Lab Guide

Inbound Web Service APIs – Integration 202

Martin Wood & Dave Slusher

Default Login / Password:

admin / Knowledge16

This
Page
Intentionally
Left
Blank

Lab Goal

Lab 1.0
The REST API Explorer

This lab introduces the REST API Explorer, a powerful tool that lets you browse, test and interact with the REST web services on your instance.

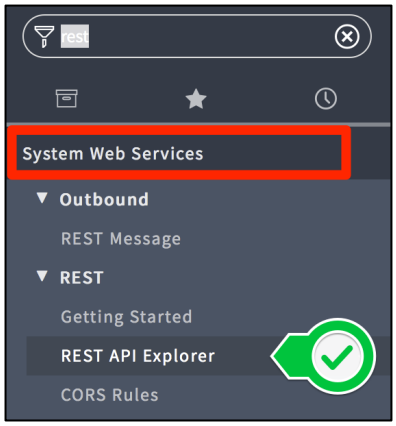
In this exercise, explores some of the functions, methods and variables available to REST requests.

Log on to Your Training Instance

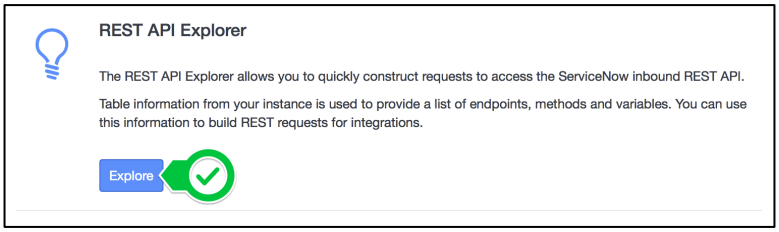
1. Navigate to the unique instance URL provided to you.
2. Log on with the **admin** credentials.

Run a Basic Query

1. Navigate to **System Web Services** > **REST** > **REST API Explorer**.



2. Click **Explore**.

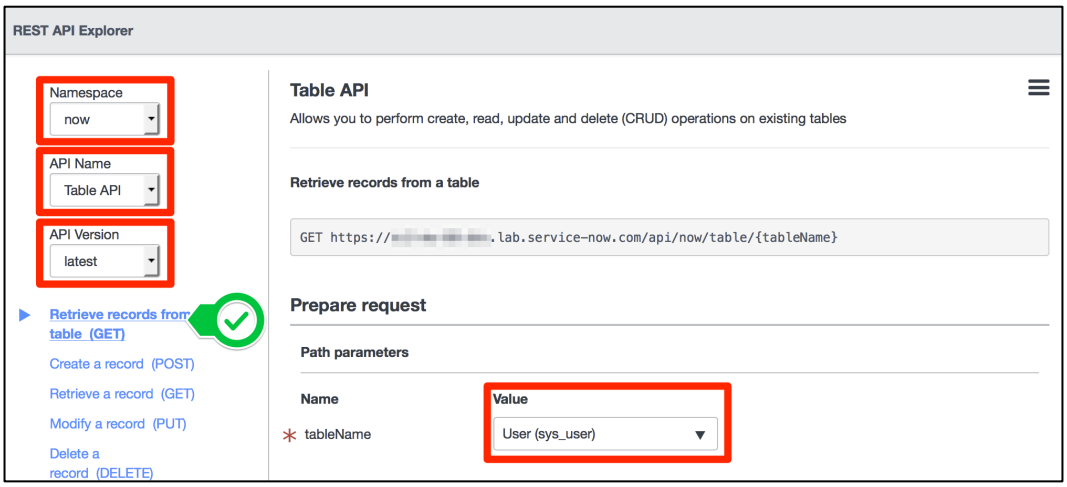


©2016 ServiceNow, Inc. All rights reserved.

3. Set the options as follows:

   Namespace: **now**
   API Name: **Table API**
   API version: **latest**
   Retrieve records from a table (GET): **<click on this link>**

   Table: **User (sys_user)**



4. Scroll down and click **Send**, and review the output of the **Response Body**. Look for details such as the **user_name**, and the **company**.

