Monitoring a Domain

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Objectives

After completing this lesson, you should be able to:

- Configure and access WebLogic Server logs
- Enable WebLogic Server debugging output
- Monitor WebLogic Server health and performance
- Monitor JDBC data sources
- Access diagnostic charts in the Monitoring Dashboard

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WebLogic Server Logs

The subsystems of an instance of WebLogic Server publish information about themselves into logs.

Log	Description
Server log	Used by server subsystems to record events
Standard out	Some server log messages are printed to standard out.
Domain log	Some server messages are gathered by the administration server for inclusion into the domain-wide log.
Access log	Used by the HTTP subsystem to track HTTP communication
Audit log	Tracks security requests. Requires configuring an Auditing provider (not configured by default).

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WebLogic Server Logs

Log	Description
Transaction log	• Contains information about transactions being managed by WebLogic Server • Is used by that server when recovering from crashes • Is in binary format
JMS Server log	• Is enabled when a JMS Server is created • Message destinations must be specifically enabled. • Contains information on basic message lifecycle events

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WebLogic Server Log Locations

Directory	Description
🗁 ***domainname***	
🗁 **servers**	
🗁 ***AdminServer***	Admin server (named *AdminServer*) directory
🗁 **logs**	
🗎 ***AdminServer*.log**	The server log file for *AdminServer*
🗎 ***domainname*.log**	The domain log
🗁 ***server1***	Directory for managed server named *server1*
🗁 **logs**	
🗎 ***server1*.log**	The server log file for *server1*
🗎 **access.log**	HTTP subsystem log
🗁 **jmsServers**	
🗁 ***jmsservername***	
🗎 **jms.messages.log**	JMS lifecycle events of the JMS Server called *jmsserverame* created on *server1*

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Log Message Severity Levels

Severity levels from low to high impact:

Severity	Description
TRACE	Used for messages that are part of WebLogic Diagnostic Framework
DEBUG	Messages from enabled "debug flags"
INFO	Normal operation information
NOTICE	More important operation information
WARNING	Something suspicious occurred, but it might not affect normal operation.
ERROR	A user level error has occurred, but the system or application can handle it with no interruption and limited degradation of service.

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Log Message Severity Levels

Severity	Description
CRITICAL	A system or service level error has occurred. The system can recover, but there may be momentary loss or permanent degradation of service.
ALERT	A particular service is unusable, while other parts of the system still function. Automatic recovery is not possible. Immediate attention of an administrator is needed.
EMERGENCY	The server is unusable. This indicates a severe system failure.

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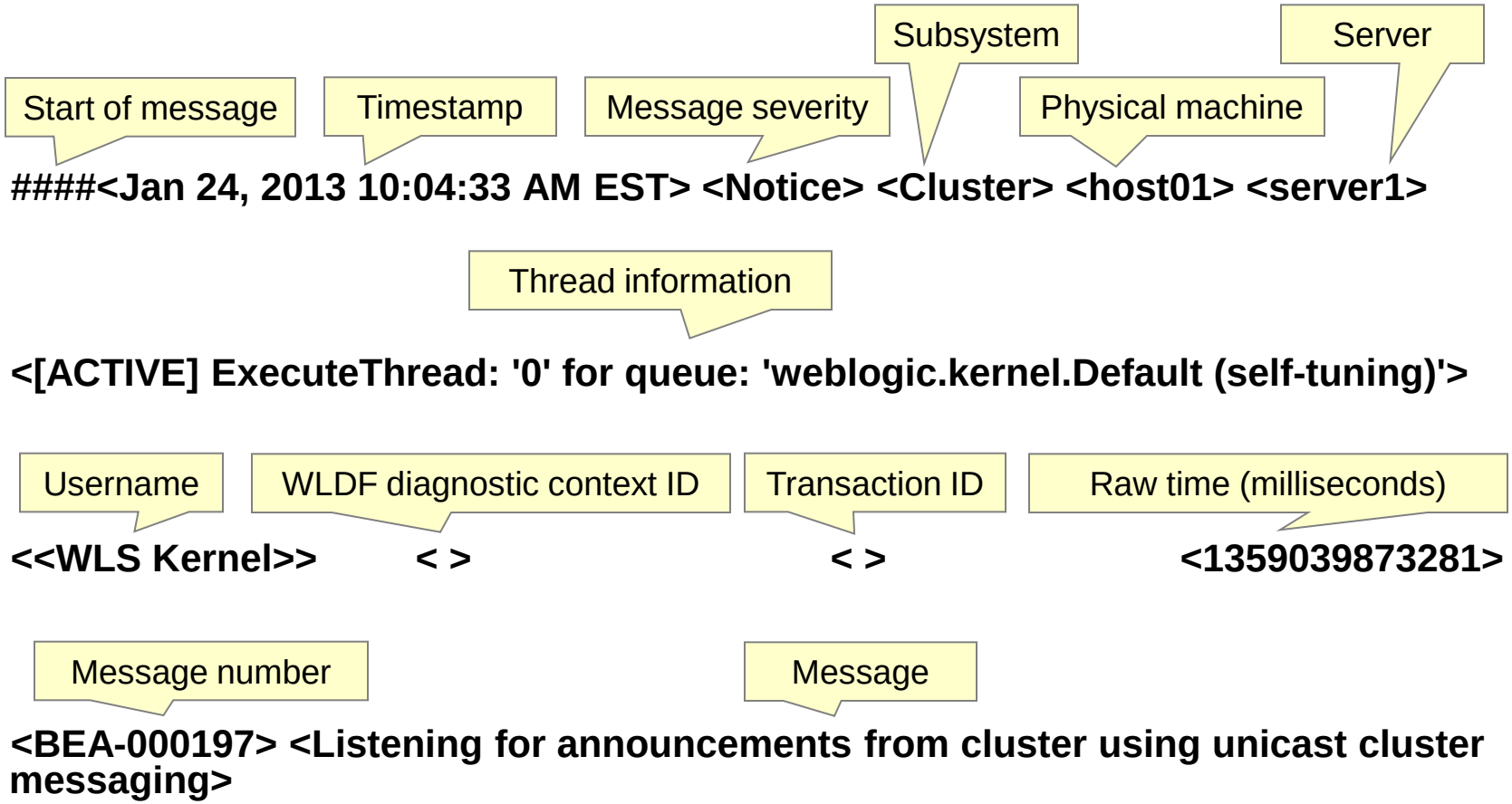
Understanding Log File Entries

Log message format:



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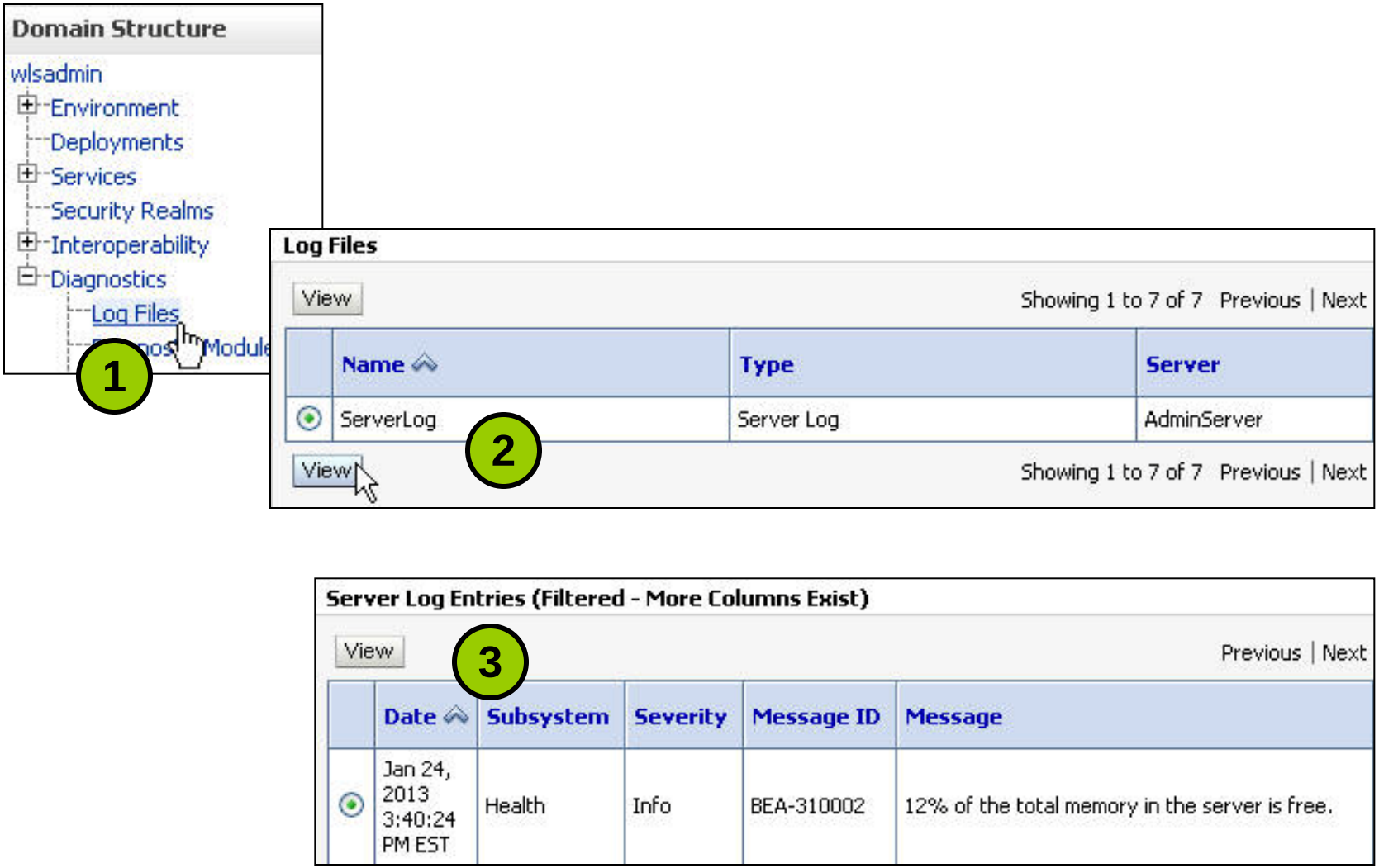
Accessing the Logs from the Admin Console



