IBM Systems - iSeries

Systems management
Basic system operations

Version 5 Release 4

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Note

Before using this information and the product it supports, read the information in “Notices,” on page 41.

Sixth Edition (February 2006)

This edition applies to version 5, release 4, modification 0 of IBM i5/OS (product number 5722-SS1) and to all subsequent releases and modifications until otherwise indicated in new editions. This version does not run on all reduced instruction set computer (RISC) models nor does it run on CISC models.

Contents

Basic system operations

The iSeries™ server is a versatile, powerful, and easy-to-use system. However, many of the functions and features of this environment are specific to IBM® and the iSeries, and might not be familiar to people who are more familiar with a Windows® or UNIX® operating system.

This topic introduces some of the key concepts and tasks required for iSeries basic operations. Many of these topics provide an introduction and example, and then suggest further resources for more detailed or advanced information.

Note: By using the code examples, you agree to the terms of the "Code license and disclaimer information" on page 38.

Printable PDF

Use this to view and print a PDF of this information.

To view or download the PDF version of this document, select Basic system operations  (about 565 KB).

- Storage solutions (177 KB) contains the following topics:
  - Objects
  - Disks
  - Tapes
  - Optical
  - Storage area networks
- Control panel (335 KB) contains the following topics:
  - Control panel concepts
  - Set up your control panel
  - Access control panel functions
  - Instructions and descriptions for control panel functions
  - Use remote control panel APIs

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iSeries basic operations

Use this topic to find procedures and supporting information for common system tasks.

The iSeries server is built to require only minimal effort to keep it running reliably, and most of the routine operations are performed quickly and easily when you are familiar with them. Use the relevant topics to help you learn about some of the common system tasks.

Use iSeries interfaces

Depending on the type of connection to the iSeries server, and the task you need to perform, there are several options available for iSeries interfaces. Learn how to access and use iSeries Navigator, the character-based interface, and the wireless clients.

There are two ways to access the iSeries server, from character-based interfaces on an attached console or emulator session and the graphical user interface in iSeries Navigator. The interface you need to use depends on your connection type to the iSeries server and the task you need to perform. In this topic, you will learn how to access the iSeries server from the character-based interface and some functions of this access method.

Character-based interface

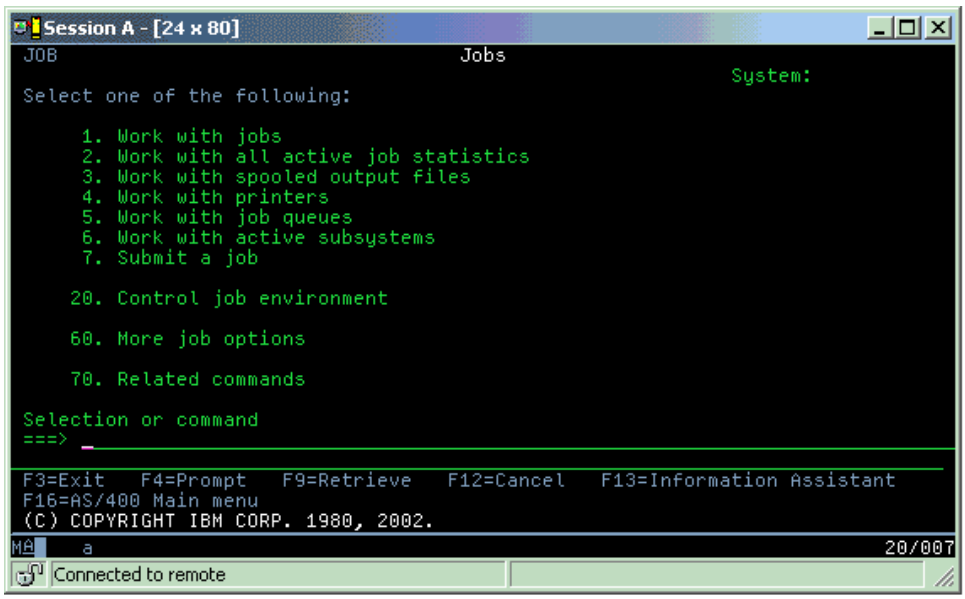
The character-based interface, available from most emulator sessions or consoles, might seem unfamiliar to people without iSeries experience. This topic explains how to navigate the i5/OS™ menus and provides some suggestions for learning to use this interface.

The character-based interface is available from most consoles and emulator sessions connected to an iSeries server, and allows more functions than any other interface. While this type of interface may be unfamiliar at first, it includes several easy methods for helping new users, and a menu-based hierarchy of tasks to make finding specific functions simple.

The character-based interface includes three primary displays: navigational, input, and informational. The navigational display typically consists of a list of menu options and a command line. You can use this to find information or tasks on the iSeries server, and to enter control language (CL) commands. Input displays are available when the operating system requires information from you. Use this display to enter or change information. Informational displays provide server information and do not allow any interaction.

Find functions or tasks

All server tasks are organized into categories accessible through the main menu. You can enter menu selections to move through this hierarchy until you find the task you are looking for. Different users might have different menu options available to them, depending on the security strategy, restrictions set by the system administrator, and the active user profile. When you have found a menu option you need to use, you can enter commands at the **Selection or Command** prompt located at the bottom of the display. Many menu displays have a name listed in the top-left corner of the display. This name allows you to access it using the GO command followed by the name of the menu. For example, GO JOB instructs the operating system to display the job menu:



Get help

The character-based interface provides several methods for assisting users. First, online help is available for many displays by pressing the help or F1 key. You can often get help with a particular field or item by placing your cursor on it and then pressing the help or F1 key. When you are entering data, you can also get help by entering a ? in a data field. Finally, the amount and type of information displayed on the display can be controlled by changing the assistance level. The assistance level determines what version of a display you see. Many system displays have two different versions:

- A *basic assistance level* version, which contains less information and does not use technical terminology.
- An *intermediate-assistance level* version, which shows more information and uses technical terms.

Some fields or functions are available only on a particular version of a display. The instructions tell you which version to use. To change from one assistance level to another, use F21 (Select assistance level). F21 is not available from all displays.

The Connecting to the iSeries might help you understand the differences between these interface options, and provide some instructions for how to use them effectively.

There are many interfaces available for iSeries servers, and the interface you use depends on the type of connection and the functions you require. This topic includes instructions and requirements for using consoles, wireless interfaces, and iSeries Navigator.

Related concepts

Connecting to the iSeries

"i5/OS commands" on page 28
i5/OS uses control language (CL) commands to interpret instructions from users. Learn the basic rules for using CL, and how to get detailed help for any CL command.

Work with devices

Most of the peripheral equipment attached to the iSeries server is considered a device. Use this information to set up and configure devices, and to learn about your system's configuration.

A device is a piece of equipment that is connected to your system. Most hardware, including internal processors, ports and adapters, drives, communications hardware, workstations, and printers are considered devices. To manage these devices, the operating system organizes these devices by their type,

such as workstation or optical drive (CD-ROMs), and identifies specific devices by their resource name. For most internal devices, like processors, adapters and ports, the operating system automatically assigns the resource name. For most external devices, and some internal storage devices, the iSeries server manages communication with the device through a device controller. Most devices managed through a controller have resource names defined by their device description. You can use the device type to learn its resource name, physical location, current status, and other information.

Every device in the system has a current status that describes whether it is turned on, and whether it is currently communicating with the system. Before a device can function, both this device and all devices connecting it to the iSeries server must be varied on (Operational) and functioning. For example, if a communication line or network adapter is varied off, any device attached to the iSeries server through those devices will not function.

Most devices have the following possible types of status:

Table 1. Possible types of status for most devices

Status	Description
Varied off	The operating system has disabled the device, and it must be varied on again before communicating with the iSeries server
Varied on (Operational)	The operating system has enabled communications with the device, and is waiting for communications.
Pending	The operating system is attempting to enable communications with the device.
Active	The device is currently busy communicating with the server, and cannot be varied off.

Other types of status are possible for some specific device types, or to indicate a specific problem. For example, a workstation that is waiting for a user to sign on will have a status of Signon display, and a device that the operating system is unable to locate will have a status of Resource not detected.

View and manage devices

iSeries Navigator allows you to display the current status, physical location, and configuration information for devices. To work with devices in iSeries Navigator, expand **Configuration and Service** and select **Hardware**. You can display detailed information about the device, including its model, type and serial number, physical location in the iSeries server, and logical address by right-clicking on the device and selecting **Properties**. Additionally, iSeries Navigator provides many functions for managing tape devices, disk units, and pools. See the online help in iSeries Navigator for more information.

To change the status or properties of a device, you must use the character-based interface and type `go device` from any command line.

Related information

Local Device Configuration PDF

Work with printer output

Many jobs on the iSeries server result in printer output. Learn how to find, track, and manage printer output across the iSeries server.

Many jobs generate output that requires printing. The operating system handles this by creating spooled files that contain the document data and processing instructions for the print job. After creating the spooled files, the operating system sends them to an output queue. Similar to a job queue, output queues hold many spooled files until a printer becomes available. The output queue that the operating system sends the spooled file to varies according to the job attributes, user profile, and workstation settings. Before any of the spooled files can be printed, a printer device must be varied on, and a print writer

started. The print writer is an i5/OS function that runs for each active printer on the system. When started, the print writer watches the specified output queue (or queues) and sends the spooled files to its printer.

Related concepts

Printing

Manage printer output

With iSeries Navigator , you can to find and manage printer output from two locations: Basic operations and work management.

- To see a list of spooled files waiting specifically for printing, expand **Basic Operations**, and then click **Printer Output**. This displays all spooled files associated with the current user. You can work with other print jobs by selecting **View** → **Customize this view** → **Include** from the iSeries Navigator menu. Right-click a spooled file to hold, release, move, or delete the print job, or convert it to a PDF. Additionally, you can select **Properties** to change many of the spooled file attributes.
- To see a list of all output queues, expand **Work Management**, and then click **Output queues**. This will display all output queues for all users. An output queue is an object that contains a list of spooled files to be written to an output device, such as a printer. Select any output queue to display the list of spooled files for that queue.

Start printers

From the command-line interface, you can start an iSeries printer.

Before you start the printer, verify the following conditions:

- The printer is turned on and ready.
- The printer or print method has been configured in the operating system.

