Apache Module mod_file_cache

Description:	Caches a static list of files in memory
Status:	Experimental
Module Identifier:	file_cache_module
Source File:	mod_file_cache.c

Summary

This module should be used with care. You can easily create a broken site using `mod_file_cache`, so read this document carefully.

Caching frequently requested files that change very infrequently is a technique for reducing server load. `mod_file_cache` provides two techniques for caching frequently requested *static* files. Through configuration directives, you can direct `mod_file_cache` to either open then `mmap()` a file, or to pre-open a file and save the file's open *file handle*. Both techniques reduce server load when processing requests for these files by doing part of the work (specifically, the file I/O) for serving the file when the server is started rather than during each request.

Notice: You cannot use this for speeding up CGI programs or other files which are served by special content handlers. It can only be used for regular files which are usually served by the Apache core content handler.

This module is an extension of and borrows heavily from the `mod_mmap_static` module in Apache 1.3.

Topics

Directives

Using mod_file_cache

`mod_file_cache` caches a list of statically configured files via `MMapFile` or `CacheFile` directives in the main server configuration.

Not all platforms support both directives. For example, Apache on Windows does not currently support the `MMapStatic` directive, while other platforms, like AIX, support both. You will receive an error message in the server error log if you attempt to use an unsupported directive. If given an unsupported directive, the server will start but the file will not be cached. On platforms that support both directives, you should experiment with both to see which works best for you.

MMapFile Directive

The `MMapFile` directive of `mod_file_cache` maps a list of statically configured files into memory through the system call `mmap()`. This system call is available on most modern Unix derivates, but not on all. There are sometimes system-specific limits on the size and number of files that can be `mmap()`ed, experimentation is probably the easiest way to find out.

This `mmap()`ing is done once at server start or restart, only. So whenever one of the mapped files

changes on the filesystem you *have* to restart the server (see the Stopping and Restarting [1] documentation). To reiterate that point: if the files are modified *in place* without restarting the server you may end up serving requests that are completely bogus. You should update files by unlinking the old copy and putting a new copy in place. Most tools such as `rdist` and `mv` do this. The reason why this modules doesn't take care of changes to the files is that this check would need an extra `stat()` every time which is a waste and against the intent of I/O reduction.

CacheFile Directive

The `CacheFile` directive of `mod_file_cache` opens an active *handle* or *file descriptor* to the file (or files) listed in the configuration directive and places these open file handles in the cache. When the file is requested, the server retrieves the handle from the cache and passes it to the `sendfile()` (or `TransmitFile()` on Windows), socket API.

This file handle caching is done once at server start or restart, only. So whenever one of the cached files changes on the filesystem you *have* to restart the server (see the Stopping and Restarting [1] documentation). To reiterate that point: if the files are modified *in place* without restarting the server you may end up serving requests that are completely bogus. You should update files by unlinking the old copy and putting a new copy in place. Most tools such as `rdist` and `mv` do this.

Note

Don't bother asking for a for a directive which recursively caches all the files in a directory. Try this instead... See the `Include` directive, and consider this command:

```
find /www/htdocs -type f -print \
| sed -e 's/.*/mmapfile &/' > /www/conf/mmap.conf
```

CacheFile Directive

Description:	Cache a list of file handles at startup time
Syntax:	`CacheFile` *`file-path`* `[`*`file-path`*`] ...`
Context:	server config
Status:	Experimental
Module:	mod_file_cache

The `CacheFile` directive opens handles to one or more files (given as whitespace separated arguments) and places these handles into the cache at server startup time. Handles to cached files are automatically closed on a server shutdown. When the files have changed on the filesystem, the server should be restarted to to re-cache them.

Be careful with the *file-path* arguments: They have to literally match the filesystem path Apache's URL-to-filename translation handlers create. We cannot compare inodes or other stuff to match paths through symbolic links *etc.* because that again would cost extra `stat()` system calls which is not acceptable. This module may or may not work with filenames rewritten by `mod_alias` or `mod_rewrite`.

Example

```
CacheFile /usr/local/apache/htdocs/index.html
```

MMapFile Directive

Description:	Map a list of files into memory at startup time
Syntax:	`MMapFile` *`file-path`* `[`*`file-path`*`] ...`
Context:	server config
Status:	Experimental
Module:	mod_file_cache

The `MMapFile` directive maps one or more files (given as whitespace separated arguments) into memory at server startup time. They are automatically unmapped on a server shutdown. When the files have changed on the filesystem at least a `HUP` or `USR1` signal should be send to the server to re-`mmap()` them.

Be careful with the *file-path* arguments: They have to literally match the filesystem path Apache's URL-to-filename translation handlers create. We cannot compare inodes or other stuff to match paths through symbolic links *etc.* because that again would cost extra `stat()` system calls which is not acceptable. This module may or may not work with filenames rewritten by `mod_alias` or `mod_rewrite`.

Example

```
MMapFile /usr/local/apache/htdocs/index.html
```

URI References

[1] http://httpd.apache.org/docs-2.1/stopping.html