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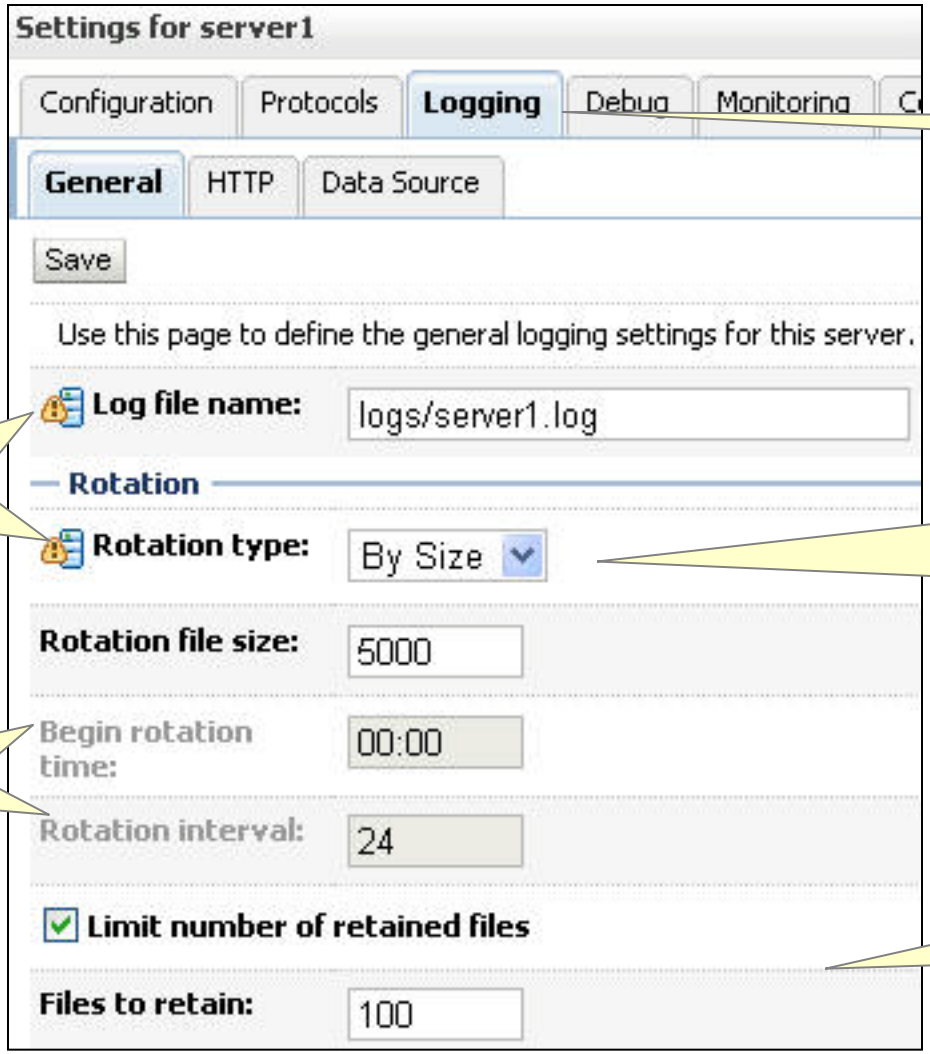
Configuring Server Logging



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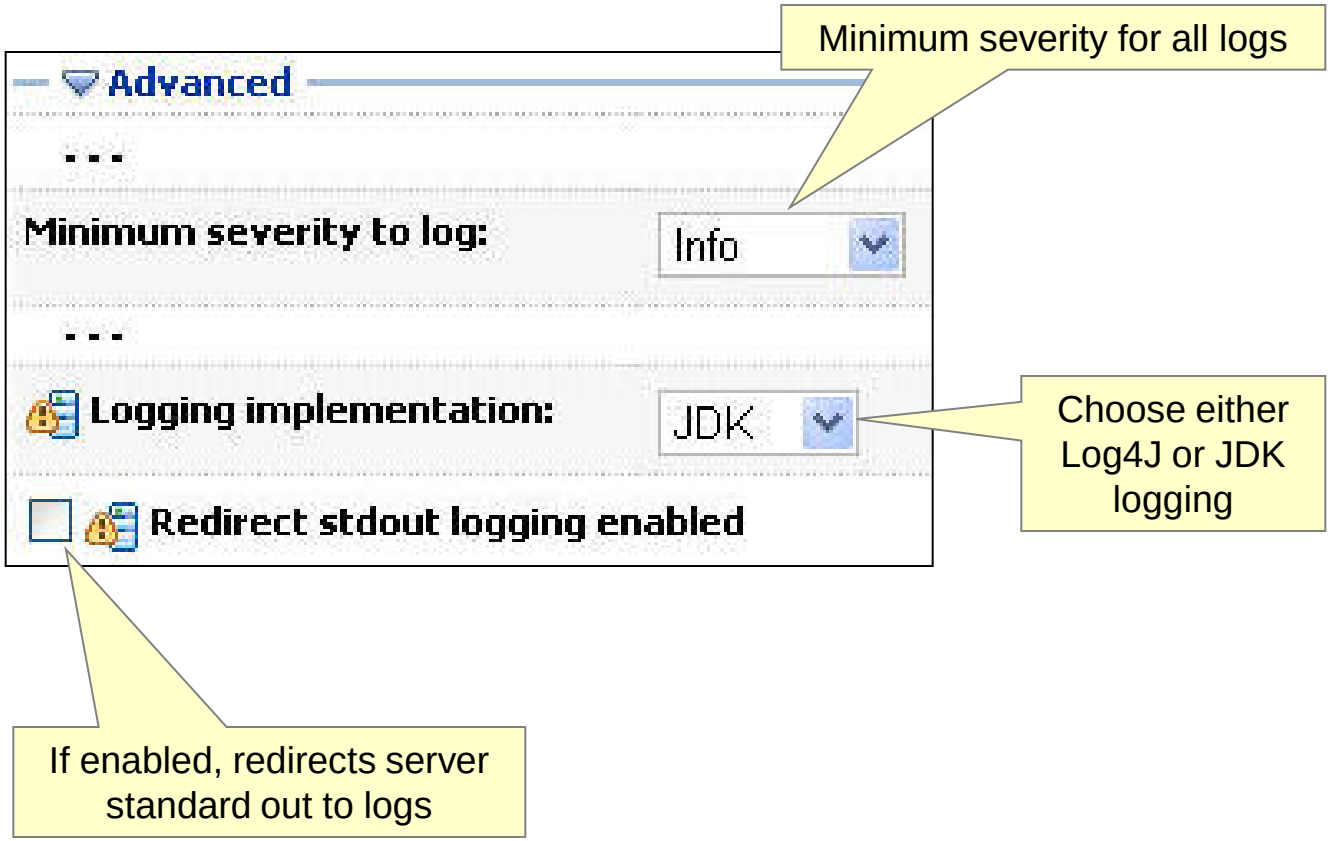
Configuring Server Logging



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Configuring Server Logging

Each log “location” has its own setting for minimum severity level and can have its own log filter.

Domain broadcast buffer size

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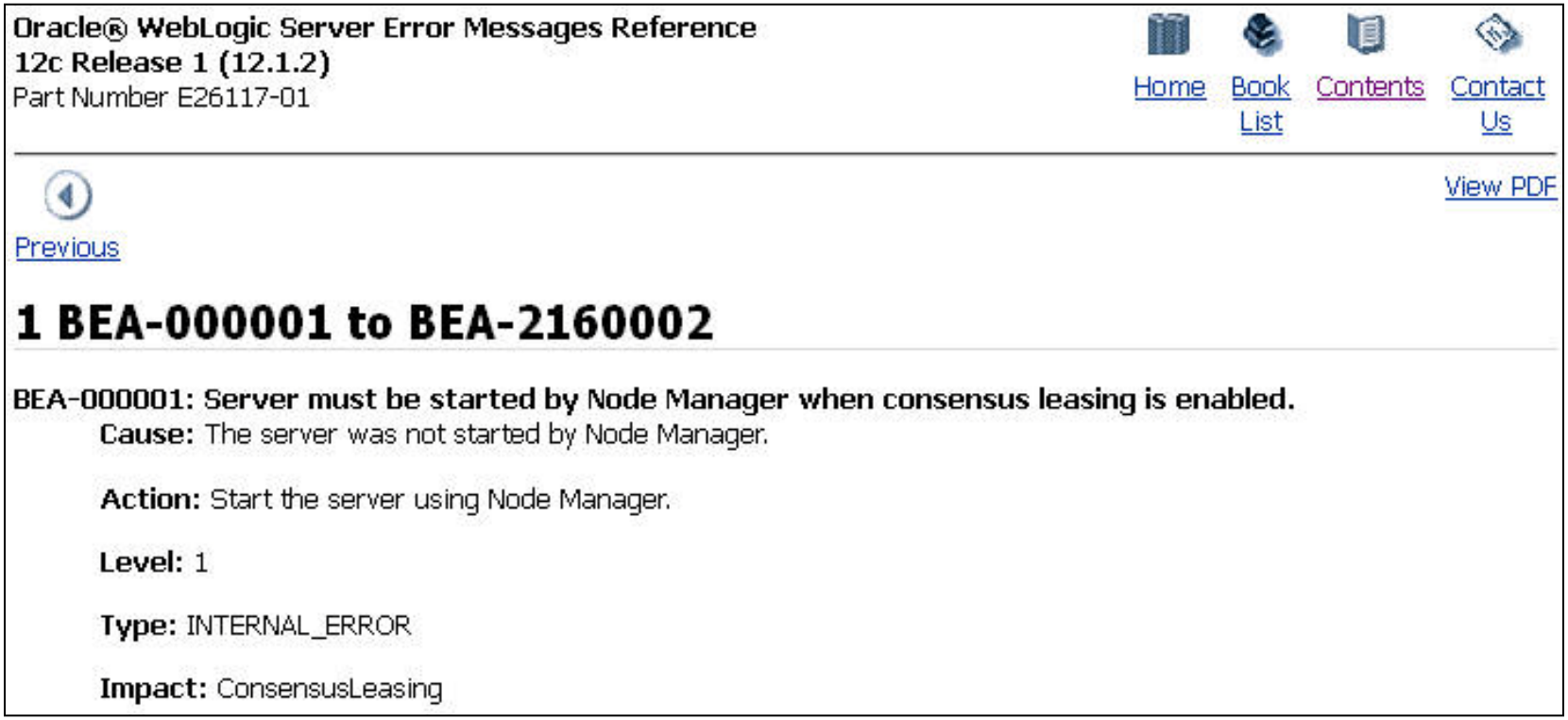
Error Messages Reference

Use the WebLogic Server online Error Messages Reference document to obtain more information about a specific log message based on its ID.



