# IBM

IBM Systems - iSeries

# Development tools
# iSeries System Debugger

*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 7.

# Contents

# iSeries System Debugger

IBM® iSeries™ System Debugger provides a graphical user debugging environment on the iSeries server. Use iSeries System Debugger to debug and test programs that run on your iSeries server, including programs written in ILE and OPM languages, Java™, and programs that run in the i5/OS™ PASE environment.

iSeries System Debugger is packaged in a JAR file with IBM Toolbox for Java.

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## iSeries System Debugger components

The components of the iSeries System Debugger work together to provide a powerful debugging tool.

IBM iSeries System Debugger consists of the following components:
* Client-based
  – "Debug Manager" on page 2
  – "System Debugger" on page 2
  – "i5/OS PASE System Debugger" on page 2
* Host-based
  – "Debug Hub" on page 2
  – "Debug Server" on page 3

The following descriptions provide only general information about the iSeries System Debugger components. To learn more about the components, run iSeries System Debugger, and from any iSeries System Debugger window, click **Help**. For more information about running iSeries System Debugger, see "Running iSeries System Debugger" on page 4.

## Debug Manager

Debug Manager registers the client with the Debug Hub, which enables using the graphical debugging mode for the selected systems. A registered client that issues the Start Debugging (STRDBG) CL command from an emulation session starts System Debugger.

Use Debug Manager to manage your debugging operations and connections:
- Add and remove systems
- Add and remove users
- Start debugging operations
- Start System Debugger and i5/OS PASE System Debugger

## System Debugger

Use System Debugger to debug programs written in ILE and OPM languages and Java that run on the iSeries server. You can debug programs that are running in existing jobs on the server or use System Debugger to open and then debug programs in a system batch job.

You can configure System Debugger to start automatically, manually from a workstation command prompt, or by using the Debug Manager interface.

Use System Debugger to perform debugging activities that include:
- Setting breakpoints
- Stepping through programs
- Inspecting variables
- Examining the callstack
- Examining memory associated with program variables
- Examining thread activity

## i5/OS PASE System Debugger

Use i5/OS PASE Debugger to debug programs that run in an i5/OS PASE environment. You can debug programs that are running in an existing process on the system or use i5/OS PASE Debugger to open and then debug a program.

You can start i5/OS PASE Debugger directly from the command line or by using the Debug Manager interface.

In addition to the debugging activites listed previously for System Debugger, you can use i5/OS PASE Debugger to perform i5/OS PASE-specific debugging activities that include:
- Using the program loadmap to debug
- Viewing a list of source files and methods
- Tracking parent and child processes
- Examining registers

## Debug Hub

Debug Hub provides the following functions:
- Serves as a registry for clients that want to use System Debugger or i5/OS PASE Debugger
- Handles incoming requests for starting debug servers

Use the Debug Manager interface to register your client with Debug Hub. Registering a client stores both the user information and the TCP/IP address of the client in the registry. Using the Start Debugging (STRDBG) CL command from an emulation session contacts Debug Hub to see if the user executing the command is registered with Debug Manager. It also checks to see if the command being executed is from the same TCP/IP addess as Debug Manager. If these qualifications are met, iSeries System Debugger (the graphical application) is started instead of the traditional debug environment.

Debug Hub also serves as a single point of contact for all iSeries System Debugging applications. When an iSeries System Debugger component performs a start debug operation, Debug Hub submits a Debug Server job on behalf of the user and passes the associated TCP/IP connection to the job.

### Debug Server

Debug Server is a TCP/IP server that is started by the Debug Hub when one of the debuggers issues a request to start debugging. The server job then services the job that is being debugged and issues the appropriate debugging APIs and commands.

## Installing iSeries System Debugger

Before installing iSeries System Debugger on your workstation, you must meet some hardware and software requirements.

### Hardware requirements

You must have the following hardware installed on your client:
* CPU: 400 - 500 MHz
* Memory: minimum 128 MB (256 MB recommended)

### Software requirements

You must have the following software installed on your client:
* One of the following:
  – Java 2 Platform, either the Standard Edition (J2SE) or the Enterprise Edition (J2EE), version 1.3 or later
  – Java 2 Runtime Environment (JRE), Standard Edition, version 1.3.1 or later
* jhall.jar (one of the jar files in JavaHelp)

**Note:** Be sure to add jhall.jar to your client CLASSPATH environment variable.

For information about installing the previously mentioned software, see the Sun Java Web site .

## Installing the iSeries System Debugger jar file

Before installing iSeries System Debugger, ensure that your client system meets the previously listed hardware and software requirements.

IBM iSeries System Debugger is packaged in a jar file, called tes.jar, as part of IBM Toolbox for Java. If you have not installed IBM Toolbox for Java on your client, you need to install it when you install the jar file that contains iSeries System Debugger.

To install iSeries System Debugger, complete the following steps:

1. Install IBM Toolbox for Java, making sure to copy jt400.jar and tes.jar to your client. For more information about installing IBM Toolbox for Java, see the Install and manage IBM Toolbox for Java topic.

   **Note:** If you already installed IBM Toolbox for Java on your server, both the jt400.jar and the tes.jar files are in the same directory on the server:

   ```
   /QIBM/ProdData/HTTP/Public/jt400/lib/
   ```

2. After copying the jar files to your client, add them to your client CLASSPATH environment variable.

Now you can use your client to run iSeries System Debugger.

## Running iSeries System Debugger

Start the iSeries System Debugger components using these instructions.

For information about running each component, see the following sections:
- "Starting Debug Manager"
- "Starting System Debugger"
- "Starting i5/OS PASE Debugger"

To learn more about iSeries System Debugger, start iSeries System Debugger and review the help information by performing one of the following actions:
- From the **Help** menu in any iSeries System Debugger window, click **Help**.
- Press **F1**.

### Starting Debug Manager

To start Debug Manager from a command prompt on your client, run the following command:

```
java utilities.DebugMgr
```

### Starting System Debugger

To start System Debugger from a command prompt on your client, run the following command:

```
java utilities.Debug <args>
```

where <args> represents any of the following command arguments:
- -u = User
- -s = System name
- -j = Job description, in the form of: job number/job user/job name
- -p = Program to run, in the form of: program library/program name

**Note:** Once you use Debug Manager to register your client, you can issue the Start Debugging (STRDBG) CL command from an emulation session to start System Debugger. You can also start System Debugger directly from System Debug Manager.

### Starting i5/OS PASE Debugger

To start i5/OS PASE Debugger from a command prompt on your client, run the following command:

```
java utilities.DebugPASE <args>
```

where `<args>` represents any of the following command arguments:

- `-u` = User
- `-s` = System name
- `-p` = Fully qualified path of program to run
- `-pid` = Process ID

**Note:** You can start i5/OS PASE Debugger directly from System Debug Manager. Unlike System Debugger, you cannot start i5/OS PASE Debugger from an emulator session.

# Appendix. Notices

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