



HAIVISION

Haivision Media Gateway 3.0
REST API Integrator's Reference

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Edition Notice

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About This Document

Conventions

The following conventions are used to help clarify the content.

Typographic Conventions and Elements

<i>Italics</i>	Used for the introduction of new terminology, for words being used in a different context, and for placeholder or variable text.
bold	Used for strong emphasis and items that you click, such as buttons.
Monospaced	Used for code examples, command names, options, responses, error messages, and to indicate text that you enter.
>	In addition to a math symbol, it is used to indicate a submenu. For instance, File > New where you would select the New option from the File menu.
...	Indicates that text is being omitted for brevity.

Action Alerts

The following alerts are used to advise and counsel that special actions should be taken.



Tip

Indicates highlights, suggestions, or helpful hints.



Note

Indicates a note containing special instructions or information that may apply only in special cases.



Important

Indicates an emphasized note. It provides information that you should be particularly aware of in order to complete a task and that should not be disregarded. This alert is typically used to prevent loss of data.

⚠ Caution

Indicates a potentially hazardous situation which, if not avoided, may result in damage to data or equipment. It may also be used to alert against unsafe practices.

⚠ Warning

Indicates a potentially hazardous situation that may result in physical harm to the user.

Obtaining Documentation

This document was generated from the Haivision InfoCenter. To ensure you are reading the most up-to-date version of this content, access the documentation online at <https://doc.haivision.com>. You may generate a PDF at any time of the current content. See the footer of the page for the date it was generated.

Getting Service Support

For more information regarding service programs, training courses, or for assistance with your support requirements, contact Haivision Technical Support using our Support Portal at: <https://support.haivision.com>.

Introduction

The Haivision Media Gateway (HMG) REST API is an application programming interface that allows you to create custom applications for HMG.

For an introduction to HMG, as well as information on managing HMG from the Web interface, please see the [Haivision Media Gateway User's Guide](#).

Topics Discussed

- [Introduction to HMG REST API](#)
- [HMG Concepts](#)
- [REST API Concepts](#)

Introduction to HMG REST API

The HMG REST API is a Representational State Transfer (REST) Application Programming Interface (REST API). REST is a style of software architecture for distributed hyper-media systems such as the World Wide Web. REST provides a set of rules (constraints) to which an architecture should conform. This is in contrast to an “unconstrained architecture” in which services are free to define their own idiosyncratic interfaces.

REST provides a uniform interface between components, allowing them to communicate in a standard way. Requests use the standard HTTP methods; GET, PUT and DELETE requests can do only what is expected.

The effect is that your services are accessible through standard tools, and it is safe for other services and utilities to use yours in ways you did not predict.

Informational Links

Following are some useful external references to learn more about REST:

- [Architectural Styles and the Design of Network-based Software Architectures](#) (dissertation by Roy Fielding)
- [Representational State Transfer](#) (Wikipedia entry)
- [How to Create a REST Protocol](#)
- [REST Anti-Patterns](#)

Introduction to JSON

The HMG REST API uses JSON (JavaScript Object Notation) to format API requests and responses. JSON is a lightweight data-interchange format that is easy for both humans to read and write, and machines to parse and generate. It is a text format that is completely language independent but uses conventions that are familiar to programmers of the C-family of languages, including C, C++, C#, Java, JavaScript, Perl, and Python.

JSON is built on two universal data structures, which are supported by nearly all modern programming languages:

- A collection of name/value pairs. In various languages, this is realized as an object, record, struct, dictionary, hash table, keyed list, or associative array.
- An ordered list of values. In most languages, this is realized as an array, vector, list, or sequence.

A full description of JSON can be found at <http://www.json.org>.

HMG Concepts

This section introduces HMG concepts that you should understand to use the REST API effectively.

HMG Resources

The HMG REST API can create and manipulate the routes used on the HMG system. This section provides a brief description of their functions.

Identifiers

Each unique HMG API object is assigned a randomly generated identifier (ID) when it is created. The REST API uses these IDs to identify specific resources.

Route

A *route* is an HMG source-to-multiple-destination resource for distributing a video stream.

Sources

A *source* is the incoming HMG-compatible video stream of a route.

Destination

A *destination* is the outgoing video stream of a route. Each route may contain multiple destinations.

Accounts

To simplify setup and security, there are three built-in user accounts available: haiadmin, operator, and user.


Default credentials for each account are provided in the *Important Notice* document.

See [REST API Concepts](#) for details on using the available accounts to access the HMG REST API.


Viewing the Available User Accounts

User account information includes the name and role.

To view the available user accounts:

1. Click the  icon and click Administration.
2. Click **Access Controls** in the admin toolbar, and click **Accounts** in the sidebar.

The available accounts are listed in the view pane along with their current roles.

Field	Value
Account Name	<p>The user name for the account. Built-in accounts set up at the factory include:</p> <ul style="list-style-type: none"> • haiadmin — Built-in Administrator account • operator — Built-in Operator account • user — Built-in Observer account <div style="border: 1px solid #f0e68c; padding: 5px; margin-top: 10px;"> <p> Note</p> <p>The operator and user accounts are new for Haivision Media Gateway version 3.0. When upgrading to 3.0, the previous accounts and passwords are retained.</p> </div>
Role	<p>The role assigned to the account. Roles for built-in accounts are read-only. Available roles include:</p> <ul style="list-style-type: none"> • Administrator — All access rights and administrator privileges. • Operator — All rights to create and configure routes. Does not include rights to the Administration page. • Observer — Read-only access to the system. Does not include the rights to the Administration page.

REST API Concepts

This section introduces REST API concepts underlying the HMG REST API.

- [Required Authorization](#)
- [Default Success HTTP Status Code](#)
- [JSON Properties](#)
- [HTTP Request Headers](#)
- [Errors](#)

Required Authorization

The HMG REST API requires user authentication. Execute the [Initiate Session](#) command to start an API session, using the login/password of the appropriate user role as described in [HMG Concepts](#).

Each API command listed in [REST API Reference](#) includes an "Authorizations" heading that lists the user role necessary to execute the command. If you make an API call with a user role that is not authorized to execute the command, the following response is returned:

```
{
  "error": {
    "type": "SessionAuthorization",
    "message": "Operation not authorized for roles: [User role]"
  }
}
```

where User role is role of the current session's user.

Default Success HTTP Status Code

Unless otherwise specified, the standard response for successful HTTP requests is 200 OK.

JSON Properties

JSON properties are either optional, required, immutable, or ignored. The definitions are as follows:

Property	Description
Optional	If the property is not provided on a PUT or POST, the server uses the default value for PUT requests or the current value stored on the server for POST.
Required	If the property is not provided on a PUT or POST, an error is returned stating that the property must be provided.
Ignored	Ignored properties are informational only in responses and are ignored for PUT and POST requests.
Immutable	Immutable properties cannot be changed. If a PUT or POST request attempts to change or assign an immutable property, an error is returned.

HTTP Request Headers

On a POST or PUT request, the content type request header should be one of the content types supported by HMG for that specific API endpoint, either:

- application/json
- application/octet-stream
- multipart/form-data

If the content type is different, the HTTP error 415 Unsupported Media Type is returned.

