This unit describes the types of tools used for problem determination.

Unit objectives

After completing this unit, you should be able to:

- Describe the types of tools used for problem determination
- List and compare some of the tools available
- Determine the appropriate tool for the problem
- Locate the tools needed

After completing this unit, you should be able to describe the types of tools used for problem determination, list and compare some of the tools available, determine the appropriate tool for the problem, and locate the tools needed

Where to find tools

- Tools are not the main focus of problem determination
- However, tools facilitate various key tasks in problem determination
- Many of the appropriate tools for a given tasks can be found in the WebSphere Knowledge Base: http://www.ibm.com/software/websphere/support/
- Also can be found through the IBM Support Assistant (ISA)

Tools help to facilitate various key tasks in problem determination. Many can be found in the WebSphere Knowledge Base, IBM Support Assistant, and alphaWorks.

Tools available externally

- Some tools are integrated into the WebSphere administrative console
  - Tivoli Performance Viewer, Configuration validater, Classloader viewer, and so on
- Some tools are separate programs shipped with WebSphere Application Server itself, or ship as separate products in their own right
  - Collector, Application Server Toolkit (AST), and so on
- IBM Support Assistant V3 (ISA)
  - Serves as a central point from which many tools can be found and even executed directly inside ISA
  - The collection of tools released through ISA will grow steadily over the next year
  - Currently, the following tools are available through ISA: IGAA, Collector, MDD4J
- In the meantime, until most tools are available through ISA, many tools can be found and downloaded individually from the Web
  - Search the Technotes on the IBM Support Web site (or in ISA), which contains references to individual tools

Many tools are already integrated into the WebSphere Application Server product, and its administrative console, such as the Tivoli Performance Viewer, configuration validator, classloader viewer, and more. Other tools such as collector and application server toolkit are shipped as separate products with the application server install. IBM Support Assistant is the central point to find new tools and run the proper tools for a certain type of problem.

Examples of tools (1 of 2)

- IBM Guided Activity Assistant (IGAA)
  - Provides step-by-step guidance to perform various problem determination tasks
  - Available as a tool in ISA
- Collector
  - Facilitates gathering the log files and other artifacts needed for analysis of a problem, and sending them to IBM Support
  - Available as a standalone program shipped with WebSphere Application Server, or through ISA
- Tivoli Performance Viewer and Performance Advisor
  - Captures and analyzes statistical performance data from a running WebSphere Application Server system
  - Integrated into the WebSphere administrative console
- Configuration validater
  - Checks for errors in a WAS configuration
  - Integrated into the WebSphere administrative console
- Application Server Toolkit (AST) and Log/Trace Analyzer
  - Analyzes and correlates logs from multiple servers
  - Available as a standalone program distributed with WebSphere Application Server, or download from the IBM Support Web site

Examples of tools include the IBM Guided Activity Assistant which provides step-by-step guidance and is available in IBM Support Assistant. The Collector gathers log files and artifacts needed for analysis of a problem by IBM and is also available in IBM Support Assistant. The Tivoli Performance Viewer and Advisor capture and analyze statistical performance data from a running Application Server and are integrated into the administrative console. The Configuration validator checks for errors in a WAS configuration and is also in the administrative console. The Application Server Toolkit and Log & Trace Analyzer are standalone programs to help analyze logs from multiple servers.

Examples of tools (2 of 2)

- Classloader Viewer
  - Diagnoses problems related to loading of classes in applications
  - Integrated into the WebSphere administrative console (V6.1), or available as a standalone download/install (V6)
- MDD4J
  - Analyzes heap dumps to diagnose out-of-memory conditions and leaks
  - Available in ISA
- PMAT
  - Analyzes a JVM verboseGC log to diagnose out-of-memory conditions
  - Available in ISA or standalone download
- Thread Analyzer
  - Analyzes a JVM thread dump to diagnose hangs, bottlenecks, etc.
  - Available as a standalone download
- DumpNameSpace
  - Dumps the contents of the JNDI name space to diagnose application configuration and startup problems
  - Available as a standalone download
- And more

Although not an exhaustive list, other examples of tools include the classloader viewer to diagnose problems related to how classes load in applications. MDD4J analyzes heap dumps for out-of-memory and leak conditions. PMAT analyzes verboseGC to diagnose out-of-memory conditions. Thread Analyzer analyzes hang conditions and bottlenecks, and DumpNameSpace dumps the contents of JNDI.