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Log Filters

- Provide finer tuned control of the log messages that are published
- Are based on the values of message attributes
- Are created at the domain level
- Can be applied to different log message destinations:
  - Server log
  - Server log memory buffer
  - Server standard out
  - Domain log broadcaster

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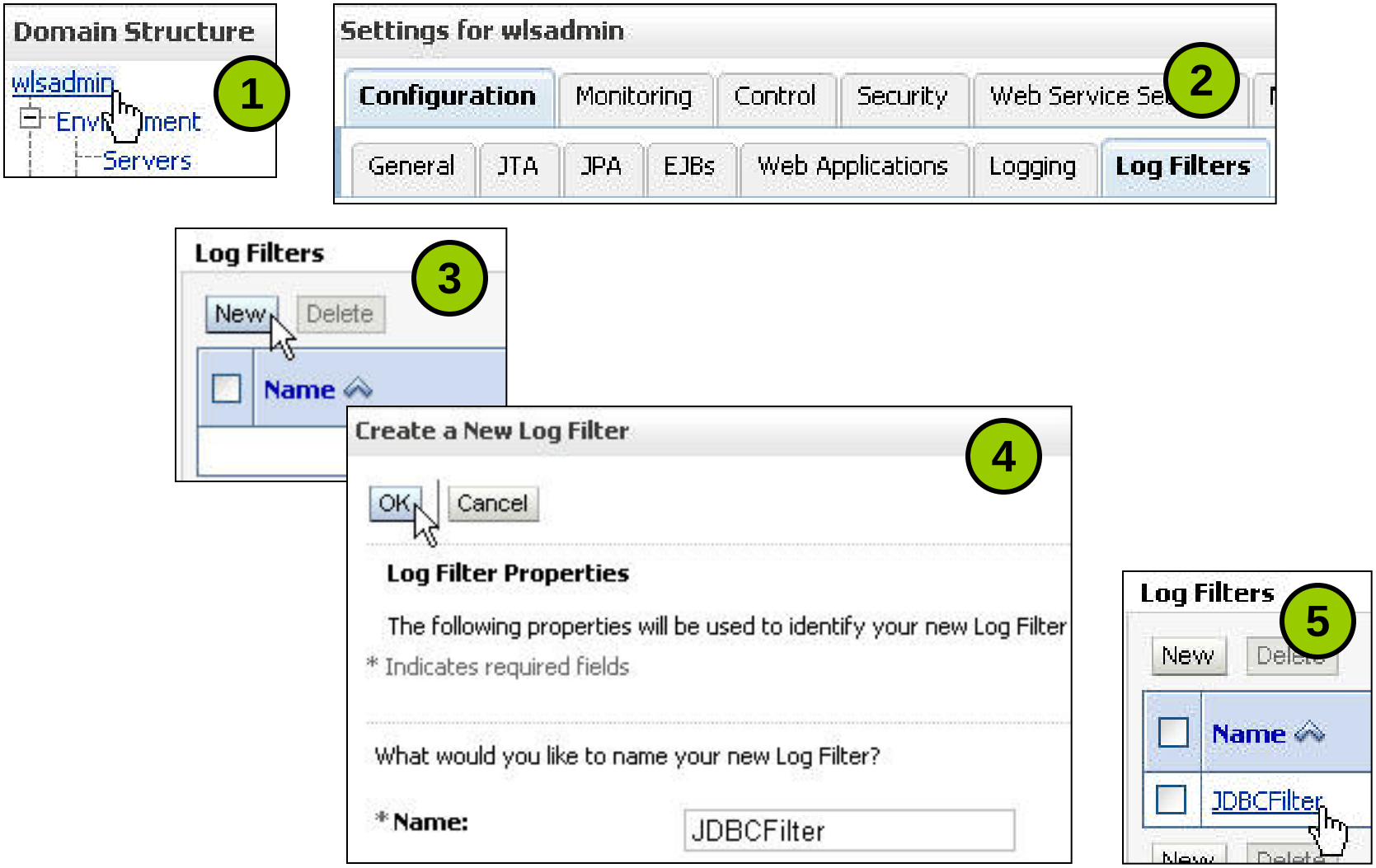
Creating a Log Filter



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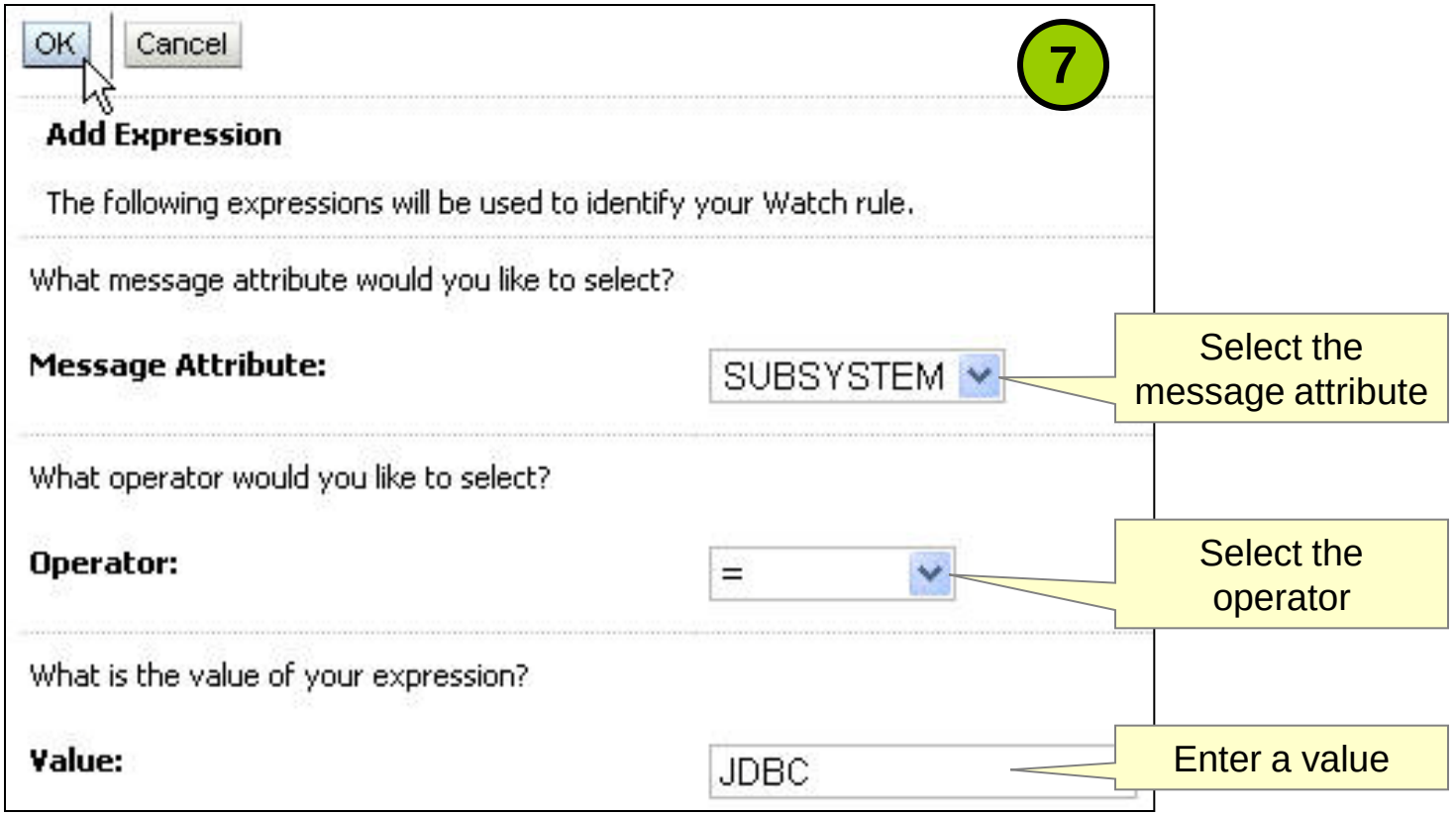
Creating a Log Filter



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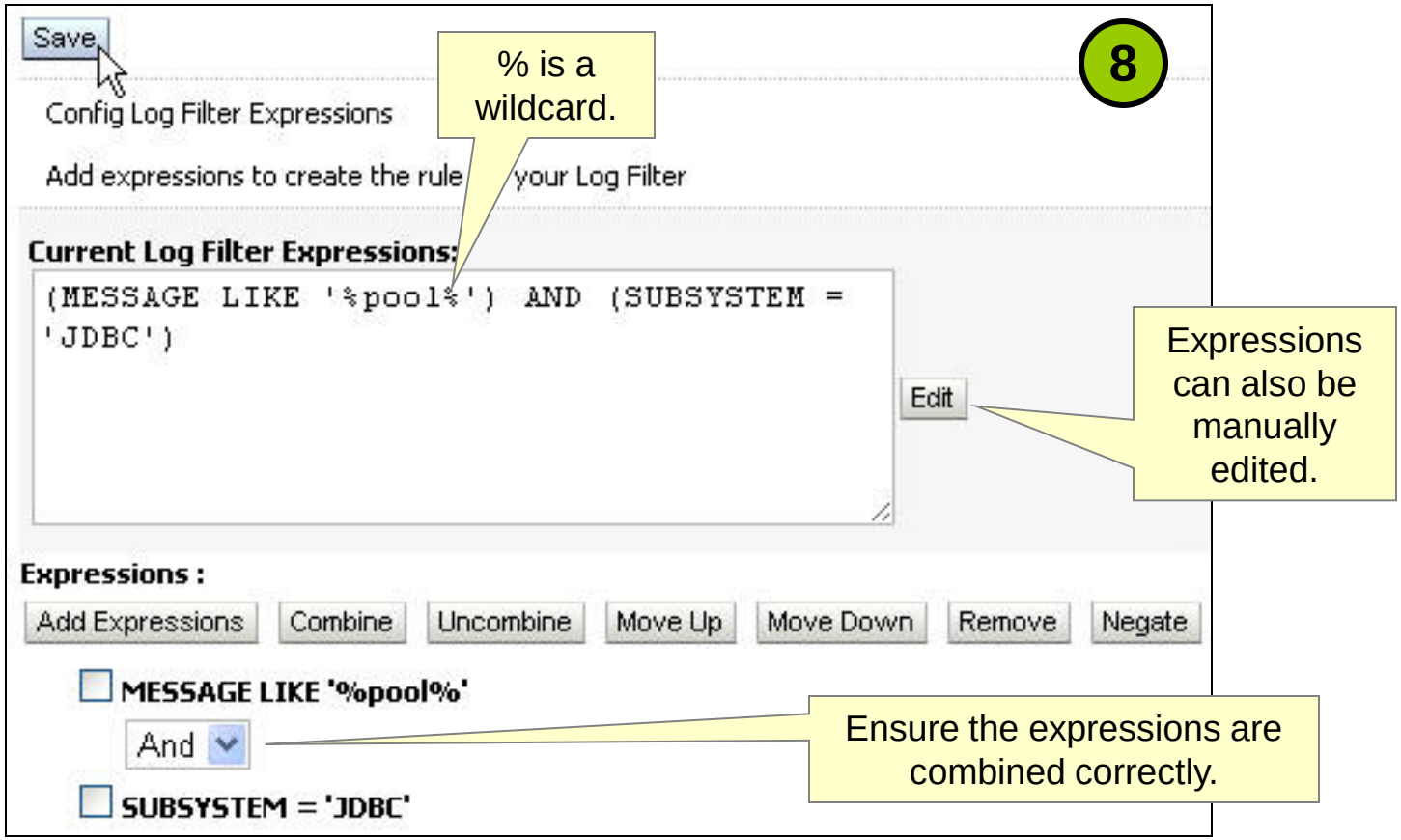
Creating a Log Filter



