Wikiprint Book

Title: Trac and mod_python

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Trac and mod_python

Mod_python is an ■Apache module that embeds the Python interpreter within the server, so that web-based applications in Python will run many times faster than traditional CGI and will have the ability to retain database connections. Trac supports ■mod_python, which speeds up Trac's response times considerably, especially compared to CGI, and permits use of many Apache features not possible with tracd/mod_proxy.

Simple configuration: single project

If you just installed mod_python, you may have to add a line to load the module in the Apache configuration:

```
LoadModule python_module modules/mod_python.so
```

Note: The exact path to the module depends on how the HTTPD installation is laid out.

On Debian using apt-get:

```
apt-get install libapache2-mod-python libapache2-mod-python-doc
```

Still on Debian, after you have installed mod_python, you must enable the modules in apache2, equivalent to the above Load Module directive:

```
a2enmod python
```

On Fedora use, using yum:

```
yum install mod_python
```

You can test your mod_python installation by adding the following to your httpd.conf. You should remove this when you are done testing for security reasons. Note: mod_python.testhandler is only available in mod_python 3.2+.

```
<Location /mpinfo>
 SetHandler mod_python
 PythonInterpreter main_interpreter
 PythonHandler mod_python.testhandler
 # For Apache 2.2
 <IfModule !mod_authz_core.c>
   Order allow,deny
   Allow from all
 </IfModule>
 # For Apache 2.4
 <IfModule mod_authz_core.c>
   Require all granted
 </IfModule>
</Location>
```

A simple setup of Trac on mod_python looks like this:

```
<Location /projects/myproject>
 SetHandler mod_python
 PythonInterpreter main_interpreter
 PythonHandler trac.web.modpython_frontend
 PythonOption TracEnv /var/trac/myproject
 PythonOption TracUriRoot /projects/myproject
 # For Apache 2.2
 <IfModule !mod_authz_core.c>
   Order allow,deny
   Allow from all
 </IfModule>
 # For Apache 2.4
 <IfModule mod_authz_core.c>
   Require all granted
 </IfModule>
</Location>
```

The option **TracUriRoot** may or may not be necessary in your setup. Try your configuration without it; if the URLs produced by Trac look wrong, if Trac does not seem to recognize URLs correctly, or you get an odd "No handler matched request to..." error, add the **TracUriRoot** option. You will notice that the `Location` and **TracUriRoot** have the same path.

The options available are:

```
# For a single project
PythonOption TracEnv /var/trac/myproject

# For multiple projects
PythonOption TracEnvParentDir /var/trac/myprojects

# For the index of multiple projects
PythonOption TracEnvIndexTemplate /srv/www/htdocs/trac/project_list_template.html

# A space delimitted list, with a "," between key and value pairs.
PythonOption TracTemplateVars key1,val1 key2,val2

# Useful to get the date in the wanted order
PythonOption TracLocale en_GB.UTF8

# See description above
PythonOption TracUriRoot /projects/myproject
```

Python Egg Cache

Compressed Python eggs like Genshi are normally extracted into a directory named `.python-eggs` in the users home directory. Since Apache's home usually is not writeable, an alternate egg cache directory can be specified like this:

```
PythonOption PYTHON_EGG_CACHE /var/trac/myprojects/egg-cache
```

Or you can uncompress the Genshi egg to resolve problems extracting from it.

Configuring Authentication

See corresponding section in the [TracModWSGI](#) page.

Advanced Configuration

Setting the Python Egg Cache

If the Egg Cache isn't writeable by your Web server, you'll either have to change the permissions, or point Python to a location where Apache can write. This can manifest itself as a `500 internal server error` and/or a complaint in the syslog.

```
<Location /projects/myproject>
 ...
 PythonOption PYTHON_EGG_CACHE /tmp
 ...
</Location>
```

Setting the PythonPath

If the Trac installation isn't installed in your Python path, you will have to tell Apache where to find the Trac mod_python handler using the `PythonPath` directive:

```
<Location /projects/myproject>
 ...
 PythonPath "sys.path + ['/path/to/trac']"
 ...
</Location>
```

Be careful about using the PythonPath directive, and *not* `SetEnv PYTHONPATH`, as the latter won't work.

Setting up multiple projects

The Trac mod_python handler supports a configuration option similar to Subversion's `SvnParentPath`, called `TracEnvParentDir`:

```
<Location /projects>
 SetHandler mod_python
 PythonInterpreter main_interpreter
 PythonHandler trac.web.modpython_frontend
 PythonOption TracEnvParentDir /var/trac
 PythonOption TracUriRoot /projects
</Location>
```

When you request the `/projects` URL, you will get a listing of all subdirectories of the directory you set as `TracEnvParentDir` that look like Trac environment directories. Selecting any project in the list will bring you to the corresponding Trac environment.