IBM Guided Activity Assistant

- Provides step-by-step guidance to perform various problem determination tasks
  - Instructs user at each step, then asks a question and takes the user to the appropriate next step
  - Can invoke other tools hosted in ISA semi-automatically
- Hosted on IBM Support Assistant
- Currently, only a few problem topics are available, but the set of topics will grow over time - keep checking back

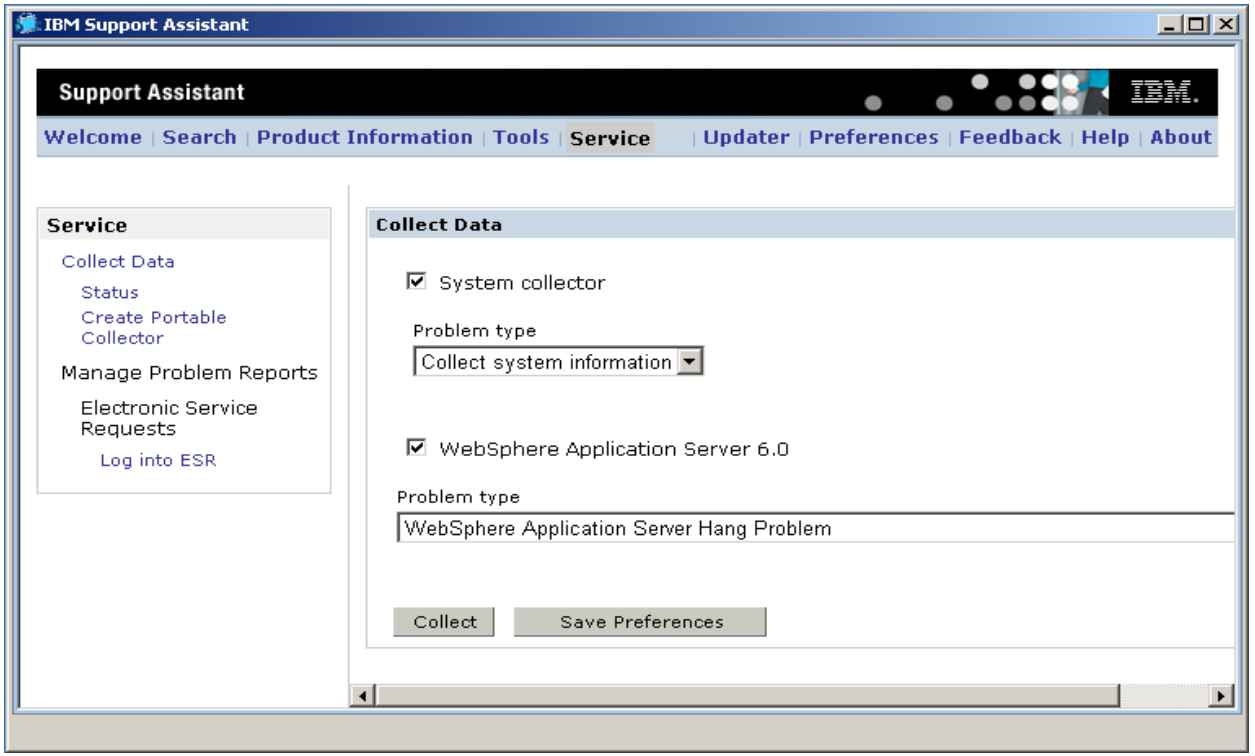
IBM Guided Activity Assistant provides step-by-step guidance to perform various problem determination tasks by interacting with a user at each step and it can invoke other IBM Support Assistant tools semi-automatically.

Collector tools

- Collect information about the WebSphere Application Server installation and configuration
- Two versions are now available:
  - The “default” standalone collector collects almost all the logs and configuration files found on the system, without distinction
  - A new more flexible collector tool is integrated into ISA
- In either case, the result is a JAR file that contains a lot of information needed by IBM Support to diagnose the problem
  - JAR file is sent to IBM Support
  - Only needs to be run upon IBM Support’s request

The Collector tool creates a JAR file with all of the necessary configuration and log information about an application server instance.

