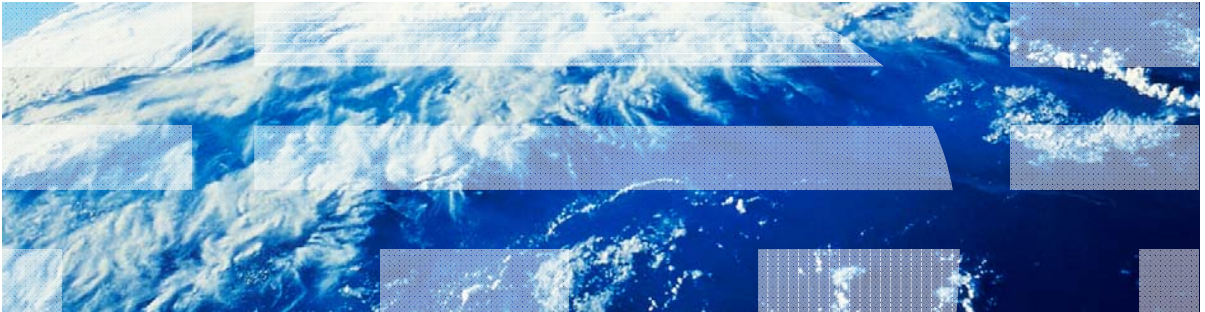


IBM Worklight V6.0.0 Getting Started

HTTP adapter – Communicating with HTTP back-end systems



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Agenda

- What is it?
- How does it work?
- Creating the adapter
- Exercise

What is it?

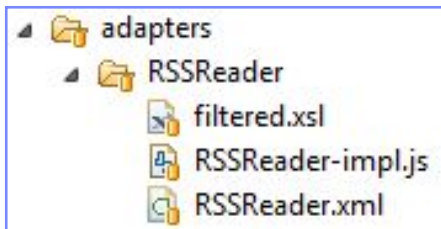
- A Worklight® HTTP adapter:
 - Works with RESTful and SOAP-based services
 - Can read structured HTTP sources, for example RSS feeds
 - Allows sending a GET or POST HTTP request and retrieves data from the response headers and body
 - Is easily customizable with simple server-side JavaScript™
 - Enables optional server-side filtering
 - Retrieved data can be in XML, HTML, JSON, or plain text formats

Agenda

- What is it?
- How does it work?
- Creating the adapter
- Exercise

How does it work?

- The adapter is configured with XML
- Basic adapter structure:



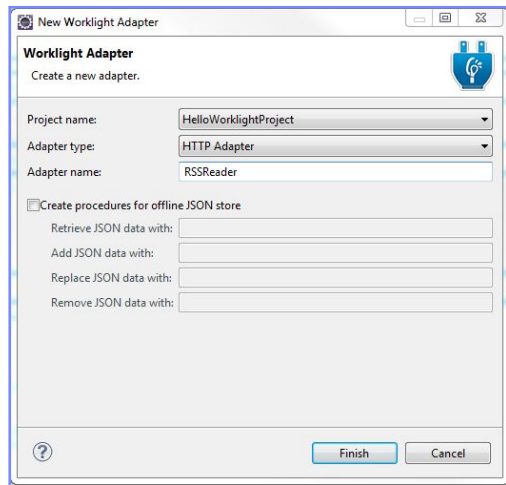
- Use XML to define the adapter properties and procedures
- Use JavaScript to create procedures
- *Optional:* Use XSL to filter received records and fields

Agenda

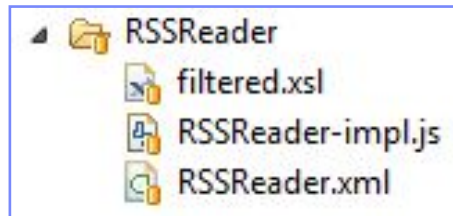
- What is it?
- How does it work?
- Creating the adapter
- Exercise

Creating the HTTP adapter

- Within Worklight Studio, right-click the Worklight project and add a Worklight HTTP adapter

