-reference summary.

Cumulative PTF packages


Cumulative PTF packages contain fixes for a given release of the OS/400 operating system and associated licensed programs. As the name implies, each package is cumulative, that is, it contains all of the fixes from the previous package plus additional fixes released since the previous package. Many, but not all, new fixes are included in cumulative packages. The fixes that are not included are typically applicable only to a specific user's situation or application. These fixes are not included for general availability to avoid introducing unwanted change and potential programming errors into a cumulative package where code quality has the highest priority. Most of the fixes that are designated as HIPER PTFs are included in cumulative packages.

How often a cumulative package is available depends on the stage of the OS/400 release life cycle. During the first six months or so of general availability for a new release, a cumulative package can be available as often as every four to six weeks. After that time, cumulative packages are scheduled on a quarterly basis. After the OS/400 release has been available for approximately two years, the frequency may decrease again. The frequency of availability depends on the number of new fixes to be added to the package.

You should install cumulative PTF packages quarterly in dynamic environments and less frequently in stable ones. You should also consider installing cumulative fix packages prior to making major hardware or software changes to your environment.

To find out about other kinds of fixes, see Types of fixes.

Fix groups

A PTF group, or fix group in iSeries Navigator terminology, consists of a list of PTFs defined for the purpose of managing those PTFs as one entity. A PTF group can identify other PTF groups called related PTF groups. For a complete listing of PTF groups, see the Preventive Service Planning Information web site  .

In iSeries Navigator, you can perform the following tasks for fix groups: send, send and install, or install. When you copy your fixes from media, fix groups are automatically copied from media when you select All products or All supported products for Fixes to copy.

For information about the tasks that you can perform with PTF groups, see the following items:

Order PTF groups

Use the Send PTF Order (SNDPTFORD) command to order your PTF groups.

Create PTF groups

Create a fix group with the Create PTF Group (QpzCreatePtfGroup) API.

Manage PTF groups

Manage your PTF groups with the Work with PTF Groups (WRKPTFGRP) command, the Copy PTF Group (CPYPTFGRP) command, or the fix group function that is available from iSeries Navigator.

Display properties for fix groups

Use iSeries Navigator to Display properties for fixes and fix groups.

To find out about other kinds of fixes, see Types of fixes.


Permanently apply program temporary fixes (PTFs)

Before you begin the installation process, you should make sure your server is ready. PTFs (or fixes) that are temporarily applied should be permanently applied before you begin.

Temporarily applied PTFs require a considerable amount of disk storage space. You should permanently apply any temporarily applied PTFs to maximize the available disk space on your current system. Do this only for products and temporarily applied PTFs that you have verified on your system.

When a new release is installed, the installation process overwrites the PTFs applied to the previous release. The PTFs for the previous release are no longer applied, but there may be associated objects that remain on the system and take up disk storage space. When you use Operational Assistant and choose to clean up system journals and system logs, PTF save files from previous releases are deleted from your system. However, for systems that have the System Manager for iSeries licensed program installed, the PTF save files are not deleted.

Notes

1. Fixes contains information on applying immediate PTFs temporarily or permanently.
2. If you have System Manager for iSeries licensed program (57xx-SM1) installed on your system, use the instructions in the book System Manager Use  for managing PTFs on your system.

Install fixes used to estimate installation time (if upgrading from V4R5)

The information on this page applies only if you are upgrading from V4R5 to V5R2 (skipping a release).

A number of structural changes to object types on the iSeries server have occurred that require conversions when you replace V4R5.

Installation Estimation PTFs for V4R4M0 and V4R5M0 Software provides estimator tools to help you predict how these conversions might affect your installation time. Apply these PTFs before you upgrade your server.

Note: Changes have been made to the V5R2 release to decrease the spooled-file conversion time (as reported by the spooled-file conversion estimator tool QSPESTMT for V5R1 upgrades). The conversion time for a V4R5 to V5R2 upgrade can range from 30% to 50% less than what is predicted in the tool.

Use the following procedure to apply the appropriate PTFs to your V4R5M0 system.

Installing the program temporary fixes used to estimate installation time

1. Locate the CD-ROM labeled *Installation Estimation PTFs for V4R4M0 and V4R5M0 Software*, SK3T-4105. This CD-ROM was shipped with your distribution media. Load the CD-ROM in the optical device.
2. Type: **GO PTF**, and press Enter.
3. Select option 8 (Install program temporary fix package) and press Enter. The Install Options for Program Temporary Fixes display appears.

```
Install Options for Program Temporary Fixes
Type choices, press Enter.                               System:  XXXXX
Device . . . . . OPT01      Name, *SERVICE
Automatic IPL . . . . . N      Y=Yes
                                N=No
Restart type . . . . . *SYS    *SYS, *FULL
PTF type . . . . . 1          1=All PTFs
                                2=HIPER PTFs and HIPER LIC fixes
                                only
                                3=HIPER LIC fixes only
                                4=Refresh Licensed Internal Code
Other options . . . . . Y      Y=Yes
                                N=No
F3=Exit  F12=Cancel
ME b MV 05/032
```

4. Specify the following:
Device: OPT01
Automatic IPL: N
Restart Type: *SYS
PTF type: 1
Other options: Y
Press Enter.

5. The Other Install Options display appears.

```
Other Install Options                               System:  #####
Type choices, press Enter.
Omit PTFs . . . N      Y=Yes, N=No
Apply Type . . . 2      1=Set all PTFs delayed
                       2=Apply immediate, set delayed PTFs
                       3=Apply only immediate PTFs

F3=Exit  F12=Cancel

MS b MV 05/021
```

Specify the following:

Omit PTFs: N

Apply type: 2

6. The system applies the appropriate PTFs for your current release. Follow the directions given in any messages that are shown.

Work with critical system values before you install software

System values are IBM-supplied objects that may be modified from their shipped value to tailor certain aspects of the OS/400 operating system to your environment. The software installation program will overlay these objects on your system with values that are supplied on the installation media.

To prevent this, IBM recommends that you do the following:

- **“Record and print all system values before you install software”**
IBM recommends that you record or print out your system values as a pre-upgrade step.
- **“Change certain system values (QSYSLIBL, QUSRLIBL, QALWOBJRST, or QVfyOBJRST)”**
To ensure that your installation runs smoothly, check the QSYSLIBL, QUSRLIBL, QALWOBJRST, or QVfyOBJRST system values.

Record and print all system values before you install software

IBM recommends that you record or print out your system values as a pre-upgrade step. Use the WRKSYSVAL output(*PRINT) command. This will help to ensure that the upgrade process will not fail due to a previous modification of any system value. This also helps to make sure you will be able to reset the values after you complete the upgrade.

Change certain system values (QSYSLIBL, QUSRLIBL, QALWOBJRST, or QVfyOBJRST)

To ensure that your installation runs smoothly, do the following to check the QSYSLIBL, QUSRLIBL, QALWOBJRST, or QVfyOBJRST system values:

1. Type the Work with System Values command, WRKSYSVAL, and press Enter. The Work with System Values display appears.
2. Type 2 (Change) in the *Option* column next to the system value you want and press Enter. The Change System Value display appears.
3. Check the system values as described in table that follows below.

4. Write down the current values of QALWOBJRST and QVFYOBJRST plus any library names that are shown for QSYSLIBL and QUSRLIBL.

System value	Action to take
QSYSLIBL ¹ Current libraries: _____ _____ _____ _____ QUSRLIBL ¹ Current libraries: _____ _____ _____ _____	If you have any of the following libraries, use the spacebar to delete the library from the library list. <ul style="list-style-type: none"> • Remove any licensed program libraries. • Remove any secondary language libraries (QSYS29xx). <p>Note: Do not remove QSYS, QGPL, QUSRSYS, QTEMP, or QSYS2.</p>
QALWOBJRST ² Current value: _____	Change the value to *ALL before installing OS/400 or licensed programs.
QVFYOBJRST ³ Current value: _____	If this system value is set to either 4 or 5, change this value to 3 before you install the new release.
<p>Notes:</p> <ol style="list-style-type: none"> 1. Having licensed program libraries or secondary language libraries in these library lists can cause errors when you install or delete software. 2. The Allow Object Restore (QALWOBJRST) system value specifies whether or not objects with security-sensitive attributes can be restored. It is important to set the value to *ALL <u>before</u> performing the following system activities: <ul style="list-style-type: none"> • Installing a new release of OS/400. • Installing new licensed programs • Applying program temporary fixes (PTFs). • Recovering your system. <p>These activities may fail if the value of QALWOBJRST is not set to *ALL. To ensure system security, return the QALWOBJRST value to your normal setting after completing the system activity.</p> 3. After you have upgraded the OS/400 operating system and option 34, you can return the QVFYOBJRST system value to either 4 or 5. 	

Note that if you want the same values after the installation process completes, you will need to reset the system values.

You can also use iSeries Navigator to set your system values. For more information, see the system value categories topic in the Information Center to find out how to use and access the system values from iSeries Navigator.

Verify the integrity of user-modified system objects

When you replace your software with the new release, the system “Installation and IBM-supplied objects” on page 13.

To ensure a successful installation of all licensed programs and to take advantage of certain new functions, perform these tasks relating to system objects before you begin:

“Verify user profiles and check cross-reference files”

The installation process requires that the QSECOFR and QLPINSTALL user profiles exist in the system distribution directory. The process also requires that all database cross-reference files are not in error before the installation process begins.

“Check the QSECOFR user profile”

The QSECOFR user profile cannot contain secondary language libraries or alternate initial menus.

“Ensure that the IBM-supplied product libraries are in the system ASP”

If you have moved IBM-supplied product libraries to user auxiliary storage pools (user ASPs), the installation procedures will not update the libraries.

Verify user profiles and check cross-reference files

The following procedure will add the QSECOFR and QLPINSTALL user profiles if you have deleted them from the system distribution directory. It will also check for errors in database cross reference files on your system.

1. Type **GO LICPGM** at the command line and press Enter. The Work with Licensed Programs menu appears.
2. Type **5** (Prepare for Install) and press Enter. The Prepare for Install display appears.
3. Select the option to verify system objects and press Enter. The system verifies the system directory entries and adds the QSECOFR and QLPINSTALL user profiles if necessary. Database cross-reference files are checked for errors.
4. If the database cross-reference files are in error, you will see message CPI3DA3. Follow the instructions of this message to resolve the errors before you continue.
5. If the database cross-reference files are not in error, you will see a completion message at the bottom of the display. Press F3 (Exit) to return to the Work with Licensed Programs menu.

Check the QSECOFR user profile

The QSECOFR user profile cannot have a secondary language library (QSYS29xx) at a previous release in its library list when you install a new release. If you have an initial program for the QSECOFR user program, be sure that it does not add a secondary language library to the system library list.

Ensure that the IBM-supplied product libraries are in the system ASP

If you have moved IBM-supplied product libraries to user auxiliary storage pools (user ASPs), the installation procedures will not update the libraries. To prevent this problem, ensure that IBM-supplied product libraries are in the system ASP before you start the installation procedures. The product libraries should remain in the system ASP. PTFs are not applied to product libraries that are not in the system ASP.

If you have duplicated IBM-supplied product libraries, delete the duplicates before you start the installation procedures. The installation process fails, and the new release does not install until duplicated IBM-supplied libraries are deleted.

Remove user-created subdirectories in iSeries Access

If you are migrating to a newer iSeries Access package, or you plan to delete or replace Client Access products, ensure that your system does not have any user-created subdirectories. Examples include any of your own directories that were created through the /QIBM/ProdData/CA400/Express or /QIBM/ProdData/Access paths.

If any user-created subdirectories exist, the install or delete operation may fail. You can use the WRKLNK command to remove all user-created subdirectories for these products.

Ensure two-phase commit integrity before you install software

Before you replace your software, you must either complete or cancel all pending resynchronizations of commitment control definitions.

You need to perform this task only if both of the following are true:

- Your server is connected in a network.
- Your system runs applications that use two-phase commit support.

Two-phase commit support is used when an application updates database files on more than one system. Two-phase commit support ensures that the databases remained synchronized. If you are not sure whether your system uses two-phase commit support, perform steps 1 and 2, below. You may need to continue with the rest of the procedure.

Remember that any actions you take with respect to a pending resynchronization affect the other systems that are participating in the logical unit of work (transaction) with your system. Therefore, you or someone else will also need to handle pending resynchronizations on the connected systems before you begin your upgrade procedure.

If you perform this procedure 1 or 2 days before you install the new release, you should recheck for resynchronizations before starting the installation.

To work with pending resynchronizations on your source system, do the following:

1. To display all commitment definitions that may require resynchronization, type the following command:
WRKCMDFN JOB(*ALL) STATUS(*RESYNC)
2. If you see the message (No commitment definitions are active), you can skip the rest of this procedure.
3. On the Work with Commitment Definitions display, type a 19 (Cancel Resync) in the Option column for each commitment definition. You see the Cancel Resync display.
4. If the value in the column *Resync Required* is Yes for any remote location listed, then do the following for that location:
 - a. Attempt an action, such as restarting communications, and allow the resynchronization to complete.
 - b. If you cannot allow the resynchronization to complete, specify option 1 (Select) to cancel resynchronization to that remote location.

You may receive message CPF83E4, which indicates that the logical unit of work is in an undecided state. You will have to make an educated decision to force either a commit operation or a rollback operation before you can

successfully cancel resynchronization. These options are available from the Work with Commitment Definitions display.

By canceling resynchronization, you may cause the databases between the two systems to be in an inconsistent state. You must then take the responsibility for determining the action taken by all the other locations that participated in this Logical Unit of Work (LUW), and resynchronize the database changes.

5. Refresh the display periodically. When resynchronization for a commitment definition completes or cancels successfully, the value in the *Resync in Progress* column will be No.

The resynchronization or a cancel of resynchronization may not take place immediately. They are dependent on the state of the other systems that are participating in the logical unit of work.

