

# IBM WebSphere Application Server V8 lab: HPEL

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## Overview

High Performance Extensible Logging (HPEL) is a new log and trace facility. It provides a convenient mechanism for storing and accessing log, trace, System.err, and System.out information produced by the application server or applications. It is an alternative to the basic log and trace facility, which provides the JVM logs, diagnostic trace, and service log files commonly named SystemOut.log/SystemErr.log, trace.log, and activity.log. HPEL provides a log data repository, a trace data repository, and a text log file.

For more information about HPEL, see the following WebSphere Application Server V8.0 information center topic: **Using HPEL to troubleshoot applications**

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## Goals

During this lab, you will learn to do the following:

1. Enable and configure HPEL.
2. Use the HPEL command line log viewer.
3. Use the HPEL log viewer included in the WebSphere administrative console.

This lab is provided **AS-IS**, with no formal IBM support.

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## Prerequisites

### Materials

Required materials include the provided wsadmin (Jython) script, SetHPELMaxLogSize.py.

### Hosts

This lab requires a single host. Within the lab instructions, it is assumed to be set up in the following manner:

- WebSphere Application Server V8.0 Installation
  - Application server root
    - Windows: C:\Program Files\IBM\WebSphere\AppServer
    - UNIX/Linux: /opt/IBM/WebSphere/AppServer
- Application Server Node
  - Profile name: AppSrv01
  - Profile path
    - Windows: C:\Program Files\IBM\WebSphere\AppServer\profiles\AppSrv01
    - UNIX/Linux: /opt/IBM/WebSphere/AppServer/profiles/AppSrv01
  - Node name: AppSrv01Node
  - Server name: server1
- WebSphere Administrative Account
  - User name: was
  - Password: was

## Part 1: Enable and configure HPEL

1. If necessary, start the application server.
2. Log in to the administrative console, specifying an appropriate user ID and password if administrative security is enabled. Next, click *TroubleShooting > Logs and Trace > server1*. Then do the following:
  - a. Click **Switch to HPEL Mode**.
  - b. Click **Configure HPEL Text Log**. Then uncheck *Enable text log* and click **OK**.
  - c. Click **Configure HPEL Logging**. Then change *Maximum Log Size* from 50 to **20** and click **OK**.
  - d. Click **Configure HPEL Trace**. Then, set *Log record purging policy* to **Begin cleanup of oldest records when oldest records reach age limit**. Next, set *Log record age limit* to **12** hours.
  - e. Click **Save** to save the changes to the master configuration.
3. Log out of the administrative console.
4. Recycle (stop/start) the application server. If administrative security is enabled, you will be required to specify an appropriate user ID and password.
5. Log in to the administrative console, specifying an appropriate user ID and password if administrative security is enabled. Next, click *TroubleShooting > Logs and Trace > server1*. Then verify the changes that you made in the previous steps.
6. Use wsadmin to temporarily set the HPEL maximum log size to a different value.

- a. Copy the provided wsadmin script, `SetHPELMaxLogSize.py` to the application server profile bin directory, for example,

### Windows

```
C:\Program Files\IBM\WebSphere\AppServer\profiles\AppSrv01\bin
```

### UNIX/Linux

```
/opt/IBM/WebSphere/AppServer/profiles/AppSrv01/bin
```

- b. Use a text editor to view `SetHPELMaxLogSize.py`.

Notice that the script displays the status of HPEL logging and temporarily sets the HPEL maximum log file size to a specified value (in MB).

- c. Open a command prompt and change to the application server bin directory. Then submit the following command to use the script to temporarily set the HPEL maximum log size to 35MB:

```
wsadmin -lang jython -userName admin_user_name -password admin_password -f SetHPELMaxLogSize.py cell_name node_name server_name max_log_size
```

For example:

#### Windows

```
wsadmin -lang jython -userName was -password was -f SetHPELMaxLogSize.py
AppSrv01Cell AppSrv01Node server1 35
```

#### UNIX/Linux

```
./wsadmin.sh -lang jython -userName was -password was -f
SetHPELMaxLogSize.py AppSrv01Cell AppSrv01Node server1 35
```

d. In the administrative console, return to the *Logs and Trace* screen. Then click the name of the server, for example, **server1**. Notice that the runtime maximum log size is set to 35MB. Next, click **Configure HPEL Logging**. Notice that the configured maximum log size is still set to 20MB. (The next time that the server is restarted, the configured size will be used to set the initial runtime size.)

For more information on using wsadmin to define HPEL settings, both runtime and configured, see the following WebSphere Application Server V8.0 information center topic: **Configuring HPEL with wsadmin scripting**

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## Part 2: Use the HPEL command line log viewer

Since you enabled HPEL and restarted the server, the legacy WebSphere Application Server logging information is no longer available. The command line HPEL log viewer provides a powerful, yet simple solution for viewing logging information.

The following WebSphere Application Server V8.0 information center topic includes a detailed reference of the command line viewer options: **LogViewer command-line tool**

1. Open a command prompt and change to the application server profile bin directory, for example,

#### Windows

```
C:\Program Files\IBM\WebSphere\AppServer\profiles\AppSrv01\bin
```

#### UNIX/Linux

```
/opt/IBM/WebSphere/AppServer/profiles/AppSrv01/bin
```

2. Run the following command to obtain help on the log viewer, including an explanation of the options:

#### Windows

```
logViewer -help
```

#### UNIX/Linux

```
./logViewer.sh -help
```

3. Create a legacy format log file and compare its contents to the output of several HPEL log viewer commands.

a. Run the following command to create a legacy format log file (`legacyFormat.log`) that contains only log records (INFO, WARNING, and SEVERE):

