



Oracle APEX 4.2: Webservices

Denes Kubicek



AGENDA

APEX 4.2 – Webservice

- ▶ About Webservices
- ▶ Why Webservices?
- ▶ Webservices in APEX
- ▶ Webservice API – WSDL and RESTful Services from the Backend
- ▶ RESTful support in APEX 4.2





About Webservices

APEX 4.2 – About Webservices

- ▶ Web Services belong to the group of API's (application programming interface) accessed by HTTP (Hyper Transfer Protocol) and run on a hosting system.
- ▶ There are two groups of Web Services:
 - ▶ Big Web Services
 - ▶ RESTful Web Services



APEX 4.2 – About Webservices

- ▶ Protocols are XML plus HTTP (less commonly SMTP, FTP, and BEEP also used as transport)
- ▶ Message formats
 - ▶ SOAP (Simple Object Access Protocoll)
 - ▶ XML-RPC
 - ▶ REST (Representational State Transfer)
- ▶ List and Search in UDDI (Universal Description, Discovery and Integration)
- ▶ WSDL (Web Services Definition Language) – describes where, what and how.





Why Webservices?

APEX 4.2 – Why Webservices?

- ▶ You will use Webservices there, where you have a central point of query which serves different consumers.
- ▶ Examples:
 - ▶ Geocoding
 - ▶ Weather service
 - ▶ Many more...
- ▶ Since there are many different consumers running on different systems, standard format of communication is required.
- ▶ The consumers should be able to understand the language in order to consume the response of a Web Service.





Webservices in APEX

APEX 4.2 – Webservices in APEX

- ▶ Version 1.5 (2004)
 - ▶ UDDI Browsing
 - ▶ WSDL based – offers Forms und Forms with Report created by a Web-Service Wizard
 - ▶ Tools for testing of the references.
 - ▶ SOAP 1.1 RPC encryption.



APEX 4.2 – Webservices in APEX

- ▶ Version 3.0 (2007)
 - ▶ SOAP 1.1 document support.
 - ▶ Support for XML-RPC.
 - ▶ Simple authentication.
 - ▶ SSL support.



APEX 4.2 – Webservices in APEX



- ▶ Version 4.0 (2010)
 - ▶ apex_web_service API.
 - ▶ RESTful Web Service support.
 - ▶ SOAP 1.2 support.
 - ▶ Forms und Forms with Report created by Web-Service Wizard can be modified manually.
 - ▶ Reading and setting Cookies and HTTP Header
 - ▶ A possibility to provide RESTful Web Service reports in an application.

APEX 4.2 – Webservices in APEX

- ▶ Version 4.2 (2012)



- ▶ Support for RESTful Webservices through a separate interface within SQL Workshop.
- ▶ Improved support of the Web Service configuration and webservice consumer within Shared Components



Differences between WSDL and RESTful Webservice

APEX 4.2 – Webservice API

- ▶ WSDL Webservice is more flexible.
- ▶ WSDL is harder to code (Coding).
- ▶ RESTful is easier to configure.
- ▶ In APEX you can write your own RESTful Services.
- ▶ You can consume both – WSDL and RESTful.





Webservice API – WSDL and RESTful Services from the Backend

APEX 4.2 – Webservice API

- ▶ Webservice API enables usage of Web Services in all areas of APEX you can run it in an application or from the back end:
 - ▶ On Demand Process
 - ▶ Authentication
 - ▶ Validation
- ▶ It has functions for encrypting / decrypting of binary data from to base 64 encryption.
- ▶ Functions for responding based on XPath expressions.
- ▶ Setting and reading HHTTP Header and Cookies.



Requirements

- ▶ There are three requirements for using Web Services:



- ▶ You need to enable INTERNAL / ADMIN > Manage Instance > Security > Allow RESTful Access.
- ▶ Your Workspace-Schema has to get a GRANT from the SYS user:

```
ALTER USER dkubicek GRANT CONNECT THROUGH apex_rest_public_user;
```

- ▶ 11g database and above has to have a networking configured to support access to the resources. Usually:

```
BEGIN
  dbms_network_acl_admin.create_acl (acl          => 'www2.xml',
                                     description => 'WWW ACL',
                                     principal   => 'APEX_040200',
                                     is_grant    => TRUE,
                                     PRIVILEGE   => 'connect'
                                   );
  dbms_network_acl_admin.add_privilege (acl          => 'www2.xml',
                                       principal   => 'APEX_040200',
                                       is_grant    => TRUE,
                                       PRIVILEGE   => 'resolve'
                                      );
  dbms_network_acl_admin.assign_acl (acl => 'www2.xml', HOST => '*');
END;
/
COMMIT ;
```

Requirements

- ▶ You can create an ACL this way as well:



```
DECLARE
  acl_path  VARCHAR2 (4000);
  acl_id    RAW (16);
BEGIN
  SELECT acl
     INTO acl_path
     FROM dba_network_acls
     WHERE HOST = '*' AND lower_port IS NULL AND upper_port IS NULL;
  SELECT sys_op_r2o (EXTRACTVALUE (p.res, '/Resource/XMLRef')) INTO acl_id
     FROM xdb.xdb$acl a, path_view p WHERE EXTRACTVALUE (p.res, '/Resource/XMLRef') = REF (a)
     AND EQUALS_PATH (p.res, acl_path) = 1;
  DBMS_XDBZ.validateacl (acl_id);
  IF dbms_network_acl_admin.check_privilege (acl_path, 'APEX_040200', 'connect') IS NULL
  THEN dbms_network_acl_admin.add_privilege (acl_path, 'APEX_040200', TRUE, 'connect');
END IF;
EXCEPTION
  WHEN NO_DATA_FOUND
  THEN
    dbms_network_acl_admin.create_acl ('power_users.xml', 'ACL that lets power users to connect
to everywhere', 'APEX_040200', TRUE, 'connect');
    dbms_network_acl_admin.assign_acl ('power_users.xml', '*');
END;
/
COMMIT ;
```