Errors

In case of an error on an API call, the API returns a response with the appropriate HTTP status code and an error message encapsulated in the body:

```
{
  "error": {
    "type": "[string]",
    "message": "[string]"
  }
}
```

REST API Reference

This API command reference lists and describes the available resources for the Haivision Media Gateway REST API. This is a list of API calls that can be used to create and manage stream routes on your HMG.

Topics Discussed

- **Login and Device Info**
 - **Initiate Session**
 - **Get Session Information**
 - **Delete Existing Session**
 - **Get Device Info**
 - **Get Device Configuration**
- **Managing and Configuring Routes**
 - **Create a Route**
 - **Update a Route**
 - **Delete a Route**
 - **Start or Stop Routes**
 - **Start or Stop a Route's Destination**
 - **Export System Preset**
 - **Import System Preset**
- **Statistics**
 - **Get Route Statistics**
 - **Get Source Statistics**
 - **Get Destination Statistics**
- **Object Model Reference**
 - **Route Object Model**
 - **Source Object Model**
 - **Destinations Object Model**
 - **Source Statistics Object Model**
 - **Destinations Statistics Object Model**

Login and Device Info

- **Initiate Session**
- **Get Session Information**
- **Delete Existing Session**
- **Get Device Info**
- **Get Device Configuration**

Initiate Session

Note

All subsequent API requests must be made with a valid sessionID cookie in the request header.

Authorizations: Administrator, Operator, Observer

Requests

```
POST /api/session

{
  "username" : "[user name]",
  "password" : "[password]"
}
```

Parameters

Name	Type	Description
username	string	Valid user.
password	string	Valid password.

Response

```
{
  "response": {
    "type": "Session",
    "message": "Session successfully started for haiadmin",
    "sessionID": "[Session ID]",
    "lastLoginDate": 1536777877871,
    "numLoginFailures": 0
  }
}
```

Get Session Information

Get existing session information.

Authorizations: Administrator, Operator, Observer

Requests

```
GET /api/session
cookie: sessionId: [Session ID]
```

Parameters

N/A

Response

```
{
  "sessionId": "[Session ID]",
  "displayName": "Administrator",
  "email": "haiadmin@localhost",
  "roles": [
    "Administrator"
  ],
  "startAt": 1536937838919,
  "expireAt": 1536938857529,
  "lastLoginDate": null,
  "numLoginFailures": null,
  "isLicensed": true
}
```

Delete Existing Session

Delete existing session.

Authorizations: Administrator, Operator, Observer

Requests

```
DELETE /api/session
cookie: sessionId: [Session ID]
```

Parameters

N/A

Response

```
{
  "type" : "Session",
  "message" : "[success message]"
}
```

Get Device Info

Retrieves information about the appliance. Use the Device ID value from the `_id` property to reference the device in subsequent API calls.

Authorizations: Administrator, Operator, Observer

Requests

```
GET /api/devices
cookie: sessionId: [Session ID]
```

Parameters

N/A

Response

```
[
  {
    "_id": "[Device ID]",
    "type": "gateway",
    "ip": "127.0.0.1",
    "name": "Haivision Media Gateway",
    "lastConnectedAt": [Date/time shown in Unix time],
    "statusCode": "ok",
    "status": "Online",
    "statusDetails": "Connection has been established in the last 1 minutes.",
    "serialNumber": null,
    "firmware": "5.0.180611.1530",
    "hasAdminError": false,
    "pendingSync": false,
    "lastConnection": "<1m"
  }
]
```

Name	Type	Description
<code>_id</code>	<i>string</i>	Device ID
<code>type</code>	<i>string</i>	Device type
<code>ip</code>	<i>string</i>	IP address of the device <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;"> <p>Note</p> <p>The IP address is from the front end to the backend, so 127.0.0.1 is expected.</p> </div>
<code>name</code>	<i>string</i>	Name of device
<code>lastConnectedAt</code>	<i>number</i>	Last time connected to the device in Unix time
<code>statusCode</code>	<i>string</i>	Device status code
<code>status</code>	<i>string</i>	Device status

Name	Type	Description
statusDetails	<i>string</i>	Device status details
serialNumber	<i>string</i>	Device serial number
firmware	string	Device firmware version
hasAdminError	Boolean	If device has an error
pendingSync	Boolean	If there is a device pending a sync task
lastConnection	<i>string</i>	Last time connected to the device in string format (e.g., "<1m")

Get Device Configuration

Retrieves the configuration of the device, including the list of routes. The Device ID used in the command is retrieved via the [Get Device Info](#) command.

Authorizations: Administrator, Operator, Observer

Requests

```
GET /api/devices/[Device ID]
cookie: sessionId: [Session ID]
```

Parameters

N/A

Response

Note

Use the config > routes > id properties on subsequent API calls to start/stop the corresponding routes, as shown in [Start or Stop Routes](#).

```
{
  "_id": "[Device ID]",
  "type": "gateway",
  "ip": "127.0.0.1",
  "name": "Haivision Media Gateway",
  "lastConnectedAt": [Date/time in Unix time],
  "lastConfigReadAt": [Date/time in Unix time],
  "statusCode": "ok",
  "status": "Online",
  "statusDetails": "Connection has been established in the last 1 minutes.",
  "serialNumber": null,
  "firmware": "5.0.180611.1530",
  "hasAdminError": false,
  "config": {
    "routes": [ { <Route Object> } ],
    "settings": {
      "networkAdapters": [
        {
          "name": "eth0",
          "address": "10.67.12.128"
        },
        {
          "name": "idrac",
          "address": "169.254.0.2"
        }
      ]
    }
  },
  "calypsos": [
    {
      "id": "Lh5ZNDm7LspsseJ3pg82jw",
      "gatewayName": "MG 141",
      "address": "dev.haivision.com",
      "httpPort": 80,
      "httpsPort": 443,
      "passcode": "[Pairing passcode]",
      "lastConnectedAt": 1536759437398,
      "status": "accepted",
      "statusDetails": "pairing accepted",
      "proxyAddress": "10.69.12.141",
      "proxyHttpPort": 80,
      "proxyHttpsPort": 443,
      "lastConnection": "<1m"
    }
  ],
  "pendingSync": false,
  "lastAcceptedUpdate": 1530219677119,
  "lastConnection": "<1m",
  "gateway": {
    "port": 1080
  },
  "suggestedPollingInterval": {
    "ms": 10000
  }
}
```

Name	Type	Description
_id	<i>string</i>	Device ID.
type	<i>string</i>	Device type.

Name	Type	Description
ip	string	<div style="border: 1px solid #ccc; padding: 5px;"> <p>Note</p> <p>The IP address is from the front end to the backend, so 127.0.0.1 is expected.</p> </div>
name	string	Name of device.
lastConnectedAt	number	Last time connected to the device in Unix time.
lastConfigReadAt	number	Last time a read config occurred in Unix time.
statusCode	string	Device status code.
status	string	Device status.
statusDetails	string	Device status details.
serialNumber	string	Device serial number.
firmware	string	Device firmware version.
hasAdminError	Boolean	If device has an error.
config	object	Device configuration object, including route objects (see Route Object Model for definition), networkAdapters objects (see following), and calypsos object (see following).
pendingSync	Boolean	If there is a device pending a sync task.
lastAcceptedUpdate	number	Last time a device update was accepted.
lastConnection	string	Last time connected to the device in string format (e.g., "<1m").
gateway	object	Gateway device settings: port number.
suggestedPollingInterval	object	Suggested polling device interval setting. Value in milliseconds.

