Connectors TLS v1.2/Two-Way SSL

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This article describes the process for doing Two-Way SSL in Connector Builder. Two-Way SSL is also sometimes referred to as SSL, Mutual TLS/SSL, Two-Way TLS, or TLS v1.2.

Not sure what that is? If your API says you need to send a signed certificate for each request, there is a chance this article will help.

For this example, I will be building authentication for ADP WorkforceNow and making a GET request following these steps:

- 1. Create a Java KeyStore formatted certificate.
- 2. Configure the connector to accept our certificate, and finish authentication.
- 3. Create an instance.
- 4. Validate with a GET call.

At a more granular level:

- 1. Gather files needed create a keystore. I have a .pem file and a .key file, but you may instead/also have a .cer file.
- 2. Convert the .pem file to a .P12 (pks12) file
- 3. Create the Java KeyStore from the .P12 (pks12) file.
- 4. Base64 encode the Java KeyStore (.jks) file.
- 5. Create an connector with custom authentication
- 6. Add a custom resource and set "API Type" to "On Provision"
- 7. Exchange the Basic Auth token with the Bearer token
- 8. make a GET Call.

Step 1: Create a Java KeyStore formatted certificate

You'll need a couple of files to create your certificate. Usually, this is a .cer , .pem , or .key file (or a combination thereof). For the ADP APIs, I have a .pem and a .key file

• In the directory with your files (.cer , .pem , .key), run the following command. Make sure to replace the file names with yours!

```
openssl pkcsl2 -export -in MyPemFile.pem -inkey myKeyFile.key -certfilemyPemFile.pem -out myPKSl2OutputFile.pl2
```

• When prompted, create a password.

```
[elements-mac95:Downloads kellygold$
[elements-mac95:Downloads kellygold$
[elements-mac95:Downloads kellygold$ openssl pkcs12 -export -in <u>and proceed_auth.pen</u> -inkey ./talend_proc_auth.key -certfile <u>Holemannand_auth.</u>
pem -out <u>Holemannand_auth.pl2</u>
[Enter Export Password:
[Verifying - Enter Export Password:
elements-mac95:Downloads kellygold$]
```

- Convert the P12 (pks12) file to a .jks file (Java KeyStore formatted certificate)
- Run the following command to convert the KeyStore, enter passwords when prompted (save this). Make sure to enter your file names!



Enter source keystore password: Entry for alias 1 successfully imported. Import command completed: 1 entries successfully imported, 0 entries failed or cancelled

You should now have a .jks file in the same directory.

Step 2: Configure the connector to accept our certificate, and finish authentication

The ADP connector authentication is as follows

Enter destination keystore password:

Re-enter new password:

- 1. Make a POST to the /Token Endpoint (correct; do not authorize for ADP).
 - 1. Include a Basic HTTP Auth header with ClientID + Client Secret Base64 encoded with a colon between ClientID:ClientSecret
 - 2. Include the certificate on the request.
- 2. Set the returned Access_Token body parameter as the Authorization Bearer Token for ongoing requests.
- Create a connector with custom authentication

Element Name- Element I	Key- O	All the API documentation for the service to quickly reference information about your new element.	
Description*	Doc	umentation URL	
Please select a hub for your element. This will define the hub resources fo	r the element.	for API Version	
Next, select the type of service you would like to connect to	•	Optionally, upload a logo image for your ele	ment
REST API	•	Click to upload	1
custom	. L.]
Basic			
CAum 1.0			
CAUD 2.0			
Onum 2.0 Password			
AWS V2			
AWS V4			
Custom			

• In Setup>Configuration, select "ADD CONFIGURATION" and select "SSL". This should add two configuration items to our connector (Base64.encoded.jks and jks.password)

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• Next, we'll need to add configuration for our ClientID, ClientSecret, and Access Token. You may choose to put default values for these for testing, although note that for a production-ready connector, they will need to be parameterized.