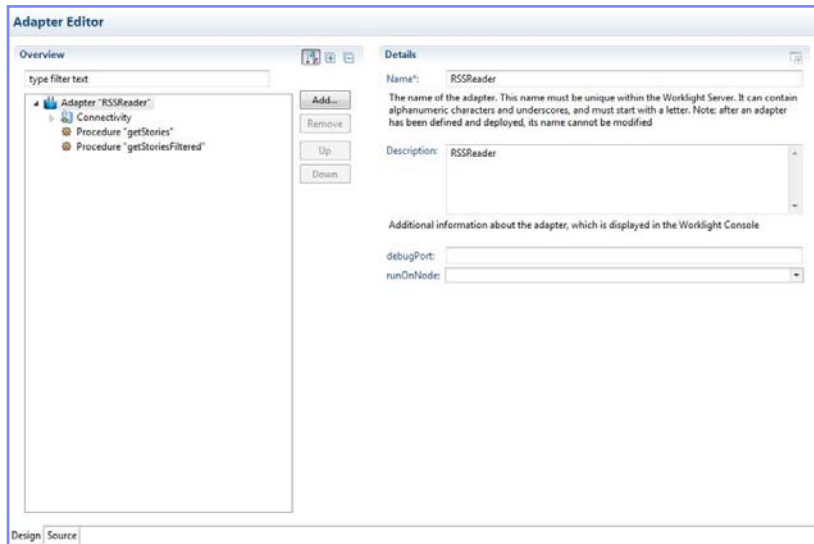


- A standard adapter structure is created



Adapter XML editor

- Settings and metadata are stored in the adapter XML file
- You can use either Design or Source editor to modify the adapter XML file



XML File: connectivity settings

- To edit the adapter XML file, you must:
 - Set protocol to HTTP or HTTPS
 - Set HTTP domain to domain part of HTTP URL
 - Set TCP Port

```
<connectivity>
  <connectionPolicy xsi:type="http:HTTPConnectionPolicyType">
    <protocol>http</protocol>
    <domain>rss.cnn.com</domain>
    <port>80</port>
    <!-- Following properties used by adapter's key manager
    <sslCertificateAlias></sslCertificateAlias>
    <sslCertificatePassword></sslCertificatePassword>
    -->
  </connectionPolicy>
  <loadConstraints maxConcurrentConnectionsPerNode="2" />
</connectivity>
```

XML File: procedures declaration

- Edit the adapter XML file
- Declare the required procedures

```
<wl:adapter name="RSSReader"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:wl="http://www.worklight.com/integration"
  xmlns:http="http://www.worklight.com/integration/http">

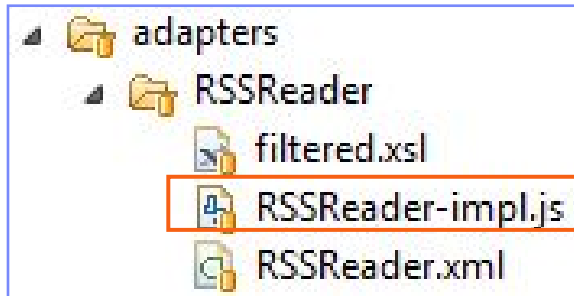
  <displayName>RSSReader</displayName>
  <description>RSSReader</description>
  <connectivity>
    <connectionPolicy xsi:type="http:HTTPConnectionPolicyType">
      <protocol>http</protocol>
      <domain>rss.cnn.com</domain>
      <port>80</port>
      <!-- Following properties used by adapter's key manager
      <sslCertificateAlias></sslCertificateAlias>
      <sslCertificatePassword></sslCertificatePassword>
      -->
    </connectionPolicy>
    <loadConstraints maxConcurrentConnectionsPerNode="2" />
  </connectivity>

  <procedure name="getStories"/>
  <procedure name="getStoriesFiltered"/>

</wl:adapter>
```

JS File: procedures implementation (1 of 4)

- Procedures are implemented in the adapter JavaScript file



JS File: procedures implementation (2 of 4)

- The service URL is used for procedure invocation.
- Some parts of the URL are constant; for example, <http://example.com/>. They are declared in the XML file.
- Other parts of the URL can be parameterized, that is, substituted at run time by parameter values provided to the Worklight Procedure.
- URL parts that can be parameterized are:

- Path elements
- Query string parameters
- Fragments

http://example.com/rest/customers?custid=12

Path elements

Query string

- See the IBM Worklight user documentation for advanced options for adapters, such as cookies, headers, and encoding.

