# Virtual-Vehicles REST API Documentation

#### **General Notes**

### Client Registration

All resource URIs require an Authorization request header with a JSON Web Tokens (JWT) To obtain a JWT, you need to register as an API client, using the Authentication service You must supply your application's name and a secret as part of the HTTP request In return, you will receive your client-specific API key

## **Obtaining JWTs**

Use your API key and secret to obtain a JSON Web Tokens (JWT) using the Authentication service Include the JWT in an Authorization request header, for all resources
Use standard format of: Header: "Authorization", Value: "Bearer {jwt}"

JWTs have an expiration date and time, set by the Authentication service (1 day default)

If JWT fails authentication, STATUS is returned as '401 Unauthorized'

### **API Key and Secret**

Your API key and secret should be kept **confidential** and never exposed to your end-users The apiKey contains (24) alphanumeric characters, mixed case (defined by API) Your secret should contain a minimum of (15) alphanumeric characters, mixed case

#### **Date and Time Format**

All date and time values should use the ISO 8601 standard, which also matches MongoDB All date and time values should be in UTC Format: YYYY-MM-DDThh:mm:ss.sZ For example, "serviceDateTime": "2015-05-07T08:22:03.400Z"

#### Media Types

Media type is optionally indicated by using'.{format}' in all RESTful resource URIs Media types available include '.json' or' .xml' JSON is default if not implicitly included in resource URI

#### **Use of PUT**

When using PUT to update data, the "updatedAt" and "id" not required in the raw JSON-format HTTP request body The "updatedAt" will be handled by MongoDB The "id" is used as part of the resource URI

#### **PATCH** is Unsupported

RestExpress has no built in support for PATCH, and hacking a POST as a partial update also does not work. Must use PUT.

## **Bug with Find using Query Filter**

There seems to be a bug using the find operation with int based property. Strings work fine. For example, GET 'http://localhost:8585/valets/utils/find?filter=parkingSpot::24' Give error:

May 10, 2015 6:34:06 PM org.mongodb.morphia.query.QueryValidator validateQuery WARNING: Validation warnings:

[Validation failed: 'When type is one of the integer types the value should be an Integer.

Type was int and value '24' was a class java.util.regex.Pattern']

Virtual-Vehicles REST API Resources		
Microservice	Purpose (Business Capability)	Functions
Authentication Service	Manage API clients and JWT authentication	<ul> <li>Create a new API client (public)</li> <li>Read, filter, sort, count, paginate API clients (admin)</li> <li>Read a single API client (public)</li> <li>Update an existing API client (public)</li> <li>Delete an existing API client (admin)</li> <li>Create new JWT (public)</li> <li>Validate a JWT (admin/internal)</li> <li>Service health ping (admin)</li> </ul>
Vehicle Service	Manage virtual vehicles	<ul> <li>Create a new vehicle (public)</li> <li>Read, filter, sort, count, paginate vehicles (admin)</li> <li>Read a single vehicle (public)</li> <li>Update an existing vehicle (public)</li> <li>Delete an existing vehicle (admin)</li> <li>Service health ping (admin)</li> </ul>
Maintenance Service	Manage maintenance on vehicles	<ul> <li>Create a new maintenance record (public)</li> <li>Read, filter, sort, count, paginate maintenance records (admin)</li> <li>Read a single maintenance record (public)</li> <li>Update an existing maintenance record (public)</li> <li>Delete an existing maintenance record (admin)</li> <li>Service health ping (admin)</li> </ul>
Valet Parking Service	Manage a valet service to park for vehicles	<ul> <li>Create a new valet parking transaction (public)</li> <li>Read, filter, sort, count, paginate valet parking transactions (admin)</li> <li>Read a single valet parking transaction (public)</li> <li>Update an existing valet parking transaction (public)</li> <li>Delete an existing valet parking transaction (admin)</li> <li>Service health ping (admin)</li> </ul>

Microservice	Purpose (Business Capability)	Functions
Sales Service	Manage the buying and selling of vehicles	Not implemented
Registration Service	Manage the registration of vehicles to owners	Not implemented
Auction Service	Manage a virtual car auction	Not implemented
Car Show Service	Manage a virtual car show	Not implemented
Interaction Service	Manage the interaction of users with vehicles (ie. drive)	Not implemented

