

Installing OIC agent on OCI

Architecture, Integration

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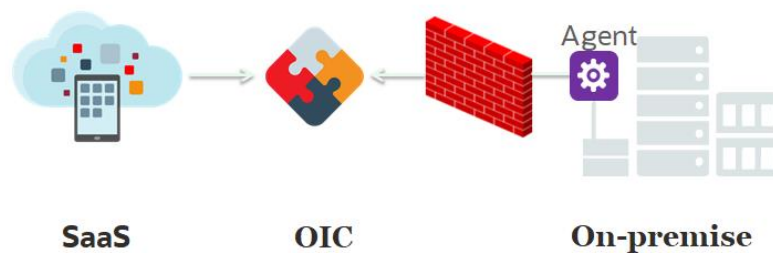
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OIC connectivity to private OCI resources and installing OIC agent in OCI using Bastion Service

This Article should demonstrate how easy is to create and manage connectivity between the Oracle Integration Cloud and private resources in OCI or VPN to on-premise or different cloud resources.

Using the connectivity agent, you can create hybrid integrations and exchange messages between applications in private or on-premises networks and Oracle Integration.



OIC connectivity agent values:

- Enables secure integration with on-premises systems without firewall pin-holes
- Brokers all communications between both OIC UI Designer and Runtime and the on-premises systems
- No DMZ components required (however can cohabit with it)
- Only requires HTTPS (443) access to the outside world
- OIC will never reach into the customer's data center
- Communication is always initiated from on-premises upstream via the Agent
- Ground Agent dis-allows any explicit inbound connections. Connection always established to ORACLE cloud
- Uses JCA adapters and JCA framework to invoke on-premises application endpoints.

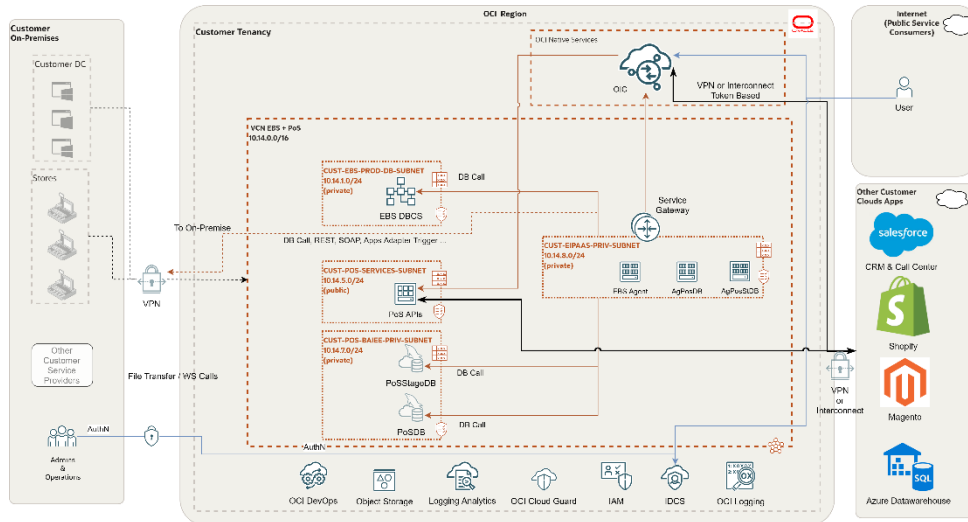
See more in [About Creating Hybrid Integrations Using Oracle Integration](#).

OIC connectivity creation prerequisites

Infrastructure Architecture Design or minimally Deployment or Physical Architecture view is a must to have before starting.

Then it is easy for any OCI Administrator to understand what needs to be done.

e.g. We have to establish connectivity to Oracle EBS in OCI – to EBS DB Staging Schemas.



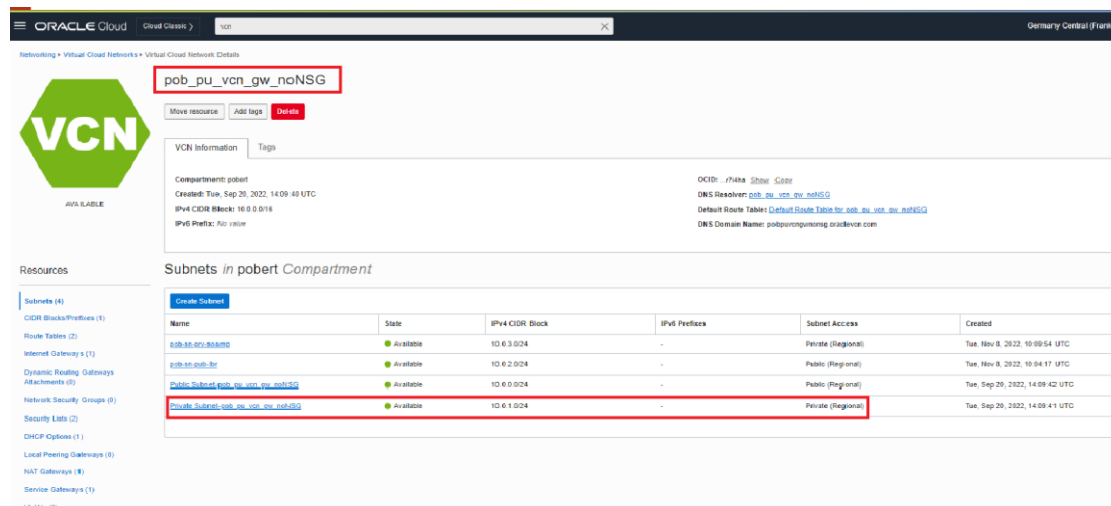
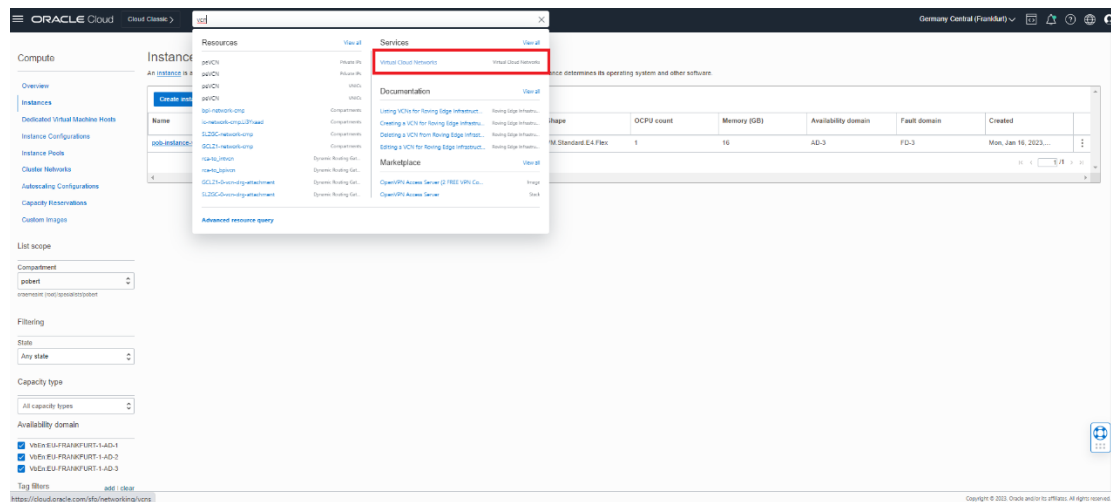
OIC connectivity to OIC private resources creation - HL Steps

