WLM Accounting

User’s Guide

AIX

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About this Guide

This guide describes the “WLM Accounting” application. This guide is organized as follows:

- Chapter 1, “**Introduction to WLM Accounting**” describes the principles of the application.
- Chapter 2, “**Graphic User Interface (GUI)**”, explains how to operate the “WLM Accounting” application.
- Appendix A, “**Reference Information**”, provides advanced users with supplemental information about the filesets and the configuration files.

Who should use this book

This guide provides system administrators with information for performing the tasks of WLM accounting.

It is assumed that you are familiar with the information and concepts presented in the following publications:

- *System Management Guide: Operating System and Devices*, 86 A2 26EF
- *System Management Concepts: Operating System and Devices*, 86 A2 28EF

You should especially have a very good knowledge of the AIX Workload Management (WLM) functions. Pay a particular attention to the chapters that describe the WLM feature in the two manuals above.

Note: You can also find the present guide on the ”Hypertext Library for AIX 5L” CD–ROM. This online documentation is designed for use with an HTML version 3.2 compatible web browser.

Related Publication

The “WLM Accounting” application uses the same daemon as “Overload Detection with WLM”. For more information refer to:

- *Overload Detection with WLM User’s Guide* 86 A2 72EF

Table of Contents

Chapter 1. Introduction to WLM Accounting

Overview

The AIX accounting system utility allows system administrators to collect and report the use of various system resources by user, group or WLM class. When process accounting is turned–on, AIX records statistics about the process resource usage in an accounting file when the process exits.

Bull further enhances the AIX Accounting subsystem capabilities with the WLM Accounting application. Unlike the base AIX Accounting subsystem, WLM Accounting records real time WLM classes information, using pre-defined or user-defined time period, without waiting for process termination. This ensures reporting of resources used by continuous processes, like daemons.

WLM Accounting has a Java–based graphical user interface (GUI) managed through WebSM. It can display data using tables or pie charts and generate Excel–compatible or PostScript output files.

Some WLM Concepts

The “WLM Accounting” application relies on the WLM configuration. Complete information about WLM is provided in:

- *System Management Concepts: Operating System and Devices*, 86 A2 28EF
- *System Management Guide: Operating System and Devices*, 86 A2 26EF

Some WLM concepts are reminded in this section.

WLM Classes

The central concept of Workload Manager (WLM) is the concept of class. A class is a collection of processes (jobs) which has a single set of resource limits applied to it. WLM assigns processes to the various classes and controls the allocation of system resources among the different classes using class assignment rules. WLM controls the allocation of system resources among the different classes using per class resource shares and limits set by the system administrator.

Resources Managed by WLM

WLM manages three types of resources:

- The CPU utilization of the threads in a class. This is the sum of all the CPU cycles consumed by every thread in the class.
- The physical memory utilization of the processes in a class. This is the sum of all the memory pages which belong to the processes in the class.
- The disk I/O bandwidth of the class. This is the bandwidth (in 512 byte blocks per second) of all the I/Os started by threads in the class on each disk device accessed by the class.

WLM Active and Passive Modes

WLM can start in active mode, where WLM does monitoring and regulation of CPU and memory (the normal operating mode), or in passive mode, where WLM only classifies processes and monitors resource utilization without interfering with the standard AIX resource allocation algorithms.

WLM Accounting Principle

When the “WLM Accounting” application is operational the **wlmrad** daemon collects, hour per hour, the consumption of the WLM classes for each resource (CPU, memory and Disk I/O). The collected information is stored in specific files during a period of twelve months. Twelve files are such existing, one for each month, working in rotation.

Note: The collect is performed whether the GUI is opened or not.

Thanks to the GUI the administrator can create accounting reports for a period of his choice, (from one hour to several hours), in the limit of the last twelve months. The reports, relying on the information collected by the daemon, reflect the resource consumption for the different WLM classes defined on the system. The report can then be displayed in one of the following output formats:

- Pie chart of the classes consumption per resource type
- Bar chart of the classes consumption per resource type
- Summary statement
- Excel file

The GUI can be opened equally on the accounting system itself (standalone mode), or remotely (remote mode), or from a PC (applet mode) or another AIX system. An administrator can display reports for several systems from the GUI, and conversely several administrators can display reports for the same system.

