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Getting started with troubleshooting

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Getting started with troubleshooting

Contents

Part 1. Getting started with server troubleshooting

You can do some preliminary problem analysis on your server before you call service. You can identify and solve server problems using the information below.

To find and report problems on your server, follow these steps:

1. Monitoring your server will help you detect, locate, and identify problems. Your server has many built-in capabilities to manage problems. Keep your eye on the following OS/400 resources:
   - Messages and message queues contain important server information
   - Logs record certain events and messages which are used for diagnosing problems. The QHST log contains past system operator messages, device status, job status changes, and program temporary fix activities that are stored as system messages.

2. Begin problem analysis.
   - Use system reference codes to identify units that detect errors.
   - Use CL commands or problem handling menus to gather more information about a problem.
   - Use electronic customer support or "Extreme Support" on page 41 to isolate the causes of problems, to help service your server, and to support your server.
   - Use fixes (or program temporary fixes, PTFs) to keep your software current.

3. Use Report hardware and software problems if you want to report a problem that has an entry in the problem log.

4. Run the "Use APARs to collect diagnostic information" on page 31 to request a correction of a defect.

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Chapter 1. Print this topic

To view or download the PDF version of this topic, select Getting started with troubleshooting (about 337 KB or 60 pages).

Other information

To view or download the PDF version of a related book, select AS/400e Diagnostic Tools for System

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

Chapter 2. How your server manages problems

The problem analysis functions that are provided by your server allow you to manage both system-detected and user-defined problems. Your server provides functions for problem analysis, problem logging and tracking, problem reporting, and problem correction. The structured problem management server helps you and your service provider quickly and accurately manage problems as they occur on the server.

Here is an example of the flow when managing a problem:

1. The server detects a hardware error.
2. An error notification is sent to the server.
3. A problem record is created with configuration information, a system reference code, the name of the reporting device, and other information.
4. The system error log records the error.
5. A message is sent to the system operator's message queue.
6. Problem analysis starts with the message.

The results of problem analysis are automatically stored, along with the collected problem information. At this point, you can report the problem to your service provider.

Various tools are available to help you manage the problems on your server.

- Chapter 3, "Messages" on page 7
- Chapter 4, "Message queues" on page 15
- Chapter 5, "Logs" on page 19
- Chapter 6, "Analyze server and system problems" on page 23
- Chapter 7, "Hardware and software problems" on page 33
- Chapter 8, "Customer Support" on page 39

Chapter 3. Messages

Messages are communications that are sent from one person or program to another. Whether you are a system operator or user, you can communicate on your server by using messages. The system operator and users send and receive messages from other users and system programs that communicate system conditions.

Your server sends informational and inquiry messages that provide you with important system information. Inquiry messages require you to respond. Informational messages allow you to keep track of system activities, jobs, users, and errors. Because messages provide information about your system, you should know how to handle messages when finding and correcting problems.

To efficiently handle messages, you need to know about the following:
- Types of messages provides general information on types of errors such as error messages and alerts.
- Display messages shows how you can display messages in the system-operator (QSYSOPR) or user-message queues and includes information on how to display message details and links to information on how to display messages in the QSYSMSG queue
- Send messages shows how you can communicate on your server by sending messages.
- Respond to messages shows how to respond to messages from the system operator or other users, as well as respond to printer messages.
- Remove messages shows how you can remove any unneeded messages.
- Print messages shows how you can print specific messages that refer to the current problem that you are handling and also provides a link to information on how to print a message queue.

Other related topics you may want to learn about include using error messages and message queues.

Types of messages

A variety of system and server messages exists to assist the user, ranging from error messages, to printer messages, to alerts. It is important before you handle messages to understand the message types:
- Error messages that can indicate simple to complex system, device or program errors.
- Alerts which provide analysis on hardware or software resources.

For information to use these message types efficiently, read about basic message tasks: display messages, send messages, respond to messages, remove messages and print messages.

Error messages

A variety of system messages can indicate conditions that range from simple typing errors to problems with system devices or programs. Error messages can be sent to a message queue or to a program and shown on a display. Messages may be one of the following:
- An error message on your current display
- A message regarding a system problem that is sent to the system operator message queue, QSYSOPR
- A message regarding a device problem that is sent to the message queue specified in a device description
- A message regarding a potential severe system condition that is sent to the QSYSMSG message queue, the system operator message queue, and other message queues specified by the users.
- An unexpected error message that is not handled by a program (shown on the Display Program Messages display)

For information about using error messages, read "Using error messages" on page 8.

Using error messages
If you request a task that the system cannot run because of an error, an error message appears at the bottom of the display. Depending on the display, the keyboard may also lock. To unlock the keyboard, press the Reset key.

Note: Displays of some application programs may not have message lines on the bottom of the display.

To obtain additional information about the error, take the following steps:
1. Move the cursor to the same line as the message. If you cannot move the cursor, go to Step 2.
2. Press the Help key. The Additional Message Information display gives you more information about the error. Press F9 to see message details such as the program and its instruction number the error was sent to. You may need to contact the owner of the program to fix the problem described in the error message.

Messages in a Message Queue

Some messages allow you to run problem analysis. Problem analysis helps you resolve an error that you could not resolve from the message or the Additional Message Information display. These messages have an asterisk (*) in front of them (intermediate assistance level) or are highlighted (basic assistance level).
* Basic assistance level: Shows the Work with Messages display. Press option 5 to show the Additional Message Information display.
* Intermediate assistance level: Shows the Display Messages display. You can position the cursor to the message and press Help to show the Additional Message Information display.

Note: Messages about critical system errors or conditions are reverse-imaged (intermediate assistance level), or highlighted (basic assistance level). You can run problem analysis on the messages with an asterisk (*) in front of them or if F14 is shown on the Additional Message Information display.

To analyze problems from the intermediate assistance level:
1. Move your cursor to any message with an asterisk and press F14.
2. From the Work with Problem (WRKPRB) display, you can display the details of the problem and work directly with the problem.

To run problem analysis from the basic assistance level for messages that are highlighted, select option 5 (Display details and reply) for that message and press F14 (Work with problem).

Examples:
    "Examples: Using error messages"

Examples: Using error messages: **Example 1:**

The system sometimes sends error messages that require you to choose a reply. Based on the possible choices given (always in parentheses), this is generally a one-character reply.

For example, notice the five possible choices for this message:

```
 Verify alignment on device PRT01. (I C G N R)
```

Messages of this kind with possible choices most often appear on the system operator message queue. However, under certain circumstances, they can also appear on your own message queue.

Example 2:

Suppose that you want to print a finished report. You go through the steps to send it to the printer, but it doesn't print. You check your message queue and find the following message:

```
 End of forms on printer PRT01. (C H I PAGE 1-99999)
```

The computer wants you to reply, using one of the four choices that are shown (C H I PAGE 1-99999). You aren't expected to know or remember the meanings of the numbers or letters in any reply. The Additional Message Information display provides information about each choice. In addition, this display also provides a reply line on which you can type your reply (if a reply is needed).

To get to the Additional Message Information display from the Work with Messages display (the basic assistance level), do the following:
1. Position the cursor on the option line in front of the message you want to respond to.
2. Select option 5 (Display details and reply).
3. When the Additional Message Information display appears, page down through the information to find the description of each reply value.

Alerts

An alert is a message that has several benefits. An alert is automatically sent from any system in the network to the system that is designated to manage problems.

An alert provides a quick, initial assessment of a problem and gives the network operator guidance on corrective actions. For those problems that a network operator cannot correct, the alert provides information that a specialist can use to isolate the source of the problem.

Alerts inform the operator of problems with hardware resources, such as local devices or controllers, communication lines, or remote controllers or devices. Alerts can also notify the operator of software errors that are detected by the system or application programs. If the system is part of a communications network, alerts can be created and sent through the network to the problem-managing system. You can display the alerts from the managing system.

You can use alerts to do the following management activities:
* Monitor systems and devices that operate unattended.
* Manage situations in which the local operator does not know how to handle the problem.
* Maintain control of system resources and expense.

For information on the benefits of alerts, read alerts benefits.

Alerts benefits
Use alerts to manage your network and systems more effectively. The following situations are examples of when you might use alerts.
* To reduce your system and network costs. Because the system automatically controls the capabilities of alerts, you can automate common responses to system problems without operator intervention.
* To monitor your network status. Alerts provide information about specific network problems that can help you track and monitor your system.
* To monitor unattended remote systems. Alerts can notify a central site about a problem on an unattended system.
* To have all your technical people at one location. When you use alerts, you can staff all of your technical support at one central site.
* To make your own applications have the same error-reporting capabilities as the system functions. Alerts give you the capability to define your own alertable messages.
* To provide the ability to choose where your technical support is located. When you use alerts, you can select which of your systems receive central technical support.
* When you manage a network with either homogeneous or heterogeneous systems. Because alerts are designed to be independent of the system architecture, alerts from one system are readable on other systems.