In Our example we will place new VM instance and install OIC Agent into the *Private Subnet-pob_pu_vcn_gw_noNSG*

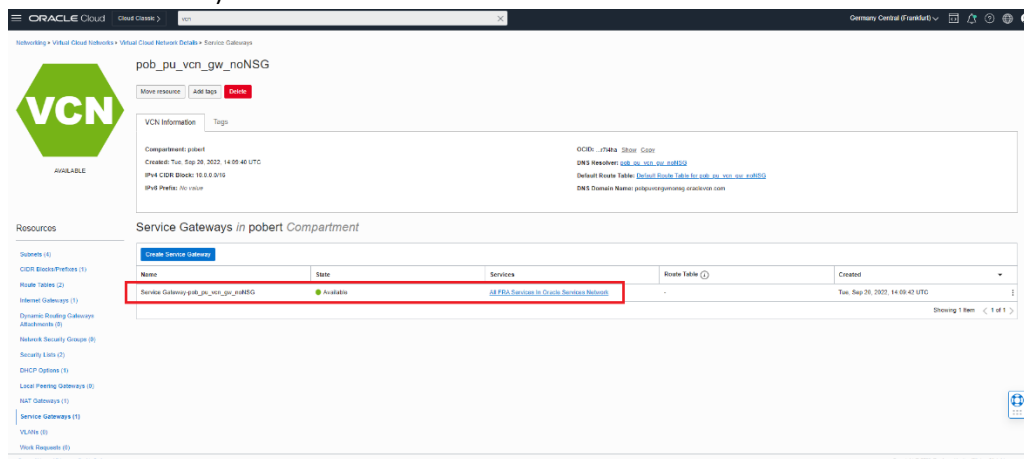
1. OCI Foundation Provisioning (VCN, Subnets, Service GW, Security List, Routing Tables, VM Instances)
2. Set-up Networking (Bastion Service, Ingres/Egress rules, VM Instance Plug-ins)
3. Create Agent Group (OIC placeholder for Agent Registration)
4. Download OIC Installer
5. Download Configuration
6. Install OIC Connectivity Agent
7. Run OIC Connectivity Agent
8. Verify Agent Registered
9. Use Agent Group in OIC Connection

OIC connectivity to OIC private resources creation – Detailed OCI Prerequisites

- ✓ Prepare Virtual Cloud Network and Private Subnet for hosting OIC Connectivity Agent VMs



- ✓ Prepare Service Gateway which provides connectivity between VCN and all the OCI regional services in the Oracle Services Network (OIC as Cloud Native PaaS is provisioned to Oracle Services Network)



- ✓ Ensure that OIC Agents subnet is associated with the security List which contains Ingress rules for the SSH Remote Login Protocol and HTTPs protocol.

Security List for Private Subnet-pob_pu_vcn_gw_noNSG

Instance traffic is controlled by firewall rules on each instance in addition to this Security List

Move resource | Add tags | **Terminate**

Security List Information | Tags

OCID: oclcmo-12345678901234567890 | Show | Copy | Compartment: pobnet

Created: Tue, Sep 26, 2022, 14:09:42 UTC

Resources

Ingress Rules

<input type="checkbox"/>	Status	Source	IP Protocol	Source Port Range	Destination Port Range	Type and Code	Allows	Description
<input checked="" type="checkbox"/>	No	0.0.0.0/0	TCP	All	22	TCP	TCP traffic for ports: 22 (SSH Remote Login Protocol)	
<input type="checkbox"/>	No	0.0.0.0/0	ICMP			3, 4	ICMP traffic for: 3, 4 (Destination Unreachable, Fragmentation Needed and Don't Fragment bits set)	
<input type="checkbox"/>	No	0.0.0.0/0	ICMP			5	ICMP traffic for: 5 (Destination Unreachable)	
<input checked="" type="checkbox"/>	No	0.0.0.0/0	TCP	All	443	TCP	TCP traffic for ports: 443 (HTTPS)	
<input type="checkbox"/>	No	0.0.0.0/0	TCP	All	80	TCP	TCP traffic for ports: 80	

0 Selected | Showing 5 items < 1 of 1 >

- ✓ Ensure that OIC Agents subnet is associated with the security List which contains Egress rules to communicate with outside world from subnet. In our case we enabled traffic to all possible destinations

Security List for Private Subnet-pob_pu_vcn_gw_noNSG

Instance traffic is controlled by firewall rules on each instance in addition to this Security List

Move resource | Add tags | **Terminate**

Security List Information | Tags

OCID: oclcmo-12345678901234567890 | Show | Copy | Compartment: pobnet

Created: Tue, Sep 26, 2022, 14:09:42 UTC

Resources

Egress Rules

<input type="checkbox"/>	Status	Destination	IP Protocol	Source Port Range	Destination Port Range	Type and Code	Allows	Description
<input checked="" type="checkbox"/>	No	0.0.0.0/0	All Protocols				All traffic for all ports	

0 Selected | Showing 1 item < 1 of 1 >

- ✓ Ensure that routing between OIC Agents subnet and OCI Services Network is enabled

Route Table for Private Subnet-pob_pu_vcn_gw_noNSG

Move resource | Add tags | **Terminate**

Route Table Information | Tags

OCID: oclcmo-12345678901234567890 | Show | Copy | Compartment: pobnet

Created: Tue, Sep 26, 2022, 14:09:42 UTC

Resources

Route Rules

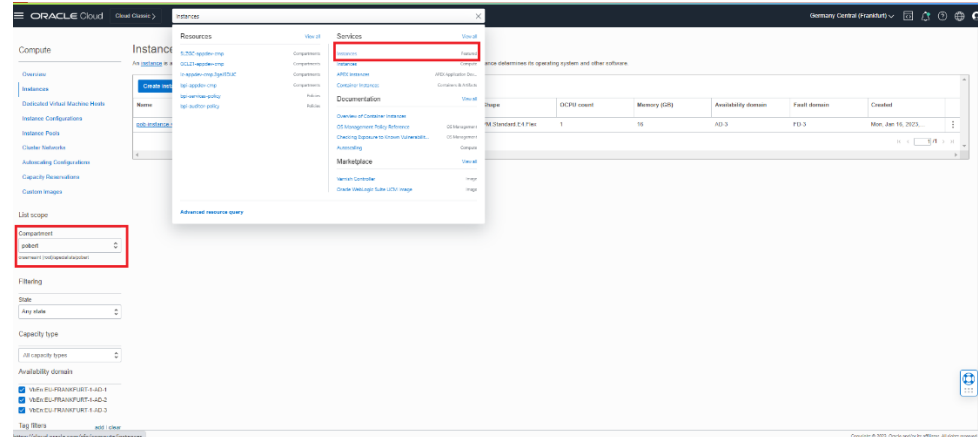
Traffic within the VCN is handled by the VCN's local routing by default. Intra-VCN routing allows you more control over routing between subnets. [Learn more](#)