Authentication	Authentication Service	
Client Manage	Client Management	
Function	Create a new API client	
Method	POST	
URI	/clients.{format}	
Request Body (raw)	{     "application": "Virtual Car Collector",     "secret": "pbZCmrFSBqkYtMh" }	
Status	201 Created	
Response Body	New client object  {     "_links": {         "self": {             "href": "http://virtual-vehicles.com:8587/clients/55482c1bc830337da8c6bd81"         },         "up": {                   "href": "http://virtual-vehicles.com:8587/clients"         }     },     "application": "Virtual Car Collector",     "secret": "pbZCmrFSBqkYtMh",     "apiKey": "PT2lOldZG6hSEDddushzSN1G",     "id": "55482c1bc830337da8c6bd81",     "createdAt": "2015-05-05T02:34:03.400Z",     "updatedAt": "2015-05-05T02:34:03.400Z" }	
MongoDB Document View (BSON)	{     "_id" : ObjectId("55482c1bc830337da8c6bd81"),     "className" : "com.example.authentication.objectid.Client",     "application" : "Virtual Car Collector",     "secret" : "pbZCmrFSBqkYtMh",     "apiKey" : "PT2IOIdZG6hSEDddushzSN1G",     "createdAt" : ISODate("2015-05-05T02:34:03.400Z"),     "updatedAt" : ISODate("2015-05-05T02:34:03.400Z") }	

Function	Read, filter, sort, count, paginate API clients
	filter = org.restexpress.common.query QueryFilter instance (uses contains method, no wildcard option) sort = org.restexpress.common.query QueryOrder instance (use - for descending order) limit and offset = org.restexpress.common.query QueryRange instance (offset is optional - default is 0) countOnly=true returns document count with empty clients object in response body
	All query params may be combined
	RestExpress bug/limitation with using non-strings for filtering! Only appears to works for string matching patterns ([Validation failed: 'Patterns can only be used as query values for Strings']
Method	GET
URI	/clients.{format}
	/clients?filter={key::value key::value }.{format} /clients?filter=apiKey::PT2IOIdZG6hSEDddushzSN1G /clients?filter=application::Garage secret::9DH
	/clients?sort={key -key }&limit={int}&offset={int} /clients?sort=application&limit=20 /clients?sort=application -createdAt&limit=10&offset=20
	/clients?countOnly=true /clients?countOnly=true&filter=apiKey::PT2IOIdZG6hSEDddushzSN1G
Request	(5) optional URL params above: filter, sort, limit, offset, countOnly
Status	200 OK
Response Body	Potentially one or more API client objects  {     "_links": {         "self": {             "href": "http://virtual-vehicles.com:8587/clients/55482c1bc830337da8c6bd81"         },         "up": {                   "href": "http://virtual-vehicles.com:8587/clients"         }         },         "application": "Virtual Car Collector",         "secret": "pbZCmrFSBqkYtMh",         "apiKey": "PT2IOIdZG6hSEDddushzSN1G",         "id": "55482c1bc830337da8c6bd81",         "createdAt": "2015-05-05T02:34:03.400Z",         "updatedAt": "2015-05-05T02:34:03.400Z" },

Function	Read a single API client
Method	GET
URI	/clients/{id}.{format} /clients/55482c1bc830337da8c6bd81
Request	none
Status	200 OK
Response Body	Single client object  {     "_links": {         "self": {

```
Function
                Update an existing API client
                (commonly used to change client secret or apiKey)
Method
                PUT
URI
                /clients/{id}.{format}
                /clients/55482c1bc830337da8c6bd81
Request
Body (raw)
                  "application": "Virtual Car Collector",
                  "secret": "TYRmHF7nNq2fum8",
                  "apiKey": "ABKJCeVDzU9L5MGNPU6pQsZy",
                  "createdAt": "2015-05-05T02:34:03.400Z"
                }
                "updatedAt" and "id" not required
Status
                201 Created
Response
                  "_links": {
Body
                    "self": {
                       "href": "http://virtual-vehicles.com:8587/clients/55482c1bc830337da8c6bd81"
                     "up": {
                       "href": "http://virtual-vehicles.com:8587/clients"
                  "application": "Virtual Car Collector",
                  "secret": "TYRmHF7nNq2fum8",
                  "apiKey": "ABKJCeVDzU9L5MGNPU6pQsZy",
                  "id": "55482c1bc830337da8c6bd81",
                  "createdAt": "2015-05-05T02:34:03.400Z",
                  "updatedAt": "2015-05-05T02:34:03.400Z"
```

