

Step-by-Step REST Examples for Locations

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About this Document

The purpose of this document is to provide examples of the web service functionality available for creating , modifying and retrieving Locations.

A DR Hub location must created and registered for participation in the PJM market. This document will review the process of building the XML used to create and modify a location.

An associated collection of sample XML files is available for download on the [DR Hub](#) home page.

The below examples are demonstrated using the PJM provided CLI tool.

A note on uploading files to DR Hub. There are numerous approaches to uploading files to our RESTful web service, however we will demonstrate using the approach found in the PJM provided CLI tool. When uploading files to DR Hub, the file must be attached to the request using a http compliant header form consistent with the multipart/form-data format. How file uploads are achieved is a function of the tools available to the user and the extent to which automation is required in the enterprise.

Release History

Release	Date	Description
1.0.0	July 14, 2016	Initial Document Created

2.0.0	November 8, 2016	November 17, 2016 Updated for Train Release.
2.1.0	March 13, 2018	Added WPL Element to XML Example

Creating the Location

This request uploads the XML based Location to DR Hub where a new location is created. Upon completion, a response containing the new location and its ID is returned. Using the response file you can validate what you uploaded with that which DR Hub has created.

The location request requires a simple file upload. Below is an example of the upload format used. Please refer to the PJM CLI documentation on the [DR Hub](#) home page for more information on uploading files to DR HUB.

The New Location file Upload format:

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<ns2:location xmlns:ns2="http://drhub.pjm.com/">
  <summaryInfo>
    <name>Lancair Turbine Shop</name>
    <CSP>
      <name>MYCSP</name>
    </CSP>
    <EDC>
      <name>MYEDC</name>
      <accountNo>3UH66773352</accountNo>
    </EDC>
    <zone>APS</zone>
    <status>NEW</status>
    <allowEDCtoSubmitData>true</allowEDCtoSubmitData>
    <allowLSEtoSubmitData>true</allowLSEtoSubmitData>
    <pricingPoint>PP</pricingPoint>
  </summaryInfo>
  <siteInfo>
    <address>
      <address1>339 Redmond Way</address1>
      <address2>Suite 201</address2>
      <city>Wawa</city>
      <state>PA</state>
      <zipCode>19403</zipCode>
    </address>
    <businessSegment>Industrial/Manufacturing</businessSegment>
    <utilityResidentialParticipant>false</utilityResidentialParticipant>
    <loadDataSample>false</loadDataSample>
    <allowLSEtoSubmit>true</allowLSEtoSubmit>
    <allowEDCtoSubmit>true</allowEDCtoSubmit>
  </siteInfo>
</ns2:location>
```

```

</siteInfo>
<profileInfo>
  <energyLossFactor>1.8</energyLossFactor>
  <capacityLossFactor>1.5</capacityLossFactor>
  <!-- Note: Load Reduction Should be Omitted when Creating Locations. -->
  <!-- Max Load Reduction Capability is automatically calculated and displayed on the UI -->
  <!-- The Load Reduction Total is provided on Location Downloads using Web Services. -->
  <!-- <loadReduction>omit when creating locations</loadReduction> -->
  <peakLoadContribution>100</peakLoadContribution>
  <winterPeakLoad>9000</winterPeakLoad>

</profileInfo>
<!-- Reduction Info : At least 1 Entry Required to Move Location to Completed Status -->
<reductionInfo>
  <reductionType>BATTERIES</reductionType>
  <reductionValue>0</reductionValue>
</reductionInfo>
<!--The Generator reduction value Field is Automatically Updated. Do Not Modify -->
<reductionInfo>
  <reductionType>GENERATOR</reductionType>
  <reductionValue>0</reductionValue>
</reductionInfo>
<reductionInfo>
  <reductionType>HVAC</reductionType>
  <reductionValue>0</reductionValue>
</reductionInfo>
<reductionInfo>
  <reductionType>LIGHTING</reductionType>
  <reductionValue>50</reductionValue>
</reductionInfo>
<reductionInfo>
  <reductionType>MANUFACTURING</reductionType>
  <reductionValue>0</reductionValue>
</reductionInfo>
<reductionInfo>
  <reductionType>PLUG_LOAD</reductionType>
  <reductionValue>0</reductionValue>
</reductionInfo>
<reductionInfo>
  <reductionType>REFRIGERATION</reductionType>
  <reductionValue>0</reductionValue>
</reductionInfo>
<reductionInfo>
  <reductionType>WATER_HEATERS</reductionType>
  <reductionValue>0</reductionValue>
</reductionInfo>
<!-- <generatorCount>0</generatorCount> --> <!-- Count not required when adding generator(s) -->
<!-- The ID for each Generator will be created by the system and returned in the XML response -->
<generatorInfo>
  <name>Big Gen 4</name>
  <nonRetailBtmg>true</nonRetailBtmg>
  <maxOutput>500</maxOutput>
  <nameplate>550</nameplate>
  <backupGeneratorOnly>true</backupGeneratorOnly>
  <generatorType>Internal Combustion Engine</generatorType>
  <fuelType>Diesel</fuelType>
  <vintage>2012</vintage>

```