For more information on commitment control and resynchronization, see Troubleshoot transactions and commitment control.

Review considerations for minimizing software installation time

The following actions will minimize the time required to install your system:

- Use the automatic installation process rather than performing a manual installation process. “Software installation scenarios” on page 15 has information on both methods.
- If you are not using the automatic installation process, be sure to set the QSYSOPR message queue in *BREAK mode before you start the installation process.
- Perform the licensed program installation with all subsystems ended (ENDSBS *ALL). If you are performing an automatic installation, you are operating in the preferred environment. This environment provides maximum system resources to the installation process and eliminates certain functions required only when subsystems are active.
- Verify that you have enough auxiliary storage to perform the installation. If there is additional auxiliary storage available, the installation process time can be reduced. Option 5 (Prepare for Install) on the Work With Licensed Program menu (type GO LICPGM) will tell you if the install can multiprocess.
- Load the next volume of installation media when prompted by the system. The files are loaded faster when the system can use multiprocess installation instead of single-process installation. However, if you encounter a message prompting you to load the next volume of installation media, the active jobs will not continue installing the licensed programs until you respond to the message.

Gather performance data for benchmark

You should establish system benchmarks before installing a new version of OS/400 or making a major system configuration change, such as adding a new application. Accurate system benchmarks allow you to compare system performance before and after the upgrade. A valid comparison allows you to accurately assess any performance improvement as well as isolate any changes to the system that may prevent optimal performance.

Collection Services can collect sample data for a wide range of system resources. Collection Services stores sample performance data in a collection object (*MGTCOL) on your system. Minimally, benchmarks should include data from current and representative collection objects. This may require that Collection

Services run long enough to collect representative data. Representative data should include all periods of activity (both peak and off-peak hours), all applications, and all normal activities performed on a system. Additionally, you may require more detailed benchmark information to identify how critical applications, transactions, and jobs are affected by the system configuration change.

There are several tools available for collecting detailed information about application performance. However, these tools may require specialized skills and could adversely affect system performance. For details about collecting different types of performance data, refer to the information about researching a performance problem in the Performance topic in the Information Center.

Gathering performance data with Collection Services

If you are not running Collection Services, or your collection objects are not current, start Collection Services in any of the following ways:

- Use the Collection Services function that is available in iSeries Navigator.
- Use the Start Collector (QYPSSTRC) API. If you do not use the Management Central function in iSeries Navigator, you can manage your collections with the Performance Management APIs. These APIs start, end, and cycle collections, and change and retrieve system parameters for the data collected.
- If you have the Performance Tools licensed program (PT1) installed, use Option 2 from the Performance Tools main menu. Refer to Performance Tools for iSeries



- for additional information on collecting performance data with this option.
- Activate Performance Management/400, which automates the start of Collection Services and then creates the database files during collection.

Ensure that Collection Services has been configured to collect the data you require, and that it runs long enough to accurately represent your operating environment.

The following example uses the Collector APIs.

1. Run Collection Services for at least one or two days, and make sure that peak and off-peak workloads are represented. Type this command:

```
CALL PGM(QYPSSTRC) PARM('*PFR ' '*STANDARDP' X'00000000')
```

This command starts Collection Services and uses the **Standard plus protocol** for the collection profile. Once you start Collection Services with this command, it will collect performance data and store it in the collection object until you either explicitly stop it or restart the system. (If collection was run for more than one day, more than one collection object will be produced.) This profile collects all the data categories typically needed by the tools in Performance Tools for iSeries, including communications protocol data. The default configuration also starts a batch job CRTPFDRDTA, which creates the performance database files.

2. Collection Services stores the data in an object type of *MGTCOL. You can convert this object into performance database files for later analysis. To retain the object for future use, you can save the objects to tape or to a save file (SAVF). Collection Services may delete collection objects from the server at any time after the retention period has expired. The default retention period is 24 hours. If you do not want Collection Services to delete your collection objects for you, change your retention period to permanent (set a retention period of *PERM) as shown in the example that follows.

Note: The command example below shows the shipped default values with the exception of the retention period value. A retention period of *PERM requires a value of 0. Furthermore, you must make this change before or during the data collection. The change does not affect any collection objects that are already cycled.

To change the retention period by using the Change Collection Services Attributes API, type this command:

```
CALL PGM(QYPSCSCA) PARM('*PFR      ' /* collection */
                        X'00000384' /* interval 900 sec */
                        'QPFRDATA ' /* library      */
                        X'00000000' /* retention period is permanent */
                        X'00000000' /* cycle time  00:00:00 */
                        X'00000018' /* cycle interval 24Hrs */
                        X'00000001' /* start CRTPFRTA */
                        '*STANDARDP' /* default profile */
                        X'00000000') /* return code */
```

3. If you want to explicitly stop the collector after the desired data is obtained, type this command:

```
CALL PGM(QYPSEND) PARM('*PFR      ' X'00000000')
```

Analyzing performance data

To analyze the performance data, you must either export collection object data into the performance database files (if Collection Services has not already done so) or convert the database files created from the prior release to the current release format. For more information, refer to the Create database files from Collection Services data topic in the Information Center and Converting the Performance Data (located in Appendix C in the *Software Installation* manual).

There are several tools you can use to analyze the data from Collection Services. For more information, refer to the applications for performance management topic in the Information Center. In particular, the Performance Tools for iSeries licensed program summarizes this data into several reports you can use for detailed analysis.

Complete required initial installation tasks

Before you save your server, complete these initial installation tasks:

“Choose a software installation method and device” on page 48

Decide which installation method (manual or automatic) and which kind of device (optical media, image catalog, tape, or alternate installation device) you will use to install the new release.

“Prepare for globalization” on page 48

Prepare to change the primary language on your server or install additional secondary languages.

“Create a custom list of software to install” on page 48

Use the Prepare for install option to create a customized installation list and preselect the licensed programs that you want to install.

“Estimate installation time” on page 52

Estimate the time that is needed to install this release of software on your server.

“Prepare your console for software installation” on page 52

Get your console ready for the software installation process.

“Prepare the installation device and media” on page 52

Prepare to install software from optical media, an image catalog, tape devices or tape libraries, or alternate installation devices.

“Stop the Integrated Netfinity Server and other application servers” on page 57

Turn off the Integrated Netfinity Server before you begin the software installation process.

Choose a software installation method and device

If you are upgrading OS/400 and your licensed programs, you need to decide which installation method (manual or automatic) that you will use to install the new release.

“Software installation scenarios” on page 15 contains a general view of the installation methods. The steps for each method are included in separate chapters

of Software Installation .

Refer to “Types of software installation devices” on page 16 to help you determine which device you use.

Prepare for globalization

Refer to “Globalization considerations” on page 16 if you plan to change the primary language on your server or install additional secondary languages.

Create a custom list of software to install

This topic describes how to use the Prepare for install option to create a customized installation list and preselect the licensed programs that you want to install.

The Prepare for install option compares the programs that are installed on your iSeries server with the programs on the media. It then generates a list. This list contains preselected programs that will be replaced during the installation. To customize this list, select or deselect programs from this installation list, depending on which programs you want installed or replaced. You must verify that what you ordered can be replaced. You must verify that you have all of the necessary upgrades on your installation media to complete the automatic installation.

Some single licensed programs will not appear on this installation list. If a previous release is currently installed on the server, the new release of these licensed programs installs during the upgrade. If these licensed programs are new (being installed for the first time), they cannot be added to this customized list. However, you can install them by using the method in the chapter on installing additional licensed programs in the Software Installation manual or after you create and customize the installation list, you add additional licensed programs to the installation list:

“Preselect the licensed programs you want to install” on page 49

Create and customize an installation list from your distribution media.

“Add additional licensed programs to the installation list” on page 51

After you have created an installation list, add any additional licensed programs to the list.

Preselect the licensed programs you want to install

Use the following process to create and customize an installation list from your distribution media:

1. Arrange the optical media for Licensed Internal Code, OS/400, and licensed programs in the order that is shown in the table, “Media labels and their contents” on page 74. The order is very important. More specifically, include only the I_BASE_01, B29xx_nn, L29xx_nn, and F29xx_nn optical media. Do not include any other optical media when creating the installation list at this time.
2. Sign on as security officer (QSECOFR user profile).
3. Type: **CHGMSGQ QSYSOPR *BREAK SEV(95)** - to put your message queue in the break mode.
4. A message display could appear. Press Enter.
5. Type: **GO LICPGM** and press Enter.
6. Select option 5 (Prepare for install) from the Work with Licensed Programs (LICPGM) menu and press Enter. The Prepare for Install display appears.
7. Select the option to Work with Licensed Programs for Target Release and press Enter. The Work with Licensed Programs for Target Release display appears.
8. Do the following:

Note: If you are using image catalogs, go to the topic, “Scenario: Prepare to install from an image catalog” on page 53, and then return to this step (b).

 - a. Load the first optical media in the optical device.
 - b. Specify 1 (Distribution media), for the *Generate list from* prompt.
 - c. Specify a value for the optical device or virtual optical device.
 - d. Specify the target release.
 - e. Press Enter.
9. When the Display Messages display appears, load the next media volume. Type G, and press Enter.

Note:

 - After you load each volume, type G, and press Enter.
 - If there are no more volumes to load or if you want to end the loading process, type X and press Enter.
10. Continue to load the optical media in order (as in the step above) until the server has read all of the volumes.
11. After the server reads all the optical media and the message Load next volume in optical device (X G) appears, type an X and press Enter. The Work with Licensed Programs for Target Release display appears.

The list you see contains the licensed programs that are on the optical distribution media and in the installed product table on your server. Preselected licensed programs indicate that the product on the distribution media can replace a product that is installed on the server. (Preselected means a 1 appears in the option column.)

Verify that you received all of the licensed programs and priced features that you ordered.

Notes:

- a. Use the F11 key to see alternate views which display information about licensed programs in greater detail. Press F11 to toggle through these views:
 - Display expected action
 - Display product option
 - Display additional storage
 - Display expected release
- b. Use option 5 (Display release-to-release mapping) to see what, if any, currently installed product can be replaced by the selected product.
- c. If the display contains the message, Problem occurred loading volume into device, or if it states that a product was not found on the media, one of these situations occurred:
 - You missed loading one of the media.
 - You left the same media in the drive and the server read it again.
 - The target release no longer supports a licensed program.

To correct the first two situations, begin again with step 1. Otherwise, continue with the next step below.

12. Select additional licensed programs or optional parts of licensed programs to add to your customized list. Type a 1 in the *Option* column to select a licensed program to install. To remove a selected product from the list, blank out or remove the 1 in the *Option* column. When you complete your selections, press Enter. A message at the bottom of the display will prompt you to enter more changes, or press Enter to confirm the changes. The Confirm Target Release Licensed Programs display appears.
13. Press Enter to confirm the list. The Prepare for Install display appears.
14. Select the option to List Licensed Programs Not Found on Media and press Enter. The Licensed Programs Not Found On Media display appears.
15. If no products are listed, you have all the media needed to replace your existing software. Press Enter to return to the Work with Licensed Programs menu. Go to the next step (step 16) to create a printed list of the licensed programs you selected.

If there are any products listed, do the following:

- a. Delete the licensed programs that are no longer supported.
- b. You may need to obtain the others before you begin installing software. Do the following:
 - 1) Check to see whether you accidentally omitted an optical disc when you performed step 8.
 - 2) Compare your media labels to the product tables (“Standard set products” on page 76, “Keyed set products” on page 78, and “Licensed program releases and sizes” on page 63) to see if the product was shipped. If you did not receive a licensed program that you expected, contact your software provider.
 - 3) When you receive the product or locate the media, use the distribution media and product tables (“Media labels and their contents” on page 74, “Standard set products” on page 76, “Keyed set products” on page 78, and “Licensed program releases and sizes” on page 63) to add its contents to the installation list. Use the procedure, “Add additional licensed programs to the installation list” on page 51, to create a printed list of the programs that you selected to install.

- 4) **Note:** If you want to modify the installation list, type 3 (3=Modify previously generated list) on the Work with Licensed Programs for Target Release display.
16. From the Prepare for Install display, select the option to Display Licensed Programs for the Target Release and press Enter. Specify *PRINT for output on the Display Licensed Programs for Target Release display and press Enter. This creates a spooled file that you can print and use as a reference while performing the installation.
You should see the message Task to prepare for install successfully completed appear at the bottom of the display.
17. Press F3 to exit.

Add additional licensed programs to the installation list

Perform this task only when you have already created an "Create a custom list of software to install" on page 48 and only when you have additional licensed programs to add to the list.

These additional programs could be a single product on media that came with your order or independently shipped. The order in which you load the additional optical media is not important.

Not all products will be included in this list. Among those are Programming Request for Price Quotations (PRPQs), licensed program offerings (LPOs), and single licensed programs. If you want to install these products for the first time, use the Work with Licensed Programs (LICPGM) menu (type GO LICPGM, then select option 1 or 11).

To add licensed programs from additional optical media to the installation list, follow these steps:

1. Load the installation media that contains the additional licensed programs. Wait for the In Use indicator to go out.
2. Starting from the Work with Licensed Programs (LICPGM) menu, select option 5 (Prepare for install), and press Enter. The Prepare for Install display appears.
3. Select the option to Work with licensed programs for the target release, and press Enter. The Work with Licensed Programs for Target Release display appears.
4. Select option 2 (Merge with additional distribution media) for the *Generate list from* prompt so that optical media contents can be added to the list. The target release value of the existing list appears.
5. Specify a name for the optical device and press Enter.
6. When the Display Messages display appears, load the next media volume.
Type G and press Enter.

Notes:


- After you load each volume, type G and press Enter.
- If there are no more volumes to load or if you want to end the loading process, type X and press Enter.

The Work with Licensed Programs for Target Release display appears. The list includes your previously generated list plus the content of the additional optical media.

