HP gWLM Version A.01.01.x
Release and Installation Notes for
HP-UX 11i v1, HP-UX 11i v2 Update 2, and
Linux

T2762-90004

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Code from the following Open Source Projects is used in this Product:

- The Apache XML Project's Batik Scalable Vector Graphics:

  batik-src-1.5.1.zip
  http://xml.apache.org/

- The Apache Jakarta Project's Commons Codec:

  commons-codec-1.2-src.tar.gz
  http://jakarta.apache.org/commons/codec/

- The Apache Jakarta Project's Commons Logging:

  commons-logging-1.0.3-src.tar.gz
  http://jakarta.apache.org/commons/logging/

- Guido Laures' Cewolf Project:

  cewolf-0.10.1.zip
  http://cewolf.sourceforge.net/

- Aaron M. Renn's Java port of GNU getopt:

  java-getopt-1.0.9.tar.gz
  http://www.urbanophile.com/arenn/hacking/download.html

- Object Refinery Limited:

  jfreechart-0.9.21.tar.gz
  http://www.jfree.org/jfreechart/

The Apache Jakarata Project and Apache XML packages are made available by the Projects under the Apache License 2.0, available in the file /opt/gwlm/src/Apache-License-2.0.txt.

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This release notice contains the following information about HP Global Workload Manager version A.01.01.x:

- Announcement
- What's in this version
- Compatibility information and installation requirements
- Known problems and workarounds
- Patches and fixes in this version
- Software availability in native languages
- What documentation is available
- Providing feedback

Announcement

HP Global Workload Manager (gWLM) version A.01.01.x supports the:

- HP-UX 11i v1 (B.11.11) operating system on HP 9000 (PA-RISC 2.0) servers
- HP-UX 11i v2 Update 2 (B.11.23 with BUNDLE11i) operating system running on either HP 9000 (PA-RISC 2.0) servers or on HP Integrity (IA-64) servers
- Linux (SUSE Linux Enterprise Sever 9 and Red Hat Enterprise Linux 4) on HP Integrity (IA-64) servers (gWLM agent only)
- Linux (SUSE Linux Enterprise Sever 9) on HP Proliant (IA-32) servers (gWLM CMS only)

gWLM is a tool that allows you to centrally define resource-sharing policies that you can use across multiple HP servers. These policies increase system utilization and facilitate controlled sharing of system resources. gWLM's monitoring abilities provide both real-time and historical monitoring of the resource allocation.

What's in this version

gWLM version A.01.01.x includes the following features:

- gWLM's interface in HP Systems Insight Manager has been improved

  When using the Manage New Systems wizard, the choice of compartment types is now limited to the types supported on the system in question.

  Also, this wizard now allows you to add workloads based on psets or fss groups as you create an SRD.

  In general, this gWLM interface is better for working with OwnBorrow policies for compartments based on psets or fss groups.

- Licensing changes

  With gWLM A.01.00, licenses for the gWLM agent were good for 180 days. Starting with A.01.01.x, licenses for the gWLM agent are good for 120 days. After the 120 days, the agent cannot be restarted once it is stopped. To continue using gWLM agents after a free-use period has ended, you must purchase a license for each managed node.

  You can check license status with the `gwlm` command on your gWLM CMS:

  # **/opt/gwlm/bin/gwlm license**

- The gWLM CMS is now available on Linux on HP Proliant servers (IA-32)

- `gwlm` command has two new subcommands: `license` and `history`

  The `license` subcommand shows the status of each managed node's license.

  The `history` subcommand allows you to truncate the database of historical data. Also, it allows you to flush data, collecting historical data from managed nodes.

  For more information, see the gwlm(1M) man page.

- Compartments based on nPartitions

  For nPartitions with Instant Capacity v7 installed, gWLM can simulate CPU movement between the nPartitions in a single complex.

  The /etc/opt/gwlm/conf/gwlmagent.properties file has been modified, allowing you to enable/disable management using Instant Capacity. By default, the property

  com.hp.gwlm.platform.icap.manageWithIcap

  is on. If you are not going to have gWLM manage nPartitions, you should disable this property as it can slow discovery and otherwise affect performance.

- Process placement by `gwlmplace` now persists across events such as:

  — Editing a workload that is in the deployed SRD

  — Editing a policy that is associated with workloads based on psets or fss groups that are in the deployed SRD

  — Adding a workload based on a pset or fss group

  — Unmanaging a workload based on a pset or fss group

  — Changing between advisory mode and managed mode

  — Changing the SRD's allocation interval by importing a new SRD definition using the `gwlm` command

- Support for 256 FSS groups on HP-UX 11i v2 Update 2 (PHKL_32518 must be installed)

- Units changed for com.hp.gwlm.node.samples

  In the file /etc/opt/gwlm/gwlmcms.properties, the property com.hp.gwlm.node.samples is now the number of minutes of real-time data used to create a historical data point. Previously, it was the number of samples used to create the data point.

- `--mute` option added to the `gwlm` commands `deploy`, `manage`, and `unmanage`

  This option suppresses validation warnings. For more information, see the gwlm(1M) man page.

- The `gwlmreport` option `--workload=`*workload* is now optional

  This option allows you to generate a report for the named workload. To get a report on all workloads, you can now omit the `--workload` option. (For reports on multiple—but not all—workloads, repeat the `--workload` option specifying the different workloads.)

Compatibility information and installation requirements

The following HP gWLM version A.01.01.x products are now available:

- HP gWLM Central Management Server (CMS) software for HP-UX (T2412AA)

- HP gWLM agent software for HP-UX (T2743AA)

- HP gWLM agent software License To Use (LTU) for HP-UX (T2762AA)

- HP gWLM Central Management Server (CMS) software for Linux (T2413AA)

- HP gWLM agent software for Linux (T2779AA)

- HP gWLM agent software License To Use (LTU) for Linux (T2778AA)

For requirements information, see the next section.

System requirements

gWLM version A.01.01.x has various requirements for its CMS, the managed nodes (where the agent runs), and the client web browser.

Table 1 lists the requirements for the CMS. (The CMS is the system where the gWLM CMS daemon, gwlmcmsd, runs.)

Table 1   CMS requirements

Requirement	Central Management Server (CMS)
Operating system	HP-UX 11i v1 on HP 9000 (PA-RISC 2.0) servers
	HP-UX 11i v2 on HP 9000 (PA-RISC 2.0) or HP Integrity (IA-64) servers
	Linux (SUSE Linux Enterprise Sever 9) on HP Proliant (IA-32) servers
Patches*	N/A
Memory	2 GB
Disk space	In /opt/: 256 MB In /var/opt/: 1 GB (4 GB if you intend to use historical data)**
Java	For HP-UX: T1456AA - 1.4 SDK or later
	For Linux: 1.4.2_05 SDK or later***
HP Systems Insight Manager (and all its prerequisites)	For HP-UX: T2414BA - C.04.02 or later
	For Linux: T2416BA - C.04.02 Update 2 or later
gWLM CMS software	For HP-UX: T2412AA - gWLM CMS
	For Linux: T2413AA - gWLM CMS

* gWLM does not currently have any required patches. However, see the documentation for HP Systems Insight Manager and Java to determine the patch requirements for those products.

** The gwlm history --truncate option allows you to trim the historical database if you are not interested in historical data.

*** Available from http://java.sun.com/j2se/1.4.2/download.html. Be sure to get the IA32 version of the SDK.

Compatibility information and installation requirements

Table 2 lists the requirements for the managed nodes. (The managed nodes are the systems where your workloads and the gWLM agent, `gwlmagent`, run. gWLM controls the resource allocations for your workloads on the managed nodes.)

