

**HP-UX Workload Manager Toolkits  
A.01.10.xx  
Release Notes  
for HP-UX 11i v1, HP-UX 11i v2, and  
HP-UX 11i v3**



**i n v e n t**

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# 1 HP-UX WLM Toolkits (WLMTK) Release Notes

This release notice contains the following information about HP-UX Workload Manager Toolkits Version A.01.10.xx:

- Announcement
- New in this version
- Known problems and workarounds
- Compatibility information and installation requirements
- Patches and fixes in this version
- Software availability in native languages
- Available manuals
- Toolkit updates
- Providing feedback
- Training

## Announcement

WLMTK Version A.01.10.xx supports HP-UX 11i v1 (B.11.11), HP-UX 11i v2 (B.11.23), and HP-UX 11i v3 (B.11.31). It enhances functionality provided by HP-UX Workload Manager (WLM) and simplifies using WLM with other products.

WLM provides goal-based workload management. This management enables automatic resource allocation and application performance management through the use of prioritized service-level objectives (SLOs). It provides this functionality by automating features of HP Process Resource Manager (PRM), HP-UX Virtual Partitions, nPartitions, and processor sets.

WLMTK consists of several toolkits:

**ODBTK**            WLM Oracle Database Toolkit provides an easy mechanism for feeding Oracle database metrics into HP-UX WLM.

ODBTK offers the ability to:

- Keep response times for your transactions below a given level by setting response-time SLOs
- Increase an instance's available CPU resources when a particular user connects to the instance
- Increase an instance's available CPU resources when more than *n* users are connected
- Increase an instance's available CPU resources when a particular job is active
- Give an instance *n* percent of the CPU resources for each process in the instance (This feature is available only with HP-UX WLM Version A.01.02 and later.)
- Give an instance *n* percent of the CPU resources for each user connection to the instance (This feature is available only with HP-UX WLM Version A.01.02 and later.)

**ApacheTK**        WLM Apache Toolkit facilitates the management and prioritization of Apache-based workloads.

The ApacheTK white paper illustrates how to:

- Separate Apache from Oracle database instances
- Separate Apache from batch work

- Isolate a resource-intensive CGI workload
- Isolate a resource-intensive servlet workload
- Separate all Apache Tomcat workloads from other Apache workloads
- Separate two departments' applications using two Apache instances
- Separate module-based workloads with two Apache instances
- Manage Apache allocation by performance goal

#### WebLogicTK

WLM BEA WebLogic Server Toolkit provides a data collector called `wlmwlsdc` that tracks metrics indicating how busy WebLogic Server instances are.

WebLogicTK offers the ability to:

- Manually provide a single instance an increasing amount of CPU resources in the form of a dynamic PSET (processor set) for benchmarking
- Separate an instance from other workloads, as well as from other instances, while automatically maintaining performance using a dynamic PSET based on:
  - Group usage of CPU resources
  - Server instance queue metrics

For more information, see `wlmwlsdc(1M)` and the white paper *Using HP-UX Workload Manager with BEA WebLogic Server*, which offers various use cases. This paper is available at the following location:

`/opt/wlm/toolkits/weblogic/doc/weblogic_wlm_howto.html`

#### SAPTK

In conjunction with HP Serviceguard Extension for SAP® (SGeSAP), the WLM SAP Toolkit enables WLM to integrate with SAP applications. The WLM SAP Toolkit provides a tool (`wlmsapmap`) that identifies SAP processes based on user-defined criteria and can be used in conjunction with WLM's process map feature to assign the processes to specific workload groups managed by WLM. For more information, see `wlmsapmap(1M)`.

In conjunction with WLM process maps, SAPTK offers the ability to:

- Collect processes for an entire SAP instance and isolate them in a specified workload group
- Collect SAP processes and separate them into different workload groups based on process types

**Announcement**

SAPTK also offers several example configuration files.

**SASTK** The WLM SAS Toolkit will be deprecated in a future release. A new, improved version will be made available and will include a white paper and example configuration files. The WLM SAS Toolkit provides enhancements to DMTK (also being deprecated) specifically for SAS users.

