



Sun Web Stack Installation and Configuration Guide



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Sun Web Stack Installation and Configuration Guide

Sun Web Stack Installation and Configuration Guide provides you with the steps involved in setting up the Sun Web Stack software in Solaris 10 OS and Red Hat Enterprise Linux (RHEL).

This document describes how to install and configure Sun Web Stack and its components on Solaris, OpenSolaris and Linux platforms.

Introduction

Sun Web Stack is a complete open source web application platform consisting of Apache Web Server, lighttpd, MySQL, PHP, Apache Tomcat Server, Glassfish, Ruby and Python. It also comes with support for memory caching framework (memcached), Dynamic Trace debugging (DTrace), Xdebug and advanced PHP security framework (Suhosin).

Sun Web Stack is available for Solaris, OpenSolaris and Red Hat Enterprise Linux platforms.

Understanding Sun Web Stack

Sun Web Stack is a complete software stack for Web Application development. It has robust support for B2B/B2C Applications, Web Services, CMS and Intranet applications. It can run on Solaris, OpenSolaris or Red Hat Enterprise Linux platforms.

Sun Web Stack Components

The table lists the primary components bundled with Sun Web Stack.

Component Name	Applicable Platform	Component Type	Component Version	Component Homepage
Apache Server	Solaris/OpenSolaris/ Linux	HTTP Server	2.2.9	http://httpd.apache.org/
lighttpd	Solaris/OpenSolaris/ Linux	HTTP Server	1.4.19	http://www.lighttpd.net/
Squid	Solaris/OpenSolaris/ Linux	Proxy Server	2.6.STABLE17	http://www.squid-cache.org/
MySQL	Solaris/OpenSolaris/ Linux	Database Server	5.0.67	http://www.mysql.com/
PHP	Solaris/OpenSolaris/ Linux	Language	5.2.6	http://www.php.net/
Ruby	Solaris/OpenSolaris	Language	1.8.6	http://www.ruby-lang.org/en/
Python	Solaris	Language	2.5.2	http://www.python.org/
memcached	Solaris/OpenSolaris/ Linux	Caching System	1.2.5	http://www.danga.com/memcached/
Apache Tomcat	Solaris/OpenSolaris/ Linux	Application Server	5.5.27	http://tomcat.apache.org/

Sun Web Stack Default Network Ports

Sun Web Stack utilizes several network ports by default for regular component operation. The following table lists the ports by component.

Component	Default Port Number
Apache Web Server	80
lighttpd Web Server	80
MySQL Database Server	3306
Squid Proxy Server	3128
Apache Tomcat	8080
memcached	11211

User Permissions

In order to install Sun Web Stack, the user must be logged in as system administrator or root.

Installing Sun Web Stack

This section discusses the installation of Sun Web Stack on Solaris, OpenSolaris and Linux platforms.

Installing Sun Web Stack on Solaris and Linux Platforms

Extract the tar.gz file containing the Sun Web Stack installer.

```
gunzip -c xxx.tar.gz | tar xf -
```

Run the installation script to begin the installation. Following is the list of available installer command options.

Installer Commands	Description	Platform
<code>./install -h</code>	Displays the available options with the installer.	Solaris/Linux
<code>./install amp</code>	Installs the complete AMP stack, which includes Apache Web Server, PHP and MySQL.	Solaris/Linux
<code>./install apache</code>	Installs Apache Web Server.	Solaris/Linux
<code>./install lighttpd</code>	Installs lighttpd Web server.	Solaris/Linux
<code>./install memcached</code>	Installs memcached memory caching system.	Solaris/Linux
<code>./install mysql</code>	Installs MySQL database server.	Solaris/Linux
<code>./install php</code>	Installs PHP language support.	Solaris/Linux
<code>./install python</code>	Installs Python language support.	Solaris
<code>./install ruby</code>	Installs Ruby language support	Solaris
<code>./install squid</code>	Installs Squid Proxy Server.	Solaris/Linux

Installer Commands	Description	Platform
./install tomcat	Installs Apache Tomcat Application Server.	Solaris/Linux

Additional Package Dependencies

Platform specific dependencies exists on Solaris and Red Hat Linux platforms. Install the dependent packages before proceeding with installation. The following table summarizes the dependencies for various Sun Web Stack components.