Table 2   **Managed node requirements**

Requirement	HP-UX managed node	SUSE or Red Hat managed node
Operating system	HP-UX 11i v1 on HP 9000 HP-UX 11i v2 on HP 9000 or HP Integrity	SUSE Linux Enterprise Sever 9 or later Red Hat Enterprise Linux 4
Patches	N/A	N/A
nPartition Provider	B.11.xx.01.03.01.01 or later (Install this software even if your system does not use nPartitions.)	N/A
Supported processors	HP 9000 (PA-RISC 2.0) or HP Integrity (IA-64)	HP Integrity (IA-64)
Memory	2 GB	2 GB
Disk space	In /opt/: 256 MB	In /opt/: 256 MB
Java	T1456AA - 1.4 SDK or later*	1.4.2 SDK or later**
gWLM agent software***	T2743AA - gWLM AGENT	T2779AA gWLM-Agent-A.01.01.01-0.ia64.rpm file (exact name may differ)

* Installing the gWLM agent on HP-UX ensures the proper version of Java is installed. Visit http://www.hp.com/go/java for information on required patches.

** Available from http://java.sun.com/j2se/1.4.2/download.html. Be sure to get the IA64 version of the SDK.

*** The agent itself can be used for 120 days; however, you must purchase and install a license to use (LTU) to use an agent beyond 120 days. Starting May 2005, the LTU for HP-UX is available on the quarterly Application Release (AR) CD, as bundle number T2762AA. For information on obtaining the LTU for Linux, search http://software.hp.com for T2778AA.

Table 3 lists the supported versions of the software that provides the compartments that gWLM manages. A managed node must have at least one of these products installed.

NOTE   Information on obtaining these products, as well as information on FSS patches, is in the section "Installing or upgrading the gWLM agent on the HP-UX systems to be managed" on page 17.

Table 3   **Managed node compartment software**

Compartment	HP-UX managed node	SUSE or Red Hat managed node
nPartition (CPU movement is simulated using the HP product Instant Capacity)	Instant Capacity v7	N/A
HP Virtual Partitions	A.03.01.05	N/A
Processor sets (psets)	On HP-UX 11i v1: Version from http://software.hp.com* On HP-UX 11i v2: Version included	gWLM simulates psets on Linux using CPU affinity masks
FSS	On HP-UX 11i v1: Install the B7697BA bundle from http://software.hp.com On HP-UX 11i v2: The B7697BA bundle is included in the Foundation OE as of September 2004	N/A

* Search for 'psets'. Select "HP-UX Processor Sets" in the search results.

Table 4 lists the supported web browsers you can use to connect to HP Systems Insight Manager, through which you access the gWLM graphical user interface.

Table 4 **Supported web browsers**

Browser	Supported versions
Internet Explorer	6.0 SP1 with Java Runtime Environment (JRE) 1.4.1_04
Mozilla	On HP-UX: 1.4.1 with JRE 1.4.1_04 On Linux: 1.5 or 1.6 with JRE 1.4.2

What gWLM software is there to install?

Install:

1. gWLM's CMS software on the system from which you want to control gWLM. This system must also run HP Systems Insight Manager.

2. gWLM's agent software on each system or partition where you want gWLM to manage resource allocations for your workloads.

3. gWLM's agent software license to use (LTU). Each agent is free to use for 120 days. Purchase and install an LTU for each system where you've installed an agent that you would like to use beyond 120 days.

The following table shows where gWLM and some of its components are installed.

Table 5 **gWLM installation directories**

Item	Installation path
gWLM commands	/opt/gwlm/bin/
Properties files License file (on managed nodes) deployed.config file (used for high availability)	/etc/opt/gwlm/
gWLM log files Files indicating gWLM daemon PIDs	/var/opt/gwlm/
Open Source products used by gWLM	/opt/gwlm/src/
Man pages for gWLM	/opt/gwlm/man/
Other gWLM documentation	/opt/gwlm/doc/

The following sections cover the topics:

- Installation procedure for HP-UX

    — Installing or upgrading the gWLM CMS on an HP-UX system

    — Installing or upgrading the gWLM agent on the HP-UX systems to be managed

- Installation procedure for Linux

    — Installing the gWLM CMS on a Linux system

    — Installing or upgrading the gWLM agent on the Linux systems to be managed

- Uninstalling gWLM

    — Uninstalling gWLM from HP-UX systems

    — Uninstalling gWLM from Linux systems

Installation procedure for HP-UX

Read this entire document before you begin an installation.

To install your HP-UX software, follow the steps below for either the Central Management Server (CMS) or the managed nodes.

Installing or upgrading the gWLM CMS on an HP-UX system

The steps below explain how to install gWLM—as well as how to upgrade gWLM. You can install gWLM over an existing gWLM installation.

Compatibility information and installation requirements

On the HP-UX system you want to set up as the Central Management Server (CMS):

Step 1. Install and configure HP Systems Insight Manager if it is not already installed.

NOTE	Be sure you install all patches, especially patches for Java, that are required for HP Systems Insight Manager.
	For information on HP Systems Insight Manger, see http://www.hp.com/go/hpsim.
	For information on Java patches, see http://www.hp.com/go/java.
	Also install the Java Out-of-Box tool version 2.03 or later as discussed in the *HP Systems Insight Manager Installation and User Guide*. The tool is available from http://www.hp.com/go/java. Be sure to get the correct version (HP 9000 or HP Integrity) for each system.

To obtain HP Systems Insight Manager free of charge, visit http://software.hp.com and search for T2414BA.

Step 2. Run the following command to verify that HP Systems Insight Manager is properly configured:

/opt/mx/bin/mxuser -lt

If the mxuser output includes the following text:

```
NAME RIGHTS DESCRIPTION
root full   Default Full Rights user added by HP Systems Insight Manager
```

continue to the next step. Otherwise, consult the documentation for
HP Systems Insight Manager and try Step 1's installation/configuration again.

Step 3. Ensure /var/opt/ has enough disk space to store your historical data.

HP recommends that you allocate 4 GB of storage for every 100 workloads you will manage with gWLM. With a 5-minute sampling interval, this is enough space to store two years of data, which you can then use for capacity planning and performance management.

Step 4. Stop using any versions of gWLM that are already installed.

   a. Undeploy any currently deployed shared resource domains (SRDs) that are based on psets. You can leave all other types of SRDs deployed.

   b. Log out from HP Systems Insight Manager and stop using gWLM's command-line interfaces.

   c. You can leave gWLM daemons (`gwlmcmsd` and potentially `gwlmagent`) running.

Step 5. Obtain the gWLM CMS software.

You can find the software on the quarterly Application Release (AR) CD starting May 2005 or download it from http://software.hp.com. Search for T2412AA.

Step 6. Use the SD-UX `swinstall` command to load product T2412AA (the gWLM CMS software) and product T2743AA (the gWLM agent):

```
# /usr/sbin/swinstall -s bundle_path \
-x autoselect_dependencies=false -x enforce_dependencies=false \
T2412AA T2743AA
```

where *bundle_path* is the fully specified path name to the depot file.

Install the gWLM agent even if you do not plan to have gWLM manage the resources on the system: The CMS requires the agent product to be installed.

Be sure the `autoselect_dependencies` and `enforce_dependencies` options are not checked if you are using the interactive version of `swinstall`.

NOTE   Loading this product ensures Java is loaded. Typically though, Java was already installed by HP Systems Insight Manager.

Step 7. (Optional—only needed for new installations) Complete the CMS configuration.