NetworkAdapters Object Model

Name	Type	Destination
name	string	Adapter name.
address	string	IP address of network adapter.

Calypsos Object Model

Name	Type	Destination
address	string	IP address of paired HMP.
gatewayName	string	Gateway name in the relationship
httpPort	number	HTTP port of paired HMP.
httpsPort	number	HTTPS port of paired HMP.
id	string	HMP relationship ID.
lastConnectedAt	number	Last connected time.

Name	Type	Destination
lastConnection	<i>string</i>	Last connection string.
passcode	<i>string</i>	Pairing passcode.
proxyAddress	<i>string</i>	Proxy address.
proxyHttpPort	<i>number</i>	Proxy HTTP port.
proxyHttpsPort	<i>number</i>	Proxy HTTPS port.
status	<i>string</i>	Relationship status.
statusDetails	<i>string</i>	Relationship status detail.

Managing and Configuring Routes

- [Create a Route](#)
- [Update a Route](#)
- [Delete a Route](#)
- [Start or Stop Routes](#)
- [Start or Stop a Route's Destination](#)
- [Export System Preset](#)
- [Import System Preset](#)

Create a Route

Use this command to create an individual route.

Authorizations: Administrator, Operator

Requests

```
POST /api/devices/[Device ID]/updates
cookie: sessionId: [Session ID]

{
  "action": "create",
  "deviceId": "[Device ID]",
  "elementType": "route",
  "fields":
  {
    "name": "[Route name]",
    "startRoute": [true,false],
    "source":
    {
      <Source object>
    },
    "destinations": [
      <Destination object list>
    ]
  }
}
```

Parameters

Name	Type	Description
action	• create	Create the specified element type.
deviceId	string	Device ID retrieved via the Get Device Info command.
elementType	• route	Create a route element.
name	string	Name of route.
startRoute	Boolean	If route is started after it is created
source	object	Source object. See Source Object Model for definition.
destinations	object list	Optional. List of route destinations. See Destinations Object Model for definition.

Response

```
{  
  "status": "[success message]"  
}
```

Update a Route

Use this command to update an individual route.

Authorizations: Administrator, Operator

Requests

```
POST /api/devices/[Device ID]/updates
cookie: sessionId: [Session ID]
```

```
{
  "action": "update",
  "deviceID": "[Device ID]",
  "elementType": "route",
  "elementID": "[Route ID]",
  "fields":
    {
      "name": "[Route name]",
      "source":
        {
          <Source object>
        },
      "destinations": [
        <Destination object list>
      ]
    }
}
```

Parameters

Name	Type	Description
action	• update	Update the specified element type.
deviceID	<i>string</i>	Device ID retrieved via the Get Device Info command.
elementType	• route	Update the route element.
elementID	<i>string</i>	Route ID retrieved via the Get Device Configuration command
name	<i>string</i>	Name of route.
source	<i>object</i>	Source object model. See Source Object Model for definition.
destinations	<i>string</i>	Optional. Destinations object model. See Destinations Object Model for definition.

Response

```
{
  "status": "[success message]"
}
```

Delete a Route

Use this command to delete an individual route.

Authorizations: Administrator, Operator

Requests

```
POST /api/devices/[Device ID]/updates
cookie: sessionId: [Session ID]

{
  "action": "delete",
  "deviceID": "[Device ID]",
  "elementType": "route",
  "elementID": "[Route ID]"
}
```

Parameters

Name	Type	Description
action	• delete	Delete the specified element type.
deviceID	<i>string</i>	Device ID retrieved via the Get Device Info command.
elementType	• route	Delete a route element as specified by elementID.
elementID	<i>string</i>	Route ID to delete. Retrieved via the Get Device Configuration command.

Response

```
{
  "status": "[success message]"
}
```


Start or Stop Routes

Use this command to start or stop individual routes.

Authorizations: Administrator, Operator

Requests

```
POST /api/devices/[Device ID]/commands
cookie: sessionId: [Session ID]

{
  "deviceID": "[Device ID]",
  "command": "[command]",
  "parameters": {
    "routeID": "[Route ID]"
  }
}
```

Parameters

Name	Type	Description
deviceID	string	Device ID retrieved via the Get Device Info command.
command	<ul style="list-style-type: none"> start-route stop-route 	Command to issue to the route.
routeID	string	Route ID retrieved via the Get Device Configuration command.

Response

```
[
  {
    "action": "command",
    "command": "start-route",
    "parameters": {
      "routeID": "[Route ID]"
    },
    "deviceID": "[Device ID]",
    "createdAt": [Date/time in Unix time],
    "completedAt": 0,
    "result": null,
    "state": "pending",
    "_id": "a5x4-7KEApdS0UuAUUCSog"
  }
]
```

Note

Status of the state property can be polled via the [Get Device Configuration](#) command. It may take several seconds to complete the command.

Start or Stop a Route's Destination

Use this command to start or stop a destination within a route.



Authorizations: Administrator, Operator

Requests

```
POST /api/devices/[Device ID]/updates
cookie: sessionID: [Session ID]

{
  "action": "update",
  "deviceID": "[Device ID]",
  "elementType": "route",
  "elementID": "[Route ID]",
  "fields":
    {
      "name": "[Route name]",
      "source":
        {
          <Source object>
        },
      "destinations": [
        <Destination object list>
      ]
    }
}
```

Parameters

Name	Type	Description
action	• update	Update the specified element type.
deviceID	string	Device ID retrieved via the Get Device Info command.
elementType	• route	Update a route element.
elementID	string	Route ID retrieved via the Get Device Configuration command.
name	string	Name of route.
source	object	Source object model. See Source Object Model for definition. <div style="border: 1px solid green; padding: 5px; margin-top: 5px;"> <p> Tip Only the fields shown above are required.</p> </div>
destinations	object	Destination object model. See Destinations Object Model for definition. <div style="border: 1px solid green; padding: 5px; margin-top: 5px;"> <p> Tip Only the fields shown above are required.</p> </div>

Response

```
{  
  "status": "[success message]"  
}
```

Export System Preset

Retrieves a preset of the entire device, including route configurations.

Authorizations: Administrator

Requests

```
GET /api/gateway/[Device ID]/system/preset
cookie: sessionId: [Session ID]
```

Parameters

N/A

Response

Response type is a downloadable file with `Content-Disposition: attachment` where the contents of the file are of type `application/json`. This file can be POSTed back to the Media Gateway using the [Import System Preset](#) command to return the system to the state captured by the preset at the moment of export.

```
{
  "preset_version": "1.0",
  "product_version": "3.0.0.79",
  "routes": [
    {
      "name": "Test route",
      "source": {
        "name": "Source Name",
        "networkInterface": "",
        "mode": "unicast",
        "address": "0.0.0.0",
        "protocol": "udp",
        "port": 1234,
        "encryption": "none",
        "srtLatency": null,
        "srtPassPhrase": null
      },
      "destinations": [
        {
          "name": "Destination Name",
          "protocol": "udp",
          "port": 7890,
          "mode": "unicast",
          "networkAddress": null,
          "networkInterface": "",
          "address": "1.2.3.4",
          "ttl": 64,
          "mtu": 1496,
          "tos": 184,
          "encryption": "none",
          "fec": "none",
          "shaping": false,
          "maxBitrate": 10000
        }
      ]
    }
  ]
}
```

Import System Preset

Loads a preset of the entire device, previously downloaded using the [Export System Preset](#) command.

