Use Web Service Data in Web Resources (REST and SOAP Endpoint)

Task	Web Service
Create, Retrieve, Update and Delete records.	REST Endpoint
Associate and Disassociate records	REST Endpoint
Assign Records	SOAP Endpoint
Retrieve Metadata	SOAP Endpoint
Execute Messages	SOAP Endpoint

- Both of these Web services rely on the authentication provided by the Microsoft Dynamics CRM application. They cannot be used by code that executes outside the context of the application. They are effectively limited to use within JScript libraries, or JScript included in Web Page (HTML) Web resources.
- The REST endpoint provides a 'RESTful' web service using OData to provide a programming environment that is familiar to many developers. It is the recommended web service to use for tasks that involve creating, retrieving, updating and deleting records. However, in this release of Microsoft Dynamics CRM the capabilities of this Web service are limited to these actions. Future versions of Microsoft Dynamics CRM will enhance the capabilities of the REST endpoint.
- The SOAP endpoint provides access to all the messages defined in the Organization service. However, only the types defined within the WSDL will be returned. There is no strong type support. While the SOAP endpoint is also capable of performing create, retrieve, update and delete operations, the REST endpoint provides a better developer experience. In this release of Microsoft Dynamics CRM the SOAP endpoint provides an alternative way to perform operations that the REST endpoint is not yet capable of.

OData and JScript in CRM 2011

Before going through the usage of oData in CRM 2011 first let us understand what is oData and why it is introduced in CRM 2011.

What is oData ?

oData is also referred as Open Data Protocol. CRM 2011 mainly uses Windows Communication Foundation (WCF) data services framework to provide oData Endpoint which is nothing but a REST based data service. The address for the endpoint is:

http://{OrganizationRootUrl} /XRMServices/2011/OrganizationData.svc

Now What is REST ?

REST(Representational State Transfer) is an style of referring data in which every resource can be referenced by a URL mainly in Microsoft CRM. Here resource is nothing but the entity or record or an image etc. So now in CRM 2011 we can reach to the record collection by the URL (properly defined syntax). Microsoft has provided some syntax styles which should be followed to access a resource.

OData uses some data format for sending and receiving the data. Basically it uses the following two formats.

1. **ATOM**: It is an Xml based format mainly used for the RSS feeds.

2. **JSON**: JavaScript Object Notation is a text formats which makes very easy for the developers to understand the response what we get. For more info please visit: www.json.org

For eg: For getting all the contact record set the URL can be like

http://{OrganizationRootUrl} /XRMServices/2011/OrganizationData.svc/ContactSet

We can also select few attributes by using a " select "command.

http://{OrganizationRootUrl}
/XRMServices/2011/OrganizationData.svc/ContactSet?$select=FirstName,LastName

This will give a collection of First Name and Last Name for all the contacts. Lot of other stuffs is also possible like filtering, ordering, paging etc.

Limitations of OData EndPoint in CRM 2011

1) The $format and $inlinecount operators are not supported. $filter, $select, $top, $skip, $orderby are supported.

2) Maximum 6 expansions are allowed using $expand operator. Querying a multi-level relationship property is not supported i.e. One level of navigation property selection is allowed.

3) Page size is fixed to max 50 records however it can be changed by doing changes in advanced configuration settings but it is not recommended.

4) When using with distinct queries, we are limited to the total (skip + top) record size = 5000. In CRM the distinct queries does not use paging cookie and so we are limited by the CRM platform limitation to the 5000 record.

5) Conditions on only one group of attributes are allowed. A group of attribute refers to a set of conditions joined by And/Or clause.

6) Arithmetic, datetime and math operators are not supported.

7) Order by clause is only allowed on the root entity.

8) Only Create, Retrieve, Update and Delete actions can be performed on entity records.

Messages that require the Execute method cannot be performed.

Associate and Disassociate actions are performed as updates.

9) Authentication is only possible within the application; Use of the REST endpoint is effectively limited to JScript libraries or Silverlight Web Resources.

10) The OData protocol is not fully implemented in CRM 2011. Some system query options are not available.

Examples:

1) **For retrieving any EntitySet(here GoalSet)**

http://{OrganizationRootUrl} /XRMServices/2011/OrganizationData.svc/GoalSet

2) **For retrieving limited attributes use $select query option**

http://{OrganizationRootUrl}/XRMServices/2011/OrganizationData.svc/GoalSet ?$select=IsAmount,MetricId

This will retrieve collection of IsAmount and MetricId for all Goals.

3) **For retrieving data filtered on some criteria use $filter query option**

http://{OrganizationRootUrl}/XRMServices/2011/OrganizationData.svc/GoalSet ?$select=IsAmount,MetricId &$filter=GoalId eq guid'" + goalid + "'";

This will retrieve IsAmount and MetricId for the Goal whose GoalId matches with the value of given goalid.

4) **For retrieving data from related entity use $expand query option**

http://{OrganizationRootUrl}/XRMServices/2011/OrganizationData.svc/GoalSet ?$select=IsAmount,metric_goal/Name,metric_goal/OrganizationId&$expand=metric_goal&$filter=GoalId eq guid'" + goalid + "'";