

# WMTS 1.0 Styles API Profile Specification

Author: Keith Pomakis (CubeWerx Inc.)

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*(Draft content for a new WMTS 1.0 profile specification, prepared as a deliverable of the OGC VT-Pilot Extension project.)*

## Declaration Of Profile

This WMTS 1.0 profile defines a set of RESTful endpoints that provide a client with the ability to GET, PUT and DELETE style definitions, and a KVP GetStyle operation. A WMTS server that provides these RESTful endpoints and/or this KVP operation must declare the profile URI *[TBD]* in its capabilities document.

## Style URL Templates (RESTful)

The RESTful endpoints are declared on a per-layer basis through URL templates with a resourceType of "style". These templates must contain exactly one template variable: "{style}". The following is an example:

### *Example 1. Style URL Template*

```
<ResourceURL format="application/vnd.ogc.sld+xml" resourceType="style"
  Ê   template="https://example.com/wmts/1.0.0/layers/MyLayer/{style}.sld"/>
```

A layer should declare a style URL template for each style encoding (format) that it supports, and must not declare any style URL templates if it is unable to provide or accept style definitions.

If an endpoint is accessed with an HTTP method that it doesn't support, the server must return an HTTP 405 "Method Not Allowed" exception. If the user simply doesn't have the proper authorization to access the endpoint with that method, the server may instead return an HTTP 401 "Unauthorized" exception with the appropriate WWW-Authenticate header.

The following HTTP methods are defined for these endpoints:

### GET

Returns the definition of the style with the identifier specified by {style} in the encoding declared by the URL template. If the encoding is SLD, an optional sld\_version parameter may be used to indicate the desired SLD version. If this parameter is not present, or if the WMTS server does not support the parameter, or if the WMTS server does not support the desired SLD version, then the server should return SLD version 1.1.0.

If the encoding is SLD, the returned SLD must contain exactly one NamedLayer, which must have the same identifier as the layer that declared the URL template. That NamedLayer must contain

exactly one `UserStyle`, which must representing the requested style.

## PUT

Sets the definition of the style with the identifier specified by `{style}` in the encoding declared by the URL template. If the layer already has a style with that identifier, the style's definition is replaced with the newly-supplied one. Otherwise, a style with that identifier is created for the layer.

If the value of HTTP Content-Type request header is not equivalent to the encoding (format) declared by the URL template, the server must either throw an HTTP 415 (Unsupported Media Type) exception or accept it anyways (if it supports that content type).

If the encoding is SLD, the request body must be an SLD containing exactly one `NamedLayer`, which must have the same identifier as the layer that declared the URL template. That `NamedLayer` must contain exactly one `UserStyle`. `NamedStyles` are not supported since they don't provide style definitions. The style must refer to valid feature sets and feature-set properties. The mechanism for determining the feature sets (and their schemas) that are available for a layer are beyond the scope of the WMTS interface. If any of these requirements are violated, the server should throw an HTTP 400 (Bad Request) exception.

It may be the case that a server has particular requirements for syntax or structure of its style identifiers. For example, there may be a restriction on the number of characters, or certain characters may be illegal. The server should return an HTTP 400 (Bad Request) exception if an attempt is made to create a style with an invalid identifier. In such a situation, the response body should contain an explanation of why the identifier is invalid.

On success, an HTTP 200 (OK) or HTTP 204 (No Content) status code should be returned.

## DELETE

Deletes the style with the identifier specified by `{style}`. On success, an HTTP 200 (OK) or HTTP 204 (No Content) status code should be returned. If no such style existed, the server may instead choose to return a 404 (Not Found) status code.

The WMTS specification requires all layers to have at least one style. This profile does not dictate the behaviour when an attempt is made to delete the last style of a layer. Two possibilities are: a) the request is rejected with an HTTP 400 (Bad Request) exception, or b) the layer ceases to be exposed through the WMTS interface.

## OPTIONS

Requests which HTTP methods are available for the endpoint. As per standard HTTP practice, the response must include an "Allow" header whose value is a comma-separated list of allowed HTTP methods for the endpoint.

### Example 2. An "Allow" Response Header

```
Allow: GET, PUT, DELETE, HEAD, OPTIONS
```

A client may use this method to determine which HTTP methods are available for an endpoint. Alternatively, it's acceptable for the client to try the request and accept the possibility of an HTTP 405 "Method Not Allowed" response.

## GetStyles Operation (KVP)

In addition to the above RESTful endpoints, this profile defines the following KVP operation.

operation name: GetStyles

parameters:

¥ layer (*required*)

¥ style (*required*)

¥ format (*optional; defaults to "SLD"*)

¥ sld\_version (*optional; relevant only if format="SLD"; defaults to "1.1.0"*)

This operation returns the definition of the specified style for the specified layer in the specified encoding (format).

If the WMTS server supports this operation, it must be declared in the OperationsMetadata section of the capabilities document.

If the SLD encoding is requested, the optional sld\_version parameter may be used to indicate the desired SLD version. If this parameter is not present, or if the WMTS server does not support the parameter, or if the WMTS server does not support the desired SLD version, then the server should return SLD version 1.1.0.

If the SLD encoding is requested, the returned SLD must contain exactly one NamedLayer, which must have the same identifier as the layer that declared the URL template. That NamedLayer must contain exactly one UserStyle, which must represent the requested style.

This profile does not define a PutStyle or DeleteStyle operation, since such operations cannot adequately be implemented as traditional KVP requests.

## Security Considerations

The HTTP PUT and DELETE methods should be privileged methods that only certain users are granted the ability to invoke. It may also be the case that the invocability of these methods varies from layer to layer, or even from encoding to encoding. I.e., a user may have the authorization to define and adjust the styles for some layers but not others. The means to define such access-control rules is server-specific and beyond the scope of the WMTS specification.