Displaying alerts

You can log and display alerts that were either locally created on your system or that were received from other systems in the network. Your system does not have to be actively processing alerts to work with alerts. You can see all the alerts that are logged in the alert database.

To view the logged alerts:
1. Use the Work with Alerts (WRKALR) command. Type `WRKALR` and press Enter from any command line. The most recent alert is displayed first.
2. Type `5` to display the recommended actions.
3. Type `8` to display the details for a specific alert.

To refresh the list of alerts automatically, press F21 (Automatic refresh).

Display messages

From the iSeries Navigator window, you can display messages in the system-operator (QSYSOPR) or user-message queues. Messages in these queues include information from the operating system and other users.

To display a message, follow the steps below:
1. From the iSeries Navigator window, expand the server from which you want to work.
2. Expand **Basic Operations**.
3. To display messages for the server that you selected, click **Messages**. This displays all the messages for your user profile.
4. From the menu bar, select **Options**.
5. From the Options menu, select **Include**.
6. Click the button at the right of the **Messages for** field to display the **Messages for** dialog.
7. Select the appropriate option to display messages for the current user, the system operator, or another user's message queue.

   Note: If you want to display messages for another user's queue, you must specify the user name. To see a list of all users on the system, click the Browse button. Select the user name from the list shown to display the message queue.
8. Click OK to return to the Include dialog.
9. (Optional) You can limit the messages that are displayed by severity. Severity ratings numerically identify the extent of a problem. To display messages with a minimum severity rating (0-99), enter a specific numeric value in the **Lowest severity to show** field.
10. Click OK to save your changes and close the Include dialog.

For information on how to display the details or properties of your message, read Display message details.

For information on how to handle potentially severe system messages or messages that require immediate action, read Display messages in the QSYSMSG queue.

Display message details

From the iSeries Navigator window, you can display the details or properties of your messages. This provides you with message information that includes:

Details from the file menu that shows you:
- Message ID
- Date and time sent
- Message text
- Message help (cause and recovery)

Properties from the File menu that shows you:

- Who sent the message
- Message text
- Date and time sent
- Message ID
- Severity level
- Message type
- Name of message queue
- Message queue library
- Name of the job that sent the message
- Number of jobs that sent the message
- Name of the program that sent the message

To display the details of your messages, follow the steps below.
1. From the iSeries Navigator window, select the message you want to display more information about.
2. From the menu bar, select File.
3. For cause and recovery information, select Details from the File menu.

   For more information about the sender of the message, the message type and severity level, and the message queue, select Properties from the File menu.

Display messages in the QSYSMSG queue

Use message queue QSYSMSG for severe error messages to handle only potentially severe system messages, which are messages that require immediate action.

To display the messages in QSYSMSG, follow the steps below:
1. Type `WRKMSG QSYSMSG`, the Work Messages command for message queue QSYSMSG, at the command line. This command shows all messages in the QSYSMSG queue.
2. For more information about the message, move the cursor to the same line as the message you want to see.
3. (Optional) If you do not have your Assistance Level specified as Basic, press F21. Select option 1=Basic. If you do not have your system set to the basic assistance level, you cannot display the message details.
4. To show the Additional Message Information display, select Option 5.
5. To display message details, select F9. This display shows the time that the user sent the message. This also displays the name of the users or programs that sent and received the message.

   Note: These instructions also display messages in any message queue.

Send messages

Whether you are a system operator or user, you can communicate between servers by sending messages.

To send a message, follow the instructions below:
1. From the iSeries Navigator window, select the file menu.
2. Select Send Message.
3. In the Send to field, enter or select the name of the user or workstation who will receive the message.
4. Select Request a reply if you want a reply to your message.
5. Select Interrupt user to interrupt a user with your message.
6. Type your message in the Message text field.

Respond to messages

From the iSeries Navigator window, you can reply to inquiry messages. This allows you to respond to messages from the system operator or other users.

To reply to your messages, follow the steps below.
1. From the iSeries Navigator window, select the inquiry message in the message list to which you want to reply.
2. From the menu bar, select **File**.
3. From the File menu, select **Reply**.
4. Type your reply.
5. Click the Reply button.

For information on how to respond to printer messages, read Respond to printer messages.

Respond to printer messages

The system operator and users can receive and display messages from system programs that communicate system conditions. This function includes receiving messages about printing. Each printer has a message queue. The printer can stop printing to wait for a response to a message. This allows the system operator to manage and report problems regarding the print devices.

To display messages that a printer is awaiting for a response to, follow the steps below:
1. To show the Work with Printers display, type `WRKWTR ASTLVL (*BASIC)` at the command line.
2. To display the messages that the printer is awaiting a response, select Option 7 (Printer message).
3. In the reply field, type your response to the printer message.

Remove messages

From the iSeries Navigator window, you can remove any unneeded messages. The message queue stores messages from the system operator, system programs, and other users on the system.

To remove the appropriate messages, follow the steps below:
1. From the iSeries Navigator window, expand the system from which you want to remove messages.
2. To display the messages for your user profile, click **Messages**.
3. Select the message that you want to remove from the message queue.
4. From the menu bar, select **File**.
5. From the File menu, select **Delete**.
6. To complete the removal of your messages, click the **Delete** button on the Confirmation dialog.

Print messages

Messages help you track your system's problems and user activities. To help you organize system messages, you can print the specific messages that refer to the current problem that you are handling.

To print specific messages one at a time from the message queue, follow the steps below:
1. Enter the Work with Messages (`WRKMSG`) command, at the command line.
2. Press F4 to prompt.
3. In the message queue parameter field, enter the name of the message queue that contains the messages that you want to print.
4. Press Enter to continue.
5. (Optional) If you do not have your Assistance Level specified as Basic, press F21. Select option 1=Basic. If you do not have your system set to the basic assistance level, you cannot display the message details.
6. To display the message that you want to print, enter 5 (Display details) and reply in the Options column.

7. To print the message, press F6.

You also track your systems problems by printing all messages in the message queue.

Chapter 4. Message queues

A message queue is like a mail box for messages. Your server has several message queues that hold messages that provide helpful information when finding and reporting problems. Understanding the location of history files, error messages, and system messages can help you solve problems by holding important system information.

To find and locate messages, you must be aware of the types of message queues including QSYSOPR queues. You must know how to manage and create message queues. Some of these tasks include:
- Creating message queues
- Changing the attributes of message queues
- Changing the message queue for a printer
- Printing all messages in the message queue

Types of Message Queues

You use several different server and system queues:
- The system operator message queue, QSYSOPR, contains system messages that require a reply from the operator
- Optional message queue QSYSMSG holds severe error messages.
- The history log, QHST, holds messages that track the system's activities.
- The printer queue stores messages that is associated with each printer.
- Each user and workstation also have message queues that hold messages from the system operator, another user, or system.

QSYSOPR message queue

To handle the large number of messages that are sent to QSYSOPR, or the configured message queue, **a message queue parameter (MSGQ)** exists for the following line and controller descriptions:
- Line Descriptions: Distributed Data Interface, Ethernet, Frame-Relay, Token-Ring, X.25
- Controller Descriptions: APPC, Async, Local Work Station, Remote Work Station, SNA Host, Virtual Work Station

The following are some practical examples of using the MSGQ function:
- You are a small-sized customer who has one LAN line and very few users: There are no changes that need to be made; all messages will remain in QSYSOPR, or the configured message queue.
- You are a medium-sized customer who has a couple of LAN lines: In this instance, you would simply have to change the QCFGMSGQ system value to the system-supplied message queue, QSYS/QCFGMSGQ. As a result, all communications messages for the object types that support the MSGQ configuration parameter will then go to this one queue.
- You are a large-sized customer who has many LAN lines and many WAN lines, with many users on each line. You would also like to set up the message queues so that messages are separated as follows:
  - The messages for the Ethernet LAN will go to ETHMSGQ: On this line, the system configures all the controllers automatically.
  - The messages for the Token Ring LAN will go to TRNMSGQ: On this line, the system configures most controllers; however, some controllers you need to configure manually.
  - All messages for workstation users will go to the WSMSGQ: This includes local workstations, remote workstations, pass-through, and telnet.
  - All other communications messages will go to QCFGMSGQ.
- You are an experienced operator who has written a program that helps the operator know which message queues are the important ones. Here is how you would configure for this instance:
  - Change the system value QCFGMSGQ to QSYS/QCFGMSGQ.