Function	Delete an existing API client
Method	DELETE
URI	/clients/{id}.{format} /clients/55482c1bc830337da8c6bd81
Request	none
Status	204 No Content
Response Body	none

JWT Management	
Function	Create a new JWT
Method	GET
URI	/jwts.{format}?apiKey={apiKey}&secret={secret} /jwts?apiKey=PT2IOIdZG6hSEDddushzSN1G&secret=pbZCmrFSBqkYtMh
Request	(2) URL params above
Status	200 OK
Response Body	New jwt as String eyJ0NiJ9.eyJp0fQ.ZTzC8RdY (jwt abridged for length)

Function	Validate a JWT
Method	GET
URI	/jwts/{jwt}.{format} /jwts/eyJ0NiJ9.eyJp0fQ.ZTzC8RdY (jwt abridged for length)
Request	(1) URL param above
Status	200 OK
Response Body	Boolean: true or false

Function	Service health ping
Method	GET
URI	/clients/utils/ping.{format}
Request	none
Status	200 OK
Response Body	Boolean: true or false

# **TOP**

```
Vehicle Service
Function
                Create a new vehicle
                POST
Method
URI
                /vehicles.{format}
Request
                Header: Authorization
Header
                Value: Bearer {jwt}
Request
Body (raw)
                  "year": 2015,
                   "make": "Chevrolet",
                  "model": "Corvette Stingray",
                  "color": "Blue".
                  "type": "Coupe",
                  "mileage": 200
Status
                201 Created
Response
                New vehicle object
Body
                  "_links": {
                     "self": {
                       "href": "http://virtual-vehicles.com:8581/vehicles/554e8bd4c830093007d8b949"
                     "up": {
                       "href": "http://virtual-vehicles.com:8581/vehicles"
                  "year": 2015,
                  "make": "Chevrolet",
                  "model": "Corvette Stingray",
                  "color": "Blue",
                  "type": "Coupe",
                  "mileage": 200,
                  "id": "554e8bd4c830093007d8b949",
                  "createdAt": "2015-05-09T22:36:04.808Z",
                  "updatedAt": "2015-05-09T22:36:04.808Z"
                }
MongoDB
                  " id": ObjectId("554e8bd4c830093007d8b949"),
Document
                  "className": "com.example.vehicle.objectid.Vehicle",
View (BSON)
                  "year": 2015,
                  "make": "Chevrolet",
                  "model": "Corvette Stingray",
                  "color": "Blue",
                  "type": "Coupe",
                  "mileage": 200,
                  "createdAt": ISODate("2015-05-09T22:36:04.808Z"),
                  "updatedAt": ISODate("2015-05-09T22:36:04.808Z")
                }
```

Function	Read, filter, sort, count, paginate vehicles
	filter = org.restexpress.common.query QueryFilter instance (uses contains method, no wildcard option) sort = org.restexpress.common.query QueryOrder instance (use - for descending order) limit and offset = org.restexpress.common.query QueryRange instance (offset is optional - default is 0) countOnly=true returns document count with empty vehicles object in response body
	All query params may be combined
Method	GET
URI	/vehicles.{format}
	/vehicles?filter={key::value key::value }.{format} /vehicles?filter=make::Chevrolet /vehicles?filter=type::Coupe color::Blue
	/vehicles?sort={key -key }&limit={int}&offset={int} /vehicles?sort=make&limit=20 /vehicles?sort=make -model&limit=10&offset=20
	/vehicles?countOnly=true /vehicles?countOnly=true&filter=make::Chevrolet
Request Header	Header: Authorization Value: Bearer {jwt}
Request	(5) optional URL params above: filter, sort, limit, offset, countOnly
Status	200 OK
Response Body	Potentially one or more vehicle objects  {     "_links": {         "self": {             "href": "http://virtual-vehicles.com:8581/vehicles"         }     },     "_embedded": {             "vehicles": [             {