Collector in ISA



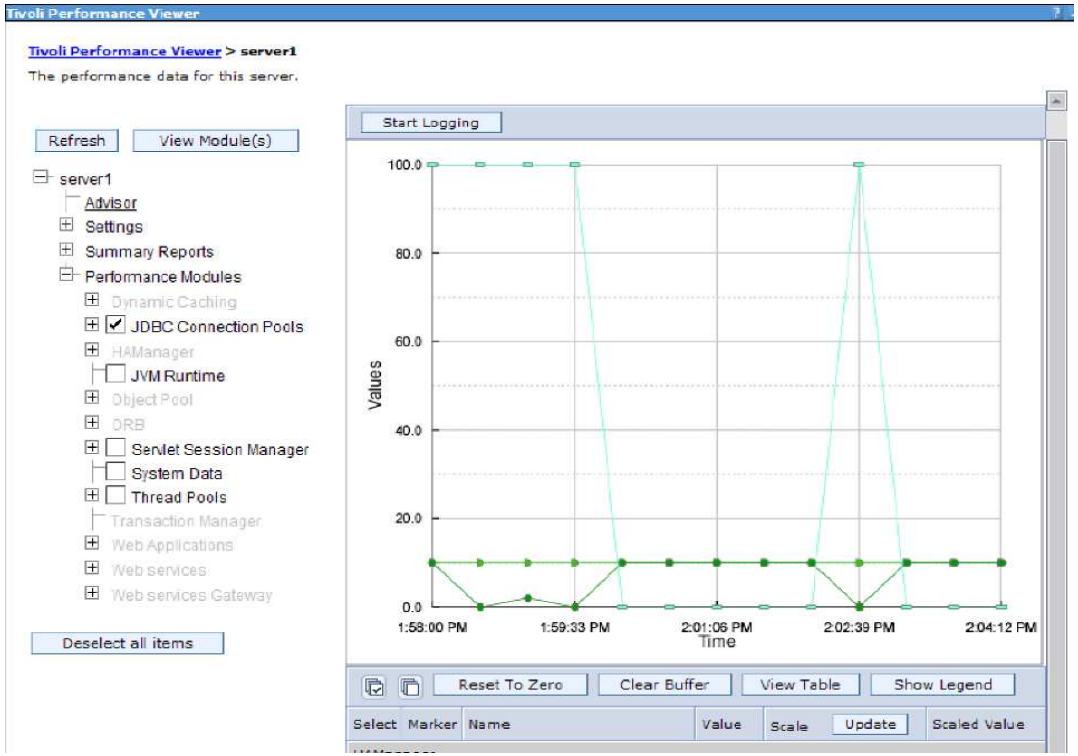
Collector can run from IBM Support Assistant automatically.

Tivoli Performance Viewer and Advisor

- Beginning with Version 6 of WebSphere Application Server, the Tivoli Performance Viewer has been integrated into the administrative console
- The Tivoli Performance Viewer (TPV) is available by navigating to Monitoring and Tuning > Performance Viewer > Current Activity
- Prior to viewing the monitored data for the application server, the Performance Monitoring Infrastructure (PMI) must be enabled for the application server
- Tivoli Performance Advisor takes information from the PMI and suggests configuration changes that will optimize performance

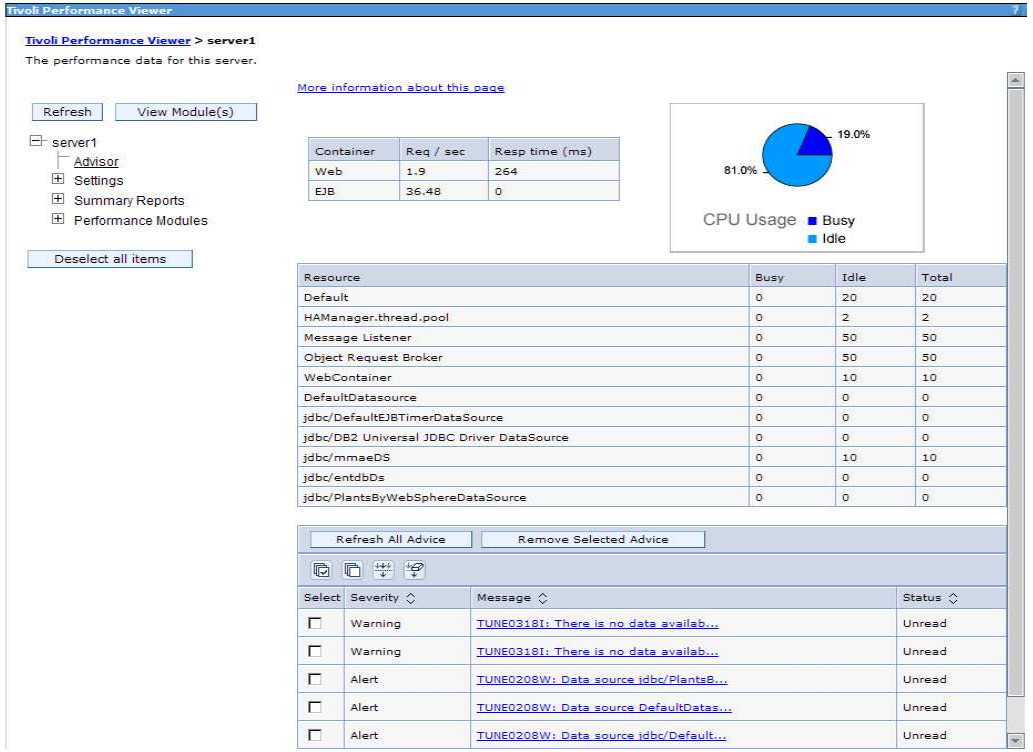
The Tivoli Performance Viewer is available by navigating to Monitoring and Tuning, Performance Viewer, and Current Activity. The Performance Monitoring Infrastructure must be enabled for this viewer to work, and there may be a significant cost to enabling performance statistics.