Authorizations: Administrator

Requests

```
POST /api/gateway/[Device ID]/system/preset
cookie: sessionID: [Session ID]
Content-Type: multipart/form-data
```

Note

The format may vary depending on the REST library in use.

Parameters

N/A

Response

```
{
  "type": "postSystemPreset",
  "message": "Successfully loaded preset",
  "pendingCreation": [
    "[Route Name 1]",
    "[Route Name 2]"
  ]
}
```

Statistics

- [Get Route Statistics](#)
- [Get Source Statistics](#)
- [Get Destination Statistics](#)

Get Route Statistics

Retrieves statistics about a specific route.

Authorizations: Administrator, Operator, Observer

Requests

```
GET /api/gateway/[Device ID]/statistics?routeID=[Route ID]
cookie: sessionId: [Session ID]
```

Parameters

Name	Type	Description
Device ID	<i>string</i>	Device ID retrieved via the Get Device Info command.
Route ID	<i>string</i>	Route ID retrieved via the Get Device Configuration command.

Response

Note

The Source ID and Destination ID can be used in subsequent API calls to obtain their specific statistics. See [Get Source Statistics](#) and [Get Destination Statistics](#) for more information.


```
{
  "collectedAt": [Date/time in Unix time],
  "route": {
    "name": "[Route Name]",
    "elapsedRunningTime": "00:00:14",
    "id": "[Route ID]",
    "state": "running",
    "source": {
      <Source Statistics object>
    },
    "destinations": [
      {
        <Destination Statistics object>
      }
    ]
  }
}
```

Parameters

Name	Type	Description
collectedAt	<i>string</i>	Timestamp when statistics were collected.
route	<i>object</i>	Refer to the table below for the route object model.

The route object has the following fields:

Name	Type	Description
id	<i>string</i>	Unique identifier for the route.
name	<i>string</i>	Name of the route.
elapsedRunningTime	<i>number</i>	Either an empty string (for idle routes), or a string in HH:MM:SS format (e.g. 00:03:46).
state	<i>string</i>	Whether the route is running, idle, or stopped.
source	<i>object</i>	See Source Statistics Object Model for the source statistics object model.
destinations	<i>object list</i>	See Destinations Statistics Object Model for the destination statistics object model.

Get Source Statistics

Retrieves statistics about a specific route's source.

Authorizations: Administrator, Operator, Observer

Requests

```
GET /api/gateway/[Device ID]/statistics?routeID=[Route ID]&sourceID=[Source ID]
cookie: sessionId: [Session ID]
```

Parameters

Name	Type	Description
Device ID	<i>string</i>	Device ID retrieved via the Get Device Info command.
Route ID	<i>string</i>	Route ID retrieved via the Get Device Configuration command.
Source ID	<i>string</i>	Source ID retrieved via the Get Route Statistics command.

Response

Response varies depending on which protocol is used. See [Source Statistics Object Model](#) for parameter definitions of the source statistics object.

```
{
  "collectedAt": [Date/time in Unix time],
  "source": {
    <Source Statistics Object>
  }
}
```

Get Destination Statistics

Retrieves statistics about a specific route's destination.

Authorizations: Administrator, Operator, Observer

Requests

```
GET /api/gateway/[Device ID]/statistics?routeID=[Route ID]&destinationID=[Destination ID]
cookie: sessionID: [Session ID]
```

Parameters

Name	Type	Description
Device ID	<i>string</i>	Device ID retrieved via the Get Device Info command.
Route ID	<i>string</i>	Route ID retrieved via the Get Device Configuration command.
Destination ID	<i>string</i>	Destination ID retrieved via the Get Route Statistics command.

Response

Response varies depending on which protocol is used. See [Destinations Statistics Object Model](#) for parameter definitions of the destination statistics object.

```
{
  "collectedAt": [Date/time in Unix time],
  "destination": {
    <Destination Statistics Object>
  }
}
```

Object Model Reference

This section defines object models that are used across various Haivision Media Gateway API commands.

Route Object Model

The route object model differs when used in API requests and responses.

POST API Requests

Use the following route model when issuing the [Create a Route](#) and [Update a Route](#) API requests.

Name	Type	Description
name	<i>string</i>	Name of route.
id	<i>string</i>	Optional when creating source, required when updating. Route ID.
source	<i>object</i>	Route source object. See Source Object Model for definition.
destinations	<i>object list</i>	Route destinations list. See Destinations Object Model for definition.

GET API Responses

The following route model is returned after issuing the [Get Device Configuration](#) API command.

Name	Type	Description
name	<i>string</i>	Name of route.
id	<i>string</i>	Route ID.
source	<i>object</i>	Route source object. See Source Object Model for definition.
destinations	<i>object list</i>	Route destinations list. See Destinations Object Model for definition.
elapsedTime	<i>string</i>	Elapsed running time of route.
state	<i>string</i>	Route state.
summaryStatusCode	<i>string</i>	Route status summary code: warn, error, or ok.
summaryStatusDetails	<i>string</i>	Route status details.

Source Object Model

The source object model differs when used in API requests and responses.

POST API Requests

Use the following source model when issuing the [Create a Route](#), [Update a Route](#), and [Start or Stop a Route's Destination](#) API requests. Definition of each source depends on the source protocol.

[UDP and RTP](#) [SRT](#) [RTMP](#) [RTSP](#)

UDP or RTP Source

Name	Type	Description
name	<i>string</i>	Name of source for route. (Unique name with length 1-60.)
id	<i>string</i>	Optional when creating source, required when updating. Source ID.
address	<i>string</i>	IP address of route source. (0.0.0.0 for unicast.)
protocol	<i>string</i>	Source protocol: udp or rtp
port	<i>number</i>	Port number of route source: 1-65535.
networkInterface	<i>string</i>	Optional. Network interface name. (Empty string if auto.)

[UDP and RTP](#) [SRT](#) [RTMP](#) [RTSP](#)

SRT Source

Name	Type	Description
name	<i>string</i>	Name of source for route. (Unique name with length 1-60.)
id	<i>string</i>	Optional when creating source, required when updating. Source ID.
address	<i>string</i>	IP address of route source. (0.0.0.0 for listener.)
protocol	<i>string</i>	Source protocol: srt
port	<i>number</i>	Port number of route source: 1-65535.
networkInterface	<i>string</i>	Optional. Network interface name. (Empty string if auto.)
srtPassPhrase	<i>string</i>	Optional. SRT passphrase.
srtLatency	<i>number</i>	Optional. SRT latency.
srtMode	<i>string</i>	Optional. SRT mode: caller, listener, or rendezvous.

UDP and RTP SRT RTMP RTSP

RTMP Source

Name	Type	Description
name	<i>string</i>	Name of source for route. (Unique name with length 1-60.)
id	<i>string</i>	Optional when creating source, required when updating. Source ID.
address	<i>string</i>	Optional in publisher mode, required in consumer mode. IP address of route source.
protocol	<i>string</i>	Source protocol: rtmp
port	<i>number</i>	Port number of route source: 1-65535.
networkInterface	<i>string</i>	Optional. Network interface name. (Empty string if auto.)
streamName	<i>string</i>	RTMP stream name
rtmpMode	<i>string</i>	RTMP mode: PUBLISHER or CONSUMER.