SASTK offers:

- A SAS macro for instrumenting jobs to provide “percent complete” data to WLM for improved duration management
- Example scripts showing how to manage the duration of SAS jobs

**DMTK** The DMTK Toolkit has been deprecated.

**SNMPDK** WLM SNMP Toolkit provides a data collector called `snmpdc` that fetches values from an SNMP agent for use as metrics in your WLM configuration. For more information, see `snmpdc(1M)`.

SNMPDK offers the ability to retrieve metrics from sources such as PRM data for use in your WLM configuration.

The new features of these toolkits are described in “New in this version” on page 9.

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**NOTE** WLM and WLM Toolkit manpages are also available at the following location:  
<http://www.hp.com/go/wlm>

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## New in this version

WLMTK Version A.01.10.xx provides the toolkits ApacheTK, ODBTK, SAPTK, SASTK, SNMPTK, and WebLogicTK. The new or changed functionality of the individual toolkits is described below:

- The Pay per use Toolkit (PPUTK) and the `utilitydc` command are no longer supported and have been removed from the product. Please use the simpler and more robust Temporary Instant Capacity(TiCAP)/Pay per use (PPU) solution available with `wlmpard`.
- WLM Toolkit for Base SAS Software (SASTK) will be deprecated in a future release  
However, a new and improved SASTK will be made available and will include a white paper and example configuration files.
- Duration Management Toolkit (DMTK) will be deprecated in a future release  
The toolkit, including its command, will be deprecated in a future release. Support for the `wlmdurdc` command will be removed in a future release. In the meantime, for documentation, see `wlmdurdc(1M)`.

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## Known problems and workarounds

This section discusses problems and workarounds.

### ODBTK: No control of instance on start-up

Issue	Assume a database instance is managed by HP-UX WLM. If WLM starts before that instance, it sets the CPU allocation for the instance's workload group based on the <code>mincpu</code> and <code>maxcpu</code> values in the WLM configuration file. The instance's workload group remains at that initial CPU allocation until the instance starts, allowing <code>wlmoradc</code> to gather metrics on it and pass the metrics to WLM.
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## Workaround

Try to minimize the time between WLM start-up and instance start-up.

## ODBTK: Problematic SQL statements

**Issue** `wlmoradc` provides minimal checking of the SQL it passes to SQL\*Plus. If SQL\*Plus finds problems with the SQL statements, messages are sent to `syslog` or `stderr`. In some cases, SQL\*Plus cannot execute the statements, resulting in a warning and a reported execution time (walltime) of 0 seconds.

**Workaround** To avoid such events, always verify your SQL by hand before finalizing your WLM and `wlmoradc` configuration files.

## ODBTK: Debug `clean_exit` code is not useful

**Issue** If `wlmoradc` detects a command-line error and debugging is enabled, the code reported by `clean_exit` may not be useful. For example:

```
Mar 26 22:57:16 mytestmachine WLMTK: wlmoradc[p8686] INFO starting
wlmoradc
Mar 26 22:57:16 mytestmachine WLMTK: wlmoradc[p8686] ERROR bad oracle home
passed to -h or --home argument
Mar 26 22:57:16 mytestmachine WLMTK: wlmoradc[p8686] INFO ending wlmoradc
Mar 26 22:57:16 mytestmachine WLMTK: wlmoradc[p8686] DEBUG clean_exit
with exit value:Not a typewriter
```

**Workaround** If the ERROR message and the DEBUG message disagree, ignore the DEBUG message.

## ApacheTK: Elapsed time reported may not be for a successful page fetch

**Issue** If you use the ApacheTK tool `time_url_fetch` with a URL that Apache cannot serve (such as `http://mytestmachine/misspelllllled_url.htm`) the `ab` tool and `time_url_fetch` report the elapsed time for Apache to serve up a “Not found” msg. Neither tool considers this an error, although an individual trying to access this URL might.

**Workaround** Always check your target URL by hand with your browser, the `ab` tool, or the `time_url_fetch` tool to ensure you are really getting a page fetch.