Tivoli Performance Viewer graph



Tivoli performance viewer can visualize certain statistics in graph form.

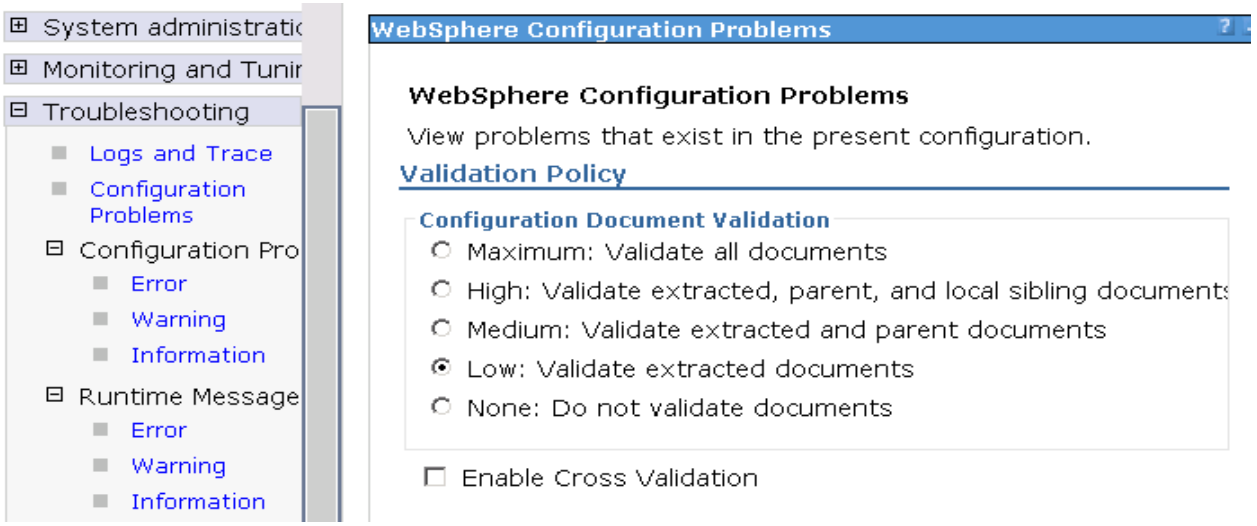
Tivoli Performance Advisor



The Tivoli Performance Advisor produces a report about the behavior of the application server's resources. It suggests changes to the configuration in the form of severity-based messages, accessible as hyperlinks.

Configuration validation

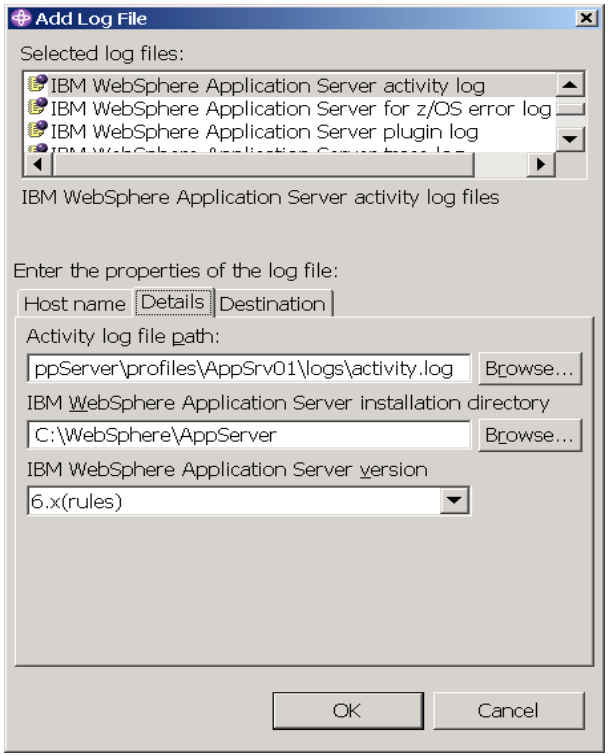
- Change Validation Policy: Troubleshooting -> Configuration Problems
- View: Troubleshooting -> expand Configuration Problems ->click Error or Warning or Information



Configuration validation settings describe what configuration to validate and report.