UDP and RTP SRT RTMP RTSP

RTSP Source

Name	Type	Description
name	<i>string</i>	Name of source for route. (Unique name with length 1-60.)
id	<i>string</i>	Optional when creating source, required when updating. Source ID.
address	<i>string</i>	IP address of route source.
protocol	<i>string</i>	Source protocol: rtsp
port	<i>number</i>	Port number of route source: 1-65535.
networkInterface	<i>string</i>	Optional. Network interface name. (Empty string if auto.)
fec	<i>string</i>	Optional. FEC enable: none or vf
username	<i>string</i>	Optional. RTSP username.
password	<i>string</i>	Optional. RTSP password.

GET API Responses

The following source model is returned after issuing the [Get Device Configuration](#) API command. Definition of each source depends on the source protocol.

UDP and RTP SRT RTMP RTSP

UDP or RTP Source

Name	Type	Description
name	<i>string</i>	Name of source for route.
id	<i>string</i>	Source ID.
address	<i>string</i>	IP address of route source. (0.0.0.0 for unicast.)
protocol	<i>string</i>	Source protocol: udp or rtp
port	<i>number</i>	Port number of route source: 1-65535.
networkInterface	<i>string</i>	Network interface name. (Empty string if auto.)
state	<i>string</i>	Source state.
summaryStatusCode	<i>string</i>	Source status summary code.
summaryStatusDetails	<i>string</i>	Source status details.

UDP and RTP [SRT](#) [RTMP](#) [RTSP](#)

SRT Source

Name	Type	Description
name	<i>string</i>	Name of source for route.
id	<i>string</i>	Source ID.
address	<i>string</i>	IP address of route source. (0.0.0.0 for listener.)
protocol	<i>string</i>	Source protocol: srt
port	<i>number</i>	Port number of route source: 1-65535.
networkInterface	<i>string</i>	Network interface name. (Empty string if auto.)
srtPassPhrase	<i>string</i>	SRT Passphrase.
srtLatency	<i>number</i>	SRT latency.
mode	<i>string</i>	SRT mode: caller, listener, or rendezvous.
state	<i>string</i>	Source state.
summaryStatusCode	<i>string</i>	Source status summary code.
summaryStatusDetails	<i>string</i>	Source status details.

UDP and RTP [SRT](#) [RTMP](#) [RTSP](#)

RTMP Source

Name	Type	Description
name	<i>string</i>	Name of source for route.
id	<i>string</i>	Source ID.
address	<i>string</i>	IP address of route source. (127.0.0.1/live for publisher.)
protocol	<i>string</i>	Source protocol: rtmp
port	<i>number</i>	Port number of route source: 1-65535.
networkInterface	<i>string</i>	Network interface name. (Empty string if auto.)
streamName	<i>string</i>	RTMP stream name
rtmpMode	<i>string</i>	RTMP mode: PUBLISHER or CONSUMER.
state	<i>string</i>	Source state.
summaryStatusCode	<i>string</i>	Source status summary code.
summaryStatusDetails	<i>string</i>	Source status details.

UDP and RTP SRT RTMP RTSP

RTSP Source

Name	Type	Description
name	<i>string</i>	Name of source for route.
id	<i>string</i>	Source ID.
address	<i>string</i>	IP address of route source.
protocol	<i>string</i>	Source protocol: rtsp
port	<i>number</i>	Port number of route source: 1-65535.
networkInterface	<i>string</i>	Network interface name. (Empty string if auto.)
fec	<i>string</i>	FEC enable: none or vf.
username	<i>string</i>	RTSP username.
password	<i>string</i>	RTSP password.
state	<i>string</i>	Source state.
summaryStatusCo de	<i>string</i>	Source status summary code.
summaryStatusDe tails	<i>string</i>	Source status details.

Destinations Object Model

The destinations object model differs when used in API requests and responses.

POST API Requests

Use the following destinations model when issuing the [Create a Route](#), [Update a Route](#), and [Start or Stop a Route's Destination](#) API requests. Definition of each destination depends on the protocol.

[UDP and RTP](#) [SRT](#) [HLS](#)

UDP or RTP Destination

Name	Type	Description
name	<i>string</i>	Name of destination for route. (Unique name with length 1-60.)
id	<i>string</i>	Optional when creating destination, required when updating. Destination ID.
address	<i>string</i>	IP address of route destination.
protocol	<i>string</i>	Destination protocol: udp or rtp.
port	<i>number</i>	Port number of route destination: 1-65535.
networkInterface	<i>string</i>	Optional. Network interface name. (Empty string if auto.)
action	<i>string</i>	Optional. Destination action: start, stop, or none.
mtu	<i>number</i>	Optional. Destination MTU. Range = 280-1500
ttl	<i>number</i>	Optional. Destination TTL. Minimum 1.
tos	<i>number</i>	Optional. Destination ToS. Minimum 0.
fec	<i>string</i>	UDP only. Optional. Destination FEC enable: none or vf.
shaping	<i>Boolean</i>	Optional. Destination shaping: true or false.
maxBitrate	<i>number</i>	Optional. Destination maximum bitrate.

[UDP and RTP](#) [SRT](#) [HLS](#)

SRT Destination

Name	Type	Description
name	<i>string</i>	Name of destination for route. (Unique name with length 1-60.)
id	<i>string</i>	Optional when creating destination, required when updating. Destination ID.
address	<i>string</i>	IP address of route destination. (0.0.0.0 for listener.)
protocol	<i>string</i>	Destination protocol: srt.
port	<i>number</i>	Port number of route destination: 1-65535.

Name	Type	Description
networkInterface	<i>string</i>	Optional. Network interface name. (Empty string if auto.)
action	<i>string</i>	Optional. Destination action: start, stop, or none.
mtu	<i>number</i>	Optional. Destination MTU. Range=280-1500
ttl	<i>number</i>	Optional. Destination TTL. Minimum 1.
tos	<i>number</i>	Optional. Destination ToS. Minimum 0.
srtEncryption	<i>string</i>	Optional. Encryption mode: AES128, AES256, or none.
srtPassPhrase	<i>string</i>	Optional. SRT Passphrase.
srtLatency	<i>number</i>	Optional. SRT latency.
srtMode	<i>string</i>	Optional. SRT mode: caller, listener, or rendezvous.
srtOverhead	<i>string</i>	Optional. Overhead used for SRT.

UDP and RTP SRT HLS

HLS Destination

Name	Type	Description
name	<i>string</i>	Name of destination for route. (Unique name with length 1-60.)
id	<i>string</i>	Optional when creating destination, required when updating. Destination ID.
protocol	<i>string</i>	Destination protocol: hls.
action	<i>string</i>	Optional. Destination action: start, stop, or none.
segmentDuration	<i>number</i>	Optional. HLS segment duration.
useEncryption	<i>Boolean</i>	Optional. Encryption enable: true or false.
segmentsPerKey	<i>number</i>	Optional. Number of HLS segments per key.
multitrackSegmenter	<i>Boolean</i>	Optional. HLS variant playlist enable: true or false.