To start an iSeries printer from the command line interface, perform the following steps:

1. Vary on the printer:
   a. Enter WRKCFGSTS *DEV *PRT command. The Work with Configuration Status display shows a list of devices.
   b. Enter a 1 next to the printer device description to vary on the printer.
2. Use the Start Print Writer (STRPRTWTR) command to start the print writer, and specify the printer and output queue (or queues) that the writer will service.

Start an iSeries printer from iSeries Navigator

From iSeries Navigator, you can start an iSeries printer.

To start an iSeries printer from iSeries Navigator, perform the following actions:

1. In iSeries Navigator, select your server, expand **Basic Operations**, and click **Printers**.
2. If the status of the printer (shown in the right pane) is **Unavailable**, right-click the printer and click **Make Available**.
3. Right-click the printer and click **Start**.

Work with storage

The iSeries server offers many options for fixed and removable storage media. Use this topic to help you configure and maintain storage media like disks, disk pools, tape cartridges, and CD-ROMs.

The iSeries servers offer a wide variety of options for storing system data. Internally, the iSeries server includes disk units that can be distributed across several expansion units (or towers). As a system operator, you might need to work with these disk units and track their usage across your business.

Additionally, there are many options for working with removable media like tapes and optical devices (CD-ROMs or DVDs). These storage devices are frequently used for backing up the system and archiving data.

Related concepts

Storage solutions

Work with the control panel

The control panel is the initial interface on your iSeries server. With the system control panel, you can determine processor activity, read error codes to help determine component failure analysis, power the system on and off, as well as change initial program load (IPL) characteristics. You can use the physical control panel on the system or set up a remote control panel to perform these operations.

Note: The information in this topic pertains only to IBM model 270 and 8xx model servers. If you have a different model server, see the IBM Systems Hardware Information Center for more information.

From the control panel, you can process system functions such as the following actions:

- Determine processor activity
- Display and get attributes or error codes to analyze problems
- Turn on or off the system
- Set IPL characteristics

You can use the physical control panel on the system or set up a remote control panel to perform these operations. It might helpful to you if you set up the virtual control panel or the remote control panel. You can access control panel functions and use APIs to operate your remote control panel with a user-written program.

Related concepts

Control panel

Related information

IBM Systems Hardware Information Center

Start and stop the server

The iSeries server is well known for rarely needing to be stopped or restarted. However, some maintenance items or system changes may require that the iSeries server stop processing and go through an initial program load (IPL). Stopping and starting the iSeries must be done carefully. Use this topic to review requirements and options for this process.

Note: The procedures for starting and stopping the server depend on whether you have a partitioned system. The following instructions are relevant only for an iSeries server without partitions. If you have a partitioned system (without the hardware management console for eServer™), see Restart and power down a system with logical partitions within the Logical Partitions topic. If you have a partitioned system (with the hardware management console for eServer), see Partitioning with an eServer i5.

Regardless of how your iSeries server is configured, starting and stopping the server requires careful planning to prevent data loss and to protect system integrity. The iSeries server provides several methods for starting the system to allow for various amounts of interaction with the user.

Note: Several system values determine the available options for starting and stopping the iSeries.

Related concepts

Partitioning with an eServer i5

Related tasks

Restart and power down a system with logical partitions

Start the server

Use this topic to select a method for starting your server and handling problems with IPL.

Some changes to the system settings or hardware configuration require the iSeries server to go through a startup sequence called an initial program load (IPL). During an IPL, system programs load from the designated load source device in the system auxiliary storage. The system hardware is also checked. The iSeries server control panel displays a series of system reference codes that indicate its current status and warn you of any problems. When the IPL is finished, the character-based interface presents the sign-on display, and users will be able to sign on with iSeries Navigator.

During the IPL, the control panel displays a series of system resource codes (SRCs) indicating the current system activity.

There are various options for starting an iSeries server.

Related tasks

IPL system reference code (SRC) finder

Start the system without making configuration changes (unattended IPL)

This is the most common way to start the iSeries server. This topic provides instruction on how to start your system during normal operation.

Prerequisites

This procedure assumes the iSeries server is running, and requires that several additional conditions be met before you begin an initial program load (IPL). While most of these settings are the default values, you must verify them if you are unsure.

- The IPL mode for the iSeries server must be set to **Normal** (unattended IPL).
- The Type of restart (QIPLTYPE) system value must be set to unattended (0).
- Turn on any devices, such as display stations, printers, tape devices, and controllers you or others may want to use.

Situation

Unattended IPLs reset system storage and recognize any configuration changes automatically. The amount of time required for any IPL depends on the size and complexity of the system, ranging from a few minutes to several hours. When the unattended IPL is complete, the **Sign On** display appears on the display station.

Note: If you are working on a system that has logical partitions, you need to understand how to restart and turn off the system with logical partitions.

To perform an unattended IPL

Enter different options on the command line to perform an unattended IPL.

1. Type ENDSYS or ENDSBS *ALL on any command line and press Enter.

   Note: More options are available for the End System (ENDSYS) and the End Subsystem (ENDSBS) commands, for example, to set delay time.
2. Type WRKSBS to verify that the controlling subsystems have ended and are in the restricted state. The subsystems status must be RSTD.
3. Type PWRDWNSYS *IMMED RESTART(*YES) on any command line and press Enter.

When the unattended IPL is done, the sign on display appears on the display station. To schedule an unattended IPL, see Schedule a system shutdown and restart.

Related concepts

"Operating mode of an IPL" on page 12
Use the *operating mode* to determine the number of options that are presented to the operator for consideration during and after the initial program load (IPL). It can also secure (lock) the control panel to prevent an unauthorized or inadvertent IPL from the control panel.

"System values that control IPL" on page 24
You can use the system values discussed in this topic to control the type of initial program load (IPL) and the way the system does an IPL.

Controlling subsystem

"Schedule a system shutdown and restart" on page 17
Set up a schedule that automatically powers your system on and off. You can determine the time of day you want the system powered on and off. You can also specify special circumstances that change the normal daily schedule, such as a holiday or special closing.

Related tasks

Restart and power down a system with logical partitions

Related reference

ENDSYS (End System) Command Description

ENDSBS (End Subsystem) Command Description

Change the system during IPL (attended IPL)

Some situations might require you to enter information or change system values during an IPL. This topic provides instructions for performing a manual IPL.

Prerequisites

This procedure assumes the iSeries server is running, and requires that several additional conditions be met before you begin an initial program load (IPL). Most of these settings are the default values, but you must verify them if you are unsure of the current setting.

- The IPL mode for the iSeries server must be set to **Manual** (attended IPL).
- The Type of restart (QIPLTYPE) system value must be set to attended (1).
- Turn on any devices, such as display stations, printers, tape devices, and controllers that you or others may want to use.

Situation

If you want to change IPL options, install the operating system, use dedicated service tools, work with logical partitions, or recover from a system failure, you need to perform an attended IPL. This IPL mode requires that you respond to several prompts during the startup sequence.

To perform an attended IPL

Enter different options on the command line to perform an attended IPL.

1. Type ENDSYS or ENDSBS *ALL on any command line and press Enter.

   Note: More options are available for the End System (ENDSYS) and the End Subsystem (ENDSBS) commands, for example, to set delay time.
2. Type WRKSBS to verify that the controlling subsystems have ended and are in the restricted state. The subsystems status must be RSTD.
3. Type PWRDWNSYS *IMMED RESTART(*YES) on any command line and press Enter.

After you begin the attended IPL, the system displays the IPL options display where you can choose which options you want to work with during the IPL. During the IPL, the system displays any options that you selected, or that are required due to system changes.

Related concepts

"Operating mode of an IPL" on page 12
Use the *operating mode* to determine the number of options that are presented to the operator for consideration during and after the initial program load (IPL). It can also secure (lock) the control panel to prevent an unauthorized or inadvertent IPL from the control panel.

"System values that control IPL" on page 24
You can use the system values discussed in this topic to control the type of initial program load (IPL) and the way the system does an IPL.

Controlling subsystem

"Change your password" on page 20
When you install the i5/OS licensed program, the licensed program runs a check to detect system model changes, certain service conditions, and ownership changes.

Related reference

ENDSYS (End System) Command Description

ENDSBS (End Subsystem) Command Description

Attended IPL displays:

During an attended IPL, your display station or console displays any required or selected displays.

The following displays appear during the initial program load (IPL) if you select them on the IPL options display:

- Set major system options
- Define or change the system

The following displays appear if system changes require them:

- Edit access paths
- Edit check pending constraints

Set major system options:

The Set Major System Options display allows you to select automatic configuration, the type of device configuration naming, and the special environment in which you want to run.

To set these options, follow these steps:

1. Using the following information, type the new values over the existing values in the following fields:
   - Enable automatic configuration
     - Y (Yes) automatically configures local devices.
     - N (No) indicates no automatic configuration.
   - Device configuration naming
     - *NORMAL uses a naming convention unique to the iSeries server, for example, DSP01 and PRT01 for displays and printers, TAP01 and OPT01 for tape and CD-ROM devices.
     - *DEVADR uses a naming convention which is obtained from the device resource name, for example, DSP010203 for a display station, PRT010203 for a printer, TAP01 and OPT01 for tape and CD-ROM devices.
   - Default special environment
     - *NONE indicates there is no special environment.
2. Press Enter.

Define or change the system at IPL:

By defining or changing the system, you can change system values and other system attributes during the initial program load (IPL).

On the Define or Change the System at IPL display, you can change the system configuration, system values, network attributes, user profiles, and object or file attributes. This display is shown when you type Y (Yes) in the Define or change the system at IPL field on the IPL Options display.

1. Select any of the following options:
   - To change the way the system starts, select option 3 (System value commands).
   - To change any of the other options, select them before exiting and continuing the IPL.
2. When you finish using the options on this display, press F3 (Exit and continue IPL) to continue the IPL.

Related concepts

"Change system values during IPL" on page 14
System values control information that affects the operation of certain parts of the system. Some system values that you change do not take effect until the next initial program load (IPL); other system values take effect immediately.

Edit access paths during attended IPL:

Applications use access paths to determine the order of records in a database file. If the access paths have changed, use the Edit Rebuild of Access Paths display to reconstruct them.

Access paths define the order that records in a database file are organized for processing by a program. If there are access paths to rebuild, the Edit Rebuild of Access Paths display is shown after the IPL Options display.

Tip: Use the online help information about this display to get more information about each column and field.