Base URL								
https://accounts.adp.c	om							?
Pagination Type			÷	Paginati	on Max			?)
Content-Type Header				Accept I	feador			
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- Add a Global-Pre-Hook setting your Oauth Token to be sent in the Headers on a request
 - let Authorization = `Bearer
 - \${configuration['oauth.token']}`;
 done({'request_vendor_headers': {Authorization}})

Placeba and an request "websiteware" and can be used to programmatically manipulate this stream. Rische applied at this level will be applied to every request. If you'd only house on that endpoints.	requests made to or responses coming from The to manipulate certain requests, add a
PostRequest Hook	
PreRequest Hook	
1 let Authorization = 'bearer S(configuration('couth.token'))'; 2 dene(('request_vender_beaker'; (Authorization)))	Context Reference Example
	request_method diff method of the AFS rail, hepresented atting
	request_weaks_method end NYPE worked this will be passed to the provider, Represented as a strong
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	request_weaks_headers
	report_path August path of the API call. Augustated a stating
	request_weader_path () hopport path that will be sett to the provider. If the path starts such long th path vill be used as the prepare ML. Supremated as a string

- Now that we've set up our configuration, we need to add an authentication resource and a bit of Javascript to make everything work.
- On Resources tab, Add a new resource (POST in ADP's case). This API should reflect the first call made to the vendor during authentication. Since we chose Custom, it's up to the developer to define how/what to call to retrieve the access token.
 - Set the "Resource Type" to "On Provision", which will call this API when we provision a connector instance.
 - Note the vendor requirements from the ADP API documentation:

Your consumer application must:

- · Send the request with the X.509 certificate provided during registration.
- Pass all parameters in a URL-encoded format with UTF-8 character encoding as specified by the HTTP header Content-Type: application/x-www-form-urlencoded.

The actual request might look like the following example:

```
POST /auth/oauth/vZ/token HTTP/1.1
Host: accounts.adp.com
Authorization: Basic QURQVGFibGV00nRoZXRhYmxldHBhc3N3b3Jk
Content-Type: application/x-www-form-urlencoded
grant_type=client_credentials
```

• We still need to tell ADP our Grant-Type. To do this modify the Body "Parameter" on the connector resource we've created.

(See the finished product for example)

- Last, add a bit of Pre-Hook Javascript to 1. Set the Basic Auth header on the provisioning request (1st request), and 2. Set the oauth.api.key to the access_token returned in the response.
 - let Authorization = `Basic \${CE.b64(configuration['oauth.api.key'] + ':' +
 configuration['oauth.api.secret'])}`;
 done({'request_vendor_headers': {Authorization, 'Content-Type':
 - 'application/x-www-form-urlencoded'}})
- Post-Hook Javascript:

```
if (response_iserror)
done();
done(('configuration':
{
    'oauth.token':
    response_body.access_token
    }))
The Finished Auth
Resource
```

Auth								Endpoints	Bulk
POST /hubs/general/Auth	Maps to →	POST -	https://a	ccounts.adp.	>			08	ō × ^
Configuration									^
Resource Type ON PROVISION		▼ Re	quest Root Key	,			> Response Root Key		
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S PostRequest Hook									
<pre>1 if (response_iserror) done(); 2 * done()('configuration': {</pre>							Context Reference	Example	
<pre>3 'oauth.token': response_body.a i 4)))</pre>	ccess_token						response_iserror If the response was an error or no	t. Only resp	onse
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							<pre>request_method HTTP method of the API call. Repre</pre>	sented as a	string
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							HTTP method of the API call. Repre	esented as a	string
							HTTP method that will be passed to	the provide	r.

Step 3: Create an instance

- To create an instance (in this case, for ADP), enter the following:
 - Base64 JKS (java KeyStore) file
 - To base64 encode your keystore file, navigate to the directory and run:
 - base64

 inyJXSCert.jks

 Import Score bash

 Import Score bash
 </tr
 - JKS Password set when you created the KeyStore (jks) file
 - ClientID
 - ClientSecret

Name*	
Configuration	
IKS Password	
	(C
Dauth API Key	
Da:	
Dauth API Secret	(r)
62¢	3
	()
Oauth Token	2
Oauth User Token	
Default select fields	?
Filter null values from the response	
true	• ?
Element Instance Tag	-
udd a new tag to the element instance	
Event Configuration	
rnis Element does not support Events	

Step 4: Validate result by making a GET call

GET	/worker-hire Sear	ch for /	/ 8 🖱 × 🔺
Parameter	s		Cancel
Name		Description	
Authoriza string (header) where string (query)	ition required	The authorization tokens. The format for the header value i User The CEQL search expression	s 'Element , User '
	Execu	to E	Clear
curl curl -X GET -N "Accep	"https://staging.cloud- t: application/json" -H	elements.com/elements/api-v2/worker-hire?debug=tru "Authorisatios: Uper	e" -H "Content-Type: application/json"
Response		GET:/worker-hire	-
REQUEST	PREHOOK VENDORREQUE Details	ST VENDORRESPONSE POSTHOOK MILIUM	
200	Headers		
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