- – Create the Ethernet line description with MSGQ(ETHMSGQ): The system creates all controllers (and thus devices) on this line. This means the system will send their messages to the message queue defined in the line ETHMSGQ.
- – Create the Token Ring line description with MSGQ(TRNMSGQ): The automatically created controllers and devices on this line will have their messages sent to TRNMSGQ. Controllers that are manually created on this line are created with the MSGQ(TRNMSGQ) parameter.
- – Create the X.25 line description with MSGQ(V25MSGQ): All controllers that are created for this X.25 line description must be created using the MSGQ(X25MSGQ) parameter on the CRTCTLxxx command.
- – You can set up the workstation controller descriptions as follows:
  - - The local workstation controller, which the system automatically created, was changed to MSGQ(WSMSGQ).

    Notes:

    1. Create all printer devices attached to the workstation controller with MSGQ(*CTLD). Messages for display devices always go to the message queue that is defined in the associated controller. Thus, changing the message queue of the controller results in the messages for the devices that go to the messages queue defined in the controller description.

    2. It would be possible for the user to use a CHGCMDDFT command and have the message queue default to a different queue. This means that the automatic creation of the local workstation controller will use the different message queue.
  - - Create the virtual controllers for pass-through and Telnet with MSGQ(WSMSGQ).

    Like the local workstation controllers above, the devices attached to the virtual workstation controllers will have their messages sent to the queue defined in the virtual controller. The same logic works for remote workstation controllers and their attached devices.
- • You are a large-sized customer that is now only using TCP/IP and would like to have the line and workstation messages logged to the QTCP message queue: You could manage this configuration by changing the system value QCFGMSGQ to QSYS/QTCP.

Create message queues

You can create message queues to store messages within a particular library. The message queue provides you a place to receive and store informational and inquiry messages efficiently.

To create a message queue, follow the steps below:
1. From the OS/400 Main Menu, select Option 3 (General system tasks).
2. From the General Systems Tasks display, select Option 4 (Messages).
3. From the Messages display, select Option 7 (Create a message queue).
4. In the message queue parameter field, enter the name of the new message queue.
5. (Optional) To specify additional message queue characteristics, press F10, Additional Parameters. You can specify characteristics to do the following:

   - • Place all message queue changes into auxiliary storage. This includes changes to the message queue attributes and changes due to messages that are sent or removed from the queue.

   - • Specify the queue size

   - • Specify user authority

   - • Specify whether the queue allows the system to generate an alert

   - • Specify the coded character set ID (CCSID)

   For further information about parameters and keywords that allow you to specify message queue characteristics, press F1 for each keyword.

For information specific to severe system messages, see Create message queue QSYSMSG for severe error messages.

Create message queue QSYSMSG for severe error messages

You can create an optional message queue, QSYSMSG, to hold specific severe system messages. QSYSMSG holds only messages that require immediate action.

To create QSYSMSG, type `CRTMSGQ QSYS/QSYSMSG TEXT ('OPTIONAL MSGQ TO RECEIVE SPECIFIC SYSTEM MESSAGES')` at the command line and press Enter. The system then creates the message queue.

Once you create the QSYSMSG message queue, your system stores specific system messages in it.

Example: CPF0907 Serious storage condition may exist. Press HELP.

Change the attributes of message queues

Your server has several message queues that hold messages with helpful information for finding and reporting problems. You can customize the way that a message queue notifies you of messages.

To change the attributes of a message queue, follow the steps below:
1. Enter the Change Message Queue command (`CHGMSGQ`) at the command line.
2. Press F4 to prompt.
3. Enter the name of the message queue that you want to change in the MSGQ parameter field.
4. Enter the name of the library that contains the message queue in the message queue library field.
5. (Optional) To change the delivery notification, specify the delivery (DLVRY) parameter.

    Note: To view a list of values for the delivery parameter, press F1.
6. Press F10 for additional parameters.
7. To limit message delivery by severity codes, specify the numeric value that you wish to view in the field of the Severity code filter, SEV, parameter field.

Related topics
   "Display messages" on page 10
   "Display message details" on page 10
   "Error messages" on page 7
   "Create message queues" on page 16
   Chapter 3, "Messages" on page 7
   Chapter 4, "Message queues" on page 15
   "Alerts" on page 9

Change the message queue for a printer

You can change the location of the message queue that stores messages that is assoicated with each printer. Changing this location allows you to separate your printing messages from system, user, or error messages.

To change the location of the message queue that stores printer messages, follow the steps below:
1. From the OS/400 Main Menu, type `WRKDEVD *PRT` at the command line to display a list of printers. Press the Enter key.
2. Enter 2 (Change) in the Opt column, next to the print device that is changing.
3. From the Change Device Description display, specify the name of the message queue that you want to change in the message queue parameter field.

Print all messages in the message queue

Sometimes a problem has many messages associated with it. To help you organize messages that are reporting possible problems, you can print the message from a message queue.

To print messages from a message queue, follow the steps below:
1. From the OS/400 Main Menu, select Option 3 (General Systems Tasks).
2. From the General Systems Tasks display, select Option 4 (Messages).
3. From the Messages display, select Option 3 (Display Messages).
4. In the Message queue parameter field, enter the name of the message queue that contains the messages which you want to print.
5. In the library parameter field, specify the library where the message queue resides.
6. In the Output parameter field, enter the value, `*PRTWRAP`.
7. **(Optional):** To quickly print messages, type `DSPMSG MSG(MSQNAME) OUTPUT(*PRTWRAP)` at the command line.

Chapter 5. Logs

The OS/400 licensed program records certain kinds of events and messages for use in diagnosing problems. A log is a special kind of database file that is used by the system to record this information.

Use this list of common logs for more information:
- "Job logs"
- "History logs" on page 20
- "Problem logs" on page 21

For information specific to communications, see Job logs and communications problems.

Job logs

Every job that runs on your server has an associated job log that records its activities. A job log can contain the following:
- The commands in the job
- The commands in a control language (CL) program
- All messages associated with that job

You can control the content of the job log by using the value specified on the LOG parameter, see "Controlling the content of the job log". You can specify the LOG parameter on the CHGJOB, CHGJOBD, or CRTJOBD commands.

To display job logs, go to "Displaying job logs" on page 20.

For information specific to communications, see Job logs and communications problems.

Controlling the content of the job log

When working with problems, you may want to record the maximum amount of information for jobs that have frequent problems. On the other hand, you may not want to create a job log for jobs that completed normally. Or you may want to exclude informational messages.

To control the contents of the job log by using the Create Job Description (CRTJOBD) command:
1. Type `CRTJOBD` from any command line and press F4.
2. Find the message logging (LOG) parameter, and specify the appropriate values for the following:
    - The message level. See "Details: Controlling the content of the job log using the message level value" for the values.
    - The message severity. See "Details: Controlling the content of the job log using the message severity value" on page 20 for the values.
    - The message text level. See "Details: Controlling the content of the job log using the message text level value" on page 20 for the values.
3. Complete the values for the required parameters and press Enter.

Details: Controlling the content of the job log using the message level value
The message level value controls the type and number of messages that the system writes to a job log. The message level can be one of the following:

0   No data is logged.

1   The messages that are logged are only those that are sent to the external message queue for the job with a severity greater than or equal to the specified message severity.

2   Logs all level 1 messages, and the following:
    - Any requests that result in a high-level message with a severity level that exceeds or equals the message severity specified.

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- If a request is logged, all of its associated messages are also logged.

3   The same as level 2, and the following:
- All requests
- Commands that are run by a CL program if allowed by the log CL program command's job attribute and the log attribute of the CL program.

4   The following information is logged:
- All requests or commands that are logged from a CL program
- All messages with a severity at least equal to the specified severity. This includes trace messages
- Commands that are run by a CL program if allowed by the log CL program command's job attribute and the log attribute of the CL program.

Note: a high-level message is one that is sent to the program message queue of the program that receives the request. For example, QCMD is an IBM-supplied request processing program that receives requests.

Details: Controlling the content of the job log using the message severity value

The message severity determines which messages are logged. Every message has an associated severity. For example, informational messages have a severity of 00. Messages that are essential to the operation of the system have a severity of 99, which is the highest severity. For more information, see the online help.

Details: Controlling the content of the job log using the message text level value

You can request to have a variety of message text generated. The amount of message text depends on the values that you specify for the message text level.
- Specify *MSG to write only the message text to the job log.
- Specify *SECLVL to write both message text and message help to the job log.
- Specify *NOLIST if you do not want to create a job log when a job ends normally.

Displaying job logs

The job log contains the messages that were recorded when a job ran. To analyze a problem, you can review the messages in the job log. You can display a job log in several different ways. How you display the job log depends on whether the job has ended or is still running.
- For a job that has ended, use the Work with User Jobs display.