## ApacheTK: Errors with the pig.pl workload in the white paper

- Issue** In the “Using HP-UX Workload Manager with Apache” white paper, in section 13.4.0.7, the step using pig.pl to generate load, namely:
- Then visit (several times, if necessary)  
http://mymachine:8090/cgi-bin/pig.pl while watching the output of wlm`info` group.
- may produce error messages and not generate the desired load. The errors in /opt/hpws/apache/logs/error\_log or /opt/hpws/apache/logs/error\_log2 are of the form:
- ```
[Sun Dec 14 16:03:08 2003] [error] 13441: ModPerl::Registry: No comma allowed after filehandle at /opt/hpws/apache/cgi-bin/pig.pl line 26.
```
- or possibly:
- ```
[Sun Dec 14 18:02:40 2003] [error] 14688: ModPerl::Registry: Can't locate Apache.pm in @INC  
<remainder of message removed>
```
- These errors indicate that the Apache environment has issues with the example mod\_perl workload pig.pl.
- Workaround** Use a different mod\_perl workload that you know works with your Apache environment. Alternatively, focus on the .cgi and .php example workloads used in the same section of the white paper.

## WebLogicTK: javax/security/auth/callback/CallbackHandler error

- Issue** Monitoring a WebLogic instance with wlmwlsdc can produce a javax/security/auth/callback/CallbackHandler error.
- In particular, running the wlmwlsdc data collector with a single argument:
- ```
% /opt/wlm/toolkits/weblogic/bin/wlmwlsdc \  
/home/wladmin/wlm/myinstA.props
```
- on a version of WebLogic other than 7.0 can produce the following error:
- ```
Exception in thread "main" java.lang.NoClassDefFoundError:  
javax/security/auth/callback/CallbackHandler  
    at weblogic.jndi.Environment.getContext(Environment.java:164)  
    at weblogic.jndi.Environment.getInitialContext(Environment.java:143)  
    at weblogic.management.Helper.getMBeanHomeForName(Helper.java:94)  
    at weblogic.management.Helper.getMBeanHome(Helper.java:59)  
    at  
com.hp.wrm.tk.weblogic.ExecQueueFetcher.connect2localhome(ExecQueueFetche
```

## Known problems and workarounds

```

r.java:328)
    at
com.hp.wrm.tk.weblogic.ExecQueueFetcher.fetch(ExecQueueFetcher.java:224)
    at com.hp.wrm.tk.DataCollector.run(DataCollector.java:355)
    at com.hp.wrm.tk.DataCollector.run(DataCollector.java:434)
    at
com.hp.wrm.tk.weblogic.ExecQueueDataCollector.main(ExecQueueDataCollector
.java:67)

```

This message occurs when the `WL_HOME` environment variable has been set to override `wlmwlsdc`'s default, but `wlmwlsdc` is using a `JAVA_HOME` variable set to `/opt/java1.3`, which is not supported by WebLogic 8.1.

**Workaround** Provide a setting for both `JAVA_HOME` and `WL_HOME` when using WLS 8.1.

There are two ways for settings these variables, as explained below:

- Use a custom shell file

You can provide custom environment variables in a new file specified when you invoke `wlmwlsdc`:

```
% /opt/wlm/toolkits/weblogic/bin/wlmwlsdc \
    /home/wladmin/wlm/myinstA.props \
    my_custom_env_settings.sh
```

The file `my_custom_env_settings.sh` contains the lines:

```
JAVA_HOME=/opt/java1.4
WL_HOME=/opt/bean/weblogic81
```

To invoke `wlmwlsdc` with this file inside a WLM configuration file, your `coll_argv` statement would be as follows:

```
coll_argv = {
    wlmrcvdc
    /opt/wlm/toolkits/weblogic/bin/wlmwlsdc
    /home/wladmin/wlm/myinstA.props
    my_custom_env_settings.sh
}
```

- Use an existing `setEnv.sh` file

You can provide the custom environment variables using an existing `setEnv.sh` file, which you specify when invoking `wlmwlsdc` as follows:

```
% /opt/wlm/toolkits/weblogic/bin/wlmwlsdc \
    /home/wladmin/wlm/myinstA.props \
    /opt/bean/user_projects/domains/mydomain/setEnv.sh
```

The `/opt/bean/user_projects/domains/mydomain/setEnv.sh` file is produced when the instance is created with the WebLogic tools.

