

Steelhead Appliance REST API Guide v1.0

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Overview

This document describes the REST APIs supported by Riverbed Steelhead products. It assumes that you have practical knowledge of REST APIs and does not provide details on what REST is and how to use it. Instead, this document focuses on what data can be accessed or modified, how to access it, and how to encode requests and responses.

This Overview section describes the data encodings for objects used to encode information for requests and responses. It also addresses the OAuth 2.0 authentication needed for the APIs.

The Resources section lists the supported REST resources and the methods supported for them. For each operation, the document describes what the operation does, the specific HTTP method and URL used, the data types used for requests and responses (if any), and any required or optional URL parameters.

The Data Types section describes commonly-used data types in the REST APIs.

The Errors section lists the various error codes that can be returned from REST API operations.

Data Encodings

The exposed APIs currently support **only** JSON encoding for requests and responses. The selection of the specific encoding is accomplished through the use of HTTP headers.

The Accept Header should be used to specify response encoding. To specify JSON encoding, set the header to Accept: application/json. If no Accept header is provided, the default encoding returned will be JSON.

The Content-Type header must be included with all PUT or POST requests that include a request body. To specify JSON encoding, set the header to Content-Type: application/json.

OAuth 2.0 API Authentication

To use OAuth 2.0 authentication, you must first generate an access code. With this access code, your script can generate access tokens periodically.

To generate the access code:

1. On your appliance, go to the **Configure > Security > REST API Access** page.
2. Enable REST API access.
3. Click Add Access Code.
4. Enter a description for the access code. The description is used for auditing purposes.
5. Select either **Generate New Access Code** to generate a new code, or **Import Existing Access Code** to add an access code generated from another Steelhead appliance.
6. Use the generated or acquired access code in your scripts.

All access to protected resources requires a valid access token. To obtain an access token, the client must send a POST request with the access code. (See the **oauth** section under **Resources** for the API.)

The Steelhead appliance will issue an access token that is valid for the next one hour time period and return that token in the body of the POST. If the client script runs for over an hour, the appliance must generate another access token when the old one expires. An expired token results in an error with HTTP code 401 and error_id AUTH_EXPIRED_TOKEN.

Finally, the Authorization HTTP Header must be used to pass the token for API authentication. The following format should be used:

- Authorization: Bearer 'Access Token encoded in base64 format'
- Example: Authorization: Bearer eyJhdWQiOiAiaHR0cHM6Ly9nZW4tdnNoNDMubGFm5idHRlY2guY29tAifQ==

Resources

common/1.0: Get device info

Get device information

```
GET https://{device}/api/common/1.0/info
```

Authorization

This request does not require authorization.

Response Body

Returns a [device_info](#) data object.

common/1.0: (Get) Ping

Ping the device

```
GET https://{device}/api/common/1.0/ping
```

Authorization

This request does not require authorization.

Response Body

On success, the server does not provide any body in the responses.

common/1.0: Get auth info

Get device authentication information

```
GET https://{device}/api/common/1.0/auth_info
```

Authorization

This request does not require authorization.

Response Body

Returns an [auth_info](#) data object.

common/1.0: Get services

Get available services on this device

```
GET https://{device}/api/common/1.0/services
```

Authorization

This request does not require authorization.

Response Body

On success, the server returns a response body with the following structure:

JSON

```
[
  {
    "id": string,
    "versions": [
      string
    ]
  }
]
```

Property Name	Type	Description	Notes
<i>services</i>	<array of <object>>	List of services	
<i>services</i> [item]	<object>		
<i>services</i> [item].id	<string>	Service namespace	
<i>services</i> [item].versions	<array of <string>>	Supported versions for this service	
<i>services</i> [item].versions[item]	<string>		

common/1.0/oauth: Create token

Create and fetch a new OAuth 2.0 token, by passing the access code

```
POST https://{device}/api/common/1.0/oauth/token
```

Authorization

This request does not require authorization.

Request Body

Provide a request body with the following structure:

JSON

```
{
  "grant_type": string,
  "assertion": string,
  "state": string
}
```

Property Name	Type	Description	Notes
<i>request</i>	<i><object></i>		
<i>request.grant_type</i>	<i><string></i>	The type of authorization method used to grant this token. The value must be 'access_code'.	
<i>request.assertion</i>	<i><string></i>	The assertion string, which is of a format 'a.b.c', where a = base64({'alg':'none'}), b = base64(access code) and c = empty string. base64() is the function that encodes the string passed to base64 format. Use the corresponding function in your language of implementation. Also, in 'a', the algorithm is 'none', because the only signature method currently supported is 'none'.	
<i>request.state</i>	<i><string></i>	An optional client-provided value that will be returned in the response.	Optional

Response Body

On success, the server returns a response body with the following structure:

