The things used for the Demo

1. WSO2 Enterprise Service Bus (ESB)
2. WSO2 Identity Server (IS)
3. A Web Service (SimpleStockQuoteService of WSO2 ESB Samples)

The demo setup

1. Uses the SimpleStockQuoteService (SOAP) as the backend
2. Uses WSO2 ESB to mediate it, and expose in the form of a REST API
3. Uses WSO2 IS as an OAuth server to authenticate the REST API

Steps

- Start SimpleStockQuoteService | http://{host}:9000/services
  https://docs.wso2.com/display/ESB481/Sample+0%3A+Introduction+to+ESB

- Set port offsets the products as follow
  ESB port offset = 10
  IS port offset = 20

- Start the ESB and IS

- Open the provided projects with WSO2 Developer Studio
  - ***AllyBank-CompositeApplication***
  - *AllyBank-ESBProject*
  - *AllyBank-RegistryProject*
  - *CustomMediatorProject*

- Export the Composite Archive (*AllyBank-CompositeApplication*) from the WSO2 Developer Studio (save as *.car)

- Deploy the CAR file, on WSO2 ESB
  http://wso2.com/library/articles/2011/09/create-deploy-car-file-standalone-wso2-server-wso2-stratos/

- Log into IS management console and create a service provider and an Inbound OAuth authentication
  https://docs.wso2.com/display/IS500/Configuring+Inbound+Authentication+for+a+Service+Provider

- Get client_key and client_secret

- Use token API of IS to generate Access Token

  curl -v -k -X POST --user client_key:client_secret -H "Content-Type: application/x-www-form-urlencoded;charset=UTF-8" -d 'grant_type=password&username=admin&password=admin' https://localhost:9463/oauth2/token

... or use the provided SOAP-UI/ReadyAPI project providing the client_key:client_secret combination encoded in base64 to provide with basic auth header.

Authorization **Basic** {encodeBase64(client_key:client_secret)}
Use something like https://www.base64encode.org/

- A response needs to be delivered similar to,

```
{
 "token_type": "bearer",
 "expires_in": 3299,
 "refresh_token": "8e63353e4f9b4468c95a12d9311093",
 "access_token": "e7dba3dc394fd2a077ee9854bb135"
}
```

- Invoke the StockAPI using the generated access_token
  Authorization **Bearer** {access_token}

- A response needs to be delivered similar to,

```
{"getQuoteResponse": {"return": {
 "@type": "ax21:GetQuoteResponse",
 "change": 4.027511698373331,
 "earnings": 13.259567133412038,
 "high": 152.02893879212672,
 "last": 146.7808331484884,
 "lastTradeTimestamp": "Thu May 14 02:33:30 EDT 2015",
 "low": 152.13151943771885,
 "marketCap": 5.5819323194555E7,
 "name": "IBM Company",
 "open": 152.40419357640985,
 "peRatio": 25.310205964012297,
 "percentageChange": 2.401643393800928,
 "prevClose": 167.69815655267809,
 "symbol": "IBM",
 "volume": 18470
}}}
```

