Using NetBeans IDE with Solaris Web Stack

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Document Convention

- ✓ **SXDE 1/08** Solaris Express Developer Edition 1/08 (Solaris OS).
- Web Stack The AMP (Apache, MySQL, and PHP) software available through the SXDE 1/08.
- ✓ **AMP GUI** Web Stack Configuration Tool.

1 Overview

Solaris OS offers complete support for developing and deploying applications for the web. Starting from SXDE 1/08, a collection of some of the most commonly used open source applications and frameworks are bundled with the OS. These applications comprise the Web Stack and include several packages that are optimized for the Solaris OS and aid in web based development in Solaris OS.

SXDE 1/08 also has NetBeans IDE, a free open-source IDE for creating professional desktop, enterprise, web, and mobile applications.



A Complete Stack Offering from NetBeans

This document shows you how you can use NetBeans IDE to build web application on Solaris OS using the Web Stack components bundled with the OS. Before we dive into the details of these components, let us enumerate the stages involved in developing an end to end enterprise grade web application.

What do you expect from an IDE if you are planning to use the IDE for web development?

 Server support – Your IDE should support managing the Server lifecycle through an intuitive and easy to use interface.

- Languages Support You will expect the IDE to support working with the programming language or web application framework your web application will be eventually built on.
- ✓ Database support What good is an enterprise application without a database? You want your IDE to be well integrated with your development, testing and production database.

Typically, your development environment should enable you to build web applications with minimal effort offering you extensive support for stack level configuration through property editors, wizards, and widgets. Server support, languages support, and database support are the three prime facets that any IDE can offer for web development.

NetBeans IDE on Solaris takes care of all these factors with an elegant interface making web development just easy. You can build your web applications in PHP or use Rails framework and work with DBs like MySQL DB or PostgreSQL DB in NetBeans.

2 Available Software

In Solaris OS, for building web applications the following software are provided:

- ✓ NetBeans IDE 6.0 (Available in SXDE 1/08)
- ✓ Web Stack (Available in SXDE 1/08)
- ✓ The Java SE Development Kit (JDK) 5.0 or higher (Available in SXDE 1/08)

If you are using Solaris Express Developer Edition 1/08, you do not need to download NetBeans IDE or any other software as the Web Stacks components like the AMP stack and Ruby/Rails are already integrated with OS. If you are using OpenSolaris OS, refer to the OpenSolaris site on getting the Web Stack IPS package. For all other Solaris OS versions, you can download the optimized AMP stack from http://cooltools.sunsource.net/coolstack/

In SXDE 1/08, Go to All Applications > Developer Tools > Web Stack Admin > View Getting Started Guide for information on setting up AMP on Solaris OS.

3 Runtime Support

What good is an IDE without integrated server/runtime support for web development? NetBeans IDE on Solaris OS supports various Java EE servers and other web servers for application deployment. You can have multiple servers configured in NetBeans irrespective of the server that will be used in your projects. Thus you can have Apache 2 Web Server configured for deploying PHP files, Apache Tomcat container configured for deploying Java based web applications or a WEBrick server for deploying Rails applications.

3.1 Apache2 Web Server

Solaris Web Stack bundle comes with Apache 2 Web Server. NetBeans IDE lets you add Apache web server in the servers list so the applications that you build including PHP based web applications can be deployed to the Apache web server. This section shows you how you can set up Apache web server in the NetBeans runtime environment.

If Web Stack is configured in Solaris machine, you do not need to download Apache Web Server or PHP engine separately. See the Web Stack Getting Started Guide to find out how you should initialize Web Stack and start MySQL Server.

- Click All Applications > Developer Tools > Web Stack Admin > Initialize
- Click All Applications > Developer Tools > Web Stack Admin > Start Apache2/MySQL Servers

Web Stack comes with Apache 2 Web Server fully configured and optimized for PHP deployment.

- ✓ Go to Services Tab.
- ✓ Expand Web Servers node.
- ✓ Right Click on Web Servers node and click Add Web Server.

	Add New Web Serve	er Record 🛛 🔀
Steps 1. Choose Server Type 2. Find Configured Hosts 3. Configure Http Server 4. Configure File Access	<u>Choose Server Type</u> <u>C</u> onnection Name: Server <u>T</u> ype: Desc <u>r</u> iption:	e Apache2 Local Web Server with File A This is configuration option for local web server. You need to have some web server locally installed on your system.
	< <u>B</u> ac	k Next > Finish Cancel Help

Add a Web Server

Step 1 – Choose Server Type

- ✓ Add a connection name. For example, Apache 2.
- ✓ Select Local Web Server with File Access option so that you can instruct NetBeans to use Apache 2 server installed through Web Stack.

Step 2 – Find Configured Hosts

- ✓ Select Manual Configuration.
- ✓ In the Apache Config File Location field enter /etc/apache2/2.2/httpd.conf

OR

- ✓ Select Auto Configuration.
- ✓ Click Find Servers.
- ✓ The Server Location field is automatically populated.

Step3 – Configure HTTP Server

✓ Enter Server Name as localhost

Step4 Configure File Access

✓ Enter Document Root as /var/apache2/2.2/htdocs

Important - Document Root directory should be writable by you.
As root user execute > chmod a+w /var/apache2/2.2/htdocs

After adding the server, check if Apache Web Server shows up the Web Servers list by clicking Services tab.



Apache Web Server Configured

These are the basic steps to get you started with using Apache web server for deploying your PHP based web applications. Since Apache Web Server is already configured to support PHP files, you do not need to perform any other configuration apart from getting and installing the PHP plug-in as shown in the section on PHP.

3.2 Tomcat Web Server

Solaris Web Stack comes with Tomcat 6.0 Servlet container for deploying your JSP based web applications. Some of the examples shown later in this document uses Tomcat in NetBeans. NetBeans for Solaris may not come bundled with Tomcat server as Tomcat is already available in Solaris through Web Stack. But still you need to let NetBeans know where your Tomcat installation directory is to allow NetBeans manage Tomcat's lifecycle.