This is not a complete dependency list. Only important packages are listed here.

Sun Web Stack Component	Important Solaris Dependencies	Important RedHat Linux Dependencies
Sun Web Stack Installer	SUNWpython	Python version 2.4 or higher
Apache Web Server	SUNWlexpt, SUNWpr, SUNWtls, SUNWlibsasl, SUNWcry, SUNWpostgr-82-libs	OpenSSL 0.9.8b or higher, OpenLDAP 2.3.27 or higher, sqlite 3.3.6 or higher, postgresql-libs 8.1.11 or higher
lighttpd		pcre 3.1 or higher
Squid Proxy Server	SUNWgss, SUNWkrbu, SUNWlibsasl, SUNWopenssl-libraries, SUNWpr, SUNWtls, SUNWperl584core	OpenSSL 0.9.8b or higher, OpenLDAP 2.3.27 or higher
MySQL	SUNWperl584core, SUNWopenssl-libraries	OpenSSL 0.9.8b or higher
PHP	SUNWpostgr-82-libs, SUNWopenssl-libraries	OpenSSL 0.9.8b or higher, OpenLDAP 2.3.27, postgresql-libs 8.1.11 or higher, pcre 6.6 or higher, gmp
memcached	None	None
Apache Tomcat Server	SUNWj5rt, SUNWj5dev	JDK 5.0 or higher

Installing Sun Web Stack on OpenSolaris Platform

For information on installing Sun Web Stack on OpenSolaris platform, see [Web Stack Getting Started Guide for OpenSolaris 2008.11](#)

Sun Web Stack File Layout

This section discusses the file layout of Sun Web Stack components on Solaris and Linux platforms. For information on the file layout on OpenSolaris, see [Web Stack Getting Started Guide for OpenSolaris 2008.11](#)

Apache Web Server Files

The following list describes the file structure for Apache Web Server:

On Solaris	On Linux	Description
<code>/etc/opt/webstack /apache2/2.2/httpd.conf</code>	<code>/etc/opt/sun/webstack /apache2/2.2/httpd.conf</code>	Contains server configuration files. A newly-installed server contains a default <code>httpd.conf</code> file. This is the main configuration file.
<code>/etc/opt/webstack /apache2/2.2/conf.d</code>	<code>/etc/opt/sun/webstack /apache2/2.2/conf.d</code>	Contains additional server configuration files. By default, server will load all the <code>.conf</code> files placed under this directory. It also has <code>2.additional.load</code> configuration files- <code>modules-32.load</code> and <code>modules-64.load</code> which contain <code>LoadModule{}</code> directives for loading the 32 and 64-bit bundled apache modules respectively. All the <code>.conf</code> files in this directory are included by the following line in <code>httpd.conf</code> : <code>Include /etc/opt/webstack /apache2/2.2/conf.d/*.conf.</code> You can add the additional configuration here.
<code>/etc/opt/webstack /apache2/2.2/envvars</code>	<code>/etc/opt/sun/webstack /apache2/2.2/envvars</code>	Contains the environment settings that the server uses at startup. When the <code>/usr</code> is mounted as read-only, you will not be able to modify the <code>envvars</code> file present in <code>/opt/webstack/apache2/2.2/envvars</code> . To modify the environment settings you need to edit the <code>envvars</code> file present in the path <code>/etc/opt/webstack/apache2/2.2/envvars</code> .