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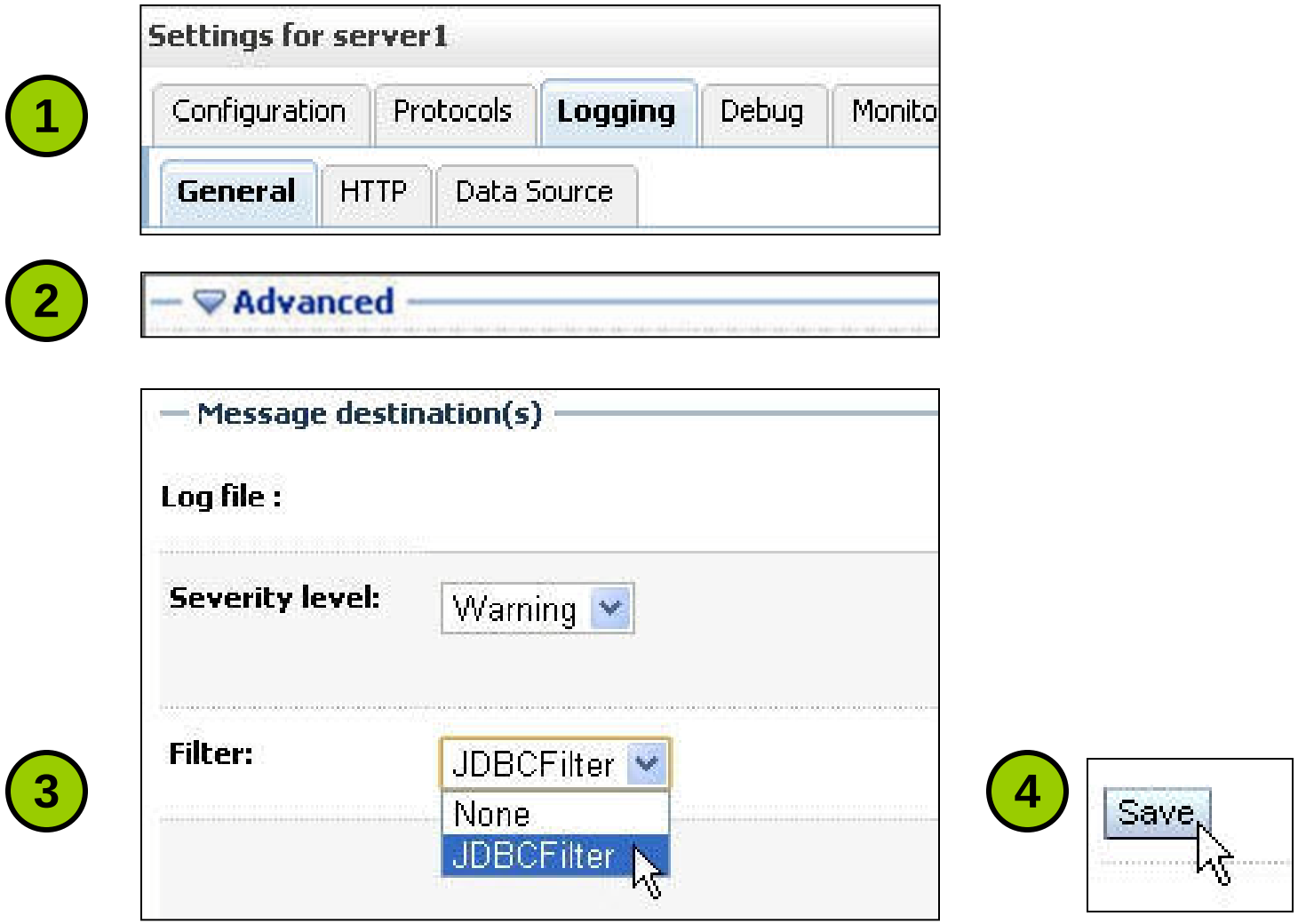
Applying a Log Filter



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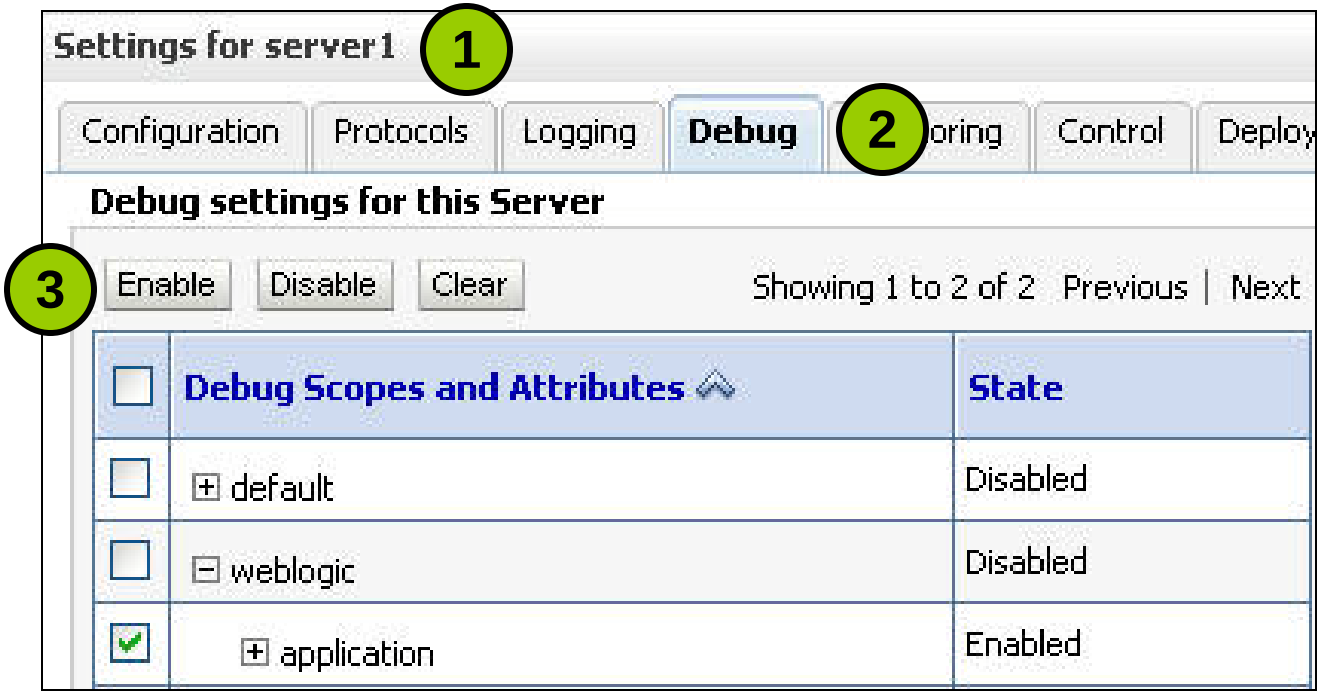
Subsystem Debugging

- Various WebLogic Server subsystems have the ability to generate detailed log messages to facilitate debugging.
- You can enable debugging on specific servers for individual subsystems.