If you are installing gWLM for the first time, run the following command to set up the gWLM database:

NOTE   If you are upgrading your gWLM version, do not run the following command: It will remove all your configuration and historical workload data.

```
# /opt/gwlm/bin/gwlminitconfig --initconfig
```

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Step 8. (Optional) Edit the file /etc/opt/gwlm/conf/gwlmcms.properties to change various gWLM properties.

Read the file for an explanation of its contents. Some of the properties are read by gWLM only when gwlmcmsd starts.

Step 9. (Optional—but recommended) Enable secure communications between the CMS and the managed nodes by following the steps in the gwlmsslconfig(1M) man page.

You will need to install the gWLM software on your gWLM CMS and on all the managed nodes to complete this step. However, you will then be able to skip the next step as it is part of the procedure in the gwlmsslconfig(1M) man page.

Step 10. Start the gWLM CMS daemon:

/opt/gwlm/bin/gwlmcmsd

Step 11. (Optional—but recommended) Set gWLM's CMS daemon to start automatically at boot.

Edit the file /etc/rc.config.d/gwlmCtl to set the GWLM_CMS_START variable to 1 so that gwlmcmsd starts automatically. In the event of a power failure/system reboot, if you are not using automatic start, you must manually start the daemon.

Whenever a system boots and gwlmcmsd starts automatically, gWLM attempts to reform the SRD the system was in before the system went down. For more information, see the section "Automatic restart of gWLM's managed nodes in SRDs" in the gWLM reference, available at /opt/gwlm/doc/gWLM.reference.pdf.

Step 12. (Optional) Run the catman command to ensure gWLM man pages are listed when you run a "man -k gwlm" command.

Step 13. Verify the CMS is configured properly.

Run the following command:

/opt/gwlm/bin/gwlm list

If the output lists various policies, the CMS is configured properly. Otherwise, you will get error messages. Wait a few seconds and try the command again. If you still get errors, take the actions suggested by the errors.

Step 14. Install or upgrade the gWLM agent software on each system to be managed. For information, see one of the following sections:

- "Installing or upgrading the gWLM agent on the HP-UX systems to be managed" on page 17

- "Installing or upgrading the gWLM agent on the Linux systems to be managed" on page 26

NOTE   Do not rely on the Summaries or Real-time reports (obtained via the HP Systems Insight Manager interface) or the `gwlm monitor` reports until after you have installed/upgraded all the managed nodes in a given SRD.

Also, ignore any messages in your log files and any events in HP Systems Insight Manager until you have completed the install/upgrade.

Step 15. Re-deploy any SRDs based on psets that you undeployed earlier in this procedure.

Step 16. If you are upgrading, verify your SRDs are operating as expected.

Verify the SRDs you defined using your previous gWLM version appear in gWLM's View Summaries screen. In HP Systems Insight Manager by follow the menu:

Optimize
-> Global Workload Manager (gWLM)
-> View Summaries...

On the command line, verify your SRDs with the following command:

/opt/gwlm/bin/gwlm list

The output will lists the various policies, workloads, and SRDs you defined using your previous gWLM version.

Installing or upgrading the gWLM agent on the HP-UX systems to be managed

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NOTE   If you plan to use a system—that has a gWLM CMS installed—as a managed node, be sure the default workload gets sufficient resources: HP Systems Insight Manager and gWLM's processes all run in this workload.

On the HP-UX systems where you want gWLM to manage resource allocations for your workloads:

NOTE	gWLM does not work with Temporary Instant Capacity. Turn off all Temporary Instant Capacity processors that are present in a complex that has vpars or npars that are to be managed by gWLM. gWLM, being unaware of the temporary license, will quickly use and deplete these resources.

NOTE	If upgrading your agent software, be sure to update your CMS software first—as explained in the section "Installing or upgrading the gWLM CMS on an HP-UX system" on page 13.

NOTE	On systems where gWLM is already managing psets or fss groups, if you upgrade your gWLM version, any process placed using the gwlmplace command are moved to the default pset or default fss group. (You can avoid this issue by placing applications in workloads when you define the workloads.)

Step 1. On each of the managed nodes, you can leave the gwlmagent running if it is already installed.

Step 2. Install the nPartition software—even if you are not using nPartitions.

Check your system for version B.11.xx.01.03.01.01 or later:

```
# /usr/sbin/swlist | grep NPar

  NPar                    B.11.11.01.03.01.01 nPartition Provider
```

If you need to install this product, you can find it on:

- The quarterly AR CD starting May 2005

- http://software.hp.com by searching for "nPartition Provider"

(gWLM uses a command provided by this software, which is typically in every version of HP-UX, to determine system capabilities.)

Step 3. Obtain the gWLM agent software

You can find the software on the quarterly AR CD (starting May 2005) or download it from http://software.hp.com. Search for T2743AA. Also, as of May 2005, the gWLM agent is available in the Foundation OE.

Step 4. Use the SD-UX `swinstall` command to load product T2743AA (the gWLM agent software):

/usr/sbin/swinstall -s _bundle_path_ T2743AA

where _bundle_path_ is the fully specified path name to the depot file.

NOTE	Loading this product ensures Java is loaded.

Step 5. Purchase and install a gWLM agent license to use (LTU).

Obtain the LTU from the quarterly AR CD (starting May 2005).

The gWLM agent is free to use for 120 days. Purchase and install an LTU for each system where you've installed an agent that you would like to use beyond 120 days.

Run the following command to install the LTU:

/usr/sbin/swinstall -s _bundle_path_ T2762AA

where _bundle_path_ is the fully specified path name to the depot file.

Step 6. Install any patches for Java that are needed, as explained on the web site http://www.hp.com/go/java.

Step 7. (Optional) Edit the file /etc/opt/gwlm/conf/gwlmagent.properties to change various gWLM properties.

Read the file for an explanation of its contents. Some of the properties are read by gWLM only when `gwlmagent` starts.

Step 8. (Optional—but recommended) Enable secure communications between the CMS and the managed nodes by following the steps in the gwlmsslconfig(1M) man page.

You will need to install the gWLM software on your gWLM CMS and on all the managed nodes to complete this step. However, you will then be able to skip the next step as it is part of the procedure in the gwlmsslconfig(1M) man page.

Step 9. Start the gWLM agent:

/opt/gwlm/bin/gwlmagent

If you are upgrading your gWLM version, you can skip the remaining steps.

Step 10. (Optional—but recommended) Set gWLM's agent daemon to start automatically at boot.

Edit the file /etc/rc.config.d/gwlmCtl to set the GWLM_AGENT_START variable to 1 so that gwlmagent starts automatically. In the event of a power failure/system reboot, if you are not using automatic start, you must manually start the daemon.

Whenever a system boots and gwlmagent starts automatically, gWLM attempts to reform the SRD that the system was in before the system went down. For more information, see the section "Automatic restart of gWLM's managed nodes in SRDs" in the gWLM reference, available at /opt/gwlm/doc/gWLM.reference.pdf.

Step 11. (Optional) Run the catman command to ensure gWLM man pages are listed when you run a "man -k gwlm" command.

Step 12. Determine what compartment types are available for gWLM management on a given system. Run the following command on your CMS:

gwlm discover *managed_node*

where *managed_node* is the name of the system to be managed. The output will consist of part or all of the following types of data:

```
SRD: managed_node.pset.000
  pset: default host: managed_node   CPUs: 5.0      workload: --
SRD: managed_node.vpar.001
  vpar: managed_node host: managed_node   CPUs: 5.0      workload: --
SRD: managed_node.fss.000
  fss: default  host: managed_node   CPUs: 5.0      workload: --
```

The output above shows the system to have psets, vpars, and fss groups available as compartments. npars is another possible compartment type. If you want to manage a type of compartment not currently available on a managed node, continue with the steps below.