7. Type 1 next to the additional licensed programs or optional parts that you want to select, and press Enter. The Confirm Licensed Programs for Target Release display appears. Press Enter to confirm the list.

8. You see the Prepare for Install display. Select the option to Display Licensed Programs for the Target Release, and press Enter.
9. Specify *PRINT for output on the Display Licensed Programs for Target Release display, and press Enter. This creates a spooled file that you can print and use as a reference while performing the installation.

Estimate installation time

The appendix on estimating your total installation time in the Software Installation  manual contains information on how to estimate the time that is needed to install this release of software on your server.

Verify that you have considered “Object conversions” on page 18. “Install fixes used to estimate installation time (if upgrading from V4R5)” on page 40 describes how to install and apply the *Installation Estimation PTFs for V4R4M0 and V4R5M0 Software*. This PTF contains estimating programs for some of the conversions that might add to your installation time.

If you are upgrading from V4R5, consider the product repackaging of iSeries Application Development e-business tools to IBM WebSphere Development Studio for iSeries (5722-WDS). Because several licensed programs (57xx-CB1, CL2, CX2, CX4, CX5, PW1, and RG1) are deleted during the installation process, your installation time could be affected.

To make the best use of the time you spend on software installation, “Review considerations for minimizing software installation time” on page 45.

Prepare your console for software installation

The software installation process expects the console, or the PC that is assigned as the console, to be attached at port 0 and address 0 of the first workstation controller. In most cases, your hardware should be defined in this way. You should verify that the console is attached at port 0 address 0. For console and PC requirements, refer to How to connect to iSeries.

Although you can use either twinax console or Operations Console on iSeries servers, IBM recommends that you use Operations Console if you are upgrading to Version 5. If you are moving from twinax console to Operations Console, use the

iSeries Setup and Operations CD-ROM  to install Operations Console before you install Version 5.

Prepare the installation device and media

Refer to “Types of software installation devices” on page 16 to help you determine which device you use.

“Prepare to install from optical media” on page 53

Prepare to use the optical device and optical media to install your software.

“Scenario: Prepare to install from an image catalog” on page 53

Prepare to use an image catalog to perform a software upgrade, install PTFs (fixes), or install single licensed programs that you receive on media.

“Prepare to install from tape or tape libraries” on page 55

Prepare to use tape devices or tape libraries to install your software.

“Prepare to install from an alternate installation device” on page 56

Ensure that your alternate installation device is set up and enabled and that you have the optical media for Licensed Internal Code as well as your tape media.

“Determine installation device names” on page 56

Use the proper iSeries naming conventions for the device that is used for the alternate IPL.


Prepare to install from optical media

The optical device used with the optical media class is considered the alternate IPL device. On some systems, the optical device is mounted vertically. Sets of tabs retain the media in the media drawer. For vertically mounted devices, ensure that the lower set of tabs are fully extended before you attempt to load optical media. Use care when loading optical media into vertically mounted units. If the tabs are not fully extended, the media can fall and be damaged. When loading vertically mounted units, the labeled side of the optical media faces the extended tabs.

Keep optical media in its protective case when not in use. When handling optical media, do not touch the surface. If the media has dust or fingerprints on it, it can be cleaned with a lint free cloth (the tape cleaning cloth can be used). Gently wipe the media from the center to the outside of the disc.

When you install from optical media, it is important to know what each media volume contains so that you do not exit the installation process prematurely. The process of creating a master installation list will help you become familiar with what software is contained on each media volume.

The system must be powered on before you can load optical media in the media drawer. The topic on starting the system after a power-off condition in Software

Installation  describes how to start the system when power is off.

Scenario: Prepare to install from an image catalog

You can use an image catalog to perform a software upgrade, install PTFs (fixes), or install single licensed programs that you receive on media. For this release, the following is a scenario of how you can create an image catalog and image catalog entry, add an image catalog entry, and load the image catalog in preparation of performing a V5R2-to-V5R2 software upgrade. Information about upgrading from V5R1 to V5R2 will be made available through V5R1 PTF SI03120, Optical Support.

An **image catalog** is an object on the server that can contain up to 64 optical images. Each catalog is associated with one user-specified integrated file system directory. The system-recognized identifier for the object type is *IMGCLG.

When you use an image catalog, you preload all your media so that you do not need to handle the physical media when you perform the installation. You do this by copying the images from the physical media to a file in the integrated file system and then use these preloaded images to install.

Image catalog requirements:

- An image catalog upgrade works like a D-mode IPL without a console during the installation of Licensed Internal Code. System reference codes (SRCs) are used to display the status.
- Installations done by using image catalogs require a command line to initiate the installation.

- An installation cannot be performed if an independent auxiliary storage pool (ASP) is accessible. Image files cannot reside in an independent ASP.
- Virtual optical devices do not support the following:
 - Write operations
 - The LODRUN command using multiple media.
 - Changing a primary language from secondary language media.
- The load-source disk unit must be a 4-gigabyte unit.
- To perform an installation using image catalogs, you must have at least 1 gigabyte of free storage on the load-source disk unit. “Clean up disk storage space” on page 30 describes how to free up space in the load-source disk unit.
- “Determine storage space required” on page 33 describes how to calculate storage requirements for your server.

To perform a V5R2-to-V5R2 software upgrade from an image catalog, do the following steps:

1. Create a virtual optical device

To create a device description, enter the following:

```
CRTDEVOPT DEVD(virtual-device-name) RSRNAME(*VRT)
  ONLINE(*YES) TEXT(text-description)
```

2. Vary on the virtual optical device

Note: You can have only one image catalog active at a time.

Enter the following:

```
VRYCFG CFGOBJ(virtual-device-name) CFGTYPE(*DEV) STATUS(*ON)
```

3. Create an image catalog

Create an image catalog for the licensed programs that you want to install. The Create Image Catalog (CRTIMGCLG) command associates an image catalog with a target directory where the optical image files are loaded.

```
CRTIMGCLG IMGCLG(catalog-name) DIR(catalog-path)
  CRTDIR(*YES) TEXT(image-catalog-name)
```

4. Add an image catalog entry

Add an image catalog entry for each physical media that you have. You need to repeat this step for each volume of media. You should add the images in the same order as if you were going to install from them. Start with the first media in the list and continue until all the media is loaded.

You can add the entries from either an optical device or from an existing optical image file.

- To add an image catalog entry to an image catalog from an existing integrated-file-system optical image file from a directory other than the image catalog directory, enter the following:

```
ADDIMGCLGE IMGCLG(catalog-name)
  FROMFILE(/directory-name/directory-name/file-name)
  TOFILE(file-name) TEXT(text-description)
```

- To add an image entry to an image catalog from an integrated-file-system file that is already in the image catalog directory, enter the following:

```
ADDIMGCLGE IMGCLG(catalog-name) FROMFILE(file-name)
  TOFILE(*fromfile) TEXT(text-description)
```

- To add an image catalog entry to an image catalog from a physical optical media device named OPT01, enter the following:

```
ADDIMGCLGE IMGCLG(catalog-name) FROMDEV(OPT01)
  TOFILE(file-name) TEXT(text-description)
```

Note: To generate a name for the TOFILE parameter, specify *GEN. To generate a text description from the media, specify *GEN.

5. Load the image catalog

This step associates the virtual optical device to the image catalog. Only one image catalog at a time can be associated with a specific virtual optical device. To load the image catalog, type the following command:

```
LODIMGCLG IMGCLG(catalog-name)  
DEV(virtual-device-name) OPTION(*LOAD)
```

6. Verify that the images are in the correct order

If you are preparing for an upgrade, you need to verify that the required media for an upgrade exist and are sorted in the correct sequence.

Enter the following command:

```
VFYIMGCLG IMGCLG(catalog-name) TYPE(*UPGRADE) SORT(*YES)
```

An additional method would be to enter the following:

```
WRKIMGCLGE IMGCLG(catalog-name)
```

Then press PF7 to prompt for the VFYIMGCLG command. Enter *UPGRADE for the type and *YES for the sort field.

Note: Three possible values for the verification TYPE parameter are *UPGRADE (used for upgrading), *PTF (used for PTFs), and *OTHER (used for individual licensed programs).

The server puts the images in the correct order. By default, the volume with the lowest index is mounted; all the other volumes are loaded. To see the order of the images, use the Work with Image Catalog Entries (WRKIMGCLGE) command:

```
WRKIMGCLGE IMGCLG(catalog-name)
```

After completing these steps, your image catalog is ready for use.

Prepare to install from tape or tape libraries

Determine which tape unit to use for the alternate IPL. The tape unit for the alternate IPL is either the tape unit in the system unit or a tape unit attached to the system unit. The system unit is not the expansion unit. If you have only one tape unit, use it as the tape unit for the alternate IPL. If you do not know which tape unit to use, then contact your hardware service representative.

To help prevent media errors, be sure to clean the heads on your alternate IPL tape drive before you begin the installation process. Refer to your tape drive reference guide if you need more information on how to clean the heads. If you receive a media error message during your installation process, see Chapter 11, "Troubleshoot software installation problems" on page 83 for recovery information.

Sharing a tape device

If you have a 3480, 3490, or 3590 tape device and are sharing that tape device with another system, be sure you inform everyone when you plan to use the tape drive for an installation process. Be sure other users do not assign the tape drive while you are using it because the installation process will fail during the installation of the Licensed Internal Code.

Installing from a tape library

When you install a release using a tape library device, do not use the device in library mode or random mode. The 3494 tape library should use standalone mode. The 3490, 3570, 358x, and 3590 tape libraries should use either automatic, sequential, or manual mode. Refer to the operator's guide for the media library device for information on setting up and using the correct mode.


Prepare to install from a non-IBM tape device

If you are using a non-IBM tape device, read informational APAR II09865 for more details on installing a release.

If your tape device emulates an IBM tape device, you may experience problems during the installation process, and receive message CPF5401. If this occurs, contact your vendor to confirm whether your tape drive is compatible with V5R2M0.

Prepare to install from an alternate installation device

If you use an alternate installation device, you need to ensure that the device is set up and enabled. You also need to have the optical media for Licensed Internal Code as well as your tape media. The appendix on alternate installation devices in

Software Installation  describes the alternate installation device function and identifies situations in which older tape devices may require its use. This topic also describes how to set up, enable, or disable an alternate installation device.

Determine installation device names

This topic describes the naming conventions for the device that can be used for the alternate IPL. The optical drive is the installation device for software distribution media. Examples here and in the Software Installation manual use OPT01 for the optical device (optical media class). This is the iSeries normal naming convention. Your system may be set up to use the System/36 naming convention. Use the following table to select the correct device name for your server or use the name that you have selected for your installation device.

Naming conventions

Media Type	System/36 Names	iSeries Normal Names
Optical Media (CD or DVD)	OPTxx	OPTxx
Cartridge	TC	TAPxx
Reel	T1	TAPxx

Note: When a media library device is created through automatic configuration, the device description is TAPMLBxx where xx = numbers.

If you are not using the automatic installation process, the display prompts you for the name of your installation device. You could have more than one tape device that can be used for the alternate IPL. You **must** use your configuration list to determine the name you have assigned to this tape device and enter that name on the Install Options display.

If you are using the automatic installation process, the system determines the name of the installation device from the installation profile on the distribution media. The installation device name will be OPTxx where xx is the number assigned to each optical unit.


Stop the Integrated Netfinity Server and other application servers

Before you begin the installation process, you must vary off the Integrated Netfinity Server. If your server has an active Integrated Netfinity Server (now called Integrated xSeries Server for iSeries), it may cause the installation process to fail. Stopping the server also stops the operating system and any applications that are running on the server.

As a precaution, record the associated resources for your hardware. For these instructions, refer to *Upgrading iSeries Integration for Windows Server*.

Other application servers, such as 5769-LNT, Lotus Domino Enterprise Server for AS/400, should be ended before upgrading your software.

Notify users before you stop the Integrated Netfinity Server. The checklist for

completing the installation in Software Installation  contains instructions on starting the server after you have completed your installation.

To stop the Integrated Netfinity Server, use the Network Server Administration menu:

1. Type: **GO NWSADM** on the iSeries command line. The Network Server Administration display appears.
2. Select option 3, Stop a network server.

Save the server

Before you install a new release, you should have a current backup copy of your server. You do not need to save your server when you have a current backup copy that can be used to recover if a failure occurs. Be sure to keep this backup copy until you save your entire server again. Back up your server contains information on how to perform your save strategy and also the steps to automatically save your entire server.


1. Before you begin the process for saving the server for a recovery procedure, determine the optical or tape device for the alternate IPL.
2. Save your server by using the alternate IPL device.

Tapes that are created with the Save System (SAVSYS) command cannot be used with the automatic installation process. These tapes also do not provide a complete backup.

Chapter 8. Complete the installation of the OS/400 release

After you complete the Chapter 7, “Prepare to install the OS/400 release” on page 25, you are ready to install your software and licensed programs. You can send and install any product across multiple servers with Management Central.

“Software installation scenarios” on page 15 describes the different methods to upgrade or install a new release of the server.

Choose the installation procedure from the Software Installation  manual that is appropriate for your tasks:

- Replacing a Release Using Automatic Installation (Chapter 3).
- Replacing a Release Using Manual Installation (Chapter 4).
- Installing Software on a New iSeries Server (with the Operating System Already Installed) (Chapter 5).
- Installing Software on a New iSeries Server (without the Operating System Installed) (Chapter 6).

If you have additional installations to consider after you complete the installation of the release, continue with Chapter 9, “Install software other than the OS/400 release” on page 61.

Use the instructions in Checklist for Completing the Installation (Chapter 11) to finalize the installation process.


Chapter 9. Install software other than the OS/400 release

This topic provides an overview of the process for installing software other than the operating system.

Procedures for installing licensed programs

You can use these procedures to add additional licensed programs either as part of a software release upgrade or independently of the upgrade. (Separately ordered features are installed as a licensed program.)