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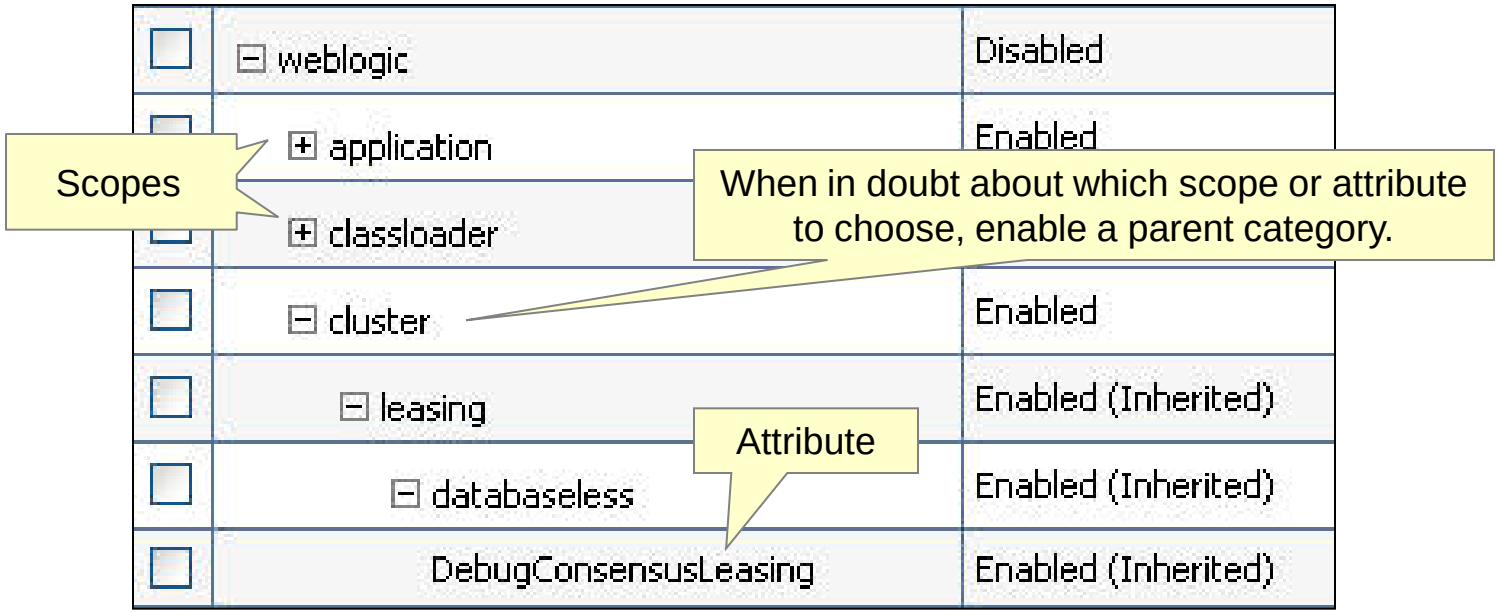
Debug Scopes

- Debug flags (attributes) for WebLogic Server subsystems are organized into *scopes*.
  - You can enable entire debug scopes or individual attributes.
  - When a parent scope is enabled, all child scopes and attributes are also enabled, unless they are overridden.



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Debug Scopes: Examples

Subsystem	Scopes (`weblogic.*`)
JDBC	`jdbc.connection, jdbc.internal, jdbc.sql`
Cluster	`core.cluster`
Deployment	`deploy, ejb.deployment`
Applications	`application.library, ejb.caching, ejb.invoke, ejb.pooling, servlet, servlet.internal, servlet.internal.session`
Transactions	`transaction.recovery, transaction.twopc, transaction.xa`
Security	`security, security.ldap, security.ssl`

All “debug scope” messages are the DEBUG severity level, so ensure the log location severity level is set appropriately.

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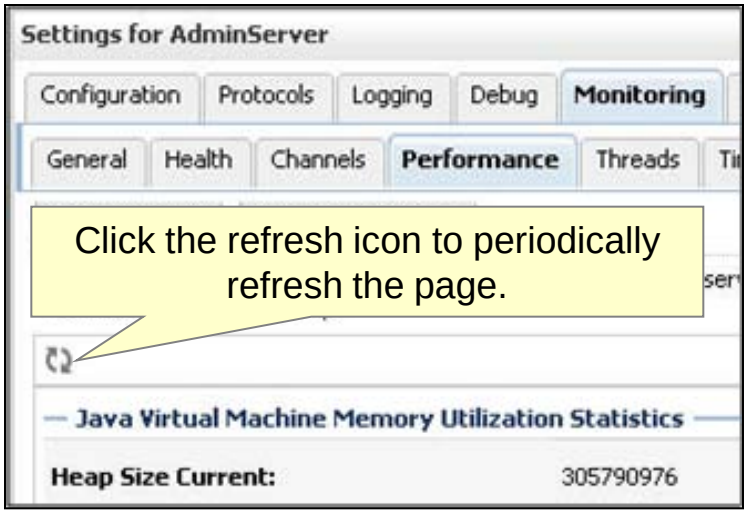
Admin Console: Monitoring Domain Resources

The administration console can monitor domain resources:

- Servers
- Clusters
- Machines
- Deployments
- JDBC data sources
- And more



Use the Domain Structure to locate the type of resource. Select a particular instance. Then click the **Monitoring** tab. The **Monitoring** tab of some elements have subtabs.

- When data is displayed in a table, use the **Customize this table** link to modify the columns displayed.

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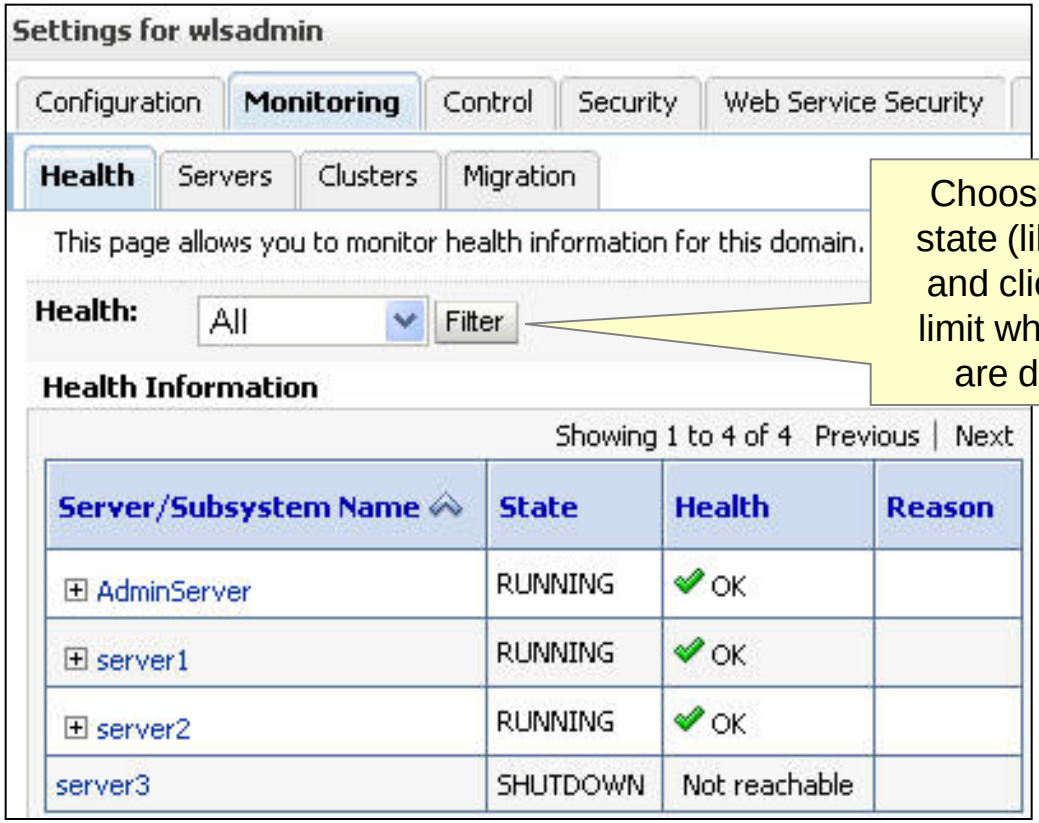
Monitoring the Domain

The domain itself has a **Monitoring** tab, which can show you an overview of the domain's health, servers, clusters, and migration.



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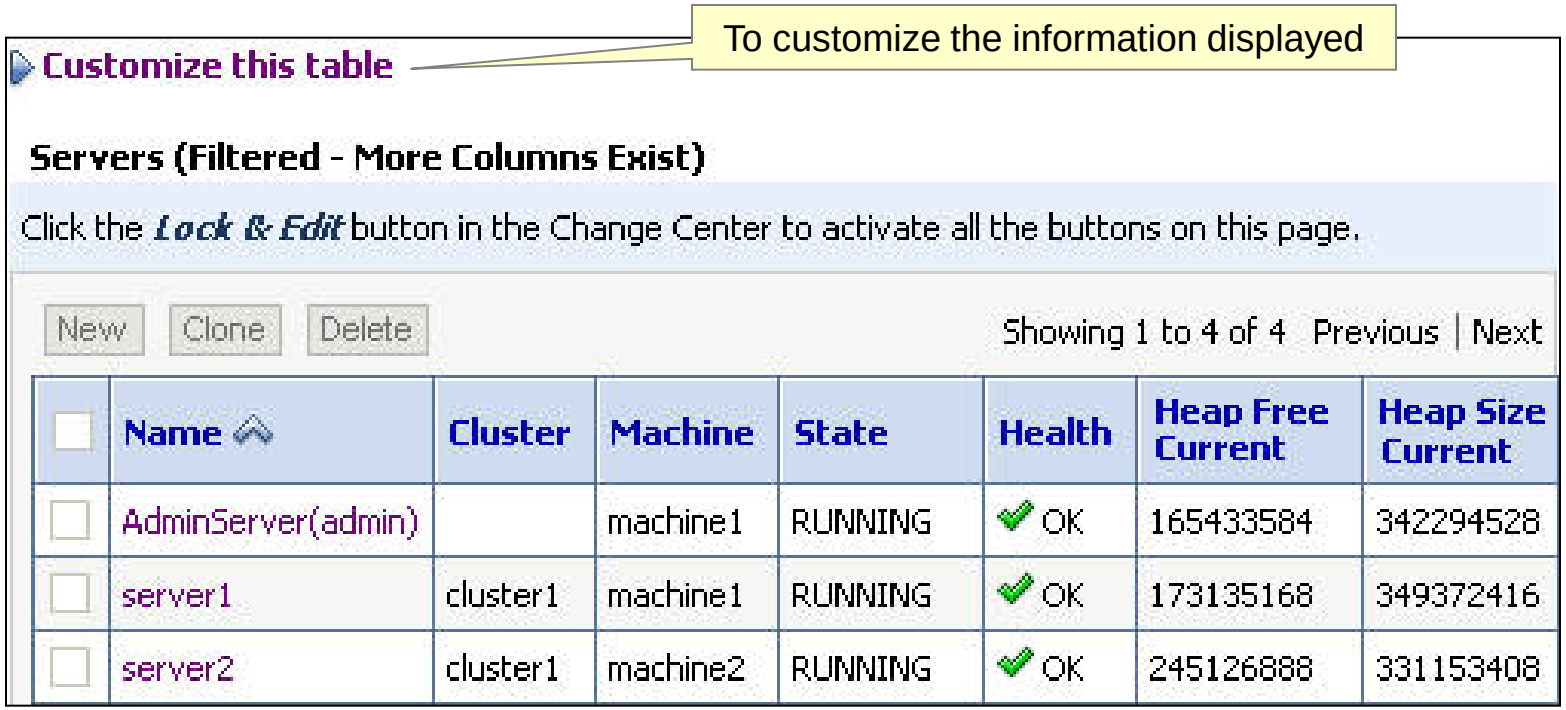
Monitoring All Servers

The servers table in the admin console lists all the servers in a domain. The information displayed can be customized so you can use this table to see the information important to you.



