

Design Specification for WMC Tile Handler

1.1 Purpose

The intention of the WMC Tile Handler is to provide an uniform interface for external services to retrieve and cache tiles from a given WMS compatible source. The server should be able to perform simple image conversion, but should otherwise be a “dumb” server that does not perform any service except for delivery of images on request. The request format is detailed in section 1.2.

Request Format

The request is specified as a regular web request and is indistinguishable as such for the client operating to the server.

A resource is requested by using the following URL scheme, relative to the root directory of the service:

`/layer/resolution/x_scale/y_scale/x_index/y_index/tile.format`

Layer is one of the available layers on the server, which may resolve to one or several WMS servers in the background. This is however not of importance to the client requesting a resource. The resolution is a string identifier which indicates which size the client would like the images returned in. The current implementation supports “small”, “full” and “xl”, being 30x30, 300x300 and 600x600 pixels respectively.

x_scale indicates the resolution of the tile to be retrieved, relative to the complete area of the coordinate system used on the WMS server in the background. For a regular latlon-system, this would be “how much” of the complete 360 degree dataset should be retrieved. A value of 1 would mean that -180 to 180 is requested from the server. 0.25 would mean that a segment with 90 degrees width would be delivered. Exactly which segment (of the 4 available) returned, is determined by the x_index value.

This is also the case for the y-parameters.

`/landsat/full/0.25/0.5/0/0/tile.jpg` Would retrieve the lower left rectangle of the landsat satellite imagery, with a width of 90 degrees and a height of 90 degrees. The format would be JPEG.

Implementation

To fully enable the server to work as a transparent proxy where the load is as small as possible when a cached file is retrieved, the retrieval and storage of tiles is implemented as a 404 Handler. This means that if the server is unable to find the resource the client is requesting on the local file system, our handler is called with a parameter describing the resource the be retrieved. The handler connects to the proper server (given by the `/layer/` parameter), and stores the image in the proper location. When the next request is parsed, the server discovers that the resource is available from the local file system, and our handler is never started.

Garbage Collection

Garbage Collection is run as a completely separate process from the delivery and storage

mechanism. The application should use the “last access time” property available from the underlying ext2 file system, and discard files that reaches a certain threshold for age. This process may also take into account a size requirement for the complete file repository and may therefore weight the parameters and values differently depending on the current storage situation.

By separating the Garbage Collection application from the resource delivery service, we are able to keep the server “dumbed down”, and are also able to both monitor and enhance the stored information independently of the delivery of data. The independence makes it possible to run the garbage collection on several clients in the network, or even by extending the system to external storage solutions.

Server registration

The initial plan was to allow the client that creates the original request to append a URL parameter that describes which WMS server to contact, and which layers to download. After consideration this parameter was deemed to be a security risk, and it seems that it is necessary to perform registration of the available WMS servers prior to delivering and caching information from them.