IBM Cloud Private 3.1.2

Lab Exercise # 5
Application Modernization
Duration: 45 Min

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Objective

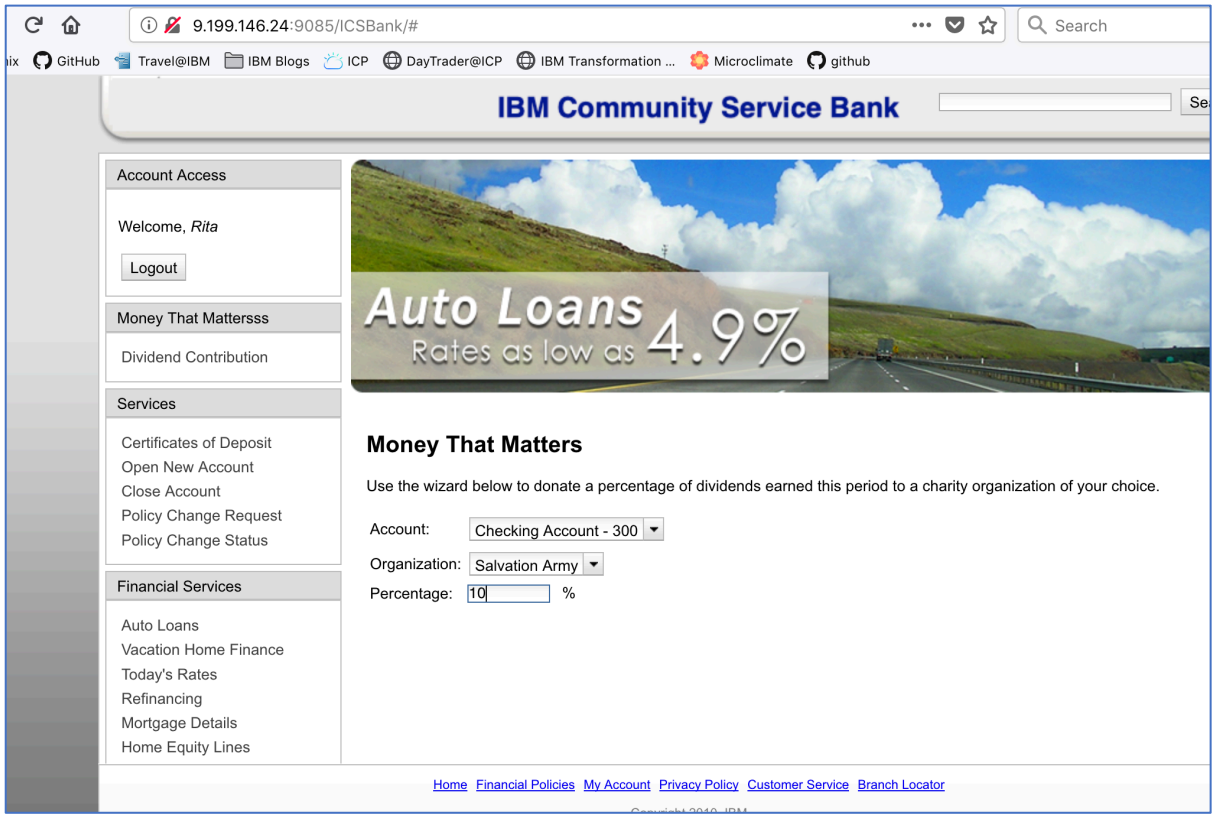
In this lab, we will use Transformation Advisor to evaluate an on-premise traditional WebSphere application and deploy the same on IBM Cloud Private (ICP) environment.

We'll use Transformation Advisor and look at the recommendations, then download the generated migration bundle, which will help us deploy the application on ICP.

Overview of application, which is planned for modernization

Application Scenario

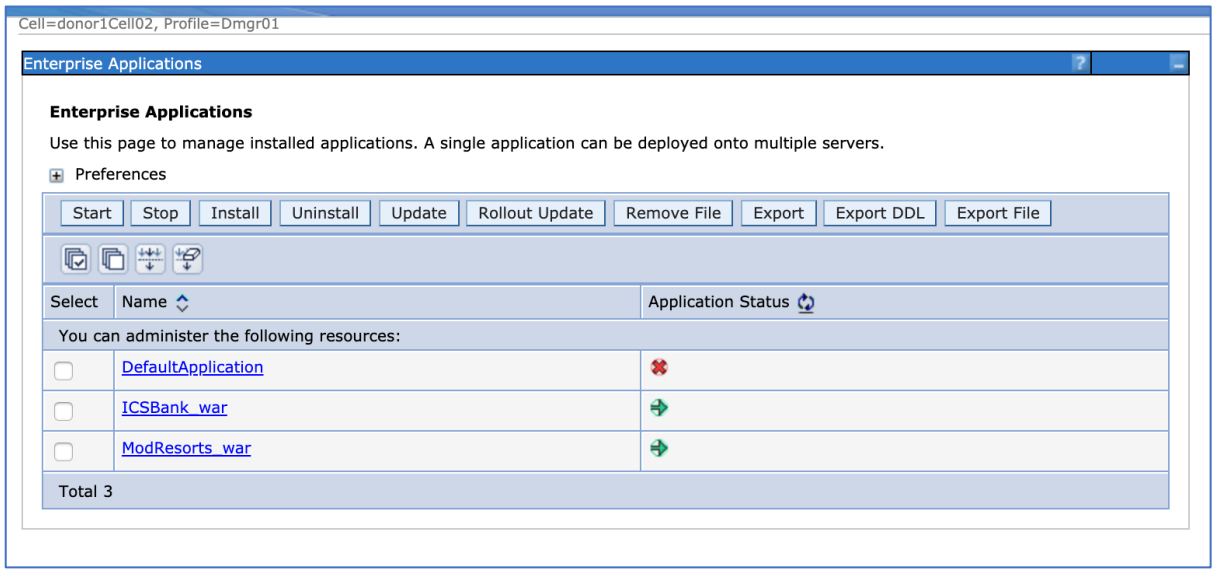
Customer has a Banking application called ICSBank. Along with the regular banking services, this application provides a wizard to donate a percentage of dividends earned this period to a charity organization of choice.