Function	Read a single vehicle
Method	GET
URI	/vehicles/{id}.{format} /vehicles/554e8bd4c830093007d8b949
Request Header	Header: Authorization Value: Bearer {jwt}
Request	none
Status	200 OK
Response Body	Single vehicle object  {     "_links": {         "self": {

```
Function
                Update an existing vehicle
                (commonly used to update milage or change vehicle color)
Method
                PUT
URI
                /vehicles/{id}.{format}
                /vehicles/554e8bd4c830093007d8b949
Request
                Header: Authorization
Header
                Value: Bearer {jwt}
Request
                  "year": 2015,
Body (raw)
                   "make": "Chevrolet",
                  "model": "Corvette Stingray",
                  "color": "White",
                  "type": "Coupe",
                  "mileage": 902,
                  "createdAt": "2015-05-09T22:36:04.808Z"
                "updatedAt" and "id" not required
Status
                201 Created
Response
                  "_links": {
Body
                     "self": {
                       "href": "http://virtual-vehicles.com:8581/vehicles/554e8bd4c830093007d8b949"
                     "up": {
                       "href": "http://virtual-vehicles.com:8581/vehicles"
                  },
                  "year": 2015,
                  "make": "Chevrolet",
                  "model": "Corvette Stingray",
                  "color": "White",
                  "type": "Coupe",
                  "mileage": 902,
                  "id": "554e8bd4c830093007d8b949",
                  "createdAt": "2015-05-09T22:36:04.808Z",
                  "updatedAt": "2015-05-23T12:07:31.829Z"
                }
```

Function	Delete an existing vehicle
Method	DELETE
URI	/vehicles/{id}.{format} /vehicles/554e8bd4c830093007d8b949
Request Header	Header: Authorization Value: Bearer {jwt}
Request	none
Status	204 No Content
Response Body	none

Function	Service health ping
Method	GET
URI	/vehicles/utils/ping.{format}
Request	none
Status	200 OK
Response Body	Boolean: true or false

# <u>TOP</u>

```
Maintenance Service
Function
                Create a new maintenance record
                POST
Method
URI
                /maintenances.{format}
Request
                Header: Authorization
Header
                Value: Bearer {jwt}
Request
Body (raw)
                  "vehicleId": "554e8bd4c830093007d8b949",
                  "serviceDateTime": "2015-05-07T08:22:03.400Z",
                  "mileage": 4025,
                  "type": "Oil change",
                  "notes": "Use same grade oil as last service."
Status
                201 Created
Response
                New maintenance record object
Body
                  "_links": {
                    "self": {
                       "href": "http://localhost:8583/maintenances/554eca58c83012f8863d910f"
                    "up": {
                       "href": "http://localhost:8583/maintenances"
                  "vehicleId": "554e8bd4c830093007d8b949",
                  "serviceDateTime": "2015-05-07T08:22:03.400Z",
                  "mileage": 4025,
                  "type": "Oil change",
                  "notes": "Use same grade oil as last service.",
                  "id": "554eca58c83012f8863d910f",
                  "createdAt": "2015-05-10T03:02:48.703Z".
                  "updatedAt": "2015-05-10T03:02:48.703Z"
               }
MongoDB
                  " id": ObjectId("554eca58c83012f8863d910f"),
Document
View (BSON)
                  "className": "com.example.maintenance.objectid.Record",
                  "vehicleId": "554e8bd4c830093007d8b949",
                  "serviceDateTime": "2015-05-05T02:39:03.400Z",
                  "mileage": 4025,
                  "type": "Oil change",
                  "notes": "Use same grade oil as last service.",
                  "createdAt": ISODate("2015-05-10T03:02:48.703Z"),
                  "updatedAt": ISODate("2015-05-10T03:02:48.703Z")
               }
```