A message notifies you that a journal needs to perform an access path recovery. A journal is a system object. It is used to record entries in a journal receiver when a change is made to an object associated with the journal. Any access path that is recoverable (because it was recorded) is not shown on this display. The IPL threshold indicates that access paths with a sequence less than or equal to the number specified will be rebuilt at IPL time. It is a value from 1 through 99 that you can set (the default is 50). If the IPL threshold changes, all access paths with a status of IPL and AFTIPL changes to reflect the new status of the IPL threshold.

- To change the sequence of access paths that are rebuilt:
  1. Make any changes to the Seq column.
  2. Press Enter.
- If you do not want to change the sequence, press Enter and the Display Access Path Status display is shown if there are access paths left to be rebuilt.

Tip: Press Enter to continue with the IPL from the Edit Rebuild of Access Paths display.

If no access paths need to be rebuilt, the IPL continues.

If you press F3 (Exit and continue IPL), the access paths are rebuilt while the IPL continues. If you press F12 (Cancel), you return to the Edit Rebuild of Access Paths display.

Every 5 seconds, the display is updated with the current run time. After all the access paths have been rebuilt (access paths with a sequence less than or equal to the IPL threshold), the IPL continues.

Edit check pending constraints during attended IPL:

Some physical files may have restrictions placed on them that need to be verified during an initial program load (IPL). With the Edit Check Pending Constraints display, you can verify the status of these physical files.

During an attended IPL, the Edit Check Pending Constraints display is shown if there are constraints to be verified. A constraint is an attribute that places a restriction or limitation on a physical file.

Tip: Use the online help information about this display to get more information about each column and field.

On the Edit Check Pending Constraints display, you can change the sequence (1 through 99) of the constraints to be verified. If the constraint has a sequence less than or equal to the IPL threshold, it is verified during the IPL. If a constraint has a sequence greater than the IPL threshold, it is verified after IPL. The sequence *HLD indicates that the constraint is not verified until it is changed to a number from 1 through 99. When the IPL threshold changes, all constraints with a status of IPL or AFTIPL are changed to reflect the new status of the IPL threshold.

- To change the sequence of check pending constraints:
  1. Make any changes to the Seq column.
  2. Press Enter.
- If you do not want to change the sequence, press Enter. The Display Constraint Status display is shown if there are constraints left to be verified.

If you press F3 (Exit and continue IPL), the constraints are verified while the IPL continues. Every five seconds, the display is updated with the current run time. After all constraints with IPL status have been verified, the IPL continues. If you press F12 (Cancel), you return to the Edit Check Pending Constraints display.

Change your system IPL from the control panel

You can specify the type of IPL you need to perform from the system control panel.

The Increment/Decrement buttons are used to change the initial program load (IPL) type and mode on servers without a mode button. Use Function 02 to select the IPL type (A, B, or D) and mode (normal or manual). To select IPL type and mode from the control panel, perform the following actions:

1. Use the Increment/Decrement buttons to select Function 02, and press Enter.
2. Use the Increment/Decrement buttons to select the IPL type and mode you want, and then press the Enter button to save.
3. You can also specify a fast or slow IPL that can only be set one time at the console panel when the server is turned off. Select Function 02 and press Enter twice. Then, use the Increment/Decrement buttons to select F(Fast), S(Slow), or V(Value from IPL attributes).

The Hardware diagnostics IPL attribute determines the type of subsequent IPLs. *MIN is the recommended setting, however, if you anticipate any hardware problems, specify *ALL on the Hardware diagnostics parameter. Use the Change IPL Attributes (CHGIPLA) command to change the IPL attribute.

Related concepts

Control panel

Related tasks

Restart and power down a system with logical partitions

IPL type:

The *IPL type* determines which copy of programs your system uses during the initial program load (IPL).

There are four IPL types:

IPL type A

Use IPL type A when directed for special work, such as applying fixes (PTFs) and diagnostic work. For example, use IPL type A in the following circumstances:

- When IPL type B fails
- When the procedures direct you to use IPL type A
- When you suspect problems with temporary Licensed Internal Code fixes.

IPL type A uses the *A copy* of Licensed Internal Code during and after the IPL. This copy of Licensed Internal Code is the permanent copy. It resides in *System Storage Area A*. It contains no temporarily applied fixes.

IPL type B

Use IPL type B for routine work and when directed by a PTF procedure. This type of IPL runs the newest copy of Licensed Internal Code and is necessary when you permanently apply certain fixes.

IPL type B uses the *B copy* of Licensed Internal Code during and after the IPL. This copy resides in *System Storage Area B*. This copy contains temporarily applied fixes. (See keeping your software current with PTFs for more information about fixes.).

IPL type C

Rochester development support reserves this type of IPL for hardware service representatives.

Attention: Do not use this function. Sever data loss can occur with improper use of this function.

IPL type D

Use IPL type D when directed for special work, such as installing and reloading programs.

IPL type D loads the system programs from an *alternate IPL load source*, such as a tape drive or CD-ROM.

Typically an IPL uses programs that are stored on the *primary IPL load source* (typically a disk drive). Sometimes it is necessary to perform an IPL from another source, such as programs that are stored on tape. To do this, you must use IPL type D to IPL from the *alternate IPL load source*.

Use IPL type D only during one of the following situations:

- When install or restore procedures direct you to use IPL type D
- When IPL type B and IPL type A fail (when the *primary IPL load source* cannot IPL the system properly) and only when directed by your support personnel
- When service directs you to perform an *alternate installation*

Related concepts

"Change operating modes and IPL types" on page 13
By changing IPL types, the user can perform an initial program load (IPL) from the load-source media or from an alternate load source media. With this operation, the user can change IPL types to also apply fixes (PTFs). Changing the operating mode gives the user several options in controlling the IPL.

Related tasks

Use software fixes

Operating mode of an IPL:

Use the *operating mode* to determine the number of options that are presented to the operator for consideration during and after the initial program load (IPL). It can also secure (lock) the control panel to prevent an unauthorized or inadvertent IPL from the control panel.

There are four operating modes:

Normal (unattended)

After the power-on, operating the system in **Normal** (unattended) mode requires no operator intervention during the IPL.

When you turn on the system in normal mode, it performs the IPL and presents the Sign On display on all available display stations. The operator cannot change the system during the IPL. Dedicated service tools (DST) and the operating system do not present any displays during this IPL.

Use a normal mode (unattended) IPL to perform the following actions:

- Perform an IPL and run the system for most routine work
- Perform a remote IPL
- Turn on and perform an IPL by date and time

Manual (attended)

After power-on, operating the system in **Manual** (attended) mode means that an operator uses the control panel to direct the system for special needs.

During manual mode IPL, DST and the operating system present menus and prompts that allow you to make changes to the internal system environment. This can include entering debug mode for service representatives to diagnose difficult problems.

Use manual mode to IPL and run the system to perform the following actions:

- Change IPL options (including system values)
- Install the operating system
- Load fixes (PTFs)
- Make some types of system hardware upgrades
- Use DST (for advanced users and service only)
- Problem diagnosis (for advanced users and service only)

Auto (automatic)

Use **Auto** mode for an automatic remote IPL, automatic IPL by date and time, and an automatic IPL after a power failure.

Secure

Use **Secure** mode to prevent use of the control panel to perform an IPL. This mode is not a form of IPL; it is a means to prevent an unauthorized or inadvertent IPL from the control panel.

Related concepts

"Start the system without making configuration changes (unattended IPL)" on page 7
This is the most common way to start the iSeries server. This topic provides instruction on how to start your system during normal operation.

"Change the system during IPL (attended IPL)" on page 8
Some situations might require you to enter information or change system values during an IPL. This topic provides instructions for performing a manual IPL.

"Change operating modes and IPL types"
By changing IPL types, the user can perform an initial program load (IPL) from the load-source media or from an alternate load source media. With this operation, the user can change IPL types to also apply fixes (PTFs). Changing the operating mode gives the user several options in controlling the IPL.

"Solve problems with the automatic power schedule" on page 18
Avoid potential problems with the power-on and power-off schedule.

Change operating modes and IPL types:

By changing IPL types, the user can perform an initial program load (IPL) from the load-source media or from an alternate load source media. With this operation, the user can change IPL types to also apply fixes (PTFs). Changing the operating mode gives the user several options in controlling the IPL.

Change the IPL type and the operating mode for systems with a keystick

To change the IPL type and the operating mode for systems with a keystick:

1. Insert the keystick.
2. Use the Mode button to scroll through the four operating modes (Manual, Normal, Secure, and Auto) and select the Manual mode.

   Note: An indicator light on the control panel shows the active mode.
3. Use the Increment or Decrement button to select function 02 (only available in Manual mode), and press the Enter button.
4. Use the Increment or Decrement button to select the required IPL type (A, B, C, or D) and press the Enter button.

Change the IPL type and the operating mode for systems without keysticks

To change the IPL type and the operating mode for systems without keysticks:

1. Use the Increment or Decrement button to select function 02, and press the Enter button.
2. Use the Increment or Decrement button to select the required IPL type (A, B, C, or D) and the operating mode (either M=manual or N=normal), and press Enter.

   Note: The control panel displays both the IPL type and the operating mode. For example, B_N indicates a B type IPL in a normal mode.

Related concepts

"IPL type" on page 11
The *IPL type* determines which copy of programs your system uses during the initial program load (IPL).

"Operating mode of an IPL" on page 12
Use the *operating mode* to determine the number of options that are presented to the operator for consideration during and after the initial program load (IPL). It can also secure (lock) the control panel to prevent an unauthorized or inadvertent IPL from the control panel.

Change system values during IPL:

System values control information that affects the operation of certain parts of the system. Some system values that you change do not take effect until the next initial program load (IPL); other system values take effect immediately.

On the System Value Commands display, you can change system values that affect IPL or other areas of the system. This display is shown when you type a Y (Yes) in the Define or change the system at IPL field on the IPL Options display (see step 6).

To change system values during an IPL:

1. Select option 3 (System value commands) on the Define or Change System at IPL display (see Defining or Changing the System at IPL).
2. Select option 3 (Work with system values).
3. Select option 2 (Change) on the Work with System Values display.
4. Type the new system value over the current value and press Enter.
5. Press F3 (Exit) to return to the System Value Commands display.
6. Press F3 (Exit) to return to the Define or Change the System at IPL display, and press F3 again to continue the IPL.

Security considerations:

To change system values, you must be signed on as QPGMR, QSYSOPR, or QSRV, or have all object (*ALLOBJ) authority. Certain system values can be changed only by a security officer (someone with all object (*ALLOBJ) and security administrator (*SECADM) special authorities).