JS File: procedures implementation (3 of 4)

- The procedure name in the JavaScript file must be the same as in the XML file.
- The required invocation parameters are method, path, and returnedContentType
- The procedure can be parameterized at run time.

```
<connectivity>
  <connectionPolicy xsi:type="http:HT
    <protocol>http</protocol>
    <domain>rss.cnn.com</domain>
    <port>80</port>
  </connectionPolicy>
  <loadConstraints maxConcurrentConne
</connectivity>

<procedure name="getStories"/>
<procedure name="getStoriesFiltered"/>
```

The procedure XML file



```
function getStories(interest) {
  path = getPath(interest);

  var input = {
    method : 'get',
    returnedContentType : 'xml',
    path : path
  };

  return WL.Server.invokeHttp(input);
}
```

The procedure JavaScript file

JS File: procedures implementation (4 of 4)

- To invoke an HTTP request, use the `WL.Server.invokeHttp` method.
- Provide an input parameters object.
- You must specify:
 - The HTTP method: GET or POST
 - The returned content type: XML, JSON, HTML, or plain
 - The service path
 - The query parameters (optional)
 - The request body (optional)
 - The transformation type (optional)
 - For a complete list of invocation options, see the IBM Worklight user documentation.

```
function getStoriesFiltered(interest) {  
    path = getPath(interest);  
  
    var input = {  
        method : 'get',  
        returnedContentType : 'xml',  
        path : path,  
        transformation : {  
            type : 'xslFile',  
            xslFile : 'filtered.xsl'  
        }  
    };  
  
    return WL.Server.invokeHttp(input);  
}
```

XSL transformation filtering

- XSL transformation can be applied to the received data
- Can be used to filter received data
- To apply, specify the transformation options in the procedure invocation input parameters

```
function getStoriesFiltered(interest) {
    path = getPath(interest);

    var input = {
        method : 'get',
        returnedContentType : 'xml',
        path : path,
        transformation : {
            type : 'xslFile',
            xslFile : 'filtered.xsl'
        }
    };

    return WL.Server.invokeHttp(input);
}
```


Agenda

- Creating SOAP-based service requests
- Invocation parameters

Creating a SOAP-based service request

- The `WL.Server.invokeHttp` method can be used to create a SOAP envelope, which can be sent directly.
 - To invoke a SOAP-based service in an HTTP adapter, you must encode the SOAP XML envelope within the request body.
 - Encoding XML within JavaScript is simple by using E4X, which is officially part of JavaScript 1.6
 - This technology can be used to encode any type of XML document, not only SOAP envelopes.
- If you receive error messages for SOAP envelopes, disable the JavaScript validator.
 - Click **Project > Properties > Builders** and clear **JavaScript Validator**

Creating a SOAP-based service request

- Use JavaScript to create a SOAP Envelope

```
var request =
<soap:Envelope xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
"http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <CelsiusToFahrenheit xmlns="http://tempuri.org/">
      <Celsius>{celsiusTemp}</Celsius>
    </CelsiusToFahrenheit>
  </soap:Body>
</soap:Envelope>;
```

Creating a SOAP-based service request

- It is possible to insert Java™ code and variables into SOAP XML. It is evaluated at run time.

```
var request =
<soap:Envelope
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <messageHeader>
      <originatingIP>
        { WL.Server.configuration["local.IPAddress"] }
      </originatingIP>
      <requestTimestamp>
        { new Date().toLocaleString() }
      </requestTimestamp>
    </messageHeader>
    <ConversionRate xmlns="http://www.webserviceX.NET/">
      <FromCurrency>USD</FromCurrency>
      <ToCurrency>EUR</ToCurrency>
    </ConversionRate>
  </soap:Body>
</soap:Envelope>;
```

Agenda

- Creating SOAP-based service request
- Service request invocation

Service request invocation (1 of 2)


- The `WL.Server.invokeHttp(options)` method is used to invoke a request for a SOAP service
- The Options object must include the following properties:
 - A method – usually POST
 - A returnedContentType – usually XML
 - A path – a service path
 - A body
 - content – SOAP XML as a string
 - contentType

```
var options = {  
  method : 'post',  
  returnedContentType : 'xml',  
  path : '/webservices/tempconvert.asmx',  
  body: {  
    content: request.toString(),  
    contentType: 'text/xml; charset=utf-8'  
  }  
};
```