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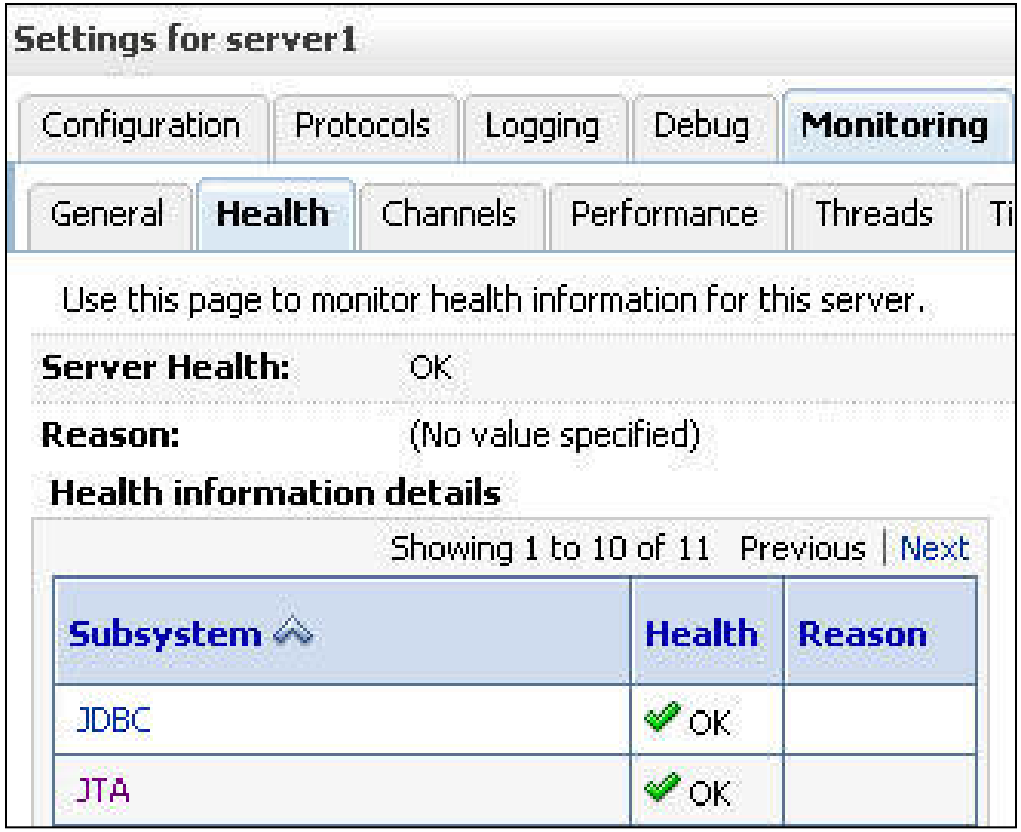
Monitoring Server Health

The admin console server health monitoring page shows the state of the server's subsystems and deployments.



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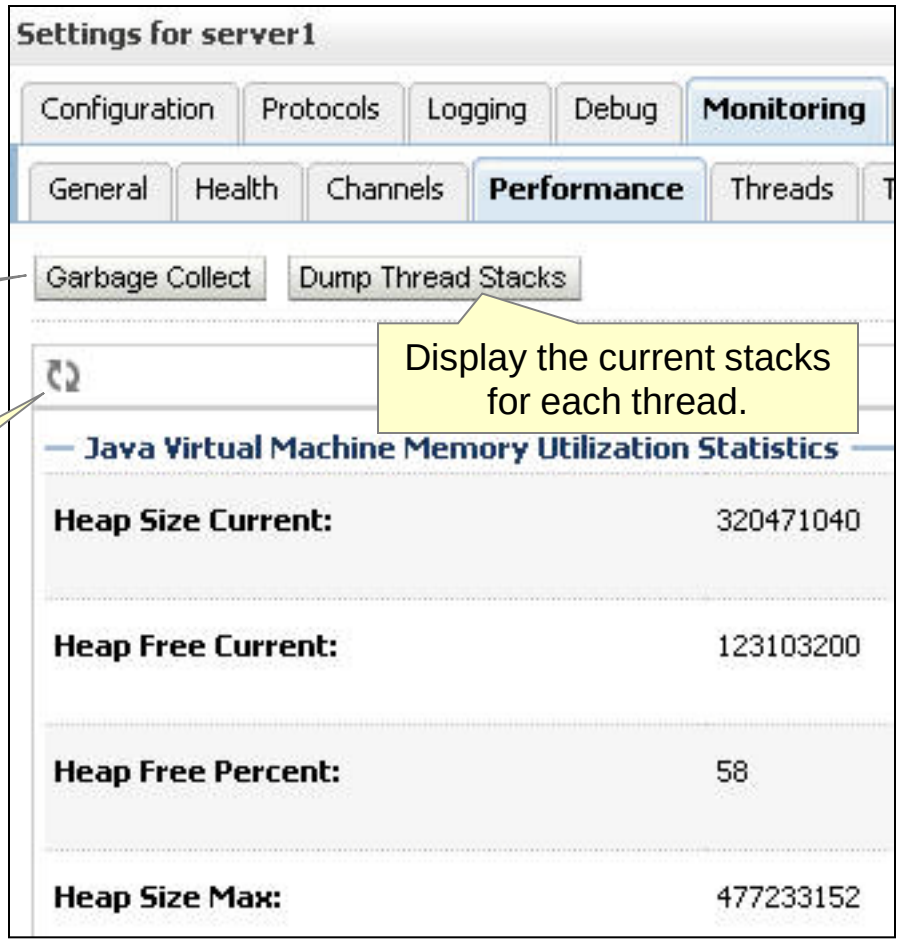
Monitoring Server Performance

The admin console server performance monitoring page shows information on the JVM.



Request the JVM do a garbage collection now.

Display the current stacks for each thread.

Have the admin console refresh the screen periodically.

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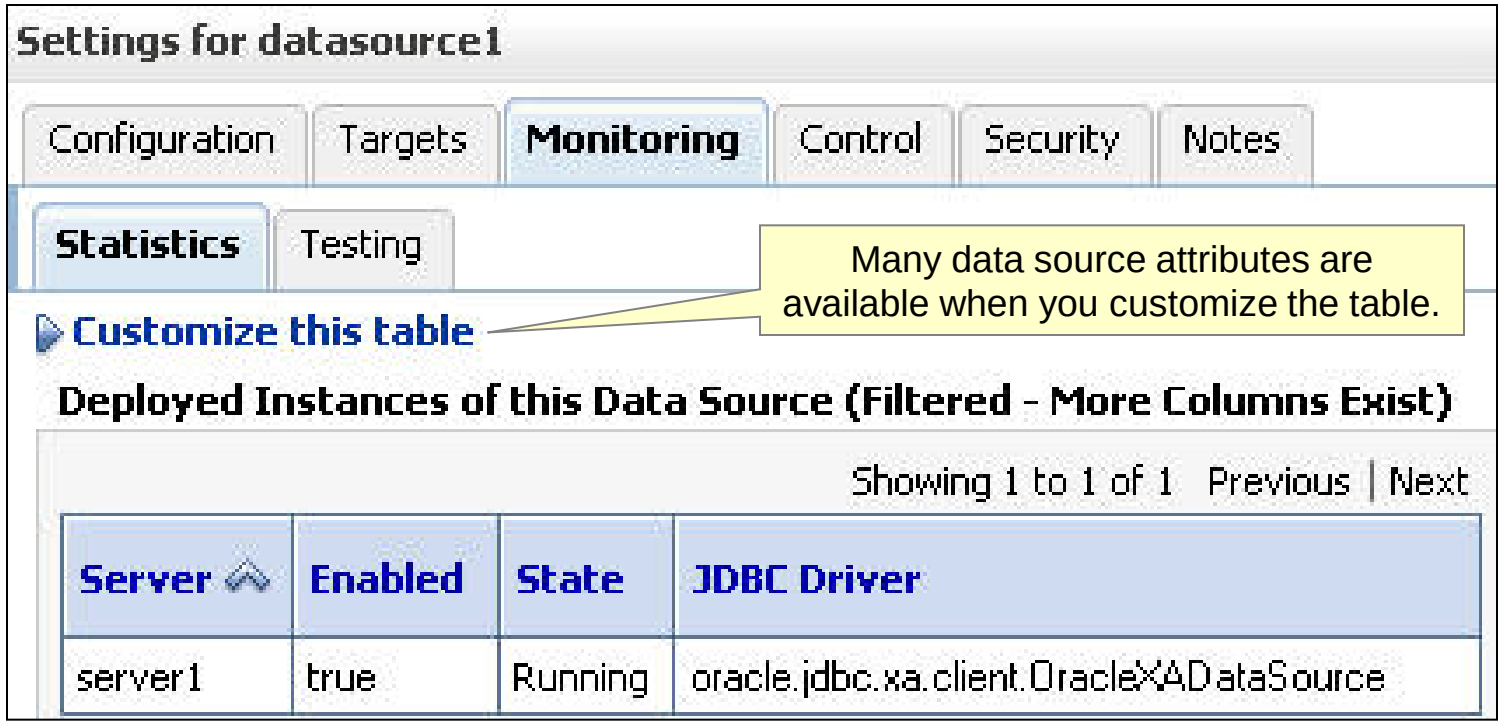
Monitoring Data Source Health

The admin console data source monitoring lets you view data source state and many statistics about its health and activity.



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Example Data Source Performance Attributes

Customize the data source monitoring table to display performance data. For example:

Attribute	Description
Active Connections Current Count	The number of database connections currently in use
Current Capacity	The total number of connections in the connection pool
Failed Reserve Request Count	The running total of connection requests that could not be fulfilled
Leaked Connection Count	The number of connections reserved but not returned to the connection pool
Number Available	The number of connections idle and available for use

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JMX, MBeans, Managing, and Monitoring

WebLogic Server manages and monitors its resources by using the Java Management Extensions (JMX) API.

- JMX provides a standardized way of managing and monitoring resources through objects call MBeans (managed beans).
- WebLogic Server provides a large set of MBeans for all the resources that it manages and monitors.
  - These MBeans are used by WebLogic Server tools like the administration console, WLST, and the Monitoring Dashboard.