Related concepts

"System values that control IPL" on page 24
You can use the system values discussed in this topic to control the type of initial program load (IPL) and the way the system does an IPL.

Related tasks

"Define or change the system at IPL" on page 10
By defining or changing the system, you can change system values and other system attributes during the initial program load (IPL).

Change the IPL startup program

Create a startup program that will change the system resources, and the resources and attributes assigned to them, that are started during an initial program load (IPL). Typically, subsystems, writers, and the Operational Assistant are launched by this program.

The autostart job in the controlling subsystem transfers control to the program that is specified in the startup program to set up system (QSTRUPPGM) system value. You can tailor this program.

You can create your own program and change the Startup program to set up system (QSTRUPPGM) system value to that program name. Or, you can use the shipped program QSTRUP in the QSYS library as a base to create your own program. To do this:

1. Retrieve the source of the shipped program by using the Retrieve CL Source (RTVCLSRC) command (for example, RTVCLSRC PGM(QSYS/QSTRUP) SRCFILE(YOURLIB/YOURFILE)).
2. Change the program.
3. Create the program by using the Create Control Language Program (CRTCLPGM) command, and then put it into your own library.
4. Test the program to ensure that it works.
5. Change the Startup program to set up system (QSTRUPPGM) system value to the program name and library you specified on the CRTCLPGM command.

Related concepts

Start-up program to set up system (QSTRUPPGM)

Source for CL startup program:

Here you can check the detailed source information for the CL Startup program.

Note: By using the code examples, you agree to the terms of the "Code license and disclaimer information" on page 38.

Table 2. Source information for CL startup program

Object	Command	CL program source

QSTRUP	CRTCLPGM	PGM
		DCL VAR(&STRWTRS) TYPE(*CHAR) LEN(1)
		DCL VAR(&CTLSBSD) TYPE(*CHAR) LEN(20)
		DCL VAR(&CPYR) TYPE(*CHAR) LEN(90) VALUE('+
		5722-SS1 (C) COPYRIGHT IBM CORP 1980, 2000. +
		LICENSED MATERIAL - PROGRAM PROPERTY OF IBM')
		
		QSYS/STRSBS SBSD(QSERVER)
		MONMSG MSGID(CPF0000)
		
		QSYS/STRSBS SBSD(QUSRWRK)
		MONMSG MSGID(CPF0000)
		
		QSYS/RLSJOBQ JOBQ(QGPL/QS36MRT)
		MONMSG MSGID(CPF0000)
		
		QSYS/RLSJOBQ JOBQ(QGPL/QS36EVOKE)
		MONMSG MSGID(CPF0000)
		
		QSYS/STRCLNUP
		MONMSG MSGID(CPF0000)
		
		QSYS/RTVSYSVAL SYSVAL(QCTLSBSD) RTNVAR(&CTLSBSD)
		IF ((&CTLSBSD *NE 'QCTL QSYS ') +
		*AND (&CTLSBSD *NE 'QCTL QGPL ')) GOTO DONE
		
		QSYS/STRSBS SBSD(QINTER)
		MONMSG MSGID(CPF0000)
		
		QSYS/STRSBS SBSD(QBATCH)
		MONMSG MSGID(CPF0000)
		
		QSYS/STRSBS SBSD(QCMN)
		MONMSG MSGID(CPF0000)
		
		DONE:
		
		QSYS/STRSBS SBSD(QSPL)
		MONMSG MSGID(CPF0000)
		
		QSYS/RTVSYSVAL SYSVAL(QSTRPRTWTR) RTNVAR(&STRWTRS)
		IF (&STRWTRS = '0') GOTO NOWTRS
		
		CALL PGM(QSYS/QWCSWTRS)
		MONMSG MSGID(CPF0000)
		
		NOWTRS:
		
		RETURN
		CHGVAR VAR(&CPYR) VALUE(&CPYR)
		ENDPGM

Startup program to set up system (QSTRUPPGM) system value:

The startup program to set up system (QSTRUPPGM) system value is the startup program. The system value of QSTRUPPGM specifies the name of the program that is called from an autostart job when the controlling subsystem is started. This program performs setup functions, such as starting subsystems and printers. This system value can only be changed by the security officer or by someone with security officer authority. A change to this system value takes effect the next time an initial program load (IPL) is performed. QSTRUPPGM can have the values:

- QSTRUP QSYS: The program that is specified is run as a result of a transfer of control to it from the autostart job in the controlling subsystem.
- *NONE: The autostart job ends normally without calling a program.

The default startup program QSTRUP in library QSYS performs the following actions:
- Starts the QSPL subsystem for spooled work
- Starts the QSERVER subsystem for file server work
- Starts the QUSRWRK subsystem for user work
- Releases the QS36MRT and QS36EVOKE job queues if they were held (these are used by the System/36™ environment)
- Starts Operational Assistant cleanup, if allowed
- Starts all printer writers unless user specified not to on the IPL Options display
- If the controlling subsystem is QCTL, it starts the QINTER, QBATCH, and QCMN subsystems

Table 3. Details of the default startup program QSYS/QSTRUP

Type	Length	Shipped CL value
Character	20	QSTRUP QSYS

Schedule a system shutdown and restart

Set up a schedule that automatically powers your system on and off. You can determine the time of day you want the system powered on and off. You can also specify special circumstances that change the normal daily schedule, such as a holiday or special closing.

For some systems, you may want to regularly schedule routine shutdowns and startups. The iSeries server supports this function by allowing you to define a schedule that alerts users to an upcoming shutdown, and then waits a predefined amount of time to allow users to finish their work and sign off. For example, you can define a schedule that must shut down your system Friday night and start it again Monday morning. The schedule also allows you to define a message sent to any signed-on users, and to specify how long to wait between sending the message and beginning the shutdown sequence.

To work with a schedule, type `go power` on any command line.

Related concepts

"Start the system without making configuration changes (unattended IPL)" on page 7
This is the most common way to start the iSeries server. This topic provides instruction on how to start your system during normal operation.

"Stop the server" on page 21
Use this topic to safely shut down the server and to plan for controlled server restart operations.

Display the power on and off schedule:

Display the current settings for your power schedule.

The power on and off schedule ensures that the system is turned on and off at specific times during the day or night. To view this schedule:

1. On any command line, type `go power` and press Enter.
2. Select option 1 (Display power on and off schedule) on the Power On and Off Tasks menu.

The power on and off schedule shows the date, day, and time (using the 24-hour clock) that the system will be turned on and off. The Description column includes comments about those days that have been changed from the system's regular schedule. Any user can display this schedule.

Change power on and off schedule defaults:

Change the current settings for your power schedule.

To set up your own power on and off schedule, select option 2 (Change power on and off schedule) on the Power On and Off Tasks (POWER) menu. On the Change Power On/Off Schedule display, press F10 (Change power on/off defaults).

On this display, you can change the first day of the week by typing a number in the **First day of week** field. Also, the system automatically sends users a message telling them when the system will be turned off. You can indicate how many minutes before turning off that you want the system to send this message in the **Minutes before turning off to send** field.

When the system sends the power off message, you can delay the scheduled time for turning off from 30 minutes to 3 hours when you reply to the message. Then the system will wait the time specified before turning off. You do not have another chance to delay the time.

For example, if you want the system turned on Saturdays and Sundays you want the system turned on at 7:30 a.m. and off at 8:00 p.m., type the new times in the Default Power On and Default Power Off columns next to Saturday and Sunday. When you press Enter, your changes are shown on the Display Power On/Off Schedule and the Change Power On/Off Schedule displays.

Change the power-on and power-off schedule for a single event:

Create a one-time scheduled shutdown and startup, without adjusting the default schedule.

Use the Change Power On/Off Schedule display to change the power-on and power-off schedule for a single day.

For example, to change the startup and shutdown time for the plant's company picnic on Wednesday, May 3:

1. Type 14:30 in the Power Off column to turn the system off at 02:30 p.m. so the employees can attend the picnic.
2. Type the reason for the change, Closing - Company picnic, in the Description column across from the date and time and press Enter.
3. Type the start time 05:30 in the Power On column to turn the system back on Thursday, May 4.

To display the schedule starting on a different date, type the date you want to start with in the Start list at field and press Enter. The information that is displayed begins with the date you specify.

Solve problems with the automatic power schedule:

Avoid potential problems with the power-on and power-off schedule.

If the power schedule is not working:

- Make sure that the Start Cleanup (STRCLNUP) command is part of your startup program.
- The automatic power scheduler uses a job called QSYSSCD to process the requests for schedule changes. The Start Cleanup (STRCLNUP) command must be run to start the QSYSSCD job. The IBM -supplied startup program includes the Start Cleanup (STRCLNUP) command. If you have your own startup program from a previous release, it may not contain the Start Cleanup (STRCLNUP) command.
- Make sure that you specify Yes on the Change Cleanup (CHGCLNUP) command to allow automatic cleanup. The QSYSSCD job will not start if you do not allow automatic cleanup.
- Make sure that the Start Cleanup (STRCLNUP) command submits the QSYSSCD job to the job queue specified in the Change Cleanup (CHGCLNUP) command.
- Check to see if the QSYSSCD job is running; it could be on a held job queue.

- Make sure that the job queue, that the Start Cleanup (STRCLNUP) command is submitted to, has the Maximum jobs parameter set to *NOMAX or a number greater than 1. Because the QSYSSCD job always runs, the other jobs that perform automatic cleanup and turn off functions are not able to start if the Maximum jobs parameter is set to 1. To change the Maximum jobs parameter on the job queue entry, use the Change Job Queue Entry (CHGJOBQE) command.
- Make sure the mode is set to Normal or Auto.

Related concepts

"Operating mode of an IPL" on page 12
Use the *operating mode* to determine the number of options that are presented to the operator for consideration during and after the initial program load (IPL). It can also secure (lock) the control panel to prevent an unauthorized or inadvertent IPL from the control panel.

Causes of abnormal IPLs

This topic describes some causes of an abnormal initial program load (IPL).

An abnormal IPL can be caused by any of the following reasons:

- Using the End Job Abnormal (ENDJOBABN) command. To see if this command has been used, look for message CPC1124 in the job log.
- Using option 7 (Start a service tool), then option 7 (Operator panel function) on the Dedicated Service Tool (DST) menu.
- Using the Power button (on the control panel) instead of the Power Down System (PWRDWNSYS) command.
- Displaying a power failure before all data is written from main storage to disk.
- Using any B900 xxxx system reference code (where xxxx is any number or letter) during the start of the operating system phase of the IPL.
- Ending with a system reference code of B900 3F10, if a PWRDWNSYS command that did not complete, .
- Causing the system to end by any function check in the controlling subsyste .
- Issuing a PWRDWNSYS command in the primary partition without first powering down secondary partitions.
- The system going down when database recovery has not completed during the IPL.