Existing Application and middleware details

Currently customer uses WebSphere Application Server 8.5.5.12 and DB2 V9.5 and both the servers are hosted in an on-prem environment.

WAS Admin Console:



Current environment has total 3 applications, including ICSBank Application.

Lab Preparation:

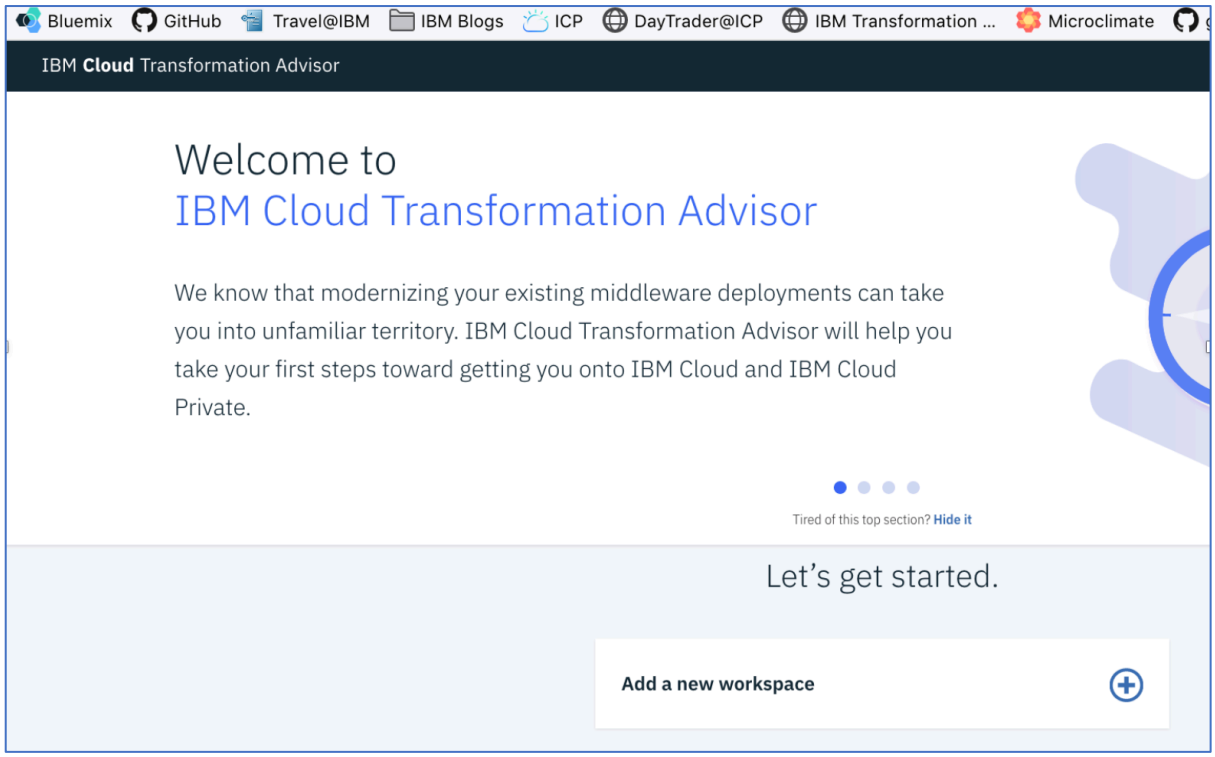
- Transformation Advisor is installed on the ICP lab environment in default namespace.
- Following files are given to you along with this lab.
  - ICSBank.war (presumed to be deployed on WAS ND Environment at the Bank).
  - Dmgr01.zip, this would be your Transformation Advisor data collected from existing WAS environment.

Detailed steps for Application Modernization Lab:

Step 1: Open Transformation Advisor from ICP Console:

Once installed access the URL from your browser as described below, you will see the following screen.

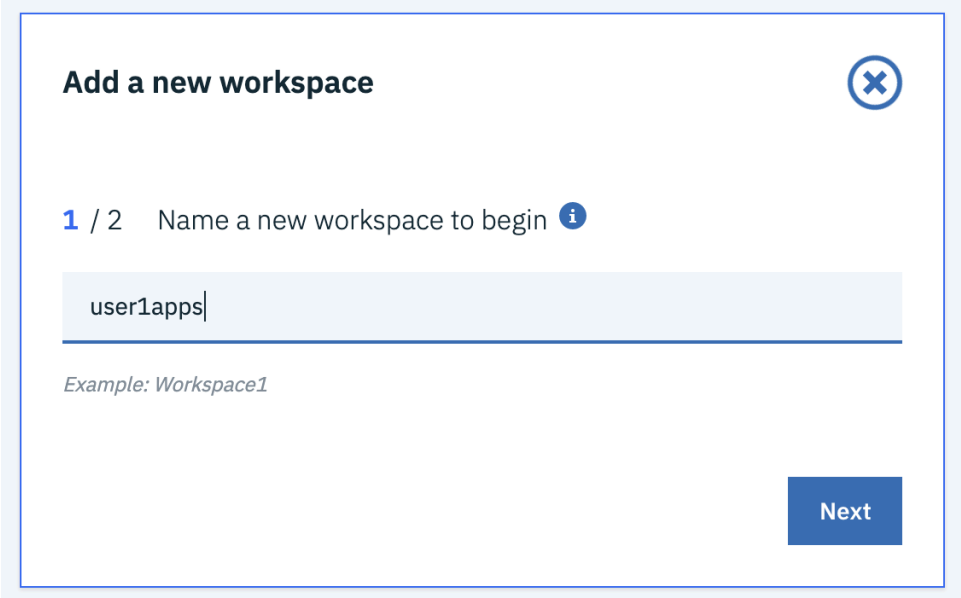
- Open transformation advisor URL https://172.16.70.58/transadv-ui
- Transformation Advisor screen is presented as shown below:

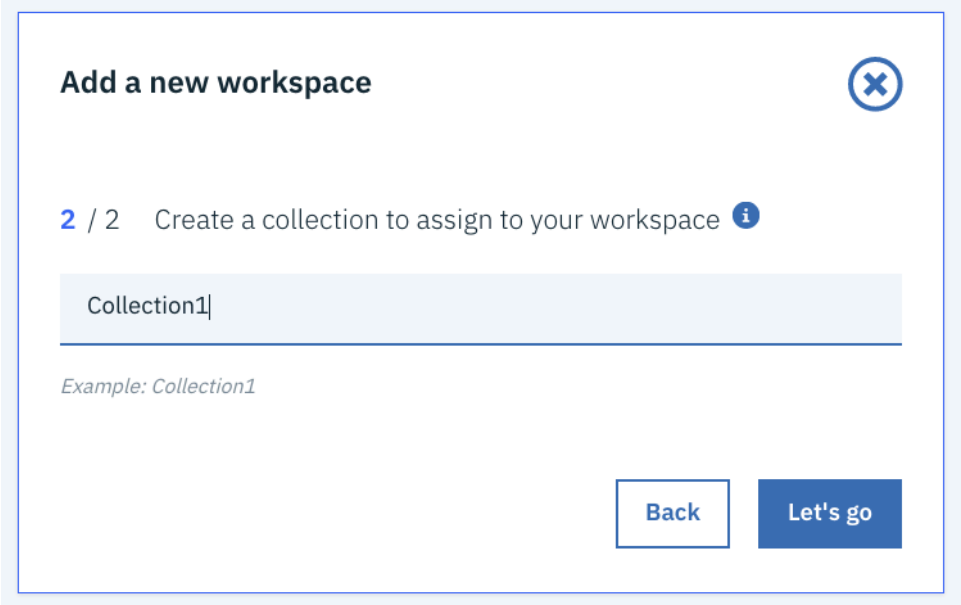


Step 2: Transformation Advisor: Create workspace for migration activities

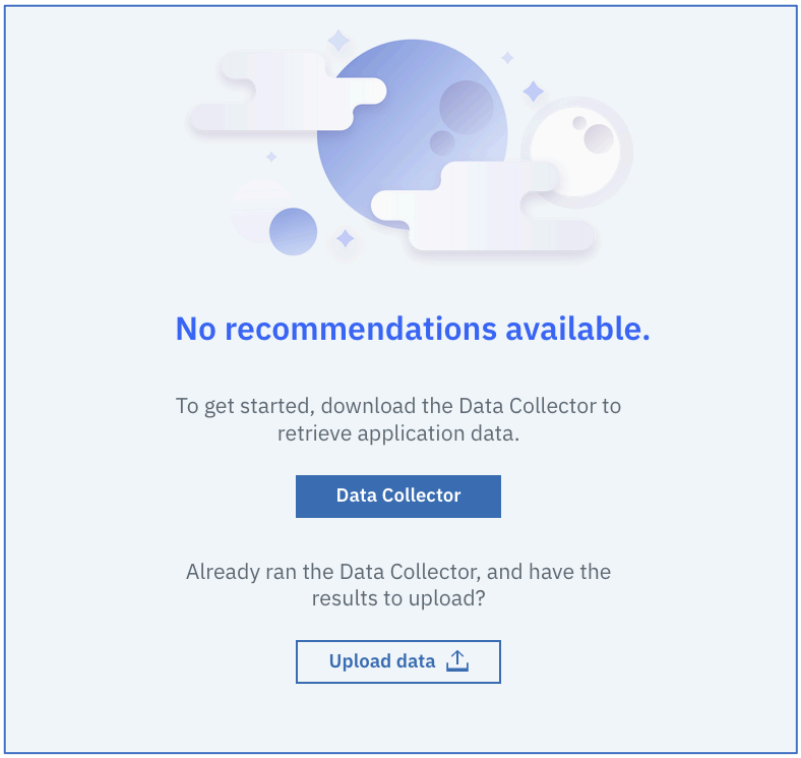
You should get started by creating a new workspace that will be used to house your recommendations, this can be any string you want, such as the project name or the name for the portfolio of applications you will be analysing, basically anything that will help you to easily identify your work when you return to it at a later date.

- Create a workspace by clicking on 'Add a new workspace'
- Name the workspace as "<UserID>apps". Eg: user1apps
- Click 'Next'
- Provide a name for the Collection. Eg: "Collection1"