To invoke `wlmwlsdc` with the `setEnv.sh` file inside a WLM configuration file, your `coll_argv` statement would be as follows:

```
coll_argv = {  
    wlmrcvdc  
        /opt/wlm/toolkits/weblogic/bin/wlmwlsdc  
        /home/wladmin/wlm/myinsta.props  
        /opt/bea/user_projects/domains/mydomain/setEnv.sh  
}
```

For more information on the possible settings and security considerations for this shell file, see the white paper *Using HP-UX Workload Manager with BEA WebLogic Server*, section “12.1.4 wlmwlsdc POSIX environment variable scripts”. The paper is available from the following location in the “information library:”

<http://www.hp.com/go/wlm>

It is installed on your system at:

`/opt/wlm/toolkits/weblogic/doc/weblogic_wlm_howto.html`

## Compatibility information and installation requirements

The HP-UX WLMTK Version A.01.10.01 (WLMTToolkits) product is now available for the following environments:

- HP-UX 11i v1 (B.11.11) on HP 9000 servers
- HP-UX 11i v2 (B.11.23) and HP-UX 11i v3 (B.11.31) on HP 9000 servers or HP Integrity servers
- HP-UX 11i v1 (B.11.11), HP-UX 11i v2 (B.11.23), and/or HP-UX 11i v3 (B.11.31) on servers combining HP 9000 partitions and HP Integrity partitions (in such mixed environments, HP-UX 11i v1 supports HP 9000 partitions only)

The WLMTK product also includes media, manual, and release notes.

Also available: *HP-UX Workload Manager Toolkits User's Guide* (T1302-90040)

The table below presents the requirements for WLMTK's component toolkits.

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**NOTE**

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**Table 1-1 Component toolkits and their installation requirements**

<b>Component toolkit</b>	<b>Supported with</b>
ODBTK	<ul style="list-style-type: none"><li>• HP-UX WLM Version A.03.02.xx on HP-UX 11i v1 (B.11.11), HP-UX 11i v2 (B.11.23), and HP-UX 11i v3 (B.11.31)</li><li>• HP-UX WLM Version A.03.01 on HP-UX 11i v1 (B.11.11) and HP-UX 11i v2 (B.11.23)</li><li>• HP-UX WLM Version A.03.00 on HP-UX 11i v1 (B.11.11) and HP-UX 11i v2 (B.11.23)</li><li>• HP-UX WLM Version A.02.03.03 on HP-UX 11i v1 (B.11.11) and HP-UX 11i v2 (B.11.23)</li><li>• HP-UX WLM Version A.02.02 on HP-UX 11i v1 (B.11.11) and HP-UX 11i v2 (B.11.23)</li><li>• HP-UX WLM Version A.02.01.01 on HP-UX 11i v2 (B.11.23)</li><li>• HP-UX WLM Version A.02.01 on HP-UX 11i v1 (B.11.11)</li><li>• HP-UX WLM Version A.01.02 on HP-UX 11i v1 (B.11.11)</li><li>• Oracle 8.0.x, Oracle 8.1.5, Oracle 8.1.6, Oracle 8.1.7, and Oracle 9.0.1</li></ul>