Before you install additional licensed programs, review the following requirements:

- If you install an additional licensed program independently of a software release upgrade, verify the following tasks:
 - Ensure that you have a recent copy of the cumulative PTF package (SF99520). You should also get the latest high-impact pervasive (HIPER) PTFs (SF98520).
 - Use the Preventive Service Planning (PSP) information to determine if any prerequisite PTFs will need to be installed or if any special instructions are included for installing the licensed program.
- The PTFs for licensed programs are on a separate media. Use the *iSeries PTF Shipping Information Letter* to install the cumulative PTF package after you add additional licensed programs.
- If you add additional licensed programs and you have a secondary language installed on your server, you must install the secondary language after you install the licensed programs. Otherwise, the added licensed program will not have secondary language support.
- To avoid installation failures and to get the best performance during your upgrade, ensure that the server is in a restricted state.
- Check the requirements of the licensed programs before you install. Some licensed programs might require special actions before you save, restore, or install a new version.
- If you are selecting more than one licensed program and want to ensure that the products install as fast as possible, review the information on installing multiple licensed programs in Multiprocess Installation Overview (within Appendix D in *Software Installation* ).

To install the additional licensed programs or optional parts of licensed programs on your server, go to *Installing Additional Licensed Programs* (Chapter 9 in the *Software Installation* manual).

Procedures for installing other software

Select the following tasks from the *Software Installation* manual that are appropriate to your installation.

- Installing a New Secondary Logical Partition (Chapter 7).
- Changing Your Primary Language (Chapter 8).
- Installing a Secondary Language (Chapter 10).

Completion checklist

Use the instructions in Checklist for Completing the Installation (Chapter 11) to finalize the installation process.

Chapter 10. Software reference

This topic contains a collection of supporting information about the concepts and tasks described in the Chapter 1, “Install the OS/400 release and related software” on page 1 category.

“Licensed program releases and sizes”

Review many of the licensed programs that are available for this release and how much storage space they require.

“Release interoperability” on page 72

An iSeries server interoperates with another iSeries server when you exchange data or when you save and restore objects. Review the supported combinations of OS/400 releases.

“Installation notes about the OS/400 release” on page 73

Review specific changes to the OS/400 release.

“Installation notes about other licensed programs” on page 74

Review specific changes to licensed programs other than the OS/400 release.

“Media labels and their contents” on page 74

Arrange your media for installation in the order that is listed in this table.

“Licensed programs no longer supported at V5R2” on page 80


Review what licensed programs have been discontinued and, where applicable, their suggested replacements.

“National Language Version feature codes” on page 80

Locate the appropriate feature code for your primary or secondary language.

Licensed program releases and sizes

The following iSeries licensed programs (LPs) are available this release and are compatible with the OS/400 operating system. To help you plan for installing your new release, use this information to find the release and current size of the LPs that are listed.

LP release and size information for the V5R1 release and earlier releases is available in the Technical Studio .

Type	Model	Version	Status	Storage (MB)	Description
5722	999	V5R2M0	Refreshed	10 ³	Licensed Internal Code
5722	SS1 base (QGPL, QUSRSYS, QSYS)	V5R2M0	Refreshed	1601.0	Operating System/400 (actual size ranges from 1302 to 1601)
5722	SS1 option 1	V5R2M0	Refreshed	18.1	OS/400 - Extended Base Support

Type	Model	Version	Status	Storage (MB)	Description
5722	SS1 option 2	V5R2M0	Refreshed	37.9	OS/400 - Online Information
5722	SS1 option 3	V5R2M0	Refreshed	495	OS/400 - Extended Base Directory Support
5722	SS1 option 4	V5R2M0	Refreshed	24.2	OS/400 - S/36 and S/38 Migration
5722	SS1 option 5	V5R2M0	Refreshed	26.4	OS/400 - System/36 Environment
5722	SS1 option 6	V5R2M0	Refreshed	3.9	OS/400 - System/38 Environment
5722	SS1 option 7	V5R2M0	Refreshed	10.4	OS/400 - Example Tools Library
5722	SS1 option 8	V5R2M0	Refreshed	17.8	OS/400 - AFP Compatibility Fonts
5722	SS1 option 9	V5R2M0	Refreshed	122.4	OS/400 - *PRV CL Compiler Support
5722	SS1 option 11	V5R2M0	Refreshed	9.3	OS/400 - S/36 Migration Assistant
5722	SS1 option 12	V5R2M0	Refreshed	20.4	OS/400 - Host Servers
5722	SS1 option 13	V5R2M0	Refreshed	223.1	OS/400 - System Openness Includes
5722	SS1 option 14	V5R2M0	Refreshed	10.1	OS/400 - GDDM
5722	SS1 option 16	V5R2M0	Refreshed	34.6	OS/400 - Ultimedia System Facilities
5722	SS1 option 18	V5R2M0	Refreshed	3.1	OS/400 - Media and Storage Extensions
5722	SS1 option 21	V5R2M0	Refreshed	80.6	OS/400 - Extended NLS Support

Type	Model	Version	Status	Storage (MB)	Description
5722	SS1 option 22	V5R2M0	Refreshed	2.1	OS/400 - ObjectConnect
5722	SS1 option 23	V5R2M0	Refreshed	10.9	OS/400 - OptiConnect
5722	SS1 option 25	V5R2M0	Refreshed	37.8	OS/400 - NetWare Enhanced Integration
5722	SS1 option 26	V5R2M0	Refreshed	6.0	OS/400 - DB2 Symmetric Multiprocessing
5722	SS1 option 27	V5R2M0	Refreshed	2.5	OS/400 - DB2 Multisystem
5722	SS1 option 30	V5R2M0	Refreshed	19.2	OS/400 - Qshell
5722	SS1 option 31	V5R2M0	Refreshed	13.6	OS/400 - Domain Name System
5722	SS1 option 33	V5R2M0	Refreshed	163.2	OS/400 - Portable Application Solutions Environment
5722	SS1 option 34	V5R2M0	Refreshed	123.0	OS/400 - Digital Certificate Manager
5722	SS1 option 35	V5R2M0	Refreshed	16.9	OS/400 - CCA Crypto Service Provider
5722	SS1 option 36	V5R2M0	Refreshed	2.9	OS/400 - PSF/400 1-45 IPM Printer Support
5722	SS1 option 37	V5R2M0	Refreshed	3.7	OS/400 - PSF/400 1-100 IPM Printer Support
5722	SS1 option 38	V5R2M0	Refreshed	5.5	OS/400 - PSF/400 Any Speed Printer Support
5722	SS1 option 39	V5R2M0	Refreshed	18.5	OS/400 - International Components for Unicode
5722	SS1 option 41	V5R2M0	Refreshed	3.5	OS/400 - HA Switchable Resources

Type	Model	Version	Status	Storage (MB)	Description
5722	SS1 option 42	V5R2M0	New	4.2	OS/400 - HA Journal performance
5722	SS1 option 43	V5R2M0	New	348.9	OS/400 - Additional Fonts
5722	AC3 base	V5R2M0	Refreshed	2.4	Cryptographic Access Provider 128-bit for iSeries
5722	AF1 base	V5R2M0	Refreshed	17.8	AFP Utilities for iSeries
5722	BR1 base	V5R2M0	Refreshed	219.2	Backup Recovery and Media Services for iSeries
5722	BR1 option 1	V5R2M0	Refreshed	74.0	BRMS for iSeries - Network Feature
5722	BR1 option 2	V5R2M0	Refreshed	72.8	BRMS for iSeries - Advanced Feature
5722	CE3 base	V5R2M0	Refreshed	21.0	iSeries Client Encryption (128-bit)
5722	CM1 base	V5R2M0	Refreshed	17.5	Communications Utilities for iSeries
5722	CR1 base	V5R2M0	Refreshed	9.4	Cryptographic Support for AS/400
5722	DB1 base	V5R2M0	Refreshed	82.4	System/38 Utilities for AS/400
5769	DC1 base	V4R3M0	Ship level	96.2	DCE Base Services for AS/400
5769	DC3 base	V4R3M0	Ship level	19.2	DCE DES Library Routines for AS/400
5722	DE1 base	V5R2M0	Refreshed	1.3	DB2 Universal Database Extenders for iSeries V7.2
5722	DE1 option 1	V5R2M0	Refreshed	23.2	Text Extender for iSeries

Type	Model	Version	Status	Storage (MB)	Description
5722	DE1 option 2	V5R2M0	Refreshed	21.9	XML Extender
5722	DE1 option 3	V5R2M0	Refreshed	169.9	Text Search Engine
5722	DFH base	V5R2M0	Refreshed	71.9	CICS Transaction Server for iSeries
5722	DFH option 1	V5R2M0	Refreshed	8.7	CICS for iSeries - Sample Applications
5722	DG1 base	V5R2M0	Refreshed	134.9	HTTP Server for iSeries
5722	DG1 option 1	V5R2M0	Refreshed	12.6	Triggered Cache Manager
5769	DL1	V4R5M0	Ship level	64.7	Dictionary and Linguistic Tools for AS/400
5722	DP4	V5R2M0	New	20.4	DataPropagator for iSeries
5722	DS1	V5R2M0	Refreshed	8.3	Business Graphics Utility for AS/400
5769	FNT base	V4R2M0	Ship level	4.6	Advanced Function Printing Fonts for AS/400
5769	FNT option 1	V4R2M0	Ship level	4.7	AFP Fonts - Sonoran Serif
5769	FNT option 2	V4R2M0	Ship level	7.0	AFP Fonts - Sonoran Serif Headliner
5769	FNT option 3	V4R2M0	Ship level	6.9	AFP Fonts - Sonoran Sans Serif
5769	FNT option 4	V4R2M0	Ship level	8.8	AFP Fonts - Sonoran Sans Serif Headliner
5769	FNT option 5	V4R2M0	Ship level	2.5	AFP Fonts - Sonoran Sans Serif Condensed

Type	Model	Version	Status	Storage (MB)	Description
5769	FNT option 6	V4R2M0	Ship level	0.3	AFP Fonts - Sonoran Sans Serif Expanded
5769	FNT option 7	V4R2M0	Ship level	5.8	AFP Fonts - Monotype Garamond
5769	FNT option 8	V4R2M0	Ship level	7.8	AFP Fonts - Century Schoolbook
5769	FNT option 9	V4R2M0	Ship level	0.5	AFP Fonts - Pi and Specials
5769	FNT option 10	V4R2M0	Ship level	4.8	AFP Fonts - ITC Souvenir
5769	FNT option 11	V4R2M0	Ship level	2.3	AFP Fonts - ITC Avant Garde Gothic
5769	FNT option 12	V4R2M0	Ship level	7.8	AFP Fonts - Math and Science
5769	FNT option 13	V4R2M0	Ship level	3.4	AFP Fonts - DATA1
5769	FNT option 14	V4R2M0	Ship level	0.9	AFP Fonts - APL2
5769	FNT option 15	V4R2M0	Ship level	3.5	AFP Fonts - OCR A and OCR B
5769	FN1 base	V4R2M0	Ship level	0.9	Advanced Function Printing DBCS Fonts for AS/400
5769	FN1 option 1	V4R2M0	Ship level	79.7	AFP DBCS Fonts - Japanese
5769	FN1 option 2	V4R2M0	Ship level	28.3	AFP DBCS Fonts - Korean
5769	FN1 option 3	V4R2M0	Ship level	17.7	AFP DBCS Fonts - Traditional Chinese
5769	FN1 option 4	V4R2M0	Ship level	15.8	AFP DBCS Fonts - Simplified Chinese
5769	FN1 option 5	V4R2M0	Ship level	3.7	AFP DBCS Fonts - Thai
5722	IP1 base	V5R2M0	Refreshed	120.3	Infoprint Server for iSeries

Type	Model	Version	Status	Storage (MB)	Description
5722	JC1 base	V5R2M0	Refreshed	82.9	Toolbox for Java
5722	JS1 base	V5R2M0	Refreshed	73.1	Advanced Job Scheduler for iSeries
5722	JV1 base	V5R2M0	Refreshed	3.9	Developer Kit for Java
5722	JV1 option 3	V5R2M0	Refreshed	221.0	Java Developer Kit 1.2
5722	JV1 option 4	V5R2M0	Refreshed	65.0	Java Developer Kit 1.1.8
5722	JV1 option 5	V5R2M0	Refreshed	34.9	Java Developer Kit 1.3
5722	JV1 option 6	V5R2M0	New	318.7	Java Developer Kit 1.4
5722	MG1 base	V5R2M0	Refreshed	50.5	Managed System Services for iSeries
5722	PD1 base	V5R1M0	Ship level	76.4	Application Program Driver for AS/400
5722	PT1 base	V5R2M0	Refreshed	3.8	Performance Tools for iSeries
5722	PT1 option 1	V5R2M0	Refreshed	31.4	Performance Tools - Manager Feature
5722	PT1 option 2	V5R2M0	Refreshed	4.2	Performance Tools - Agent Feature
5722	QU1 base	V5R2M0	Refreshed	8.1	Query for iSeries
5722	RD1 base	V5R2M0	Refreshed	23.2	Content Manager OnDemand for iSeries
5722	RD1 option 1	V5R2M0	Refreshed	48.2	OnDemand Spooled File Archive Feature
5722	RD1 option 2	V5R2M0	Refreshed	0.4	OnDemand Object Archive Feature