Note: If the ENDJOBABN command is issued, message CPI0990 will be in QHST. For all other reasons, message CPI091D will be in QHST stating why the IPL is abnormal.

Related tasks

Service, support, and troubleshooting

Sign on to the system

Use this topic to access functions on the iSeries after startup.

The iSeries server requires users to sign on to the system before gaining access to any system functions. This both provides an important measure of security and allows for each user's session to be customized. In addition to checking the password, the operating system uses the signon operation to access the specified user profile. The operating system uses this profile to customize the displays, providing consideration for the user's language and available functions.

Sign on to the server using iSeries Navigator

You can sign on to the server from iSeries Navigator, follow these steps.

To sign on to the server using iSeries Navigator:

1. Select a server.
2. At the Signon to iSeries prompt, enter your user ID and password.

Sign on to the server using the character-based interface

You can sign on to the server from the character-based interface.

To sign on to the server using the character-based interface:

1. Type your user ID, your password (if security is active), and fill in any of the optional entry fields you want to use. Use the Tab key to move the cursor from field to field on the display.

   Notes:

   - The Password field is displayed only if password security is active on the system.
   - The top right corner of the Sign On displays the name of the system you are using, the subsystem the system is using, and the display station identifier (ID).

2. Press Enter.

   If this is an unattended IPL, one or more of the following displays is shown, depending on what options you select on this display or what is defined in your user profile:

   - The Main Menu is displayed.
   - Another menu is displayed.
   - A program or procedure is run.
   - A current library is inserted into your library list.

   If you specify a program or procedure to run and a menu to be displayed, the program or procedure is run first and then the menu is shown.

After signing on, you can change your system password.

Now that your system is up and running, be aware of the following aspects:

- The Operational Assistant displays are now the default.
- The system cleanup functions are automatically started with default values.
- The Attention key program displays the Operational Assistant (ASSIST) menu (the default).

Change your password

When you install the i5/OS licensed program, the licensed program runs a check to detect system model changes, certain service conditions, and ownership changes.

If the licensed program detects these changes or conditions, you are prompted to enter the system password before the initial program load (IPL) can continue. If no changes or conditions are recognized, the IPL continues without a request for the system password.

You must enter the correct system password to complete the IPL. If the system password is not available, you or your service representative may temporarily bypass entering the system password for a limited time. When the bypass period starts, immediately contact your marketing representative, who will have IBM send you the correct system password. To order the system password, ask your marketing representative to order nonstandard RPQ S40345 if you are in the United States, Asia Pacific, Canada, Latin America, or Japan. If you are in Europe, Middle East, or Asia, request nonstandard RPQ S40346.

Related concepts

"Change the system during IPL (attended IPL)" on page 8
Some situations might require you to enter information or change system values during an IPL. This topic provides instructions for performing a manual IPL.

Change the system password:

Use this topic to change the system password.

- If you have just installed new hardware, you might need to change the system password during the first IPL. To do this, follow these steps:

1. Select option 1 (Change the system password) on the Verification of System Password Failed display.
2. The following system information about the Change the System Password display is shown:
   - System serial number
   - System type number
   - System model number
   - System password version
   - Processor card serial number

   If you do not know the system password, use F12 (Cancel) and select option 2 (Bypass the system password) on the Verification of System Password Failed display.
3. Type the password in the blank field and press Enter.

- To change the system password when your system is operational, follow these steps:
  1. Perform an attended IPL.
  2. Select option 1 (Change the system password) on the Verification of System Password Failed display.
  3. Type the password in the blank field and press Enter.

Bypass the system password:

Use this topic to bypass the system password.

Use the Verification of System Password Failed display to bypass the system password when:
- You do not know or cannot find the system password.
- You guess the system password and get a message stating that the password you entered is incorrect.

  Note: If you type the password incorrectly five times, you must do the IPL again.

To bypass the system password during the first initial program load (IPL), follow these steps:
1. Select option 2 (Bypass the system password) on the Verification of System Password Failed display.
2. Read the information about the Bypass the System Password display. Remember to contact your marketing representative immediately to obtain the system password before the bypass period runs out.
3. Press F9 (Bypass) to continue the IPL.

When the IPL has finished, you will receive hourly messages that tell how much time is left in the bypass period.

When you receive the password, you can enter it by doing one of the following steps:
- Perform an attended IPL and select option 1 (Change the system password) on the Verification of System Password Failed display.
- Perform an attended IPL and select option 1 (Change the system password) on the Bypass Period has Ended display.

Stop the server

Use this topic to safely shut down the server and to plan for controlled server restart operations.

Turning off your system takes careful attention. If you turn off the system without completing the following tasks, data might be damaged or the system might behave in unpredictable ways. The iSeries server provides several ways to safely turn off your system.

- Use the Power Down System (PWRDWNSYS) command to either perform a controlled shutdown operation or to shut down the system immediately.

- You can stop the system using the Power On and Off Tasks (POWER) menu. To get to the Power On and Off Tasks menu, type **go power** on any command line and press Enter.
- You can set up a schedule that automatically turns your system on and off. You can determine the time of day that you want the system turned on and off. You can also specify special circumstances that change the normal daily schedule, such as a holiday or special closing.
- In emergencies you can stop the system by using the Power button. However, using the Power button might cause errors with your data files and other objects on the system.

Before you turn off your system, you must complete the following tasks.

Make sure all batch jobs are finished and users are signed off the system

1. Send a message that interrupts all users signed on the system telling them to sign off.
   a. Type GO MANAGESYS and press Enter.
   b. Select option 12 (Work with signed-on users) on the Manage Your System, Users, and Devices (MANAGESYS) menu.

      Note: If the Work with User Jobs display is shown, you need to switch to basic assistance level using F21.
   c. Press F10 (Send message to all) on the Work with Signed-On Users display.
   d. Type the message in the Message text field on the Send a Message display and press F10 (Send).
2. Wait for the users to sign off.
3. Check to make sure all users have signed off by pressing F5 (Refresh) on the Work with Signed-On Users display. When everyone is signed off the system, the display will show only your job. To sign someone off the system, use option 4 (Sign off).

   Note: If you have separate interactive subsystems, other than the controlling subsystem, you might want to stop the interactive subsystems when the users have signed off. This prevents them from signing on again before you stop the system. See Working with Subsystems for information about how to end a subsystem.

Check the status of any batch jobs that might be affected if the system is powered down

1. On any command line, type GO MANAGESYS and press Enter.
2. Select option 11 (Work with jobs) on the Manage Your System, Users, and Devices (MANAGESYS) menu.

   Note: If the Work with User Jobs display is shown, you need to switch to basic assistance level using F21.
3. Press F14 (Select other jobs) on the Work with Jobs display.
4. Type *all in the User field.
5. Type an N in every field except the Message waiting, Running, and Running job held fields. The Work with Jobs display is shown again with the batch jobs listed.
6. If any job queues have jobs waiting to run, press F22 (Work with job queues) to see the Work with Job Queues display.
7. Hold any job queues that have jobs waiting to run on the Work with Job Queues display. Release these job queues when you start the system again.
8. Press F12 (Cancel) to return to the Work with Jobs display.
9. Press F5 (Refresh) every few minutes until all batch jobs have completed processing.

Check for removable media

1. Check to see if there are any tapes in any tape units or CD-ROMs in any optical units.
2. Remove any tapes or CD-ROM currently in the unit.

Related concepts

"Schedule a system shutdown and restart" on page 17
Set up a schedule that automatically powers your system on and off. You can determine the time of day you want the system powered on and off. You can also specify special circumstances that change the normal daily schedule, such as a holiday or special closing.

"Subsystems, job queues, and memory pools" on page 35
You can control work on the servers by working with the resources used to process jobs.

Controlled shutdown concepts

Related reference

PWRDWNSYS

Turn off the system immediately

Stop the system by using the Power Down System (PWRDWNSYS) command on any command line when the system is in any mode.

Type PWRDWNSYS and press F4 to view the power down options. You must have QSYSOPR authority to use the Power Down System (PWRDWNSYS) command. If this command does not work on your system, use the following methods.

To turn off the system immediately:

1. Type go power on any command line to display the Power on and Off Tasks (POWER) menu.
2. Select option 3 (Power off the system immediately) if you want to keep the power off until the next time the system is scheduled to power on.
3. Press F16 (Confirm) to confirm your choice to turn off the system immediately. An immediate shutdown occurs that causes the subsystems to end all active jobs.

To turn off the system and restart immediately:

1. Select option 4 (Power off the system immediately and then power on) on the Power On and Off Tasks (POWER) menu.
2. Press F16 (Confirm) to confirm your choice. The system stops running and then starts again automatically.

Note: Do not turn the modem on or off when the system is turned off and is made ready for remote initial program load (IPL). Otherwise, the system might start unexpectedly, although it turns itself off in a few minutes.

If you stop the system using the automatic power schedule or one of the options on the Power On and Off Tasks (POWER) menu, the IPL date and time system value (QIPLDATTIM) is checked and, if necessary, reset to the next scheduled power-on time. This checking does not occur if you turn off the system in another way, so the system might not turn on automatically. To force the power schedule to update the Date and time (QIPLDATTIM) system value, enter the following command on any command line: CHGPWRSCDE DAY(*TODAY) PWRONTIME(*SAME) PWROFFTIME(*SAME)

Use the Power button

If you cannot use option 3 (Power off the system immediately) or option 4 (Power off the system immediately and then power on) on the Power On and Off Tasks (POWER™) menu to stop the system, you can turn off the system using the Power button when the mode is set to Manual.

Note: Using the Power button to turn off the system might cause results that cannot be predicted in your data files, and the next initial program load (IPL) will take longer to complete. Using the Power button to turn off the system will turn off all logical partitions.

Make sure that there are no tapes in the tape units or diskettes in the diskette units, and that the mode is set to Manual.

Do not turn the modem on or off when the system is turned off and is made ready for remote IPL. Otherwise, the system might start unexpectedly, although it turns itself off in a few minutes.

