

# Focal Point<sup>®</sup>

## REST RDF API Reference Manual

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- Focal Point APM Workspace Deployment Guide
- Focal Point APM Workspace User Guide
- Focal Point Business Rule Development and Usage Guide
- Focal Point Custom Chart Plug-in Reference Manual
- Focal Point REST RDF API Reference Manual
- Focal Point RESTful API Reference Manual
- Focal Point Web Services API Reference Manual

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# 1 REST RDP API

Focal Point supports REST Resource Description Framework (RDF) API, where RDF representation for Focal Point resource is included so that Focal Point resources are available for Linked Data. REST RDF API uses the most of the resources defined by RDF XML API and few additional resources. Focal Point supports content negotiation by using the standard HTTP Accept header values for getting the required resource representations. To understand and use the REST RDF API, you must be familiar with the REST principles and RDF.

The RESTful RDF API for Focal Point is a provisional API and subject to change without prior notice. Most of the RDF examples provided in this document are in the TURTLE (<http://www.w3.org/TeamSubmission/turtle/>) format.

---

## Setup

The URIs that Focal Point returns are absolute. To create absolute URIs, the Focal Point server must have information about its own server name. To configure this setting, click **Application > Login Page > Login or Balancer URL** and specify the appropriate value for. Make sure that the host name does not change because a change in the host name can lead to broken links in Focal Point integrated systems that link to the Focal Point resources.

---

## Authentication

The requests to the RESTful API must be authenticated by using HTTP basic authentication. Unless you use HTTPS, the user name and password are sent without encryption. In HTTP basic authentication, character encoding is not specified for user names and passwords. User names and passwords can include ASCII characters only. You might be able to use ISO-8859-1 characters if the client correctly encodes the characters.

---

## Content negotiation

REST RDF API supports RDF/XML, TURTLE and N3 formats. You can request any of these formats by using the standard HTTP Accept header content negotiation. When making the REST API calls, you can use these HTTP Accept header values to specify the preferred format:

Accept header value	Preferred format
application/rdf+xml	rdf/xml
application/x-turtle	rdf/turtle
application/rdf+n3	rdf/n3
application/xml	XML
application/html	HTML

For convenience, typically while requesting for different formats through browsers, the following URL extensions can be used with the resource URLs.

URL Extension	Preferred format
.rdf	rdf/xml
.ttl	rdf/turtle
.n3	rdf/n3
.xml	XML
.html	HTML

For example, to view resources in the RDF/XML format, use the <http://focalpointserver/fp/resources/workspaces/2.rdf> URL in a web browser.

---

## RDF vocabulary approach

The four Focal Point RDF vocabularies used in RDF representations of Focal Point resources are these

- Standard vocabulary
- Focal Point core vocabulary
- Focal Point data type vocabulary
- Focal Point auto-generated vocabulary

The Focal Point defined RDF vocabularies uses <http://jazz.net/ns/psm> as its base URI for defining the resources and terms. Focal Point RDF resource representations also use auto-generated vocabulary for user-defined terms and terms from the Dublin Core, FOAF, OSLC, OWL, RDF and XML Schema vocabularies.

The following table lists the vocabulary prefixes used in Focal Point RDF representations.

Prefix	Namespace URI	Description
dcterms:	<a href="http://purl.org/dc/terms/">http://purl.org/dc/terms/</a>	Dublin Core vocabulary.
foaf:	<a href="http://xmlns.com/foaf/0.1/">http://xmlns.com/foaf/0.1/</a>	Friend of a Friend (FOAF) vocabulary.
owl:	<a href="http://www.w3.org/2002/07/owl#">http://www.w3.org/2002/07/owl#</a>	Web Ontology Language (OWL) vocabulary.
rdf:	<a href="http://www.w3.org/1999/02/22-rdf-syntax-ns#">http://www.w3.org/1999/02/22-rdf-syntax-ns#</a>	RDF vocabulary.
rdfs:	<a href="http://www.w3.org/2000/01/rdf-schema#">http://www.w3.org/2000/01/rdf-schema#</a>	RDF Schema vocabulary.
xsd:	<a href="http://www.w3.org/2001/XMLSchema#">http://www.w3.org/2001/XMLSchema#</a>	XML Schema (XSD) vocabulary.
oslc:	<a href="http://open-services.net/ns/core#">http://open-services.net/ns/core#</a>	OSLC Core vocabulary.
fps:	<a href="http://jazz.net/ns/psm/focalpoint#">http://jazz.net/ns/psm/focalpoint#</a>	Focal Point core vocabulary.
fpdt:	<a href="http://jazz.net/ns/psm/focalpoint/datatypes#">http://jazz.net/ns/psm/focalpoint/datatypes#</a>	Focal Point data type vocabulary.