Type	Model	Version	Status	Storage (MB)	Description
5722	RD1 option 3	V5R2M0	Refreshed	3.1	OnDemand Record Archive Feature
5722	RD1 option 4	V5R2M0	Refreshed	5.3	OnDemand AnyStore Feature
5722	RD1 option 5	V5R2M0	Refreshed	15.6	OnDemand Server Feature
5722	RD1 option 10	V5R2M0	Refreshed	29.6	OnDemand Common Server Feature
5722	RD1 option 11	V5R2M0	New	16.7	OnDemand Web Enablement Kit
5722	RD1 option 12	V5R2M0	Refreshed	35.9	OnDemand PDF Indexer for OnDemand Common Server
5798	RZG base	V5R2M0	Refreshed	11.0	Electronic Service Agent
5722	SM1 base	V5R2M0	Refreshed	23.9	System Manager for iSeries
5722	ST1 base	V5R2M0	Refreshed	27.3	DB2 Query Manager and SQL Development Kit for iSeries
5722	TC1 base	V5R2M0	Refreshed	63.0	TCP/IP Connectivity Utilities for iSeries
5769	VG1 base	V4R4M0	Ship level	15.8	VisualAge Generator Server for AS/400
5722	VI1 base	V5R1M0	Ship level	25.5	Content Manager for iSeries
5722	VI1 option 1	V5R1M0	Ship level	72.5	Content Manager for iSeries
5722	VI1 option 2	V5R1M0	Ship level	1.3	Content Manager for iSeries

Type	Model	Version	Status	Storage (MB)	Description
5722	WDS base	V5R2M0	Refreshed	122.3	WebSphere Development Studio
5722	WDS option 21	V5R2M0	Refreshed	31.7	AS/400 Tools - Application Development
5722	WDS option 22	V5R2M0	Refreshed	26.9	AS/400 Tools - Application Development Manager
5722	WDS option 23	V5R2M0	Refreshed	66.8	AS/400 Tools - Application Dictionary Services
5722	WDS option 31	V5R2M0	Refreshed	9.6	ILE RPG
5722	WDS option 32	V5R2M0	Refreshed	6.1	System/36 Compatible RPG II
5722	WDS option 33	V5R2M0	Refreshed	12.5	System/38 Compatible RPG III
5722	WDS option 34	V5R2M0	Refreshed	6.7	OPM RPG
5722	WDS option 35	V5R2M0	Refreshed	19.8	ILE RPG *PRV Compiler
5722	WDS option 41	V5R2M0	Refreshed	24.8	ILE COBOL
5722	WDS option 42	V5R2M0	Refreshed	9.4	System/36 Compatible COBOL
5722	WDS option 43	V5R2M0	Refreshed	6.4	System/38 Compatible COBOL
5722	WDS option 44	V5R2M0	Refreshed	8.8	OPM COBOL
5722	WDS option 45	V5R2M0	Refreshed	42.5	ILE COBOL *PRV Compiler
5722	WDS option 51	V5R2M0	Refreshed	11.4	ILE C
5722	WDS option 52	V5R2M0	Refreshed	25.4	ILE C++
5722	WDS option 53	V5R2M0	Refreshed	15.4	ILE C *PRV Compiler (ILEC for V4R5)

Type	Model	Version	Status	Storage (MB)	Description
5722	WDS option 54	V5R2M0	Refreshed	25.7	ILE C++ *PRV Compiler (ILEC++ for V4R5)
5722	WDS option 55	V5R2M0	Refreshed	15.3	IBM Open Class - source and samples
5722	WDS option 60	V5R2M0	Refreshed	3.0	Workstation Tools - Base
5722	WSV base	V5R2M0	Refreshed	22.0	iSeries Integration for Windows Server
5722	WSV option 1	V5R2M0	Refreshed	7.3	Integration for Windows NT 4.0
5722	WSV option 2	V5R2M0	Refreshed	5.5	Integration for Windows 2000 and .NET
5722	XE1 base	V5R2M0	Refreshed	175.8	iSeries Access for Windows
5722	XH2 base	V5R2M0	New	100.2	iSeries Access for Web
5722	XP1 base	V5R2M0	New	6.3	iSeries Access for Wireless
5722	XW1 base	V5R2M0	Refreshed	2.7	iSeries Access
5722	XW1 option 1	V5R2M0	Refreshed	1.8	iSeries Access Enablement Support
1TME	LCF base	V3R7M0	Ship level	9.2	Tivoli Management Agent

Release interoperability

Interoperability is the ability of one system to exchange data or objects with another system. The exchange can be performed electronically or by physical media (such as tape). Either system can initiate the exchange.

An iSeries server interoperates with another iSeries server when you exchange data or when you save and restore objects. Following are the supported combinations of OS/400 releases.

Supported system combinations

Currently installed release
V5R2M0
V5R1M0

Release to be installed
V5R2M0
V5R2M0
V5R1M0

Supported system combinations

V4R5M0

V5R2M0

V5R1M0

V4R5M0

If you have several iSeries servers in a network, they must be at compatible releases. This is necessary if objects and data are to be interchanged between systems. You can use option 10 (Display licensed programs) on the Work with Licensed Programs menu (type GO LICPGM) to see the installed release of your licensed programs.

The releases on servers must all be supported when data is exchanged

The source system (the system that sends the information) and the target system (the system that receives the information) must be within the supported releases.

For example, V5R1M0 Client Access Express supports functions on OS/400 V4R4 or later servers. V5R2M0 iSeries Access for Windows supports functions on OS/400 V5R1 or later servers.

Requirements for saving and restoring objects to be interoperable

To be interoperable, objects must be saved by specifying either a specific release or *PRV for the value of the target release (TGTRLS) parameter.

You can save and restore licensed programs just like other objects as long as the release is compatible with the operating system release. “Licensed program releases and sizes” on page 63 contains more information about compatible releases of licensed programs.

For more information on saving objects to a system that is running a previous release, see the section on release-to-release support in the Backup and Recovery



book.

Installation notes about the OS/400 release

Note: The system must be in a restricted state to install the QGPL and QUSRSYS libraries, and to install Option 12 (Host Servers).

5722-SS1, OS/400 Option 1

This option installs automatically when you install the new release of OS/400. You cannot delete this option.


5722-SS1, OS/400 Option 3

This option installs automatically when you install the new release of OS/400. This option contains IFS directories. You cannot delete this option.

5769-SS1 Option 15—Common Programming APIs Toolkit has been removed.

5769-SS1 Option 17—PSF/400 Fax Support has been removed.

The following information describes this process in greater detail:

- Informational authorized program analysis report (APAR) II09900 on the IBM  Web site.
- SC41-4151-00 OS/400 System/36 Migration Assistant V3R6
- SC41-4152-00 System/36 Migration Planning V3R6

5769-SS1, OS/400 Option 24

Option 24 (Lotus Notes Enhanced Integration) has been removed.

5722-SS1, OS/400 Option 32

LDAP is part of the OS/400 operating system in V5R1. In V5R2, if you have APIs in the library QDIRSRV, you need to call the APIs out of library QSYS instead of QDIRSRV.

Installation notes about other licensed programs

5722-MG1, Managed System Services for iSeries

You should use ENDMGDSYS and ENDMGRSRV commands to end the product before you perform any save, restore, or installation functions. The server must be in a restricted state to install this licensed program.

5722-SM1, System Manager for iSeries

If you have this product installed, be sure to end all subsystems before you replace the product or install secondary languages.

Media labels and their contents

When you verify that you have received the correct optical media for your software order, arrange the optical media in the order that is shown.

Release Identifier: R02M00
Distribution media labels indicate the version, release, and modification level in a format that is different from what appears on displays during installation. The media labels show the version, V5, in the first line of the label. The release and modification level are shown in the format R0xM00. For example, the release and modification level for V5R2M0 would be R02M00.
Media Type Identifiers
Labels on the distribution media that is used for installation have unique identifiers. Media type identifiers are located on the center of the left-hand side of the CD-ROM label. These identifiers help you determine when to use each media volume. When you replace your software with a new release, you typically use the media in the order that the identifiers are listed below.

For a list of specific products contained in the standard set CD-ROMs, refer to “Standard set products” on page 76. “Keyed set products” on page 78 contains the list of products contained in the priced licensed programs CD-ROMs.

1. SK3T-4105 Installation Estimation PTFs for V4R4M0 and V4R5M0 Software
If you are skipping V5R1M0 and upgrading from V4R5M0, this media contains PTFs that you install on your V4R5M0 server before you upgrade to V5R2M0. Due to the number and type of conversions that occur when you install the new release, IBM recommends that you use the estimator tools from these PTFs to help predict how these conversions might affect your installation time.
2. I_BASE_01 Licensed Internal Code for OS/400

This language-independent Licensed Internal Code supports all national language features. The Licensed Internal Code is part of the standard set of media.

3. B29xx_01 Operating System/400
This standard set media contains the base part of the OS/400 operating system.
4. B29xx_02 OS/400 no-charge options
This standard set media contains IBM-supplied libraries QGPL and QUSRSYS and a no-charge optional part of OS/400.
5. B29xx_03 OS/400 no-charge options
This standard set media contains some of the no-charge optional parts of OS/400.
6. B29xx_04 OS/400 no-charge options
This standard set media contains more of the no-charge optional parts of OS/400.
7. B29xx_05 OS/400 no-charge options
This standard set media contains more of the no-charge optional parts of OS/400.
8. B29xx_06 OS/400 no-charge options
This standard set media contains option 43 of the operating system, OS/400 - Additional Fonts.
9. B29xx_07 no-charge licensed programs
This standard set media contains some of the no-charge licensed programs.
10. B29xx_08 no-charge licensed programs
This standard set media contains some of the no-charge Java Developer Kit licensed programs.
11. B29xx_09 no-charge licensed programs
This standard set media contains the remainder of the no-charge licensed programs.
12. L29xx_01 Priced licensed programs
This keyed set media contains keyed options of OS/400 and some of the keyed products and keyed product options.
13. L29xx_02 Priced licensed programs
This keyed set media contains the remainder of the keyed products and keyed product options.
14. F29xx_01 Single licensed programs
This media contains individual products that you ordered. Each piece of media is labeled in the same manner: F29xx_01. You may receive more than one media volume for a single licensed program. In that case, the additional volumes are labeled F29xx_02, F29xx_03, and so on. Refer to "Licensed program releases and sizes" on page 63 for the single products available this release.
15. N29xx_01 Secondary Language Media
This media contains only language objects for the indicated secondary language. For secondary language media, the value for 29xx is the feature code of the secondary language as used for installation. "National Language Version feature codes" on page 80 contains a listing of the specific national language feature codes.
16. Cyddvrm_01 Cumulative PTF Package (if ordered)

Numbers in the positions shown here as *yddd* indicate the Julian date. Characters in the positions shown here as *vrmm* indicate the version, release, and modification of the cumulative PTF package.

17. SK3T-4091 iSeries Information Center

This media volume ships with all systems. This package includes the PDF versions of iSeries manuals, *iSeries Information Center: Supplemental Manuals*, SK3T-4092.

Notes:

1. Keep all of your distribution media. You may need them for recovery procedures.
2. Media identifiers that contain the string *29xx* (where *xx* are numerals) indicate language-specific media. This string indicates the national language feature code for the primary language. For example, media labeled B2928_01 would be OS/400 with French as the primary language.
3. You may receive additional media volumes that do not conform to these descriptions. Examples include media that contain PRPQs or media for iSeries Access products that are installed on workstations. Also, IBM Business Partners may label the media differently.
4. Julian dates are shown in the form *yddd*. The *y* is the last digit of the year (0 through 9), and *ddd* is the day of the year (0 through 366). For example, the Julian date for April 6, 1998 would be shown as 8096 because April 6 is the 96th day of the year 1998.

Standard set products

The standard set comes with every software release order. It contains the hardware and software components to install on your server. This includes the Licensed Internal Code, OS/400, its no-charge options, and no-charge (bonus) licensed programs and features, such as online help messages.

I_BASE_01 standard set

Product	Description
5722999	Licensed Internal Code for OS/400

B29xx_01 standard set

Product	Description
5722SS1	Operating System/400

B29xx_02 standard set

Product	Description
5722SS1	Operating System/400 (continued)
5722SS1	OS/400 - Library QGPL
5722SS1	OS/400 - Library QUSRSYS
5722SS1 option 1	OS/400 - Extended Base Support

B29xx_03 standard set

Product	Description
5722SS1 option 2	OS/400 - Online Information
5722SS1 option 3	OS/400 - Extended Base Directory Support

B29xx_04 standard set

Product	Description
5722SS1 option 4	OS/400 - S/36 and S/38 Migration
5722SS1 option 5	OS/400 - System/36 Environment
5722SS1 option 6	OS/400 - System/38 Environment
5722SS1 option 7	OS/400 - Example Tools Library
5722SS1 option 8	OS/400 - AFP Compatibility Fonts
5722SS1 option 9	OS/400 - *PRV CL Compiler Support
5722SS1 option 11	OS/400 - S/36 Migration Assistant
5722SS1 option 12	OS/400 - Host Servers
5722SS1 option 13	OS/400 - System Openness Includes
5722SS1 option 14	OS/400 - GDDM
5722SS1 option 16	OS/400 - Ultimedia System Facilities
5722SS1 option 21	OS/400 - Extended NLS Support
5722SS1 option 22	OS/400 - ObjectConnect
5722SS1 option 25	OS/400 - NetWare Enhanced Integration

B29xx_05 standard set

Product	Description
5722SS1 option 30	OS/400 - Qshell
5722SS1 option 31	OS/400 - Domain Name System
5722SS1 option 33	OS/400 - Portable Application Solutions Environment
5722SS1 option 34	OS/400 - Digital Certificate Manager
5722SS1 option 35	OS/400 - CCA Cryptographic Service Provider
5722SS1 option 39	OS/400 - International Components for Unicode

B29xx_06 standard set

Product	Description
5722SS1 option 43	OS/400 - Additional Fonts

B29xx_07 standard set

Product	Description
1TMELCF	Tivoli Management Agent
5722DG1 *BASE	HTTP Server for iSeries

Product	Description
5722JC1 *BASE	Toolbox for Java
5722TC1 *BASE	TCP/IP Connectivity Utilities for iSeries
5722WSV *BASE	iSeries Integration for Windows Server
5722WSV option 1	Integration for Windows NT 4.0
5722WSV option 2	Integration for Windows 2000 and .NET
5722XE1 *BASE	iSeries Access for Windows
5722XP1 *BASE	iSeries Access for Wireless
5798RZG *BASE	Electronic Service Agent for iSeries

B29xx_08 standard set

Product	Description
5722JV1 *BASE	Developer Kit for Java
5722JV1 option 3	Java Developer Kit 1.2
5722JV1 option 4	Java Developer Kit 1.1.8
5722JV1 option 5	Java Developer Kit 1.3

B29xx_09 standard set

Product	Description
5722JV1 option 6	Java Developer Kit 1.4

Keyed set products

The keyed set comes with the standard set for every software or upgrade order. It contains keyed products and program options. Use the following information to verify the licensed programs that you ordered.