On Solaris	On Linux	Description
/etc/opt/webstack /apache2/2.2/magic	/etc/opt/sun/webstack /apache2/2.2/magic	Magic data for mod <i>mimemagic</i> Apache module as documented in the /opt/webstack/apache2/2.2 /manual/mod/mod <i>mimemagic</i> .html file. Editing this file is not recommended.
/etc/opt/webstack /apache2/2.2/mime.types	/etc/opt/sun/webstack /apache2/2.2/mime.types	Default MIME types file. This file sets the default list of mappings from filename extensions to content types, changing this file is not recommended. Use the AddType directive instead.
/etc/opt/webstack /apache2/2.2/original/	/etc/opt/sun/webstack /apache2/2.2/original/	Contents under this directory are delivered as-is from the apache distribution and these files are not meant to be read by the server.
/etc/opt/webstack /apache2/2.2/sample-conf.d	/etc/opt/sun/webstack /apache2/2.2/sample-conf.d	Contains sample .conf files. These are not included in the main configuration file. To use the sample file, copy the file to conf.d directory and modify as per the need.
/opt/webstack/apache2/2.2/bin	/opt/sun/webstack /apache2/2.2/bin	Contains the 32-bit httpd(Pre-fork MPM) and httpd.worker(Worker MPM) executables as well as other utility programs.
/opt/webstack /apache2/2.2/bin/isainfo	/opt/sun/webstack /apache2/2.2/bin/isainfo	Contains the 64-bit httpd (Prefork MPM) and httpd.worker (Worker MPM) executables as well as other utility programs.
/opt/webstack/apache2/2.2/manual	/opt/sun/webstack /apache2/2.2/manual	Contains the Apache Web Server manual in HTML format.
/opt/webstack/apache2/2.2/include	/opt/sun/webstack /apache2/2.2/include	Contains the Apache Web Server header files, which are needed for building various optional server extensions with apxs(8).
/opt/webstack/apache2/2.2/libexec	/opt/sun/webstack /apache2/2.2/libexec	Contains 32-bit loadable modules (DSOs) supplied with the server.
/opt/webstack /apache2/2.2/libexec/isainfo	/opt/sun/webstack /apache2/2.2/libexec/isainfo	Contains 64-bit loadable modules (DSOs) supplied with the server.

On Solaris	On Linux	Description
/opt/webstack/apache2/2.2/man	/opt/sun/webstack /apache2/2.2/man	Contains man pages for the server, utility programs, and mod_perl. Add this directory to your MANPATH to read the Apache Web Server man pages.
/opt/webstack/apache2/2.2/lib	/opt/sun/webstack/apache2/2.2/lib	Contains the 32-bit apache2 core libraries.
/opt/webstack /apache2/2.2/lib/isainfo	/opt/sun/webstack /apache2/2.2/lib/isainfo	Contains the 64-bit Apache 2 core libraries.
/opt/webstack/apache2/2.2/lib/perl	/opt/sun/webstack /apache2/2.2/lib/perl	Contains the 32-bit modules and library files used by the mod_perl extension to Apache Web Server.
/var/opt/webstack /apache2/2.2/cgi-bin	/var/opt/sun/webstack /apache2/2.2/cgi-bin	Default location for the CGI scripts. This can be changed by altering the httpd.conf file and restarting the server.
/var/opt/webstack /apache2/2.2/htdocs	/var/opt/sun/webstack /apache2/2.2/htdocs	Default document root. This can be changed by altering the httpd.conf file and restarting the server.
/var/opt/webstack /apache2/2.2/icons	/var/opt/sun/webstack /apache2/2.2/icons	Icons used by the server. This should not be changed.
/var/opt/webstack /apache2/2.2/libexec	/var/opt/sun/webstack /apache2/2.2/libexec	Place holder for 32-bit user apache modules. Any 32-bit modules which are added using apxs(8) are copied into this directory.
/var/opt/webstack /apache2/2.2/libexec/isainfo	/var/opt/sun/webstack /apache2/2.2/libexec/isainfo	Place holder for 64-bit user Apache 2 modules. Any 64-bit modules which are added using apxs(8) are copied into this directory.
/var/opt/webstack /apache2/2.2/logs	/var/opt/sun/webstack /apache2/2.2/logs	Contains server log files. The formats, names, and locations of the files in this directory can be altered by various configuration directives in the httpd.conf file.

On Solaris	On Linux	Description
/var/opt/webstack /apache2/2.2/proxy	/var/opt/sun/webstack /apache2/2.2/proxy	Directory used to cache pages if the caching feature of <code>mod_proxy</code> is enabled in the <code>httpd.conf</code> file. The location of the cache can also be changed by changing the proxy configuration in the <code>httpd.conf</code> file.

Modules `mod_fcgid`, `mod_jk`, `mod_security`, and `mod_dtrace` are integrated to Apache 2. For more information about these modules, see <http://fastcgi.coremail.cn/doc.htm>, http://tomcat.apache.org/connectors-doc/generic_howto/quick.html, <http://www.modsecurity.org/documentation/index.html>, and <http://prefetch.net/projects/apachemodtrace/moddtrace.c>

MySQL Database Files

The following list describes the file structure for the MySQL Database Server.