```

    <retrofitYear>2018</retrofitYear>
    <permitStatus>AVAILABLE</permitStatus>
    <permitType>EMERGENCY_ONLY</permitType>
    <note>Test Generator with a note.</note>
</generatorInfo>
<generatorInfo>
  <name>Big Gen 5</name>
  <nonRetailBtmg>true</nonRetailBtmg>
  <maxOutput>500</maxOutput>
  <nameplate>550</nameplate>
  <backupGeneratorOnly>true</backupGeneratorOnly>
  <generatorType>Internal Combustion Engine</generatorType>
  <fuelType>Diesel</fuelType>
  <vintage>2012</vintage>
  <retrofitYear>2018</retrofitYear>
  <permitStatus>AVAILABLE</permitStatus>
  <permitType>EMERGENCY_ONLY</permitType>
  <note>Test Generator with a note.</note>
</generatorInfo>
<!-- Sample Battery -->
<batteryInfo>
  <maxOutput>100</maxOutput>
  <capacity>125</capacity>
  <vintage>2017</vintage>
  <chemistry>LITHIUM_AIR</chemistry>
  <type>STAND_ALONE</type>
  <note>Test Battery with a note.</note>
</batteryInfo>
<!-- Meter Info : Required to Move Location to Completed Status -->
<meterInfo>
  <meterType>EDC_METER</meterType>
  <meterStatus>PENDING</meterStatus>
  <reviewDate>2016-10-27T15:01:55.000-04:00</reviewDate>
</meterInfo>
<rerraInfo>
  <id>2033</id>
  <evidence>Resolution of the Great Demand Response Group</evidence>
  <rerra>Great Demand Response Group</rerra>
  <state>PA</state>
</rerraInfo>
</ns2:location>

```

With the file formatted and saved in the upload directory, create the request to upload and create the new location. Add the below to the PJM CLI command file. Comment other actions using “REM” at the beginning of the line to avoid undesired processing.

PJM CLI Command File: Required Authentication via CLI

REM Create a Location