## Standard vocabulary

Focal Point uses a few built-in attributes for the primary resources. For good interoperability, RDF representations reuse existing, widely adopted vocabularies such as the Dublin Core. Focal Point therefore maps as many built-in Focal Point attributes as possible to these standard vocabularies.

The following table lists the mapping to some of the standard properties.

### Focal Point built-in attribute

Focal Point built-in attribute	Standard URI
Alias	dcterms:identifier
Created Date	dcterms:created
Creator	dcterms:creator
Description	dcterms:description
Last Changed Date	dcterms:modified
Title	dcterms:title
User	foaf:Person
User name	foaf:name



<b>Focal Point built-in attribute</b>	<b>Standard URI</b>
User title	foaf:title
User email	foaf:mbox
User login name	foaf:accountName

---

## Focal Point core vocabulary

The Focal Point defined concepts and, built-in attributes that are not mapped to the standard vocabulary are defined in the Focal Point core vocabulary.

### Namespace URI

<http://jazz.net/ns/psm/focalpoint#>

### Prefix

fpdt: (Focal Point Schema) to distinguish it from fp: which is used in the XML representation

### Details

<https://jazz.net/wiki/bin/view/Main/FocalPointDatatypeVocabulary>

---

## Focal Point data type vocabulary

Focal Point provides support for a large number of data types that could be used as the values of attributes. These data types are described in their own vocabulary so that the main Focal Point vocabulary smaller and is easier to understand. For a description of the data types see

<https://jazz.net/wiki/bin/view/Main/FPDatatypes>.

### Namespace URI

<http://jazz.net/ns/psm/focalpoint/datatypes#>

### Prefix

fpdt: (Focal Point data type)

### Details

<https://jazz.net/wiki/bin/view/Main/FocalPointDatatypeVocabulary>

---

## Focal Point auto-generated vocabulary

In Focal Point you can modules, attributes and choice items. By default Focal Point treats these definitions as user-defined terms and auto generates the vocabularies. Auto-generated vocabularies are of three scopes.

---

### Workspace scope

#### Namespace URI

`http://focalpointserver/fp/resources/workspaces/wid/ns#`

#### Prefix

`workspace_wid:`

#### Scope

Workspace scope. Vocabulary for all of the user defined modules, in a given Focal Point workspace

---

### Module scope

#### Namespace URI

`http://focalpointserver/fp/resources/workspaces/wid/modules/mid/ns#`

#### Prefix

`module_mid_wid:`

#### Scope

Module scope. Vocabulary for all of the user-defined attributes, for a given Focal Point module.

---

### Attribute scope

#### Namespace URI

`http://focalpointserver/fp/resources/workspaces/wid/modules/mid/attributes/aid/ns#`

#### Prefix

`attribute_aid_mid_wid:`

#### Scope

Attribute scope. Vocabulary for all of the user-defined choice items for a given Focal Point attribute.

---

## Focal Point primary resources

The primary resources in Focal Point are service, workspace, module, view, element and attribute. The following table lists the types and example REST API URIs for the primary resources. The REST XML API does not support HTTP GET for workspace, module and view resources. REST RDF API extends the REST XML API defined resources to define these additional resources.