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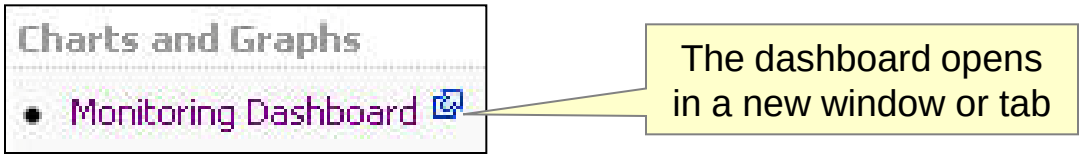
Monitoring Dashboard

The Monitoring Dashboard:

- Is accessible from a link on the administration console home page



- Graphically presents current or historic WebLogic Server diagnostic data
  - Multiple graph types are available
- Allows you to monitor WebLogic Server MBean attributes
  - From active runtime MBeans (*polled metrics*)
  - From an archive collected by WLDF (*collected metrics*)

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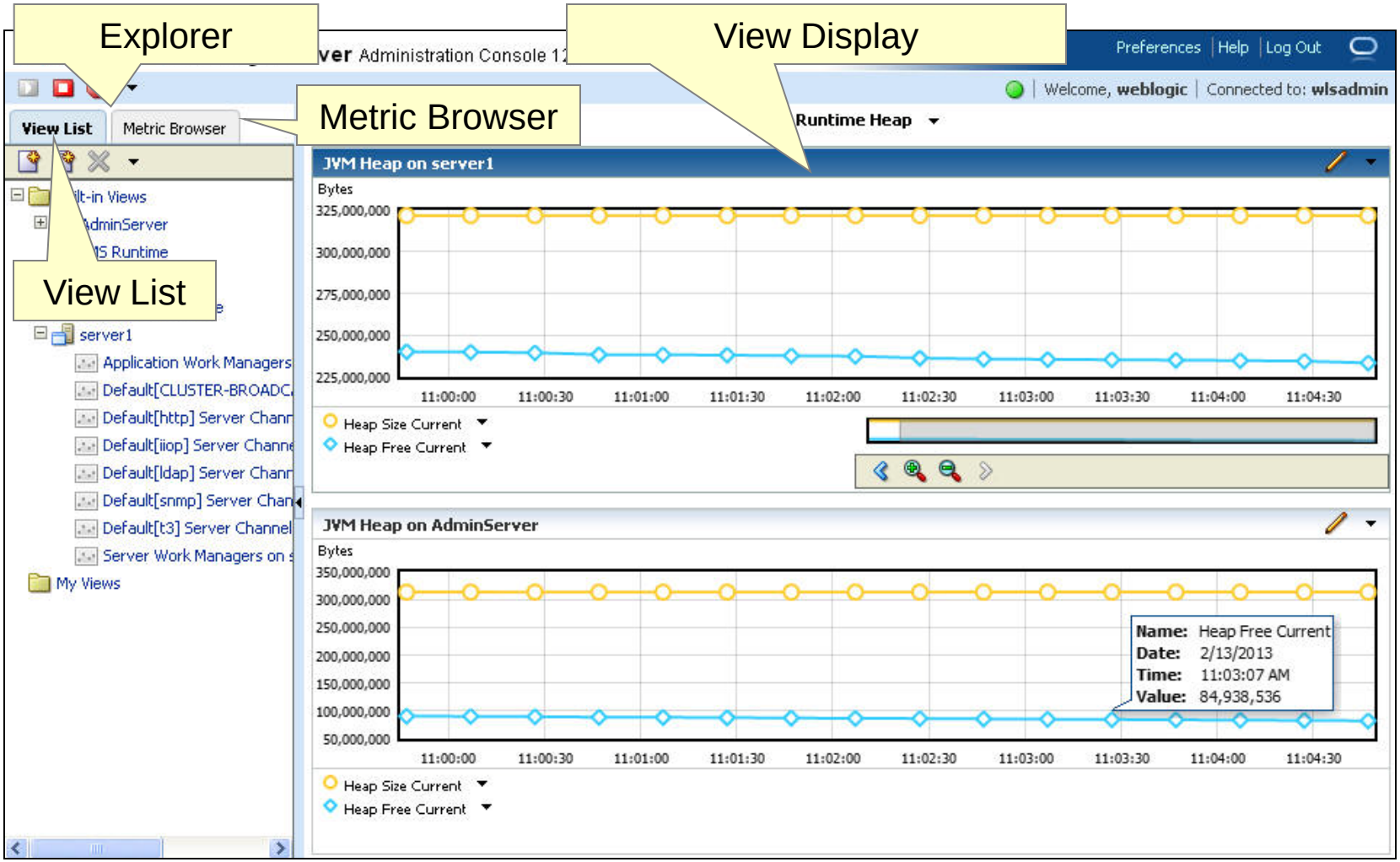
Monitoring Dashboard Interface



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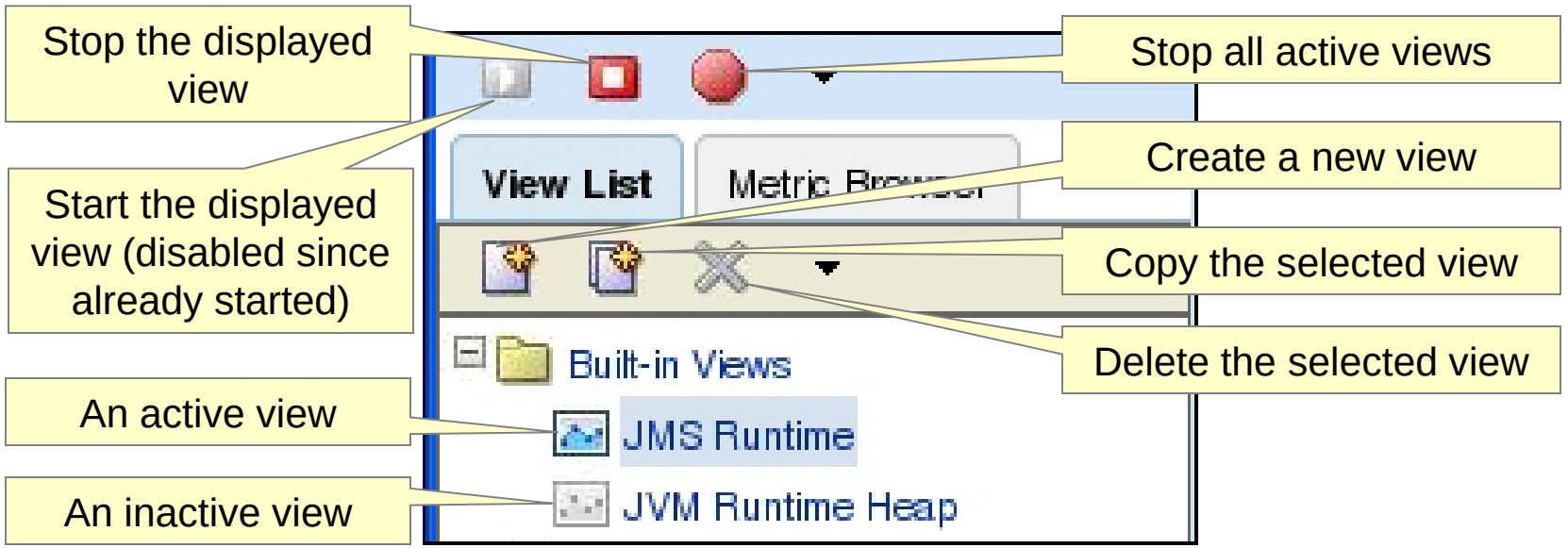
Views

- Are a way to organize your charts and graphs
- Typically display metrics that are related in some way
- Are individually started (to collect data) and stopped
- Continue to collect data even when not being displayed



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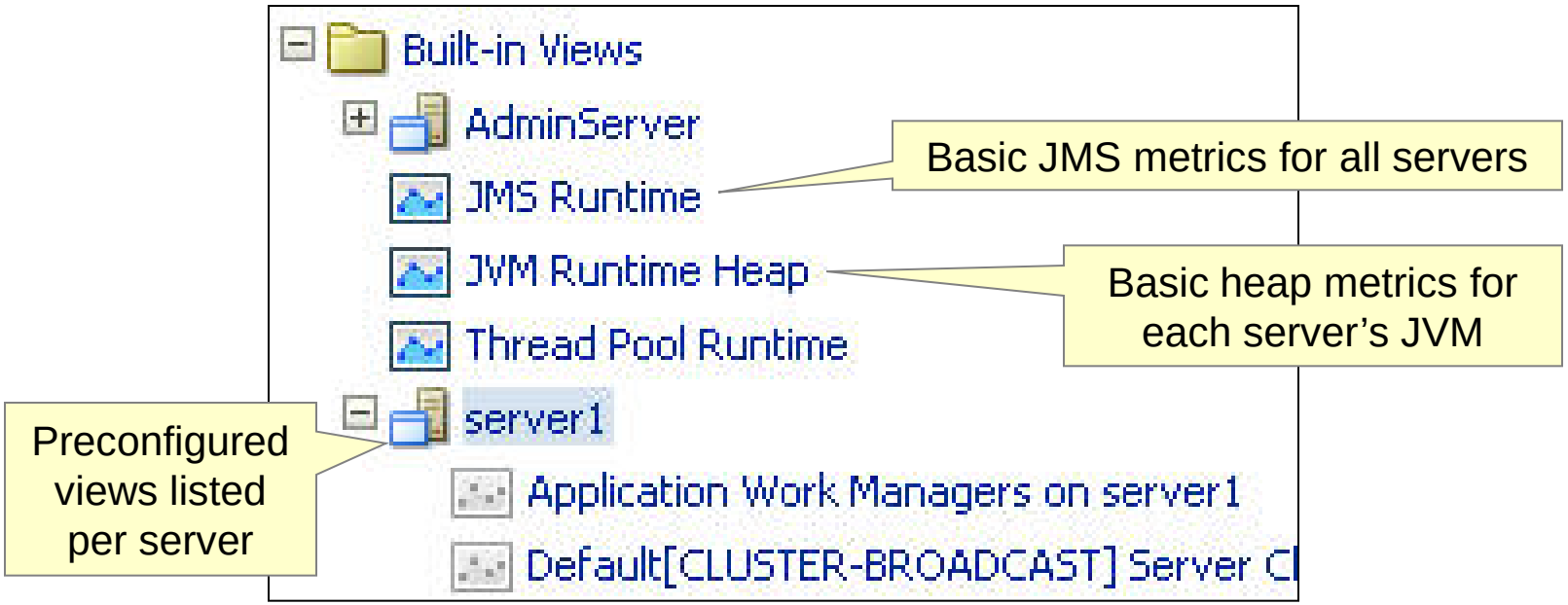
Built-in Views

- The dashboard defines built-in views for some of the more critical runtime performance metrics.
- Built-in views cannot be modified (or deleted), but they can be copied and the copy modified.