<input type="checkbox"/>	Destination	Target Type	Target	Route Type	Description
<input type="checkbox"/>	0.0.0.0/0	NAT Gateway	nsg7-gateway-ocb-ae_vcn_gw_noNSG	Static	
<input checked="" type="checkbox"/>	All FQDN Services to Oracle Services Network	Service Gateway	Service-Gateway-ocb-ae_vcn_gw_noNSG	Static	

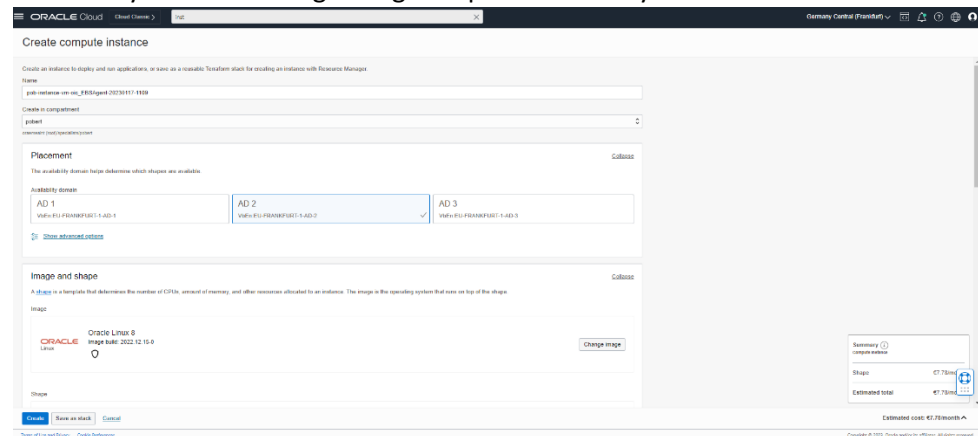
0 Selected | Showing 2 items < 1 of 1 >

OIC connectivity agent physical VM Instance provisioning using OCI Terraform Stack

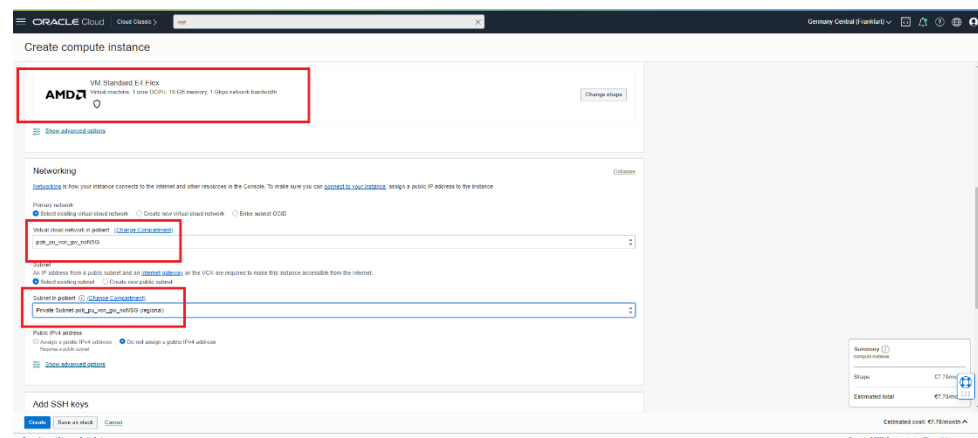
- Now we can provision new VM instance which will be dedicated to OIC connectivity Agent for EBS Connection. Chose Correct Compartment and jump into the OCI Instances Resource types.



- Create new Instance. Assign Name according to your organization naming Standards, chose availability domain. Change image shape if different you want to use.



- You can change/adjust shape but do not forget to check [minimum of 8 GB memory needed for the running Agent process](#). Provide VCN and Subnet.



- Download OCI generated or provide your own public and private key to access the instance in the future. If you want to automate this in the future, we recommend to click to Save as Stack button

Create compute instance

Generate an [SSH key](#) to connect to the instance using a Secure Shell (SSH) connection, or upload a public key that you already have.

Add SSH keys

Generate a key pair for me ☒ Upload public key files (path) ☐ Private public keys ☐ No SSH keys

Download the private key so that you can connect to the instance using SSH. It will not be shown again.

☒ Save private key ☒ Download public key

Boot volume

A [boot volume](#) is a detachable device that contains the image used to boot the compute instance.

☐ Specify a custom boot volume size
 [View boot volume sizes with resource tags](#). Default boot volume size: 40 GB. When you specify a custom boot volume size, consider IOPS ratio.

☐ Use a shared encryption key
 [View shared keys](#) to connect between the instance, the boot volume, and the block volumes.

☐ Encrypt the volume with a key that you manage
 By default, Oracle manages the keys that encrypt the volume, but you can choose a key from a vault that you have access to if you want greater control over the keys that encrypt and how to use it. [View the Oracle Key Management vault](#).

Create **Save as stack** **Cancel**

Summary
 Compute instance
 Shape: E7.75mm
 Estimated total: \$7.75mm

- Now you can create the instance or create and run Terraform stack that in the future you are able to repeat the process easily in different environment/compartments. Click next.

Create stack

Stack origin: Compute instance "pub-instance-vm-oci_ESSAgent_20230117_1109"

Custom providers

☒ Use custom Terraform providers
 [View custom Terraform providers in a vault](#)

Name: Optional
 pub-instance-vm-oci_ESSAgent_20230117_1109

Description: Optional

Create in compartment:
 project

Terraform version:
 1.0.x

Tags:
 Add tags to organize your resources. [What can I do with tags?](#)
 Tag key:
 Tag value:

Next **Cancel**

- Run and Apply the stack. Click Create.

Create stack

Verify your configuration variables, and then create your stack. Due to limited space, we show only variables without default values or that you edited.

Stack information

Name:
 pub-instance-vm-oci_ESSAgent_20230117_1109

Description:

Compartment:
 project

Terraform version:
 1.0.x

No variable values added or changed.

Run apply on the created stack?
 Immediately provision the resources defined in the Terraform configuration by running the apply action on the new stack.