  1. Type `WRKUSRJOB` from any command line.

  2. Select option 8 (Work with spooled files) for the job whose log you want to see.

  3. Find the file that is called QPJOBLOG on the Work with Spooled Files display.

  4. Type `5` (Display) to view it.
- For a job that is still running, use the Work with User Jobs display.
  1. Type `WRKUSRJOB` from any command line.
  2. Type `5` (Work with) for the job whose log you want to see.
  3. Type `10` (Display job log, if active or on job queue) from the Work with Job display.
- To display the job log for your own workstation session, use the Display Job Log (DSPJOBLOG) command. Type `DSPJOBLOG` from any command line.

History logs

The history log is a tool that contains information about the operation of the system and the system status. The history log tracks high-level activities such as the start and completion of jobs, device status changes, system operator messages, and attempted security violations. The information is recorded in the form of messages. These messages are stored in files that are created by the system.

History logs help you track and control system activity. When you maintain an accurate history log, you can monitor specific system activities that help analyze problems. History logs differ from job logs. Job logs record the sequential events of a job. History logs record certain operational and status messages that relate to all jobs in the system.

You can start your investigation of a problem by looking at the history log and then referring to a specific job log for details.

You may also find valuable information in various other logs:
* Chapter 5, "Logs" on page 19
* "Problem logs"
* "Display the list of history log files"
* Displaying other logs to solve communications problems

Read Display contents of QHST history log for specific information on display that specific type of history log.

Display the list of history log files

Use the Display Object Description (DSPOBJD) command to view a list of history log files. The history log files are copies of all the messages that are sent to the message queue QHST. When the size of the current history log exceeds its size limitation, the system creates a new file. The files reside in library QSYS and begin with the letters QHST, followed by a number. The format that is used is QHST`yydddn`. The `yydddn` represents the date of the first message in the file, where `yy` is the year and `ddd` is the day. The `n` that is appended at the end is a sequence number; this sequence number is only incremented when more than one QHST file is generated within one day.

To display the list of history logs and to view its contents:
1. Type `WRKF QHST*` from any command line.
2. Select option 5 to display the contents of the file.

Note: The system copies the messages in the QHST message queue to the history log files and then removes them from the QHST message queue. The DSPLOG command uses the history log files to show the messages sent to the QHST message queue.

Display the contents of the QHST history log

Track your system activities by displaying the contents of the history log, QHST; see "History logs" on page 20. QHST contains past system operator messages, device status, job status changes, and program temporary fix activities that are stored as system messages.
1. To display the contents of the QHST history log, type the Display Log command (`DSPLOG`) at the command line.
2. To prompt the command, select F4.
3. To display only messages that were logged during a certain time, specify a time period. If you did not specify a time period, the DSPLOG command displays all available messages for that day.

Problem logs

A problem log is a useful tool for coordinating and tracking all your problem management operations. The problem log at a service provider contains problem records created as a result of:
* Incoming alerts that were received
* Service requests and program temporary fix (PTF) orders that were received
* Local system-detected problems
* Local user-detected problems

You can print or display error logs from your jobs.

Print error logs

If you have errors, you may want to print the error log. Your log contains a list of errors that occurred on your system. When you review these errors, you may be able to determine the problem.

To print the error log:
1. Type `PRTERRLOG` from any command line and press F4.
2. Type the parameter value for the kind of error log information that you want to print. For example, you can specify *ALL to print all the error codes, or specify *ALLSUM to print a summary of the error log.
3. Press Enter. The error log information is sent to the output queue that is identified in your user profile.
4. Type `GO ASSIST` from any command line to display the Operational Assistant menu.
5. Type `10` (Start printing) on the Work with Printer Output display to print the error log.

Display error logs

If you have errors, you may want to display the error log. Your error log contains a list of errors that occurred on your system. When you review these errors, you may be able to determine the problem.

To view the error log:
1. Type `PRTERRLOG` on any command line and press F4.
2. Type the parameter value for the kind of error log information that you want to print. For example, you can specify *ALL to print all the error codes, or specify *ALLSUM to print a summary of the error log.
3. Press Enter. The error log information is sent to the output queue that is identified in your user profile.
4. Type `GO ASSIST` on any command line to display the Operational Assistant menu.
5. Look for the error log at or near the bottom of the printer output list on the Work with Printer Output display.
6. Type `5` (Display) to view the printer output.

You can also print the error logs, see "Print error logs".

Chapter 6. Analyze server and system problems

If you are experiencing problems with your system, you can gather more information about the problem to either solve it or report it through several options:

- Control language or CL commands are the set of commands with which a user requests system functions. For information on specific CL commands and an example of each, read Analyze problems using CL commands
- An system reference codes or SRC is a set of eight characters that identifies the name of the system component that detected the error code and the reference code that describes the condition. For more information on SRCs, read System reference codes
- Problem handling menus accommodate users of all skill levels in solving server problems. For example, the USERHELP menu provides basic problem handling function, where you can learn the simple task of using help. On the other hand, the NETWORK menu provides access to information that helps an operator handle problems throughout a network.
- Authorized program analysis report or APAR is a request for correction of a defect in a current release of an IBM-supplied program.

Analyze problems using CL commands

If you are experiencing problems with your system, some problem determination commands are discussed in the following articles:
- "Using the Work with Problems (WRKPRB) command" shows how you can gather more information about a problem to either solve it or to report it without the help of a service representative.
- "Using the Analyze Problem (ANZPRB) command" on page 24 shows you how to start problem analysis for user-detected problems.
- "Using the Work with Alerts (WRKALR) command" on page 26 shows you how to use the Work with Alerts (WRKALR) command to remotely analyze system-detected problems.
- "Using the Verify Communications (VFYCMN) command" on page 26 shows you how to verify either remote or local communications equipment.
- "Using the Verify Tape (VFYTAP) command" on page 27 shows you how to use the Verify Tape (VFYTAP) command.

Using the Work with Problems (WRKPRB) command

With problem analysis, you can gather more information about a problem to either solve it or to report it without the help of a service representative. You can run problem analysis on messages that are highlighted (basic assistance level) or have an asterisk (*) next to them (intermediate assistance level). If you do not see any of these messages, you may not be authorized to the Work with Problem (WRKPRB) command, or the message does not support additional problem analysis.

To run the Work with Problem (WRKPRB) command for messages that are highlighted, do the following:
1. Select option 5 (Display details and reply) for the message
2. Press F14 (Work with problem)

To run the Work with Problems (WRKPRB) command for messages with an asterisk, do the following:
1. Move your cursor to the message and press F14. The Additional Message Information display appears.
2. Press the F14 (Work with problem) key. From the Work with Problem (WRKPRB) display, you can display the details of the problem and work directly with the problem.

Example:
   "Examples: Work with Problems (WRKPRB) command" on page 24

Examples: Work with Problems (WRKPRB) command
Example 1: Displaying Entries with Status of OPENED or READY.

```
WRKPRB  STATUS(*OPENED *READY) HDW(9347)
```

This command shows the Work with Problems display. It will list only those problem entries with a status of OPENED or READY, which identify a failing device with type 9347.

Example 2: Displaying Current Day Problem Entries.

```
WRKPRB  PERIOD((*AVAIL *CURRENT))
```

This command shows the Work with Problems display. It will list all problem entries that were created on the current day.

Example 3: Displaying List of Hardware Problems.

```
WRKPRB  SEV(1 2)  HARDWARE(9347 001 10-7523489)
```

This command shows a list that contains problems with the hardware that is specified by the user. The user has specified that the command track medium to high levels of severity.

See the "Using the Work with Problems (WRKPRB) command" on page 23 if you need details on how to use the command.

Using the Analyze Problem (ANZPRB) command

Type the Analyze Problem (ANZPRB) command on any command line to start problem analysis for user-detected problems. A new problem is one that you detect while using the system and that has not been recorded in the problem log. A new problem is also one that is in the problem log with a status of opened. When the analysis is complete, the results are stored in the problem record. The results are used to search for program temporary fixes (PTFs) to correct the problem or to prepare a new service request if no solution is found.

To analyze a new problem that has not been recorded in the problem log, do the following:
1. Type ANZPRB on the command line.
2. Select the option that most closely corresponds to the problem listed on the Analyze a New Problem display. A series of steps then guides you through problem analysis. As you progress through problem analysis, the system builds a symptom string that is based on your responses.

    Note: If you encounter the Problem Analysis display while you are building your symptom string, contact IBM service before continuing.
3. When you complete problem analysis, the collected information is placed in the problem log.

To analyze a problem that has been recorded in the problem log with opened status, do the following:
1. Type DSPMSG QSYSOPR on any command line and press the Enter key to see the system operator messages.
    - If the message is highlighted, use option 5 (Display details and reply) for the message. On the Additional Message Information display, press F14 (Work with problem).
    - If the message has an asterisk (*) next to it, press F14 (Work with problem) on the Display Messages display.
2. Select Option 8 (Work with problem), and then Option 1 (Analyze problem). As you progress through problem analysis, the system builds a symptom string based on your responses.
3. When you complete problem analysis, the collected information is placed in the problem log.