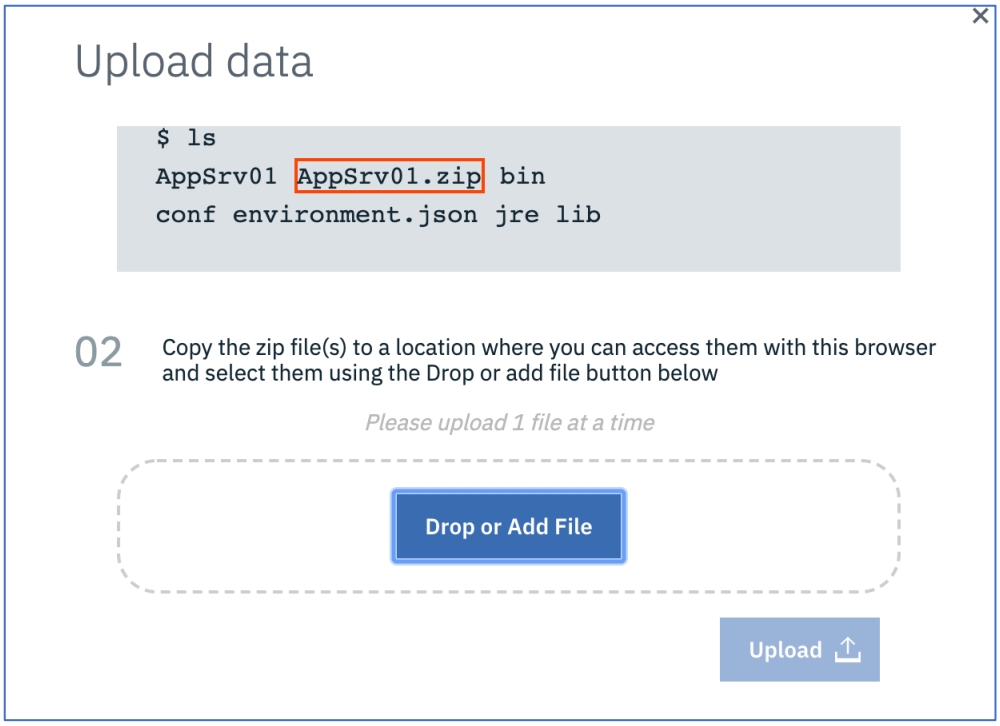


- The Data Collector tab should now display the screen shown below. The data collector is a downloadable zip file that needs to be extracted and run on your target server where the applications you wish to migrate are located ie your application server machine. You should choose the correct data collector for your target server's operating system.

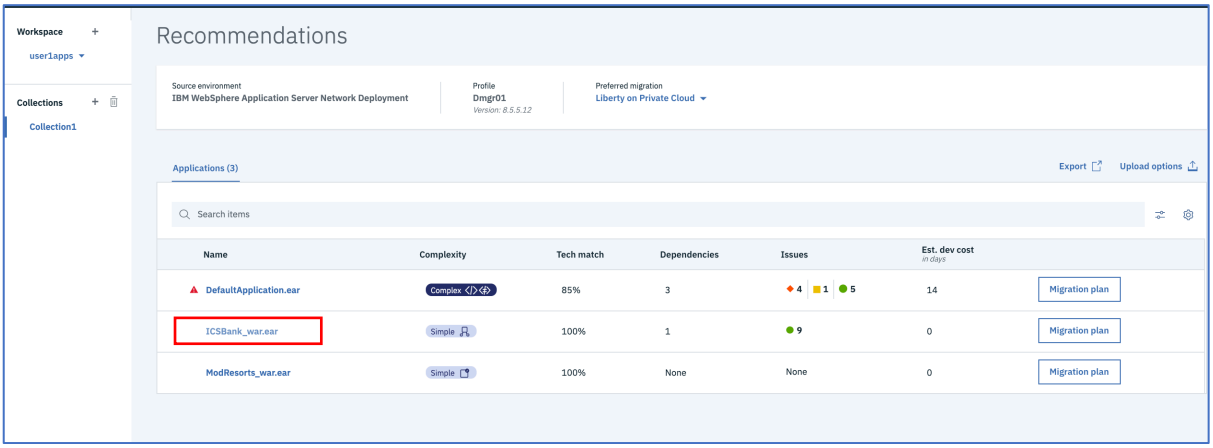


- Download the zip file to your browsers download directory and copy/ftp to your target server, then follow the directions as described on the page to unzip and run the data collector.
- ***Please note**: For this lab, WAS environment is not available, hence the downloading and running the data collector can be skipped.*

- You can use the file 'Dmgr01.zip' which is collected from one of existing WAS environment for this lab.
- Click on 'Upload data' and use the Dmgr01.zip to upload existing WAS data and click on 'upload'.



- View the recommendations and cost estimates. The Recommendations view after the data collector has completed and uploaded results should display a screen similar to that shown below.



The recommendations tab shows you a table with a summary row for each application found on your application server. Each row contains the following information :

Application Name : The name of the EAR/WAR file found on the application server.

Complexity : This is an indication of how complex Transformation Advisor considers this application to be if you were to migrate it to the cloud.

Technology Match : This is a percentage and if less than 100% it indicates that there may be some technologies that are not suitable for the recommended platform. You should investigate the details and ensure your application is actually using the technologies.

Dependencies : This shows potential external dependencies detected during the scan. Work may be needed to configure access to these external dependencies.

Possible Issues : This indicates the number and severity of potential issues migrating the application.

Dev Cost : This is an estimate in days of the development effort to perform the migration.

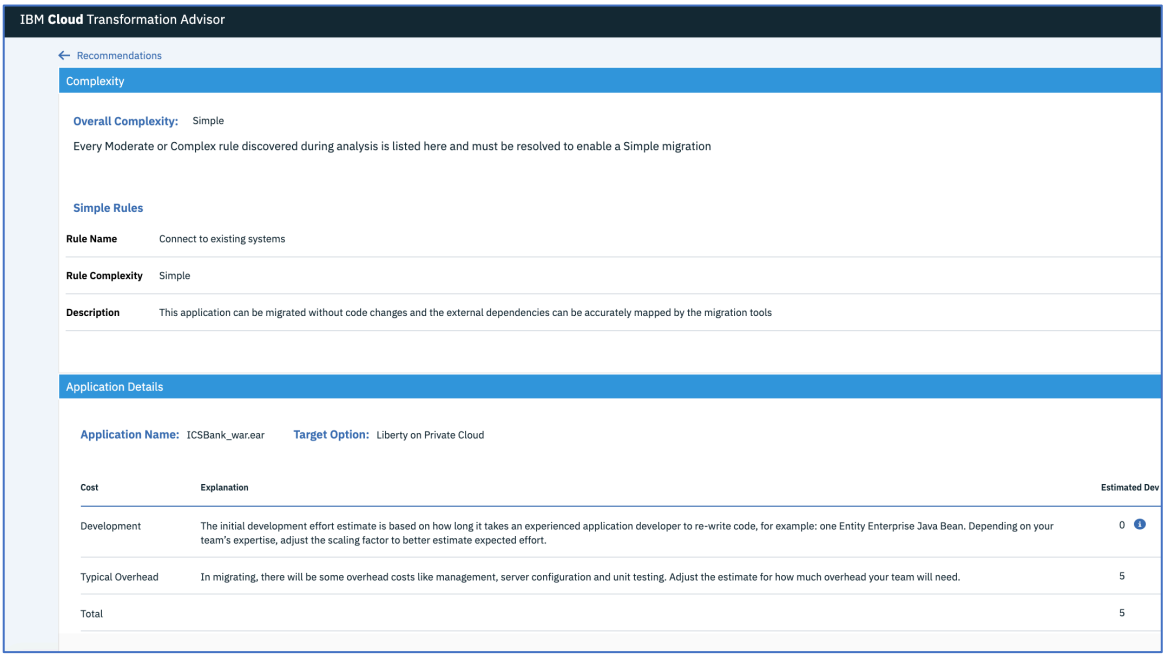
Total Cost : This is the total estimate in days of the overhead and development costs in migration up to the point of functional testing.

