



*rego*University 2018

Building and Consuming a Web Service

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Introductions

- Take 5 Minutes
- Turn to a Person Near You
- Introduce Yourself
- Business Cards



Agenda

- APIs
- Web Services
- SOAP vs REST
- How to execute REST calls
- Consume CA PPM REST service
- Consume ServiceNow REST service

Key Concepts

- API (Application Program Interface)
 - Defines how software components interact
 - Specify a protocol, routines (methods or functions) or tools
- Web Service
 - Implements an API that provides communication over the web
 - Two primary types are SOAP and REST

SOAP

- Simple Object Access Protocol
- Uses only XML for messaging
- Interface is defined in a WSDL (Web Service Description Language) file
- Can be complex to build and parse requests
- Object based

REST

- Representational State Transfer
- Uses XML, JSON, text for messaging
- REST is an architectural style rather than a protocol
- A web service API is said to be “RESTful” when it adheres to the REST architectural constraints
- Much easier to make and parse requests
- Defined Resources

- SOAP or REST based?

```
<soap:invoke var="xogResponse" endpoint="internal">
  <soap:message>
    <soapEnv:Envelope>
      <soapEnv:Header>
        <xog:Auth>
          <xog:SessionID>${sessionID}</xog:SessionID>
        </xog:Auth>
      </soapEnv:Header>
      <soapEnv:Body>
        <NikuDataBus xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:noNamespaceSchemaLocation="../../../xsd/nikuxog_read.xsd">
          <Header version="6.0.13" action="read" objectType="resource" externalSource="NIKU">
            <args name="include_contact" value="true"/>
            <args name="include_management" value="true"/>
            <args name="include_custom" value="true"/>
            <args name="include_financial" value="true"/>
          </Header>
          <Query>
            <Filter name="resourceID" criteria="OR">*</Filter>
          </Query>
        </NikuDataBus>
      </soapEnv:Body>
    </soapEnv:Envelope>
  </soap:message>
</soap:invoke>
```

CA PPM REST

- Introduced in 14.3
- Not supported by CA
- Many other applications contain REST web services
- Common REST requests
- No REST tags within GEL

REST in GEL

- Authentication String

```
<!-- CREATE BASIC AUTH STRING -->
<core:invokeStatic var="base64" className="com.niku.union.utility.Base64" method="encode">
  <core:arg type="java.lang.String" value="{restUser}:{restPass}"/>
</core:invokeStatic>
<core:set var="basicAuth" value="Basic {base64}"/>
<gel:log level="INFO">Basic Auth String: {basicAuth}</gel:log>
```

- Construct URL

```
<!-- ADD QUERY PARAMETERS AND BUILD URL -->
<core:new var="uriBuilder" className="org.apache.http.client.utils.URIBuilder">
  <core:arg type="java.lang.String" value="{restEndPoint}"/>
</core:new>
<core:expr value="{uriBuilder.addParameter('limit', '10')}"/>
<core:set var="restURL" value="{uriBuilder.build().toURL()}"/>
<gel:log level="INFO">Rest URL: {restURL}</gel:log>
```

REST in GEL

- Open Connection

```
<!-- OPEN CONNECTION -->
<core:set var="connection" value="{restURL.openConnection()}" />
<core:expr value="{connection.setRequestProperty('Authorization', basicAuth)}" />
<core:expr value="{connection.setRequestProperty('Connection', 'keep-alive')}" />
<core:expr value="{connection.setRequestProperty('Content-type', 'application/json')}" />
<core:expr value="{connection.setRequestProperty('Accept', 'application/json')}" />
<core:expr value="{connection.setDoOutput(true)}" />
<core:expr value="{connection.setRequestMethod('GET')}" />
```

- Consume Response

```
<!-- CONSUME THE RESPONSE -->
<core:set var="inputStream" value="{connection.getInputStream()}" />
<core:new var="inputStreamReader" className="java.io.InputStreamReader">
  <core:arg type="java.io.InputStream" value="{inputStream}" />
</core:new>
```

REST in GEL

- Parse Response

```
<!-- PARSE JSON -->  
<core:new var="jsonTokener" className="org.json.JSONTokener">  
  <core:arg type="java.io.InputStreamReader" value="{inputStreamReader}"/>  
</core:new>  
<core:new var="jsonResponseObject" className="org.json.JSONObject">  
  <core:arg type="org.json.JSONTokener" value="{jsonTokener}"/>  
</core:new>  
<gel:log level="INFO">Json Response: {jsonResponseObject}</gel:log>
```

- Close resources

```
<!-- CLOSE RESOURCES -->  
<core:if test="{inputStreamReader != null}">  
  <core:invoke on="{inputStreamReader}" method="close"/>  
</core:if>  
<core:if test="{inputStream != null}">  
  <core:invoke on="{inputStream}" method="close"/>  
</core:if>  
<core:if test="{connection != null}">  
  <core:invoke on="{connection}" method="disconnect"/>  
</core:if>
```

Questions?



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