Type	Example REST API URI	Description
fps:Service	<a href="http://focalpointserver/fp/resources/">http://focalpointserver/fp/resources/</a>	Service document
fps:Workspace	<a href="http://focalpointserver/fp/resources/workspace/3">http://focalpointserver/fp/resources/workspace/3</a>	Workspace
foaf:Person	<a href="http://focalpointserver/fp/resources/users/13">http://focalpointserver/fp/resources/users/13</a>	Global user
fps:Member	<a href="http://focalpointserver/fp/resources/workspaces/3/members/15">http://focalpointserver/fp/resources/workspaces/3/members/15</a>	Membership entry
fps:Module	<a href="http://focalpointserver/fp/resources/workspaces/3/modules/1">http://focalpointserver/fp/resources/workspaces/3/modules/1</a>	Module or Element collection
fps:Module	<a href="http://focalpointserver/fp/resources/workspaces/3/modules/1?/view=123">http://focalpointserver/fp/resources/workspaces/3/modules/1?/view=123</a>	Element collection of a view
fps:View	<a href="http://focalpointserver/fp/resources/workspaces/2/modules/2/views/759">http://focalpointserver/fp/resources/workspaces/2/modules/2/views/759</a>	View
fps:Element (natural)	<a href="http://focalpointserver/fp/resources/workspaces/3/modules/3/elements/3">http://focalpointserver/fp/resources/workspaces/3/modules/3/elements/3</a>	Element, natural graph (default)
fps:Element (generic)	<a href="http://focalpointserver/fp/resources/workspaces/3/modules/3/elements/3?format=genericrdf">http://focalpointserver/fp/resources/workspaces/3/modules/3/elements/3?format=genericrdf</a>	Element, generic graph
fps:Attribute	<a href="http://focalpointserver/fp/resources/workspaces/3/modules/3/elements/3/attributes/38">http://focalpointserver/fp/resources/workspaces/3/modules/3/elements/3/attributes/38</a>	Attribute

---

### Service document (fps:Service)

The service document is the starting point of the REST RDF API. The resources listed can be referenced to find subsequent resources. The resource URI for the service document is <http://focalpointserver/context/resources/>. For example, <http://focalpointserver/fp/resources/>.

The service document lists the high level resources (workspace and user module) that the current user has access to. Only users with global administrator rights can access the list of users. Referencing the workspace resource lists the modules, views, member resources of the workspace.

```
<http://focalpointserver/fp/resources/>
  a fps:Service ;
  fps:memberModule <http://focalpointserver/fp/resources/users> ;
  fps:memberWorkspace <http://focalpointserver/fp/resources/workspaces/2>
;
  fps:rootService <http://focalpointserver/fp/resources/rootservices> ;
  dcterms:description "This Service documents lists the top level
resources for Focal Point REST API" ;
  dcterms:title "Focal Point REST API Services Document" .
```

---

## Focal Point primary data types

---

### Usage of literals

These are the standard XML data types used for basic Focal Point data types.

Focal Point Data Types	Mapped Data Types
Boolean (Check Box, Lock)	xsd:boolean
Date	xsd:date
Integer	xsd:integer
Float	xsd:decimal
Text (plain)	plain text
Text (rich)	rdf:XMLLiteral
Time (created, last modified)	xsd:dateTime

For information on how rest of the Focal Point data types are represented in RDF, see <https://jazz.net/wiki/bin/view/Main/FPDatatypes>.

---

## REST Operations

How to use make various HTTP method calls on the REST RDF API defined resource is explained in this section. For all of the REST operations, the HTTP Accept header value is appropriately set to any one of RDF formats as mentioned in *'Content negotiation' on page 6*.

---

### Parameters

These are the supported parameters that can used when making REST RDF API calls:

- View selection
- Modified since
- Resource paging
- Selective properties
- Format

---

## View selection

### Parameter name

view

### Parameter value

view\_id as integer

### Can be used with

Module and Element resource

### Applicable

HTTP GET, PUT and POST

### Description

Lists only the elements and attributes of the given view.

### Example

<http://focalpointserver/fp/resources/workspaces/2/modules/1?view=39>

---

## Modified Since

### Parameter name

modifiedSince

### Parameter value

time as xsd:date or xsd:dateTime

### Can be used with

Module (Element collection) resource

## Applicable

HTTP GET

## Description

Lists only the elements that are modified later to entered time value.

## Example

`http://focalpointserver/fp/resources/workspaces/2/modules/1.rdf? modifiedSince=2012-06-11T09:56:48.128Z`

---

## Resource Paging

Sometimes, an element collection is too large to be reasonably transmitted in a single HTTP message. In such cases, resource paging can be used to split the response into several pages. The page size is configurable thru Focal Point administrator configuration UI.