On Solaris	On Linux	Description
/opt/webstack/mysql/5.0/bin	/opt/sun/webstack/mysql/5.0/bin	Contains the binaries and scripts.
/opt/webstack/mysql/5.0/lib	/opt/sun/webstack/mysql/5.0/lib	Contains the libraries for the client API.
/opt/webstack/mysql/5.0/include	/opt/sun/webstack /mysql/5.0/include	Contains the header files for the client API.
/opt/webstack /mysql/5.0/man/man1	/opt/sun/webstack /mysql/5.0/man/man1	Manual pages for client programs.
/opt/webstack /mysql/5.0/man/man8	/opt/sun/webstack /mysql/5.0/man/man8	Manual pages for server programs.
/opt/webstack/mysql/5.0/share	/opt/sun/webstack /mysql/5.0/share	Shared data: locale, time zone.
/opt/webstack/mysql/5.0/docs	/opt/sun/webstack/mysql/5.0/docs	Contains HTML documentation.
/opt/webstack /mysql/5.0/mysql-test	/opt/sun/webstack /mysql/5.0/mysql-test	Contains MySQL test programs.
/opt/webstack /mysql/5.0/sql-bench	/opt/sun/webstack /mysql/5.0/sql-bench	SQL benchmark test.

On Solaris	On Linux	Description
/opt/webstack /mysql/5.0/share/mysql	/opt/sun/webstack /mysql/5.0/share/mysql	Contains internationalization (I18N) files, sample configuration files, and utility scripts.
/var/opt/webstack/mysql/5.0/data	/var/opt/sun/webstack /mysql/5.0/data	Default database data directory.
/etc/opt/webstack/mysql/5.0	/etc/opt/sun/webstack/mysql/5.0	Contains the MySQL configuration file.
/opt/webstack /mysql/5.0/bin/mysql	/opt/sun/webstack /mysql/5.0/bin/mysql	Client executable.
/opt/webstack /mysql/5.0/bin/mysqld	/opt/sun/webstack /mysql/5.0/bin/mysqld	Server executable.

PHP Files

The following list describes the file structure for PHP:

On Solaris	On Linux	Description
/opt/webstack/php5/5.2/bin	/opt/sun/webstack/php/5.2/bin	Contains the PHP configuration executables.
/opt/webstack/php5/5.2/lib	/opt/sun/webstack/php/5.2/lib	Contains PHP library files.
/opt/webstack/php5/5.2/modules	/opt/sun/webstack /php/5.2/modules	Contains PHP modules for PHP extensions.
/opt/webstack/apache2/2.2/libexec	/opt/sun/webstack /apache2/2.2/libexec	Contains the PHP module for Apache 2 (32-bit) prefork MPM and the module name ismod_php5.so.
/opt/webstack/php/5.2	/opt/sun/webstack/php/5.2	Contains the default configuration file (php.ini).
/etc/opt/webstack/php/5.2/conf.d	/etc/opt/sun/webstack /php/5.2/conf.d	Contains extension specific INI files for each PHP extension . Here, you can enable or disable various extensions that are integrated with the package.

Note – The PHP extensions like APC, DTtrace, XDebug, suhosin, and tcpwrap are disabled by default. To enable these extensions, you need to uncomment the respective line (`extensions=<module-name>.so`) in the `{ }conf.d` file.

Ruby Files

The following list describes the file structure for Ruby:

On Solaris	On Linux	Description
<code>/var/opt/webstack/ruby/1.8/gem_home</code>	<code>/var/opt/sun/webstack/ruby/1.8/gem_home</code>	Contains the Ruby gems repository.
<code>/opt/webstack/ruby/1.8/bin</code>	<code>/opt/sun/webstack/ruby/1.8/bin</code>	Contains the Ruby executable as well as other utility programs, and Ruby gems programs. These programs are linked from <code>/usr/bin</code> .