- ✓ Go to Tools > Servers.
- ✓ In the left pane, click Add Server.
- ✓ Choose Tomcat 6.0 from the servers list.

	C) Add Server Instance 🛛 🛛 🔀
Steps	Choose	Server
1. Choose Server 2	<u>S</u> erver:	BEA WebLogic Server GlassFish V1 GlassFish V2 JBoss Application Server Sun Java System Application Server Tomcat 5.0 Tomcat 5.5 Tomcat 6.0
	<u>N</u> ame:	Tomcat 6.0
		< Back Next > Einish Cancel Help

Add Server Instance

- ✓ In the Catalina Home field, type /opt/apache-tomcat-6.0.14 (Make sure that path exists).
- ✓ Add the user name and password for the manager role as provided in tomcatusers.xml file in the Tomcat configuration directory.

You can also let NetBeans create a new user if the user entered in the user name text field does not exist.

	🕥 Add Server Instance 🛛 🛛 🔀			
Steps	Installation and Login Details			
1. Choose Server 2. Installation and Login	Specify the installation folder (Catalina Home) and login details			
Details	Catalina Home: /opt/apache-tomcat-6.0.14			
	Use Private Configuration Folder (Catalina Base)			
	C <u>a</u> talina Base: Br <u>o</u> wse			
	Enter the credentials of an existing user in the "manager" role <u>U</u> sername: webstack <u>P</u> assword: ******* ✓ Create user <u>if</u> it does not exist			
	< <u>Back</u> Next > <u>Finish</u> Cancel <u>H</u> elp			

Add Server Instance

		C Servers
Servers:		
Java EE Servers	Server <u>N</u> ame: Tom	icat 6.0
Tomcat 6.0	Server <u>T</u> ype: Tom	icat 6.0
	Connection Star	tup Platform Deployment Classes Sources Javadoc
	<u>C</u> atalina Home:	/opt/apache-tomcat-6.0.14
	Catalina <u>B</u> ase:	/opt/apache-tomcat-6.0.14
	Credentials of an <u>U</u> sername: <u>P</u> assword:	existing user in the "manager" role webstack *******
	Ser <u>v</u> er Port: Shut <u>d</u> own Port:	8080 ÷
	Enable HTTP	Monitor
	Note: Changes w	vill take affect the next time you start the server
Add Server	1	
		Close Help

Configure Tomcat properties

When Tomcat is successfully configured in NetBeans, the Servers node shows Tomcat 6.0 entry.



Servers node shows native Tomcat server

You can right click on the Tomcat 6.0 node and select Start to start the server.

3.3 WEBrick Server

NetBeans IDE 6.0 comes bundled with WEBrick, the most widely used Ruby web server. WEBrick is started automatically on Rails project creation. There is a WEBrick console window that shows the output of the web server. No other manual configuration is required for the WEBrick server. For using Mongrel or any other server, update your gems by invoking Tools > Ruby gems.

4 Languages and Applications Support

There is a widespread misconception that NetBeans is an IDE for Java development. In fact NetBeans IDE supports working with non-Java scripting languages like PHP, Ruby, and other such scripting languages. If you are using NetBeans IDE 6.0 in Solaris OS, you can work with any of these scripting languages supported by Solaris Web Stack. This document shows you how you can use NetBeans IDE with the language interpreters that come with Solaris OS.

Note – Visit http://scripting.netbeans.org for more information on scripting support in NetBeans IDE 6.0.

4.1 PHP Support

PHP is an interpreted, dynamic, web page scripting language. NetBeans IDE 6.0 has support for PHP editing and debugging through an add-on component called PHP plug-in. The plug-in supports PHP5 and features:

- \checkmark Formatting, folding, and bracket completion of the PHP code
- ✓ Syntax highlighting
- ✓ Combination of HTML and PHP blocks
- ✓ Code completion

- ✓ Debugging
- ✓ Command-line mode
- ✓ Automatic detection of configured servers (for Solaris OS)

Supported Version – PHP 5.2.4

When you have downloaded and configured the plug-in, you should be able to create new PHP projects. However to run and debug your PHP projects, you will need:

- ✓ Apache 2 Available through Web Stack. You can use a local server or a remote server with FTP access. Typically a local web server is utilized for development and debugging, while the production environment is located on a remote web server.
- ✓ PHP engine Available through Web Stack.
- ✓ PHP debugger Available through Web Stack PHP Extension. The NetBeans 6.0 IDE PHP Plug-in allows you to use XDebug, but using a debugger is optional.

For using PHP and Apache2 through Web Stack, you do not need any additional configuration.

Note - PHP language interpreter is integrated into the Apache Web Server. PHP module with MySQL and PostgreSQL database support is provided for Apache HTTP (32-bit) prefork MPM. See http://httpd.apache.org/docs/2.2/mod/prefork.html

Some PHP modules are packaged with SXDE as extensions. Each of the modules has a respective INI file under /etc/php5/5.2.4/conf.d directory. These PHP extensions are enabled by default. Custom third-party PHP extensions like APC, Suhosin, IDN, Tcpwrap, XDebug, DTrace are not enabled by default. However, you can edit the PHP extension specific INI file for any specific configuration changes.

For enabling debugging support in PHP, perform the following steps:

Click All Applications > Developer Tools > Web Stack Admin > Options.

✓ Go to PHP tab and click 'PHP Debugger' check box.

In the PHP tab, click Advanced Configuration to open the INI file for editing.

Important - NetBeans IDE configured for PHP development is already installed in SXDE 1/08. The IDE provides support for PHP editing, debugging, and deployment to the Web Stack Apache runtime. To invoke the NetBeans PHP IDE, click All Applications > Developer Tools > NetBeans PHP IDE 6.0. PHP plug-in is already bundled with this version of NetBeans IDE.