**Table 1-1 Component toolkits and their installation requirements**

<b>Component toolkit</b>	<b>Supported with</b>
<p>ApacheTK</p>	<p>HP-UX WLM Version A.03.02.xx on HP-UX 11i v1 (B.11.11), HP-UX 11i v2 (B.11.23), and HP-UX 11i v3 (B.11.31), and earlier versions of WLM on the appropriate operating systems.</p> <p>The <i>Using HP-UX Workload Manager with Apache</i> white paper was written using the following packages:</p> <ul style="list-style-type: none"> <li>• HP-UX Workload Manager (WLM) Version A.02.02 (B8843CA)                      However, you can use other versions (starting at WLM Version A.01.01) in most circumstances to accomplish the management outlined in the paper.</li> <li>• HP-UX Apache-based Web Server B.1.0.09.01 based on Apache version 2.0.47;                      HP-UX Apache-based Web Server B.1.0.10.03                      However, the techniques from the paper can be applied to many versions and configurations of Apache. (For techniques for use with Apache 1.3.x, see the “Information library” available from <a href="http://www.hp.com/go/wlm">http://www.hp.com/go/wlm</a>.)</li> <li>• HP’s perl B.5.6.1.C or later, available from <a href="http://software.hp.com/">http://software.hp.com/</a></li> </ul>
<p>WebLogicTK</p>	<p>HP-UX WLM Version A.03.02.xx on HP-UX 11i v1 (B.11.11), HP-UX 11i v2 (B.11.23), and HP-UX 11i v3 (B.11.31), and earlier versions of WLM on the appropriate operating systems.</p> <p>The <i>Using HP-UX Workload Manager with BEA WebLogic</i> white paper was written using the following packages:</p> <ul style="list-style-type: none"> <li>• HP-UX WLM Version A.02.02 on HP-UX 11i v1 (B.11.11)                      Processor sets (PSETs), which are available starting with HP-UX 11i v1 (B.11.11), are used as workload containers.</li> <li>• BEA WebLogic Server 7.0, BEA WebLogic Server 8.1</li> </ul>

**Table 1-1                    Component toolkits and their installation requirements**

<b>Component toolkit</b>	<b>Supported with</b>
SAPTK	<ul style="list-style-type: none"> <li>• HP-UX WLM Version A.03.02.xx on HP-UX 11i v1 (B.11.11), HP-UX 11i v2 (B.11.23), and HP-UX 11i v3 (B.11.31)</li> <li>• HP-UX WLM Version A.03.01 on HP-UX 11i v1 (B.11.11) and HP-UX 11i v2 (B.11.23)</li> <li>• HP's perl B.5.6.1.C or later, available from <a href="http://software.hp.com/">http://software.hp.com/</a></li> </ul>
SASTK (Will be deprecated in a future release but a new, improved version is pending)	<ul style="list-style-type: none"> <li>• HP-UX WLM Version A.03.02.xx on HP-UX 11i v1 (B.11.11), HP-UX 11i v2 (B.11.23), and HP-UX 11i v3 (B.11.31)</li> <li>• HP-UX WLM Version A.03.01 on HP-UX 11i v1 (B.11.11) and HP-UX 11i v2 (B.11.23)</li> <li>• HP-UX WLM Version A.03.00 on HP-UX 11i v1 (B.11.11) and HP-UX 11i v2 (B.11.23)</li> <li>• HP-UX WLM Version A.02.03.03 on HP-UX 11i v1 (B.11.11) and HP-UX 11i v2 (B.11.23)</li> <li>• HP-UX WLM Version A.02.02 on HP-UX 11i v1 (B.11.11) and HP-UX 11i v2 (B.11.23)</li> <li>• HP-UX WLM Version A.02.01.01 on HP-UX 11i v2 (B.11.23)</li> <li>• HP-UX WLM Version A.02.01 on HP-UX 11i v1 (B.11.11)</li> <li>• HP-UX WLM Version A.01.02 on HP-UX 11i v1 (B.11.11)</li> <li>• Base SAS software Version 8.1 and later</li> </ul>