Migration Plan : This button will take you to the Migration tab for the application.

Step 3: Look at various reports for ICSBank Application

Clicking on any application row will show you the details behind the analysis. You can see a lot more detail. For starters, the complexity rating is explained for you.

- Click on ICSBank_war.ear file and look at the detail report:

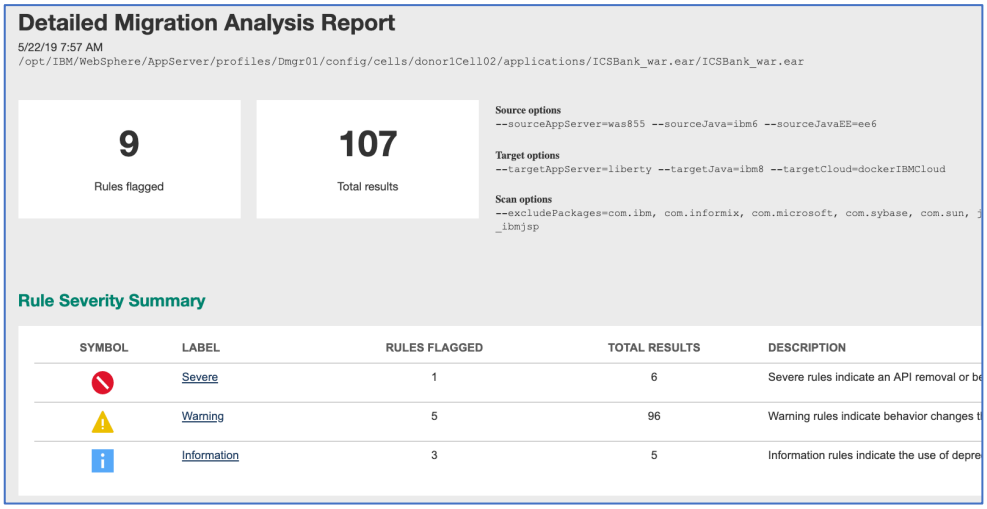


- Scrolling to the end of the Recommendations screen will show three links to further detailed reports.

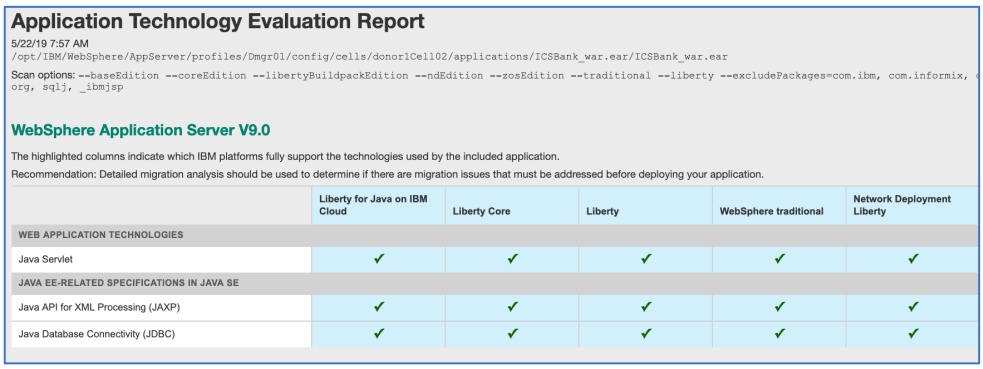
1. *Analysis Report*
2. *Technology Report*
3. *Inventory Report*

- Review all three reports (Analysis Report will give you detailed analysis of application and technologies it uses)

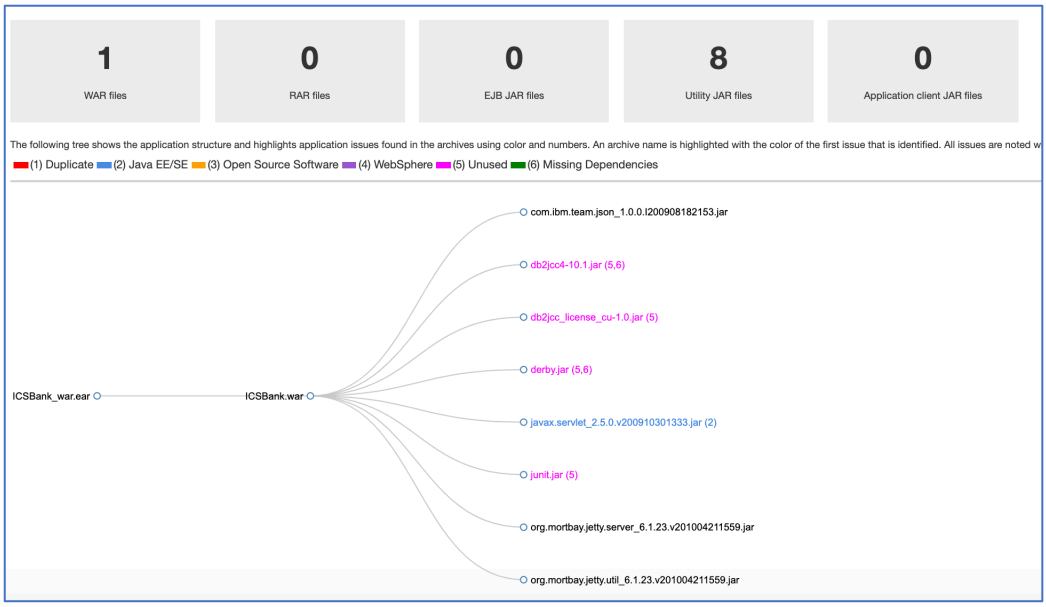
1. **Analysis Report**: The binary scanner's detailed migration report digs deeper to understand the nitty-gritty details of the migration. The detailed report helps with migration issues like deprecated or removed APIs, Java SE version differences, and Java EE behaviour differences.