Squid Proxy Server Files

The following list describes the file structure for Squid Proxy Server:

On Solaris	On Linux	Description
<code>/opt/webstack/squid/bin</code>	<code>/opt/sun/webstack/squid/bin</code>	Contains the executable for the Squid Proxy Server client and to run the cache.
<code>/opt/webstack/squid/libexec</code>	<code>/opt/sun/webstack/squid/libexec</code>	Contains the libraries.
<code>/etc/opt/webstack/squid/squid.conf</code>	<code>/etc/opt/sun/webstack/squid/squid.conf</code>	The main configuration file. Modify this file for Squid Proxy Server to work.

Extending Sun Web Stack

Sun Web Stack can be easily extended using by using various third party extensions. This enables you to add new features to the existing software.

Installing PHP extensions

PHP extensions are available in two forms, PECL (PHP Extension Community Library) and PEAR (PHP Extension and Application Repository). PECL extensions are shipped as C source code. PECL extensions are compiled C language extensions linked to the PHP core. As C programs, PECL extensions run more efficiently than PEAR packages. PECL includes modules for XML-parsing, access to additional databases, mail-parsing, embedding Perl or Python in PHP scripts.

A PEAR package is distributed as a gzipped tar file. Each archive consists of source code written in PHP, usually in an object-oriented style. Many PEAR packages can readily be used by developers as ordinary third party code via simple include statements in PHP.

Installing PECL extensions

PECL extensions need to be compiled to shared object files (.so) before they can be used with PHP. To compile PECL extensions you need to have mandatory development packages installed on your system. You can install Sun Studio for this purpose. Sun Studio software delivers a optimizing C and C++ developer toolchain for Solaris, OpenSolaris and Linux platforms. More information on Sun Studio is available at <http://developers.sun.com/sunstudio/>.

After installing Sun Studio, run the following command to download, compile and install the PECL extension:

On Solaris:

```
# /opt/webstack/bin/pecl install <extension name>
```

On Linux:

```
# /opt/sun/webstack/bin/pecl install <extension name>
```

On OpenSolaris:

```
# /usr/bin/pecl install <extension name>
```

If you are not sure of the extension name you can use the following command to get a list of all the available extensions:

On Solaris:

```
$ /opt/webstack/bin/pecl list-all
```

On Linux:

```
# /opt/sun/webstack/bin/pecl install <extension name>
```

On OpenSolaris:

```
$ /usr/bin/pecl list-all
```

Installing PEAR extensions

Run the following command to download and install the PEAR extension:

On Solaris:

```
# /opt/webstack/bin/pear install <extension name>
```

On Linux:

```
# /opt/sun/webstack/bin/pear install <extension name>
```

On OpenSolaris

```
# /usr/bin/pear install <extension name>
```

Installing Python extensions

Python extensions are supported through Easy Install. Easy Install is a python module (`easy_install`) bundled with `setuptools` that lets you automatically download, build, install, and manage Python packages. `easy_install` is capable of downloading and installing python extensions from PyPI (Python Package Index) repository.

Installing setuptools (easy_install)

Use the following commands to download and install `setuptools`. You need have Sun Studio installed in your system to compile `setuptools` package. Also, verify that Sun Web Stack location is present in the system `PATH` variable. This will avoid any conflict with the existing installation of python.

1. Download and extract the python `setuptools` source package from <http://pypi.python.org/pypi/setuptools#downloads>. Download the tar.gz file (`setuptools-0.6c9.tar.gz`).
2. Run the following command to build and install the `setuptools` package.

```
# python setup.py install
```

Using easy_install

easyinstall is very easy to use. Just use the following command to download and install the python extension.

```
# python easy_install.py <package name>
```

You can also browse through the PyPI repository by visting <http://pypi.python.org/pypi>

Installing Ruby extensions (RubyGems)

Ruby extensions are supported via RubyGems. RubyGems is a package manager for the Ruby programming language that provides a standard format for distributing Ruby programs and libraries (in a self-contained format called a "gem"), a tool designed to easily manage the installation of gems, and a server for distributing them.

Use the following command to install the ruby extension (gem). Make sure that you have Sun Web Stack in PATH variable.

```
# gem install <gem name>
```

If you are not sure of gem name you can use the following command to get a list of all the available gems:

```
# gem list -r -d
```

Advanced Configuration

Sun Web Stack can take advantage of Solaris OS specific features like Solaris Zones and DTrace. For more information, see:

- [Using Memcached with Solaris Zones](#)
- [DTrace and Sun Web Stack](#)