**Table 1-1 Component toolkits and their installation requirements**

<b>Component toolkit</b>	<b>Supported with</b>
DMTK (Will be deprecated in a future release)	<ul style="list-style-type: none"> <li>• HP-UX WLM Version A.03.02.xx on HP-UX 11i v1 (B.11.11), HP-UX 11i v2 (B.11.23), and HP-UX 11i v3 (B.11.31)</li> <li>• HP-UX WLM Version A.03.01 on HP-UX 11i v1 (B.11.11) and HP-UX 11i v2 (B.11.23)</li> <li>• HP-UX WLM Version A.03.00 on HP-UX 11i v1 (B.11.11) and HP-UX 11i v2 (B.11.23)</li> <li>• HP-UX WLM Version A.02.03.03 on HP-UX 11i v1 (B.11.11) and HP-UX 11i v2 (B.11.23)</li> <li>• HP-UX WLM Version A.02.02 on HP-UX 11i v1 (B.11.11) and HP-UX 11i v2 (B.11.23)</li> <li>• HP-UX WLM Version A.02.01.01 on HP-UX 11i v2 (B.11.23)</li> <li>• HP-UX WLM Version A.02.01 on HP-UX 11i v1 (B.11.11)</li> <li>• HP-UX WLM Version A.01.02 on HP-UX 11i v1 (B.11.11)</li> </ul>
SNMPTK	<ul style="list-style-type: none"> <li>• HP-UX WLM Version A.03.02.xx on HP-UX 11i v1 (B.11.11), HP-UX 11i v2 (B.11.23), and HP-UX 11i v3 (B.11.31)</li> <li>• HP-UX WLM Version A.03.01 on HP-UX 11i v1 (B.11.11) and HP-UX 11i v2 (B.11.23)</li> <li>• HP-UX WLM Version A.03.00 on HP-UX 11i v1 (B.11.11) and HP-UX 11i v2 (B.11.23)</li> <li>• HP-UX WLM Version A.02.03.03 on HP-UX 11i v1 (B.11.11) and HP-UX 11i v2 (B.11.23)</li> <li>• HP-UX WLM Version A.02.02 on HP-UX 11i v1 (B.11.11) and HP-UX 11i v2 (B.11.23)</li> <li>• HP-UX WLM Version A.02.01.01 on HP-UX 11i v2 (B.11.23)</li> <li>• HP-UX WLM Version A.02.01 on HP-UX 11i v1 (B.11.11)</li> <li>• HP-UX WLM Version A.02.00 on HP-UX 11i v1</li> </ul>

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**NOTE** HP-UX WLM Version A.01.02 is the first version to offer the `cpushares` keyword. With ODBTK, this keyword allows you to give an instance *n* percent of the CPU resources per some metric, such as “user connection”.

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## Disk and memory requirements

This version of HP-UX WLMTK requires:

- 3 Mbytes of disk space in `/opt/wlm/toolkits/`

Memory requirements for the individual toolkits are as follows:

- ODBTK requires 6 Mbytes of memory
- ApacheTK requires no more than 1 Mbyte of memory
- WebLogicTK requires no more than 1 Mbyte of memory
- SAPTK requires no more than 1 Mbyte of memory
- DMTK and SASTK require no more than 1 Mbyte of memory (DMTK and SASTK will be deprecated in a future release; a new, improved version of SASTK is pending)
- SNMPTK requires no more than 1 Mbyte of memory

## Installation procedure

WLMTK is installed when you install WLM. To install or update WLMTK separately, run the SD-UX `swinstall` command. It will invoke a user interface to lead you through the installation.

To install or update HP-UX WLMTK Version A.01.10.xx:

**Step 1.** Load product WLMToolkits.

**Step 2.** If you are not also installing HP-UX WLM, update the file `/etc/MANPATH` to include both of the following:

- `/opt/wlm/share/man/%L`
- `/opt/wlm/share/man`

**Step 3.** If you are going to use ODBTK (`wlmoradc`, `smooth`) or WebLogicTK (`expsmooth`), or ApacheTK (`wlm_watch.cgi`), or SAPTK (`wlmsapmap`):

The `wlmoradc`, `smooth`, `wlm_watch.cgi`, `expsmooth`, and `wlmsapmap` utilities all require `/opt/perl/bin/perl`.

Starting with WLM A.02.02, WLM offers a `cntl_smooth` configuration file keyword. It is recommended that you use the `cntl_smooth` WLM keyword instead of the `smooth` tool and the `expsmooth` tool. For information on `cntl_smooth`, see `wlmconf(4)`. If you adopt `cntl_smooth` and are not using `wlmoradc` or `wlm_watch.cgi`, you do not need perl and you can skip the rest of this step.

If perl is not already installed, you can install it from the quarterly Application Release (AR) CD-ROM, using the following `swinstall` line:

```
# /usr/sbin/swinstall -s depot_path perl
```

If you already have perl version 4.0.1.8 (or newer) installed in a location other than `/opt/perl/bin/` and you prefer to use your perl, either:

- Ensure there is a symbolic link from `/opt/perl/bin/perl` to your perl.
- or
- Invoke `wlmoradc`, `smooth`, `expsmooth`, and `wlmsapmap` with your installed perl.