NetBeans PHP IDE is a pre-configured NetBeans setup that only exposes the PHP support. You do not need to download any additional PHP modules. This simple PHP configuration also allows you to add MySQL or PostgreSQL databases since the drivers are already registered in the IDE. NetBeans PHP IDE startup time is lesser than the normal NetBeans IDE.

4.1.1 Bundled PHP Extensions

PHP modules are available in SXDE 1/08 as extensions. Each of the modules has a respective INI file under /etc/php5/5.2.4/conf.d directory. These PHP extensions are enabled by default. Custom third-party PHP extensions like APC, Suhosin, IDN, Tcpwrap, XDebug, and DTrace are not enabled by default. However, you can edit the PHP extension specific INI file for any specific configuration changes. Following is the list of PHP extensions available on the Solaris OS:

- ✓ bcmath
 ✓ exif
 ✓ mbstring
 ✓ pdo_sqlite
- ✓ sysvsem
- ✓ xmlrpc
- ✓ bz2
- 🖌 ftp
- ✓ mysql
- ✓ pgsql
- ✓ sysvshm
- ✓ xmlwriter
- ✓ calendar
- 🗸 gd
- 🗸 mysqli
- ✓ posix
- ✓ tcpwrap
- 🗸 xsl
- ✓ ctype
- ✓ gettext
- 🗸 openssl
- ✓ shmop
- ✓ tcpwrap
- ✓ zip
- ✓ curl
- ✓ hash
- ✓ pcntl
- ✓ soap
- ✓ tidy
- 🖌 zlib
- ✓ dba
- ✓ iconv
- ✓ pdo
- ✓ sockets
- ✓ tokenizer
- ✓ dbase
- ✓ n.so
- ✓ pdo_mysql
- ✓ sqlite
- ✓ wddx
- ✓ dom

- ✓ ldap
- ✓ pdo_pgsql
- ✓ sysvmsg
- ✓ xmlreader

More Information

- Solaris Web Stack Getting Started Guide. Click All Applications > Developer Tools > Web Stack Admin > View Getting Started Guide to view the guide.

4.1.2 Setting Up PHP Plug-in in NetBeans

PHP editing is supported from NetBeans IDE 6.0. PHP Plug-in is an extension to the NetBeans IDE that supports Web development based on PHP. It is one of the series of plugins for scripting languages that are supported by the NetBeans IDE. The following sections show you how you can get started with NetBeans PHP plug-in.

4.1.2.1 Download PHP Plug-in

PHP plug-in is not loaded by default in NetBeans 6.0 as the plug-in is still evolving. You need to manually download the plug-in and extend NetBeans IDE to support working with PHP files. However you can use the NetBeans 6.0 PHP IDE option from the menu. While installing the plug-in you can set up a web server environment for deploying your PHP projects. NetBeans comes bundled with Apache Tomcat Servlet Container and not Apache Web Server. You need to follow the steps mentioned in the rest of the sections to successfully configure Apache Web Server in NetBeans IDE.

- ✓ Click Tools > Plugins.
- ✓ Click Available Plugins Tab.
- ✓ Click Reload Catalog to update the list of plugins from different sources.
- ✓ Scroll down the list till you find the PHP plug-in under Scripting Category.
- Select the plug-in and click Install. The plug-in will be downloaded from one f the NetBeans repository.
- \checkmark Restart the IDE for the plug-in to be functional.

	Plugins 🛛 🔀
Updates Available Plugins (96) Downloaded	Installed (0/38) Settings
Reload Catalog	Search:
Inst Name Categ ₹ So Embedded JavaS Phobos Image: Solid Soli	PHP NetBeans Development Plugin Version: 1.0 Date: 11/28/07 Source: Latest Development Build Homepage: http://scripting.netbeans.org/ Plugin Description Provides tools and support for php development. Includes PHP editor, runtime explorer and documentation. Close Help Source: Label Development for php development. Includes PHP editor, runtime explorer and documentation.

Download PHP Plug-in.

You do not need to download PHP plug-in for NetBeans, if you are using the NetBeans PHP IDE 6.0 is SXDE 1/08. Click All Applications > Developer Tools > NetBeans 6.0 PHP IDE.

4.1.3 Create a PHP Project

When you install the PHP plug-in, a new project type is created. You can either create a new PHP project or create a PHP project with existing sources.

- ✓ Click File > New Project.
- ✓ Select PHP Project from PHP Categories.
- ✓ Enter project name as MyApp and Click Next.
- ✓ Select Apache₂ as the configured Web Server.
- ✓ Enter Context Path as /MyAPP.
- ✓ Enter HTTP Path as http://localhost/MyApp.
- ✓ Enter Document Path as /var/apache2/2.2/htdocs/MyApp.

While creating the project, you have the option of creating an index file. Note that MyApp Source Files contain index.php. Modify the code to print "Hello NetBeans".

	Reans IDE
Pr • × Files Services	📷 index.php ×
▼ 🛍 MyApp ▼ 冠 Source Files	· 🕼 📑 - 🗐 - · · · 🔍 🤜 🖓 😓 · 🔗 · ⊗ · · 😫 🖕 · · · · · · · · · · · · · · · · · ·
튮 index.php	<pre><!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"> <html> <head> <title></title> </head> <body> </body></html></pre>
	<pre>echo("Hello NetBeans!");</pre>

Print Hello

4.1.4 Test Your PHP Project

Start Apache Web Server by running httpd or using Solaris SMF. httpd is located in /usr/apache2/2.2/bin.

For running Apache 2 Web Server, as root user execute:

\checkmark	\$ /usr/	′sbin/sv	cadm	enable	apache2
--------------	----------	----------	------	--------	---------

OR

 Click All Applications > Developers Tools > Web Stack Admin > Start Apache2/MySQL Servers.

When Apache Web Server is running, right click on index.php and click execute the file. The file will be uploaded to the server's document root and a web browser window will open to show the output.