WLM Accounting Parameters

The administrator can display and change two parameters of the WLM Accounting configuration file: **Accounting status** and **Accounting Period**.

- The **Accounting status** indicates whether the accounting is operational (**ON**) or not (**OFF**). The “WLM Accounting” application is operational if the following conditions are satisfied:
  - WLM is started, in passive or active mode,
  - the **wlmrad** daemon is started,
  - the accounting parameter of the configuration file is active (**Accounting: yes**).
- The **Accounting Period** (in minutes) is the period on which the **wlmrad** daemon calculates the average resource consumption for each class. By default the Accounting Period is set to 60 minutes.

Refer to *Modify Accounting Configuration*, on page 2-6 to change the default values for these parameters.

Requirements

WLM Accounting runs with **AIX 5L for POWER Version 5.1** and later versions.

Only the **root** user can use the WLM Accounting application.

Chapter 2. Graphic User Interface (GUI)

Entering the WLM Accounting Menus

We assume in this chapter that WLM is configured and started (either in active or passive mode).

The WLM Accounting GUI is started from the WebSM ”**Workload Manager**” application, selecting “**Accounting**”. The “Accounting” panel is displayed as Figure 1:

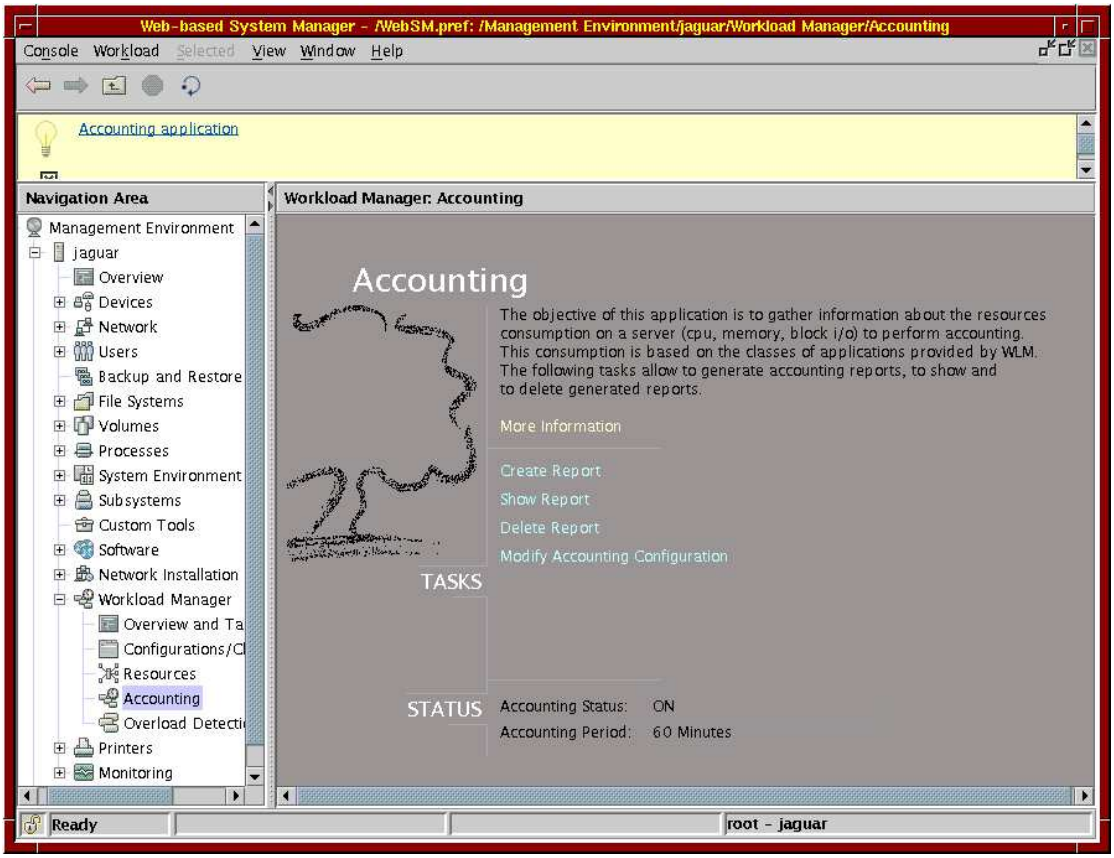


Figure 1. Starting WLM Accounting from WebSM

The Accounting panel displays the status of the application. Refer to *WLM Accounting Parameters*, on page 1-2 for the meaning of the **Accounting Status** and **Accounting Period** parameters.

The Accounting panel allows you to perform one of the following actions:

- **Create Report** described on page 2-2,
- **Show Report** described on page 2-3,
- **Delete Report** described on page 2-6,
- **Modify Accounting Configuration** described on page 2-6.

Create Report

The Create Report function allows you to generate a report for the period of your choice (day, week, month, or any other customized period). The report is created from the information stored in the accounting files.

The Create Report function displays the following screen (Figure 2):

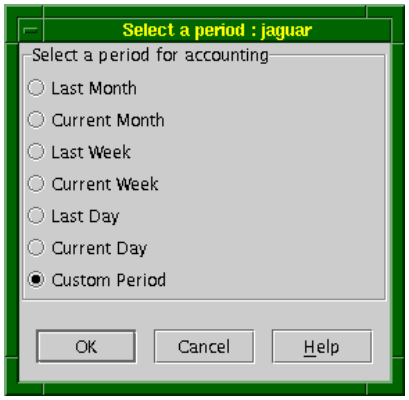


Figure 2. Selecting a period

Select a period, then click OK. The following menu is displayed (Figure 3). It allows you to check and, if needed, to change the start and end dates for the report period.

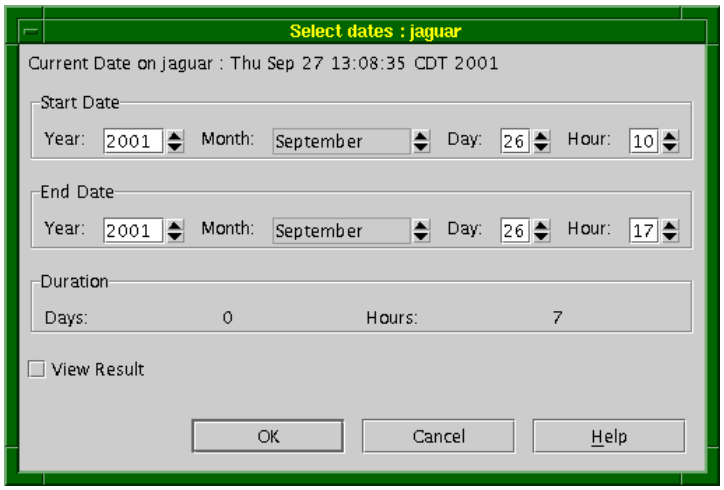


Figure 3. Selecting dates for a report

Click on OK to generate the report.

If the **View Result** option is notched, the system will directly display the report in a graphical format as soon as it is created.

If the **View Result** option is not notched, the report is genereated and stored in the list of the available reports. Then, to view the report in a convivial form, you should enter the “Show report” function from the Accounting panel. See **Show Report** on page 2-3 for more information.

Show Report

The Show Report function first displays the list of the available reports (those created by the “Create Report” function).

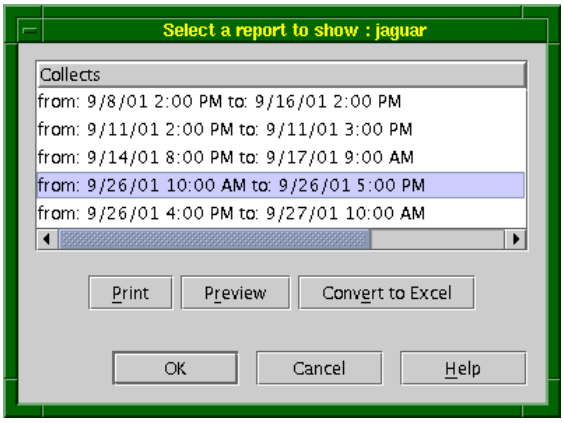


Figure 4. Selecting a report

Select one report, then choose a format in which you want to display the information:

OK To generate a per class result, a pie chart and a bar chart representation, per resource.