Function	Read, filter, sort, count, paginate maintenance records
	filter = org.restexpress.common.query QueryFilter instance (uses contains method, no wildcard option) sort = org.restexpress.common.query QueryOrder instance (use - for descending order) limit and offset = org.restexpress.common.query QueryRange instance (offset is optional - default is 0) countOnly=true returns document count with empty maintenance records object in response body
	All query params may be combined
Method	GET
URI	/maintenances.{format}
	/maintenances?filter={key::value key::value }.{format} /maintenances?filter=vehicleId::554e8bd4c830093007d8b949 /maintenances?filter=type::Oil notes::change
	/maintenances?sort={key -key }&limit={int}&offset={int} /maintenances?sort=type&limit=20 /maintenances?sort=type -notes&limit=10&offset=20
	/maintenances?countOnly=true /maintenances?countOnly=true&filter=type::Oil
Request Header	Header: Authorization Value: Bearer {jwt}
Request	(5) optional URL params above: filter, sort, limit, offset, countOnly
Status	200 OK
Response Body	Potentially one or more maintenance record objects  {     "_links": {         "self": {             "href": "http://localhost:8583/maintenances"         }     },     "_embedded": {             "records": [             {                   "self": {

Function	Read a single maintenance record
Method	GET
URI	/maintenances/{id}.{format} /maintenances/554eca58c83012f8863d910f
Request Header	Header: Authorization Value: Bearer {jwt}
Request	none
Status	200 OK
Response Body	Single maintenance record object  {     "_links": {         "self": {              "href": "http://localhost:8583/maintenances/554eca58c83012f8863d910f"         },         "up": {

```
Function
                Update an existing maintenance record
                (commonly used to change service date and time or change type)
Method
                PUT
URI
                /maintenances/{id}.{format}
                /maintenances/554eca58c83012f8863d910f
Request
                Header: Authorization
Header
                Value: Bearer {jwt}
Request
                  "vehicleId": "554e8bd4c830093007d8b949",
Body (raw)
                  "serviceDateTime": "2015-05-08T11:26:03.400Z",
                  "mileage": 4025,
                  "type": "Oil change and new air filter",
                  "notes": "Use same grade oil as last service.",
                  "createdAt": "2015-05-10T03:02:48.703Z"
                }
                "updatedAt" and "id" not required
                201 Created
Status
Response
                  " links": {
Body
                     "self": {
                       "href": "http://localhost:8583/maintenances/554eca58c83012f8863d910f"
                     "up": {
                       "href": "http://localhost:8583/maintenances"
                  "vehicleId": "554e8bd4c830093007d8b949",
                  "serviceDateTime": "2015-05-08T11:26:03.400Z",
                  "mileage": 4025,
                  "type": "Oil change and new air filter",
                  "notes": "Use same grade oil as last service.",
                  "id": "554eca58c83012f8863d910f",
                  "createdAt": "2015-05-10T03:02:48.703Z"
                  "updatedAt": "2015-05-10T03:02:48.703Z"
                }
```

Function	Delete an existing existing maintenance record
Method	DELETE
URI	/maintenances/{id}.{format} /maintenances/554eca58c83012f8863d910f
Request Header	Header: Authorization Value: Bearer {jwt}
Request	none
Status	204 No Content
Response Body	none

Function	Service health ping
Method	GET
URI	/maintenances/utils/ping.{format}
Request	none
Status	200 OK
Response Body	Boolean: true or false

<u>TOP</u>

```
Valet Parking Service
Function
                Create a new valet parking transaction
Method
                POST
URI
                /valets.{format}
Request
                Header: Authorization
Header
                Value: Bearer {jwt}
Request
Body (raw)
                  "vehicleId": "554e8bd4c830093007d8b949",
                  "dateTimeIn": "2015-05-07T08:22:03.400Z",
                  "parkingLot": "Lot A: Main and Broad Streets",
                  "parkingSpot": 24,
                  "notes": "Existing dent on drivers side front fender"
Status
                201 Created
Response
                New valet parking transaction object
Body
                  "_links": {
                     "self": {
                       "href": "http://localhost:8585/valets/554ecdf7c8306ec3631472cd"
                     "up": {
                       "href": "http://localhost:8585/valets"
                  "vehicleId": "554e8bd4c830093007d8b949",
                  "dateTimeIn": "2015-05-07T08:22:03.400Z",
                  "parkingLot": "Lot A: Main and Broad Streets",
                  "parkingSpot": 24,
                  "notes": "Existing dent on drivers side front fender",
                  "id": "554ecdf7c8306ec3631472cd",
                  "createdAt": "2015-05-10T03:18:15.097Z",
                  "updatedAt": "2015-05-10T03:18:15.097Z"
                }
MongoDB
                  " id": ObjectId("554ecdf7c8306ec3631472cd"),
Document
View (BSON)
                  "className" : "com.example.valet.objectid.Transaction",
                  "vehicleId": "554e8bd4c830093007d8b949",
                  "dateTimeIn": "2015-05-07T08:22:03.400Z",
                  "parkingLot": "Lot A: Main and Broad Streets",
                  "parkingSpot": 24,
                  "notes": "Existing dent on drivers side front fender",
                  "createdAt": ISODate("2015-05-10T03:18:15.097Z"),
                  "updatedAt": ISODate("2015-05-10T03:18:15.097Z")
                }
```