Output - Run File - Apache 2

```
Upload Files using server Apache 2 started
Number of copied files: 1
Upload Files using server Apache 2 finished
```

PHP Files are uploaded to the Server's Document Directory

Note - In a PHP file type phpinfo() and run the file to see the Web Stack PHP configuration that provides a way to debug your PHP and server environment.

4.1.5 PHP Configuration through AMP GUI

You can use the AMP Web App Development Option GUI to modify PHP settings as supported by Apache Web Server. For invoking the GUI tool, click Developer Tools > WebStack Admin > Options.

	A.M.P. Web App Development Options	
ope	nsolaris Mysql php	
Apache 2 PHP MySQL	FTP	
PHP Debugger: (√ enable	
Error Reporting Level: (All errors and warnings	
1	fatal run-time errors	
(run-time warnings (non-fatal errors)	
(run-time notices	
	Advance Configuration (edit php.ini) Repair Show phpinfo	
ок		Cancel

PHP Configuration through AMP GUI

PHP Debugger is not enabled by default. You need to click PHP Debugger check box to enable this option. NetBeans IDE supports the use of XDebug for debugging PHP projects.

More Information

- http://wiki.netbeans.org/wiki/view/PHPDebugging
- http://php.netbeans.org/docs/plugin-quick-start.html
- http://php.netbeans.org/docs/system-requirements.html

4.2 Ruby Support

NetBeans features plug-ins that provides an integrated development environment for building, running, testing, and debugging Ruby and Ruby on Rails applications. NetBeans supports Ruby project types including Ruby files, RSpec specification files, and YAML files. You can configure NetBeans to use the native ruby available through Web Stack. The IDE also supports Rake build tool integration and gives you access to the Interactive Ruby Shell.

Supported Version – Ruby 1.8

Note – If you need to use the Gem Manager, you must have gem installed, and the IDE must have write permission to your Ruby installation directory.

4.2.1 Where is Ruby?

You do not need to download and install ruby if you are using Solaris with Web Stack. The following list describes the file structure for Ruby:

/var/ruby/1.8/gem_home contains the Rubygems repository. Configure the GEM_HOME environment variable to point to /var/ruby/1.8/gem_home to use this installation of Rubygems.

/usr/ruby/1.8/bin contains the Ruby executable as well as other utility programs, and Rubygems programs. These programs are linked from /usr/bin. For example:

/usr/ruby/1.8/bin/ruby is linked from /usr/bin/ruby1.8, and may be linked
from /usr/bin/ruby if 1.8 is the latest version of Ruby installed on this system.

4.2.2 Verifying Your Gem Environment

\$ gem environment

RubyGems Environment:

- VERSION: 0.9.4 (0.9.4) - INSTALLATION DIRECTORY: /var/ruby/1.8/gem home
- GEM PATH: /var/ruby/1.8/gem home
- REMOTE SOURCES:
 - http://gems.rubyforge.org

4.2.3 Preparing NetBeans for Ruby

Before proceeding to use NetBeans for Ruby, you need to set the environmental variable GEM_HOME.

For sh -> export GEM_HOME=/var/ruby/1.8/gem_home For csh -> setenv GEM_HOME_/var/ruby/1.8/gem_home

Important - For using gem, make sure you have direct access to internet. If your system is behind a firewall or if it uses a proxy server, set the HTTP_PROXY variable.

If you do not set the GEM_HOME environmental variable, NetBeans IDE will not work as the available gems cannot be enumerated if you are using a native Ruby environment. So you when you click Tools > Ruby Gems, you will get an error as shown in the following figure:

	New Ruby on Rails Application
Steps	Install Rails
 Choose Project Name and Location Install Rails 	Ruby Gems is not accessible Details
	If using JRuby: JRuby does not bundle SSL support used by Rails.
	Install JRuby OpenSSL Support
	Proxy Settings
	Rails is not installed.
	<back next=""> Einish Cancel Help</back>

Set GEM_HOME before using NetBeans for Rails development.

For this reason you need to set GEM_HOME for the gem repository to be accessible from the NetBeans IDE.

Also the directory referenced by GEM_HOME should be writeable. So make sure you execute the following command as root user:

```
✓ $ chmod -R a+w/var/ruby/1.8/gem home
```

4.2.4 Ruby on Rails

Rails is a full-stack framework for developing database-backed web applications. Rails provide a pure-Ruby development environment. RubyGems is the standard Ruby package manager. On the Solaris platform, RubyGems are already loaded. Hence you can install Rails and its dependencies through the command-line by typing the following command as a root user:

/usr/bin/gem install rails --include-dependencies

You can also install rails directly from NetBeans IDE rather than invoking the gem command through command line. The Ruby on Rails environment is set up for the development. You can now use NetBeans IDE to create a Ruby on Rails project. When you create a project, the IDE creates the same folders and files that a rails command would create.

Note - Depending on the version of SXDE, Rails may not be available automatically. If rails is not available, you need to install that using the gem command.

4.2.4.1 Ruby Gems

Ruby Gems is a system for managing Ruby software libraries. Ruby code packaged in this manner is called a gem. Gems allow downloading, installing, and managing your Ruby libraries. Web Stack bundle in Solaris does not include a lot of bundled gems as you can use

Ruby Gems to download and install additional gems. You can use the NetBeans interface for managing Gems.

4.2.4.2 Downloading Gems

You can manage ruby gems from NetBeans IDE.

- ✓ Click Tools > Ruby Gems.
- ✓ Go to New Gems tab.
- ✓ Click Reload Gems.
- ✓ Select the Ruby Gems and click Install.

	Ruby Gems 🛛 🔀
Updated(8) Installed(10) New Gems(<u>Reload Gems</u> actionmailer (1.3.5) : Service laye actionpack (1.13.5) : Web-flow and actionwebservice (1.2.5) : Web s	2439) Settings Search: rails Installed Version
activerecord (1.13.3): Implements activesupport (1.4.4) : Support an rails (1.2.5) : Web-application fram rake (0.7.3) : Ruby based make-lik rspec (1.0.8) : RSpec-1.0.8 (r2338)	1.2.5 Available Version 2.0.2 Description:
Update Update All	Web-application framework with template engine, control-flow layer, and ORM.

