

Using Oracle Application Express to Interact with XML-RPC Style Web Services

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Introduction	3
Manual Web Reference.....	4
Create an Application.....	4
Create a Manual Web Reference.....	4
Test the Web Reference.....	5
Test the Web Reference.....	6
Music Videos Application	7
Create Process of Type Web Service	7
Extract the Embedded XML Document	7
Create Report on Manual Web Reference	9
Refine the Report.....	10
Conclusion.....	12

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INTRODUCTION

Oracle Application Express – a feature of the Oracle Database – is a powerful and easy to use web application development platform. With Oracle Application Express, you can quickly develop and deploy applications in a matter of hours, often without writing a single line of code. Application Express supports consuming Web services for integration with other applications that are potentially deployed on other platforms. Support for Manual Web references was introduced in version 3.0 and allows for great flexibility in interacting with Web services. Manual Web references are created on traditional SOAP-style Web services and XML-RPC style Web services.

XML-RPC style Web services support Remote Procedure Calls over the internet. An XML document is posted to a service as an HTTP-POST request. The Web service returns a response in the form of an XML document.

YouTube offers a set of Web service API's that allows you to build applications based on the videos that YouTube hosts. The Web service's APIs are in the REST and XML-RPC format. This paper will describe how to create an Application Express application that interacts with the YouTube XML-RPC Web service API that lists music videos. You supply a developer ID with every request to the API. Obtaining a developer ID is free and easy, with information available at:

<http://www.youtube.com/dev>

An expanded version of the application that results from this whitepaper can be downloaded from:

[Oracle Application Express Packaged Applications and Sample Code site](#)

MANUAL WEB REFERENCE

Manual Web references allow for interaction with XML-RPC style Web services such as the YouTube API.

Create an Application

Prior to creating the manual Web reference to the YouTube music videos XML-RPC Web service, you must create an application. To create an Application Express application:

1. Login to your Application Express instance.

Please note that this tutorial cannot be demonstrated on apex.oracle.com because it does not support external network call-outs. You will need to use your own instance to be able to execute the resulting application.

2. Select **Application Builder**
3. Click **Create >**
4. Supply information as required by the Create Application wizard
5. Add one blank page on the Pages step of the wizard
6. Once you have created the application, if your environment requires a proxy server to reach pages on the Internet, supply the proxy server in the Proxy Server field of the Application Definition (Shared Components > Definition - under Application)

Create a Manual Web Reference

Now that you have your application, you are ready to create the Web service reference to the YouTube music videos Web service. When you create a manual Web reference, you supply the URL to the Web service and the document to send to it. You also supply the name of an Application Express collection where the response will be stored. To create a manual Web reference:

1. From within your application, navigate to Shared Components
2. Select **Web Service References** (under Logic)
3. Click **Create >**
4. For Do you want to search a UDDI registry to find the WSDL?, select **No** and click **Next >**
5. From within the Tasks region on the right, select **Create Web Service Reference Manually**

Enter the values as specified below:

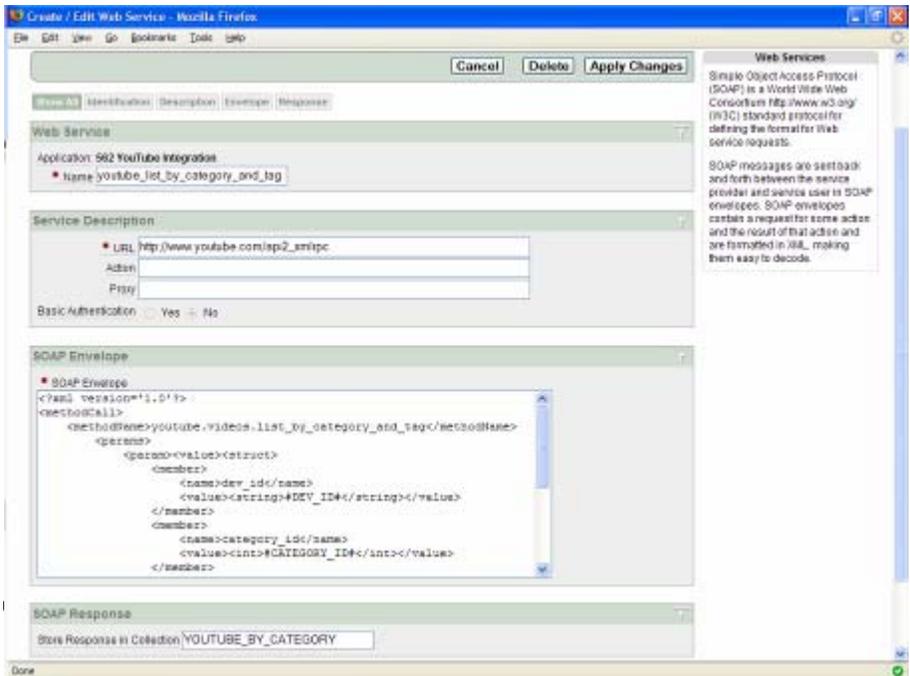
Name: YouTube Music Videos
URL: http://www.youtube.com/api2_xmlrpc
SOAP Envelope:

```
<?xml version='1.0'?>
<methodCall>
<methodName>youtube.videos.list_by_category_and_tag</methodName>
  <params>
    <param><value><struct>
      <member>
        <name>dev_id</name>
        <value><string>YOUR_DEV_ID</string></value>
      </member>
      <member>
        <name>category_id</name>
        <value><int>10</int></value>
      </member>
      <member>
        <name>tag</name>
        <value><string></string></value>
      </member>
      <member>
        <name>per_page</name>
        <value><int>5</int></value>
      </member>
    </struct></value></param>
  </params>
</methodCall>
```

Store Response in Collection: YOUTUBE_MUSIC_VIDEOS

Note: Be sure to replace YOUR_DEV_ID with your actual YouTube developer ID. Information on obtaining a developer ID is available at the link in the introduction.

6. Click Create



MUSIC VIDEOS APPLICATION

Create Process of Type Web Service

In order to invoke a Web service via a Web reference that you create in your application, you create a process on a page that calls the Web service. You are ready to do that now for the YouTube Music Videos reference because you have created the Web reference and have ensured that it works. To create the process that invokes the Web reference:

1. Navigate to the Page Definition page for page 1
2. In the Processes section, under Page Rendering, click the Create icon ()
3. For the Process Category, select **Web Services** and click **Next >**
4. For Name, enter **Call YouTube Music Video Service** and click **Next >**
5. For Web Service Reference, select **YouTube Music Videos** click **Next >**
6. Click **Create Process**

Extract the Embedded XML Document

The response returned by the YouTube Music Videos API is an XML document with another XML document escaped and embedded. The embedded document is the document you want to report on so you must create a process that extracts that document and then un-escapes it. The process will also update the collection used to store the response with the value of the extracted document.

To create a process to extract the embedded XML document:

1. In the Processes section, under Page Rendering, click the Create icon
2. For the Process Category, select **PL/SQL** and click **Next >**
3. For Name, enter **Extract Embedded Document**
4. For Sequence, enter **20** and click **Next >**