NOTE   Installing any of the software below causes a reboot.

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a. (Optional) To manage using Fair Share Scheduler (fss) groups, install bundle B7697BA, version C.02.03.03. This free download is available in the Foundation OE as of September 2004. It is also available from http://software.hp.com.

Be sure to install the following FSS patches on HP-UX 11i v1: PHKL_30034, PHKL_30035, PHKL_31993, PHKL_31995, and PHKL_32061.

For HP-UX 11i v2 Update 2, install PHKL_32518 and PHKL_33052.

Also, ensure your `max_thread_proc` and `nkthread` kernel tunables are set correctly:

On HP-UX 11 v1, set `max_thread_proc` to at least 192.

On HP-UX v2 Update 2, set `max_thread_proc` to at least 768.

On either version of HP-UX, set `nkthread` to allow for your `max_thread_proc` value as well as the number of threads needed by all the other processes on the system.

b. (Optional) To manage using psets, search http://software.hp.com for 'psets.' This product, which is free, is labelled

HP-UX Processor Sets

in the search results. You also need the HP-UX 11i Version 1 Quality Pack. Search http://software.hp.com for 'qualitypack' to locate this free download.

c. (Optional) To manage using vpars, search http://software.hp.com for 'vpars' or contact your HP sales representative.

d. (Optional) To manage using npars, search http://software.hp.com for 'nPartition Provider.'

Installation procedure for Linux

Read this entire document before you begin an installation.

To install your Linux software, follow the steps below for either the Central Management Server (CMS) or the managed nodes.

Installing the gWLM CMS on a Linux system

The steps below explain how to install gWLM—as well as how to upgrade gWLM. You can install gWLM over an existing gWLM installation.

On the HP Proliant (IA-32) Linux system you want to set up as the Central Management Server (CMS):

Step   1.   Install and configure HP Systems Insight Manager if it is not already installed.

NOTE	Be sure you install all patches that are required for HP Systems Insight Manager.
	For information on HP Systems Insight Manger, see http://www.hp.com/go/hpsim.
	For information on any Java patches that may be needed, see http://www.hp.com/go/java.

To obtain HP Systems Insight Manager free of charge, visit http://software.hp.com and search for T2416BA.

Step   2.   Run the following command to verify that HP Systems Insight Manager is properly configured:

/opt/mx/bin/mxuser -lt

If the mxuser output includes the following text:

```
NAME RIGHTS DESCRIPTION
root full   Default Full Rights user added by HP Systems Insight Manager
```

continue to the next step. Otherwise, consult the documentation for HP Systems Insight Manager and try Step 1's installation/configuration again.

Step   3.   Ensure /var/opt/ has enough disk space to store your historical data.

HP recommends that you allocate 4 GB of storage for every 100 workloads you will manage with gWLM. With a 5-minute sampling interval, this is enough space to store two years of data, which you can then use for capacity planning and performance management.

Step 4. Stop using any versions of gWLM that are already installed.

    a. Undeploy any currently deployed shared resource domains (SRDs) that are based on psets. You can leave all other types of SRDs deployed.

    b. Log out from HP Systems Insight Manager and stop using gWLM's command-line interfaces.

    c. You can leave the gWLM daemon (gwlmcmsd) running.

Step 5. Download the gWLM CMS RPM file from http://software.hp.com (search for T2413AA):

gWLM-CMS-A.01.01.01-0.i586.rpm

(exact name may differ)

Step 6. Copy the RPM file to your target machine.

Step 7. Go to (cd to) the directory where you placed the RPM file.

Step 8. Install the RPM file (exact names may differ):

    # **rpm -U gWLM-CMS-A.01.01.01-0.i586.rpm**

Step 9. Verify the installation, checking that gWLM shows up:

    # **rpm -qa | grep -i gwlm**

The output should be similar to:

gWLM-CMS-A.01.01.01-0.i586

(exact name may differ)

Step 10. (Optional—only needed for new installations) Complete the CMS configuration.

If you are installing gWLM for the first time, run the following command to set up the gWLM database:

NOTE   If you are upgrading your gWLM version, do not run the following command: It will remove all your configuration and historical workload data.

    # **/opt/gwlm/bin/gwlminitconfig --initconfig**

Step 11. (Optional) Edit the file /etc/opt/gwlm/conf/gwlmcms.properties to change various gWLM properties.

Read the file for an explanation of its contents. Some of the properties are read by gWLM only when gwlmcmsd starts.

Step 12. (Optional—but recommended) Enable secure communications between the CMS and the managed nodes by following the steps in the gwlmsslconfig(1M) man page.

You will need to install the gWLM software on your gWLM CMS and on all the managed nodes to complete this step. However, you will then be able to skip the next step as it is part of the procedure in the gwlmsslconfig(1M) man page.

Step 13. Start the gWLM CMS daemon:

/opt/gwlm/bin/gwlmcmsd

Step 14. (Optional—but recommended) Set gWLM's CMS daemon to start automatically at boot.

Edit the file /etc/sysconfig/gwlmCtl to set the GWLM_CMS_START variable to 1 so that gwlmcmsd starts automatically. In the event of a power failure/system reboot, if you are not using automatic start, you must manually start the daemon.

Whenever a system boots and gwlmcmsd starts automatically, gWLM attempts to reform the SRD the system was in before the system went down. For more information, see the section "Automatic restart of gWLM's managed nodes in SRDs" in the gWLM reference, available at /opt/gwlm/doc/gWLM.reference.pdf.

Step 15. (Optional) Run the catman command to ensure gWLM man pages are listed when you run a "man -k gwlm" command.

Step 16. Verify the CMS is configured properly.

Run the following command:

/opt/gwlm/bin/gwlm list

If the output lists various policies, the CMS is configured properly. Otherwise, you will get error messages. Wait a few seconds and try the command again. If you still get errors, take the actions suggested by the errors.

Step 17. Install the gWLM agent software on each system to be managed. For information on installing the agent software, see one of the following sections:

- "Installing or upgrading the gWLM agent on the HP-UX systems to be managed" on page 17

- "Installing or upgrading the gWLM agent on the Linux systems to be managed" on page 26

NOTE	Do not rely on the Summaries or Real-time reports (obtained via the HP Systems Insight Manager interface) or the `gwlm monitor` reports until after you have installed/upgraded all the managed nodes in a given SRD.
	Also, ignore any messages in your log files and any events in HP Systems Insight Manager until you have completed the install/upgrade.

Step 18. Re-deploy any SRDs based on psets that you undeployed earlier in this procedure.

Step 19. If you are upgrading, verify your SRDs are operating as expected.

Verify the SRDs you defined using your previous gWLM version appear in gWLM's View Summaries screen. In HP Systems Insight Manager by follow the menu:

Optimize
-> Global Workload Manager (gWLM)
-> View Summaries...

On the command line, verify your SRDs with the following command:

/opt/gwlm/bin/gwlm list

The output will lists the various policies, workloads, and SRDs you defined using your previous gWLM version.

Installing or upgrading the gWLM agent on the Linux systems to be managed

On HP Integrity Linux systems, gWLM can manage compartments based on processor sets (psets), moving processors between psets as the workloads demand. (gWLM simulates psets using CPU affinity masks.)

To install the gWLM agent on a Linux system:

NOTE   If upgrading your agent software, be sure to update your CMS software first—as explained in the section "Installing or upgrading the gWLM CMS on an HP-UX system" on page 13.