If you don't want to have the subdirectory listing as your projects home page you can use a

```
<LocationMatch "/.+/">
```

This will instruct Apache to use mod_python for all locations different from root while having the possibility of placing a custom home page for root in your DocumentRoot folder.

You can also use the same authentication realm for all of the projects using a `<LocationMatch>` directive:

```
<LocationMatch "/projects/[^/]+/login">
 AuthType Basic
 AuthName "Trac"
 AuthUserFile /var/trac/.htpasswd
 Require valid-user
</LocationMatch>
```

Virtual Host Configuration

Below is the sample configuration required to set up your Trac as a virtual server, ie when you access it at the URLs like `http://trac.mycompany.com`:

```
<VirtualHost *>
   DocumentRoot /var/www/myproject
   ServerName trac.mycompany.com
   <Location />
       SetHandler mod_python
       PythonInterpreter main_interpreter
       PythonHandler trac.web.modpython_frontend
       PythonOption TracEnv /var/trac/myproject
       PythonOption TracUriRoot /
   </Location>
   <Location /login>
       AuthType Basic
       AuthName "MyCompany Trac Server"
       AuthUserFile /var/trac/myproject/.htpasswd
       Require valid-user
   </Location>
</VirtualHost>
```

This does not seem to work in all cases. What you can do if it does not:

- Try using `<LocationMatch>` instead of `<Location>`.
- `<Location />` may, in your server setup, refer to the complete host instead of simple the root of the server. This means that everything (including the login directory referenced below) will be sent to Python and authentication does not work, ie you get the infamous Authentication information missing error. If this is the case, try using a sub-directory for Trac instead of the root, ie /web/ and /web/login instead of / and /login.
- Depending on apache's `NameVirtualHost` configuration, you may need to use `<VirtualHost *:80>` instead of `<VirtualHost *>`.

For a virtual host that supports multiple projects replace `TracEnv /var/trac/myproject` with `TracEnvParentDir /var/trac`.

Note: DocumentRoot should not point to your Trac project env. As Asmodai wrote on #trac: "suppose there's a webserver bug that allows disclosure of DocumentRoot they could then leech the entire Trac environment".

Troubleshooting

If you get server error pages, you can either check the Apache error log, or enable the `PythonDebug` option:

```
<Location /projects/myproject>
 ...
 PythonDebug on
</Location>
```

For multiple projects, try restarting the server as well.

Login Not Working

If you've used `<Location />` directive, it will override any other directives, as well as `<Location /login>`. The workaround is to use negation expression as follows (for multi project setups):

```
#this one for other pages
<Location ~ "/*(?!login)">
  SetHandler mod_python
  PythonHandler trac.web.modpython_frontend
  PythonOption TracEnvParentDir /projects
  PythonOption TracUriRoot /
</Location>

#this one for login page
<Location ~ "/[^/]+/login">
  SetHandler mod_python
  PythonHandler trac.web.modpython_frontend
  PythonOption TracEnvParentDir /projects
  PythonOption TracUriRoot /

  #remove these if you don't want to force SSL
  RewriteEngine On
  RewriteCond %{HTTPS} off
  RewriteRule (.*) https://%{HTTP_HOST}%{REQUEST_URI}

  AuthType Basic
  AuthName "Trac"
  AuthUserFile /projects/.htpasswd
  Require valid-user
</Location>
```

Expat-related segmentation faults

This problem will most certainly hit you on Unix when using Python 2.4. In Python 2.4, some version of ■Expat (an XML parser library written in C) is used and if Apache is using another version, this results in segmentation faults. As Trac 0.11 is using Genshi, which will indirectly use Expat, that problem can now hit you even if everything was working fine before with Trac 0.10. This problem has not been reported for Python 2.5+, so best to upgrade.

Form submission problems

If you're experiencing problems submitting some of the forms in Trac (a common problem is that you get redirected to the start page after submission), check whether your `DocumentRoot` contains a folder or file with the same path that you mapped the mod_python handler to. For some reason, mod_python gets confused when it is mapped to a location that also matches a static resource.

Problem with virtual host configuration

If the <Location /> directive is used, setting the `DocumentRoot` may result in a *403 (Forbidden)* error. Either remove the `DocumentRoot` directive, or make sure that accessing the directory it points is allowed, in a corresponding `<Directory>` block.

Using <Location /> together with `SetHandler` resulted in having everything handled by mod_python, which leads to not being able to download any CSS or images/icons. Use <Location /trac> `SetHandler None` </Location> to circumvent the problem, though this may not be the most elegant solution.

Problem with zipped egg

It's possible that your version of mod_python will not import modules from zipped eggs. If you encounter an `ImportError: No module named trac` in your Apache logs but you think everything is where it should be, this might be your problem. Look in your site-packages directory; if the Trac module appears as a *file* rather than a *directory*, then this might be your problem. To rectify this, try installing Trac using the `--always-unzip` option:

```
easy_install --always-unzip Trac-0.12b1.zip
```

Using .htaccess

Although it may seem trivial to rewrite the above configuration as a directory in your document root with a `.htaccess` file, this does not work. Apache will append a "/" to any Trac URLs, which interferes with its correct operation.