GET API Responses

The following destinations model is returned after issuing the [Get Device Configuration](#) API command. Definition of each destination depends on the protocol.

UDP and RTP SRT HLS

UDP or RTP Destination

Name	Type	Description
name	<i>string</i>	Name of destination for route.
id	<i>string</i>	Destination ID.

Name	Type	Description
address	<i>string</i>	IP address of route destination. (0.0.0.0 for unicast.)
protocol	<i>string</i>	Destination protocol: udp or rtp.
port	<i>number</i>	Port number of route destination: 1-65535.
networkInterface	<i>string</i>	Network interface name. (Empty string if auto.)
mtu	<i>number</i>	Destination MTU. Range=280-1500
ttl	<i>number</i>	Destination TTL. Minimum 1.
tos	<i>number</i>	Destination ToS. Minimum 0.
fec	<i>string</i>	UDP only. Destination FEC enable: none or vf.
shaping	<i>Boolean</i>	Destination shaping: true or false.
maxBitrate	<i>number</i>	Destination maximum bitrate.
state	<i>string</i>	Destination state.
summaryStatusCode	<i>string</i>	Destination status summary code.
summaryStatusDetails	<i>string</i>	Destination status details.
started	<i>Boolean</i>	If destination is started: true or false.

UDP and RTP [SRT](#) [HLS](#)

SRT Destination

Name	Type	Description
name	<i>string</i>	Name of destination for route.
id	<i>string</i>	Destination ID.
address	<i>string</i>	IP address of route destination. (0.0.0.0 for listener.)
protocol	<i>string</i>	Destination protocol: srt.
port	<i>number</i>	Port number of route destination: 1-65535.
networkInterface	<i>string</i>	Network interface name. (Empty string if auto.)
mtu	<i>number</i>	Destination MTU. Range=280-1500
ttl	<i>number</i>	Destination TTL. Minimum 1.
tos	<i>number</i>	Destination ToS. Minimum 0.
srtEncryption	<i>string</i>	Encryption mode: AES128, AES256, or none.
srtPassPhrase	<i>string</i>	SRT Passphrase.
srtLatency	<i>number</i>	SRT latency.
mode	<i>string</i>	SRT mode: caller, listener, or rendezvous.

Name	Type	Description
srtOverhead	<i>string</i>	Overhead used for SRT.
state	<i>string</i>	Destination state.
summaryStatusCode	<i>string</i>	Destination status summary code.
summaryStatusDetails	<i>string</i>	Destination status details.
started	<i>Boolean</i>	If destination is started: true or false.

[UDP and RTP](#)
[SRT](#)
[HLS](#)

HLS Destination

Name	Type	Description
name	<i>string</i>	Name of destination for route.
id	<i>string</i>	Destination ID.
protocol	<i>string</i>	Destination protocol: http.
address	<i>string</i>	HLS playlist path. (Construct the URI to m3u8 playlist for this client by using: https://[HMG IP address] + [HLS playlist path].) Playlist requests may require authorization.
segmentDuration	<i>string</i>	HLS segment duration.
useEncryption	<i>boolean</i>	Encryption enable: true or false.
segmentsPerKey	<i>number</i>	Number of HLS segments per key.
multitrackSegmenter	<i>boolean</i>	HLS variant playlist enable: true or false.
state	<i>string</i>	Destination state.
summaryStatusCode	<i>string</i>	Destination status summary code.
summaryStatusDetails	<i>string</i>	Destination status details.
started	<i>Boolean</i>	If destination is started: true or false.

Source Statistics Object Model

The following source statistics model is returned after issuing the [Get Device Configuration](#) and [Get Source Statistics](#) API commands. The definition depends on the source protocol.

[UDP, RTP, RTMP, and RTSP](#) [SRT](#)

UDP, RTP, RTMP, and RTSP Source

Name	Type	Description
name	<i>string</i>	Name of the source.
id	<i>string</i>	Unique identifier for the source.
mode	<i>string</i>	Unicast or multicast.
elapsedRunningTime	<i>string</i>	Either an empty string (for idle routes), or a string in HH:MM:SS format (e.g. 00:03:46).
signalLosses	<i>number</i>	Number of signal losses.
sendRate	<i>number</i>	Packet send rate in Mbits/s.
numPackets	<i>number</i>	Number of packets sent.
usedBandwidth	<i>number</i>	Bandwidth used in Mbits/s.
bitrate	<i>number</i>	Stream bitrate in Mbits/s.
state	<i>string</i>	Source state.
fecLostPackets	<i>number</i>	Number of lost FEC packets.
fecRecoveredPackets	<i>number</i>	Number of recovered FEC packets.
fecUnrecoveredPackets	<i>number</i>	Number of unrecovered FEC packets.
fecReorderedPackets	<i>number</i>	Number of reordered FEC packets.

[UDP, RTP, RTMP, and RTSP](#) [SRT](#)

SRT Source

Name	Type	Description
name	<i>string</i>	Name of the source.
id	<i>string</i>	Unique identifier for the source.
mode	<i>string</i>	SRT mode (caller, listener, or rendezvous).
elapsedRunningTime	<i>string</i>	Either an empty string (for idle routes), or a string in HH:MM:SS format (e.g. 00:03:46).
signalLosses	<i>number</i>	Number of signal losses.

Name	Type	Description
sendRate	<i>number</i>	Packet send rate in Mbits/s.
numPackets	<i>number</i>	Number of packets sent.
usedBandwidth	<i>number</i>	Bandwidth used in Mbits/s.
bitrate	<i>number</i>	Stream bitrate in Mbits/s.
state	<i>string</i>	Source state.
srtNumLostPackages	<i>number</i>	SRT number of lost packages.
srtRetransmitRate	<i>number</i>	SRT retransmit rate in bits/s.
srtRoundTripTime	<i>number</i>	SRT round trip time in ms.
srtNegotiatedLatency	<i>number</i>	SRT latency in ms.
srtLatency	<i>number</i>	SRT latency in ms.
srtEncryption	<i>string</i>	SRT encryption.
srtPacketLossRate	<i>number</i>	SRT packet loss rate.
srtNumSkippedPackets	<i>number</i>	SRT number of skipped packet.
srtDecryptionState	<i>string</i>	SRT description state.
srtBufferLevel	<i>number</i>	SRT buffer time in ms.

Destinations Statistics Object Model

The following destination statistics model is returned after issuing the [Get Route Statistics](#) and [Get Destination Statistics](#) API commands. The definition depends on the destination protocol.

UDP, RTP, and HLS SRT

UDP, RTP, and HLS Destinations

Name	Type	Description
name	<i>string</i>	Name of the destination.
id	<i>string</i>	Unique identifier for the destination.
mode	<i>string</i>	Destination mode (unicast or multicast).
state	<i>string</i>	Destination state.
elapsedRunningTime	<i>string</i>	Either an empty string (for idle routes), or a string in HH:MM:SS format (e.g. 00:03:46).
bitrate	<i>number</i>	Stream bitrate in Mbits/s.
signalLosses	<i>number</i>	Number of signal losses.
usedBandwidth	<i>number</i>	Bandwidth used in Mbits/s.

Name	Type	Description
sendRate	<i>number</i>	Packet send rate in Mbits/s.
numPackets	<i>number</i>	Number of packets.