JSON

```
{
  "access_token": string,
  "allowed_signature_types": [
    string
  ],
  "expires_in": number,
  "state": string,
  "token_type": string
}
```

Property Name	Type	Description	Notes
<i>response</i>	<i><object></i>		
<i>response.access_token</i>	<i><string></i>	The generated access token that can be used to access protected resources	
<i>response.allowed_signature_types</i>	<i><array of <string>></i>	Array of allowed signature methods	
<i>response.allowed_signature_types[item]</i>	<i><string></i>	Allowed signature method	
<i>response.expires_in</i>	<i><number></i>	How long the token is valid for	
<i>response.state</i>	<i><string></i>	Included if the state parameter was passed in the token request	Optional
<i>response.token_type</i>	<i><string></i>	The token type. Only 'bearer' is currently supported.	

rfwk/1.0/system: Get system uptime

Get the system uptime

```
GET https://{device}/api/rfwk/1.0/system/uptime
```

Authorization

This request requires authorization.

Response Body

On success, the server returns a response body with the following structure:

JSON

```
{  
  "uptime": string  
}
```

Property Name	Type	Description	Notes
<i>response</i>	<i><object></i>		
<i>response.uptime</i>	<i><string></i>	System uptime	

sh/1.0/qos: Get global settings

Get QoS global configuration settings

```
GET https://{device}/api/sh/1.0/qos/global
```

Authorization

This request requires authorization.

Response Body

Returns a *global* data object.

sh/1.0/qos: List classes

Get the list of QoS class identifiers

```
GET https://{device}/api/sh/1.0/qos/classes
```

Authorization

This request requires authorization.

Response Body

On success, the server returns a response body with the following structure:

JSON

```
[
  {
    "id": number,
    "uri": class
  }
]
```

Property Name	Type	Description	Notes
<i>class_ids</i>	<i><array of <object>></i>	List of QoS class identifiers	
<i>class_ids</i> [item]	<i><object></i>		
<i>class_ids</i> [item].id	<i><number></i>		
<i>class_ids</i> [item].uri	<i><class></i>	Instance of a <i><class></i>	

sh/1.0/qos: Get class

Get information about a specific QoS class

```
GET https://{device}/api/sh/1.0/qos/classes/{class_id}
```

Authorization

This request requires authorization.

Parameters

Property Name	Type	Description	Notes
<i>class_id</i>	<i><number></i>	QoS Class identifier	

Response Body

Returns a *class* data object.

sh/1.0/qos: List sites

Get the list of QoS site identifiers

```
GET https://{device}/api/sh/1.0/qos/sites
```

Authorization

This request requires authorization.

Response Body

On success, the server returns a response body with the following structure:

JSON

```
[
  {
    "id": number,
    "uri": site
  }
]
```

Property Name	Type	Description	Notes
<i>site_ids</i>	<i><array of <object>></i>	List of QoS site identifiers	
<i>site_ids[item]</i>	<i><object></i>		
<i>site_ids[item].id</i>	<i><number></i>		
<i>site_ids[item].uri</i>	<i><site></i>	Instance of a <i><site></i>	

sh/1.0/qos: Get site

Get information about a specific QoS site

```
GET https://{device}/api/sh/1.0/qos/sites/{site_id}
```

Authorization

This request requires authorization.

Parameters

Property Name	Type	Description	Notes
<i>site_id</i>	<i><number></i>	QoS site identifier	

Response Body

Returns a *site* data object.

sh/1.0/qos: List applications

Get a list of applications, classified by QoS

```
GET https://{device}/api/sh/1.0/qos/applist
```

Authorization

This request requires authorization.

Response Body

On success, the server returns a response body with the following structure:

JSON

```
[ application ]
```

Property Name	Type	Description	Notes
<i>applications</i>	<i><array of <application>></i>	List of applications	
<i>applications[item]</i>	<i><application></i>	Instance of an <application>	

sh/1.0/qos/applist: List application names

Get a list of application names, classified by QoS

```
GET https://{device}/api/sh/1.0/qos/applist/app_names
```

Authorization

This request requires authorization.

Response Body

On success, the server returns a response body with the following structure:

JSON

```
[
  {
    "display_name": application_display_name,
    "uri": application
  }
]
```

Property Name	Type	Description	Notes
<i>applications</i>	<i><array of <object>></i>	List of application names	
<i>applications[item]</i>	<i><object></i>		
<i>applications[item].display_name</i>	<i><application_display_name></i>	Instance of an <i><application_display_name></i>	
<i>applications[item].uri</i>	<i><application></i>	Instance of an <i><application></i>	

sh/1.0/qos/applist: Get application by id

Get information about an application, indexed by its identifier

```
GET https://{device}/api/sh/1.0/qos/applist/id/{id}
```

Authorization

This request requires authorization.