☒ Run apply

Previous **Create** **Cancel**

- Now Terraform stack is running

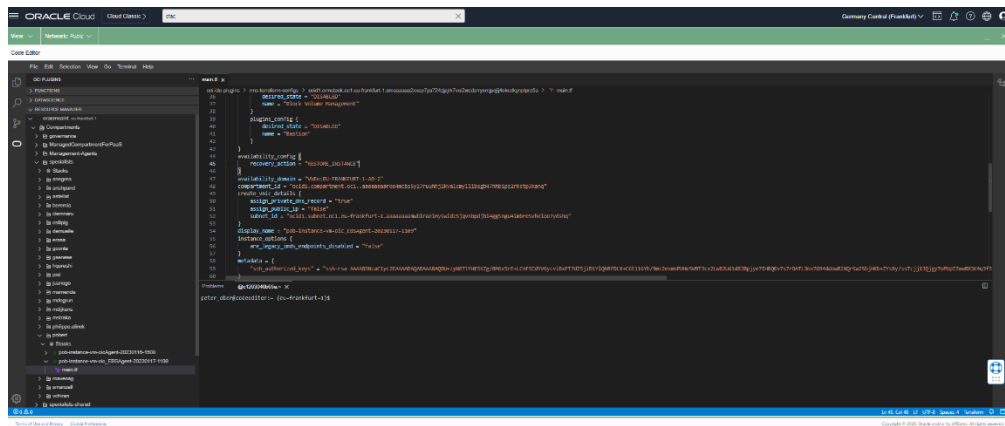
Oracle Cloud Resource Manager console showing a job in progress. The job ID is **ormjob20230117101552**. The status is **ACCEPTED**. The job information shows the OCI ID, job type, status, start time, and end time. The logs section shows the download logs.

- After successful or failed job execution you can still download provisioning logs.

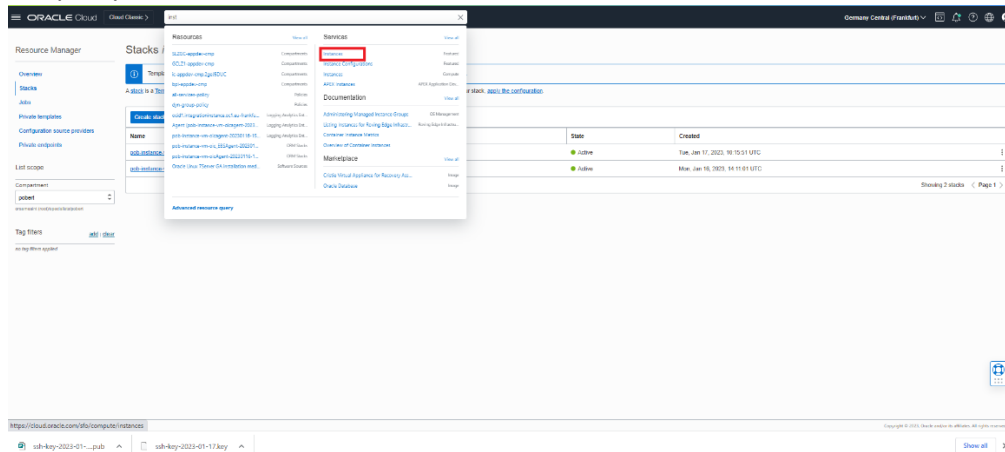
Oracle Cloud Resource Manager console showing a job in progress. The job ID is **ormjob20230117101552**. The status is **ACCEPTED**. The job information shows the OCI ID, job type, status, start time, and end time. The logs section shows the download logs.

- You can always find the stack in the compartment you provisioned the instance and Edit it or export using Code Editor

Oracle Cloud Resource Manager console showing a stack in progress. The stack ID is **pob-instance-vm-oci_EBSAgent-20230117-1109**. The status is **ACTIVE**. The stack information shows the OCI ID, stack type, status, start time, and end time. The jobs section shows the download logs.

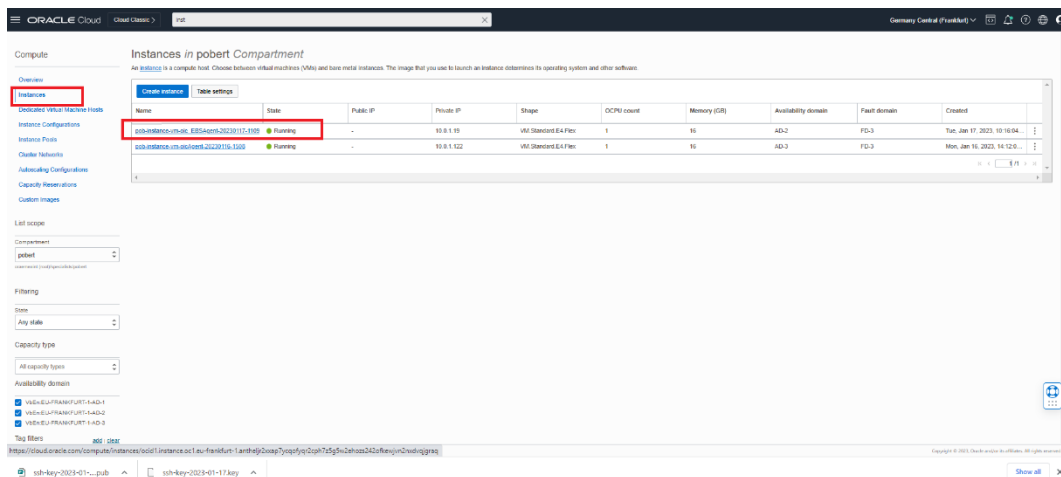


- Jump to your instances

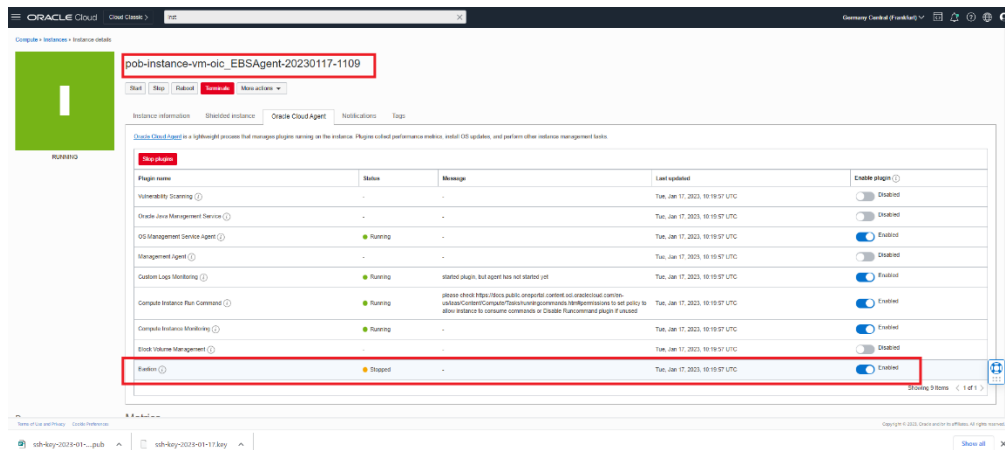


OIC connectivity agent VM Instance configuration and Agent Installation using Bastion Service