UDP, RTP, and HLS [SRT](#)

SRT Destinations

Name	Type	Description
name	<i>string</i>	Name of the destination.
id	<i>string</i>	Unique identifier for the destination.
mode	<i>string</i>	Destination mode (caller, listener, or rendezvous).
state	<i>string</i>	Destination state.
elapsedRunningTime	<i>string</i>	Either an empty string (for idle routes), or a string in HH:MM:SS format (e.g. 00:03:46).
bitrate	<i>number</i>	Stream bitrate in Mbits/s.
signalLosses	<i>number</i>	Number of signal losses.
usedBandwidth	<i>number</i>	Bandwidth used in Mbits/s.
sendRate	<i>number</i>	Packet send rate in Mbits/s.
numPackets	<i>number</i>	Number of packets.
srtNumLostPackets	<i>number</i>	SRT number of lost packages.
srtRetransmitRate	<i>number</i>	SRT retransmit rate in bits/s.
srtPacketLossRate	<i>number</i>	SRT packet loss rate.
srtRoundTripTime	<i>number</i>	SRT round trip time in ms.
srtMaxBandwidth	<i>number</i>	SRT maximum bandwidth used in Mbits/s.
srtBufferLevel	<i>number</i>	SRT buffer time in ms.
srtDroppedPackets	<i>number</i>	SRT number of dropped packets.
srtPeerDecryptionState	<i>string</i>	SRT peer decryption state.
srtEstimatedBandwidth	<i>number</i>	SRT estimated bandwidth in bits/s.
srtNegotiatedLatency	<i>number</i>	SRT latency in ms.

Warranties

1-Year Limited Hardware Warranty

Haivision warrants its hardware products against defects in materials and workmanship under normal use for a period of ONE (1) YEAR from the date of equipment shipment ("Warranty Period"). If a hardware defect arises and a valid claim is received within the Warranty Period, at its option and to the extent permitted by law, Haivision will either (1) repair the hardware defect at no charge, or (2) exchange the product with a product that is new or equivalent to new in performance and reliability and is at least functionally equivalent to the original product. A replacement product or part assumes the remaining warranty of the original product or ninety (90) days from the date of replacement or repair, whichever is longer. When a product or part is exchanged, any replacement item becomes your property and the replaced item becomes Haivision's property.

EXCLUSIONS AND LIMITATIONS

This Limited Warranty applies only to hardware products manufactured by or for Haivision that can be identified by the "Haivision" trademark, trade name, or logo affixed to them. The Limited Warranty does not apply to any non-Haivision hardware products or any software, even if packaged or sold with Haivision hardware. Manufacturers, suppliers, or publishers, other than Haivision, may provide their own warranties to the end user purchaser, but Haivision, in so far as permitted by law, provides their products "as is".

Haivision does not warrant that the operation of the product will be uninterrupted or error-free. Haivision does not guarantee that any error or other non-conformance can or will be corrected or that the product will operate in all environments and with all systems and equipment. Haivision is not responsible for damage arising from failure to follow instructions relating to the product's use.

This warranty does not apply:

- (a) to cosmetic damage, including but not limited to scratches, dents and broken plastic on ports;
- (b) to damage caused by accident, abuse, misuse, flood, fire, earthquake or other external causes;
- (c) to damage caused by operating the product outside the permitted or intended uses described by Haivision;
- (d) to a product or part that has been modified to alter functionality or capability without the written permission of Haivision; or
- (e) if any Haivision serial number has been removed or defaced.

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OBTAINING WARRANTY SERVICE

Before requesting warranty service, please refer to the documentation accompanying this hardware product and the Haivision Support Portal <https://support.haivision.com>. If the product is still not functioning properly after making use of these resources, please contact Haivision or Authorized Reseller using the information provided in the documentation. When calling, Haivision or Authorized Reseller will help determine whether your product requires service and, if it does, will inform you how Haivision will provide it. You must assist in diagnosing issues with your product and follow Haivision's warranty processes.

Haivision may provide warranty service by providing a return material authorization ("RMA") to allow you to return the product in accordance with instructions provided by Haivision or Authorized Reseller. You are fully responsible for delivering the product to Haivision as instructed, and Haivision is responsible for returning the product if it is found to be defective. Your product or a replacement product will be returned to you configured as your product was when originally purchased, subject to applicable updates. Returned products which are found by Haivision to be not defective, out-of-warranty or otherwise ineligible for warranty service will be shipped back to you at your expense. All replaced products and parts, whether under warranty or not, become the property of Haivision. Haivision may require a completed pre-authorized form as security for the retail price of the replacement product. If you fail to return the replaced product as instructed, Haivision will invoice for the pre-authorized amount.

APPLICABLE LAW

This Limited Warranty is governed by and construed under the laws of the Province of Quebec, Canada.

This Limited Hardware Warranty may be subject to Haivision's change at any time without prior notice.

EULA - End User License Agreement

READ BEFORE USING

THE LICENSED SOFTWARE IS PROTECTED BY COPYRIGHT LAWS AND TREATIES. READ THE TERMS OF THE FOLLOWING END USER (SOFTWARE) LICENSE AGREEMENT ("AGREEMENT") CAREFULLY BEFORE ACCESSING THE LICENSED SOFTWARE. BY SCANNING THE QR CODE TO REVIEW THIS AGREEMENT AND/OR ACCESSING THE LICENSED SOFTWARE, YOU CONFIRM YOUR ACCEPTANCE OF THIS AGREEMENT. IF YOU DO NOT AGREE TO THESE TERMS, HAIVISION IS UNWILLING TO LICENSE THE LICENSED SOFTWARE TO YOU AND YOU ARE NOT AUTHORIZED TO ACCESS THE LICENSED SOFTWARE.

Click the following link to view the Software End-User License Agreement: [Haivision EULA.pdf](#)

If you have questions, please contact legal@haivision.com

SLA - Service Level Agreement

1. Introduction

This Service Level and Support supplement forms a part of and is incorporated into the Service Agreement (the "Agreement") between You and Haivision Network Video Inc. ("Haivision"). Capitalized terms used but not otherwise defined in this supplement shall have the meaning ascribed to them in the Agreement. Haivision may, upon prior written notice to You, amend this supplement to incorporate improvements to the service levels and support commitments at no additional cost to You. This supplement applies only to those products and services set forth below.

2. Definitions

- "Audience Member" means an individual or entity that accesses Your Published Media Objects through a public URL.
- "Access Service" means the service provided by Haivision VCMS that verifies an Audience Member's credentials.
- "Digital Media File" means a computer file containing text, audio, video, or other content.
- "Outage" is a 12-minute period of consecutive failed attempts by all six agents to PING the domain on the Haivision Streaming Media network.
- "Published Media Object" means a Digital Media File with a public URL.
- "Transaction" means the creation of a right for an Audience Member to access a Media Object and the completion of an order logged in the order history service.