L29xx_01 keyed set

Product	Description
5722SS1 option 18	OS/400 - Media and Storage Extensions
5722SS1 option 36	PSF/400 1-45 IPM Printer Support
5722SS1 option 37	PSF/400 1-100 IPM Printer Support
5722SS1 option 38	PSF/400 Any Speed Printer Support
5722SS1 option 41	OS/400 - HA Switchable Resources
5722SS1 option 42	OS/400 - HA Journal Performance
5722AF1 *BASE	AFP Utilities for AS/400
5722BR1 *BASE	Backup Recovery and Media Services for iSeries
5722BR1 option 1	BRMS for iSeries - Network Feature
5722BR1 option 2	BRMS for iSeries - Advanced Functions Feature
5722CM1 *BASE	Communications Utilities for iSeries
5722DE1 *BASE	DB2 Universal Database Extenders for iSeries
5722DE1 option 1	Text Extender for AS/400

Product	Description
5722DE1 option 2	XML Extender for AS/400
5722DE1 option 3	Text Search Engine
5769DP4 *BASE	DataPropagator
5722JS1 *BASE	Job Scheduler for iSeries
5722PT1 *BASE	Performance Tools for iSeries
5722PT1 option 1	Performance Tools - Manager Feature
5722PT1 option 2	Performance Tools - Agent Feature
5722QU1 *BASE	Query for iSeries
5722ST1 *BASE	DB2 Query Manager and SQL Development Kit for iSeries
5722XH2 *BASE	iSeries Access for the Web
5722XW1 *BASE	iSeries Access
5722XW1 option 1	iSeries Access Enablement Support

L29xx_02 keyed set

Product	Description
5722IP1 *BASE	Infoprint Server for iSeries
5722WDS *BASE	WebSphere Development Studio
5722WDS option 21	Tools - Application Development
5722WDS option 31	Compiler - ILE RPG IV
5722WDS option 32	Compiler - System/36 Compatible RPG II
5722WDS option 33	Compiler - System/38 Compatible RPG III
5722WDS option 34	Compiler - RPG/400
5722WDS option 35	Compiler - ILE RPG IV *PRV
5722WDS option 41	Compiler - ILE COBOL
5722WDS option 42	Compiler - System/36 Compatible COBOL
5722WDS option 43	Compiler - System/38 Compatible COBOL
5722WDS option 44	Compiler - OPM COBOL
5722WDS option 45	Compiler - ILE COBOL *PRV
5722WDS option 51	Compiler - ILE C
5722WDS option 52	Compiler - ILE C++
5722WDS option 53	Compiler - ILE C *PRV
5722WDS option 54	Compiler - ILE C++ *PRV
5722WDS option 55	IBM Open Class - source and samples
5722WDS option 60	Workstation Tools - Base
5722AP1 *BASE (if media is in double-byte character set language)	Advanced DBCS Printer Support for iSeries
5722AP1 option 1 (if media is in double-byte character set language)	Adv DBCS Printer Support for AS/400 - IPDS

Licensed programs no longer supported at V5R2

The following products are no longer supported this release:

- **5733-A47 WebSphere Personalization Version 3.5 for AS/400**
- **5722-AC2 Cryptographic Access Provider 56-bit for AS/400**
(No longer need because of changes to U.S. export and import regulations. If you currently have this product and want to continue using it, you can obtain 5722-AC3, Cryptographic Access Provider 128-bit.)
- **5733-AS3 WebSphere Application Server, Standard Edition for AS/400 (128-bit)**
(5722-AS4 is supported.)
- **5733-B2B Connect for iSeries**
(Replaced with 5733-CO2, which is Version 2.)
- **5648-C69 IBM CallPath Server for AS/400**
- **5722-CE2, IBM iSeries Client Encryption (56-bit)**
(This product, which provides 56-bit encryption capability for Client Access Express and Toolbox for Java, is no longer needed because of changes to U.S. export and import regulations. If you currently have this product, you can obtain 5722-CE3, iSeries Client Encryption (128-bit.)
- **5765-D65 IBM DB2 DataJoiner Version 2.1.1**
- **5769-DP3 IBM DB2 DataPropagator for AS/400 Version 7.1**
(Replaced by DataPropagator V8 for iSeries)
- **5648-GL1 SanFrancisco General Ledger 1.4**
- **5648 OM1 SanFrancisco Order Management 1.4**
- **5733-PY2 WebSphere Payment Manager for iSeries, V2.2**
- **5648-RP1 SanFrancisco Accounts Receivable/Accounts Payable 1.4**
- **5648-SF1 SanFrancisco Base 1.4**
- **5798-TBG NetView FTP**
- **5733-WA3 WebSphere Application Server Version 3.5, Advanced Edition for AS/400 (128-bit)**
(Replaced by 5733-WA4 WebSphere Application Server V4.0, Advanced Edition for iSeries)
- **5798-WC4 WebSphere Commerce Suite, Pro Edition, Version 4.1**
(Replaced by 5733-WC5 WebSphere Commerce for iSeries, Version 5.4. If you are entitled to 5798-WC4 through Software Subscription, you are entitled to order 5733-WC5 free of charge.)
- **5722 WDS Option 1 AS/400 Tools - Build Tools**
- **5722-WDS Option 61 Workstation Tools - WebFacing, CODE**
- **5722-WDS Option 62 Workstation Tools - VisualAge RPG**
- **5722-WDS Option 63 Workstation Tools - WebSphere Studio**
- **5722-WDS Option 64 Workstation Tools - VisualAge for Java**
- **5648 WM1 SanFrancisco Warehouse Management 1.4**
- **5722-XH1 iSeries Access for Web (V5R1M0)**
(Replaced by 5722-XH2 (V5R2M0))

National Language Version feature codes

Use this table to locate the appropriate feature code for your primary or secondary language.

Note: Labels on the installation media indicate the feature code for the primary language (29xx). When you install OS/400, the system prompts for the primary language in the form 29xx. The secondary language feature code is only used when ordering secondary languages (56xx). When you install the secondary language, you select a feature code, in the form 29xx, from a list of national language feature code identifiers. For example, if you ordered French as a secondary language, the secondary language media volume would be labeled N2928, and you would select 2928 from the list of feature codes when you install the secondary language.


Primary language feature code	Secondary language feature code	National Language
2902	5602	Estonian
2903	5603	Lithuanian
2904	5604	Latvian
2905	5605	Vietnamese
2906	5606	Lao
2909	5609	Belgian English
2911	5611	Slovenian
2912	5612	Croatian
2913	5613	Macedonian
2914	5614	Serbian Cyrillic
2922	5622	Portuguese
2923	5623	Dutch Netherlands
2924	5624	English
2925	5625	Finnish
2926	5626	Danish
2928	5628	French
2929	5629	German
2931	5631	Spanish
2932	5632	Italian
2933	5633	Norwegian
2937	5637	Swedish
2938	5638	English Uppercase Support for Double-Byte Character Set (DBCS)
2939	5639	German Multinational Character Set
2940	5640	French Multinational Character Set
2942	5642	Italian Multinational Character Set
2950	5650	English Uppercase
2954	5654	Arabic
2956	5656	Turkish
2957	5657	Greek

Primary language feature code	Secondary language feature code	National Language
2958	5658	Icelandic
2961	5661	Hebrew
2962	5662	Japanese Double-Byte Character Set (DBCS)
2963	5663	Belgian Dutch
2966	5666	Belgian French
2972	5672	Thai
2974	5674	Bulgarian
2975	5675	Czech
2976	5676	Hungarian
2978	5678	Polish
2979	5679	Russian
2980	5680	Brazilian Portuguese
2981	5681	Canadian French
2984	5684	English Uppercase and Lowercase Support for Double-Byte Character Set (DBCS)
2986	5686	Korean Double-Byte Character Set (DBCS)
2987	5687	Traditional Chinese Double-Byte Character Set (DBCS)
2989	5689	Simplified Chinese Double-Byte Character Set (DBCS) (PRC)
2992	5692	Romanian
2994	5694	Slovakian
2995	5695	Albanian
2996	5696	Portuguese Multinational Character Set
2998	5698	Farsi

Chapter 11. Troubleshoot software installation problems

This information describes common problem scenarios, recovery methods, and ways to get help if you encounter a problem during software installation.

Error messages and system reference codes (SRCs) let you know that an error occurred during the installation process. Use the error messages or SRCs to determine which part of the process failed.

Note: If an SRC appeared during the automatic or manual installation procedures, you should check the section on corrective action for common SRCs in the Software Installation  manual. All software installation tasks are in this manual.

“Where to begin recovery” on page 84

First you need to determine the type of software installation failure.

“Starting point for automatic installation recovery” on page 85

If you used the automatic installation process, use the following information to determine where the failure occurred and the appropriate recovery action.

“Licensed Internal Code recovery” on page 86

Use this procedure if an error occurred when you installed the Licensed Internal Code.

“Operating system recovery” on page 87

Use this procedure if an error occurred when you installed the OS/400 operating system.

“Licensed programs, PTFs, and secondary language recovery” on page 90

Use this procedure if an error occurred when you installed a licensed program, PTF, or secondary language.

“Start the automatic installation process again” on page 94

Use one of three methods if you want to start the automatic installation process again.

“Start the manual installation process again” on page 96

Use one of these methods if you want to start the manual installation process again when recovering from an error while installing licensed programs, PTFs, or secondary languages.

“Initialize System (INZSYS) recovery information” on page 97

In a software upgrade, the installation is complete when the licensed program portion of the installation process completes and the INZSYS process successfully completes. Use this information if the INZSYS process did not complete.


“Disk configuration warning and error messages” on page 98

Perform the actions necessary if you see a disk configuration warning or an error report.

Where to begin recovery

When you determine that you have an installation error, first you need to determine what your first step to recovery should be:

Type of installation failure	
When failure occurred	What to do
Saving server before installation	If a problem occurs while you are saving the system, review your job log to determine what caused the failure. Correct the error and complete your system save procedure. Do not continue to replace the new release until you have a complete backup copy of your system. If you cannot complete installing the new release, you will need this backup copy to restore the system to the previous release.
Installing new release or licensed program	Use the next table on this page to direct you to the recovery information you need to find the problem, determine what caused it, correct the problem, and then complete installing this release.
Power failure during an installation process	If you have a power failure anytime during the installation process, go to the next table on this page to determine where to start the installation again. You should be able to start with the task where you were at when the failure occurred. For example, if you had completed installing the operating system when the power failed, and are installing licensed programs, start with the task to install licensed programs. If you are using the automatic process, start at the beginning. The system can determine which tasks have not been completed and will resume at the appropriate task.

If the installation process fails and you cannot continue the current installation, use the book Backup and Recovery  and your server's backup to restore the previous release.

In the farthest left column of the following table, locate the installation section you were using when the failure occurred. In the second column, locate which task you were performing in that section. Locate the first task that failed during your installation and then use the information in the last column to determine your recovery starting point.

Where to start recovery		
Installation procedure in use	Task number in use at time of failure	Where to start
Replacing a release using automatic installation	Task 1. Using automatic installation	"Starting point for automatic installation recovery" on page 85

Where to start recovery		
Replacing a release using manual installation	Task 1. Replacing the Licensed Internal Code	"Licensed Internal Code recovery" on page 86
	Task 2. Replacing the operating system	"Operating system recovery" on page 87
	Task 3. Replacing the licensed programs	"Licensed programs, PTFs, and secondary language recovery" on page 90
Installing software on a new iSeries server (with the operating system already installed)	Task 1. Doing the initial program load (IPL)	"Operating system recovery" on page 87
Installing software on a new iSeries server (without the operating system installed)	Task 1. Installing the operating system	"Operating system recovery" on page 87
Changing your primary language	Task 1. Changing the primary language	"Operating system recovery" on page 87
	Task 2. Installing the licensed programs	"Licensed programs, PTFs, and secondary language recovery" on page 90
Installing additional licensed programs	Task 1. Installing IBM licensed programs	"Licensed programs, PTFs, and secondary language recovery" on page 90
	Task 2. Installing non-IBM licensed programs	Look at the messages for the command
Installing a secondary language	Task 1. Using the Work with Licensed Programs Menu	"Licensed programs, PTFs, and secondary language recovery" on page 90
	Task 2. Using the Restore Licensed Program command	Look at the messages for the command

Starting point for automatic installation recovery

If you used the automatic installation process (replacing a release using automatic installation), use the following information to determine where the failure occurred and the appropriate recovery action. After you have the problem corrected, go to "Start the automatic installation process again" on page 94.

- To use automatic installation recovery, you must use the same version, release, and modification distribution media that caused the failure.
- If you have a failure during the automatic installation process and sign on to do problem analysis, your system will be running under the QSYSSBSD controlling subsystem. When your system completes an IPL after the installation has completed successfully, your controlling subsystem is active again.