Step 1. On each of the managed nodes, you can leave the `gwlmagent` running if it is already installed.

Step 2. Ensure you have v1.4.2 or later of the Java SDK installed.

You can get the SDK from http://java.sun.com/j2se/1.4.2/download.html.

Be sure to also install any patches that are needed.

Step 3. Download the gWLM agent RPM file from http://software.hp.com (search for T2779AA):

gWLM-Agent-A.01.01.01-0.ia64.rpm

(exact name may differ)

Step 4. Copy the RPM file to your target machine.

Step 5. Go to (`cd` to) the directory where you placed the RPM file.

Step 6. Install the RPM file (exact name may differ):

`rpm -U gWLM-Agent-A.01.01.01-0.ia64.rpm`

Step 7. Verify the installation, checking that gWLM shows up:

`rpm -qa | grep -i gwlm`

The output should be similar to:

gWLM-Agent-A.01.01.01-0.ia64

(exact name may differ)

Step 8. Purchase and install a gWLM agent license to use (LTU):

You can find this product on:

 http://software.hp.com by searching for T2778AA

Each gWLM agent is free to use for 120 days. Purchase and install an LTU for each system where you've installed an agent that you would like to use beyond 120 days.

Step 9. (Optional—but recommended) Set gWLM's agent daemon to start automatically at boot.

Edit the file /etc/sysconfig/gwlmCtl to set the GWLM_AGENT_START variable to 1 so that gwlmagent starts automatically. In the event of a power failure, if you are not using automatic start, you must manually start the daemon.

Whenever a system boots and gwlmagent starts automatically, gWLM attempts to reform the SRD that the system was in before the system went down. For more information, see the section "Automatic restart of gWLM's managed nodes in SRDs" in the gWLM reference, available at /opt/gwlm/doc/gWLM.reference.pdf.

Step 10. (Optional) If you are using Mozilla on Linux, ensure you are using the proper Java plug-in for your version of Mozilla by creating a link from

/usr/lib/mozilla/plugins/libjavaplugin_oji.so

to the plug-in in the /usr/java/ tree that corresponds to your version of Mozilla. For example, for version 6.10, the link would go to the file

/usr/java/j2sdk1.4.2_03/jre/plugin/ns610-gcc32/libjavaplugin_oji.so

---

NOTE	The exact file you create the link to may be different. If there is not a file for your version, use an earlier version.

Step 11. Start the gWLM agent:

/opt/gwlm/bin/gwlmagent

Uninstalling gWLM

The following sections explain how to properly uninstall gWLM from HP-UX systems and Linux systems.

You can upgrade your version of gWLM with an existing gWLM still installed.

Uninstalling gWLM from HP-UX systems

Removing an HP-UX CMS To uninstall the gWLM software on the gWLM CMS, follow the steps below on the CMS:

NOTE	HP Systems Insight Manager must be running and configured when uninstalling the CMS.

Step 1. Undeploy all deployed SRDs.

Step 2. Stop the gWLM CMS daemon:

/opt/gwlm/bin/gwlmcmsd --stop

Step 3. Stop the gWLM agent daemon if it is running:

/opt/gwlm/bin/gwlmagent --stop

Step 4. (Optional) Remove the gWLM database.

When you remove the gWLM CMS software from a system, the gWLM historical database is left intact. (This practice facilitates upgrades to another version of gWLM.) If you want to delete the database of configuration and historical data, run the following command:

/opt/gwlm/bin/gwlminitconfig --unconfig

Step 5. (Optional) Remove the agent LTU (T2762AA) if it is installed:

NOTE	If you plan to install another version of the gWLM agent, leave the LTU in place for use with the new gWLM agent.

/usr/sbin/swremove T2762AA

Step 6. Remove the CMS (T2412AA):

/usr/sbin/swremove T2412AA

Step 7. Remove the agent (T2743AA):

/usr/sbin/swremove T2743AA

Removing an HP-UX agent To uninstall the gWLM agent software from HP-UX systems, repeat the step below on each of the managed nodes:

Step 1. Ensure the managed node is not in a deployed SRD.

Step 2. Stop the gWLM agent daemon:

> # **/opt/gwlm/bin/gwlmagent --stop**

Step 3. (Optional) Remove the agent LTU (T2762AA) if it is installed:

NOTE	If you plan to install another version of the gWLM agent, leave the LTU in place for use with the new gWLM agent.

> # **/usr/sbin/swremove T2762AA**

Step 4. Remove the agent (T2743AA):

> # **/usr/sbin/swremove T2743AA**

Uninstalling gWLM from Linux systems

Removing a Linux CMS To uninstall the gWLM software on the gWLM CMS, follow the steps below on the CMS:

NOTE	HP Systems Insight Manager must be running and configured when uninstalling the CMS.

Step 1. Undeploy all deployed SRDs.

Step 2. Stop the gWLM CMS daemon:

> # **/opt/gwlm/bin/gwlmcmsd --stop**

Step 3. (Optional) Remove the gWLM database.

> When you remove the gWLM CMS software from a system, the gWLM historical database is left intact. (This practice facilitates upgrades to another version of gWLM.) If you want to delete the database of configuration and historical data, run the following command:

> # **/opt/gwlm/bin/gwlminitconfig --unconfig**

Step 4. Remove the CMS (T2413AA):

> # **rpm -e gWLM-CMS-A.01.01.01-0.i586**

Step 5. Verify the uninstall:

> # **rpm -qa | grep -i gwlm**

A lack of output indicates success.

Removing a Linux agent To uninstall an existing gWLM agent on a Linux system:

Step 1. Ensure the managed node is not in a deployed SRD.

Step 2. Stop the gWLM agent daemon:

> # **/opt/gwlm/bin/gwlmagent --stop**

Step 3. Determine the version of gWLM installed and whether an LTU is installed:

> # **rpm -qa | grep -i gwlm**

The output should be similar to:

```
gWLM-Agent-A.01.01.01-0.ia64
```

If you have an LTU installed, the output will include a line similar to:

```
gWLM-Agent-LTU-A.01.01.01-0.ia64
```

Step 4. Remove the LTU (if installed) and the gWLM version identified:

NOTE If you plan to install another version of the gWLM agent, leave the LTU in place for use with the new gWLM agent.

> # **rpm -e gWLM-Agent-LTU-A.01.01.01-0.ia64**

> # **rpm -e gWLM-Agent-A.01.01.01-0.ia64**

Step 5. Verify the uninstall:

> # **rpm -qa | grep -i gwlm**

A lack of output indicates success.

Patches

There are no patches needed by gWLM itself. However, be sure to install all patches needed by:

- HP Systems Insight Manager

- Java

- FSS

  If you are using fss groups on your managed nodes, install the patches listed in the section "Installing or upgrading the gWLM agent on the HP-UX systems to be managed" on page 17.

Starting gWLM in HP Systems Insight Manager

Now that you have installed gWLM on the CMS and the managed nodes and started the daemons, you can access gWLM through HP Systems Insight Manager. The following steps ensure your daemons are running, then guide you to gWLM's Manage New Systems wizard. This wizard allows you to quickly start managing systems using gWLM.

If you prefer, you can use gWLM's command-line interface, which is described in the gwlm(1M) man page.

To start the wizard:

NOTE   You must be logged in as root on the systems where you run the `mxstart`, `gwlmcmsd`, and `gwlmagent` commands mentioned below. In HP Systems Insight Manager, you must have authorizations for "All Tools" or "gWLM All Tools."