You can also use the following method to analyze a problem with open status in the problem log:

1. Type WRKPRB on any command line.
2. Select Option 8 (Work with problem) for the problem, and then Option 1 (Analyze Problem).

For information about how to report a problem, see "Report problems detected by the system" on page 33.

Example:
   "Examples: Analyze Problem (ANZPRB) command"

Examples: Analyze Problem (ANZPRB) command
Example 1: Displaying the Menu.

```
ANZPRB
```

This command shows the Analyze Problem menu.

Example 2: Starting Remote Analysis.

```
 ANZPRB  ANZTYPE(*REMOTE)
```

This command shows the display which prompts for the remaining values of the command. After you specify the appropriate values, remote analysis begins.

Example 3: Accessing Remote System with User ID and Password.

```
ANZPRB ANZTYPE(*REMOTE) RCPNAME(RCH38377) USERID(JON) PASSWORD
```

This command shows the display which prompts for the remaining values of the command. After you specify the appropriate values beyond the ones that are specified on the command example, remote analysis begins.

Example 4: Remote Analysis has Security Level of 10.

```
ANZPRB ANZTYPE(*REMOTE) RCPNAME(RCH38377) USERID(JON)
```

This command is slightly different than the preceding example. The same display prompt appears. However, if you do not specify PASSWORD, the system assumes that the remote system has a security level of 10; that is, it does not use passwords. After you specify the appropriate values beyond the ones that are specified on the command example, remote analysis begins.

Example 5: Displaying Menu.

```
ANZPRB  ANZTYPE(*MENU)
```

This command shows a menu that prompts you for the type of analysis that you want done. The remaining parameters do not appear on the display.

Example 6: Starting Local Analysis.

```
 ANZPRB  ANZTYPE(*LOCAL)
```

This command begins analysis on the local device. The remaining parameters do not appear on the display.

See the "Using the Analyze Problem (ANZPRB) command" on page 24 if you need details on how to use the command.

Using the Work with Alerts (WRKALR) command

Use the Work with Alerts (WRKALR) command to remotely analyze system-detected problems that cause the service requester to create and send them to the service provider.

To remotely analyze system-detected problems, do the following:
1. Type WRKALR on any command line and press the Enter key.
2. Press F11 (Display user/group) to show the problem IDs associated with the alerts.
3. Type 9 (Work with problem) in the Opt column next to the alert that is associated with the problem you want to analyze. Then press the Enter key (or press F18 (Work with problem) to work with the problem log).
4. Type 8 (Work with problem) in the Opt column next to the problem you want to analyze.
5. Select option 1 (Analyze problem) from the Work with Problem menu.

Example:
    "Example: Work with Alerts (WRKALR) command"

Example: Work with Alerts (WRKALR) command
Example 1:

Type the following command:

WRKALR
1. Press the Enter key.
2. Select the alert you want to work.
3. Use the different options on the Work with Alerts display to complete the required task.

See the "Using the Work with Alerts (WRKALR) command" if you need details on how to use the command.

Using the Verify Communications (VFYCMN) command

The Verify Communications (VFYCMN) command allows you to verify either remote or local communications equipment. The prompt display allows you to select the system on which you want to verify remote communications.
1. Type VFYCMN on any command line.
2. Press F4 (Prompt).

Depending on the system's configuration, you can run tests on the following:
• Cable
• Communications input/output adapter
• Communications interface trace
• Link
• Local modem
• Remote modem
• Link Problem Determination Aid-2 (LPDA-2)

Example:
    "Examples: Verify Communications (VFYCMN) command"

Examples: Verify Communications (VFYCMN) command
Example 1: Showing Select a Line to Test Display

VFYCMN

This command shows the Select a Line to Test display.

Example 2: Checking a Remote System

```
VFYCMN  VFYTYPE(*REMOTE)
```

This command shows the display which prompts for the remaining values of the command. After you specify the appropriate values, remote analysis begins.

Example 3: Accessing a Remote System Using a Password

```
VFYCMN VFYTYPE(*REMOTE) RCPNAME(RCH38377)        USERID(JON) PASSWORD
```

This command shows the display which prompts for the remaining values of the command. After you specify the appropriate values beyond the ones that are specified on the command example, remote analysis begins.

Example 4: Accessing a Remote System Without a Password

```
VFYCMN VFYTYPE(*REMOTE) RCPNAME(RCH38377)        USERID(JON)
```

This command is similar to the preceding example except that the PASSWORD parameter is not specified. The same prompt display is shown; however, the system assumes that the remote system has a security level of 10; that is, it does not use passwords. Another prompt display appears after this command is specified. After the user specifies the appropriate values on this display, remote analysis begins.

Example 5: Checking a Local System

```
VFYCMN VFYTYPE(*LOCAL)
```

This command begins analysis on the local device. The remaining parameters do not appear on the display.

See the "Using the Verify Communications (VFYCMN) command" on page 26 if you need details on how to use the command.

Using the Verify Tape (VFYTAP) command

The Verify Tape (VFYTAP) command starts procedures that verify whether the specified tape unit is operating. This command is for local tape verification and is presented here as a complement to the problem analysis procedures. You can have an operator at a service requester use this command to verify that a problem with a tape unit has been resolved.

1. Type `VFYTAP` on any command line.
2. Type `*RSRCNAME` in the device name position and press the Enter key.
3. Displays appear that prompt you for the resource name. Enter either a device description name or the resource name.

Example:
   "Example: Verify Tape (VFYTAP) command"

Example: Verify Tape (VFYTAP) command
Example 1:

```
VFYTAP  DEV(TAP3)
```

This command verifies whether the tape unit that is named TAP3 is working.

See the "Using the Verify Tape (VFYTAP) command" if you need details on how to use the command.

System reference codes

A system reference code (SRC) is a set of eight characters that identifies the name of the system component that detected the error code and the reference code that describes the condition. The first four characters of the SRC indicate the type of error. The last four characters give additional information. When xxxx is shown as the last four characters of the SRC, xxxx indicates that any set of characters could appear (for example, DC06).

You should record the total SRC, words 11-20, if one is displayed on the control panel when a problem is detected. The information gained from the SRC can help the service representative better understand the problem and how to fix it.

Error codes

An error code is a group of characters or digits displayed on the system console. The system displays error codes in an error message, recorded in a problem log entry, or shown on the system control panel.

The error code indicates that a hardware or software error condition has occurred in the system.

The system attention light is turned on when the system detects a hardware error it cannot correct. An error may lose or corrupt data.

The error code recorded in the problem log is used to report errors and to perform problem analysis and resolution. Some error codes have the system automatically collect associated data that is used to diagnose the problem.

Some error codes require you to restart the system for recovery while others may indicate intermittent errors.

Examples: System reference codes

The following examples show system reference codes that may occur when an abnormal restart happens:

Example 1:

Any B900 xxxx system reference code (where xxxx is any number or letter) during the start of the operating system phase of restart.

Example 2:

A Power Down System (PWRDWNSYS) command that did not complete, ending with a system reference code of B900 3F10.

Normal startup IPL SRC codes

The process that loads the system programs from the system auxiliary storage, checks the system hardware, and prepares the system for user operations is called the initial program load or IPL process. SRC codes that are seen during a normal system startup, with no initiating problems, are called IPL SRC codes. For a list of normal startup IPL SRC codes, see the IPL SRC Finder.

Solving problems using problem handling menus

Your server can experience difficulties caused by problems with the following:
- Job or programming
- System performance
- Equipment
- Communications

- Remote

If you are experiencing problems with your system, use the following problem handling menus to help analyze problems. The order of the menus listed is from basic skill level to advanced skill level.
- Solving user problems using the GO USERHELP menu. This menu is for the novice who wants to learn about using help and who needs help in analyzing problems.
- Solving problems using the GO PROBLEM menu. This is the main menu for working with problems.
- Solving system problems using the GO PROBLEM2 menu. This menu allows you to work with programming problems and system performance.
- Solving system problems using the GO TECHHELP menu. Use this menu if you encounter problems related to system operation.
- Solving network problems using the GO NETWORK menu. This menu allows you to manage and use network communications.
- Solving network problems using the GO NETPRB menu. This menu allows you to handle problems that relate to communications.

Solving user problems using the GO USERHELP menu

This menu is for the novice who wants to learn about using help and who needs help in analyzing problems. From the information and problem handling (USERHELP) menu, you can record information about the system that helps resolve problems. You can record information about a particular problem by using option 10 (Save information to help resolve a problem). Option 10 creates a problem record and several spooled files that can be helpful to the analyzer.

To access this menu:
1. Type `GO USERHELP` on any command line and press Enter.
2. Select the menu option for the task you want to perform.