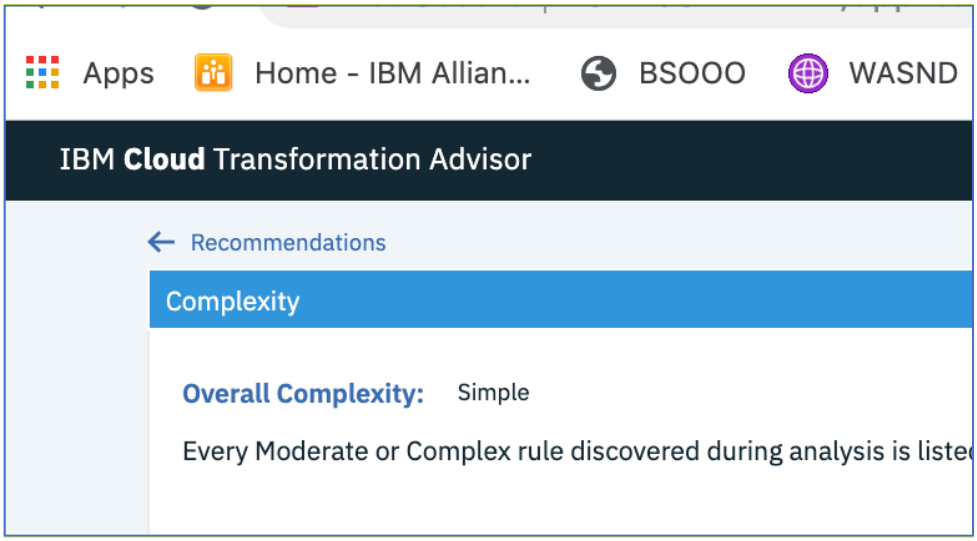
2. **Technology Report**: The binary scanner can examine your application and generate the Application Evaluation Report, which shows the editions of WebSphere Application Server that are best suited to run the application. The report provides a list of Java EE programming models that are used by the application, and it indicates on which platforms the application can be supported.



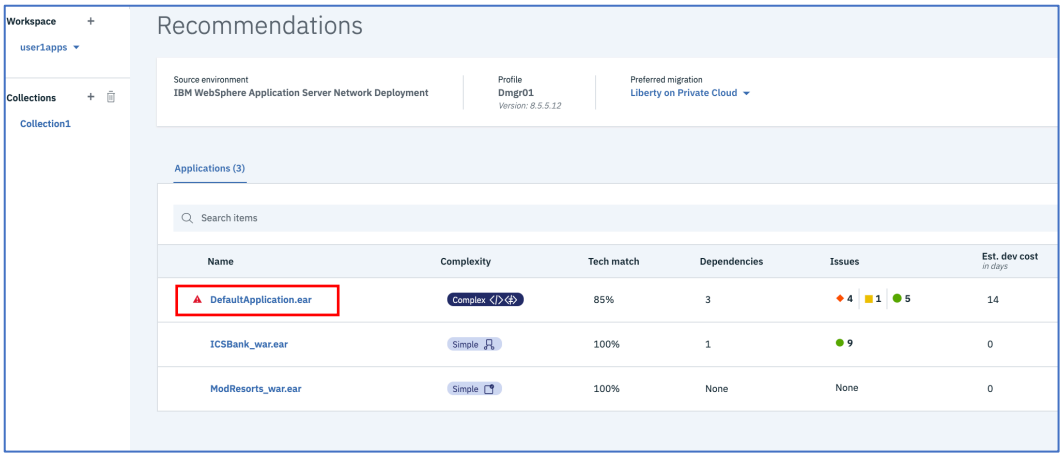
3. **Inventory Report**: The binary scanner has an inventory report that helps you examine what's in your application including the number of modules and the technologies in those modules.



- To go back to recommendation screen, click on 'recommendation'.



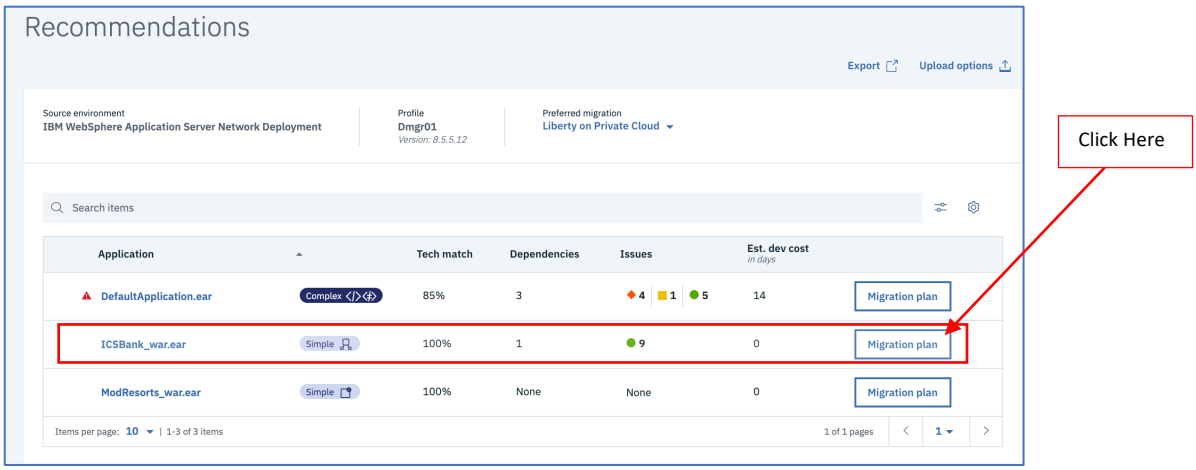
- Similar to ICSBank, click on other applications as well. You can see that 'DefaultApplication.ear' is identified as a complex one. You can look at the Analysis Report of same and understand why is it considered as complex.