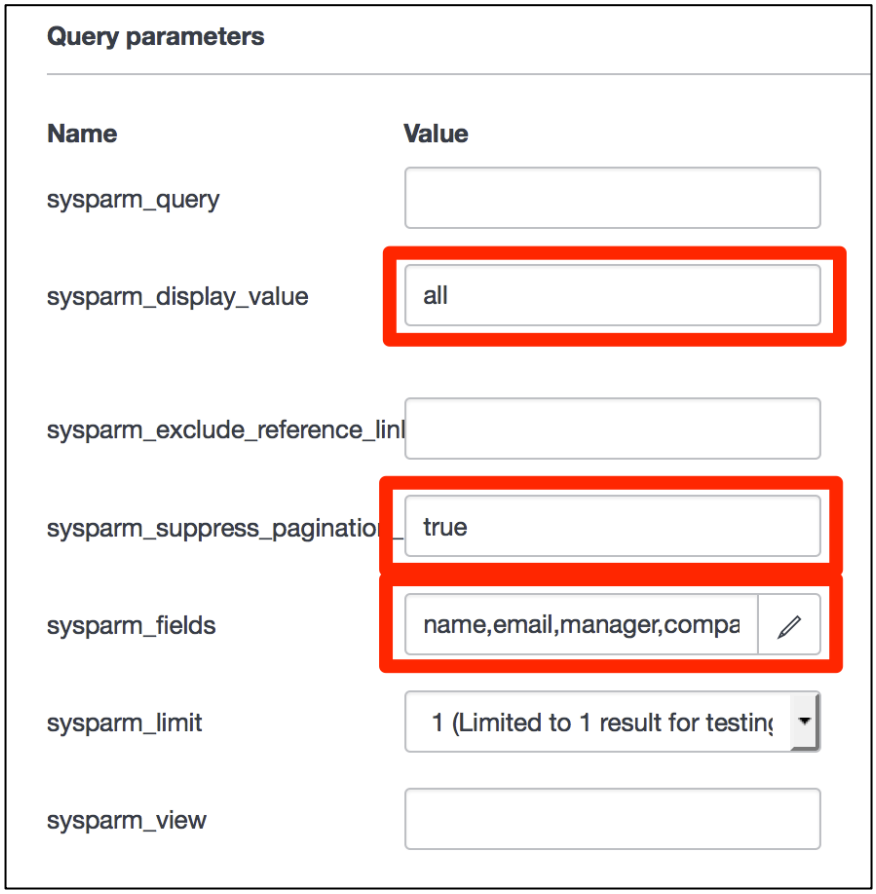


©2016 ServiceNow, Inc. All rights reserved.

Return the Data You Want

1. Edit the options as follows:

   sysparm_display_value: **all**
   sysparm_suppress_pagination_header : **true**
   sysparm_fields: **name,email,manager,company**
   (TIP: Use the pencil icon to select the fields you want, or just type them in)



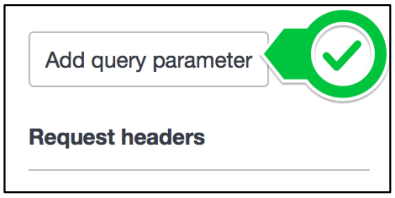
©2016 ServiceNow, Inc. All rights reserved.

2. Click **Send**, and review the output of the **Response Body**. Notice how specifying the fields and turning off pagination makes the output much clearer. Also, setting **display_value** to **all** gives the display value of the reference field (such as the company name), rather than just the sys_id.



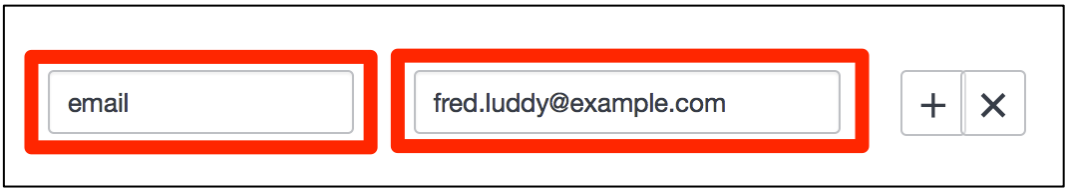
Select the Right Data

1. Leaving the other options the same, click the **Add query parameter** button.



2. Specify these parameters:

   <first field>: **email**
   <second field> : **fred.luddy@example.com**



3. Click **Send**, and review the output of the **Response Body**. Notice how the record that is return has changed.

©2016 ServiceNow, Inc. All rights reserved.

Take it Outside of ServiceNow

1. Copy the **HTTP Method / URI** to your clipboard. Ensure you miss out the **GET** prefix.

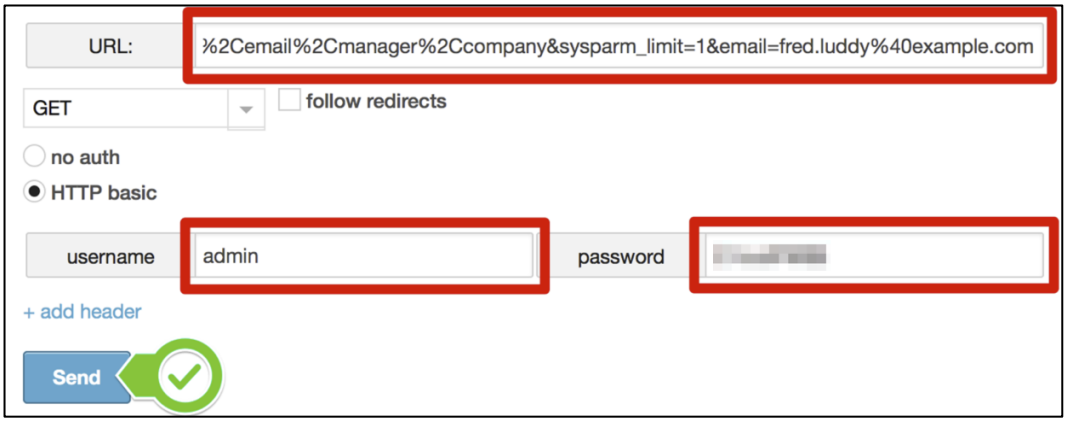
HTTP Method / URI	**GET** https://ec2-mw-68-dev.lab.service-now.com/api/now/table/sys_user?sysparm_display_value=all&sysparm_suppress_pagination_header=true&sysparm_fields=name%2Cemail%2Cmanager%2Ccompany&sysparm_limit=1&email=fred.luddy%40example.com

2. Open a new tab in your browser, and navigate to: http://hurl.dasos.uk/

   If the website is slow, try using these alternatives. They use a slightly different interface, but the same functionality:
   http://hurl.eu/
   http://hurl.quickblox.com/
   http://hurl.it/

3. Fill out the form as follows:

   url: **<paste the URI from your instance>**
   HTTP Basic: **<use the admin credentials for your instance>**



4. Click **Send**, and review the data returned.

5. The data returned using Hurl should be exactly the same as the data you saw in the REST Explorer. The URI contains all the information that the instance needs to get the data you want. More on this in the next lab.