Where to start recovery for the automatic installation process	
Finding the problem (symptom)	Where to start
SRC B608 1105	"Licensed Internal Code recovery" on page 86
SRCs other than B900 xxxx	"Licensed Internal Code recovery" on page 86
SRCs starting with B900 xxxx	"Operating system recovery" on page 87


Where to start recovery for the automatic installation process	
Messages starting with CPZ20xx	"Operating system recovery" on page 87
Message indicating automatic installation not complete	"Licensed programs, PTFs, and secondary language recovery" on page 90

Licensed Internal Code recovery

Use this procedure if an error occurred when you installed the Licensed Internal Code.

- Use the following table to determine the action to take if the Install Licensed Internal Code - Error display shows the following message:
An unrecoverable error occurred. The error reason code is listed below. This install cannot be completed. Give the reason code to your service representative. Do not re-IPL the system until your service representative can retrieve any needed information.

Return code for Licensed Internal Code - Error display	
Reason code	Action
51 52 53 54	If you are using optical media, clean the media. If you are using tape, clean the tape device. Then retry the installation.
All others	Retry the installation. If the installation fails again with the same reason code, retry the installation with another set of media. If the same failure occurs, contact your service representative.

- For Licensed Internal Code SRCs, go to one of the following sources:
 - If the SRC is of the form A6xx 6xxx, refer to the appendix on Licensed Internal Code SRCs in the book Backup and Recovery  .
 - If any SRC other than an A6xx 6xxx appears, go to Analyze server and system problems and follow the instructions.
- Find the SRC that is shown on the control panel display and take the appropriate recovery action. If the SRC indicates that you have a media error, thoroughly clean the installation device. If you are using optical media, clean the media. If you are using tape, clean the tape head and tape path thoroughly. Then continue with the next step. If you receive another error message that indicates a media error on the same media, get another set of media to complete the installation process.
- You are trying to do one of the following:
 - Install from optical media when an alternate installation device is enabled.
 - Use an alternate installation device which is not enabled.

Go to How to Set Up an Alternate Installation Device or How to Disable an Alternate Installation Device in the *Software Installation* manual (Appendix H) and perform the appropriate procedure.

If you cannot find the address information or the configuration has changed and the address is wrong, you must determine the address by physical

inspection. This inspection can be difficult and could vary depending on your system model and the specific configuration of your IO buses. For this reason, IBM recommends that you call your next support level for help in determining the addresses for the alternate installation device. A service agreement may be required for this type of assistance.

5. Start the installation process again.

If you were using the automatic installation process, go to Starting the Automatic Installation Process Again in the *Software Installation* manual to start the installation process again. You must load the first volume in the installation device to start the automatic recovery installation process.

If you were using the manual installation process, go to Starting the Manual Installation Process Again in the *Software Installation* manual to start the installation process again.

The following table lists error messages that could occur during the installation of Licensed Internal Code when using image catalogs.

Error messages	
Message	Description
B60041FD	<p>Cause: This SRC occurs when the decompression of Licensed Internal Code fails when performing an installation using image catalogs. A main storage dump occurs. This should be copied to the auxiliary storage pool (ASP) or media. Words 12 and 13 of the SRC contain reason codes that indicate why the failure occurred.</p> <p>Recovery: No Licensed Internal Code has been installed yet. You can either restart the server by using the currently installed Licensed Internal Code (perform a B-side IPL) or by using the physical media to install.</p>
B60041FC	<p>Cause: This SRC occurs when the Licensed Internal Code installation fails when performing an installation using image catalogs. Words 12 and 13 of the SRC contain reason codes that indicate why the failure occurred.</p> <p>Recovery: Use physical media to perform the installation.</p>

Operating system recovery


Use this procedure if an error occurred when you installed the OS/400 operating system.

1. If a problem occurs when you are replacing or installing the operating system, an SRC appears on the control panel display, or an error message appears on the console. Use the tables below to determine the cause of the problem and take the action indicated. Then continue with the next step in this list.
2. If you were using the automatic installation process, start the process again using the instructions in “Start the automatic installation process again” on page 94.

3. Start the manual installation again using the following steps.

Attention! If you do this on a primary partition when secondaries are active, this will cause all partitions to IPL immediately. If you have active secondary partitions, power them off before you use this procedure.

 - a. Load the first volume (B29xx_01) into the installation device for the alternate IPL. Prepare the device.
 - b. Use the control panel to set the mode to **Manual** and select function **03**. Press Enter on the control panel.
 - c. Return to the task that failed and start the task again at the step where the IPL or Install the System display appears on the console.
 - d. After you respond to the Confirm Install of Operating System display, you should see the Select a Language Group display. Verify that the language feature that is displayed matches the language feature for the OS/400 installation media that you are using.

Operating system problems	
Symptom	Action
B900 3000 through B900 308F	The SRCs in this range are displayed by the installation of the operating system process. Review the information in Analyze server and system problems. Take the appropriate recovery action. Then return to Software Installation  to start the installation process again.
B900 3100 through B900 37FF	The SRCs in this range are displayed by the start operating system process. Go to Analyze server and system problems. Take the appropriate recovery action.
Other SRCs not listed in this table.	If the SRC is not in the range of SRCs listed in this table, go to Analyze server and system problems.

The following table contains some of the error messages that could occur during the installation of the operating system.

Error messages	
Message	Description

Error messages	
CPZ2003 CPZ2004 CPZ2005 CPZ2010 CPZ2011	<p>Cause: The installation process received a tape or optical media error code. Recovery for Error Code Ex10 0019 or Ex10 001A:</p> <ol style="list-style-type: none"> 1. Clean the media. <ul style="list-style-type: none"> • If you are using tape, clean the tape head and tape path thoroughly. • If you are using optical media, clean the media with a clean lint free cloth. Gently wipe the disc from the center to the outside of the disc. 2. Try the installation process again. <ul style="list-style-type: none"> • If you were using the automatic installation process, go to “Start the automatic installation process again” on page 94. • If you were using the manual installation process, go to step 3 in “Licensed Internal Code recovery” on page 86 to start the installation process again. <p>If you receive another error message indicating a media error on the same installation media, contact your software provider to get another set of installation media to complete the installation process.</p> <p>Recovery for all other error codes: Contact your service representative.</p>
CPZ2022	<p>Cause: The restore options read from the installation profile are not valid.</p> <p>Note: If you create distribution media and specify *NONE for the installation profile name, the media will contain an empty installation profile. These media cannot be used to perform an automatic installation.</p> <p>Recovery: Record the recovery information for the error message. Try to install the operating system again using the manual installation process. You can also try to use the automatic installation process with a different set of media. If the problem occurs again during an automatic installation process, contact your next level of service.</p>

Error messages	
CPZ2023	<p>Cause: The installation options read from the installation profile are not compatible with the current state of the system.</p> <p>The installation requested by the options read from the installation profile cannot be performed. For example, this condition can occur when an installation is requested that does not load program objects and the QSYS library is damaged.</p> <p>Recovery: Try to install the operating system again using the manual installation process.</p>
CPZ20xx	<p>Cause: These termination messages are displayed by the installation of the operating system process. Print the display if possible; otherwise, copy all of the information.</p> <p>Recovery: Read the instructions for the messages that are displayed on the console. Perform the recovery action described in the message to correct the problem and then try the installation process again.</p> <p>Note: A short time after you press Enter, a B900 xxxx SRC is displayed. Analyze server and system problems contains additional information.</p>

Licensed programs, PTFs, and secondary language recovery

Use this procedure if an error occurred when you installed a licensed program, PTF, or secondary language.

1. Type GO LICPGM on any command line.
2. On the Work with Licensed Programs menu, type 50 (Display log for messages). Press Enter.
3. The Display Install History display appears. Press Enter.
4. The Display History Log Contents display appears. Look at the messages to determine the installation status of the licensed programs and PTFs. The messages show what part of the licensed program installation function has failed. Areas where the failure could have occurred include the following:
 - Installing the IBM-supplied libraries
 - Installing the licensed programs
 - Installing PTFs
 - Installing a secondary language
 - Initialization process

If a problem such as a power failure occurs during a process in the preceding list, you could see a message that the process has started. An example of such a message is Licensed program installation process started. However, the failed or completed status message may not display.

5. There should be one or more messages that indicate which IBM-supplied library or licensed program failed. Be sure to look at all of the messages. Use F10 (Display all) to see all messages.
6. To see the online help information, move the cursor to the message and press the Help key. Look at the online help information for the error message to get the message identifier and more information about the cause and recovery for the failure. Go to the *Error messages* table in this topic to review the list of possible messages that you could see.
7. A copy of the job log has been spooled to an output queue.

To locate and display the job log, enter one of the following Work with Spool File (WRKSPLF) commands:

- For automatic installation, type the following command: WRKSPLF SELECT(QLPAUTO) ASTLVL(*INTERMED), and press Enter.
- For manual installation, type the following command: WRKSPLF SELECT(QSECOFR) ASTLVL(*INTERMED), and press Enter.
- For the PTF process, type the following command: WRKSPLF SELECT(QSYS *ALL *ALL SCPF) ASTLVL(*INTERMED), and press Enter.

If the display shows More..., on the bottom of the display, page down (Roll up) until Bottom... appears. Select option 5 (5=Display) on the last entry.

Note: Ignore any error messages listed in the nnnnnn/QSYS/QLPINSTALL job log. These messages are not installation error messages.

Scan the job log for error messages. Determine the cause and recovery for each error message in the job log. Go to the *Error messages* table in this topic for a list of possible messages that you could see. Be sure to scan the entire job log. There could be more than one failure. Scan the job log by using the message ID. Remember that the message ID is case-sensitive.

8. Select option 10 (Display installed licensed programs) on the Work with Licensed Programs display. The Installed Status column indicates which licensed programs and optional parts are installed. The Installed Status column also indicates if each licensed program installed successfully and if it is compatible with the installed operating system. Refer to Installed status values (Appendix E in the *Software Installation* manual) for a description of the installed status values.

You can press the F11 key to see a view of the display that shows the Installed Release column. The version, release, and modification value appears for licensed programs that are either installed compatibly or are installed at a back level. Page down (Roll up) through all of the displays to see the status of your licensed programs.

Check to see if the licensed program that you are installing had a different language feature code than your primary language feature code. If it does, the licensed program either is flagged as *ERROR or the column is blank. The language objects for the licensed program are installed in a secondary language library. Obtain distribution media with the correct primary language feature code. Press the F3 key to return to the Work with Licensed Programs menu.

9. After you determine the cause of the error and complete the recommended recovery action, resume the installation process. If you were using automatic installation, go to "Start the automatic installation process again" on page 94. If you were using the manual installation process, go to "Start the manual installation process again" on page 96.

The following table contains some of the error messages with possible causes of the errors. Look at the messages on your server to determine the exact cause and recovery.

Error messages	
Message	Description
CPA3DD2 CPA3DD3	<p>Cause: The server could not identify the last volume loaded in the device.</p> <p>Recovery: Open the device door, verify that correct volume is loaded, and close the device door.</p>
CPA3DDD CPA3DDF	<p>Cause: The installation process is expecting more licensed programs to be loaded.</p> <p>Recovery: If you have more media that contains licensed programs, load the volume and type a G to continue the installation process. If you do not have any more volumes that contain licensed programs, type an X to indicate that there is no more media to load. When the installation process completes, use option 50 of the LICPGM menu to verify messages in the installation history log.</p>
CPA3DE1	<p>Cause: The volume that is loaded does not contain licensed programs that are supported through the Work with Licensed Programs (LICPGM) menu.</p> <p>Recovery: Load the optical media that contains licensed programs.</p>
CPD32B0 reason code 7 CPF327E reason code 3	<p>Cause: 5722SS1 option 1 Extended Base Support failed to install.</p> <p>Recovery: Use the Reclaim Storage (RCLSTG) command and try to install option 1 again.</p>
CPD3713	<p>Cause: The licensed program is currently installed on your server and was not found on the distribution media.</p> <p>Recovery: Get another set of distribution media that contains the licensed program. Install the licensed program again from Installing Additional Licensed Programs (Chapter 9 in the <i>Software Installation</i> manual) or delete the licensed program from your server if you no longer want it.</p>
CPD3D82 CPF3D8F	<p>Cause: These messages could be shown if you did not end all of the subsystems before you started the installation process.</p> <p>Recovery: End all subsystems and start installing the licensed programs again.</p>

Error messages	
CPF371C CPF3731	<p>Cause: Look at the messages previously listed in the job log to determine the failure.</p> <p>Recovery: Take the recommended recovery action.</p> <p>If you received one of these messages, the installation process ended before you completed installing the licensed programs.</p>
CPF371D CPF371E	<p>Cause: These messages could be shown if the wrong volume is loaded. The online information of the message can help determine the cause.</p> <p>Recovery: Load the correct volume and start the process again.</p>
CPF3D96	<p>Cause: Errors occurred during the restoring process for a licensed program.</p> <p>Recovery: Take the recommended recovery action explained in the online help information.</p> <p>If you received these messages, the installation continued with the other licensed programs if the problem was not too severe. However, problems with the tape or system storage level would have caused the installation to end.</p>
CPF3D90 CPF3D81 CPF3D84 CPF3D8B CPF3D8C CPF3D90 CPF3D91	<p>Cause: Errors occurred when restoring a licensed program or PTFs.</p> <p>Recovery: Use the Display Job (DSPJOB) command. Enter DSPJOB nnnnnn/QLPINSTALL/QBCHINST or DSPJOB nnnnnn/QLPINSTALL/QLPINSTALL where nnnnnn is the job number of the job log in the message help of the error message. Select option 4 on the Display Job display to display spooled files. Select option 5 on the Display Job Spooled Files display to determine the cause of the failure. Correct the error and start the installation process again. Ignore error messages in the nnnnnn/QSYS/QLPINSTALL job log. These messages are not installation error messages.</p>
CPF3D82 CPF3D83	<p>Cause: There is not enough auxiliary storage to install the licensed programs that you selected.</p> <p>Recovery: Go to "Licensed program releases and sizes" on page 63 to determine the space requirements for each licensed program that you want to install. Obtain additional auxiliary storage and start the installation process again.</p>

Error messages	
CPF3D85 CPF3D86 CPF3D8E	<p>Cause: An object or PTF is not installed because it requires successful installation of a licensed program. That licensed program may not be installed or may be installed at the wrong release.</p> <p>Recovery: See the previous messages in the job log to determine if the licensed program is installed successfully. Correct any errors or install the required licensed program and start the installation process again.</p>
CPF3DD3	<p>Cause: The device description could not be found or could not be used.</p> <p>Recovery: Create a device description for the installation device (optical or tape). Use the CRTOPTDEV command to create a device description for the optical device that supports the optical media class. Use the CRTDEVTAP command to create a device description for the tape device. Then start the process again.</p>
CPI3D82 CPI3D84 DPI3D85	<p>Cause: A licensed program that is included on the distribution media was not currently installed on the server.</p> <p>Recovery: Use the online information of the message for recovery help. Use Installing Additional Licensed Programs (Chapter 9 in the <i>Software Installation</i> manual) to install the licensed program.</p>
Media error messages	<p>Cause: A media error occurred during the installation process.</p> <p>Recovery: If you are using optical media, clean the disc, then follow the recovery actions that are indicated for this message. If you are using tape, clean the tape head and tape path thoroughly. If you receive another error message that indicates a media error on the same tape, get another set of tapes to complete the installation.</p>

Start the automatic installation process again

Use one of the following methods if you want to start the automatic installation process again after recovering from an error.