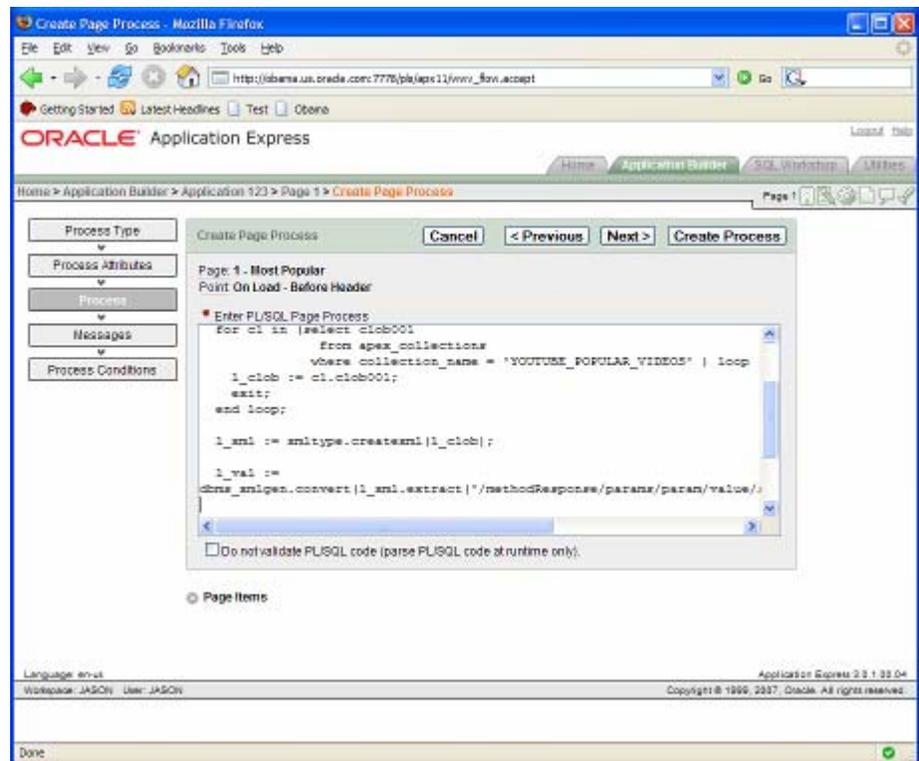
5. For Enter PL/SQL Page Process, enter:

```
declare
  l_clob clob;
  l_xml xmltype;
  l_val clob;
begin
  for c1 in (select clob001
             from apex_collections
             where collection_name = 'YOUTUBE_MUSIC_VIDEOS'
             ) loop
    l_clob := c1.clob001;
    exit;
  end loop;

  l_xml := xmltype.createxml(l_clob);

  l_val :=
dbms_xmlgen.convert(l_xml.extract('/methodResponse/params/param
/value/string/text()').getclobval(),1);

  apex_collection.update_member_attribute(
    p_collection_name => 'YOUTUBE_MUSIC_VIDEOS',
    p_seq              => '1',
    p_clob_number      => '1',
    p_clob_value       => l_val );
end;
```



6. Click **Create Process**

Create Report on Manual Web Reference

Now that you have the embedded document stored in the collection you can write a report on it. You will use the Create Report on a Manual Web Service result wizard. When using the Create Report on a Manual Web Service wizard you need to know information about the structure of the XML document that is returned in the response. This includes the XPath expression to the base node that you want to report on and the nodes that contain the information you will include in your report.

To Create a Report on a Manual Web Service:

1. In the Regions section, under Page Rendering, click the Create icon
2. For Type, select **Report** and click **Next >**
3. For Report Implementation, select **Report on collection containing Web service result** and click **Next >**
4. For Title, enter **Music Videos** and click **Next >**
5. For Web Reference Type, select **Manually Created** and click **Next >**
6. For Web Service Reference, select **YouTube Music Videos**
7. For SOAP Style, select **RPC**
8. For Message Format, select **Encoded**
9. For Result Node Path, enter:
`/video_list/video`
10. Click **Next >**
11. For Parameter Names, enter:
`title`
`author`
`rating_avg`
`description`
`url`
`thumbnail_url`
12. Click **Create SQL Report**

The basic application should now be complete. Click the Run Page icon on the wizard Success page to view the application. Login to the application with the same credentials you used to login to the Application Express workspace.

Title	Author	Rating_avg	Description	Url	Thumbnail_url
Mario Piano	sasukekun22	4.87	Mario Piano Dear All YouTubers. Thank you for watching my "Mario Piano" performance. I have recently created a YouTube account at http://www.youtube.com/profile?user=MIMLeung I look forward to making more videos for all of you and providing the best entertainment! Thanks sasukekun22 for posting this video! Sincerely, Video Game Pianist aka Martin Leung	http://www.youtube.com?v=eALZcy8Qk	http://img.youtube.com/v/eALZcy8Qk/default.jpg
Incubus - AT&T acoustic series	Skromblin	4.91	An Incubus Acoustic concert	http://www.youtube.com?v=eg4LnRVozg	http://img.youtube.com/v/eg4LnRVozg/default.jpg
Pink Floyd-Live 8	NBgr1133	4.86	london	http://www.youtube.com?v=i0VKUJehAE	http://img.youtube.com/v/i0VKUJehAE/default.jpg
Paul sings Nesusun Dorma high quality video/sound	myredroom	4.90	Paul's official websites have been announced. http://sonyimg.co.uk/artists/paul_potts/ Official Website. - http://www.paulpottsu.com/ Official Myspace. - http://www.myspace.com/officialpaulpottsmusic Please do not promote any other websites in the comments. Any such comments will be deleted and your account blocked. Paul Potts CDs now available, in stores in the UK or on line. Sunday...	http://www.youtube.com?v=1k08yxu57NA	http://img.youtube.com/v/1k08yxu57NA/default.jpg
Kingdom Hearts Piano Medley	GermanSeabass	4.90	SHEET MUSIC: http://germanseabass.livejournal.com/912.html MP3 available at my profile at last.fm: http://www.last.fm/music/Sebastian+Wolff [128kbps mp3; 16.2 MB] (Oh, and the freaky eyes - sorry, it's this: http://tinyurl.com/eaeg7) ---- Holay, so, in lieu of proper sheet music, I decided to arrange my favorite KH / KH2 songs for piano. In chronological order: Dearly Beloved,...	http://www.youtube.com?v=VQzRAaXxjek	http://img.youtube.com/v/VQzRAaXxjek/default.jpg