©2016 ServiceNow, Inc. All rights reserved.

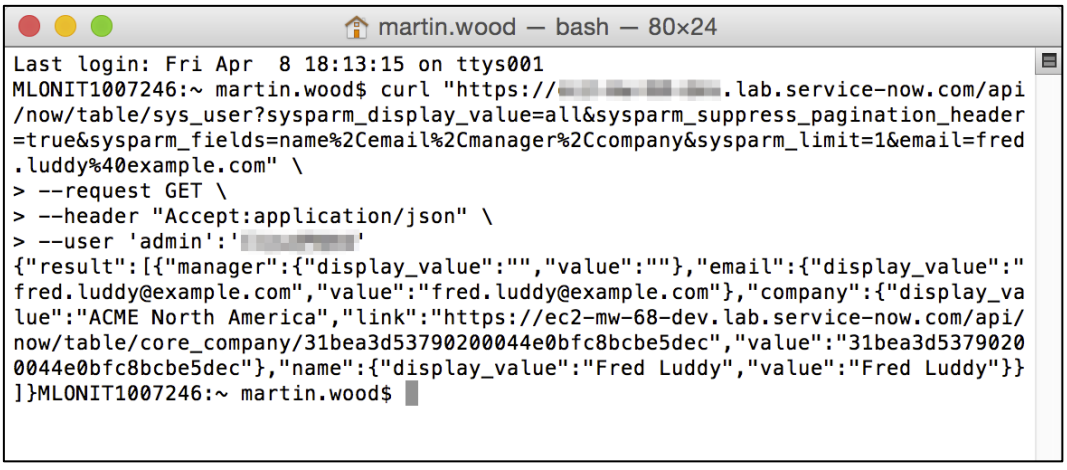
BONUS: Use cURL

This step only works if you have cURL installed on your laptop. OS X has it installed by default, Windows does not. cURL is available at https://curl.haxx.se/.
Please skip this step if you do not have cURL.

1. Navigate back to your ServiceNow instance window, and click [cURL].
2. Click **Select Snippet**, then copy to your clipboard.
3. Open up a text-editing program, like Notepad or TextEdit. Paste the snippet.

```
curl "https://<instance name>.lab.service-
now.com/api/now/table/sys_user?sysparm_display_value=all&sysparm_suppres
s_pagination_header=true&sysparm_fields=name%2Cemail%2Cmanager%2Ccompany
&sysparm_limit=1&email=fred.luddy%40example.com" \
 --request GET \
 --header "Accept:application/json" \
 --user 'admin':'<password>'
```

4. Edit the last line to contain the correct password, and recopy the snippet.
5. Open up Command prompt or a Terminal window. Paste the snippet into the window, and **Run**.
6. Review the data returned. The REST Explorer can give you snippets for many languages.

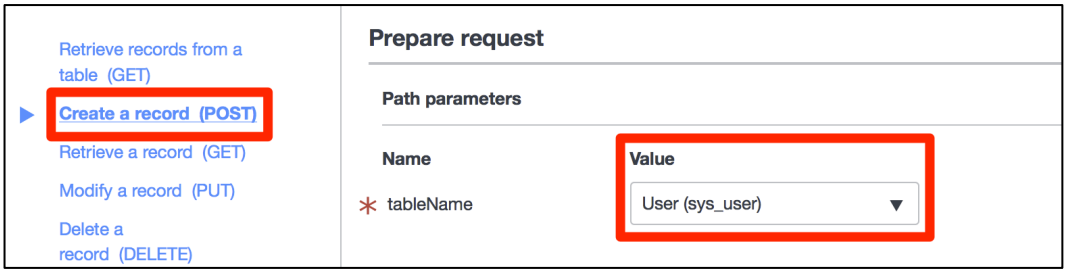


©2016 ServiceNow, Inc. All rights reserved.

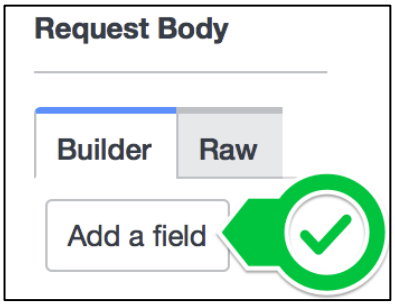
Create a Record (POST)

1. In the REST API Explorer, set the options as follows:

   Create a record (POST): **<click on this link>**
   Table: **User (sys_user)**



2. Under the Request Body heading, click **Add a field** to set data.



3. Enter the following fields:

   Name: **<your name>**
   Manager: **Fred Luddy**



©2016 ServiceNow, Inc. All rights reserved.