Step 4: Look at the all the artefacts generated by Transformation Advisor

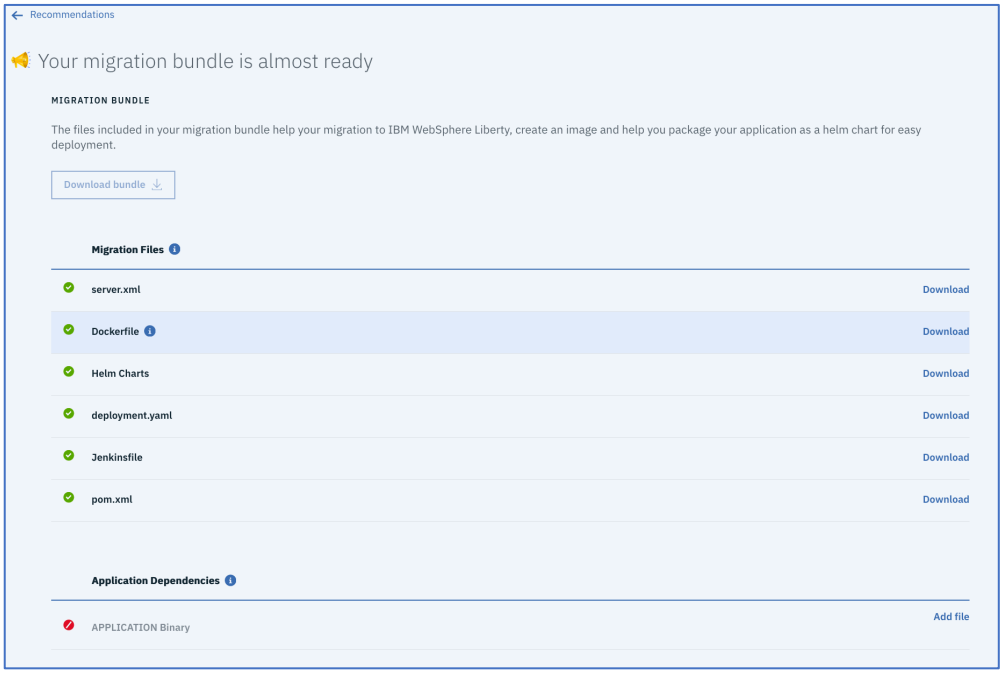
Once you have decided on an application you would like to migrate, hit the Migrate button and you will land on the Migration Tab.

- Click on 'Migration Plan' button of ICSBank application:

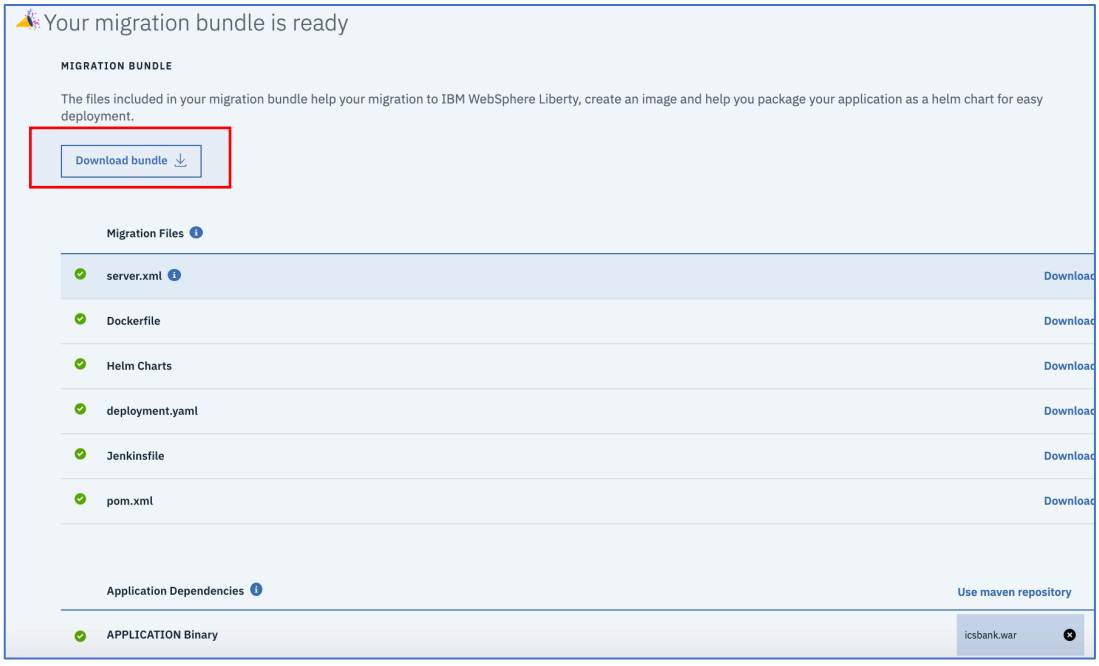


- TA will automatically generate the artefacts you will need to containerize your application running on liberty and deploy to IBM Cloud Private. You will have the opportunity on this page to upload your application binaries and any external drivers we have detected that you may need. You can then download them all in a single zip and use them for the next steps to migrate.
- A pdf document is included in the zip bundle that will give you detailed instructions on the next steps you need to take. Alternatively as you will see on the right hand side there are instructions also available here.