Starting the automatic installation process again	
Method	Instructions

Starting the automatic installation process again	
Method 1: Licensed Internal Code	<p>When to Use: This method should be used if the Licensed Internal Code needs to be installed again. If you are sure the Licensed Internal Code has been successfully installed, you do not need to use this method. No message indicates that the Licensed Internal Code has been installed successfully; however, messages do indicate that the operating system has been installed successfully. If the operating system has been installed successfully, so has the Licensed Internal Code.</p> <p>How to Use: To start an installation process again, use the instructions in Replacing a Release Using Automatic Installation (Chapter 3 of the <i>Software Installation</i> manual).</p>
Method 2: Operating System	<p>When to Use: If you are sure the Licensed Internal Code has been installed successfully, use Method 2 to install the operating system again. Method 2 is faster than using Method 1 because the Licensed Internal Code does not need to be installed again. No message indicates that the Licensed Internal Code has been installed successfully; however, messages do indicate that the operating system has been installed successfully. If the operating system has been installed successfully, so has the Licensed Internal Code.</p> <p>How to Use:</p> <ol style="list-style-type: none"> 1. Use the control panel to set the mode selector to Manual and the function selected is 03 (Start IPL). 2. Press the Enter button on the control panel. 3. Load the volume B29xx_01 in the installation device. 4. When the IPL or Install the System display is shown, set the mode selector on the control panel to Normal. 5. Select option 4 (Perform an automatic install of the operating system) on the IPL or Install the System display. 6. Continue with step 11 (begins with loading the next volume (B29xx_01) under Task 1. Using Automatic Installation (Chapter 3 in the <i>Software Installation</i> manual).

Starting the automatic installation process again	
Method 3: Licensed Programs	<p>When to Use: Use the Work with Licensed Programs display to install only the licensed programs that failed to install. Make sure the Licensed Internal Code and the operating system are successfully installed.</p> <p>How to Use: Determine which products failed to install. Use option 11 (Install licensed programs) on the Work with Licensed Programs display. To install the licensed programs from a list, refer to Installing Additional Licensed Programs (Chapter 9 in the <i>Software Installation</i> manual).</p>

Start the manual installation process again

Use one of these methods if you want to start the manual installation process again after you recover from an error while installing licensed programs, PTFs, or secondary languages.

Starting the manual installation process again	
Method	Instructions
Method 1	<p>When to Use: This method should be used if several licensed programs are not installed.</p> <p>How to Use: To start an installation process again using method 1, use option 1 (Install all) on the Work with Licensed Programs display. Refer to Using Option 1. Install All (Appendix B in the <i>Software Installation</i> manual).</p>
Method 2	<p>When to Use: This method should be used if one or more licensed programs are not installed and you want to install only those licensed programs or optional parts that failed.</p> <p>How to Use: To start the installation of only those licensed programs or optional parts that failed, use the instructions in Installing Additional Licensed Programs (Chapter 9 in the <i>Software Installation</i> manual). Complete all of the instructions in that part.</p>
Method 3	<p>When to Use: This method can be used if only one or two licensed programs had PTFs that failed to install. Consider installing PTFs for only those licensed programs that failed.</p> <p>How to Use: To install PTFs for selected licensed programs, use the GO PTF menu and select option 7.</p>

Starting the manual installation process again	
Method 4	<p>When to Use: This method should be used if several licensed programs had PTFs that failed to install. Consider installing the entire cumulative PTF package again.</p> <p>How to Use: To install the cumulative PTF package, use the instructions in the <i>iSeries System PTF Shipping Information Letter</i>.</p>

Initialize System (INZSYS) recovery information

In a software upgrade, the installation is complete when the licensed program portion of the installation process completes and the INZSYS process successfully completes. The installation process must end before the INZSYS process is automatically started. This process is initiated during **each** IPL after you install the QUSRSYS library until the INZSYS process has successfully completed. The INZSYS process will not be initiated during the IPL if the system is in the restricted state. If the INZSYS process is initiated during the IPL, it runs in the SCPF system job.

Note: If you perform an IPL before installing a cumulative PTF package, make sure that the INZSYS process has completed before you start to install the PTF package. Using any PTF commands before INZSYS completes causes the INZSYS to fail.

The completion time for INZSYS varies. Allow sufficient time for this process to complete.

When you select option 50 (Display log for messages) on the Work with Licensed Programs menu, you should see the message Initialize System (INZSYS) started. Later, you should see the message Initialize System (INZSYS) processing completed successfully(CPC37A9). If you do not see the completed message, or if the message Initialize System (INZSYS) failed appears, look at the job log to determine the problem. Use the information in the job log to correct the problem. Then start the conversion process again.

To start the conversion process yourself, you can either use a batch job or enter INZSYS on the command line. If you use a batch job, you can use your workstation while the process is running, but the server cannot be in a restricted state. Batch jobs do not run when the server is in a restricted state. If you enter INZSYS from a command line, IBM recommends that the server be in a restricted state. Setting the server to a restricted state reduces the time that is needed for the INZSYS process to complete. Before you use the INZSYS command, set the mode selection to **Normal** and set the IPL type to **B** (or the IPL type that you use for everyday operation).

To set the server to restricted state, do the following:

1. Type: **CHGMSGQ QSYSOPR *BREAK SEV(60)** and press Enter.
2. A message display could be shown. Press Enter. (Ignore the messages that are shown.)
3. To put the system in a restricted state, type the End Subsystem (ENDSBS) command: **ENDSBS *ALL *IMMED**

The message System ended to restricted condition appears. Press Enter to continue.



To start the conversion process again, do the following:

1. Type: **INZSYS** and press Enter.
2. Use option 50 (Display log for messages) on the Work with Licensed Programs menu to make sure that the process completes successfully.

Do not attempt to save your system until the INZSYS process has completed successfully.

Start from a power-off condition

If your system unit power is off, perform the following steps to power on the system and begin a normal installation. When you complete this topic, you will be instructed to return to the appropriate step of your original installation procedures.

1. Use the control panel to select function **02** and press the Enter button. Then select IPL type **D**.
2. Set the mode selector on the control panel to the appropriate position.
 - If you were directed here from replacing a release using automatic installation, set the mode selector to **Normal**.
 - If you were directed here from replacing a release using manual installation, verify that the mode selector is in the **Manual** position. On some iSeries models, you will not have a mode selector. Instead, use the increment or decrement buttons to scroll to function 02, press Enter, and then scroll through to **DM** or **DN**.
3. Press Enter on the control panel.
4. Make sure that the power is on for the display station being used as the console.
5. Verify that the switch is in the On position if the installation device used for the alternate initial program load (IPL) has separate on and off switches.
6. Load the media and make the device ready. If you cannot load the media now, you will be able to in step 9.
7. **Optional:** If you have a 1/4-inch cartridge tape, load the first tape volume into the tape device for the alternate IPL. Close the door on the tape device.
8. Turn the power on for the server by pushing the power switch once.
9. If you could not load your media in the previous steps, load the first volume into the tape or optical device for the alternate IPL now.
10. You are ready to return to your original installation procedures.
 - If you are performing automatic installation, continue with step 8 in the automatic installation chapter in Software Installation 
 - If you are performing a manual installation, continue with step 7 in the manual installation chapter (replacing Licensed Internal Code) in Software Installation  .

Disk configuration warning and error messages

You see a disk configuration warning or an error report when your server detects errors or warning conditions in your disk configuration.


You may see this display immediately after the hardware upgrade procedure or while you are installing the operating system.

The action you take for each message depends on the upgrade method that you are using. The following table lists the messages that you might see on the display and the actions that you should take.

For each message, you can select option 5 (Display Detailed Report) to see more information about why the message occurred and what possible actions are available.

Attention! Are you using Option 1? When you are installing the Licensed Internal Code by using option 1 from the Install the Licensed Internal Code (LIC) menu, disk configuration warning messages might mean that the server will not be able to recover its ability to access the data on your disk units. Please do not ignore these messages or attempt to resolve them without consulting the table. An incorrect response will probably require you to reload your data.




Disk configuration warning messages	
Warning messages	Your Action: Option 1 (Restore Licensed Internal Code)
Disk unit not formatted for optimal performance	Do the following: 1. Type a 5 (Display Detailed Report). 2. Write down the disk units that should be reformatted. 3. Press F12 to return to the warning report display. 4. Press F10 to accept the warning and continue. You cannot reformat the disk units during the upgrade procedure.
Unit possibly configured for PowerPC AS	Contact software support before you proceed.
Unit possibly configured for IMPI	Contact software support before you proceed.
Missing disk configuration	Contact hardware support before you proceed.
Unknown load source status	Contact hardware support before you proceed.
Load source failure	Contact hardware support before you proceed.
Restore load source	Contact software support before you proceed.
Missing disk units in the configuration	Contact hardware support before you proceed.
Restore in progress	View the online information and take the appropriate recovery action.
Device parity protected units in exposed mode	You have a failed unit in a parity set. You can ignore this message and continue the upgrade procedure. However, you should contact hardware support immediately after the upgrade procedure.

Disk configuration warning messages	
No alternatives available	Contact software support before you proceed.
New disk configuration	Contact software support before you proceed.
Incorrect Licensed Internal Code installed	Contact hardware support before you proceed. The load source unit and its mirrored pair might be configured incorrectly.
Change load source location	Contact hardware support before you proceed. Your load source unit might be configured incorrectly.
Bad load source configuration	Contact hardware support before you proceed. Your load source unit might be configured incorrectly.
Overflowed ASPs	Wait to correct the problem until after the upgrade process is complete. The book Backup and Recovery  describes how to reset an overflowed ASP.
Lower level of protection	Ignore during the installation procedure. However, you should analyze your mirrored configuration after the installation procedure.
Logical partition configuration error	Do the following: <ol style="list-style-type: none"> 1. Type a 5 (Display Detailed Report). 2. Write down the disk units that contain the error. 3. Press F12 to return to the warning report display. 4. Press F10 to accept the warning and continue. <p>Refer to Troubleshoot logical partitions.</p>


Chapter 12. Related software installation information

Listed below are the iSeries manuals and IBM Redbooks^(TM) (in PDF format), Web sites, and Information Center (*categories or*) topics that relate to the Install OS/400 and related software topic. You can view or print any of the PDFs.




Manuals



- **Software Installation**  (about 250 pages)
- **Memo to Users**  (about 50 pages)
This document provides information about software and hardware changes that could potentially affect your system operations.
- **Backup and Recovery**  (about 600 pages)

Redbooks

- **iSeries Handbook** 
This book provides a product overview of the iSeries software for the release. It also discusses hardware concepts and technical specifications for iSeries models and features.

Web sites

- **IBM  SERVER** iSeries Support 
This Web site contains tools and resources such as preventive service planning (PSP) information and authorized problem analysis reports (APARs) that help you with your software installation.
- **iSeries Planning** 

This web site provides links to a variety of planning tools and information.
- **iSeries Upgrade Planning** 
This web site provides information on iSeries products or features which may not be supported in future releases of the OS/400 operating system or on future iSeries models, Product Previews, and Statements of Directions.
- **IBM Electronic Service Agent for iSeries** 
This Web site provides information on Electronic Service Agent, 5798-RZG, a no-charge licensed program that resides on your server. It is designed to monitor events and to transmit server inventory information to IBM on a periodic, customer definable timetable.

Other information in the Information Center

- **Backup and recovery** contains information on how to plan a backup and recovery strategy, how to set up disk protection for your data, how to back up your system, and how to control your system shutdown in the event of a failure. It also includes information about the Backup, Recovery, and Media Services plug-in to iSeries^(TM) Navigator.
- **Basic system operations** contains topics on iSeries basic operations, OS/400 concepts, and analyzing and reporting system problems.

- **Logical partitions** allow you to distribute resources within a single iSeries(TM) server to make it function as if it were two or more independent servers.
- **Software and licensed programs** indicates how you can manage and maintain fixes and licensed programs in your network.

Saving PDF files

To save a PDF on your workstation for viewing or printing:

1. Right-click the PDF in your browser (right-click the link above).
2. Click **Save Target As...**
3. Navigate to the directory in which you would like to save the PDF.
4. Click **Save**.

Downloading Adobe Acrobat Reader

If you need Adobe Acrobat Reader to view or print these PDFs, you can download a copy from the Adobe Web site

(www.adobe.com/products/acrobat/readstep.html)  .



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