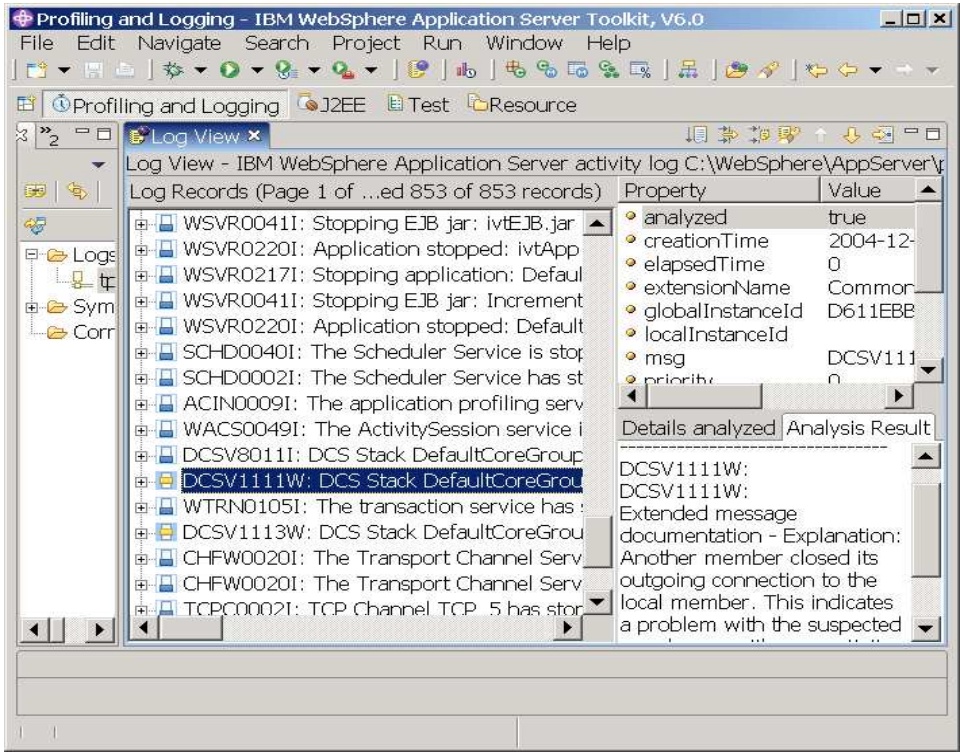
Application Server Toolkit (AST)

- Based on Eclipse tooling
- Similar to Rational Studio Application Developer, limited function
  - Remote debugger
  - Profiling and logging
  - J2EE packaging
  - Java perspectives
- Installed as separate program
- To work with log files:
  - File → Import
  - Select **Log File**, then type of log file
- For remote connection ensure that the **IBM Agent Controller** is running on remote host



The Application Server Toolkit is similar to Rational Studio Application Developer, and helps to work with log files, debugging, and profiling.

AST – Profiling and Logging Perspective



Analyzing log records means to compare log records using specified symptom databases that are loaded in memory. The solution is reported in the Analysis Result pane, giving a customer advice on resolving the reported problem.

Checkpoint

1. Name some tools that are integrated into the WebSphere administrative console.
2. What serves as a central point where many tools can be found and downloaded?
3. What tools are integrated into ISA?
4. True or false: Application Server Toolkit (AST) can be used to analyze logs and trace.

As a checkpoint, name some tools that are integrated into the WebSphere administrative console. What serves as a central point where many tools can be found and downloaded? What tools are integrated into ISA? Is it true that Application Server Toolkit (AST) can be used to analyze logs and trace?

Checkpoint solutions

1. Tools that are integrated into the administrative console:
   a. Tivoli Performance Viewer and Performance Adviser
   b. Classloader viewer
   c. Configuration validater
2. IBM Support Assistant (ISA)
3. Tools integrated into ISA:
   a. IBM Guided Activity Assistant (IGAA)
   b. Collector
   c. MDD4J
4. True

Tools that are integrated into the administrative console include Tivoli Performance Viewer and Performance Adviser, Classloader viewer, and Configuration validater. Tools integrated into the IBM Support Assistant include IBM Guided Activity Assistant (IGAA), Collector, and MDD4J.

Unit summary

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