Print To print the report.

Preview To display, before printing, a preview of the report in the form of a table.

Convert to Excel To generate an Excel file.

The **OK** button generates a set of different views of the report, accessible through several tabs:

Perclass result indicates, for each WLM class, the part of the resource consumption.

Cpu consumption displays in a pie chart or a bar chart format the dispatching of the CPU consumption between the different classes.

Mem consumption displays in a pie chart or bar chart format the dispatching of the memory consumption between the different classes.

DIO consumption displays in a pie chart or bar chart format the dispatching of the Disk I/O consumption between the different classes.

For example the following screen (Figure 5) shows the pie chart representation of the CPU consumption for the different WLM classes:

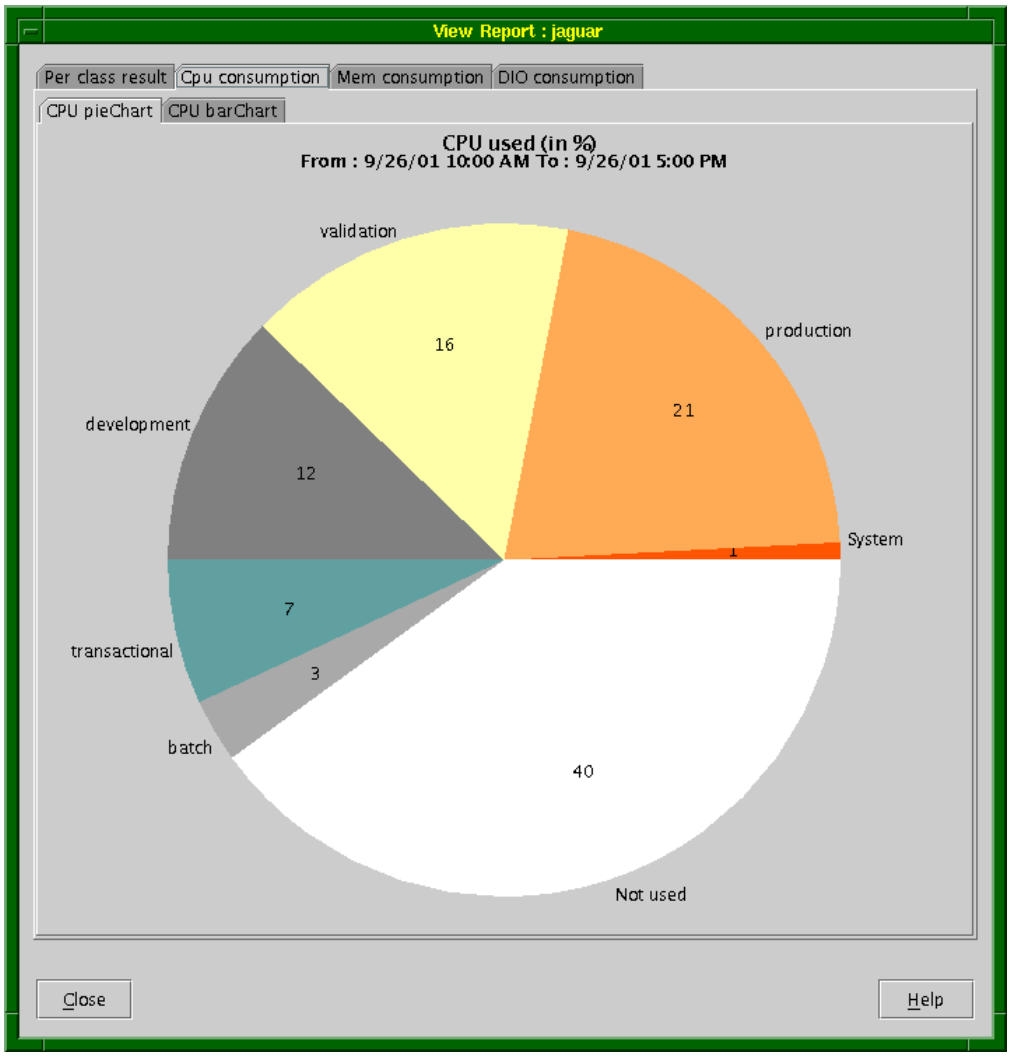


Figure 5. Pie chart representation of the CPU Consumption

The following screen (Figure 6) shows the bar chart representation of the CPU consumption for the different WLM classes:

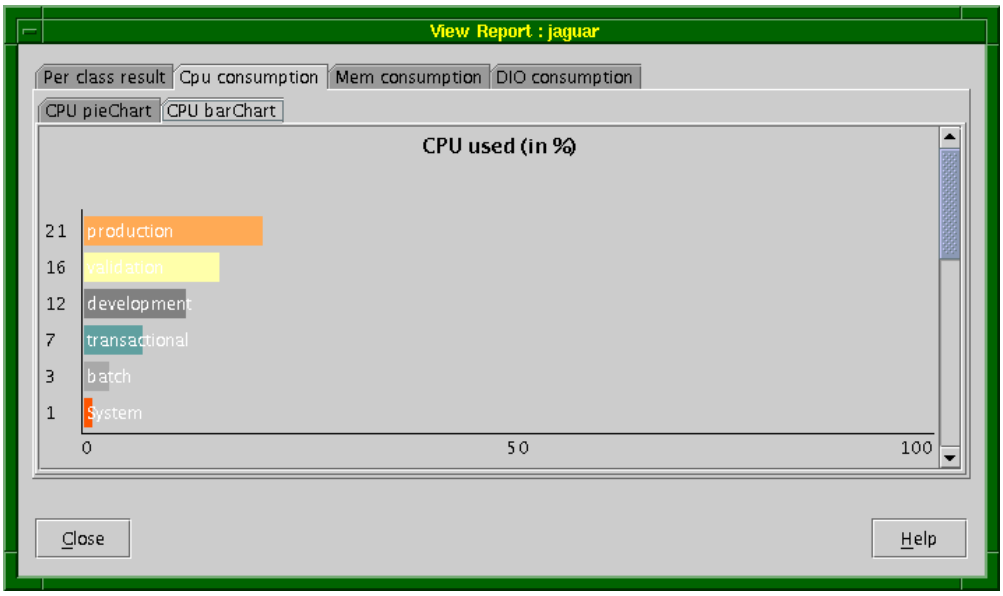
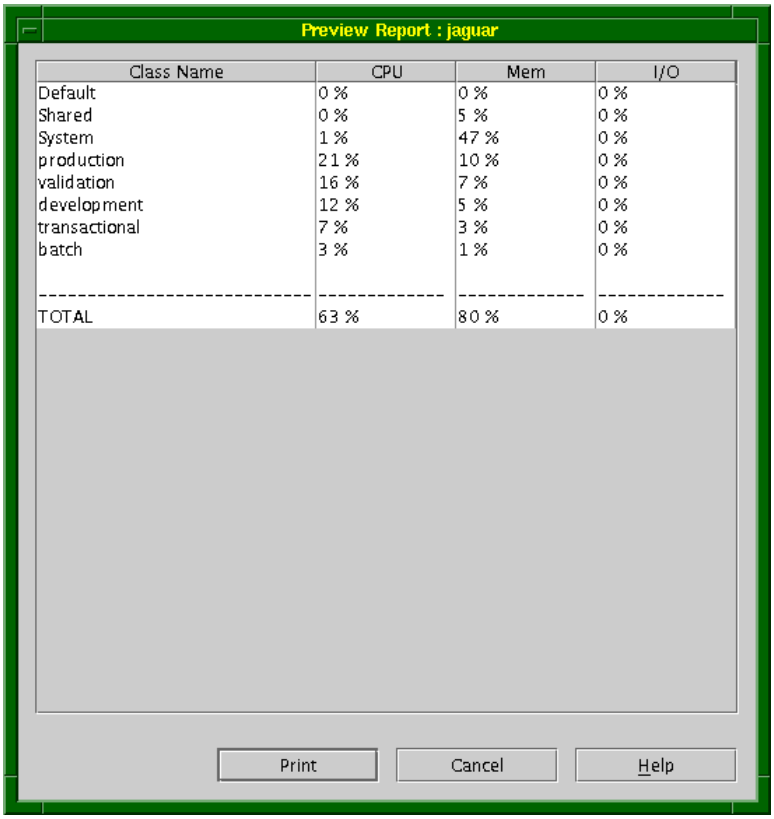