Parameters

Property Name	Type	Description	Notes
<i>id</i>	<number>	Application identifier	

Response Body

Returns an [application](#) data object.

sh/1.0/qos/applist: Get application by display name

Get information about an application, indexed by its display name

```
GET https://{device}/api/sh/1.0/qos/applist/display_name/{display_name}
```

Authorization

This request requires authorization.

Parameters

Property Name	Type	Description	Notes
<i>display_name</i>	<u><application_display_name></u>	Instance of an <application_display_name>	

Response Body

Returns an application data object.

sh/1.0/qos/applist: Get application description by display name

Get the description of an application, indexed by its display name

```
GET https://{device}/api/sh/1.0/qos/applist/display_name/{display_name}/desc
```

Authorization

This request requires authorization.

Parameters

Property Name	Type	Description	Notes
<i>display_name</i>	<application_display_name>	Instance of an <application_display_name>	

Response Body

Returns an [application_description](#) data object.

sh/1.0/status: get health status

Get the Steelhead appliance's health status

```
GET https://{device}/api/sh/1.0/status/health
```

Authorization

This request requires authorization.

Response Body

On success, the server returns a response body with the following structure:

JSON

```
{  
  "health": string  
}
```

Property Name	Type	Description	Notes
<i>response</i>	<i><object></i>		
<i>response.health</i>	<i><string></i>	Steelhead appliance health	

Data types

application

Information about an application

JSON

```
{  
  "id": number,  
  "description": application_description,  
  "display_name": application_display_name,  
  "type": number  
}
```

Property Name	Type	Description	Notes
<i>application</i>	<i><object></i>	Information about an application	
<i>application.id</i>	<i><number></i>	Application identifier	
<i>application.description</i>	<i><application_description></i>	Instance of an <i><application_description></i>	
<i>application.display_name</i>	<i><application_display_name></i>	Instance of an <i><application_display_name></i>	
<i>application.type</i>	<i><number></i>	Type of application (1 = System-defined application, or 2 = User-defined application)	Values: 1, 2

application_description

Application description

JSON

string

Property Name	Type	Description	Notes
<i>application_description</i>	<i><string></i>	Application description	Optional

application_display_name

The application's display name

JSON

```
string
```

Property Name	Type	Description	Notes
<i>application_display_name</i>	<i><string></i>	The application's display name	

auth_info

Device authentication information

JSON

```
{  
  "login_banner": string,  
  "specify_purpose": boolean,  
  "supported_methods": [  
    string  
  ]  
}
```

Property Name	Type	Description	Notes
<i>auth_info</i>	<i><object></i>	Device authentication information	
<i>auth_info.login_banner</i>	<i><string></i>	Login banner text	
<i>auth_info.specify_purpose</i>	<i><boolean></i>	Whether to specify purpose	
<i>auth_info.supported_methods</i>	<i><array of <string></i>	Supported authentication protocols	
<i>auth_info.supported_methods[item]</i>	<i><string></i>		

class

Information about a QoS class

JSON

```
{
  "class_id": number,
  "class_name": string,
  "class_type": string,
  "connection_limit": number,
  "max_bw": number,
  "min_bw": number,
  "out_dscp": number,
  "parent": string,
  "queue_type": string
}
```

Property Name	Type	Description	Notes
<i>class</i>	<object>	Information about a QoS class	
<i>class.class_id</i>	<number>	QoS class identifier	
<i>class.class_name</i>	<string>	QoS class name	
<i>class.class_type</i>	<string>	QoS class type	
<i>class.connection_limit</i>	<number>	QoS class connection limit	
<i>class.max_bw</i>	<number>	Maximum QoS class bandwidth percentage	Range: 0 to 100
<i>class.min_bw</i>	<number>	Minimum QoS class bandwidth percentage	Range: 0 to 100
<i>class.out_dscp</i>	<number>	Outbound DSCP mark	
<i>class.parent</i>	<string>	Name of parent class	
<i>class.queue_type</i>	<string>	Type of queue used by the class	Values: fifo, sfq, mxtcp, packet-order

device_info

Device information

JSON

```
{  
  "device_name": string,  
  "model": string,  
  "serial": string,  
  "sw_version": string  
}
```

Property Name	Type	Description	Notes
<i>device_info</i>	<object>	Device information	
<i>device_info.device_name</i>	<string>	Device name	
<i>device_info.model</i>	<string>	Device model	
<i>device_info.serial</i>	<string>	Device serial key	
<i>device_info.sw_version</i>	<string>	Device software version	

global

Information about QoS global configuration

JSON

```
{
  "basic_mode": boolean,
  "bw_overcommit": boolean,
  "hierarchical_mode": boolean,
  "marking": boolean,
  "qos_dpi_enable": boolean,
  "shaping": boolean,
  "timestamps": [
    {
      "update_timestamp": number
    }
  ],
  "interfaces": [
    {
      "enable": boolean,
      "ifindex": number,
      "interface_name": string,
      "link_rate": number
    }
  ]
}
```