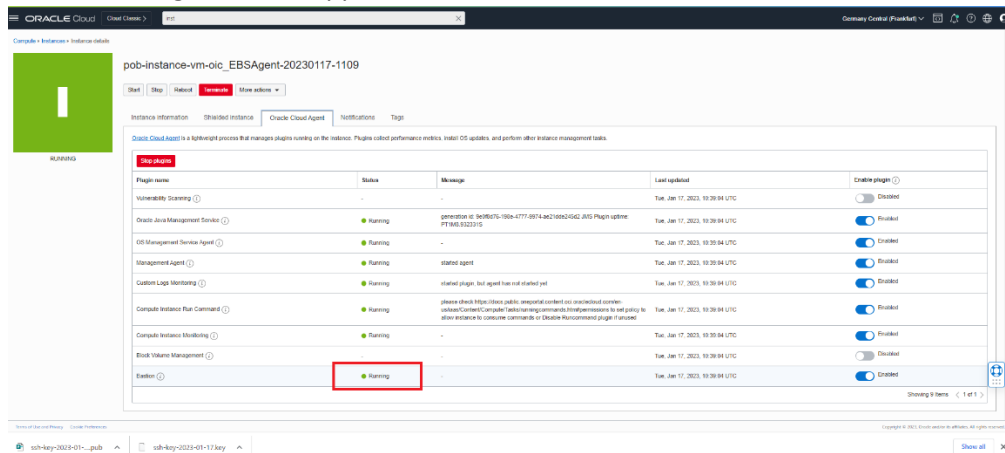
Our VM which will host OIC Connectivity Agent is running.



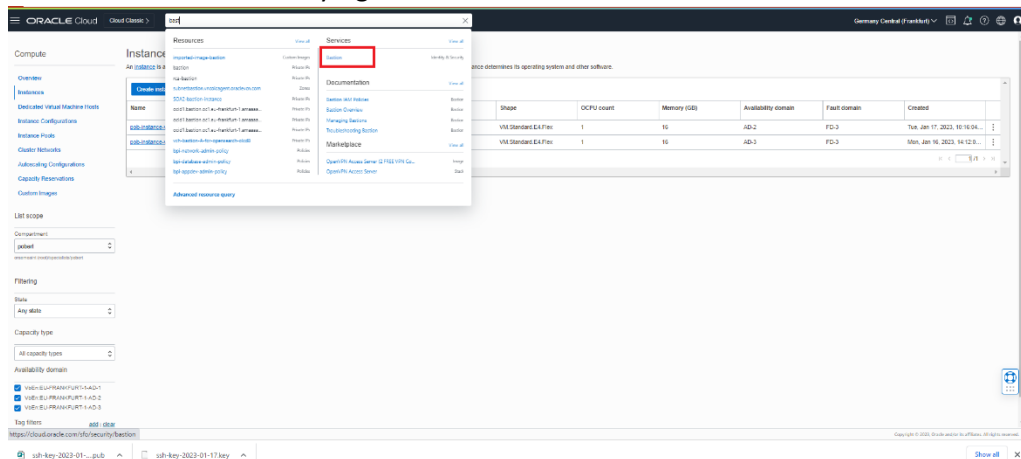
- By Default, Bastion plug-in is disabled on the VM during the provisioning. We could change it in the terraform stack in the editor or we can enable it manually or using OCI REST API or Cloud Shell CLI. Click to Enable.



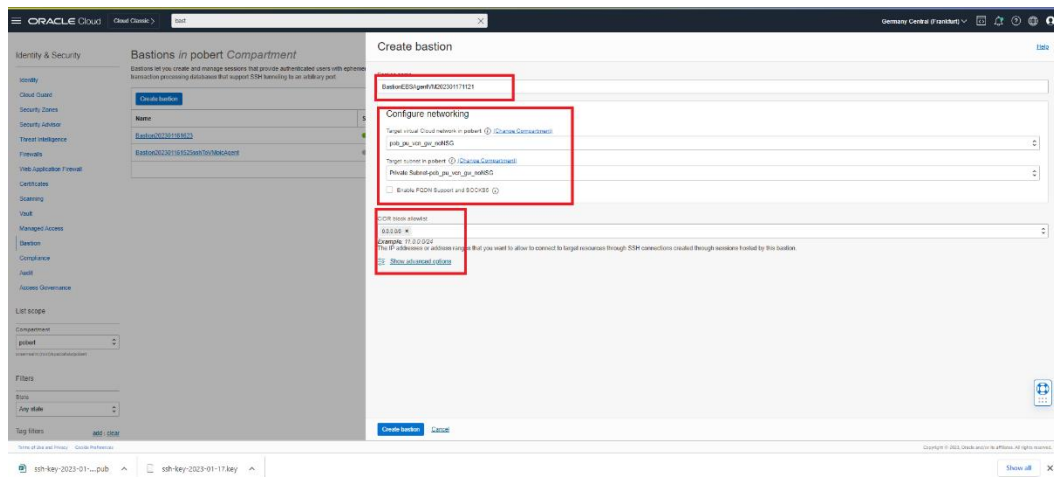
- After some time the Bastion plug-in should be running. If not then use Stop plugins button – then Start Plugins should appear.



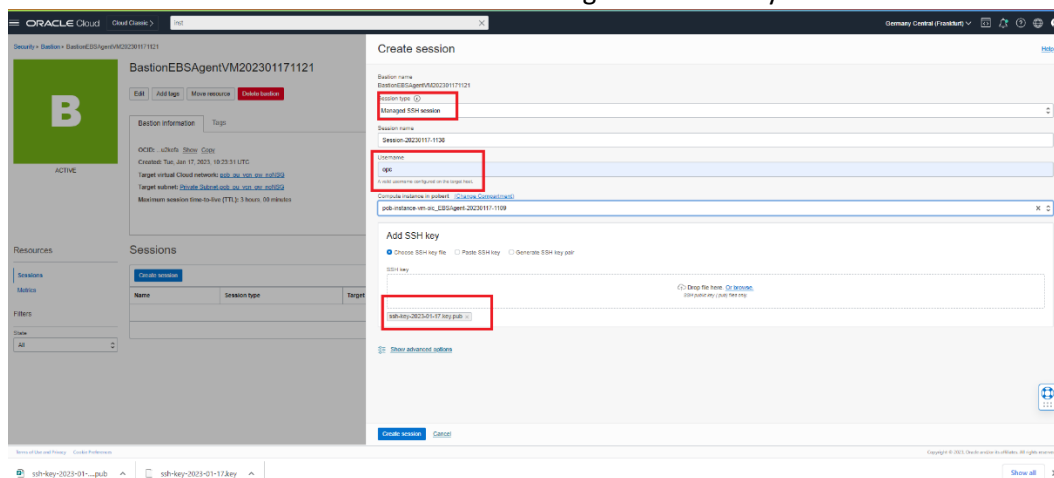
- Now we can create Bastion Service and Bastion session which allows us to maintain the Instance and install OIC connectivity Agent.