Manage Ruby Gems from NetBeans

Important – Make sure you install rails 1.x and not 2.x

4.2.5 NetBeans Ruby Setup

NetBeans IDE provides extensive support for creating Ruby and Rails applications. You do not need to download Ruby as Ruby support is already provided in the NetBeans 6.0 IDE that comes with SXDE 1/08.

<u>R</u> eload	Catalog			Search:	
Unin	Name	Category ₹	Active		
	Java Persistence	Java	0	AR	uby net Depativate
	Java Profiler	Java	0		
	GUI Builder	Java	0	K	ans
	Ant	Java	0	(E	Build
	Java Debugger	Java	۲	<u> </u> 20	00711261600)
	Platform	Platform	0	n	
	JRuby and Rails Distribution	Ruby	0	PI	ugin Description
	Depot Sample	Ruby	0		
V	Ruby and Rails	Ruby	0	R in	formation on rocc
	PHP	Scripting	Ø	ht	to://wiki.netbean:
	SOA	SOA	0	F	or more informati
	BPEL	SOA	Ø	ht	tp://wiki.netbean:
	Composite Application	SOA	Ø	7 4	
Uninsta	2 nluging selected A I	Ininstall onera	tion will rec	wire res	tart of the IDE

Install Ruby and Rails Plug-in

Ruby and Rails support has been well documented in NetBeans site. See the links below for more information.

When you download the Ruby and Rails plug-in, you need to restart the IDE for changes to take effect.

For creating a Rails application perform the following steps:

- ✓ Click File > New Project
- ✓ Under Ruby category, select Ruby on Rails Application

At this point you will be prompted to select a Ruby interpreter for your project. If you are using SXDE 1/08, you can select the optimized native ruby interpreter as shown in the figure below:

	🕥 Choose Ruby Interpreter 🛛 🔀
A	Which Ruby interpreter do you want to use?
	JRuby (bundled with the IDE)
	Native Ruby: /usr/ruby/1.8/bir/ruby
	Other
	You can change this setting later in the Options dialog
	OK Cancel Help

Choose Native Ruby Interpreter

The native ruby interpreter is available at /usr/ruby/1.8/bin/ruby. This path will be automatically shown in the Choose Ruby Interpreter dialog.

🔽 🕥 New Ruby on Rails Application 🛛 🛛 🔀					
Steps	Name and Location				
1. Choose Project 2. Name and Location	Project Name: RailsApplication1				
3. Install Kalls	Project Location: //NetBeansProjects Browse.	.]			
	Project Folder: //NetBeansProjects/RailsApplication				
	 Set as Main Project Database: mysql * If Using JRuby: Access Database Using JDBC Add Rake Targets to Support App Server Deployment (.war) 				
	Ruby Interpreter: ruby in /usr/ruby/1.8/bin Change.	.]			
	< <u>Back</u> Next> Einish Cancel Help				

MySQL/PostgreSQL DB support.

You can select MySQL or PostgreSQL DB for your Rails project. You can also edit the file database.yml, which is already configured to use the MySQL adapter as the development database by default. You do not need to do any configuration unless the root user requires a password.

The PostgreSQL driver is not pre-installed with NetBeans Ruby support. You need to install the postgres-pr Ruby gem using the Gem Manager as shown in the section on Downloading Gems.

Important - When using PostgreSQL with JRuby (not native Ruby bundled through Web Stack), you need to edit the database.yml file and uncomment the lines that start with "host" and "port" for Ruby access to PostgreSQL to work.

More Information

- Installing and Configuring Ruby (http://www.netbeans.org/kb/60/ruby/setting-up.html)
- Getting started with Ruby and Rails (http://www.netbeans.org/kb/60/ruby/getting-started.html)

- NetBeans IDE Ruby Documentation (http://www.netbeans.org/kb/60/ruby/index.html) – Recommended for understanding Ruby and Rails support in NetBeans.

5 DB Support

NetBeans Database Explorer is a simple database administration tool, which allows the user to work with any supported database schema. To invoke the Database Explorer, navigate to the Databases node by clicking the Services tab of the Explorer window as shown in the figure.

Se	ervi	ces + x
~	٢	Databases
	⊳	Drivers
	Þ	🔢 jdbc:derby://localhost:1527/sample [app on APP]
	Þ	jdbc:derby://localhost:1527/travel [travel on TRAVEL]
	Þ	jdbc:derby://localhost:1527/vir [vir on VIR]
	~	jdbc:postgresql://127.0.0.1:5432/postgres [postgres on public]
		▼ 🛄 Tables
		✓ iiii accounts
		iller
		▶ III accounts pkev
		▷ 🚊 Foreign kevs
		branches
		▶ 🛄 history
		▼ 🛄 tellers
		💷 tid
		Le bid
		🛄 tbalance
		I I filler
		▶ Indexes
		P 🔜 Foreign keys
		P Views
ь	G	Viah Services
Þ	-20	Enterprise Beans (2 v)
Þ		Servers
Þ		Web Servers
	-	-

Browse Tables, Views, and Procedures

Within the Databases node is the Drivers node, which contains the JDBC drivers that NetBeans supports. To install a new driver, right-click the Drivers node and select New Driver to open the New JDBC driver dialog. Fill in the required data (especially the driver class and JAR files) and click OK. A node for the new driver will be created under the Drivers node. Right-click this node and select the Connect Using command and enter the required connection information (database URL, username, password). If everything is correct, the database connection will be established. You need to do this only for drivers not bundled in NetBeans. Some of the drivers bundled by NetBeans are:

- ✓ Java DB Embedded (org.apache.derby.jdbc.EmbeddedDriver)
- ✓ Java DB Network (org.apache.derby.jdbc.ClientDriver)
- ✓ JDBC-ODBC Bridge (sun.jdbc.odbc.JdbcOdbcDriver)
- ✓ MySQL (Connector /J Driver) (com.mysql.jdbc.Driver)
- ✓ PosgreSQL (org.postgresql.Driver)

Information about the database schema is presented by the nodes under the connection node. You can see the tables with their columns, indexes and foreign keys. You can also see views and their columns and stored procedures with their arguments. More information about each database element can be found in the Properties window. For instance, data type, size for each column are shown. Using the popup menus, it is possible to access commands specific to database elements, such as to create a new table, add a column to an existing table, or view data.