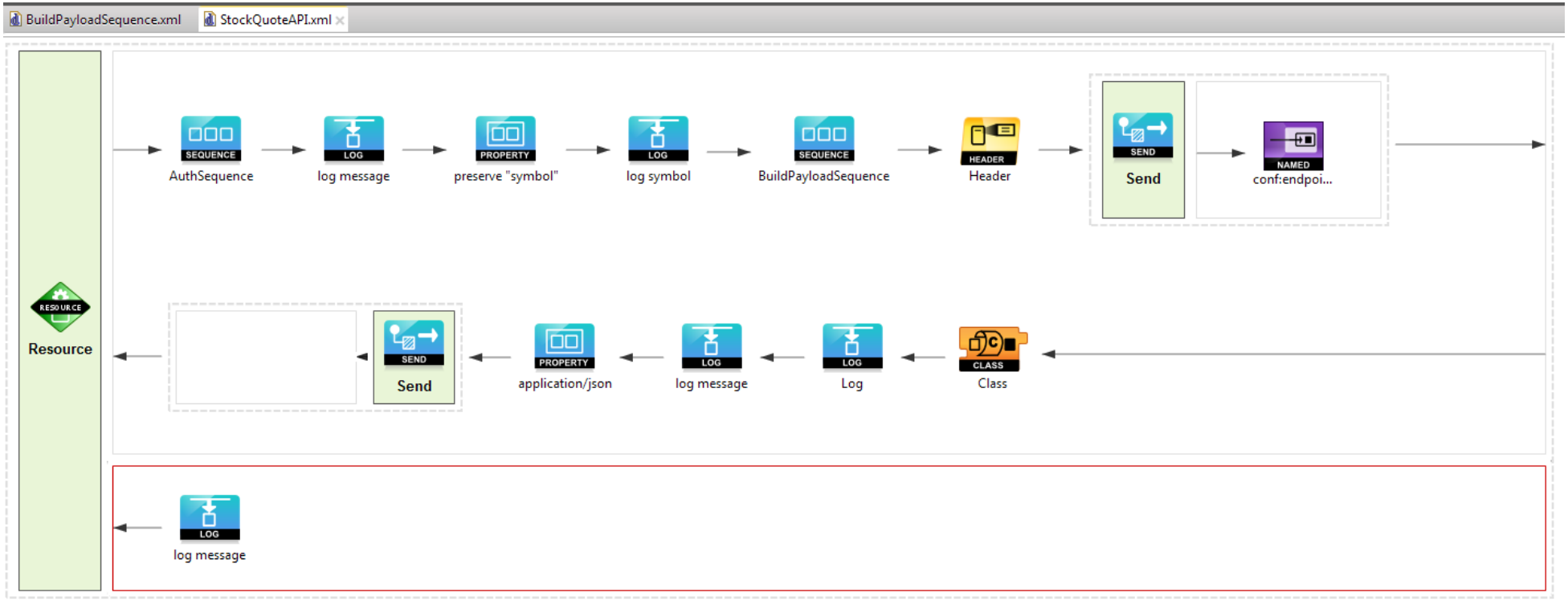
- Mediation flow - described

```
<?xml version="1.0" encoding="UTF-8"?>
<api xmlns="http://ws.apache.org/ns/synapse" name="StockAPIX" context="/stockapix">
   <resource methods="GET" uri-template="/{symbol}">
      <inSequence>
         <!-- OAuth based validation -->
         <sequence key="AuthSequence" />
         <!-- logs incoming message -->
         <log level="full" description="log message" />
```

```
         <!-- extracts 'symbol' value form URL (resource) and preserves it within
mediation context (synapse scope) -->
         <property name="symbol" expression="get-property('uri.var.symbol')"
scope="default" type="STRING" description="preserve &quot;symbol&quot;" />
         <!-- logs the preserved 'symbol' value -->
         <log level="custom" description="log symbol">
            <property name="Symbol is " expression="get-property('symbol')" />
         </log>
         <!-- builds a brand new SOAP message payload (using the extracted symbol
value)-->
         <sequence key="BuildPayloadSequence" />
         <!-- Injects a new header called 'Action' -->
         <header name="Action" scope="default" value="getQuote" />
         <!-- delivers the new SOAP message to a backend service -->
         <send>
            <endpoint key="conf:endpoints/StockQuoteEndpoint.xml" />
         </send>
      </inSequence>
      <outSequence>
         <!-- reads response from the backend, and sets a new property called
'riskFactor' within mediation context -->
         <class name="com.demo.mediators.SampleClassMediator" />
         <!-- logs 'riskFactor' peroperty value -->
         <log level="custom">
            <property name="RISK" expression="get-property('riskFactor')" />
         </log>
         <!-- logs the response -->
         <log level="full" description="log message" />
         <!-- converts XML response into JSON -->
         <property name="messageType" value="application/json" scope="axis2"
type="STRING" description="application/json" />
         <!-- sends response to the client -->
         <send />
      </outSequence>
      <faultSequence>
         <log level="custom" description="log message">
            <property name="ALERT" value="ERROR OCCURED" />
         </log>
      </faultSequence>
   </resource>
</api>
```

```
<?xml version="1.0" encoding="UTF-8"?>
<api xmlns="http://ws.apache.org/ns/synapse" name="StockAPIX" context="/stockapix">
  <resource methods="GET" uri-template="/{symbol}">
    <inSequence>
      <!-- OAuth based validation -->
      <sequence key="AuthSequence"/>

      <!-- logs incoming message -->
      <log level="full" description="log message"/>

      <!-- extracts 'symbol' value form URL (resource) and preserves it within mediation context
(synapse scope) -->
      <property name="symbol" expression="get-property('uri.var.symbol')" scope="default"
type="STRING" description="preserve &amp;quot;symbol&amp;quot;"/>

      <!-- logs the preserved 'symbol' value -->
      <log level="custom" description="log symbol">
        <property name="Symbol is " expression="get-property('symbol')"/>
      </log>

      <!-- builds a brand new SOAP message payload (using the extracted symbol value)-->
      <sequence key="BuildPayloadSequence"/>

      <!-- Injects a new header called 'Action' -->
      <header name="Action" scope="default" value="getQuote"/>

      <!-- delivers the new SOAP message to a backend service -->
      <send>
        <endpoint key="conf:endpoints/StockQuoteEndpoint.xml"/>
      </send>
    </inSequence>
    <outSequence>
        <!-- reads response from the backend, and sets a new property called 'riskFactor' within
mediation context -->
      <class name="com.demo.mediators.SampleClassMediator"/>

      <!-- logs 'riskFactor' peroperty value -->
      <log level="custom">
        <property name="RISK" expression="get-property('riskFactor')"/>
      </log>

      <!-- logs the response -->
      <log level="full" description="log message"/>

      <!-- converts XML response into JSON -->
      <property name="messageType" value="application/json" scope="axis2" type="STRING"
description="application/json"/>

      <!-- sends response to the client -->
```

```
        <send/>
      </outSequence>
      <faultSequence>
        <log level="custom" description="log message">
          <property name="ALERT" value="ERROR OCCURED"/>
        </log>
      </faultSequence>
    </resource>
</api>
```


BuildPayloadSequence.xml
StockQuoteAPI.xml
RESOURCE
Resource
SEQUENCE
AuthSequence
LOG
log message
PROPERTY
preserve "symbol"
LOG
log symbol
SEQUENCE
BuildPayloadSequence
HEADER
Header
SEND
Send
NAMED
conf:endpoi...
SEND
Send
PROPERTY
application/json
LOG
log message
LOG
Log
CLASS
Class
LOG
log message