### Parameter name

oslc.paging

### Parameter value

boolean

### Can be used with

Module (Element collection) resource

## Applicable

HTTP GET

## Description

Activates resource paging, so that the result element collection is paginated

## Example

`http://focalpointserver/fp/resources/workspaces/2/modules/1.rdf?oslc.paging=true`

**Note** By default, oslc.paging is turned off.

### Parameter name

pageno

### Parameter value

integer

### Can be used with

Module (Element collection) resource

### Description

If paging is activated, any valid page can be request by specifying an integer value.

### Example

`http://focalpointserver/fp/resources/workspaces/2/modules/1.rdf? oslc.paging=true&pageno=1`

**Note** By default, pageno is set to 0.

### Parameter name

oslc.pageSize

### Parameter value

integer

### Can be used with

Module (Element collection) resource

### Applicable

HTTP GET

### Description

Number of elements per page when paging is turned on.

### Example

`http://focalpointserver/fp/resources/workspaces/2/modules/1.rdf?  
oslc.paging=true&pageno=1&oslc.pageSize=100`

### Default

You can change the default page size. From the Focal Point Admin configuration page, click **Application > Data Access > REST Page size** to specify the value.

**Note** When paging is activated, the following resource is included in the response and it gives details such as total elements and URL for the next page.

For details, see <http://open-services.net/resources/tutorials/oslc-primer/resource-paging/> for more details.

```
<http://focalpointserver/fp/resources/workspaces/2/modules/1?
oslc.paging=true&pageno=0&oslc.pageSize=100>
  a oslc:ResponseInfo ;
  oslc:nextPage
<http://focalpointserver/fp/resources/workspaces/2/modules/1?
oslc.paging=true&pageno=1&oslc.pageSize=100> ;
  oslc:totalCount 118 .
```

---

## Selective properties

Sometimes, only a subset of attributes is required when querying for element or element collection. The selective properties parameter can be used to specify a comma-delimited set of attribute names, only specified attribute values are returned in the result.

### Parameter name

oslc.properties

### Parameter value

List of comma-separated attribute names.

### Can be used with

Module (element collection) or Element resources

### Applicable

HTTP GET

### Description

Specifies a subset of attributes that are the only attributes to be returned.

### Example

```
http://focalpointserver/fp/resources/workspaces/2/modules/1.rdf?
oslc.properties=dcterms:title, fps:id, :version
```

---

## Format

Element has two graphs, natural and generic. If the parameter is not used, the default graph type is natural.

### Parameter name

format



### Parameter value

"genericrdf"

### Can be used with

Element and Element Collection resources only

### Applicable

HTTP GET

### Description

To get generic graph of elements.

### Example

`http://focalpointserver/fp/resources/workspaces/2/modules/1/elements/1.rdf?  
format=genericrdf`

### Default

"naturalrdf"

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## HTTP GET

The HTTP GET method is supported for all Focal Point REST RDF API defined resources. To request for appropriate resource format, see the Content negotiation section of this page. Administrative privilege is need to access an element with a view parameter.

### URI

`http://focalpointserver/fp/resources/workspaces/2/modules/1/elements/53.ttl?  
view=39&oslc.properties=dcterms:title`

### HTTP Accept Header

`application/x-turtle`

### or URL Extension

`.ttl`

### Result

```
<http://focalpointserver/fp/resources/workspaces/2/modules/1/elements/53>  
  a workspace_2:Business_Need ;  
  fps:genericLink  
<http://focalpointserver/fp/resources/workspaces/2/modules/1/elements/53?
```

```
format=genericrdf> ;
  fps:inModule
<http://focalpointserver/fp/resources/workspaces/2/modules/1> ;
  dcterms:identifier "c414ea18-25ea-4bc1-8cc6-830a074a01d5" ;
  dcterms:title "Enable touch screen"^^rdf:XMLLiteral .
```

---

## HTTP PUT

The HTTP PUT method is supported only for the Element resource. The Element RDF/XML document received from an HTTP GET call can be used to update attributes by using a PUT call.