To turn off the system using the Power button, perform the following steps:

1. On the control panel, press the Power button. The Function/Data display blinks with `0` (the international turn off symbol).
2. Press the Power button again. The Power On light blinks as the system is being turned off. When the system is completely turned off, the light goes off.

   Note: If the system does not turn the power off within 30 minutes, wait for the System Attention light to come on. When the System Attention light comes on, go to Service and support, and Troubleshooting and follow the steps necessary to solve the problem.

System values that control IPL

You can use the system values discussed in this topic to control the type of initial program load (IPL) and the way the system does an IPL.

You can now work with all system values in iSeries Navigator. To work with system values in iSeries Navigator, select your system → **Configuration and Service** → **System Values**. If you do not have an iSeries Navigator connection, you can still use these system values through the character-based interface. From the character-based interface, change or display these values using the Work with System Values (WRKSYSVAL) command.

Allow scheduled restart (QIPLDATTIM)

The Allow scheduled restart (QIPLDATTIM) system value sets the date and time for a scheduled restart. In iSeries Navigator, select your system → **Configuration and Service** → **System Values** → **Restart** → **General**.

To set the date and time format, use the Date and Time (QDATFMT, QDATSEP, QTIMSEP) system values.

Previous restart type (QIPLSTS)

The Previous restart type system value displays the way the system did the last IPL. You cannot change this system value. In iSeries Navigator, select your system → **Configuration and Service** → **System Values** → **Restart** → **Previous**. When needed, use the help associated with the display.

Operator panel restart (0)	The restart operation occurred when requested from the operator panel or from Dedicated Service Tools (DST) for a secondary partition.
Automatic restart after power restored (1)	The restart operation occurred automatically when power was restored after a power failure. You can specify this type of restart operation in the **Restart options** on the General page.
Restart (2)	The restart operation occurred when a user requested turning off the system and restarting it.

Time-of-day restart (3)	The restart operation occurred automatically on the date and time specified for **Scheduled restart** on the General page.
Remote restart (4)	A remote restart operation occurred. You can specify this type of restart operation in the **Restart options** on the General page.

Type of restart (QIPLTYPE)

The Type of restart system value defines the type of IPL the system does from the control panel. In iSeries Navigator, select your system → **Configuration and Service** → **System Values** → **Restart** → **General**. When needed, use the help associated with the display.

Unattended (0)	An unattended IPL. No displays requiring user interaction are shown during the restart. The normal signon display is shown when the restart is complete. If the system is in manual mode, an attended IPL is performed instead.
Attended (1)	An attended IPL. Start the system with an operator. All dedicated service tools functions are available along with the full set of restart displays. An unattended IPL is done if it is done remotely, by date and time, or after power failure.
Attended, console in debug mode (2)	An attended IPL in debug mode. Restarts the system and leaves the controller QCTL and device QCONSOLE varied on. Select this only for problem analysis, as it prevents other devices on the workstation controller from being used.

Automatically restart after power failure (QPWRRSTIPL)

With the Automatically restart after power failure system value, you can specify whether to allow auto-restart when a power failure occurs. In iSeries Navigator, select your system → **Configuration and Service** → **System Values** → **Restart** → **General**. When needed, use the help associated with the display.

Not selected (0)	Does not do an automatic restart after a power failure.
Selected (1)	Does an automatic restart after a power failure.

Allow remote power-on and restart (QRMTIPL)

Use the Allow remote power-on and restart system value to start the remote system by using your telephone and a modem or the system power control network (SPCN) signal. This means that any telephone call causes the system to restart. In iSeries Navigator, select your system → **Configuration and Service** → **System Values** → **Restart** → **General**. When needed, use the help associated with the display.

Not selected (0)	Does not allow a remote restart.
Selected (1)	Allows a remote restart.

When power failure occurs (QUPSDLYTIM)

The When power failure occurs (QUPSDLYTIM) system value controls the length of time the system waits before saving main storage and turns off the system. If utility power is restored before the time

ends, the system ends the timer. If the timer ends first, the system begins to save main storage or goes into continuously powered main storage (CPM). In iSeries Navigator, select your system → **Configuration and Service** → **System Values** → **Power Control** → **General**.

There are five choices for the QUPSDLYTIM value.

Automatically power down the entire system (0)	The system automatically turns down when system utility power fails.
Power down system after time interval (1-99999)	Specifies the delay time in seconds before the utility power fails.
Power down system, retain power on main tower (*BASIC)	Turns down only the processor, I/O processor cards, and load source storage. The appropriate wait time, in seconds, is calculated. (This must be used only if you have the battery power unit or an uninterruptable power supply without every rack being connected.)
Power down system, system calculates delay time (*CALC)	The appropriate wait time (in seconds) is calculated. This value must be used only if you have a 9402 or 9404 system with a battery power unit.
Do not automatically power down system (*NOMAX)	*NOMAX is used when a user supplied program is controlling the turning down of the system or a generator is providing unlimited power. The system does not start any action on its own.

Message queue and library (QUPSMSGQ)

Use the Message queue and library system value to specify where you want your messages sent when the power to the system is interrupted. The default values are QSYSOPR for the Message queue and QSYS for the library. In iSeries Navigator, select your system → **Configuration and Service** → **System Values** → **Power Control** → **General**. When needed, use the help associated with the display.

This system value sends the messages to the system operator's message queue when power to the system is interrupted.

Message queue	Specifies another message queue (in addition to the system operator's message queue) where messages are sent when power to the system is interrupted.
Library	Specifies the library where the other message queue is located.

Related concepts

"Start the system without making configuration changes (unattended IPL)" on page 7
This is the most common way to start the iSeries server. This topic provides instruction on how to start your system during normal operation.

"Change the system during IPL (attended IPL)" on page 8
Some situations might require you to enter information or change system values during an IPL. This topic provides instructions for performing a manual IPL.

"Change system values during IPL" on page 14
System values control information that affects the operation of certain parts of the system. Some system values that you change do not take effect until the next initial program load (IPL); other system values take effect immediately.

Allow scheduled restart

Previous restart type

Type of restart

Automatically restart after power failure

Allow remote power-on and restart

When power failure occurs

Message queue and library

Related tasks

Date and time (QDATFMT, QDATSEP, QTIMSEP)

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i5/OS concepts

Learn about the essential components of the iSeries server, including the basics of work management, how to interact with the operating system, and system maintenance.

IBM i5/OS is the operating system for the iSeries servers. It manages hardware and software resources, and provides an interface that allows you to work with the iSeries server. To best use the operating system, you need to be familiar with the following system concepts.

Basic work management

Jobs	All work done by the iSeries server is divided into units called jobs. Learn about the types of jobs, and how to find, monitor, and work with them on the iSeries server.
Subsystems, queues, and memory pools	Control work on the iSeries servers by working with the resources used to process jobs.
Objects	Everything on the system that can be worked with is considered an object. Objects provide a common interface for working with system components. Learn about the different kinds of objects and how to work with them.

System maintenance

Logs and journals	Record keeping is an important way for the iSeries to protect data and track system problems. Learn what logs and journals are for and how to use them.
Software fixes	Recent versions of iSeries software add functions and solve known problems. Learn how to install and manage software and software updates.

Additional reference information can be found in the IBM glossary.

Related reference

iSeries glossary

Messages

Messages are communications sent from another user, from the operating system, or from an application. Learn about the different kinds of messages and how to interpret and respond to them.

Messages are communications that are sent from a person, program, or the iSeries server to a message queue. Every user profile and workstation has a message queue associated with it. All message queues are named after the user or workstation they are associated with, and get created automatically when the user signs onto the system for the first time, or when the workstation is first defined. The message queue for the QSYSOPR profile is particularly important because the iSeries server sends many messages about job completion and system status to the QSYSOPR message queue.

Work with messages

You can use iSeries Navigator to display, reply to, and send messages. To work with messages, expand **Basic Operations**, and click **Messages**. iSeries Navigator displays all the messages for either your

message queue, or a specified message queue. To reply to, delete, or view the properties for a specific message, right-click the message and select the required action. To send a message, right-click **Messages** in iSeries Navigator, and click **Send a message**.

Also, your system administrator can set up a message monitor in iSeries Navigator to watch for and handle messages. For an example, see Scenario: Message monitor.

Related concepts

Message queues

Scenario: Message monitor

i5/OS commands

i5/OS uses control language (CL) commands to interpret instructions from users. Learn the basic rules for using CL, and how to get detailed help for any CL command.

i5/OS CL provides a powerful and flexible means of entering commands on the iSeries server. You can use CL to control most of the iSeries functions by entering them from the character-based interface, by including them in programs, or by sending commands in iSeries Navigator. While the iSeries menu system and CL commands might be unfamiliar at first, they follow an easy-to-use syntax, and i5/OS includes many features to help you use them successfully.

CL command syntax

CL commands consist of a verb, an i5/OS object, and sometimes an adjective; for example, WRKACTJOB:

Verb	Adjective	Object
WRK	ACT	JOB
Work	Active	Job

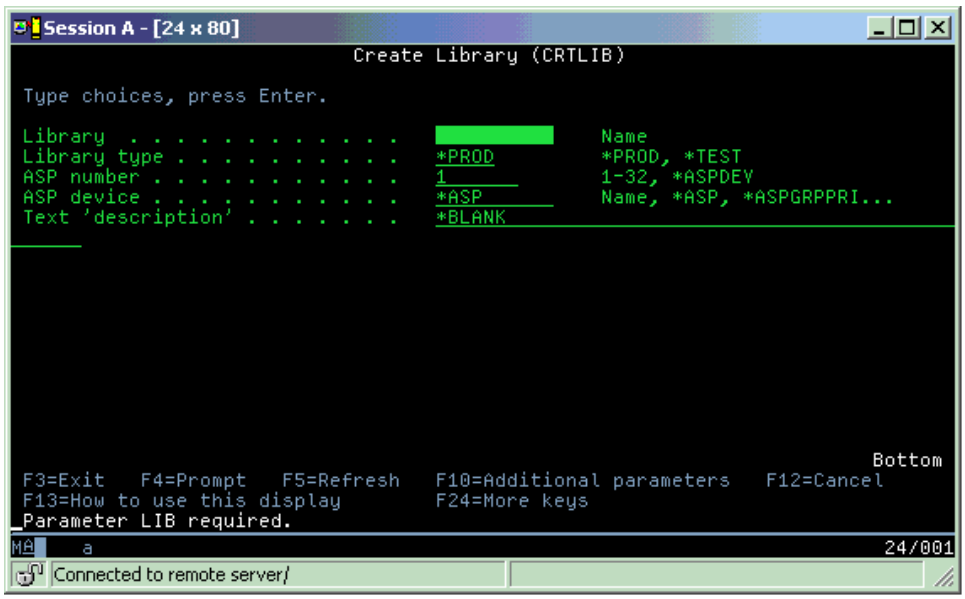
One of the important features of CL syntax is that it is consistent. For example, regardless of the object or command you want to work with, using the verb WRK in the command starts a menu that allows you to perform the available actions on the specified object.