4. Notice that the data has created a JSON object in the text box as below:

```
{'name':'Martin Wood','manager':'Fred Luddy'}
```

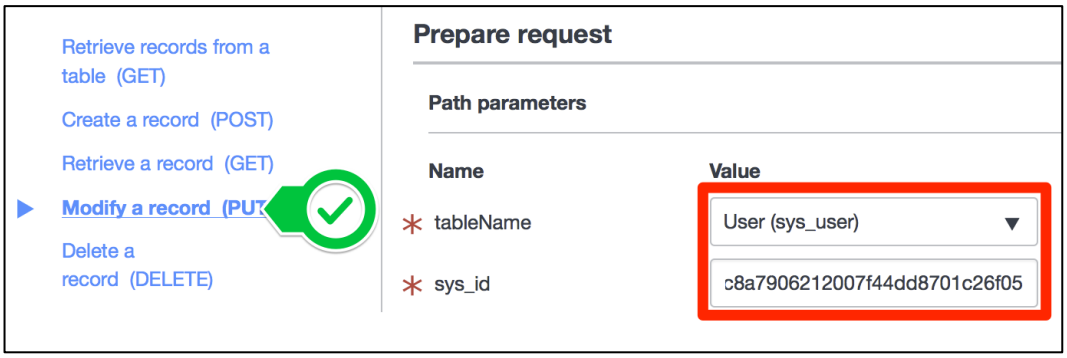
5. Click **Send**, then **OK**, and review the data returned in the Response Body. Find the sys_id of your new user record, and copy it to your clipboard.



Modify a Record (POST)

1. In the REST API Explorer, set the options as follows:

   Modify a record (PUT): **<click on this link>**
   Table: **User (sys_user)**
   sys_id: **<paste the sys_id of the new user>**



©2016 ServiceNow, Inc. All rights reserved.

2. Under the Request Body heading, click **Add a field** to set data. Enter the following fields:

   Email: **test@example.com**



3. Click **Send**, then **OK**, and review the data returned. The user record should now have an email address.

Get XML

1. Set the options as follows:

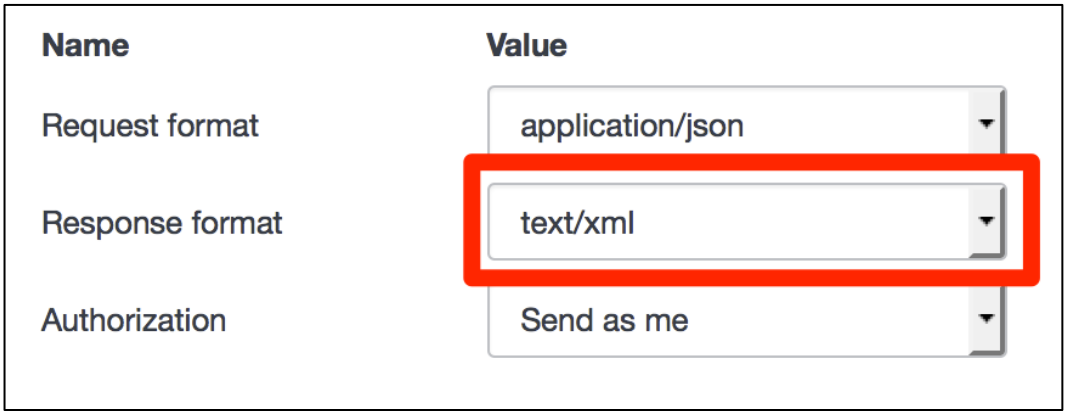
   Retrieve records from a table (GET): **<click on this link>**
   Table: **User (sys_user)**



®2016 ServiceNow, Inc. All rights reserved.

2. Edit the options as follows:

   Response format: **text/xml**



3. Click **Send**, and copy the **Response Body** text to the clipboard.

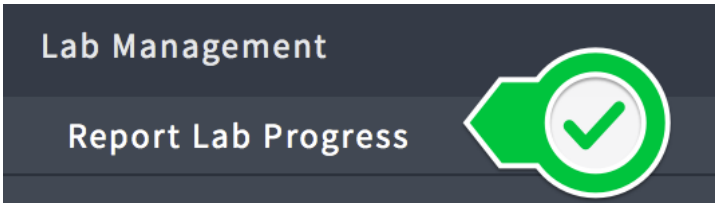


4. Open a new tab in your browser, and navigate to http://xmlprettyprint.com/. Paste the response into the text box and click **Pretty Print XML**.