### URI

<http://focalpointserver/fp/resources/workspaces/2/modules/1/elements/53.rdf>

### HTTP Accept Header

application/xml

### or URI Extension

.xml

### Request body

```
<rdf:RDF
  xmlns:dcterms="http://purl.org/dc/terms/"
  xmlns:fps="http://jazz.net/ns/psm/focalpoint#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:fpdt="http://jazz.net/ns/psm/focalpoint/datatypes#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:module_2_1="http://focalpointserver/fp/resources/workspaces/2/modules/1/ns#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:oslc="http://open-services.net/ns/core#"
  xmlns:workspace_2="http://focalpointserver/fp/resources/workspaces/2/ns#"
  xmlns:oslc_rm="http://open-services.net/ns/rm#" >
  <rdf:Description
  rdf:about="http://focalpointserver/fp/resources/workspaces/2/modules/1/elements/53">
    <dcterms:title rdf:parseType="Literal">New Title value</dcterms:title>
    <fps:genericLink
  rdf:resource="http://focalpointserver/fp/resources/workspaces/2/modules/1/elements/53?format=genericrdf"/>
    <fps:inModule
  rdf:resource="http://focalpointserver/fp/resources/workspaces/2/modules/1"/>
    <dcterms:identifier>c414ea18-25ea-4bc1-8cc6-830a074a01d5</dcterms:identifier>
```

```
<rdf:type
rdf:resource="http://focalpointserver/fp/resources/workspaces/2/ns#Business
Need"/>
</rdf:Description>
</rdf:RDF>
```

## Result

After a successful PUT call, the title attribute of element 53 is changed to 'New Title value'. Though the example shows updating of only one attribute, it is possible to update more than one attribute in a single PUT call.

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## HTTP POST

The HTTP POST method is supported only for the Module resource for creating new Elements in the Module. The Element RDF/XML document received from an HTTP GET call can be used to create one or more elements resource using a single PUT call.

## URI

<http://focalpointserver/fp/resources/workspaces/2/modules/1/elements.rdf>

## HTTP Accept Header

.xml

## Request body

```
<rdf:RDF
  xmlns:dcterms="http://purl.org/dc/terms/"
  xmlns:fps="http://jazz.net/ns/psm/focalpoint#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:fpdt="http://jazz.net/ns/psm/focalpoint/datatypes#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:module_2_1="http://focalpointserver/fp/resources/workspaces/2/modules
/1/ns#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:oslc="http://open-services.net/ns/core#"
  xmlns:workspace_2="http://focalpointserver/fp/resources/workspaces/2/ns#"
  xmlns:oslc_rm="http://open-services.net/ns/rm#" >
  <rdf:Description
rdf:about="http://focalpointserver/fp/resources/workspaces/2/modules/1/elem
ents/53">
    <dcterms:title rdf:parseType="Literal">New Title value</dcterms:title>
    <fps:genericLink
rdf:resource="http://focalpointserver/fp/resources/workspaces/2/modules/1/e
lements/53?format=genericrdf"/>
  </rdf:Description
  <fps:inModule
rdf:resource="http://focalpointserver/fp/resources/workspaces/2/modules/1"/
```

```
>
  <dcterms:identifier>c414ea18-25ea-4bc1-8cc6-
830a074a01d5</dcterms:identifier>
  <rdf:type
rdf:resource="http://focalpointserver/fp/resources/workspaces/2/ns#Business
Need"/>
  </rdf:Description>
</rdf:RDF>
```

## Result

HTTP Response <http://focalpointserver/fp/resources/workspaces/2/modules/1/elements/163>

After a successful PUT call, a new element is created in module 1 and updated with the attributes values specified in the input RDF/XML document. The URI of the newly created element is returned as response.

More than one element can be created in a single POST call by including more than one element resource in the input RDF/XML to the HTTP request. Make sure that the URI of each Element resource has a different element ID.

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## HTTP DELETE

The HTTP DELETE method is supported only for the Element resource.

### URI

<http://focalpointserver/fp/resources/workspaces/2/modules/1/elements/155.rdf>

### HTTP Accept Header

application/xml

### or URL Extension

.xml

## Result

After a successful DELETE call, the element 155 is deleted.



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