```
%CLIENT% -s %APP_URL% -a /rest/secure/upload/location/create/ -file .\upload\create_location.xml
```

When complete, a response will be returned in the form of a file (Location_date.xml). The file name will include the creation date.

Note: To create multiple locations create one file per location and repeat the above request to upload each file.

The response file from a successful create submission will look like the original file upload with the inclusion of a an id for the location. Below is a sample response.

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<ns2:location xmlns:ns2="http://drhub.pjm.com/">
id>61543</id>
  <summaryInfo>
    <name>Lancair Turbine Shop</name>
    <CSP>
      <name>MYCSP</name>
    </CSP>
    <EDC>
      <name>MYEDC</name>
      <accountNo>3UH66773352</accountNo>
    </EDC>
    <zone>APS</zone>
    <status>NEW</status>
    <allowEDCtoSubmitData>true</allowEDCtoSubmitData>
    <allowLSEtoSubmitData>true</allowLSEtoSubmitData>
    <pricingPoint>PP</pricingPoint>
  </summaryInfo>
  <siteInfo>
    <address>
      <address1>339 Redmond Way</address1>
      <address2>Suite 201</address2>
      <city>Wawa</city>
      <state>PA</state>
      <zipCode>19403</zipCode>
    </address>
    <businessSegment>Industrial/Manufacturing</businessSegment>
    <utilityResidentialParticipant>false</utilityResidentialParticipant>
    <loadDataSample>false</loadDataSample>
    <allowLSEtoSubmit>true</allowLSEtoSubmit>
    <allowEDCtoSubmit>true</allowEDCtoSubmit>
  </siteInfo>
  <profileInfo>
    <energyLossFactor>1.8</energyLossFactor>
    <capacityLossFactor>1.5</capacityLossFactor>
    <loadReduction>50</loadReduction>
    <peakLoadContribution>100</peakLoadContribution>
    <winterPeakLoad>9000</winterPeakLoad>
  </profileInfo>
  <reductionInfo>
    <reductionType>BATTERIES</reductionType>
    <reductionValue>0</reductionValue>
  </reductionInfo>
</ns2:location>
```

```

</reductionInfo>
<reductionInfo>
  <reductionType>GENERATOR</reductionType>
  <reductionValue>0</reductionValue>
</reductionInfo>
<reductionInfo>
  <reductionType>HVAC</reductionType>
  <reductionValue>0</reductionValue>
</reductionInfo>
<reductionInfo>
  <reductionType>LIGHTING</reductionType>
  <reductionValue>50</reductionValue>
</reductionInfo>
<reductionInfo>
  <reductionType>MANUFACTURING</reductionType>
  <reductionValue>0</reductionValue>
</reductionInfo>
<reductionInfo>
  <reductionType>PLUG_LOAD</reductionType>
  <reductionValue>0</reductionValue>
</reductionInfo>
<reductionInfo>
  <reductionType>REFRIGERATION</reductionType>
  <reductionValue>0</reductionValue>
</reductionInfo>
<reductionInfo>
  <reductionType>WATER_HEATERS</reductionType>
  <reductionValue>0</reductionValue>
</reductionInfo>
<!--Generator and Battery elements omitted for brevity. Please review the actual response -->
<meterInfo>
  <meterType>EDC_METER</meterType>
  <meterStatus>PENDING</meterStatus>
  <reviewDate>2016-10-27T15:01:55.000-04:00</reviewDate>
</meterInfo>
<rerraInfo>
  <id>2033</id>
  <evidence>Resolution of the Great Demand Response Group</evidence>
  <rerra>Great Demand Response Group</rerra>
  <state>PA</state>
</rerraInfo>
</ns2:location>

```

Retrieve a Location by Id

This request returns the Location by its Id. Let's retrieve the Location we created above.

The request format is.

PJM CLI Command File: Required Authentication is completed via the CLI

REM Download Location by ID

```
REM %CLIENT% -s %APP_URL% -a /rest/secure/download/location/61543
```

The above request can also be achieved using a browser. Once you have logged into Dr Hub, open a new browser tab and paste the below into the page URL. Now press return. An XML file containing the location information will be downloaded to your browser's default download file location.

```
https://drhub.pjm.com/drhub/rest/secure/download/location/61543
```

The response should match the response you received when the location was created. Retrieving locations is easy and can be done at any time during the life of the location. Locations move through several states during approval, thus it is helpful to monitor the status of locations through a retrieval and review process.

Retrieve Location(s) by Ids or Name

The below request return locations by ids or name. These options may be used individually or combined together to assist with filtering. When searching by Name, the search is performed using "contains" which neither requires nor accepts wildcards. Let's look at the syntax for each and a combined request.

The request format is.

PJM CLI Command File: Required Authentication is completed via the CLI

REM Download Locations by IDs (1 or More in a String)

```
REM %CLIENT% -s %APP_URL% -a /rest/secure/download/location -q ids=11214,11215,11216
```

Via a Browser (Requires active DR Hub Session) Note the required comma encoding.

```
https://drhub.pjm.com/drhub/rest/secure/download/location?ids=11214%2C11215%2C
```

REM Download Locations by Name (using a partial name works like a "contains")

```
%CLIENT% -s %APP_URL% -a /rest/secure/download/location -q name=Turbine
```

Via a Browser (Requires active DR Hub Session)

```
https://drhub.pjm.com/drhub/rest/secure/download/location?name=Turbine
```

Retrieve Location(s) by Zone, EDC Account Number or Last Modified Date

In addition to searching by id or name, locations may be searched by zone, edc account number or last modified date. These parameters may be used individually or together to narrow search criteria.