Property Name	Type	Description	Notes
<i>global</i>	<i><object></i>	Information about QoS global configuration	
<i>global.basic_mode</i>	<i><boolean></i>	'true' if QoS is operating in 'basic mode', 'false' otherwise	
<i>global.bw_overcommit</i>	<i><boolean></i>	'true' if bandwidth overcommit feature is enabled, 'false' otherwise	
<i>global.hierarchical_mode</i>	<i><boolean></i>	'true' if QoS is operating in hierarchical mode, 'false' otherwise	
<i>global.marking</i>	<i><boolean></i>	'true' if the QoS marking feature is enabled, 'false' otherwise	
<i>global.qos_dpi_enable</i>	<i><boolean></i>	'true' if QoS and application statistics are exported to CascadeFlow Collectors, 'false' otherwise	
<i>global.shaping</i>	<i><boolean></i>	'true' if the QoS shaping feature is enabled, 'false' otherwise	
<i>global.timestamps</i>	<i><array of <object>></i>	List of various timestamps exported by QoS	
<i>global.timestamps[item]</i>	<i><object></i>		
<i>global.timestamps[item].update_timestamp</i>	<i><number></i>	Last-modified timestamp of the database used by QoS	
<i>global.interfaces</i>	<i><array of <object>></i>	List of QoS interfaces and their settings	Minimum: 1
<i>global.interfaces[item]</i>	<i><object></i>		
<i>global.interfaces[item].enable</i>	<i><boolean></i>	'true' if enabled, 'false' otherwise	
<i>global.interfaces[item].ifindex</i>	<i><number></i>	Interface's ifindex number	
<i>global.interfaces[item].interface_name</i>	<i><string></i>	Interface name	
<i>global.interfaces[item].link_rate</i>	<i><number></i>	Interface link rate in kbps	

site

Information about a QoS site

JSON

```
{
  "site_id": number,
  "default_class": string,
  "site_name": string,
  "wan_bw": number,
  "networks": [
    {
      "ip_address": string,
      "network_index": number
    }
  ]
}
```

Property Name	Type	Description	Notes
<i>site</i>	<object>	Information about a QoS site	
<i>site.site_id</i>	<number>	QoS site identifier	
<i>site.default_class</i>	<string>	Default QoS class name	
<i>site.site_name</i>	<string>	QoS site name	
<i>site.wan_bw</i>	<number>	QoS site WAN bandwidth. Applies only to Basic mode; returns 0 in Advanced mode.	
<i>site.networks</i>	<array of <object>>	QoS site subnets	Minimum: 1
<i>site.networks[item]</i>	<object>		
<i>site.networks[item].ip_address</i>	<string>	IP address	
<i>site.networks[item].network_index</i>	<number>	Index of the network subnet	

Error Codes

In the event that an error occurs while processing a request, the server will respond with appropriate HTTP status code and additional information in the response body:

```
{
  "error_id": "{error identifier}",
  "error_text": "{error description}",
  "error_info": {error specific data structure, optional}
}
```

The table below lists the possible errors and the associated HTTP status codes that may returned.

Error ID	HTTP Status	Comments
AUTH_REQUIRED	401	The requested resource requires authentication.
AUTH_INVALID_CREDENTIALS	401	Invalid username and/or password
AUTH_INVALID_SESSION	401	The session ID is invalid.
AUTH_EXPIRED_PASSWORD	403	The password must be changed and you can only access password change resources.
AUTH_DISABLED_ACCOUNT	403	The account is either temporarily or permanently disabled. The response body might provide more information.
AUTH_FORBIDDEN	403	The user is not authorized to access the requested resource.
AUTH_INVALID_TOKEN	401	The OAuth access token is invalid.
AUTH_INVALID_CODE	401	The OAuth access code is invalid.
AUTH_EXPIRED_TOKEN	401	The OAuth access token is expired.
AUTH_EXPIRED_CODE	401	The OAuth access code is expired.
RESOURCE_NOT_FOUND	404	The requested resource was not found.
HTTP_INVALID_METHOD	405	The requested method is not available for this resource, and the response must include an Allow header.
HTTP_INVALID_HEADER	400	An HTTP header was malformed: name: value
REQUEST_INVALID_INPUT	400	Malformed input structure
URI_INVALID	400	Cannot parse the URI
URI_INVALID_PARAMETER	400	The URI parameter is not supported or malformed: name=value
URI_MISSING_PARAMETER	400	Missing required parameter: name
INTERNAL_ERROR	500	Internal server error