

Imagen Dispatcher

Plugin for Imagen Cache

Module documentation

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Overview

Imagen Dispatcher is a plugin for Imagen Cache, which responsibility is to call Imagen on remote machines. The HTTP protocol is used to call the remote Imagen and to collect its output. The remote Imagen URLs list is retrieved from an outside text file. Each URL has its priority. The Dispatcher performs simple load balancing when choosing which Imagen to execute.

The Dispatcher works as dynamic library under both Windows and Linux. As it is Imagen Cache plugin, it conforms the Cache Plugin API.

Implementation Details

Ideas

Executing Imagen scripts is a resource-consuming process. It is a problem for the web server to generate a page with many Imagen images in it. The Dispatcher responsibility is to broadcast Imagen Cache requests to remote machines with installed Imagen in order to not slow down the web server.

The Dispatcher operates at several rings. Each ring consists of several URLs to remote Imagens. By default, the Dispatcher uses ring 0. If there is no working machines at this ring, the next one is used. When there is no more rings, the local Imagen is used. The Dispatcher may be switched to ring 0 again by calling it with the appropriate argument.

Each URL in the ring has an integer number for its priority. Please refer to the *Algorithms* section for description of the priorities usage.

The Imagen on the remote machines may be installed in several ways – standalone Imagen Cache, Imagen Cache as a web server plugin, or Imagen without Imagen Cache. By this reason, there are two types of URL, which the Dispatcher accepts:

- ◆ URL for standalone generator. For example “*http://server.com/folder/imagenc.cgi*”. In this case, the Dispatcher uses the URL by the following way:
“*http://server.com/folder/imagenc.cgi?scriptname&arg1=val1&arg2=val2...*”
- ◆ URL for web server plugin. For example “*http://server.com/folder*”. In this case, the Dispatcher uses the URL by the following way:
“*http://server.com/folder/scriptname?arg1=val1&arg2=val2...*”

The Dispatcher is a dynamic library under both Windows and Linux. It uses shared memory to keep the calls count for each URL.

The plugin provides also full statistics of the URLs usage, time performance, etc. Text trace log file is supported in order to allow tracking down the Dispatcher actions.

Modules

Module	Description
dispatcher_config	Dispatcher configuration holder.

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url_executable	Module for remote executing based on the HTTP protocol.
www	lib_www wrapper.
dispatcher	The basic dispatcher behavior – rings, priorities, etc.
url_dispatcher	Union of the dispatcher & url_executable. Used by main.
shared_mem	Operations with shared mem (included in the Linux build only).
main	Main entry point. Cache Plugin API implementation.
Used Cache Modules	
config	Config file parser.
executable	Module for executing command and getting its output.
array	Simple self-resizing array.
semaphore	Operations with semaphores.
trace	Trace log system.

General Flow

The following diagram describes what functionality and/or data each module provides to others:

Error! No topic specified.

Algorithms

Download

lib_www is used to implement downloading the remote Imagen outputs. Under Linux, this library should be installed in order to be possible to build and run the Dispatcher. Under Windows, dispatcher.dll is static linked to the lib_www code.

The **www** module uses the lib_www interface. It allows both blocking and asynchronous download under Windows, and blocking only under Linux.

Load Balancing

Each URL has an integer number describing its frequency (priority). Frequency1:Frequency2 is just the proportion of the calls to URL1 and URL2. The **dispatcher** module is responsible to call the URLs smoothly according to these frequencies.

If some URL fails, it is not called in the next 50 times. If all URLs at the current ring fail, the dispatcher continues by using the next ring. If all rings are passed, the local Imagen executable is called. Initially, the dispatcher operates at ring 0.

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Shared Memory

Under Windows, the statistics about the URL calls is kept in **url_dispatcher** singleton in the DLL.

This is not possible under Linux. So shared memory is used to keep the past URL call counts. In order to hold the whole data in just one one-dimension shared memory block, the **url_dispatcher** provides interface to convert the hosts data into a memory block and vice-versa.

References

[1] Readme

[2] Install

[3] Config

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