NetBeans' Database Explorer supports the following features:

- ✓ Database schema browsing You can browse database schema and see the tables, views and stored procedures defined in a database.
- ✓ Database schema editing You can edit database schema using wizards. It is possible to create new tables and views and add columns to a table.
- ✓ Data view You can view the data stored in the tables.
- ✓ **SQL and DDL command execution -** You can write and execute SQL or DDL commands.
- Migration of table definitions You can migrate table definitions across databases from different vendors.

For a list of supported drivers for NetBeans IDE 6.0, see: http://wiki.netbeans.org/DatabasesAndDrivers

5.1 MySQL Support

MySQL server is the most widely used relational database server. SXDE 1/08 includes 32-bit architecture of MySQL database. MySQL also has its own C client API, which is delivered with Web Stack.

Supported Version – MySQL 5.0.45

Assuming that you have already configured MySQL users and added necessary permissions, you can use NetBeans Database Explorer to add a new connection to the MySQL DB and manage tables as shown later in this document.

5.1.1 Initial Setup

For using MySQL with PHP you do not need to manually set up extension directories as it is already done in Web Stack but you still need to enable MySQL extension in the PHP.ini file. If you are using SXDE 1/08, you do not need to create mysql user or mysql group as mysql user and mysql group has been pre-configured.

5.1.2 Starting the DB

MySQL 5.0.45 for Solaris includes files necessary to register with SMF. The procedure to register MySQL service with SMF and starting the database server instance is described in the Web Stack Getting Started Guide.

For starting the MySQL Server through the Web Stack menu, perform the following step:

 Click All Applications > Developer Tools > Web Stack Admin > Start Apache2/MySQL Server.

Optionally, you can also start MySQL server through command line:

✓ \$ /usr/sbin/svcadm enable mysql:version_50

You can also start MySQL server from the AMP GUI option tool. Click All Applications > Developer Tools > Web Stack Admin > Options. Go to General tab. Click Start Servers to start the MySQL Server along with Apache 2 web server.

A.M.P. Web App Development Options	
opensolaris My	
Php	
Beneral Apache 2 PHP MySQL	
/usn/bin/secs as ache22 mysel STATE STIME FMRI disabled 01.45.35 xvc /spplication/database/mysel servion_50 disabled 01.45.50 xvc /nstwork/http:spache20	Start Servers View Details
<u>OK</u>	Cancel

Use the AMP tool to start MySQL Server.

MySQL 5.0 configuration file is located at /etc/mysql/5.0/my.cnf. You can directly edit this file. The log file is located at /var/svc/log/application-database-mysql:version 50.log.

For creating a MySQL DB connection and testing the connection, refer to the next section on managing PostgreSQL connections. It is the same procedure except the part where you specify the MySQL DB driver that gets bundled with the NetBeans IDE.

Note – The default user name is root and the corresponding password is an empty string.

5.2 PostgreSQL Support

PostgreSQL is the open source enterprise database platform fully integrated into Solaris 10 and Solaris Express Developer Edition (SXDE) with comprehensive support offerings from Sun. Unlike many proprietary databases, PostgreSQL is known as the 'failsafe DB' among the community. PostgreSQL is free of charge, and Sun includes a version of the database with every Solaris distribution.

Supported Version – PostgreSQL 8.2

5.2.1 Starting the DB

In SXDE 1/08, before starting to use PostgreSQL DB, execute the following command as root user:

/usr/sbin/svcadm enable postgresql:version_82

You do not need to setup PostgreSQL data directory or create a postgres user as it is already created in Solaris OS. The above command will also start the PostgreSQL DB.

5.2.2 Additional Configuration

The pre-existing PostgreSQL SMF service is disabled by default. So, if you (as owner and single user of the machine) don't enable the SMF service, the default port won't be used. So you can start PostgreSQL on a non-default port also.

If you want a PostgreSQL instance that is owned and managed by you and runs on the default port, just call initdb as shown in the above section followed by pg_ctl start. If you need to enable the pre-existing PostgreSQL SMF service, and if you want to manage it from another user name, then you need to assign the necessary privileges.

Execute the following command just once:

✓ \$ usermod -P "Postgres Administration" <username>

5.2.3 Adding a New Connection

For using PostgresSQL DB in your application through NetBeans, you need to let NetBeans know the existence and authentication information of the DB. For this reason, you need to create a new DB connection from NetBeans IDE.

- ✓ Go to Service tab.
- ✓ Right click Databases and select New Connection.



	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	h 📋 🦻 🧖 🤇 🖓	It config> 💽 🦹
	Projects	Files	Services
I	▼ 🛢 Data <u>bases</u>		
I	Dr New Connection		
I	▶ 😼 jdl Enable Debug	sample [app on APP]	
I	Id Disable Debug	travel [travel on TRAVEL]	
I	▷ Signation Decodes and because of the second s	7vir [vir on VIR]	
I	Web Services		
I	Enterprise Beans (2.x)		
	▶ 📑 Servers		
- 18			

New DB Connection

- ✓ In the New Database Connection dialog select PostgreSQL as the DB.
- ✓ Enter the Driver name as org.postgresql.Driver if not present already.
- ✓ Provide the Database URL. postgres is the name of the DB.
- Enter user name and password (Default user name is postgres and password is an empty string ").
- ✓ Click OK.