Service request invocation (2 of 2)

- Full SOAP-based service invocation procedure example


```
function temperatureConvertor(celsiusTemp) {  
    // Use USD and EUR as fromCurrency and toCurrency variables. Case is impo  
  
    var request =  
        <soap:Envelope xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"  
            "http://schemas.xmlsoap.org/soap/envelope/">  
            <soap:Body>  
                <CelsiusToFahrenheit xmlns="http://tempuri.org/">  
                    <Celsius>{celsiusTemp}</Celsius>  
                </CelsiusToFahrenheit>  
            </soap:Body>  
        </soap:Envelope>;  
  
    var input = {  
        method : 'post',  
        returnedContentType : 'xml',  
        path : '/webservices/tempconvert.asmx',  
        body : {  
            content: request.toString(),  
            contentType: 'text/xml; charset=utf-8'  
        }  
    };  
  
    var result = WL.Server.invokeHttp(input);  
  
    return result.Envelope.Body;  
}
```



SOAP envelope



Options



Request invocation

Agenda

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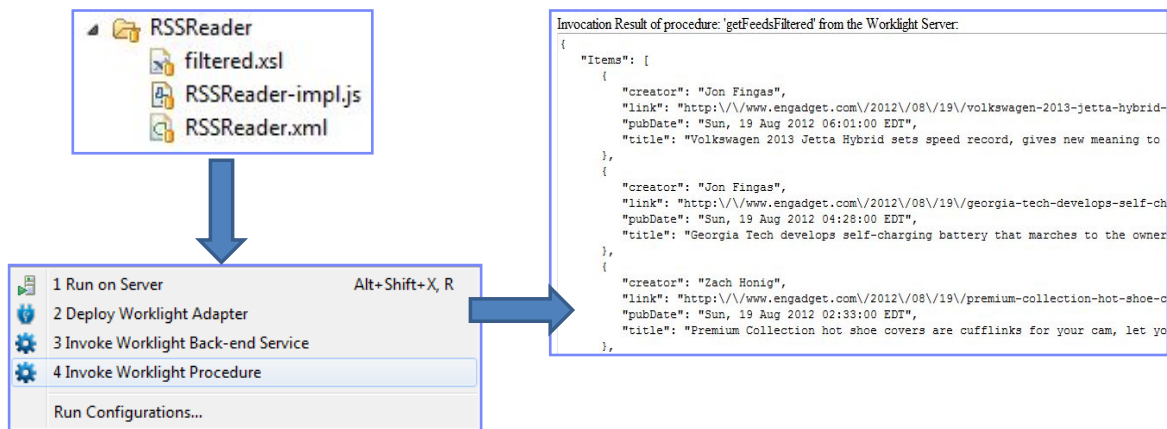
Exercise

Engadget RSS Reader

- Create a Worklight HTTP adapter called RSSReader.
- Connect to the Engadget RSS feed at <http://engadget.com/rss.xml>
- Declare and implement a getFeeds procedure, which retrieves the RSS feed.
- Declare and implement a getFeedsFiltered procedure, which does the same as getFeeds, but returns only the title, the creator, the pubDate, and the link fields.
- Deploy the adapter and use the Worklight Studio to test your procedures as described in this module.

Exercise Solution

- The sample for this training module can be found on the Getting Started page of the IBM Worklight documentation website at <http://www.ibm.com/mobile-docs>



Check yourself questions

- HTTP adapters can be used to:
 - Work with RESTful services
 - Work with SOAP services
 - Issue GET and POST requests
 - All of the above
- What format of data can the HTTP adapter retrieve and automatically parse?
 - XML
 - JSON
 - Plain text
 - All of the above
- Can you use the HTTP adapter with non-standard HTTP ports?
 - You must use port 80 for HTTP and port 443 for HTTPS
 - You can use any port for HTTP but only port 443 for HTTPS
 - You must use port 80 for HTTP but can use any port for HTTPS
 - It is possible to use any port for both HTTP and HTTPS

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