Figure 6. Bar chart representation of the CPU consumption

The **Preview** button displays a table similar to the following one:



Class Name	CPU	Mem	I/O
Default	0 %	0 %	0 %
Shared	0 %	5 %	0 %
System	1 %	47 %	0 %
production	21 %	10 %	0 %
validation	16 %	7 %	0 %
development	12 %	5 %	0 %
transactional	7 %	3 %	0 %
batch	3 %	1 %	0 %
---	---	---	---
TOTAL	63 %	80 %	0 %

Figure 7. Report Preview

Delete Report

The Delete Report function displays the list of the available reports. You can select one or more reports to be deleted. A dialog box asks you to confirm your choice.

Note: To select several reports, enter the “Control” key, and click on the report.

Modify Accounting Configuration

The **Accounting Status** and the **Accounting Period** are the two parameters that can be modified in the Modify Accounting Configuration menu.

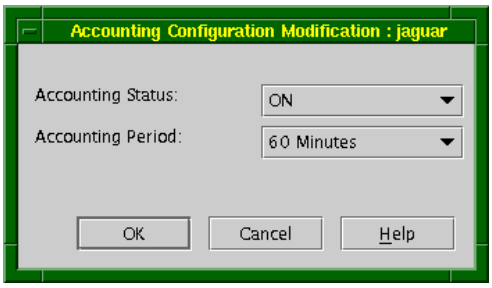


Figure 8. Modifying the accounting configuration

Accounting Status Values: **ON** or **OFF**. The **ON** value starts the application daemon, while **OFF** stops it.

Accounting Period Values: 10, 30 or 60 Minutes. This is the record period of the daemon. The default is 60 Minutes.

A modification of the configuration parameters automatically updates the STATUS values in the Accounting first panel.

Appendix A. Reference Information

This appendix is for administrators who have specific installation or configuration needs.

Installation

The WLM Accounting application is made of the following LPP's:

- **wlmra.server**
- **wlmra.accounting**

These LPP are delivered in the *Bull Enhancement* CD-ROM that comes with AIX delivery. Enter the following command to verify that the filesets are installed:

```
lslpp -L wlmra*
```

If the **wlmra.accounting** and **wlmra.server** filesets are not installed, use the `smit install_latest` command to install them.

Notes:

1. On new systems, the AIX and Bull Enhancements filesets are factory pre-loaded, and you do not need to perform any installation operation.
2. Refer to the "AIX 5L and Bull Enhancement SRB" (System Release Bulletin) for more information about installation.
3. The **wlmra.rolling** fileset is used by the "Overload Detection with WLM" application.

The **wlmra.*** LPP install the **wlmrad** daemon on the system. The **wlmrad** daemon is a subsystem controlled by the System Resource Controller (SRC).

After the installation, the **wlmrad** daemon is running and the "Accounting" parameter value is "No".

Configuration File

The configuration parameters of **wlmrad** are defined in the **/var/wlmra/config/wlmra.cfg** stanza file.

Note: Only the root user can modify the parameters value.

WebSM Configuration

Web–based System Manager (WebSM) can be configured to run in *standalone* mode or in *remote* mode. Whatever mode WebSM is running (remote or not), the communication between the GUI and the **wlmrad** daemon operates through the port defined in the **/etc/services** file (by default **6969**), or through a dynamic port.

If WebSM runs in remote mode, refer to the following publication to configure the communication port:

Web–based System Manager Administration Guide , reference 86 A2 34EF

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