	New Database Connection				
Basic setting A	Advanced				
<u>N</u> ame:	PostgreSQL				
<u>D</u> river:	org.postgresql.Driver				
D <u>a</u> tabase URL:	jdbc:postgresql://mpriest:5432/postgres				
<u>U</u> ser Name:	postgres				
<u>P</u> assword:	****				
	✓ <u>R</u> emember password (see help for information on security risks)				
Connection established.					
	OK Cancel <u>H</u> elp				

New Database Connection

✓ Click Advanced tab and select public schema.
 ✓ Click OK.

	\bigcirc	New Database Connection
Basic setting	Advanced	
Select a data	abase schen	na to use.
<u>S</u> elect scher	na: public	▼ <u>G</u> et Schemas
Connection e	established.	
		OK Cancel <u>H</u> elp

Select DB Schema

5.2.4 Testing the Connection

For testing if the connection is successful, let us crate a DB from the DB Explorer as explained in the following section:

				🗊 NetE	Beans I	DE Dev 2	00711021200
<u>F</u> ile <u>E</u> dit ⊻iev	v <u>N</u> avigate	<u>S</u> ource	Ref <u>a</u> ctor	<u>B</u> uild	<u>R</u> un	<u>P</u> rofile	Vers <u>i</u> oning
12 🖆 🔛	9 ×		19(6	<default< td=""><td>config></td><td>• 7</td></default<>	config>	• 7
Projects		Files				Se	rvices
 Drivers jdbc:derb jdbc:derb jdbc:derb jdbc:derb jdbc:derb jdbc:post 	y://localhost:1: y://localhost:1: y://localhost:1: gresql://mprie:	527/samp 527/travel 527/vir [vir st:5432/po	le [app on / [travel on T on VIR] stgres [pos	APP] RAVEL] tgres on	public]		_
🚞 Views 🚞 Proced	Create Table Recreate Ta	e ble					
▶ 🧟 Web Servic ▶ 🥯 Enterprise I	Execute Co	mmand					
Servers	Rendan						

✓ Right click on the newly added connection and select Create Table.

Create Tables

You can create a table using the easy-to-use GUI provided by NetBeans IDE.

Add columns and their data types in the table. You can also set primary keys, define unique and null constraints from the tool.

				🕥 🕥	ate Table					×
<u>T</u> able n	ame: Gu	uestitine	rary				<u>O</u> wn	er: public	•	
Key	Index	Null	Unique	Column name	Data type		Size	Scale		Add column
☑	V		V	GuestID	NUMERIC	•	0	C		Remove
				FirstName	VARCHAR		20	C		
				SecondName	VARCHAR		20	C		
				Destination	VARCHAR		10	C		
				Source	VARCHAR		0	C		
		v		StartDate	DATE		0	C	V	
										OK Cancel

Create Tables

When you have created the table, check if the table shows up in the Tables list in the DB Explorer.

For more information on NetBeans DB support, see: http://db.netbeans.org/

5.3 Java DB Support

Java DB is the Sun's supported distribution of the open source Apache Derby database. Java DB is shipped with JDK 1.6 and NetBeans 6.0 that is available in Solaris OS. You can work with the bundled Java DB available through NetBeans IDE. There is no Solaris OS specific configuration so you can get started by reading the tutorial available at: http://wiki.netbeans.org/GetStartedwithJavaDB

5.4 Entity Classes from DB

One of the main features of the Java Persistence API (JPA) that was introduced with the Java EE 5 platform is that you can plug in any persistence provider that you want in your application. NetBeans together with its DB support and support to generate entity classes from an existing DB like MySQL DB or PostgreSQL DB makes building web applications easier. This section shows how you can use NetBeans' wizards to access any running DB in Solaris and generate entity classes for updating the DB through your application.

In the section on PostgreSQL, we created a GuestItinerary table through NetBeans. Now let us generate entity classes for that table using a wizard interface provided by NetBeans.

Create a new web application that will connect to the PostgreSQL DB.

✓ Click File > New Project.

✓ Select Web Application under Web Categories.

	🚺 New Project	
Steps	Choose Project	
1. Choose Project 2	Categories: Java Web Enterprise PHP UML SOA Ruby C/C++ NotBoons Modulos Creates an empty Web applica project uses an IDE-generated to	Projects: Web Application Web Application with Existing Source Web Application with Existing Ant Sc Web Application with Existing Ant Sc web Application with Existing Ant Sc web Application with Existing Ant Sc
	project.	Back Next > Einish Cancel Help

Create New Project

- ✓ Enter MyWebApp as the project name.
- ✓ Select the server as Tomcat 6.0. See the section on adding Tomcat as a server in NetBeans.
- ✓ Enter Context Path as /MyWebApp. This path is used for accessing the web application.

🕤 💦 New Web Application 🛛 🔀					
Steps	Name and Locat	ion			
 Choose Project Name and Location 	Project <u>N</u> ame:	MyWebApp			
3. Frameworks	Project Location:	/export/home/phantom/NetBeansF Browse			
	Project <u>F</u> older:	/export/home/phantom/NetBeansF			
	<u>A</u> dd to Enterprise <u>S</u> erver: Java EE Version: <u>C</u> ontext Path: I √ I Set as Main P	Application: <none> Tomcat 6.0 Java EE 5 /MyWebApp roiect</none>			
		< <u>Back</u> Next > <u>Finish</u> Cancel <u>Help</u>			

Select target server as Tomcat

Now a web application by name MyWebApp will be created by NetBeans.

- ✓ Right click on MyWebApp node and select New File
- ✓ Select Entity Classes from Database under Persistence Category.

	🕥 New File 🛛 🛛 🛛
Steps	Choose File Type
1. Choose File Type	Project: 🛞 MyWebApp 🔹
	Categories: Web JavaServer Faces Struts Java Junit Persistence Web Services XML GlassFish
	Description: Creates Java Persistence API entity classes based on an existing relational database. Entity classes are used to represent objects whose lifespan is longer than a typical program execution. This template creates an entity class for each selected table complete
	< Back Next > Finish Cancel Help

Entity Classes from Database option.