Zones – zones may be searched individually or in groups separated by commas. Ex: AEP,AECO,DOM

EDC Account Number – account numbers may be searched using a complete or partial number. When a partial account number is used, the search will behave like a “contains” search. There is no minimum number of values required to form a search pattern.

Last Modified Date – this search provides a convenient way to search for all locations modified since a specific date.

REM Download Locations by Zone

```
%CLIENT% -s %APP_URL% -a /rest/secure/download/location -q zone=PSEG,APS
```

Via a Browser (Requires active DR Hub Session)

```
https://drhub.pjm.com/drhub/rest/secure/download/location?zone=PSEG
```

REM Download Locations by EDC Account Number

```
%CLIENT% -s %APP_URL% -a /rest/secure/download/location -q edcAccountNumber="88842135"
```

Via a Browser (Requires active DR Hub Session)

```
https://drhub.pjm.com/drhub/rest/secure/download/location?edcAccountNumber=12345
```

REM Download Locations by Last Modified Date

```
%CLIENT% -s %APP_URL% -a /rest/secure/download/location -q lastModifiedDate=02-10-2017
```

Via a Browser (Requires active DR Hub Session)

```
https://drhub.pjm.com/drhub/rest/secure/download/location?lastModifiedDate=02-10-2017
```

Modifying a Location

There are times when modifications to existing locations are needed to append or update location information. Changes to existing Locations may be done through web services using the modify Location end point.

Changing a location is a function of the Location status at the time of the change. As a Location moves from New to Completed, the ability to access specific segments of the Location changes from editable to locked down.

Throughout the status changes we have the opportunity to modify fields which are not yet locked down. Once a Location has reached Completed status, the ability to make changes to a Location is highly restricted.

While a Location is still in "New" status, we have a high degree of flexibility for change. Let's look at how making a change works.

Note: A great way to determine which fields can be changed when and where in the web service is to log into DR Hub and open a location of the status to explore the fields available for editing. These will be the same fields available for editing via web services.

In the below we'll take our existing Location and submit it for modification. The good news about REST is that we no longer need to deal with the complex SOAP wrapper when making changes. We'll simply use the original response, make our changes and upload the file to affect the change. In the below we're making a change to the address information which will be updated on the location. We will also change the energy loss factor and the capacity loss factor for this location.

Below is the modified location file upload format:

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<ns2:location xmlns:ns2="http://drhub.pjm.com/">
  <id>61543</id>
  <summaryInfo>
    <name>Lancair Turbine Shop</name>
    <CSP>
      <name>MYCSP</name>
    </CSP>
    <EDC>
      <name>MYEDC</name>
      <accountNo>3UH66773352</accountNo>
    </EDC>
    <zone>APS</zone>
    <status>NEW</status>
    <allowEDCtoSubmitData>true</allowEDCtoSubmitData>
    <allowLSEtoSubmitData>true</allowLSEtoSubmitData>
    <pricingPoint>PP</pricingPoint>
  </summaryInfo>
```