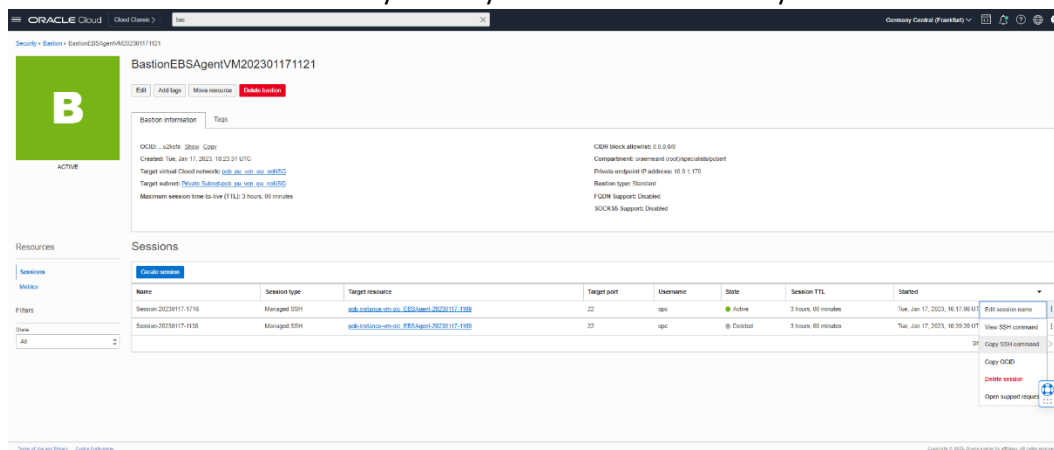
- Provide nice Bastion Service Name, Networking Detail(for the resources in the Agents private subnet) and IP Address from which you will be accessing the resources in the subnet. I allowed all 0.0.0.0/0 (not recommended for PROD type resources ;-)



- Now we can create Bastion SSH session to manage the VM easily



- When the Bastion SSH Session is active then Copy SSH Command and store it into some file – the best some notes in the directory where you stored the Server keys.



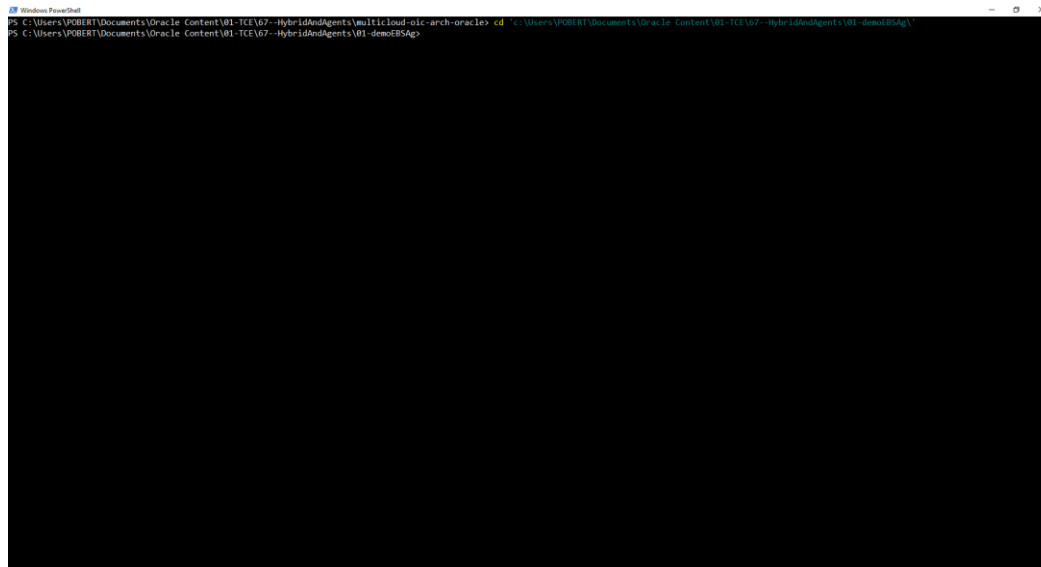
Add your private key file name into the command – you should have now something like that:

```
ssh -i ymebsagent-ssh-key-2023-01-17.key -o ProxyCommand="ssh -i ymebsagent-ssh-key-2023-01-17.key -W %h:%p -p 22 ocid1.bastionsession.oc1.eu-frankfurt-1.xxxxxxxx32q@host.bastion.eu-frankfurt-1.oci.oraclecloud.com" -p 22 opc@10.0.1.19
```

- Open your Power Shell if you are using Windows. On MacOS or Linux you can start Terminal window. Change working directory to the local directory where you stored server keys and you will put OIC connectivity Agent Artifacts. Do not use any public or shared windows folder like „Downloads“.

In my case it was

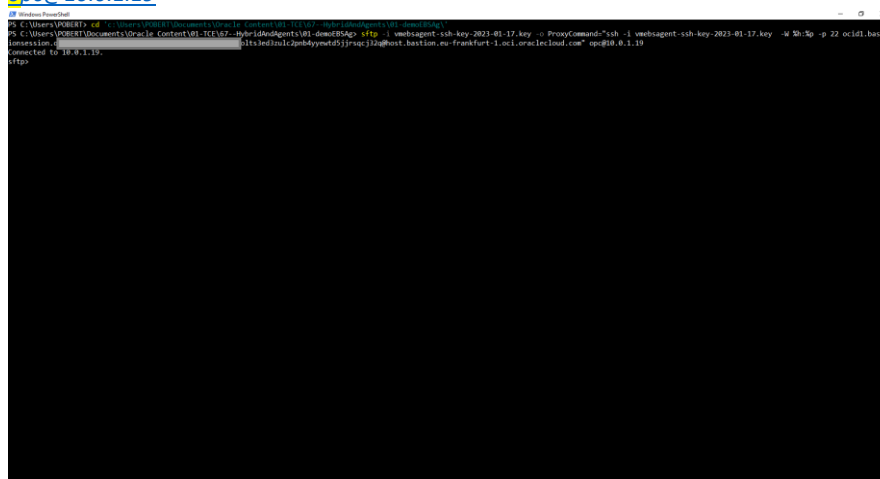
➤ `cd 'c:\xxxxxx\67--HybridAndAgents\01-demoEBSAg\'`



- SSH session command should work:



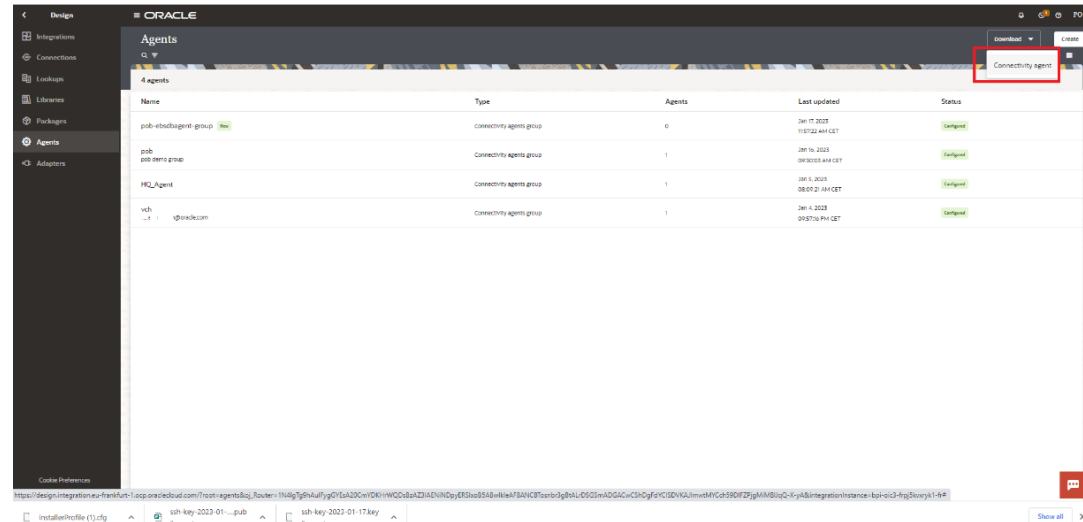
- Create directory e.g. *olc-agent* as directory you will use for dropping OIC Connectivity Agent installation files and configuration. Prepare sftp command from the ssh command. You should have something like that:
`sftp -i vmebsagent-ssh-key-2023-01-17.key -o ProxyCommand="ssh -i vmebsagent-ssh-key-2023-01-17.key -W %h:%p -p 22 ocid1.bastionsession.oc1.eu-frankfurt-1. xxxxxxxxxxx32q@host.bastion.eu-frankfurt-1.oc1.oraclecloud.com" opc@10.0.1.19`



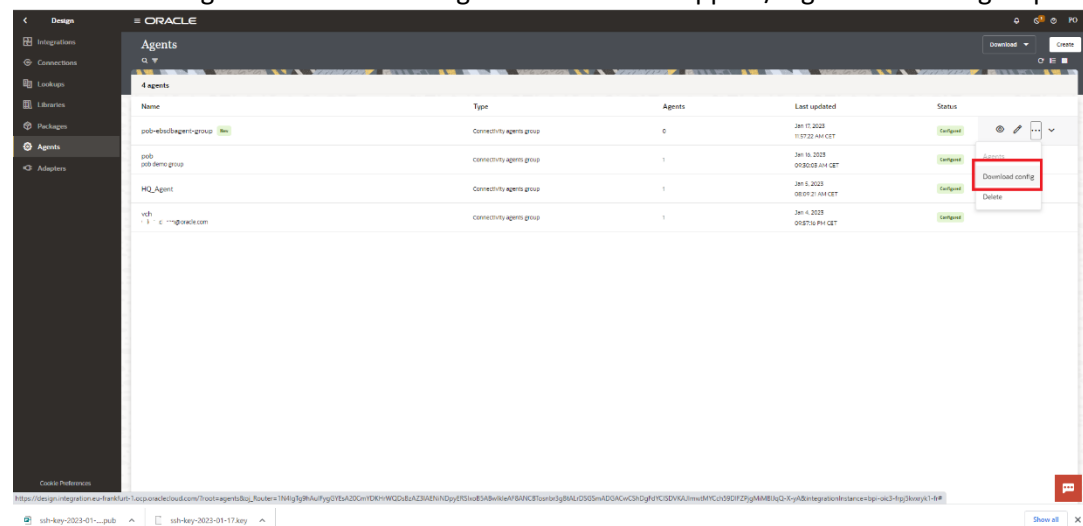
Open Oracle Integration Instance Console and go to Integrations->Design->Agents.

- Create new Agent Group for your Source/Target Integrated System. E.g. In my case *pub-ebssdbagent-group*

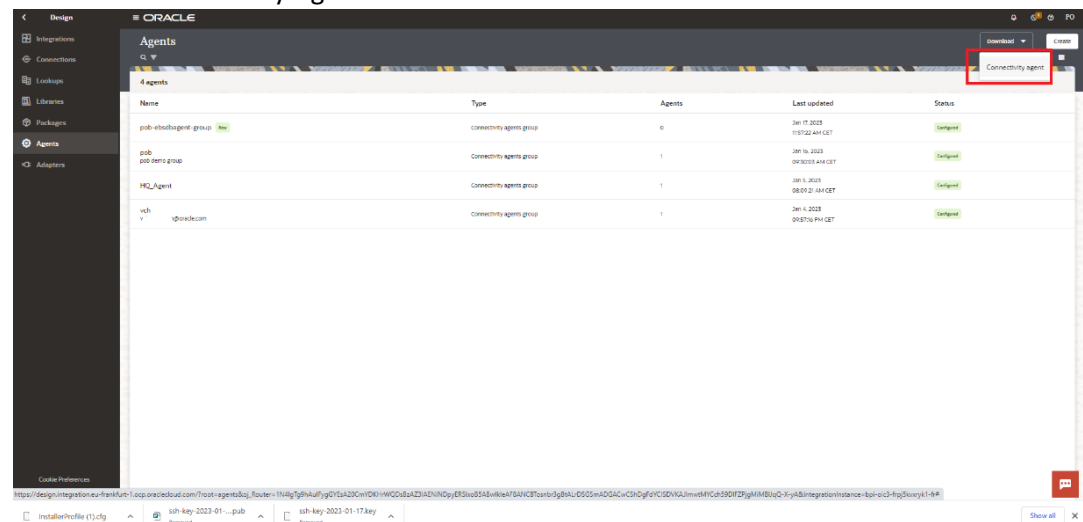
Note: 0 Agents registered for the new Agent Group



- Download configuration file for the Agent which should appear/register into this group.