In HP Systems Insight Manager, a user is authorized with a toolbox on a system or group of systems. If you are logged in as root on the gWLM CMS, gWLM considers you to have "gWLM All Tools" authorization on the CMS and any gWLM managed nodes (systems running the gWLM agent). Also, any user with the "gWLM All Tools" authorization can perform any gWLM-related operations on the gWLM CMS and the gWLM managed nodes—regardless of that user's "system" or "system group" authorizations.

Step 1. On your gWLM CMS:

    a. Check that HP Systems Insight Manager is running:

       `# ps -ef | grep mxadmin`

       If there is no match for mxadmin, start HP Systems Insight Manager:

       `# /opt/mx/bin/mxstart`

    b. Start the gWLM CMS daemon if it is not already running:

       `# /opt/gwlm/bin/gwlmcmsd`

Step 2. Start the gWLM agent on the managed nodes if it is not already running:

    `# /opt/gwlm/bin/gwlmagent`

Step 3. Connect to HP Systems Insight Manager by pointing your web browser to:

    http://*hostname*:280

    where *hostname* represents the hostname of the CMS.

Step 4. Select the menus:

    Optimize
    -> Global Workload Manager (gWLM)
    -> Manage New Systems...

Compatibility with outside CPU/system control

gWLM expects to have complete control of the CPUs available on a system. Various user actions can negatively affect gWLM's management of a system. For example:

- Do not manually adjust CPU counts on systems where gWLM is running. (Do not manually adjust Temporary Instant Capacity resources, Instant Capacity resources, vpars, or npars.)

- Do not create or delete a pset using psrset on a system where gWLM is managing pset compartments.

- Do not change a virtual partition's number of bound CPUs with the partition in a deployed SRD. (If you do need to adjust the number of bound CPUs, undeploy the SRD, make your partition changes, then create an SRD with the modified partition using gWLM's Manage New Systems wizard.)

Compatibility with Temporary Instant Capacity

gWLM does not work with Temporary Instant Capacity. Turn off all Temporary Instant Capacity processors that are present in a complex that has vpars or npars that are to be managed by gWLM. gWLM, being unaware of the temporary license, will quickly use and deplete these resources.

Compatibility with PRM and WLM

You cannot use gWLM with either PRM (Process Resource Manager) or WLM (Workload Manager) to manage the same system at the same time. Attempts to do so result in a message indicating a lock is being held by the product actually managing the system. To use gWLM in this situation, you must first turn off the product holding the lock. For PRM, enter the commands:

/opt/prm/bin/prmconfig -d

/opt/prm/bin/prmconfig -r

For WLM, enter the command:

/opt/wlm/bin/wlmd -k

Compatibility with Bastille and firewalls

By default, gWLM uses ports 9617 and 9618.

If your network or the remote systems use a firewall or if you are using the HP-UX Bastille product on the remote systems, it is likely that communications on these ports are being blocked.

To use gWLM in your environment, specifically allow ports 9617 and 9618 or other ports to be open to incoming connections. If you use ports other than 9617 and 9618, be sure to restart gwlmagt and gwlmcmsd to listen on the new ports on each system—as explained in the section "Communications ports" in the file /opt/gwlm/doc/gWLM.reference.pdf. If you are using gWLM through HP Systems Insight Manager, you must also stop (/opt/mx/bin/mxstop) and restart (mxstart) HP Systems Insight Manager.

Known problems and workarounds

This section discusses problems and workarounds for HP gWLM version A.01.01.x.

Multiple network interface cards

Issue
As a client-server application, gWLM is more sensitive to the network configuration of your host than other types of applications. gWLM supports management only within a single network domain. If, for example, your CMS host has multiple network interface cards that are connected to multiple distinct networks, gWLM requires that the fully qualified host name evaluate to the IP address that will be reachable by the gWLM agents to be managed.

This issue is most often a concern when a host is connected to both of the following items:

- A corporate LAN/WAN via one network interface card and IP address

- A second private internal network and private IP address for communicating with a certain other set of hosts (such as cluster members)

gWLM attempts to detect and report network configuration issues that may cause undesirable behavior, but in some cases this detection occurs in a context that can only be reported into a log file.

Workaround
If you encounter some unexpected behavior (such as a gWLM agent that fails to update or report the status of its workloads), please inspect the /var/opt/gwlm/glwmagent.log.0 file of the host for errors.

Hostname aliases

Issue
gWLM does not support hostname aliases. It only supports a host's canonical DNS name (fully qualified domain name).

Workaround
Use only canonical DNS names when configuring gWLM through HP Systems Insight Manager or an XML file used with the gwlm command.

Error during discovery of compartments

Issue
You encounter the following message when using the Manage New Systems wizard or the `gwlm discover` command:

`Error during discovery of compartments.`

and your /var/opt/gwlm/gwlmagent.log.0 file has the message:

```
com.hp.gwlm.common.PlatformException: /usr/sbin/parstatus -w
exited with a non-zero exit status. Captured stderr is:
Error: Unable to get the local partition number.
```

Workaround
This is most likely due to having an outdated version of the nPartition software. You should have version B.11.xx.01.03.01.01 or later. Install the latest nPartition software—even if you are not using nPartitions.

You can find this product on:

- The quarterly AR CD starting May 2005

- http://software.hp.com by searching for "nPartition Provider"

(gWLM uses a command provided by this software, which is typically in every version of HP-UX, to determine system capabilities.)

Configuration out of synch

Issue
Occasionally, a gWLM agent and the gWLM CMS may disagree on whether an SRD is actually deployed. This can occur when you use ^C (Control-C) to interrupt a `gwlm deploy` or `undeploy`. Also, it can occur if there are errors saving a gWLM configuration: The configuration is deployed and then saved to the gWLM configuration repository. If the deploy occurs but the save fails, the gWLM agent sees the SRD as deployed while the CMS considers it undeployed.

Workaround
Use the `--force` option with `gwlm deploy` or `gwlm undeploy` to re-synch the agent and the CMS.

For example, run the following command to re-synch, forcing both the agent and the CMS to consider the SRD as deployed:

/opt/gwlm/bin/gwlm deploy --srd=*SRD* --force

substituting the name of your SRD for *SRD*.

For more information on the `gwlm` command, see the gwlm(1M) man page.

Lock already held by

Issue   You repeatedly see a message similar to the following message:

Lock already held by: root(Tue Feb 08 13:11:08 CST 2005).

Workaround   You can clear the lock by stopping and restarting gwlmcmsd, although you
                   may have to wait up to one minute before you can use gWLM:

/opt/gwlm/bin/gwlmcmsd --stop

/opt/gwlm/bin/gwlmcmsd

Missing or unexpected historical data

Issue   You have no historical data available for graphing—even though you are
                   certain an SRD was deployed for the time period in question.

                   A related issue occurs when you select a time period where you expect high
                   system activity, but the graph shows limited activity. Similarly, you may
                   expect very little activity for a time period, but the graph shows lots of
                   activity.

Workaround   Check that the system clocks on the CMS and on all the systems in the SRD
                   are synchronized. If the clocks differ significantly, gWLM may not be able to
                   match the data from the managed nodes with the time period you are trying
                   to graph.

gwlmreport: sample missing at start and/or end of report

Issue   A report from gwlmreport is based on a report period that starts at
                   midnight the day the report begins and ends at midnight the day the report
                   ends. Any samples that overlap midnight at the start or end of the report
                   period are excluded from the report.

Workaround   There is no workaround, but you should be aware of the behavior.

                   These samples may be included in the report in a future release.

Log file extensions other than .log.0, .log.1, and .log.2

Issue   gWLM is designed to use the file extensions .log.0, .log.1, and .log.2 for its logs. gWLM uses Java for file locking to ensure only one gWLM process is updating a log at any given time. Starting with Java 1.4.2.06, the file locking allows the creation of files with extensions of the form .log.0.n, where n is some integer.