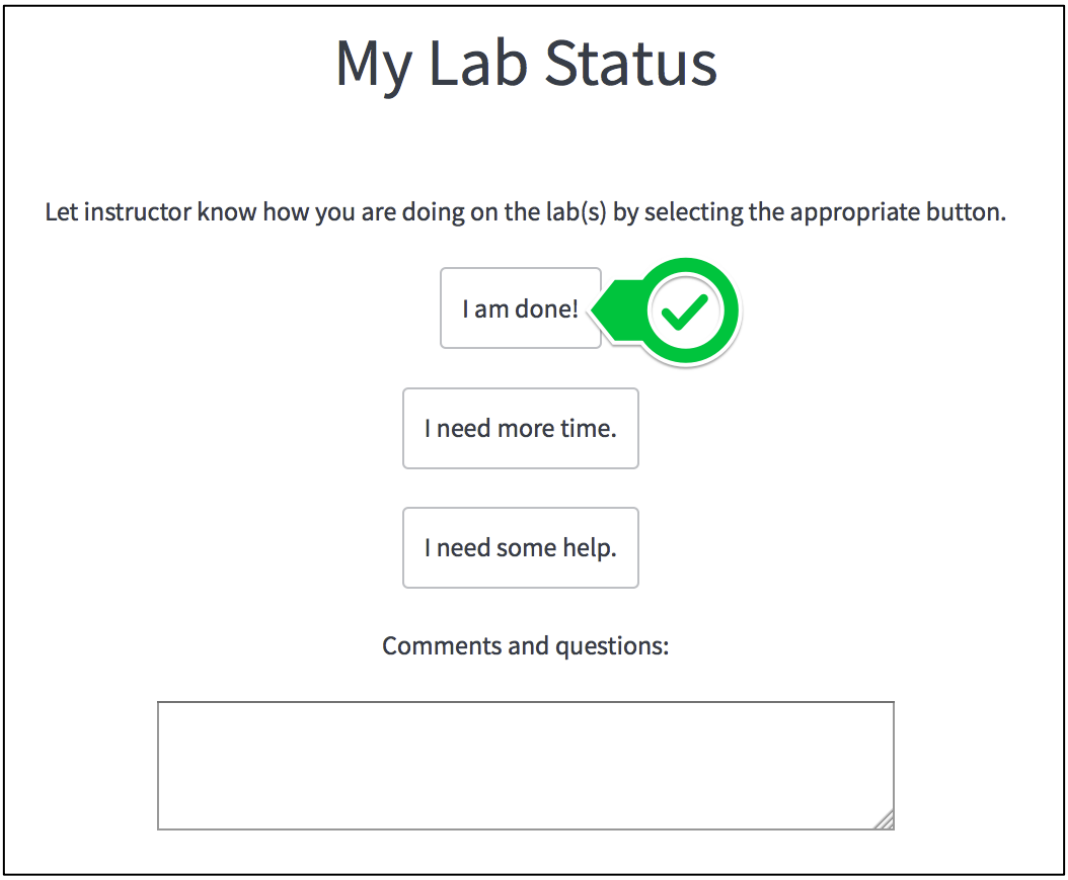
©2016 ServiceNow, Inc. All rights reserved.

Progress Report

1. Navigate to **Lab Management > Report Lab Progress**.



2. Click **I am done!**



©2016 ServiceNow, Inc. All rights reserved.

Lab Goal

This lab uses the same REST APIs as seen in Lab 1, but instead of using the REST API Explorer, use Hurl to construct the request manually.

Lab 2.0
Build Your Own Query

Build the URL

1. Open a new tab in your browser, and navigate to: http://hurl.dasos.uk/ (or your favorite alternative).

2. Fill out the form as follows:

   URL: **https://<instance name>.lab.service-now.com/api/now/table/sys_user?sysparm_limit=1**
   HTTP basic: **on**
   username; password: **<use the admin credentials for your instance>**



©2016 ServiceNow, Inc. All rights reserved.

3. Click **Send**, and review the data returned.

   Breaking apart the URL:

   `https://<instance name>.lab.service-now.com` is your instance name
   `api` represents the REST API.
   `now` is the namespace of the API. All ServiceNow provided APIs have the **`now`** namespace
   `table` selects the appropriate API, to retrieve data directly from a database table. More APIs in the next lab.
   `sys_user` is the table you retrieve from
   The first parameter (because it comes after a question mark) is **`sysparm_limit`**. This represents how many records should be returned.

   Try changing the table name to something like `incident`, or alter `limit` and see the difference it makes.

Set the Fields

1. Change the URL as follows:

   URL: **https://<instance name>.lab.service-now.com/api/now/table/sys_user?sysparm_limit=1&sysparm_fields=name,email**

2. Click **Send**, and review the data returned.


```
{
   "result": [
     {
       "email": "lucius.bagnoli@example.com",
       "name": "Lucius Bagnoli"
     }
   ]
}
```


   What's new in the URL?

   `sysparm_fields` (the second parameter, and separated from the first by an ampersand) specifies a comma separated list of fields

©2016 ServiceNow, Inc. All rights reserved.

Give a Query

1. Change the URL as follows:

   URL: https://<instance name>.lab.service-now.com/api/now/table/sys_user?sysparm_fields=name,email**&first_name=Carla**

   Note! **`sysparm_limit=1`** has been removed!

2. Click **Send**, and review the data returned. You should get two results:

```
{
   "result": [
     {
       "email": "carla.humble@example.com",
       "name": "Carla Humble"
     },
     {
       "email": "carla.sirbaugh@example.com",
       "name": "Carla Sirbaugh"
     }
   ]
}
```

   What's new in the URL?

   `first_name` is a field name on the sys_user table. Any field can be used as a filter.

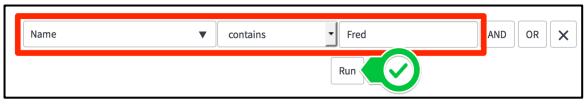
Make Complex Queries

1. Keep Hurl open and navigate to **Organization** > **Users** in your ServiceNow instance.

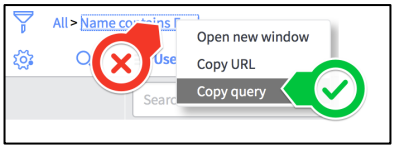
2. Use the filter builder to query for:

   Name – contains – Fred

3. Click **Run**.



4. Right click on the breadcrumbs, and choose **Copy query**.



©2016 ServiceNow, Inc. All rights reserved.