- ✓ In the Data Source drop down select New DataSource.
- In the popup window, enter jdbc/postgres as the JNDI name and select the PostgreSQL DB connection from the list.
- ✓ Click guestitinerary table from Available tables list.
- ✓ Click Next.

New File				
Steps	Database Tables			
1. Choose File Type 2. Database Tables	● Data Source:	jdbc/postgres [jdbc:postgresql://mpriest:5432/postgres]	•	
3. Entity Classes	🔿 Database <u>S</u> chema	<no database="" in="" project="" schemas="" the=""></no>	Ŧ	
	Available <u>T</u> ables:	S <u>e</u> lected Tables:		
		Add > < <u>R</u> emove Add A <u>J</u> I >> << <u>Remove All</u>		
		Include Related Tables		
		< Back Next > Finish Cancel Help	0	

Select the table for which entity classes should be generated

Before you proceed, you need to create a persistence unit. We will use Toplink essentials.

Note - TopLink Essentials is the open-source community edition of Oracle's TopLink object/relational mapping (ORM) tool. It provides the Java Persistence API (JPA) functionality — for creating, removing and querying across lightweight Java objects.

- ✓ Click Create Persistence Unit.
- ✓ Enter a name for persistence unit.
- ✓ Select Persistence Provider as TopLink.
- ✓ Select Data Source as jdbc/postgres.
- ✓ Click create.

🖸 🕕 New File 🛛 🛛					
Steps	Entity Classes	i			
 Choose File Type Database Tables 	Specify the names of the entity classes for the database tables and the location for				
3. Entity Classes	<u>C</u> lass Names:	Database Table Class Name			
		guestitinerary Guestitinerary			
	<u>P</u> roject:	MyWebApp			
	Location:	Source Packages			
	Pac <u>k</u> age:	org.myapp			
	✓ Generate Named Query Annotations for Persistent Fields				
	The project does not have a persistence unit. You need a persistence unit to persist Create Persistence Unit				
		< <u>Back</u> Next > <u>Finish</u> Cancel <u>H</u> elp			

Create Persistence Unit

	🜔 Create Persistence Unit	X			
Dessistence Unit News		_			
Persistence <u>U</u> nit Name:	МуччевАррРО				
Specify the persistence provider and database for entity classes.					
Persistence Provider:	TopLink	•			
D <u>a</u> ta Source:	jdbc/postgres	•			
☑ Use Java Transaction APIs					
Table Generation Strategy: O Create O Drop and Create O None					
	Create	ancel			

TopLink Essentials as Persistence Provider

At this stage, you cannot build your web application successfully as Tomcat does not come bundled with TopLink essentials like GlassFish Application Server.

- ✓ Right click MyWebApp and click Properties.
- ✓ Select Libraries in the Categories section.
- ✓ In the right pane click Add Library and select TopLinkEssentials from the list.
- ✓ Click OK.

	🕽 Project Properties - MyWebApp	×			
Categories:					
 Sources Frameworks 	Java Platform: JDK 1.6 (Default) •	Manage Platforms			
Libraries	Compile Compile Tests Run Tests				
 Build Compiling Packaging Documenting Run 	Compile- <u>t</u> ime Libraries:				
	Name	Add <u>P</u> roject			
	PostgreSQL JDBC Driver	Add <u>L</u> ibrary			
		Add JAR/ <u>F</u> older			
		<u>R</u> emove			
		Move Up			
		Move <u>D</u> own			
	Compile-time libraries are propagated to all library categ				
	☑ <u>B</u> uild Required Projects (Libraries an	d additional WAR c			
	0	Cancel <u>H</u> elp			

Add Libraries

Now MyWebApp is ready and you can start building your web application using the entity classes.

5.5 Web Services from DB

Another interesting aid provided by NetBeans is that you can create a web service that can perform CRUD operation on a selected table in a database. You can do these using SOA capabilities of NetBeans. From the plugins dialog, make sure that you have SOA plugin downloaded and installed or use the OpenESB NetBeans IDE bundle available for download at https://open-esb.dev.java.net/

- ✓ Right click your web application.
- ✓ Select New File.
- ✓ Under SOA category select WSDL from Database.

Follow the steps in the wizard for selecting the table and the CRUD operations that you need to perform. When the WSDL file is generated you can use the WSDL (Web Service) as a BPEL partner link and start building your SOA applications.



A sample BPEL process updating a partner DB

For instance, from your BPEL process you easily access a PostgreSQL or MySQL DB and can perform insert operations using a simple BPEL invoke activity.

More Information

- http://www.netbeans.org/kb/trails/soa.html

6 Getting Help

Getting help is always easier for NetBeans IDE and Solaris OS. If you have a particular problem that you are facing with Web Stack, you can get help from the community mailing lists and official documentation at http://docs.sun.com.

6.1 Mailing Lists

When you have a particular issue with NetBeans IDE, you can write to the NetBeans mailing list. To subscribe, unsubscribe, browse archives, or for more info on individual lists, please follow the appropriate links given in the NetBeans mailing list site.

- http://www.netbeans.org/community/lists/

Alternatively, if you have a question for the Web Stack community at OpenSolaris.org, check the following site for mailing list information.

- http://opensolaris.org/os/project/webstack/Mailing_LIsts/

6.2 Documentation

Web Stack documentation is available at docs.sun.com and OpenSolaris.org site. For information on starting with Solaris OS for web development, read Web Stack Getting Started Guide available at docs.sun.com. For any other issues pertaining to Web Stack documentation, send a mail to webstack-discuss@opensolaris.org.

More Information

- NetBeans Documentation Site http://www.netbeans.org/kb/60/
- OpenSolaris Web Stack Project Page http://opensolaris.org/os/project/webstack/
 Cookbook for using NetBeans on Solaris
- http://wiki.netbeans.org/NetBeansAndSolarisHowTos