It may be possible to work around this with mod_rewrite, but I failed to get this working. In all, it is more hassle than it is worth.

This also works out-of-box, with following trivial config:

```
SetHandler mod_python
PythonInterpreter main_interpreter
PythonHandler trac.web.modpython_frontend
PythonOption TracEnv /system/path/to/this/directory
PythonOption TracUriRoot /path/on/apache

AuthType Basic
AuthName "ProjectName"
AuthUserFile /path/to/.htpasswd
Require valid-user
```

The `TracUriRoot` is obviously the path you need to enter to the browser to get to Trac, eg `domain.tld/projects/trac`.

Additional .htaccess help

If you are using the .htaccess method you may have additional problems if your Trac directory is inheriting .htaccess directives from another. This may also help to add to your .htaccess file:

```
<IfModule mod_rewrite.c>
 RewriteEngine Off
</IfModule>
```

Platform specific issues

Win32 Issues

If you run Trac with mod_python < 3.2 on Windows, uploading attachments will **not** work. This problem is resolved in mod_python 3.1.4 or later, so please upgrade mod_python to fix this.

OS X issues

When using mod_python on OS X you will not be able to restart Apache using `apachectl restart`. This is apparently fixed in mod_python 3.2, so please upgrade mod_python to fix this.

SELinux issues

If Trac reports something like: `Cannot get shared lock on db.lock`, then the security context on the repository may need to be set:

```
chcon -R -h -t httpd_sys_content_t PATH_TO_REPOSITORY
```

See also ■How do I set repository permissions correctly?

FreeBSD issues

The FreeBSD ports have both the new and old versions of mod_python and SQLite, but earlier versions of pysqlite and mod_python won't integrate:

- pysqlite requires threaded support in Python
- mod_python requires a threadless install.

Apache2 does not automatically support threads on FreeBSD. You could force thread support when running `./configure` for Apache, using `--enable-threads`, but this isn´t recommended. The best option ■seems to be adding to /usr/local/apache2/bin/ennvars the line:

```
export LD_PRELOAD=/usr/lib/libc_r.so
```

Fedora 7 Issues

Make sure you install the 'python-sqlite2' package as it seems to be required for TracModPython, but not for tracd.

Subversion issues

If you get the following Trac error `Unsupported version control system "svn"` only under mod_python, though it works well on the command-line and even with TracStandalone, chances are that you forgot to add the path to the Python bindings with the PythonPath directive. A better way is to add a link to the bindings in the Python `site-packages` directory, or create a `.pth` file in that directory.

If this is not the case, it's possible that you are using Subversion libraries that are binary incompatible with the Apache ones and an incompatibility of the `apr` libraries is usually the cause. In that case, you also won't be able to use the svn modules for Apache (mod_dav_svn).

You also need a recent version of `mod_python` in order to avoid a runtime error (`argument number 2: a 'apr_pool_t *' is expected`) due to the default usage of multiple sub-interpreters. Version 3.2.8 *should* work, though it's probably better to use the workaround described in ■#3371, in order to force the use of the main interpreter:

```
PythonInterpreter main_interpreter
```

This is also the recommended workaround for other issues seen when using the Python bindings for Subversion within mod_python (■#2611, ■#3455). See in particular Graham Dumpleton's comment in ■#3455 explaining the issue.

Page layout issues

If the formatting of the Trac pages look weird, chances are that the style sheets governing the page layout are not handled properly by the web server. Try adding the following lines to your Apache configuration:

```
Alias /myproject/css "/usr/share/trac/htdocs/css"
<Location /myproject/css>
   SetHandler None
</Location>
```

Note: For the above configuration to have any effect it must be put after the configuration of your project root location, ie `<Location /myproject />`.

Note: Do not enable python optimizations using the directive `PythonOptimize On`. When optimizations are enabled the page header/footer and documentation for macros and plugins will be hidden. An error will be raised in Trac 1.0.11 and later when optimizations are enabled.

HTTPS issues

If you want to run Trac fully under https you might find that it tries to redirect to plain http. In this case just add the following line to your Apache configuration:

```
<VirtualHost *>
   DocumentRoot /var/www/myproject
   ServerName trac.mycompany.com
   SetEnv HTTPS 1
   ....
</VirtualHost>
```

Segmentation fault with php5-mhash or other php5 modules

You may encounter segfaults (reported on Debian etch) if php5-mhash module is installed. Try to remove it to see if this solves the problem. See ■Debian bug report.

Some people also have troubles when using PHP5 compiled with its own third party libraries instead of system libraries. Check ■Django segmentation fault.

See also: TracGuide, TracInstall, ModWSGI, FastCGI, ■TracNginxRecipe