5. Copy the result to your clipboard.

6. Navigate back to Hurl (http://hurl.dasos.uk/), and change the URL to include the query:

   https://<instance name>.lab.service-now.com/api/now/table/sys_user?sysparm_fields=name,email**&sysparm_query=<copied query>**

   (The query should be **`nameLIKEFred`**)

7. Click **Send**, and review the data returned. You should get three results:


```
{
   "result": [
     {
       "email": "fred.luddy@example.com",
       "name": "Fred Luddy"
     },
     {
       "email": "fred.kunde      @example.com",
       "name": "Fred Kunde"
     },
     {
       "email": "wilfredo.gidley@example.com",
       "name": "Wilfredo Gidley"
     }
   ]
}
```


   What is new in the URL?

   `sysparm_query` accepts an encoded query. Write them manually, or copy it from the UI.

   Note: Hurl has a problem with the caret (^) character used in ServiceNow encoded queries. It likely will not work if you use either the **`and`** operator or the **`or`** operator in your query. (Other systems work fine!)

Progress Report

1. Navigate to **Lab Management** > **Report Lab Progress**.

2. Click **I am done!**

©2016 ServiceNow, Inc. All rights reserved.

Lab Goal

ServiceNow provides some more specialist APIs, such as downloading and uploading attachments, as well as efficiently counting

Lab 3.0
Attaching and Counting

Download Attachments

1. Navigate to **System Web Services** > **REST** > **REST API Explorer**.

2. Set the options as follows:

   Namespace: **now**
   API Name: **Attachment API**
   API version: **latest**
   Retrieve metadata for attachments (GET): **<click on this link>**

   sysparm_query: **file_nameSTARTSWITHacme**

3. Click Send, and inspect the data returned. It should look similar to the example.

```
{
   "result": [
     {
       "table_sys_id": "d71da88ac0a801670061eabfe4b28f77",
       "size_bytes": "1754",
       "download_link": "https://<INSTANCE NAME>.lab.service-
now.com/api/now/attachment/8287c3db6f002100758ecb512e3ee4d6/file",
       "sys_updated_on": "2016-02-14 17:58:57",
...
     }
   ]
}
```

4. In response, there should be a `download_link` url, highlighted above. Copy this to your clipboard.

5. Paste the URL into a new browser window, and download the file. You may need to type in your admin credentials into a browser dialog.

®2016 ServiceNow, Inc. All rights reserved.

Upload Attachments

1. Attachments are associated with another record. Find the user you created in lab 1, then attach an image to the record. Instead of using the user interface, use the REST Explorer! Navigate to **System Web Services** > **REST** > **REST API Explorer**.

2. Set the options in the REST Explorer as follows:

   Retrieve metadata for attachments (GET): **<click on this link>**

   tableName: **User (sys_user)**
   sysparm_query: **email=test@example.com**
   sysparm_fields: **name,sys_id**

3. Click **Send**, and inspect the results. Your results will differ, depending on what name you entered.

```
{
   "result": [
     {
       "name": "Martin Wood",
       "sys_id": "99bff60d0c2e12007f44b991ba605ffe"
     }
   ]
}
```

4. Copy the sys_id to your clipboard.

5. On your computer, find an image that you like. Perhaps search the web. If you are lacking inspiration, download this image of one of my cats: http://dasos.com/ash.jpg.

6. Set the options as follows:

   API Name: **Attachment API**
   Upload an attachment from a binary request (POST): **<click on this link>**

   table_name: **sys_user**
   table_sys_id: **<paste the sys_id>**
   file_name: **<type any name for the file>**

7. Under **Request Body** and **Binary**, click **Choose a file**. Select the picture you like.

8. Click **Send**, then **OK**.

©2016 ServiceNow, Inc. All rights reserved.

9. To verify, navigate to **Organization** > **Users**, find your new user, and verify there is an attachment. You should see the link on the top right.



Count Records

1. Return to the Rest Explorer at **System Web Services** > **REST** > **REST API Explorer**.

2. Set the options as follows:

   Namespace: **now**
   API Name: **Aggregate API**
   API version: **latest**

   tableName: **User (sys_user)**
   sysparm_count: **true**

3. Click **Send**, and review the results. You should get the total number of users in the instance.

```
{
    "result": {
      "stats": {
        "count": "564"
      }
    }
}
```

4. Change the options as follows:

   sysparm_query: **department!=**
   sysparm_group_by: **department**
   sysparm_display_value: **true**

©2016 ServiceNow, Inc. All rights reserved.

5. Click **Send**, and review the results. You should get a count of how many users are in a department, ignoring those that aren't in any. Again, see how the URI contains your query.


```
{
   "result": [
     {
       "stats": {
         "count": "145"
       },
       "groupby_fields": [
         {
           "value": "Customer Support",
           "field": "department"
         }
       ]
     },
...
   ]
}
```


Progress Report

1. Navigate to **Lab Management** > **Report Lab Progress**.

2. Click **I am done!**

©2016 ServiceNow, Inc. All rights reserved.

Lab Goal

A useful interface is the Import Set API. It gives an extra layer of control to the ServiceNow administrator.