#### Windows

```
logViewer -outLog ..\logs\legacyFormat.log -minLevel INFO -maxLevel SEVERE
```

#### UNIX/Linux

```
./logViewer.sh -outLog ../logs/legacyFormat.log -minLevel INFO -maxLevel SEVERE
```

b. Run the following command to view only the log records for thread 0:

#### Windows

```
logViewer -thread 0
```

#### UNIX/Linux

```
./logViewer.sh -thread 0
```

c. Run the following command to view only WARNING messages:

#### Windows

```
logViewer -level WARNING
```

#### UNIX/Linux

```
./logViewer.sh -level WARNING
```

d. Use a text editor to view the legacy format log file that you created earlier, for example,

#### Windows

```
C:\Program  
Files\IBM\WebSphere\AppServer\profiles\AppSrv01\logs\legacyFormat.log
```

#### UNIX/Linux

```
/opt/IBM/WebSphere/AppServer/profiles/AppSrv01/logs/legacyFormat.log
```

Then compare (roughly) the number of thread 0 records in the file to the number of thread 0 records displayed by running the command `logViewer -thread 0`. (The second query will contain additional records if thread 0 completed additional tasks between the times that the two commands were submitted.) Next, compare (roughly) the number of warning records (type w) in the file to the number of WARNING messages displayed by running the command `logViewer -level WARNING`.

4. Run the following command to retrieve all log records NOT from loggers beginning with com.ibm:

#### Windows

```
logViewer -excludeLoggers com.ibm.*
```

#### UNIX/Linux

```
./logViewer.sh -excludeLoggers com.ibm.*
```

5. Extract a specified set of log records to a new repository and a text file.

a. Run the following command to extract a repository of just WARNING and SEVERE messages and save the resulting file in a new directory:

#### Windows

```
logViewer -minLevel WARNING -maxLevel SEVERE -extractToNewRepository  
..\logs\newHPELRepository
```

## UNIX/Linux

```
./logViewer.sh -minLevel WARNING -maxLevel SEVERE -extractToNewRepository
../logs/newHPELRepository
```

b. Run the following command to export the contents of the resulting repository to a text format log file:

## Windows

```
logViewer -repositoryDir ..\logs\newHPELRepository -outLog
..\logs\newFormat.log
```

## UNIX/Linux

```
./logViewer.sh -repositoryDir ../logs/newHPELRepository -outLog
../logs/newFormat.log
```

c. Use a text editor to view the resulting log file, for example,

## Windows

```
C:\Program Files\IBM\WebSphere\AppServer\profiles\AppSrv01\logs\newFormat.log
```

## UNIX/Linux

```
/opt/IBM/WebSphere/AppServer/profiles/AppSrv01/logs/newFormat.log
```

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## Part 3: Use the HPEL log viewer included in the WebSphere administrative console

1. Log in to the administrative console, specifying an appropriate user ID and password if administrative security is enabled. Next, click *TroubleShooting > Logs and Trace > server1*. Then click **View HPEL logs and trace**.
2. Expand the *Content and Filtering Details* area of the page. Click each server instance (start time) to view the corresponding log messages. Then collapse the *Content and Filtering Details* area.
3. Click **Server Instance Information** to view information about the current run of the application server such as the process ID (PID). Then close the Server Instance Information pop-up window.
4. Click the (early) log message **TRAS0017I** to view explanations, user actions, and so on. Then click **Close** to remove the pop-up window.
5. Locate a log entry indicating activity on a thread other than 00000000. Then select the entry and click **Show Only Selected Threads** to filter the list to include only records generated by the same thread. Finally, click **Show All Threads** to once again display messages generated by all threads.
6. Show only WARNING and higher level messages.
  - a. Expand the *Content and Filtering Details* area of the page.
  - b. Uncheck *System out* and *System err*.
  - c. Under *Logs and trace*, set *Minimum level* to **WARNING** and *Maximum level* to **FATAL**.
  - d. Click **Apply** to filter the list. (It may take several seconds for the filtering to be applied.) Then collapse the *Content and Filtering Details* area of the page and view the resulting messages.

7. Export the filtered view to a binary repository and use the command line log viewer to display the records.

a. Click **Export**.

b. Within the Select Export Options window, set the log format to **Binary format** and the log content to **Current view only**. Then click **OK**.

c. In the File Download window, click **Save**.

d. In the Save As window, select the application server profile logs directory, for example,

Windows

```
C:\Program Files\IBM\WebSphere\AppServer\profiles\AppSrv01\logs
```

UNIX/Linux

```
/opt/IBM/WebSphere/AppServer/profiles/AppSrv01/logs
```

Accept the default file name.

Click **Save**.

e. Locate the exported repository, for example, `logs_AppSrv01Cell_AppSrv01Node_server1.zip`.

f. Use a suitable archiving utility to extract the files to a subdirectory within the application server profile logs directory, for example, `logs_AppSrv01Cell_AppSrv01Node_server1`.

g. Open a command prompt and change to the application server profile bin directory, for example,

Windows

```
C:\Program Files\IBM\WebSphere\AppServer\profiles\AppSrv01\bin
```

UNIX/Linux

```
/opt/IBM/WebSphere/AppServer/profiles/AppSrv01/bin
```

h. Run the `logViewer` command with the `-repositoryDir` option to view the log messages present in the exported repository, for example,

Windows

```
logViewer -repositoryDir ..\logs\logs_AppSrv01Cell_AppSrv01Node_server1
```

UNIX/Linux

```
./logViewer.sh -repositoryDir ../logs/logs_AppSrv01Cell_AppSrv01Node_server1
```

8. Return to the administrative console. Then click **Reset**, followed by **Apply** to remove all filtering.

9. Log out of the administrative console.

10. Optionally, stop the application server.