Workaround   If you are using java version 1.4.2.06 or later and wish to check the logs for errors, use the following command see which files have recent error messages:

/bin/ls -ltr /var/opt/gwlm/*log*

You can then use /usr/bin/tail to view messages in recently updated log files.

If you are sending the log files to HP support, create a tar file:

cd /

tar cvf /tmp/gwlmlogs4support.tar var/opt/gwlm/*log*

Then send the /tmp/gwlmlogs4support.tar file to support.

Convergence rate and OwnBorrow/utilization policies

Issue   The convergence rate value you optionally specify when defining a policy currently affects only custom policies. OwnBorrow and utilization policies are not affected.

Workaround   This issue will be addressed in a future gWLM release.

...unable to create new native thread

Issue   You encounter a message that includes the text:

...unable to create new native thread

Workaround   This is due to having certain kernel parameters set too low.

On HP-UX 11 v1, set max_thread_proc to at least 192.

On HP-UX v2 Update 2, set max_thread_proc to at least 768.

On either version of HP-UX, set nkthread to allow for your max_thread_proc value as well as the number of threads needed by all the other processes on the system.

Erroneous warning about policy maximum exceeding compartment maximum

Issue   With utilization policies, you may get warnings of the form:

```
Policy maximum (x CPUs) is greater than compartment maximum
(y CPUs). Using compartment maximum instead.
```

where x is actually less than y.

Workaround   You can ignore the warnings: gWLM will actually use the policy maximum value.

If you prefer to get rid of the warnings, for each utilization policy:

1. Export the policy

   Assuming the policy name is *myUtilPol*, run the command:

   # **/opt/gwlm/bin/gwlm export --policy=*myUtilPol* \
   --file=/tmp/myTmpPol**

2. Import the policy

   # **/opt/gwlm/bin/gwlm import --file=/tmp/myTmpPol --clobber**

Custom metrics lost on re-deploy

Issue   Custom policies use metric values you provide via the gwlmsend command. If you re-deploy an SRD that has a custom policy, the most recent value for the policy's metric is lost. In this situation, gWLM bases its allocations on the minimum request specified in the workload's policy. The workload may also receive any CPU resources that remain after all the policies have been satisfied.

Workaround   Be sure to update metric values for all your custom policies immediately after a re-deploy.

Multiple SRDs based on virtual partitions can occur

Issue   gWLM does not typically allow you to create multiple SRDs based on virtual partitions on a single nPartition or system at the same time. However, when multiple gWLM users are deploying SRDs at almost the same time, gWLM may inadvertently allow such multiple SRDs.

Workaround   Delete one of the SRDs and then re-manage the workloads from the deleted SRD, placing them in the remaining SRD.

Unable to deploy Shared Resource Domain

Issue   You may see a message similar to the following error message:

Unable to deploy Shared Resource Domain: system1.pset.000, due
to: Error starting Compartment Manager. Please save file
/var/opt/gwlm/gwlmagent.log.0 and contact HP technical support.

This error can occur if you have an empty pset (pset with no CPUs assigned
to it) on a system when you create and then try to deploy an SRD that
includes that system.

Workaround   Assign CPUs to the pset or remove the pset and then try creating the SRD
and deploying it.

Attempts to manipulate an SRD result in failure

Issue   gWLM may incorrectly validate an SRD with fixed policies that are too
large. This can occur if the SRD has no OwnBorrow policies and a
compartment minimum is greater than the associated policy's minimum.

gWLM will incorrectly allow such an SRD to be deployed. However, gWLM
will not be able to meet some policies. Also, attempts to manipulate the
SRD, such as trying to unmanage a workload, can fail.

Workaround   Ensure each policy's minimum is greater than or equal to any compartment
minimum to which it is applied.

This issue is scheduled to be addressed in the next gWLM release.

Real-time data is currently loading

Issue   You may see the following message when trying to view real-time reports:

Real-time data is currently loading, please wait...
You might also verify that the remote node is running and
SRDs have been deployed.

Workaround   Normally, this condition is only temporary. If it persists, check that the
gwlmagent daemon is running on the remote nodes. If it is running, stop and
re-start it. If the condition still persists, undeploy and re-deploy the SRD.

Only one SRD is allowed to be deployed.

Issue   You see a message similar to the following one:

```
Error trying to deploy SRD, mysystem.vpar.000 to
mysystem2.mydomain.com. SRD, mysystem2.fss.000 is already
deployed. Only one SRD is allowed to be deployed.
```

Workaround   Undeploy using the --force option with gwlm undeploy and restart
                   gwlmagent on the managed node.

Application hangs in FSS group

Issue   On HP-UX 11i v2 (B.11.23), an application inside an fss group may hang
                   when running in a single-processor virtual partition, nPartition, or system.

Workaround   Install patch PHKL_33052.

Scripts not being placed in correct workloads

Issue   With compartments based on psets or fss groups, gWLM allows you to place
                   scripts in the compartments using application records with alternate names.
                   This works only if the shell or interpreter being used is listed in the file
                   /etc/shells. Typically, perl is not in this file. So, perl scripts (and any other
                   scripts based on shells or interpreters not listed in /etc/shells) are not
                   properly placed.

                   Executables are not affected by this issue.

Workaround   Add /opt/perl/bin/perl, and any other needed shells or interpreters, to the file
                   /etc/shells. gWLM will recognize the added shells or interpreters within 30
                   seconds.

NOTE   Because the full pathname is not required for the script, a
                   rogue user can get access to compartments based on psets or
                   fss groups—that would otherwise not be accessible—by using
                   the name of the script for new scripts or wrappers.

Processes moved to default pset or default fss group

Issue   If you placed processes in workloads using the gwlmplace command, and any of the following events occur, the processes are typically moved to the default pset or the default fss group.

- The managed node is rebooted

- The local gwlmagent daemon is restarted

- You undeploy the current SRD

- You deploy an SRD

In these cases, processes are placed according to any application records or user records that apply. If no records exist, the processes are subject to the placement rules, which are explained in the online help for the Workloads tab, in the section named "Precedence of placement techniques."

Workaround   To maintain the process placements across re-deploys, use gWLM's application records or user records when creating or editing your workload definitions in gWLM.

Process placement using `psrset` is ignored

Issue   When gWLM is managing the psets on a system, every process on the system has to go in a workload. gWLM places the processes according to application records or user records specified when you create or edit a workload definition. If no records exist, the processes are subject to the placement rules, which are explained in the online help for the Workloads tab, in the section named "Precedence of placement techniques."

If you use psrset to place processes in psets, gWLM is very likely to move the processes to the default pset.

Workaround   To maintain the placement of a process, use gWLM's application records or user records when creating or editing your workload definitions in gWLM. If using records is not practical, use the gwlmplace command. However, you will have to use gwlmplace after each re-deploy of an SRD to put the processes back in the desired workloads.

Unable to remove abandoned fss groups

Issue   fss groups created by gWLM have become abandoned and cannot be easily removed. This situation can occur due to various circumstances. One example is when managing an SRD based on fss groups, a second CMS is used—perhaps because the original CMS went down. This may leave the SRD with fss groups you cannot remove.

Workaround   Remove the fss groups.