```

<siteInfo>
  <address>
    <address1>339 Redmond Way</address1>
    <address2>Suite 101</address2>
    <city>Valley Forge</city>
    <state>PA</state>
    <zipCode>19403</zipCode>
  </address>
  <businessSegment>Industrial/Manufacturing</businessSegment>
  <utilityResidentialParticipant>false</utilityResidentialParticipant>
  <loadDataSample>false</loadDataSample>
  <allowLSEToSubmit>true</allowLSEToSubmit>
  <allowEDCToSubmit>true</allowEDCToSubmit>
</siteInfo>
<profileInfo>
  <energyLossFactor>1.2</energyLossFactor>
  <capacityLossFactor>1.5</capacityLossFactor>
  <!-- Note: Load Reduction Should be Omitted when Modifying Locations. -->
  <!-- Max Load Reduction Capability is automatically calculated and displayed on the UI -->
  <!-- The Load Reduction Total is provided on Location Downloads using Web Services. -->
  <!-- <loadReduction>omit when modifying locations</loadReduction> -->
  <peakLoadContribution>100</peakLoadContribution>
  <winterPeakLoad>9000</winterPeakLoad>
</profileInfo>
<reductionInfo>
  <reductionType>BATTERIES</reductionType>
  <reductionValue>0</reductionValue>
</reductionInfo>
  <!-- Field Automatically Updated. Do Not Modify -->
<reductionInfo>
  <reductionType>GENERATOR</reductionType>
  <reductionValue>0</reductionValue>
</reductionInfo>
<reductionInfo>
  <reductionType>HVAC</reductionType>
  <reductionValue>0</reductionValue>
</reductionInfo>
<reductionInfo>
  <reductionType>LIGHTING</reductionType>
  <reductionValue>50</reductionValue>
</reductionInfo>
<reductionInfo>
  <reductionType>MANUFACTURING</reductionType>
  <reductionValue>0</reductionValue>
</reductionInfo>
<reductionInfo>
  <reductionType>PLUG_LOAD</reductionType>
  <reductionValue>0</reductionValue>
</reductionInfo>
<reductionInfo>
  <reductionType>REFRIGERATION</reductionType>
  <reductionValue>0</reductionValue>
</reductionInfo>
<reductionInfo>
  <reductionType>WATER_HEATERS</reductionType>
  <reductionValue>0</reductionValue>

```

```

    </reductionInfo>
<!-- To remove an existing Generator, delete the entire generatorInfo section for the item to be
removed. -->
<!-- In This Example we are adding a New Generators to this Registration. -->
<!-- Note: The Generator Id will be created by the system and returned in the XML response. -->
    <generatorInfo>
        <name>Big Gen 4</name>
        <nonRetailBtmg>true</nonRetailBtmg>
        <maxOutput>500</maxOutput>
        <nameplate>550</nameplate>
        <backupGeneratorOnly>true</backupGeneratorOnly>
        <generatorType>Internal Combustion Engine</generatorType>
        <fuelType>Diesel</fuelType>
        <vintage>2012</vintage>
        <retrofitYear>2018</retrofitYear>
        <permitStatus>AVAILABLE</permitStatus>
        <permitType>EMERGENCY_ONLY</permitType>
        <note>Test Generator with a note.</note>
    </generatorInfo>
<!-- With the exception of the ID, any of the Battery fields may be modified. -->
    <batteryInfo>
        <id>159</id>
        <maxOutput>100</maxOutput>
        <capacity>125</capacity>
        <vintage>2017</vintage>
        <chemistry>LITHIUM_AIR</chemistry>
        <type>STAND_ALONE</type>
        <note>Test Battery with a note.</note>
    </batteryInfo>
    <rerraInfo>
        <id>2033</id>
        <evidence>Resolution of the Great Demand Response Group</evidence>
        <rerra>Great Demand Response Group</rerra>
        <state>PA</state>
    </rerraInfo>
</ns2:location>

```

Below is the request to modify an existing Location.

PJM CLI Command File: Required Authentication via CLI

REM Modify a Location (Where 12345 is the Location id)

```
%CLIENT% -s %APP_URL% -a /rest/secure/upload/location/12345/ -file .\upload\modify_lLocation.xml
```

When complete, a response will be returned in the form of a file (Locations_date.xml). The file name will include the creation date. Inside you'll find the desired modifications. Inspect the file for accuracy and completeness.

[Upload Documentation for a Location](#)

When changes to a location require supporting documentation, the associated documents may be uploaded using the below request format and endpoint.

Note: Description is required. A file cannot be larger than 10 MB. Supported file types include CSV, XLS, XLSX, PPT, DOC, DOCX, PDF, and ZIP.

In this section we upload a Microsoft Word document using the document endpoint. Don't forget to include the correct target location id.

REM UPLOAD LOCATION DOCUMENTATION

```
%CLIENT% -s %APP_URL% -a /rest/secure/upload/location/123456/document -m "application/octet-stream" -q -q  
description="Test WS UPLOADS." -file .\overview\UploadLocationDoc.docx
```

When the upload is complete, you will receive a response in the form of a file named output.txt.

This file will contain the name of the file uploaded.

If an error occurs during the upload, you will receive an error in the PJM CLI window and a response file named error.

[End of Document](#)