Enter CL commands

You can enter CL commands from iSeries Navigator by selecting **Run a command** from the task pad. Alternatively, you can enter CL commands from any command line and most displays on the iSeries character-based interface.

Every command has a set of required and optional parameters. For example, Create Library (CRTLIB) requires, at a minimum, that you specify the name of the library you need to create. The syntax for more complex CL commands is: `command_name` *parameter (value)*. For example, CRTLIB LIB (FRED) enters the verb *create*, on the object type *library*, and specifies that the required parameter LIB, the library name, must have the value *FRED*. This command causes i5/OS to create a library called FRED.

If you are not familiar with the parameters associated with a CL command, you can enter the command with the parameters you already know, place the cursor on the command, and press F4 (Prompt). i5/OS then displays the available options for the command. Entering a command without any parameters also causes the system to prompt you for any required fields, making field-level help available. For example, entering CRTLIB causes i5/OS to show the following display:



Entering a **?** in any field brings up detailed help for that parameter.

Get help with CL commands

i5/OS provides several methods for helping users access and enter CL commands. The Command Entry program provides a useful interface and additional help. You can start this program by entering CALL QCMD from a command line. The CL finder in the information center can also help you find a specific command. Most importantly, remember that entering a command without any parameters, or pressing F4 (Prompt) while your cursor is over the command, displays a menu with detailed help for all associated parameters.

Related concepts

"Use iSeries interfaces" on page 2
Depending on the type of connection to the iSeries server, and the task you need to perform, there are several options available for iSeries interfaces. Learn how to access and use iSeries Navigator, the character-based interface, and the wireless clients.

"Objects" on page 36
Everything on the system that can be worked with is considered an object. Objects provide a common interface for working with system components. This topic discusses the different kinds of objects and how to work with them.

Related reference

Control language (CL)

Commands operating on i5/OS objects

Related information

CL command finder

Security and user authority

The operating system determines which resources users might access based on information in their user profiles and the security strategy implemented for this system. Learn about security settings and how to manage user authorities efficiently.

Security is a critical part of iSeries operations. It is built into the operating system, and impacts nearly every function on the system. The iSeries security environment determines the commands and functions available to users, and the objects they can access.

Typically the security strategy restricts the objects a user can access. For systems with object-level security, there are several ways to provide authority to access objects. Often, user profiles will explicitly grant types of access to specific objects. To simplify the task of managing all these permissions, authorization lists can specify groups of objects, and users can be given access to these lists. Accessing these lists then provides access to all of the objects the list specifies.

The level of iSeries server security, and other more detailed security practices, often affect system operations. The following concepts are important for understanding user requirements in various security environments:

Security levels	The operating system operates in one of several predefined levels of security. The security level currently in effect determines the level of detail that user profiles must provide to grant appropriate access to system resources. This level of detail can range from simple password management to explicitly providing a level of access to each object that a user can read or change.
Security system values	Many more detailed aspects of system security are set by the system values. These system values set the security level, and grant or restrict options like adopted authority.
User profiles	The user profile contains most of the authorizations and preferences for individual users or groups. You can use iSeries Navigator to create and manage users and groups across the server.
Authorization lists	You can create authorization lists that specify groups of objects. Users and groups can then be authorized to this list, granting them authority to everything that list contains.

Also, security settings regarding policies and authorization lists are available in iSeries Navigator under **Security**.

Related concepts

System values

Authority to access objects

Depending on the security level and other security settings, users might be given several levels of access to objects on the server.

Table 4. Levels of accessing authority

Access	Description
All object	Grants unrestricted access to every object on the server.
Object	Grants access to specified objects.
Object data	Grants access to the data contained in specified objects.
public	Grants default access to public objects

Assume that a user needs authorization to add, change and delete data in a database, but does not need to delete tables or the database itself. The user can be granted *object data-level authority*, rather than *object-level authority*.

Note: Adopted authority will grant users access to objects called by an object they are working with. Administrators can allow or restrict adopted authority with security system values.

Security levels

The operating system operates in one of several predefined levels of security. The security level currently in effect determines the level of detail that user profiles must provide to grant appropriate access to system resources. This level of detail can range from simple password management to explicitly providing a level of access to each object that a user can read or change.

Security on your system is arranged in a series of levels or classes, each offering a greater degree of security and protection of your data than the previous. Select the level that best meets the needs of your organization.

You can use iSeries Navigator to change these settings on a single system or across multiple systems.

Level 20

This level is referred to as password security. That is, users must have a password and user ID that is recognized by your system to gain access to the system. Both the user ID and initial password are created for users by the system administrator.

This level of security offers all users on the system total authority to do anything they want. That means they can access all data, files, objects, and so on, on your system. This might be appropriate for small businesses where internal security is a low priority, but will likely be inappropriate for larger businesses that do not want every employee to be able to access confidential payroll files, for example.

Level 30

This level is referred to as resource security. That is, users must have a valid user ID and password defined for them by the system administrator, and no longer have automatic access to everything on the system. User access is limited by the security policies of the business.

Level 40

This level is referred to as system integrity security. That is, at this level, the system itself is protected against users. User-written programs cannot directly access the internal control blocks through pointer manipulation.

Level 40 is the default security level for every new installation.

Level 50

This level is referred to as enhanced system integrity security. Level 50 is the recommended level of security for most businesses, because it offers the highest level of security currently possible. Not only is the system protected against user-written programs, but it ensures that users only have access to data on the system, rather than information about the system itself. This offers greater security against anyone attempting to learn about your system.

Related information

Plan and set up iSeries security

Security Reference PDF

User profiles

The user profile contains most of the authorizations and preferences for individual users or groups. With iSeries Navigator, you can create and manage users and groups across the server.

User profiles contain the information the iSeries server requires to allow users to sign on to a system, to access their own customized session, including their own message and output queue, and to access functions and objects to which they have been granted authority.

A user profile includes:

- A system user profile name
- The user's privileges and limitations
- A list of objects the user owns or is authorized to use
- A reference to a message queue
- A reference to an output queue
- Information about which groups the user is a member of (up to 16)
- Information about the user's last sign on
- Job attributes, such as description and priority, the initial program to call, and the initial library list
- National language settings
- Other attributes, such as the user id (UID), group ID (GID), and home directory

User profiles may be included in group profiles. In this way, all group members share attributes, share access to specific objects, and share ownership of objects. Group profiles can simplify many user administration tasks by allowing you to apply a single change to many users.

iSeries Navigator's user administration function provides convenient ways to manage users and groups across the iSeries server. For specific security recommendations on creating profiles, see Planning user profiles and Planning user groups.

Work with user profiles

Use iSeries Navigator to create and manage user profiles and groups if your own user profile has the required authority. Expand **Users and groups** to create and manage user profiles. Additionally, you can use this function to perform some common actions on a selected user, such as sending a message, and working with that user's jobs and objects.

Related concepts

iSeries Navigator's user administration function

Authorization lists

The task of granting each user authority to every separate object to which the user needs access can be time-consuming and complex. You can simplify this process by creating authorization lists that specify groups of objects. Users and groups can then be authorized to this list, granting them authority to everything that list contains.

Providing each user with explicit access to every object they need to work with might create a great deal of duplicated effort, since many users need to access the same group of objects. A much easier way to provide this access is to create authorization lists. Authorization lists consist of a list of users or groups, the type of authority (use, change, and exclude) for each user or group, and a list of objects that this list provides access to.

To work with authorization lists, open **Security** in iSeries Navigator and select **Authorization lists**.

For example, an authorization list can be created to contain a list of objects related to an inventory database. A user responsible for ordering new inventory items can be granted authority to see the contents of the database objects. Additionally, a user group in shipping and receiving needs to update this database as parts come in and out of stock. This group can have authority to change the contents of the objects.

Files and file systems

Files and file systems present information about database file management, spooled files, tape files, and the integrated file system capabilities of the IBM iSeries server.

Integrated file system

Files in the operating system are significantly different from their counterparts in the UNIX and Windows operating systems. In the operating system, a file is another kind of object on your system. Each file has a description that describes its characteristics and how the data associated with the file is organized. Whenever the operating system processes a file, it uses this description.

In addition to differences in handling files, the operating system also uses unique structures to store the files and other objects on the system. However, the integrated file system in iSeries Navigator will look familiar to people who are used to a hierarchy based on the Windows operating system. UNIX users will recognize some elements of this hierarchy, as well as the presence of file pointers.

You can access the integrated file system in iSeries Navigator. The integrated file system will allow you to find, change, and copy files and libraries on your system by navigating through a hierarchy that is

similar to Windows Explorer. You can use the integrated file system to copy data files onto your client PC.

Database file management

Learn about traditional file management functions that your application uses in creating and accessing data on the iSeries server and in ensuring the integrity of the data. File management is the part of the operating system that controls the storing and accessing of traditional file objects (*FILE objects in the QSYS.LIB library) on the iSeries server.

Spooled files

Spooling is a system function that saves data in a database file for later processing or printing. With spooled files, you can manage your data files on attached devices, such as a diskette or printer.

Tape files

Tape files are device files that provide access to attached tape devices. The Tape files topic describes the characteristics and use of tape and device files for application programs. Learn about storing and accessing data from a tape device. Conceptual information about tape, tape data files, and tape device files can also be found there.

Related concepts

"Objects" on page 36
Everything on the system that can be worked with is considered an object. Objects provide a common interface for working with system components. This topic discusses the different kinds of objects and how to work with them.

Database file management

Secure the integrated file system

Related information

Spooled files and output queues

i5/OS restricted state

At times, it is necessary to place the operating system in restricted state. This is a concept unique to the i5/OS operating system and must only be performed when necessary. Learn about restricted state and when it needs to be performed.

Restricted state is a condition that occurs when all subsystems are ended, either manually or automatically by the system. When the operating system is in restricted state, most jobs cannot be active and users cannot connect to the server. You need to ensure that information is saved and that other servers, such as a Windows server, are properly powered down before putting the operating system in restricted state. If not, there is a high risk that you will lose data.