You have two options for removing the groups. If you have PRM installed, run the command:

/opt/prm/bin/prmconfig -r

If you do not have PRM installed, run the following gWLM commands:

1. Run discovery:

   # **/opt/gwlm/bin/gwlm discover *host* --file=myfile.xml \
   --type=fss**

   where *host* is the system with the fss groups

2. Import myfile.xml into the configuration repository:

   # **/opt/gwlm/bin/gwlm import --file=myfile.xml**

3. Determine the SRD name by running the following command and checking the output for names that include *host*:

   # **/opt/gwlm/bin/gwlm list**

   Assume the name is *host*.fss.*xyz* (where *xyz* are numbers 0-9).

4. Deploy the SRD:

   # **/opt/gwlm/bin/gwlm deploy --srd=*host*.fss.*xyz***

   where you substitute the actual SRD name for "*host*.fss.*xyz*"

5. Undeploy the SRD:

   # **/opt/gwlm/bin/gwlm undeploy --srd=*host*.fss.*xyz***

   where you substitute the actual SRD name for "*host*.fss.*xyz*"

The fss groups should now be gone from the system. However, their workload definitions will still be in the gWLM configuration repository. You can remove those definitions, and the SRD definition, from the repository in one of two ways.

The first option is to remove these definitions using the gWLM interface in HP Systems Insight Manager. Select the menu

Optimize
-> Global Workload Manager (gWLM)
-> Edit SRDs...

then select the SRD with the fss groups, and then select the button [Delete SRD and Workloads].

The second option is to use the command line:

1. Determine the SRD name and workload names by running the following command:

   # **/opt/gwlm/bin/gwlm list**

   Assume the name is *host*.fss.*xyz* (where *xyz* are numbers 0-9).

2. Delete the SRD definition, substituting the actual SRD name for "*host*.fss.*xyz*":

   # **/opt/gwlm/bin/gwlm delete --srd=*host.fss.xyz***

3. Delete the workload definitions by repeating the following command substituting each workload's name:

   # **/opt/gwlm/bin/gwlm delete --workload=*host.fssN.xyz***

   where *N* is a number from 1 to the total number of fss groups on the system.

Verifying the Linux package

Issue   If you attempt to verify the gWLM Agent package on Linux using "rpm -V," you will see the following message:

      missing /opt/gwlm/bin/gwlmlicense

Workaround You can safely ignore this message.

Documentation says CMS is only for HP-UX

Issue   Some of the gWLM documentation may state that the gWLM CMS runs only on HP-UX.

Workaround You can safely ignore this restriction: The CMS is supported on HP-UX and Linux, as indicated in Table 1 on page 9.

Creating "golden images"

If you create golden images of a system's applications and operating system to store in an IgniteUX server for distribution to other systems, here are tips for creating images that include gWLM.

When creating an image of a managed node:

- Ensure the gWLM agent is set to start automatically

  In the file /etc/rc.config.d/gwlmCtl, set the variable GWLM_AGENT_START equal to 1.

- Ensure no deployed SRD includes the node
  (If the file /etc/opt/gwlm/deployed.config exists, an SRD is deployed on the node.
  Temporarily undeploy the SRD or unmanage the node.)

  If a node based on a virtual partition is part of a deployed SRD and you make a golden image of the virtual partition, once you push that golden image out, the gWLM agent on the new system will still consider itself part of the SRD. The agent will then try to rendezvous with that SRD's other managed nodes. You can reset the agent by deleting the deployed.config file (mentioned above), then stopping and restarting gwlmagent.

Patches and fixes in this version

There have been no patches created for gWLM.

gWLM A.01.01.x includes the following fixes:

- If you have an SRD based on psets, when you stop the gwlmagent process, you no longer have to manually delete psets before restarting gwlmagent.

- The known issue from the previous release regarding the use of OwnBorrow policies with compartments based on psets or fss groups and the various workarounds has been fixed.

- Previously, renaming an SRD, workload, or policy that was deployed caused problems. For example, a renamed policy could not be monitored until the SRD was undeployed and re-deployed. Similarly, a renamed workload would not be recognized by the gwlmplace command until the SRD was undeployed and re-deployed.

  Renaming no longer causes problems.

  This change addresses CR# JAGaf53587.

- If you re-use a workload name, when you select the [Show Workload Detail] button in historical reporting, you will see data for the current workload plus all previous workloads that used that name. (Previously, you would have seen data only for the current workload.)

  This change addresses CR# JAGaf52259.

- Previously, if an unexpected database error occurred while the gWLM configuration was being modified, the wrong configuration data may have been displayed. However, the data would have been stored correctly in the configuration repository. This correct configuration data is now displayed.

  This change addresses CR# JAGaf52555.

- Previously, using `gwlm delete` to remove a single policy could occasionally delete that policy and all the policies that come with gWLM. These extra deletions no longer occur.

  This change addresses CR # JAGaf59857.

- Previously, the AvgSampleDuration value reported by `gwlmreport` was one allocation interval less than the actual duration. (The allocation interval is the interval on which gWLM makes changes in CPU allocations.) The reported duration now matches the actual duration.

  This change addresses CR# JAGaf52570.

- Previously, when attempting to view historical reports for a managed node that is part of an SRD based on vpars, you would likely see the following error message:

  ```
  No Data Available for Workload
  ```

  gWLM now pulls this data when a report is requested.

  This change addresses CR # JAGaf56045.

- Previously, the `gwlm monitor` command could hang indefinitely, producing no output, if it was started at the same time as an SRD was undeployed or re-deployed. The hang could also occur when `gwlmagent` was stopped and/or restarted when an SRD was deployed.

  These events no longer hang the command indefinitely. The command times out if need be.

  This change addresses CR # JAGaf58006.

- Previously, gWLM's application manager would fail to move a process into its assigned workload if the application record was specified with an alternate name and the target process had trailing command-line options.

  This case is now handled correctly.

  This change addresses CR # JAGaf58680.

Software availability in native languages

The HP gWLM version A.01.01.x man pages, release notes, *Getting Started with gWLM*, and *gWLM: Reference and Additional Topics* are available in English. The HP gWLM version A.01.01.x release notes, *Getting Started with gWLM,* and *gWLM: Reference and Additional Topics* are available in Japanese.

Security

This section highlights security items you should be aware of:

*   HP provides the HP-UX Bastille product, available from http://software.hp.com at no charge, for enhancing system security.

*   You can secure gWLM's communications as explained the gwlmsslconfig(1M) man page.

*   HP Systems Insight Manager allows you to create user roles with different levels of privileges. For more information, see the HP SIM documentation.

NOTE	In HP Systems Insight Manager, a user is authorized with a toolbox on a system or group of systems. If you are logged in as root on the gWLM CMS, gWLM considers you to have "gWLM All Tools" authorization on the CMS and any gWLM managed nodes (systems running the gWLM agent). Also, any user with the "gWLM All Tools" authorization can perform any gWLM-related operations on the gWLM CMS and the gWLM managed nodes—regardless of that user's "system" or "system group" authorizations.

What documentation is available

Several related documents are available. A number of these documents can be accessed at http://docs.hp.com.

Specific gWLM information can be found in:

- *Getting Started with gWLM*

  Also available at /opt/gwlm/doc/getting.started.with.gWLM.pdf

- *gWLM: Reference and Additional Topics*

  Also available at /opt/gwlm/doc/gWLM.reference.pdf

- gWLM's online help in HP Systems Insight Manager

- gwlm(5) man page (overview man page that points to all the other gWLM man pages)

Providing feedback

- Email your feedback to the gWLM development team at the following address:

  gwlmfeedback@rsn.hp.com

- For a forum with other gWLM users, visit the IT Resource Center's forum for HP-UX Workload/Resource Management:

  http://forums.itrc.hp.com/cm/CategoryHome/1,,213,00.html

What documentation is available