Refine the Report

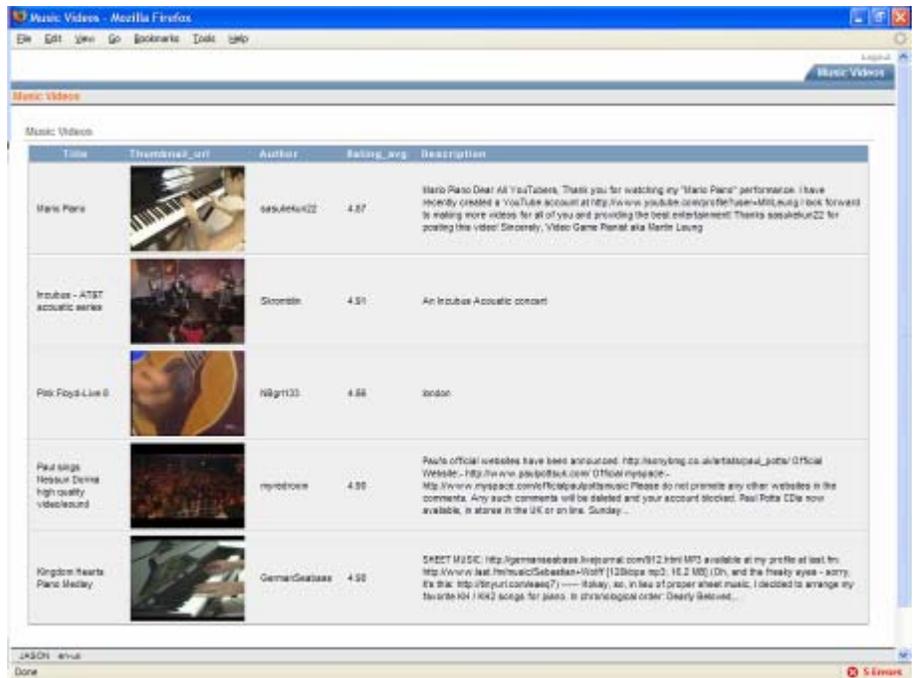
You can refine the report to include pagination, display the thumbnail image of the video, and also make the thumbnail image a link to the actual video on YouTube. To make these refinements:

1. Navigate to the Page Definition page for page 1. If you were previously running the page, you can click **Edit Page 1** from the developer links at the bottom of the page.
2. In the Regions section, under Page Rendering, click the **Report** link to the right of Music Videos
3. Under Layout and Pagination, for Pagination Scheme, select **None**
4. Under Column Attributes, click the edit icon (🔧) to the left of the thumbnail_url column
5. Under Column Formatting, for HTML Expression, enter:


```
<a href="#url#"></a>
```
6. Click **Apply Changes**

7. For the thumbnail_url column, click the move down arrow (▼) twice until it appears directly after the title column (note that the first click will place it at the top of the report)
8. For the url column, uncheck **Show**
9. Click **Apply Changes**

Run the page to view your refinements. You can either click the Run button or the run icon.



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<http://htmldb.oracle.com/forums>

Oracle Application Express References
<http://htmldb.oracle.com/references>

CONCLUSION

Oracle Application Express allows for building applications that integrate with other applications on other platforms by supporting the consumption of Web services. With the introduction of the Manual Web References feature in 3.0, Application Express can interact with XML-RPC style Web services and is no longer limited to interaction with only SOAP style Web services. Oracle Application Express makes it easy to build applications based on XML-RPC style Web services such as the YouTube Music Video API.



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