The following examples show the most common tasks that require or highly recommend restricted state status:

Performing a full system backup
When a full system backup is performed, the operating system is automatically placed in restricted state. Restricted status is required because the server requires sole access to everything it is backing up.

Saving multiple items
It is recommended that you put the operating system in a restricted state when backing up multiple items such as libraries, documents, directories, and storage. As previously stated, the

system requires sole access to each object it is backing up. If the system is not in restricted state and someone is using a library when the system tries to back it up, the save operation will not complete successfully.

Software installation and upgrade
At various points during a software installation or upgrade, the operating system is required to be in a restricted state. During these procedures, you are given instructions on how to do this.

There are many more situations where certain tasks require that you perform this operation. The individual tasks will include specific requirements and instructions. When required, you can place the operating system in restricted state by entering the following command at a command line, type `ENDSBS SBS(*ALL) OPTION(*CNTRLD) DELAY(600)` and press Enter.

Notes:

- For the Delay parameter, specify a number of seconds that allows your server time to bring most jobs to a normal end. On a large, busy server, you might need a longer delay. For more information, use the online command help.
- The End System command (ENDSYS) will also put the system into restricted state.

The server sends messages to the QSYSOPR message queue. These messages indicate that the subsystems ended, and the server is in a restricted state.

Jobs

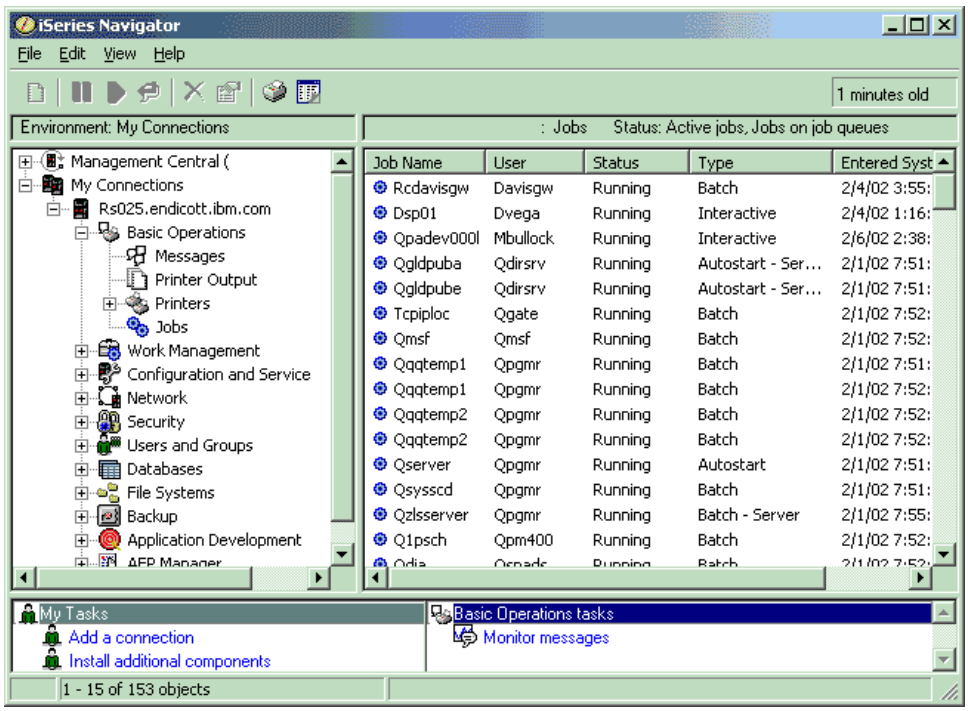
All work done by the iSeries server is divided into units called *jobs*. Learn about the types of jobs, and how to find, monitor, and work with them on the iSeries server.

Jobs are how the operating system organizes, tracks, and processes work. A job typically includes all of the information the system requires to complete a specific task. This information might include data files, programs, and instructions for processing and tracking the job throughout its processing. Jobs vary greatly in their complexity, ranging from simple tasks like printing a specified document to complex procedures like generating reports based on information spread throughout the iSeries server. Tracking and managing jobs on the iSeries is an important part of normal system operation.

Jobs are an essential part of iSeries work management. To learn more about how jobs are processed, including working with subsystems and job queues, see Structure of your system. For an example of how jobs move through the iSeries server, see A job's life.

Work with jobs

You can work with jobs in iSeries Navigator. **Jobs** in the **Basic Operations** folder displays all the jobs associated with the current user. To display other jobs, right-click the Jobs container, and select **Customize this view** → **Include**. The Server Jobs - Include window allows you to limit the list of server jobs displayed in the iSeries Navigator window to those that meet the criteria you specify. Alternately, you can see the jobs submitted by the iSeries server by clicking **Work Management** → **Server jobs**, or view the jobs currently being processed by clicking **Work Management** → **Active jobs**. The following display shows the jobs in the iSeries Navigator.



After finding the jobs you want to work with, you can display their attributes or change their queue, priority, messages, and other features by right-clicking the job and clicking **Properties**. Additionally, your system administrator might decide to set up a job monitor to work with some jobs.

Related concepts

The structure of your system

A jobs life

Manage jobs

Related tasks

Create a job monitor

Subsystems, job queues, and memory pools

You can control work on the servers by working with the resources used to process jobs.

Subsystems, job queues, and memory pools are the basic parts of work management. You can work with subsystems and job queues to manage specific jobs or to adjust the system's work flow.

To efficiently use system resources, different types of jobs require different processing instructions and system resources. To meet this need, the operating system creates unique operating environments called *subsystems*. Each subsystem has a set of system resources, especially a memory pool, that determines how quickly it can process jobs. Subsystems also have unique processing instructions and, in many cases, at least one associated job queue. The job queues hold incoming jobs from the users or applications until an associated subsystem has available resources. The job then moves from its queue into the subsystem where it is processed based on the instructions and resources available to that subsystem. Finally, any output that results from job processing gets handled and routed by the instructions in the job description.

During this process, you may want to monitor a job's progress or adjust its priority. Also, if the iSeries server is having trouble processing certain types of jobs, you may need to adjust the subsystems resources.

Work with subsystems, job queues and memory pools

iSeries Navigator allows you to view subsystem properties, view job queues that are in use by an active subsystem, start and stop a subsystem, and adjust memory pools. These functions are available under **Work Management** in iSeries Navigator. However, some subsystem commands are only available from the character-based interface.

Related concepts

"Stop the server" on page 21
Use this topic to safely shut down the server and to plan for controlled server restart operations.

Structure of your system

A job's life

Subsystems

Memory pools

Manage subsystems

Manage memory pools

Objects

Everything on the system that can be worked with is considered an object. Objects provide a common interface for working with system components. This topic discusses the different kinds of objects and how to work with them.

One of the differences between iSeries servers and other servers is the concept of objects. Anything that you can change in the operating system is a type of object. For example, data files, programs, libraries, queues, user profiles, and device descriptions are all types of objects. By treating everything as an object, the operating system can provide all of these items with an interface that defines what actions users can perform, and how the operating system needs to treat the encapsulated data. Additionally, this interface allows for standardized commands across very different system elements; the commands for working with user profiles and data files are similar.

One important type of object is the library. Libraries are essentially containers, or organizational structures for other objects, and you can use them to reference other objects on your system. Libraries may contain many objects, and may be associated with a specific user profile or application. The only library that may contain other libraries is called QSYS. It contains all other libraries on the system.

There are many different types of objects in the operating system. Finding objects and performing actions on them are basic functions of system operations.

Related concepts

"i5/OS commands" on page 28
i5/OS uses control language (CL) commands to interpret instructions from users. Learn the basic rules for using CL, and how to get detailed help for any CL command.

"Files and file systems" on page 32
Files and file systems present information about database file management, spooled files, tape files, and the integrated file system capabilities of the IBM iSeries server.

i5/OS objects

Commands operating on i5/OS objects

Logs and journals

Record keeping is an important way for the system to protect data and track system problems. This topic describes what logs and journals are for and how to use them.

Protecting the data and resources on the system is a critical part of the operating system. One important way the iSeries servers accomplish that goal is to keep detailed records of any changes to system resources. These records, called *logs* or *journals*, can help solve system problems or recover damaged data.

Logs

A *log* is a database file that contains the history of backup, archive, recovery, and media management operations that can be displayed online or printed for future reference. Logs are used in backup and recovery situations. Logs can also contain information about jobs, general system information, and problems.

Table 5. Types of logs

Log	Description
Job logs	Track the description, status, and action of jobs performed by the system.
History logs	Get general system information, like device changes, operator messages, job completion and other activities.
Problem logs	Retrieve records of system problems that occurred on an iSeries system.

Journals

A *journal* is a system object that contains information about changes made to another system object. The journal can be used to recover database files, data areas, data queues, and integrated file systems objects. Regular journaling speeds up management tasks such as save operations.

Related concepts

Job logs

History logs

Problem logs

Journal management

Related information

Backup and Recovery PDF

Software fixes

Use fixes to install and manage software and software updates.

IBM supports several different releases of the operating system, and businesses might have several iSeries servers running different versions. This can cause some system operations to be more complex; different versions of the operating system can contain new or changed functions and features. Moreover, IBM provides updates to the operating system and other programs between releases in sets of program temporary fixes (PTFs), also known as *fixes*. The PTFs that have been applied to a system can also affect system operations. iSeries Navigator provides ways to manage the software and fixes across a business.

Related concepts

iSeries software and licensed programs

Fix maintenance strategy

Analyze and report system problems

Use this information to help you solve some basic system problems and references for getting additional help.

System problems are carefully tracked and managed in the operating system. Familiarity with this process and the ability to perform basic troubleshooting and problem handling procedures are a basic part of system operations.

When the operating system detects a problem, it generates a problem record and sends a message to the system operator message queue (QSYSOPR).

Related concepts

How your server manages problems

Analyze server and system problems

Report problems detected by the system

Service and support

Troubleshooting

Related information for Basic system operations

Listed here are the product manuals and IBM Redbooks™ (in PDF format), Web sites, and information center topics that relate to the Basic system operations topic. You can view or print any of the PDFs.

IBM Redbooks

Printing Redbook

Other information

- Printing
- iSeries Navigator

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 the option that saves the PDF locally.
3. Navigate to the directory in which you want to save the PDF.
4. Click **Save**.

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