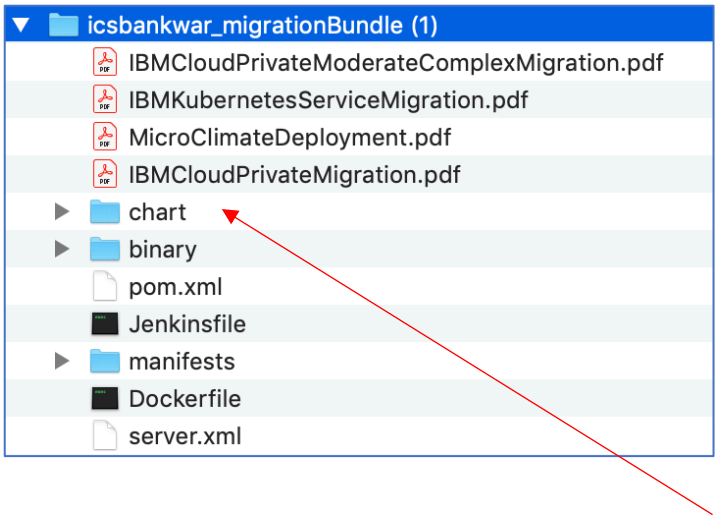
- Please note that the Application Binary is not downloaded by data collector, and user need to provide it.



- Click on "Add File" link as shown in the above screen and upload the ICSBank.war file provided in the lab material.
- Once upload is complete, you will notice that the 'Download Bundle' button is enabled at the top of the screen.



- Click on 'Download Bundle' and save the zip file to local machine.
- You will find file named 'icsbankwar_migrationBundle.zip'.
- Unzip it to some new folder (say 'TALab' folder).

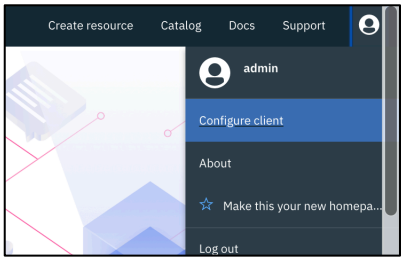


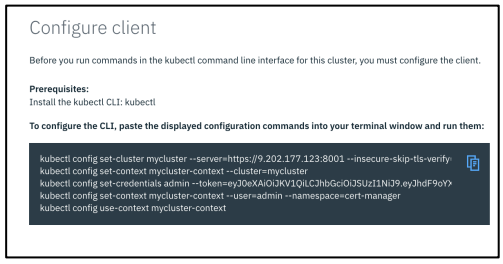
- You will find various files, including helm chart, which would be used to deploy application on to ICP.

Step 5: Prepare Helm Chart for application installation.

Setup the command line environment for kubectl :

- Login to ICP Console using user(id)/Passw0rd.
- On top right corner -> configure client -> copy the content.
- Paste the content on the command prompt.





Run following command to change the namespace to your own namespace.
kubectl config set-context mycluster-context --user=admin --namespace=namespace(id)

Setup the command line environment for helm commands :

- Run 'cloudctl login -a https://ilon1.icp:8443/ -u user(id)'
- Login with user(id)/Passw0rd
- Look at the last line which shows helm home directory.
- export HELM_HOME= (the output you see in above command)

Check the image location in values.yaml file inside chart/icsbankwar folder.

- You will find the image name as :

```
## Common image variables
##################################################################
image:
  repository: "mycluster.icp:8500/default/icsbankwar"
  tag: latest
```

- Change this to ilon1.icp:8500/namespace(id)/icsbankwar (for example for user1, it would be to *ilon1.icp:8500/namespace01/icsbankwar)*
- Add image pull secret as mentioned below:

```
replicaCount: 1
revisionHistoryLimit: 1
image:
  repository: "ilon1.icp:8500/default/icsbankwar"
  tag: "latest"
  pullPolicy: "IfNotPresent"
  pullSecret:
   - "registry-secret"
```

Add "registry-secret" as mentioned above
Save the values.yaml.

Please note: *Ideally, you need to run docker build and push the new image for this application. But for this lab, we have already uploaded the image into image repository of ICP. So you can proceed to Deploying Helm Chart.*

Step 6: Deploy Application Helm Chart

- cd TALab/chart
- helm install icsbankwar --name icsbank(uniqueuserid) –tls

```
[root@icp012019-icp012019-1 chart]# helm install icsbankwar --tls
NAME:   honest-labradoodle
LAST DEPLOYED: Tue May 14 15:25:21 2019
NAMESPACE: default
STATUS: DEPLOYED

RESOURCES:
==> v1/Service
NAME                                TYPE      CLUSTER-IP    EXTERNAL-IP  PORT(S)                       AGE
honest-labradoodle-icsbankwar-service  NodePort  10.0.176.177  <none>       9080:32575/TCP,9443:31405/TCP  1s

==> v1beta1/Deployment
NAME                                  DESIRED  CURRENT  UP-TO-DATE  AVAILABLE  AGE
honest-labradoodle-icsbankwar-deployment  1        0        0           0          1s

==> v1/Pod(related)
NAME                                                  READY  STATUS   RESTARTS  AGE
honest-labradoodle-icsbankwar-deployment-5c5b7dbdd6-s5995  0/1    Pending  0         1s
```

- Wait for few min (check application status by 'kubectl get pods')
- Open the browser in Private/Incognito mode.
- Access the application using https://172.16.70.58:Port/ICSBank/

Getting hostname and and portnumber

- Host = Proxy Host IP (172.16.70.58)
- Port = (kubectl get svc | grep icsbank) and look at the http or https node port
- Access the application using https://172.16.70.58:Port/ICSBank/

This is application which is migrated to ICP and running inside Liberty Container/

- You can login with user(id) e.g. user1 and password as Passw0rd.

Summary

In this lab, we have successfully migrated WAS Application, running on WAS ND environment to Liberty Container on ICP. This application is running on container platform and this is the first step towards application modernization.