Function	Read, filter, sort, count, paginate valet parking transactions
	filter = org.restexpress.common.query QueryFilter instance (uses contains method, no wildcard option) sort = org.restexpress.common.query QueryOrder instance (use - for descending order) limit and offset = org.restexpress.common.query QueryRange instance (offset is optional - default is 0) countOnly=true returns document count with empty valet parking transactions object in response body
	All query params may be combined
Method	GET
URI	/valets.{format}
	/valets?filter={key::value key::value }.{format} /valets?filter=vehicleId::554e8bd4c830093007d8b949 /valets?filter=parkingLot::Lot A notes::dent
	/valets?sort={key -key }&limit={int}&offset={int} /valets?sort=parkingLot&limit=20 /valets?sort=parkingLot -notes&limit=10&offset=20
	/valets?countOnly=true /maintenances?countOnly=true&filter=parkingLot::Lot A
Request Header	Header: Authorization Value: Bearer {jwt}
Request	(5) optional URL params above: filter, sort, limit, offset, countOnly
Status	200 OK
Response Body	Potentially one or more valet parking transaction objects  {     "_links": {         "self": {             "href": "http://localhost:8585/valets"         }     },     "_embedded": {             "transactions": [             {

Function	Read a single valet parking transaction
Method	GET
URI	/valets/{id}.{format} /valets/554eca58c83012f8863d910f
Request Header	Header: Authorization Value: Bearer {jwt}
Request	none
Status	200 OK
Response	Single valet parking transaction object  {     "_links": {         "self": {

```
Function
                Update an existing valet parking transaction
                (commonly used to add dateTimeOut to transaction)
Method
                PUT
URI
                /valets/{id}.{format}
                /valets/554eca58c83012f8863d910f
Request
                Header: Authorization
Header
                Value: Bearer {jwt}
Request
                  "vehicleId": "554e8bd4c830093007d8b949",
Body (raw)
                  "dateTimeIn": "2015-05-07T08:22:03.400Z",
                  "dateTimeOut": "2015-05-07T12:41:22.400Z",
                  "parkingLot": "Lot A: Main and Broad Streets",
                  "parkingSpot": 24,
                  "notes": "Existing dent on drivers side front fender",
                  "createdAt": "2015-05-10T03:18:15.097Z"
                "updatedAt" and "id" not required
Status
                201 Created
Response
                  "_links": {
Body
                     "self": {
                       "href": "http://localhost:8585/valets/554ecdf7c8306ec3631472cd"
                     "up": {
                       "href": "http://localhost:8585/valets"
                  },
                  "vehicleId": "554e8bd4c830093007d8b949",
                  "dateTimeIn": "2015-05-07T08:22:03.400Z",
                  "dateTimeOut": "2015-05-07T12:41:22.400Z",
                  "parkingLot": "Lot A: Main and Broad Streets",
                  "parkingSpot": 24,
                  "notes": "Existing dent on drivers side front fender",
                  "id": "554ecdf7c8306ec3631472cd",
                  "createdAt": "2015-05-10T03:18:15.097Z",
                  "updatedAt": "2015-05-10T03:18:15.097Z"
```

Function	Delete an existing valet parking transaction
Method	DELETE
URI	/valets/{id}.{format} /valets/554eca58c83012f8863d910f
Request Header	Header: Authorization Value: Bearer {jwt}
Request	none
Status	204 No Content
Response Body	none

Function	Service health ping
Method	GET
URI	/valets/utils/ping.{format}
Request	none
Status	200 OK
Response Body	Boolean: true or false

<u>TOP</u>