Lab 4.0
The Import Set API

Create an Import Set

1. Navigate to **System Import Sets** > **Administration** > **Transform Maps**.
2. Find the **User** Transform Map, and select it.
3. Change the script so it creates a default password. **Empty out the script field**, and replace it with this line of code:

```
target.user_password.setDisplayValue("password");
```

4. Review the rest of the Transform Map, especially the Field Maps. Click **Update** when done to save the Transform Map.
5. Return to the Rest Explorer at **System Web Services** > **REST** > **REST API Explorer**.
6. Set the options as follows:

   Namespace: **now**
   API Name: **Import Set API**
   API version: **latest**

   Create a record in an Import Set staging table (POST): **<click on this link>**

   stagingTableName: **User (imp_user)**

7. Using either the Builder, or typing it in Raw, enter this information in the Request Body section:

```
{'user_id':'test.user','email':'test@example.com'}
```

©2016 ServiceNow, Inc. All rights reserved.

8. Click **Send**, then **OK**. Review the results. It should look like the example:


```
{
   "import_set": "ISET0010001",
   "staging_table": "imp_user",
   "result": [
     {
       "transform_map": "User",
       "table": "sys_user",
       "display_name": "name",
       "display_value": "Martin Wood",
       "record_link": "http://<INSTANCE NAME>.service-
now.com/api/now/table/sys_user/99bff60d0c2e12007f44b991ba605ffe",
       "status": "updated",
       "sys_id": "99bff60d0c2e12007f44b991ba605ffe"
     }
   ]
}
```


9. If you wish, try out the user account. The username will be **`test.user`**, the password will be **`password`**.

Progress Report

1. Navigate to **Lab Management** > **Report Lab Progress**.

2. Click **I am done!**

©2016 ServiceNow, Inc. All rights reserved.

Lab Goal

Although the REST API is the most full featured, other APIs do exist. This lab explains how to extract data in several different formats.

Lab 5.0
The Other APIs

Download lists as CSV

1. Open a new tab in your browser, and navigate to:

   http://<instance name>.lab.service-now.com/sys_user_list.do

2. You should be presented with the standard list interface. Edit the URL to include the CSV parameter, like so:

   http://<instance name>.lab.service-now.com/sys_user_list.do**?CSV**

3. The CSV suffix will cause the instance to react differently. You are prompted to open or save the document. If you have Excel, once downloaded, open it up to see the same data.

	A	B	C	D	E	F
1	user_name	name	email	active	sys_created_on	sys_updated_on
2	abel.tuter	Abel Tuter	abel.tuter@example.com	TRUE	17/02/12 19:04	25/02/12 13:17
3	adela.cervantsz	Adela Cervantsz	adela.cervantsz@example.com	TRUE	17/02/12 19:04	25/02/12 13:17
4	admin	System Administrator	admin@example.com	TRUE	03/07/07 11:48	01/03/16 12:48
5	aileen.mottern	Aileen Mottern	aileen.mottern@example.com	TRUE	17/02/12 19:04	25/02/12 13:17
6	alejandra.prenatt	Alejandra Prenatt	alejandra.prenatt@example.com	TRUE	17/02/12 19:04	25/02/12 13:17
7	alejandro.mascall	Alejandro Mascall	alejandro.mascall@example.com	TRUE	17/02/12 19:04	25/02/12 13:17
8	alene.rabeck	Alene Rabeck	alene.rabeck@example.com	TRUE	17/02/12 19:04	25/02/12 13:17
9	alfonso.griglen	Alfonso Griglen	alfonso.griglen@example.com	TRUE	17/02/12 19:04	25/02/12 13:17
10	alissa.mountjoy	Alissa Mountjoy	alissa.mountjoy@example.com	TRUE	17/02/12 19:04	25/02/12 13:17
11	allan.schwantd	Allan Schwantd	allan.schwantd@example.com	TRUE	17/02/12 19:04	25/02/12 13:17
12	allie.pumphrey	Allie Pumphrey	allie.pumphrey@example.com	TRUE	17/02/12 19:04	25/02/12 13:17
13	allyson.gillispie	Allyson Gillispie	allyson.gillispie@example.com	TRUE	17/02/12 19:04	25/02/12 13:17
14	alva.pennigton	Alva Pennigton	alva.pennigton@example.com	TRUE	17/02/12 19:04	25/02/12 13:17
15	alyssa.biasotti	Alyssa Biasotti	alyssa.biasotti@example.com	TRUE	17/02/12 19:04	25/02/12 13:17

©2016 ServiceNow, Inc. All rights reserved.

4. Many of the same parameters can be used as before. To download only name and email addresses, edit the URL to include the **sysparm_fields=name,email** value pair. It should look like this:

   http://<instance name>.lab.service-now.com/sys_user_list.do**?CSV&sysparm_fields=name,email**

	A	B
1	name	email
2	Abel Tuter	abel.tuter@example.com
3	Adela Cervantsz	adela.cervantsz@example.com
4	System Administrat	admin@example.com
5	Aileen Mottern	aileen.mottern@example.com
6	Alejandra Prenatt	alejandra.prenatt@example.com
7	Alejandro Mascall	alejandro.mascall@example.com
8	Alene Rabeck	alene.rabeck@example.com
9	Alfonso Griglen	alfonso.griglen@example.com
10	Alissa Mountjoy	alissa.mountjoy@example.com

Download PDF

1. Other formats are also supported. Navigate to:

   https://<instance name>.lab.service-now.com/sys_user_list.do**?PDF&sysparm_query=nameLIKEFred**

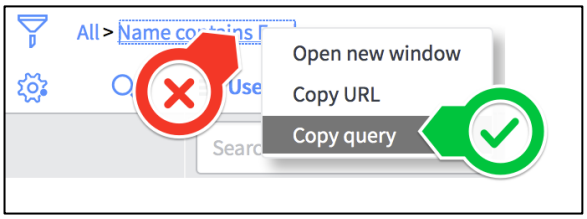
2. You should get a PDF to download that only contains names with Fred in them.