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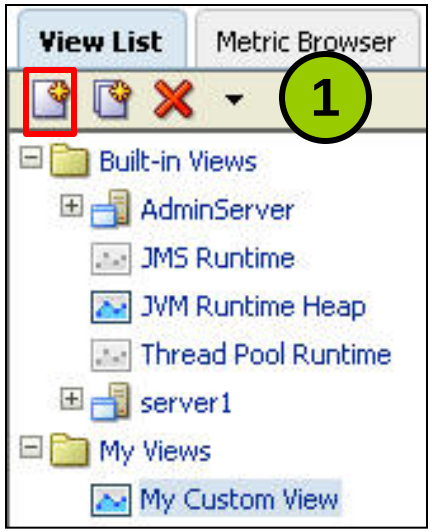
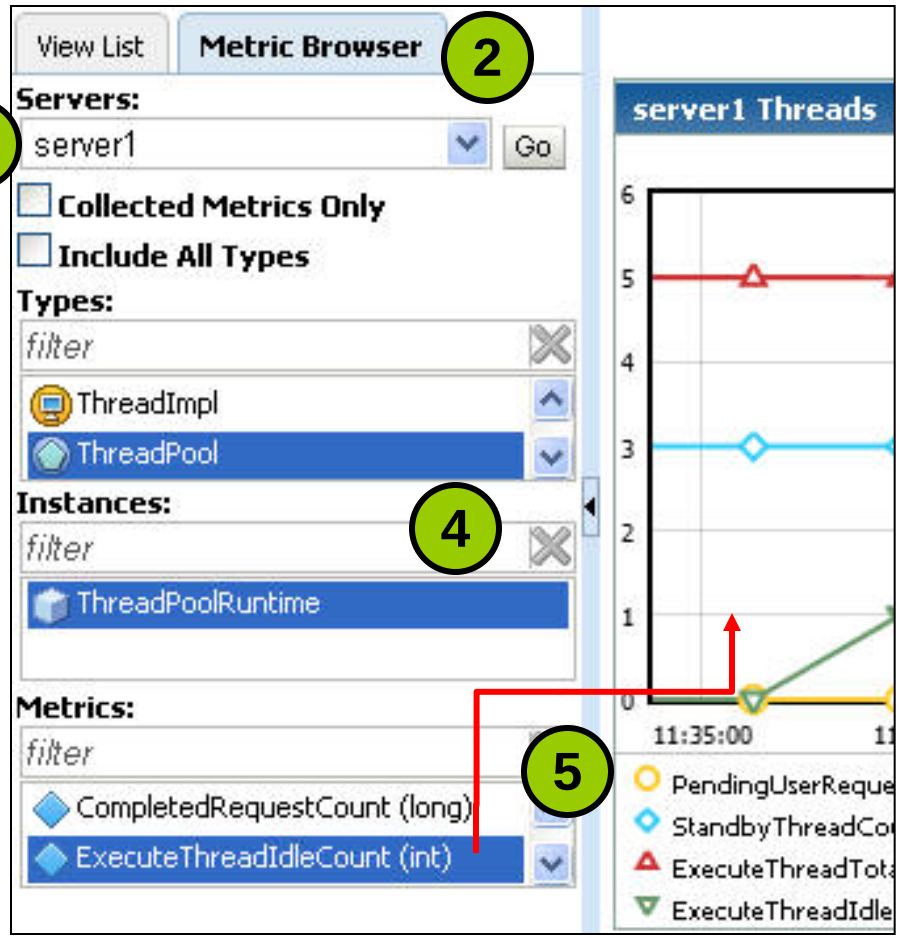
Creating a Custom View



- A view is a collection of charts.
- Each chart contains one or more graphs.
- Each graph displays one MBean attribute.



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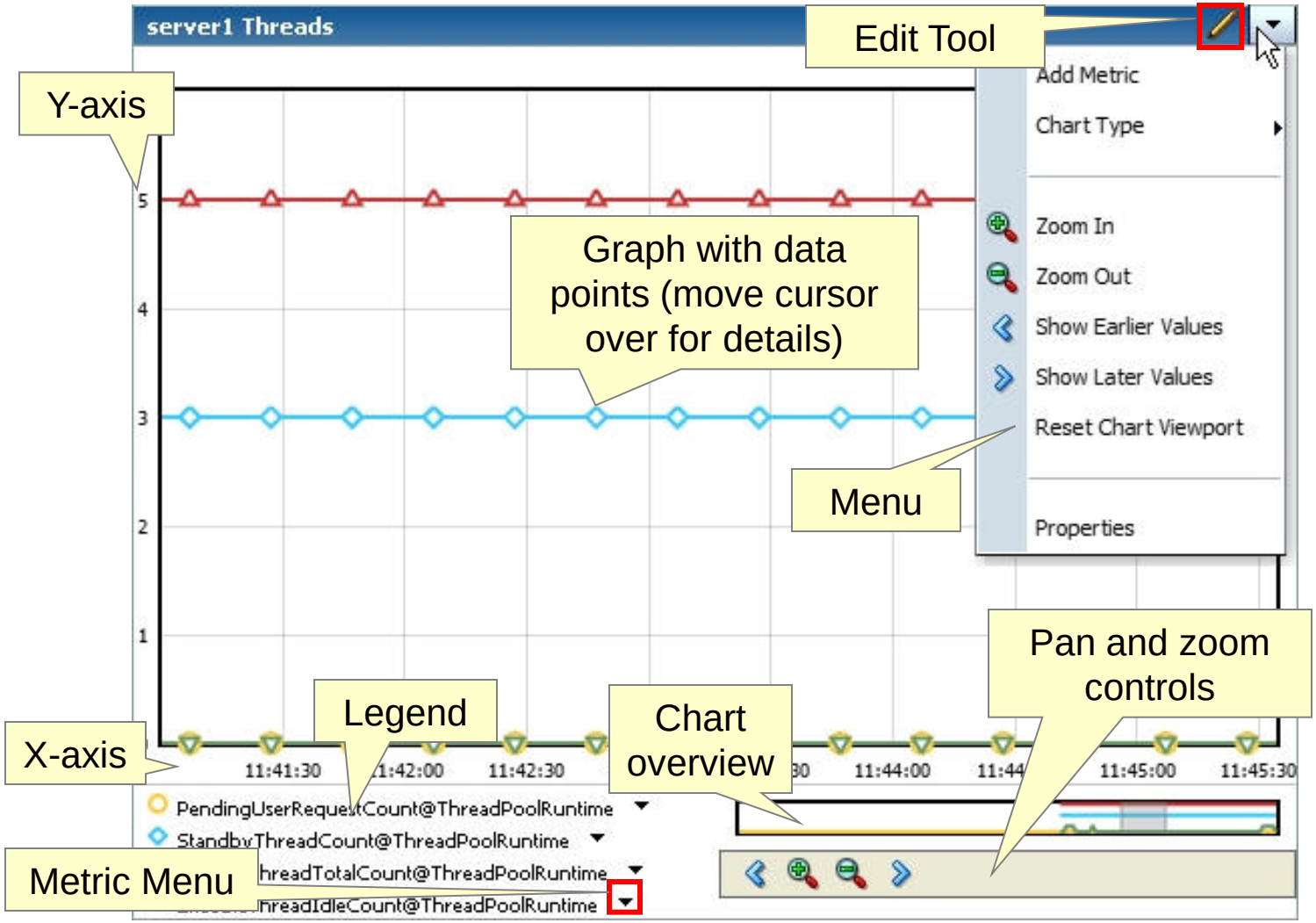
Anatomy of a Chart



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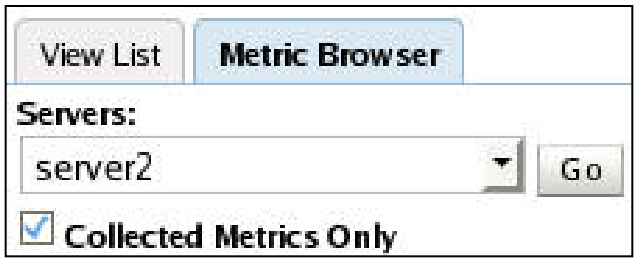
Current or Historical Data

- To view real-time metrics, no set up is needed. When a view is started, the runtime MBean instances are polled.
- To view historical (collected) metrics, WLDF must have been previously configured to collect data. Metrics collected by WLDF are placed into the diagnostic archive. To view harvested data:
  1. In the View List, click the New View button.
  2. In the Metric Browser, select a Server.
  3. To see only harvested data, select Collected Metrics Only.
  4. Drag some attribute from the Metrics list to the new view.



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Quiz

Which list of severity levels is in order from bad to worse?

a. ERROR, CRITICAL, ALERT, EMERGENCY
b. ALERT, ERROR, CRITICAL, EMERGENCY
c. ERROR, ALERT, CRITICAL, EMERGENCY
d. ERROR, CRITICAL, EMERGENCY, ALERT

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Quiz

A log filter can be applied to only one log message destination at a time.

a. True
b. False

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Summary

In this lesson, you should have learned how to:

- Configure and access WebLogic Server logs
- Enable WebLogic Server debugging output
- Monitor WebLogic Server health and performance
- Monitor JDBC data sources
- Access diagnostic charts in the Monitoring Dashboard

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Practice 8-1 Overview: Working with WebLogic Server Logs

This practice covers the following topics:

- Accessing the server log by using the admin console
- Creating and applying a log filter

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Practice 8-2 Overview: Monitoring WebLogic Server

This practice covers the following topics:

- Monitoring a server by using the admin console and the Monitoring Dashboard
- Monitoring JDBC data sources by using the admin console
- Enabling debugging by using the admin console

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