3. Service Levels for the Video Content Management System

The service levels in this [Section 3](#) apply only to the hosted version of Haivision VCMS and the Haivision VCMS development kit (collectively, the "Standard Hosted Components" of Haivision Video Cloud Services). Subject to the exceptions noted in [Section 4](#) below, the aforementioned components of Haivision Video Cloud Services will be available for use over the course of each calendar month as follows:

Type of Access	Definition	Availability Level
Write Functions	<ul style="list-style-type: none"> • Access to all functions through the administrative user interface. • Ability to add or modify objects and metadata through the application programming interface (“API”) • Ability of ingest service to check for new or updated files or feeds 	99.999%
Read-Only Functions	<ul style="list-style-type: none"> • Ability to retrieve data through the API • Ability for Audience Members to authenticate through the Access Service • Ability for Audience Members to play Published Media Objects • Ability for Audience Members to play Haivision VCMS-authenticated or entitled Published Media Objects • Ability to complete Transactions 	99.999%

4. Exceptions to Availability for the VCMS

The Standard Hosted Components may not be available for use under the following circumstances, and in such case such periods of unavailability shall not be counted against Haivision Video Cloud for purposes of calculating availability:

- a. Normal Maintenance, Urgent Maintenance and Upgrades as defined in the table below;
- b. Breach of the Agreement by You as defined in the Agreement;
- c. The failure, malfunction, or modification of equipment, applications, or systems not controlled by Haivision Video Cloud;
- d. Any third party, public network, or systems unavailability;
- e. Acts of Force Majeure as defined in the Agreement;
- f. Modification of software made available to You as part of Haivision Video Cloud Services by You or a third party acting on Your behalf; and
- g. Any third party product or service not incorporated into Haivision Video Cloud Services or any third party plug-in.

Haivision Video Cloud shall make commercially reasonable efforts to notify, or work with, applicable third parties to repair or restore Haivision VCMS functionality affected by such exceptions.

Type of Maintenance	Purpose	Write Functions Available	Read Functions Available	Maximum Time Per Month	Continuous Time in Mode (Max)	Window (Central Time)	Min Notice
Normal	<ul style="list-style-type: none"> • Preventive maintenance on the software/hardware components of Haivision VCMS • Addition of new features/functions • Repair errors that are not immediately affecting Your use of Haivision VCMS 	No	Yes	10 Hours	6 Hours	10:00p m - 5:00a m	48 Hours
Urgent	<ul style="list-style-type: none"> • Repair errors that are immediately affecting Your use of Haivision VCMS 	No	Yes	30 Minutes	15 Minutes	Any Time	3 Hours

Type of Maintenance	Purpose	Write Functions Available	Read Functions Available	Maximum Time Per Month	Continuous Time in Mode (Max)	Window (Central Time)	Min Notice
Upgrades	<ul style="list-style-type: none"> Perform upgrades on software or hardware elements necessary to the long term health or performance of Haivision VCMS, but which, due to their nature, require that certain components of Haivision VCMS to be shut down such that no access is possible 	No	No	1 Hour	1 Hour	12:00am - 4:00am M-F	5 Days

5. Credits for Downtime for the VCMS

Haivision Video Cloud will grant a credit allowance to You if You experience Downtime in any calendar month and you notify Haivision Video Cloud thereof within ten (10) business days after the end of such calendar month. In the case of any discrepancy between the Downtime as experienced by You and the Downtime as measured by Haivision Video Cloud, the Downtime as measured by Haivision Video Cloud shall be used to calculate any credit allowance set forth in this section. Such credit allowance shall be equal to the pro-rated charges of one-half day of Fees for each hour of Downtime or fraction thereof. The term “Downtime” shall mean the number of minutes that Standard Hosted Components are unavailable to You during a given calendar month below the availability levels thresholds in [Section 3](#), but shall not include any unavailability resulting from any of the exceptions noted in [Section 4](#). Within thirty (30) days after the end of any calendar month in which Downtime occurred below the availability levels thresholds in [Section 3](#), Haivision Video Cloud shall provide You with a written report detailing all instances of Downtime during the previous month. Any credit allowances accrued by You may be offset against any and all Fees owed to Haivision Video Cloud pursuant to the Agreement, provided that a maximum of one month of credit may be accrued per month.

6. Support Services for the VCMS

Support for Haivision Video Cloud Services as well as the Application Software (defined as the VCMS application software components that Haivision licenses for use in conjunction with the Video Cloud Services) can be reached at hvc-techsupport@haivision.com and shall be available for all Your support requests. Haivision Video Cloud will provide 24x7 monitoring of the Standard Hosted Components.

Cases will be opened upon receipt of request or identification of issue, and incidents will be routed and addressed according to the following:

Severity Level	Error State Description	Status Response Within	Incident Resolution within
1 - Critical Priority	Renders Haivision VCMS inoperative or causes Haivision VCMS to fail catastrophically.	15 minutes	4 hours
2 - High Priority	Affects the operation of Haivision VCMS and materially degrades Your use of Haivision VCMS.	30 minutes	6 hours
3 - Medium Priority	Affects the operation of Haivision VCMS, but does not materially degrade Your use of Haivision VCMS.	2 hours	12 hours

Severity Level	Error State Description	Status Response Within	Incident Resolution within
4 - Low Priority	Causes only a minor impact on the operation of Haivision VCMS.	1 business day	3 business days

7. Service Levels for Haivision Streaming Media Service

Haivision agrees to provide a level of service demonstrating 99.9% Uptime. The Haivision Streaming Media Service will have no network Outages.

The following methodology will be employed to measure Streaming Media Service availability:

Agents and Polling Frequency

- a. From six (6) geographically and network-diverse locations in major metropolitan areas, Haivision’s Streaming Media will simultaneously poll the domain identified on the Haivision Streaming Media network.
- b. The polling mechanism will perform a PING operation, sending a packet of data and waiting for a reply. Success of the PING operation is defined as a reply being received.
- c. Polling will occur at approximately 6-minute intervals.
- d. Based on the PING operation described in (b) above, the response will be assessed for the purpose of measuring Outages.

If an Outage is identified by this method, the customer will receive (as its sole remedy) a credit equivalent to the fees for the day in which the failure occurred.

Haivision reserves the right to limit Your use of the Haivision Streaming Media network in excess of Your committed usage in the event that Force Majeure events, defined in the Agreement, such as war, natural disaster or terrorist attack, result in extraordinary levels of traffic on the Haivision Streaming Media network.

8. Credits for Outages of Haivision Streaming Media Service

If the Haivision Streaming Media network fails to meet the above service level, You will receive (as your sole remedy) a credit equal to Your or such domain’s committed monthly service fee for the day in which the failure occurs, not to exceed 30 days of fees.

9. No Secondary End User Support

UNDER NO CIRCUMSTANCES MAY YOU PROVIDE CONTACT INFORMATION FOR HAIVISION SERVICES TO CUSTOMERS OR AUDIENCE MEMBERS OR OTHER THIRD PARTIES WITHOUT HAIVISION’S EXPRESS PRIOR WRITTEN CONSENT.

Getting Help

<p>General Support</p>	<p>North America (Toll-Free) 1 (877) 224-5445</p> <p>International 1 (514) 334-5445</p> <p><i>and choose from the following:</i> Sales - 1, Cloud Services - 3, Support - 4</p>
<p>Managed Services</p>	<p>U.S. and International 1 (512) 220-3463</p>
<p>Fax</p>	<p>1 (514) 334-0088</p>
<p>Support Portal</p>	<p>https://support.haivision.com</p>
<p>Product Information</p>	<p>info@haivision.com</p>