Solving problems using the GO PROBLEM menu

The problem handling (PROBLEM) menu is the main menu for working with problems. From the problem handling menu, you can analyze problems, create problem records, view problem records, and report problems to the service provider. In addition, you can check message queues and the history log.

To access this menu:
1. Type `GO PROBLEM` on any command line and press Enter.
2. Select the menu option for the task you want to perform.

Solving system problems using the GO PROBLEM2 menu

The second problem handling (PROBLEM2) menu is an extension of the PROBLEM menu. From the PROBLEM menu, you can analyze problems at a cursory level. From the PROBLEM2 menu, you can perform tasks that allow you to work with programming problems and system performance. These are areas that require more skill in solving problems.

To access this menu:
1. Type `GO PROBLEM2` on any command line and press Enter.
2. Select the menu option for the task you want to perform.

Solving system problems by using the GO TECHHELP menu

If you encounter problems that are related to system operation, start with the Technical Support Tasks (TECHHELP) menu. You can save the necessary information for a technical support person to do problem analysis by using the options from this menu. It is also possible to have a remote support organization access your system from a remote workstation.

To access this menu:
1. Type `GO TECHHELP` on any command line and press Enter.

2. Select the menu option for the task you want to perform.

Solving network problems using the GO NETWORK menu

From the network management (NETWORK) menu, you can manage and use network communications. Many of the options on this menu are for the advanced user, for example, someone who is responsible for a network of systems. Other problem handling menus contain options that help users find problems on their own workstations or on specific systems within a single network.

To access this menu:
1. Type GO NETWORK on any command line and press Enter.
2. Select the menu option for the task you want to perform.

Solving network problems using the GO NETPRB menu

From the network problem handling (NETPRB) menu, you can handle problems that relate to communications. Verifying that the links are working properly is a good place to start your problem investigation.

To access this menu:
1. Type GO NETPRB on any command line and press Enter.
2. Select the menu option for the task you want to perform.

Authorized program analysis reports (APARs)

An authorized program analysis report (APAR) is an IBM-supplied program. When you perform an APAR procedure, you create one or more diskette or tape files that contain information from your system that helps software service representatives to correct programming problems.

The APAR procedure creates one or more diskette or tape files that contain information about the following:
- Control storage dump area

  This area is control block storage that is used by the Licensed Internal Code (LIC).
- Input/output controller storage dump area
- The system work area (if you are not running the APAR procedure during IPL after a system dump), including the following:
  - The system configuration
  - The disk volume table of contents (VTOC)
  - The #SYSWORK index
  - The trace work area
  - The security work area
  - The program temporary fix (PTF) work area
  - The diskette VTOC
  - The volume label
  - The IPL bootstrap
- PTF logs for the IBM licensed program library and system library
- The system service log
- The disk trace files. Suppose you are not running the APAR procedure during startup and you choose not to copy a task dump. Then the system displays a trace file prompt and you can select up to 16 trace files to copy.
- Microcode tables
- Task dump file (optional)
- The history file
- The spooled file (optional)
- The job queue (optional)
- The message file (optional)
- The product-level data file

The APAR procedure can copy a specified load member to a file named APARLOAD. It can also copy a specified source member to a file named APARSRCE, and a specified procedure member to a file named APARPROC. They can be saved to a diskette or tape.When the APAR procedure begins running a display appears. You can select the spooled file, job queue, message file, and user file index that the system will copy to the diskette or tape. Most of the data areas that are copied to diskette or tape by the APAR procedure can be displayed using the DUMP procedure.

Run the authorized program analysis report (APAR) procedure to collect diagnostic information. "Details: Use APARs to collect diagnostic information" contains definitions for each of the APAR command parameters.

Use APARs to collect diagnostic information

Run the authorized program analysis report (APAR) procedure during initial program load (IPL) after you have done a system dump. The procedure requires an attended IPL.

To perform the APAR procedure, enter the following command:

```
APAR volid,[object],[source],[proc],[dumpfile],[S1],[AUTO/NOAUTO],[I1/TC/T1/T2]
```

"Details: Use APARs to collect diagnostic information" contains definitions for each of the APAR command parameters.

Details: Use APARs to collect diagnostic information

You can use the following parameters for the APAR command:

volid The volume ID of the one or more diskettes or tapes where you want to store the system data areas.

object The load member that contains the program that caused the program check to occur. The system places the load member in diskette or tape file that is named APARLOAD.

source
The source member from which the program was created. The system places the source member in diskette or tape file that is named APARSRCE.

proc The procedure member from which the program was called. The system places the procedure member in a diskette or a tape file that is named APARPROC.

dumpfile
The file that is created by a task dump. Specify zero (0) if you want to copy the most recent dump file. If you do not specify a file name when you run the APAR procedure from a display station, the status of all dump files is displayed. You can select to copy one or none of the files. If you do not specify a file name and the APAR procedure is not being run from a display station, no dump file is copied to diskette or tape.

Dump files are named #DUMP.nn on disk, where nn is a number from 00 through 99.

S1 Indicates that you want to use slot one of the diskette drive (the 5360 system had multiple slots and the 9402 model 236 has only one). On the 9402 Model 236, S1 is the only slot that can be used. If you do not specify a parameter, S1 is assumed.

AUTO Specifies that you want to automatically save the results of the APAR procedure to the next slot on a multiple slot diskette drive. You cannot use this parameter on the 9402 Model 236.

NOAUTO
Specifies that you do not want to automatically save the results of the APAR procedure to the next slot on a multiple slot diskette drive. You cannot use this parameter on the 9402 Model 236.

I1 Specifies that the information collected by the APAR procedure is to be copied to diskette.

TC Specifies that the information collected by the APAR procedure is to be copied to the 1/4 inch tape cartridge mounted in the tape drive. If no parameter is specified, TC is assumed.

T1 Specifies that the information collected by the APAR procedure is to be copied to the 1/2 inch tape reel mounted in tape drive 1.

T2 Specifies that the information collected by the APAR procedure is to be copied to the 1/2 inch tape reel that is mounted in tape drive 2.

Chapter 7. Hardware and software problems

For problems with software or Licensed Internal Code, you should notify the IBM service system of the failure and related symptoms. The problems that are detected by the server can be reported either manually or automatically. For information on how to report problems detected by the systems, see "Report problems detected by the system".

If a problem is new, a problem management record (PMR) is created by the IBM service system. The PMR number is returned to your server. Depending on your contract with IBM, you may or may not be entitled to voice support (telephone). If you have voice support, IBM service center personnel will contact you, if requested, and work with you to resolve the problem. If you do not have voice support, you may view the service centers response by using the Query Problem Status (QRYPRBSTS) command. For more information on the QRYPRBSTS command, see "Querying problem status" on page 34.

Upon finding a problem, a service request can either be sent immediately or can be sent later. Read "Send Service Requests" on page 35 to find out more information on this topic.

For information on how to find a problem, see "Finding a previously reported problem" on page 36.

To provide more information, attaching a note or adding to an existing note to a problem record. For more information, read "Add to problem record" on page 36.

Report problems detected by the system

The system problem log allows you to display a list of all the problems recorded on the system. You can also display detailed information about a specific problem. For example, you can see the product type and serial number of the device that had the problem, the date and time of the problem, the part that failed, where the part is found, and the problem status. You can also analyze and report a problem, or determine any service activity.

To report a problem that has an entry in the problem log, do the following:
1. Type WRKPRB on any command line and press the Enter key. The Work with Problems (WRKPRB) display appears.
2. If you have a problem ID, look for an entry with the same ID on the Work with Problems display. Select option 8 (Work with problem) for the problem you want to work with. Press the Enter key, and the Work with Problem display appears.
3. Select option 2 (Report problem) on the Work with Problem display. Press the Enter key, and the Verify Contact Information display appears.
4. To change any fields that appear on the Verify Contact Information display, type over the current information and press the Enter key. The system includes the new information in the service request.
5. Select the severity level that closely relates to the severity of your problem on the Select Problem Severity display.
6. Select who should receive and process your request on the Select Service Provider display.
7. Select when and how you want to send the service request on the Select Reporting Option display.

For information on how to report problems automatically or by voice, see "Report problem automatically".

Report problem automatically

The automated problem analysis function runs problem analysis routines automatically when the system detects a problem. The problem reporting function notifies the service provider of the software problem. To run these functions, the appropriate service attributes must be set to *YES. If these attributes are set to *NO, you will need to run the problem analysis manually. The default value for service attributes is *NO.

Use the Display Service Attribute (DSPSRVA) command to display the service attributes, or use the Change Service Attributes (CHGSRVA) command to change the service attributes.