The following examples illustrate this idea for perl installed in `/usr/contrib/` instead of `/opt/perl/`, with the invocation on the command line:

```
# /usr/contrib/bin/perl /opt/wlm/lbin/coll/wlmoradc arguments
# /usr/contrib/bin/perl /opt/wlm/lbin/coll/smooth arguments
# /usr/contrib/bin/perl /opt/wlm/lbin/coll/expsmooth arguments
# /usr/contrib/bin/perl /opt/wlm/toolkits/sap/bin/wlmsapmap
  arguments
```

The next examples perform the same functions as the above lines, but with the invocation inside the WLM configuration file using the `coll_argv` keyword (line breaks are permitted in the configuration file):

```
coll_argv = /usr/contrib/bin/perl /opt/wlm/lbin/coll/wlmoradc arguments ;
coll_argv = /usr/contrib/bin/perl /opt/wlm/lbin/coll/smooth arguments ;
coll_argv = /usr/contrib/bin/perl /opt/wlm/lbin/coll/expsmooth arguments ;
procmap = group : /usr/contrib/bin/perl
           /opt/wlm/toolkits/sap/bin/wlmsapmap arguments ...;
```

Use the `coll_stderr` keyword in your WLM configuration to catch perl incompatibilities, toolkit errors, and errors in your data collectors.

The following table indicates where the WLM toolkits are installed:

**Table 1-2 Installation paths for WLM toolkits**

Toolkit	Installation path
ODBTK	/opt/wlm/toolkits/oracle
ApacheTK	/opt/wlm/toolkits/apache
WebLogicTK	/opt/wlm/toolkits/weblogic
SAPTK	/opt/wlm/toolkits/sap
SASTK (Will be deprecated in a future release; new, improved version is pending)	/opt/wlm/toolkits/sas
DMTK (Will be deprecated in a future release)	/opt/wlm/toolkits/duration
SNMPTK	/opt/wlm/toolkits/snmp

For more information about installation procedures and related issues, see the following documentation:

- *Managing HP-UX Software with SD-UX*
- `swinstall` (1M)

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## Patches and fixes in this version

HP-UX WLMTK Version A.01.10.xx consists of various toolkits. There are no patches or fixes to a previous version of any of the toolkits.

For the latest information on WLM patches however, visit the “Patches / support” page available from the following location:

<http://www.hp.com/go/wlm>

## Software availability in native languages

The [www.hp.com/go/wlm](http://www.hp.com/go/wlm) site also provides information on WLMTK's support policy and patch policy. These policies indicate the time periods for which this version of WLMTK is supported and patched.

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## Software availability in native languages

The manpages are available only in English. The release notes and user's guide are available in English and Japanese.

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## Available manuals

Several related manuals are available. Unless otherwise noted, you can access these manuals at:

<http://docs.hp.com>

Specific HP-UX WLMTK information can be found in:

- *HP-UX Workload Manager Toolkits User's Guide* (T1302-90040)  
Also available at `/opt/wlm/toolkits/doc/WLMTKug.pdf`

Specific HP-UX WLM information can be found in:

- *HP-UX Workload Manager User's Guide* (B8844-90014)  
Also available at `/opt/wlm/share/doc/WLMug.pdf`

Information about HP-UX system administration and Logical Volume Manager can be found in:

- *Managing Systems and Workgroups* (B2355-90950)

WLM and WLMTK manpages are also available on your HP-UX system, as well as at the following location:

<http://www.hp.com/go/wlm>

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## Toolkit updates

For updates of WLMTK, visit:

<http://www.hp.com/go/wlm>

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## Providing feedback

- Email your feedback to the HP-UX WLMTK development team at the following address:  
[wlmfeedback@rsn.hp.com](mailto:wlmfeedback@rsn.hp.com)
- For a forum with other HP-UX WLM users, visit the IT Resource Center's forum for HP-UX Workload/Resource Management:  
<http://forums.itrc.hp.com/cm/>
- For the latest patch information, white papers, and documentation, visit the HP-UX Workload Manager web page:  
<http://www.hp.com/go/wlm/>

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## Training

HP offers a course in HP-UX resource management using WLM. For information, including a course outline, visit:

<http://www.hp.com/education/courses/u5447s.html>

**Toolkit updates**