

Loxcel REST Interface

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REST Interface to the layer Resource

Based on the mapping of HTTP methods and idempotency constraints, and the understanding that the layer is the resource of interest, Loxcel web services have implemented this URI structure to perform transactions on the markers that reside within a layer:

Create Layer

Task	Create an empty layer
Method	PUT
URI	<code>http://api.loxcel.com/layer/<i>layerName</i></code>
Request Body	Empty
Status Code (Response Body)	201 - layer was created (transaction count)
	409 - another transaction is modifying layer
	500 - server error (details of error)

Task	Create a layer with markers
Method	PUT
URI	<code>http://api.loxcel.com/layer/<i>layerName</i></code>
Request Body	transaction steps to initialize the layer. Operations restricted to and default to append
Status Code (Response Body)	201 - layer was created (transaction count)
	400 - transaction steps have an error (details of error)
	409 - another transaction is modifying layer
	413 - too many markers, layer is full
	500 - server error (details of error)
	503 - server busy / memory pressure

Query Layer

Task	Query layer for markers and clusters
Method	GET
URI	<code>http://api.loxcel.com/layer/<i>layerName</i>?parameters</code>
Request Body	Empty
Status Code (Response Body)	200 - query succeeded (markers and clusters)
	400 - parameters have an error (details of error)
	404 - layer does not exist
	500 - server error (details of error)

Parameter	Meaning
s	South latitude (-85.0 .. 85.0)
w	West longitude (-180.0 .. 180.0)
n	North latitude (-85.0 .. 85.0)
e	East longitude (-180.0 .. 180.0)
z	Map zoom (0 .. 21)
t	(optional) tag label (alphanumeric)
jsonp	(optional) Callback function (JavaScript function name)

Update Layer

Task	Remove all markers in a layer
Method	PUT
URI	<code>http://api.loxcel.com/layer/<i>layerName</i></code>
Request Body	Empty
Status Code (Response Body)	200 - all markers were removed (transaction count)
	409 - another transaction is modifying layer
	500 - server error (details of error)

Task	Replace all markers in a layer
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Method	PUT
URI	http://api.loxcel.com/layer/layerName
Request Body	transaction steps that replace layer's markers. Operations restricted to and default to append
Status Code (Response Body)	200 - all markers were replaced (transaction count)
	400 - transaction steps have an error (details of error)
	409 - another transaction is modifying layer
	413 - too many markers, layer is full
	500 - server error (details of error)
	503 - server busy / memory pressure

Task	Insert / update / delete markers within a layer
Method	POST
URI	http://api.loxcel.com/layer/layerName
Request Body	transaction steps that update layer's markers. Operations default to insert
Status Code (Response Body)	200 - markers were updated (transaction count)
	400 - transaction steps have an error (details of error)
	404 - layer does not exist
	409 - another transaction is modifying layer
	413 - too many markers, layer is full
	500 - server error (details of error)
	503 - server busy / memory pressure

Delete Layer

Task	Delete layer and its markers
Method	DELETE
URI	http://api.loxcel.com/layer/layerName
Request Body	Empty
Status Code (Response Body)	200 - layer deleted (transaction count)
	404 - layer does not exist
	409 - another transaction is modifying layer
	500 - server error (details of error)

Transaction Steps

Some web services process a sequence of transaction steps to modify the contents of a layer. These steps are read one-by-one from the request body and applied as a single transaction, such that either all steps are performed (with a 2xx response) or none are performed (with a 5xx response).

The syntax of a step is as follows:

```
step ::=          op_label
                | marker
                | op_mnemonic , marker
op_label ::=      insert | update | delete
marker ::=       id , lat , lon { , tag }
op_mnemonic ::=  i | u | d
id ::=           4-byte integer with range -2147483648 ..
                2147483647
lat ::=          8-byte floating point with range -85 .. 85
lon ::=          8-byte floating point with range -180 .. 180
tag ::=          alphanum { alphanum }
alphanum ::=     [a-z] | [A-Z] | [0-9]
```

An `op_label` step defines the default operation (append, insert, update or delete) for subsequent steps that consist of only marker.

The presence of `op_mnemonic` overrides any applicable `op_label` for that step only.

An `op_label` overrides a previous `op_label`.

Transaction Count Response

Some responses include a transaction count, whose structure is as follows:

```
200 markers were in layer
  0 replaced
 70 inserted
  5 updated
 20 deleted
  0 could not update
  3 could not delete
```

```
250 markers after commit  
Transaction completed in 0.032 seconds
```

Marker counts occupy the first 10 characters of each line.
This response indicated that three of the markers to be deleted could not be found.

This structure can be easily read by a person and parsed by a program.

REST Interface to the admin Resource

Layer Dump

Task	Dump layer's markers, across all indexes. If filename is supplied, contents is written to file and filename is returned in response body; otherwise, contents is returned in response body. Verbose parameter will contain additional information related to physical layout of makers within layer.
Method	GET
URI	<code>http://api.loxcel.com/admin/layerdump/layerName? f=filename &verbose</code>
Request Body	Empty
Status Code (Response Body)	200 - layer dumped (dump of layer markers or filename) 400 - bad parameters 404 - layer does not exist 500 - server error (details of error) 503 - failed to write (details of error)

Layer Catalog List

Task	List all layers' names and related statistics
Method	GET
URI	<code>http://api.loxcel.com/admin/layercatalog</code>
Request Body	Empty
Status Code (Response Body)	200 - query succeeded (list of layers; can contain none) 500 - server error (details of error)

Memory Statistics

Task	Report statistics on memory utilization
Method	GET
URI	<code>http://api.loxcel.com/admin/memory</code>

Request Body	Empty
Status Code	200 - success (memory statistics)
(Response Body)	500 - server error (details of error)