To change service attributes, fill in the appropriate information in the fields. Specify *YES in the Analyze problem field to automatically run problem analysis at the time of the failure. Problem analysis includes programs that attempt to isolate or correct the problems. Automated problem analysis applies mostly to hardware problems, and some software problems in Licensed Internal Code. To determine which problems are analyzed automatically and which ones are not, use the Work with Problem (WRKPRB) command. If the status is Opened, it indicates that the problem has not been analyzed. For problems that are not analyzed automatically, you can use the Work with Problems (WRKPRB) command to run the problem analysis manually. Go to "Using the Work with Problems (WRKPRB) command" on page 23 for detailed information about the command. "Examples: Work with Problems (WRKPRB) command" on page 24 provides you examples of how the command is used.

When *YES is specified in the Report problem automatically field, software problems are reported automatically to the service provider. Your service provider is specified in the Control point name field. For hardware problem reporting, contact your service provider.

Report problem by voice

If you find that you are not connected to a telephone line or your communications lines are down, you can report a problem with your system by voice (telephone). To report the problem by telephone, follow the directions in Report problems detected by the system. When you get to the Select Reporting Option display, select option 3 (Report serice quest by voice). The Report Service Request by Voice isplay gives you the telephone number of the service provider for your specific problem.

If the service provide is IBM, IBM assigns a service number to the problem. To put this number in the problem log, press F14 (Specify servce-assigned number) on the Report Service Reuest by Voice display.

Querying problem status

To retrieve the latest status of a previously reported problem, use one of the following methods:

Method 1:
1. Type QRYPRBSTS on any command line, and press the F4 key. The Query Problem Status (QRYPRBSTS) display appears.

   Note: Currently, the QRYPRBSTS command is not enabled to query hardware problems.
2. If you know the problem management record (PMR) number, type *PMR in the Problem identifier field and press the Enter key. Additional fields appear on the display. Type the PMR number in the Service number field and press the Enter key. If you know the WRKPRB problem ID number, type the 10-digit ID number for the problem in the Problem identifier field and press the Enter key. If you don't know the problem ID number, see "Finding a previously reported problem" in the "Related topics" section for instructions on how to find this 10-digit number.
3. After the query is complete, enter: WRKPRB xxxxxxxxxx where xxxxxxxxxx is the 10-digit problem ID number. The Work with Problem display appears.
4. Type Option 12 (Enter text) next to the problem entry and press the Enter key. The Select Text Type display appears.
5. Select Option 10 (Query Status text). The Query results are shown.

Method 2:
1. Type WRKPRB on any command line and press the Enter key. The Work with Problems display appears.
2. Find the problem entry for which you want to query the status. To start a query, the problem entry must have a status of Answered or Sent.
3. Type Option 8 (Work with problem) next to the problem entry. The Work with Problem menu appears.
4. Select Option 41 (Query problem status text). The Results of the query are shown.

Note: The QRYPRBSTS command does not apply to problem entries that have a Fix request specified in the problem description column of the Work with Problem display.

Send Service Requests

For hardware failures that do not disable system operation, electronic customer support provides a fast, electronic method for requesting the service of an IBM service representative with replacement parts. Using this method, you may report failures that occur on your iSeries server and selected input or output devices.

The Send Service Request (SNDSRVRQS) command establishes a communications session and sends problem information to your service support system or tests the communications link to your service provider.

Refer to the following topics for information that tells you how to send a service request now or later.
- "Sending a service request immediately"
- "Sending a service request later" on page 36

Sending a service request immediately

If you decide to send a service request now, select option 1 (Send service request now) on the Select Reporting Option display. The system packages the problem log entry as a service request. Then your server automatically dials the IBM service provider system, and the system transmits the problem to the service provider.

Note: Service requests can also be sent to other servers that have the System Manager for iSeries licensed program installed.

The service provider determines whether the request is for hardware or software service, and takes the appropriate action that is described below.

Hardware Service:

If the service provider is IBM, and if no PTFs are found that match your problem symptoms, one of the following happens:
- Your request is sent to an IBM service representative.
- An IBM Customer Assistance Group representative calls you to assist in further problem definition. The connection to the service provider system ends, and the status of the problem in the problem log is changed to SENT.

Software Service:
- A search is performed against the database of program temporary fixes (PTFs) by using the symptom string you created during problem analysis.
- If the service provider is IBM, a match is found, and a PTF is available, and IBM transmits the PTF to you electronically. Or, IBM sends a PTF tape to you through normal mail channels. The size of the PTF and its requisites determine whether IBM sends the PTF electronically or through the mail. The PTFs that you receive electronically are placed in the QGPL library with a file name of the PTF number that is preceded by a Q and a file type of SAVF.
- If a match is not found or the PTF is not available, you see the Save APAR Data display. This display saves the following information about your problem:
  - History log
  - Job information
  - Hardware and software resources
  - Error log entries

- Vertical Licensed Internal Code log entries
- Problem log entries
- Pictures of displays

You can then forward this information to the IBM Software Support Center to help you solve your problem.

The connection to the service provider ends when you receive a PTF or when your problem is opened for further investigation. The system changes the status of the problem to SENT or to ANSWERED in the problem log.

Note: Whenever you use electronic customer support, your server needs to dial out to the IBM system. Remember to have the electronic customer support modem available and powered on.

Sending a service request later

If you decide to send a service request later, select option 2 (Do not send service request) on the Select Reporting Option display. The status of the problem in the problem log changes to PREPARED.

To submit a problem with PREPARED status, follow the directions in "Report problems detected by the system" on page 33. When the system reports the problem, the problem log entry is packaged as a service request. Then your server automatically dials the service provider system, and the system transmits the problem to the service provider.

To report all problems in the problem log that have a status of PREPARED, do one of the following:

1. On the Work with Problems display, press F16 (Report prepared problems).
2. On any command line, type `SNDSRVRQS *PREPARED` and press the Enter key.

The connection to the service provider system ends when you receive a program temporary fix (PTF) or when your problem is opened for further investigation. The system changes the status of the problem to SENT or to ANSWERED in the problem log.

Note: Whenever you use electronic customer support, your server needs to dial out to the IBM system. Remember to have the electronic customer support modem available and powered on.

Finding a previously reported problem

To find a previously reported problem, you need to know the IBM Service-assigned number, also known as the problem management record (PMR).

Once you have this number, type the following on any command line:

`WRKPRB SRVID(XXXXX)`

where XXXXX is the PMR number, then press the Enter key.

If you do not have the PMR number, "Using the Work with Problems (WRKPRB) command" on page 23 and search the list for the problems with a status of SENT, VERIFIED, ANSWERED, and CLOSED.

Add to problem record

To attach a note or add to an existing note in the problem record, do the following:

1. Use the Work with Problem (WRKPRB) command.
2. Select option 12 (Enter text) on the Work with Problems display. The Select Text Type display appears.

3. Select Option 1 (Problem description) to enter problem description. Only the text that is entered with this option is sent to the service provider along with the problem.

Notes should be typed in the following format to keep a chronological record of events.
- On the first line, type a brief description of the problem.
- On the second line, type the current date.
- On the third line, type in the note that you want to send. Use as many additional lines (up to 20) as you need.

Include the following information in your notes:
- Any recent release update that you have applied to the system
- Any changes you made in the system configuration
- Any new program or feature that you are using
- Anything that may be different since the last time the program was run

Chapter 8. Customer Support

If the user is looking for customer support, there are several options available:

- Electronic customer support occurs when your server helps you isolate the cause of system-detected hardware problems and some software problems. Your server also has an integrated set of functions that are designed to help service and support your system.
- Extreme Support Personalized (ESP) is IBM's comprehensive technical service and support initiative exclusively for IBM iSeries. Extreme Support Personalized is total solutions support, personalized for you in the form you need it. It involves support over the Internet, voice and onsite support, and support that is integrated right into the product.
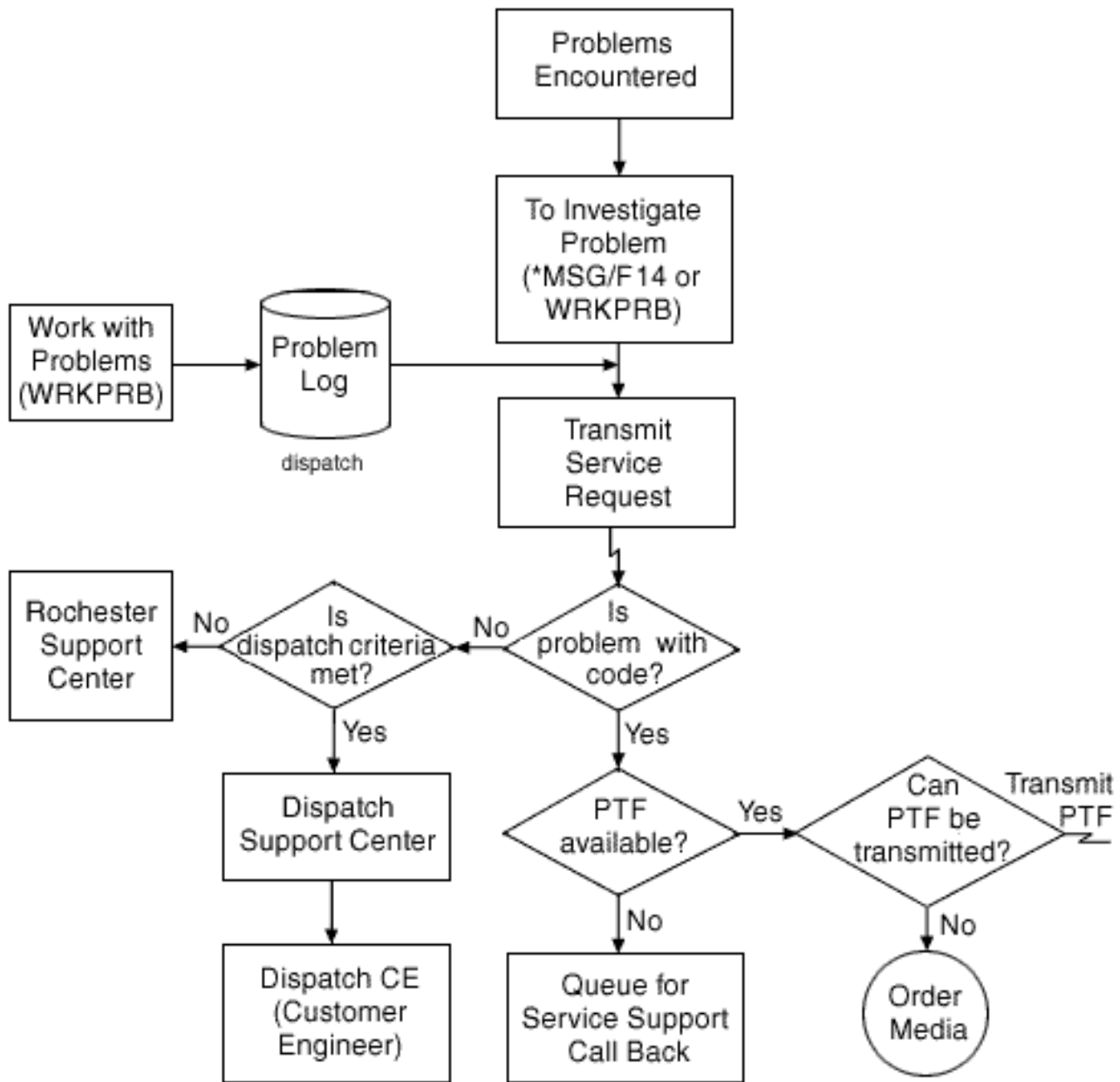
Electronic customer support

Your server can help you isolate the cause of system-detected hardware problems and some software problems. Your server also has an integrated set of functions that are designed to help service and support your system. These are the functions of electronic customer support.

The OS/400 licensed program includes electronic customer support. Electronic customer support provides a connection to the IBM service system after you have done problem analysis and have run isolation procedures. The communications hardware and software that are needed to access remote IBM service and support functions are part of the OS/400 licensed program.

The following diagram shows how electronic customer support is organized to report problems and to receive responses.

Figure 1. Reporting Problems and Receiving Responses

For more information about electronic customer support, see these topics:

- "Electronic customer support: Command authority"

  To use electronic customer support, your security officer must give you authority. Find out what authorities are required.

- Adding electronic customer support

  Find out how to access electronic customer support. Details are provided on configuring the Universal Connection support or the traditional connection with SNA.

Electronic customer support: Command authority

To use electronic customer support, your security officer must give you authority to the following commands:

- Send program temporary fix (PTF) Order (SNDPTFORD)
- Send Service Request (SNDSRVRQS)
- Work with Contact Information (WRKCNTINF)
- Work with Order Requests (WRKORDRQS)
- Request Order Assistance (RQSORDAST)

Extreme Support

Extreme Support Personalized (ESP) is IBM's comprehensive technical service and support initiative exclusively for IBM iSeries. Extreme Support Personalized is total solutions support, personalized for you in the form you need it. It involves support over the Internet, voice and onsite support, and support that is integrated right into the product.

One of the offerings includes support that uses TCP/IP with Performance Management/400, Service Agent, and inventory consolidation with Management Central.

Electronic Service Agent is a no charge licensed program that resides on the user's system and is designed to monitor events and to transmit system inventory information to IBM on a periodic, customer-definable timetable. The two key functions of Electronic Service Agent are:

- **System inventory collection and transmission** collects and electronically sends system information to IBM as input to problem analysis and problem prevention functions, and to assist IBM in providing improved service. The system information is gathered and stored by Management Central and is then sent to IBM with the Universal Connection. This function of Electronic Service Agent also has the ability to collect and transmit information from multiple systems. This is done by consolidating inventory from multiple systems onto one Management Central system prior to transmisson over the connection.

   The system inventory collection and transmission function of Electronic Service Agent is available with iSeries Navigator. You can find this support in the Management Central hierarchy under **Extreme Support**.

   Inventory examples. You can collect any of the following: Hardware, software, fixes, system values, users and groups, service attributes, contact information, network attributes, PM/400 performance data, and system registration.

   Note: You can collect inventory for users and groups; however, Electronic Service Agent does not send this inventory to IBM.

- **Hardware problem reporting** predicts and prevents hardware errors by early detection of potential problems; downloads fixes, and automatically calls IBM Service when necessary. With early knowledge about potential problems, IBM can provide proactive service, assisting in maintaining higher availability and performance.

   Note: The Hardware problem reporting function can be activated only if your system is under warranty, or if you have purchased an IBM Maintenance Services Agreement.

For information on how to set up and configure Electronic Service Agent support, go to this URL:

`http://www.ibm.com/services/electronic/`

The links below connect you to additional information:

Configuring Extreme Support

To use the Electronic Service Agent for iSeries function in iSeries Navigator, you must configure Extreme Support by doing the following steps:

1. Verify that the Electronic Service Agent for iSeries licensed program offering was installed on your iSeries server.
2. Verify that you have security officer (*SECOFR) authority with *ALLOBJ, *IOSYSCFG, and *SECADM special authorities in your OS/400 user profile.
3. In iSeries Navigator, expand **Management Central**.
4. Right-click **Extreme Support** and select **Configuration**. You are shown the Extreme Support wizard.
5. Follow the wizard instructions to set up and configure Extreme Support functions.

   Notes:

   a. It is recommended that you manage your scheduled inventory tasks to avoid duplication.
   b. If you did not previously complete the Universal Connection configuration, you are given another opportunity to configure that connection now with the Extreme Support wizard.

The links below connect you to additional information:

- "Extreme Support" on page 41
- "Collecting inventory with Management Central and sending information to IBM at separate times"
- "Collecting inventory with Management Central and sending information to IBM at the same time"

Collecting inventory with Management Central and sending information to IBM at the same time

You can collect inventory with Management Central and send the information to IBM immediately after the collection is completed by doing the following:

1. In iSeries Navigator, expand **Management Central**.
2. Expand **Endpoint Systems** or **System Groups**.
3. Right-click any one of the selected systems or groups that you want to collect and send inventory from, select **Inventory**, and then select **Run Actions**.
4. In the **Available Actions** list, select **Send Electronic Service Agent inventory to IBM**
5. Select the inventories from the **Inventory for selected action** list, and add them to the **Selected actions to run** list.
6. Select **Collect inventory before selected actions are run**.
7. Click **OK** to collect and send once immediately or click **Schedule** to specify a frequency and time, and then click **OK**.

You can also collect and send inventory at separate times. See "Extreme Support" on page 41 for more information on this service.

Collecting inventory with Management Central and sending information to IBM at separate times

If you do not want to collect your inventory and send the information to IBM at the same time, you can schedule to collect inventory as one task and then send the information to IBM, at a different time, as another task.

1. In iSeries Navigator, expand **Management Central**.
2. Expand **Endpoint Systems** or **System Groups**.
3. Right-click any one of the selected systems or groups that you want to collect inventory from, select **Inventory**, and then select **Collect**.

4. Select the inventories that you want to collect.
5. Click **Schedule** to specify when you want the collection task to run. Click **OK**.
6. Right-click the same systems or groups as specified in Step 3, and select **Inventory**, and then select **Run Actions**.
7. In the **Available Actions** list, select **Send Electronic Service Agent inventory to IBM**.
8. Select the inventorys from the **Inventory for selected action** list and add them to the **Selected actions to run** list. These are the inventories that you previously specified in Step 4.
9. Do not select **Collect inventory before selected actions are run**.
10. Click **Schedule** to specify when you want the send task to run. Click **OK**.

You can also collect and send inventory at the same time. See "Extreme Support" on page 41 for more information on this service.

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