3 Users

▲ User ID	Name	Email	Active	Created	Updated
fred.kunde	Fred Kunde	fred.kunde@example.com	true	2012-02-17 19:04:49	2012-02-25 13:17:18
fred.luddy	Fred Luddy	fred.luddy@example.com	true	2004-05-01 17:00:00	2012-02-25 13:17:18
wilfredo.gidley	Wilfredo Gidley	wilfredo.gidley@example.com	true	2012-02-17 19:04:50	2012-02-25 13:17:18

©2016 ServiceNow, Inc. All rights reserved.

3. Remember, use the **Copy query** option available on the breadcrumbs of a filter to get an encoded query very easily:



4. You can also get XML and JSON data by using the XML and JSONv2 parameters respectively, but the REST API gives many more features.

5. Finally, RSS and EXCEL parameters are also available, but are not widely used.

Progress Report

1. Navigate to **Lab Management > Report Lab Progress**.

2. Click **I am done!**

©2016 ServiceNow, Inc. All rights reserved.

BONUS: Lab Goal

Lab 6.0 Using Postman and OAuth

If you have time, try using Postman to generate and consume an OAuth token.

Because this is a bonus lab, the instructions are less detailed. Ask for help if you need it!

Get Postman

1. OAuth is a way of authentication. In the other labs, we used Basic Authentication, which sent the username and password on each request. With OAuth, we can send them once, get a token in exchange, and then use that instead. Navigate to **System OAuth** > **Application Registry**, click **New**, and **Create an OAuth API endpoint for external clients**.

2. Fill out the form with a name and set a client secret, and record the Client ID.

3. Postman makes it easy to test and experiment with APIs, and is more fully featured than Hurl. It is used for other sessions, so you may already have it installed. If not, download it here:

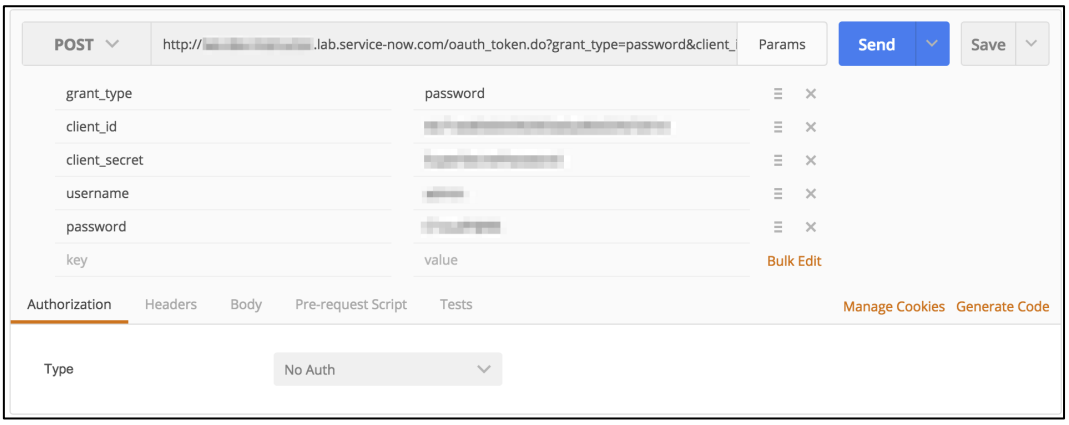
   https://www.getpostman.com/

©2016 ServiceNow, Inc. All rights reserved.

4. Once installed, open up Postman. To get a token, generate a POST request, with the following details:

   URL: **http://<instance name>.lab.service-now.com/oauth_token.do**

   URL params:
   grant_type: **password**
   client_id: **<your client_id>**
   client_secret: **<the client secret>**
   username: **<admin username>**
   password: **<admin password>**



5. When you click **Send**, you should get an access token in the response.


```
{
  "scope": "useraccount",
  "token_type": "Bearer",
  "expires_in": 1799,
  "refresh_token":
"aOFRq3T5AnE5XuY0yzR6fgrPsgzXkSwgpz7rqjdachltLpLw1cZGBYK_1qOc1TMZ-
PGmdDUJ098P71GpOLyJMA",
  "access_token": "64jNzK2iI_4oO2STJdD2kEXkvtvD-
NGPqT1Je4elAM0Ip2MWO5v5QVzx0lDxtsFs0oSgqgVti4BBGelPZgFkhQ"
}
```


©2016 ServiceNow, Inc. All rights reserved.

6. Copy the access token, then create a new GET request. Set an endpoint, constructing a URL as per lab 2, and add a header in the format of:

   Authorization**: Bearer <access token>**



7. Enjoy password-less REST!

©2016 ServiceNow, Inc. All rights reserved.