- Download connectivity Agent installation Archive



- Transfer the artifacts using sftp commands into the VM instance and *oic-agent* folder

```
PS C:\Users\POBERT> cd "C:\Users\POBERT\Documents\Oracle Content\01-TCF67-HybridAndAgents\01-demoBSAg"
PS C:\Users\POBERT\Documents\Oracle Content\01-TCF67-HybridAndAgents\01-demoBSAg> sftp -i vmebsagent-ssh-key-2023-01-17.key -o ProxyCommand="ssh -i vmebsagent-ssh-key-2023-01-17.key -W %h:%p -p 22 ocid1.bast
ion@host bastion.eu-frankfurt-1.oc1.oraclecloud.com" opc@10.0.1.19
Connected to 10.0.1.19.
sftp> ls
oic-agent
sftp> cd oic-agent
sftp> pwd
Remote working directory: /home/opc/oic-agent
sftp> put oic*.zip
Uploading oic_conn_agent_installer.zip to /home/opc/oic-agent/oic_conn_agent_installer.zip
oic_conn_agent_installer.zip
sftp> put Ins*.cfg
Uploading InstallerProfile.cfg to /home/opc/oic-agent/InstallerProfile.cfg
InstallerProfile.cfg
sftp> ls -l
-rw-rw-r-- 1 opc   opc       723 Jan 17 11:03 InstallerProfile.cfg
-rw-rw-r-- 1 opc   opc    196294265 Jan 17 11:02 oic_conn_agent_installer.zip
sftp>
```

- Exit from SFTP and run again SSH command as before when creating the folder
 - unzip the installer zip archive – not extracting InstallerProfile.cfg. Or unzipping in additional temporary folder and replace empty InstallerProfile.cfg with the one downloaded from the OIC Agent Group menu.

```
opc@qob-instance-vm-oic-ebagent-20230117-1109:/oic-agent
PS C:\Users\POBERT> cd "C:\Users\POBERT\Documents\Oracle Content\01-TCF67-HybridAndAgents\01-demoBSAg"
PS C:\Users\POBERT\Documents\Oracle Content\01-TCF67-HybridAndAgents\01-demoBSAg> sftp -i vmebsagent-ssh-key-2023-01-17.key -o ProxyCommand="ssh -i vmebsagent-ssh-key-2023-01-17.key -W %h:%p -p 22 ocid1.bast
ion@host bastion.eu-frankfurt-1.oc1.oraclecloud.com" opc@10.0.1.19
Connected to 10.0.1.19.
sftp> ls
oic-agent
sftp> cd oic-agent
sftp> pwd
Remote working directory: /home/opc/oic-agent
sftp> put oic*.zip
Uploading oic_conn_agent_installer.zip to /home/opc/oic-agent/oic_conn_agent_installer.zip
oic_conn_agent_installer.zip
sftp> put Ins*.cfg
Uploading InstallerProfile.cfg to /home/opc/oic-agent/InstallerProfile.cfg
InstallerProfile.cfg
sftp> ls -l
-rw-rw-r-- 1 opc   opc       723 Jan 17 11:03 InstallerProfile.cfg
-rw-rw-r-- 1 opc   opc    196294265 Jan 17 11:02 oic_conn_agent_installer.zip
sftp> quit
PS C:\Users\POBERT\Documents\Oracle Content\01-TCF67-HybridAndAgents\01-demoBSAg> ssh -i vmebsagent-ssh-key-2023-01-17.key -o ProxyCommand="ssh -i vmebsagent-ssh-key-2023-01-17.key -W %h:%p -p 22 ocid1.bast
ion@host bastion.eu-frankfurt-1.oc1.oraclecloud.com" -p 22 opc@10.0.1.19
Activate the web console with: systemctl enable --now cockpit.socket

Last login: Tue Jan 17 10:47:38 2023 from 10.0.1.170
opc@qob-instance-vm-oic-ebagent-20230117-1109 ~$ cd oic-agent/
opc@qob-instance-vm-oic-ebagent-20230117-1109 oic-agent$ ls
InstallerProfile.cfg  oic_conn_agent_installer.zip
opc@qob-instance-vm-oic-ebagent-20230117-1109 oic-agent$ ls -l
total 191700
-rw-rw-r-- 1 opc opc       723 Jan 17 11:03 InstallerProfile.cfg
-rw-rw-r-- 1 opc opc    196294265 Jan 17 11:02 oic_conn_agent_installer.zip
opc@qob-instance-vm-oic-ebagent-20230117-1109 oic-agent$ unzip *.zip
Archive:  oic_conn_agent_installer.zip
  creating: agenthome/
  creating: agenthome/agent/
  creating: agenthome/agent/cert/
  creating: agenthome/agent/config/
  creating: agenthome/agent/data/
  creating: agenthome/logs/
  creating: agenthome/bin/
  creating: agenthome/thirdparty/
  creating: agenthome/thirdparty/lib/
  creating: agenthome/lib/
replace InstallerProfile.cfg? [y]es, [n]o, [A]ll, [U]none, [r]ename: n
```

- Install the OIC Connectivity Agent by running following command:
/usr/bin/java -jar connectivityagent.jar

```

Inflating: agenthome/lib/javax.xml.soap-api-1.4.0.jar
Inflating: agenthome/lib/javax.activation-api-1.2.0.jar
Inflating: agenthome/lib/javax.jws-3.1.2.jar
Inflating: agenthome/lib/jaxws-api-2.3.1.jar
Inflating: agenthome/lib/activation-1.3.1.jar
Inflating: agenthome/lib/bc-fips-1.0.2.1.jar
Inflating: agenthome/lib/slf4j-jdk16-1.7.26.jar
Inflating: agenthome/lib/jsoup-1.18.2.jar
Inflating: agenthome/lib/commons-lang3-3.9.jar
Inflating: agenthome/lib/authentication-authenticator-1.13.46.jar
Inflating: agenthome/lib/flient-hc-4.5.15.jar
Inflating: agenthome/lib/authentication-signed-request-verification-1.13.46.jar
Inflating: agenthome/lib/authentication-signed-request-common-1.13.46.jar
Inflating: agenthome/lib/authentication-signed-request-generation-1.13.46.jar
Inflating: agenthome/lib/authentication-token-verification-1.13.46.jar
Inflating: agenthome/lib/authentication-token-common-1.13.46.jar
Inflating: agenthome/lib/google-http-client-1.28.0.jar
Inflating: agenthome/lib/authentication-client-1.13.46.jar
Inflating: agenthome/lib/jet-1.0.5.jar
Inflating: agenthome/lib/oci-java-sdk-common-1.9.5.jar
Inflating: agenthome/lib/jersey-hk2-2.27.jar
Inflating: agenthome/lib/jersey-media-json-jackson-2.27.jar
Inflating: agenthome/lib/jersey-entity-filtering-2.27.jar
Inflating: agenthome/lib/core-1.0.117.jar
Inflating: agenthome/lib/core-resources-1.0.117.jar
Inflating: agenthome/lib/request-id-8.1.7.jar
Inflating: agenthome/lib/jackson-datatype-jdk8-2.9.9.jar
Inflating: agenthome/lib/config-1.3.4.jar
Inflating: agenthome/lib/bcpkix-fips-1.0.2.jar
Inflating: agenthome/lib/httpcore-4.4.11.jar
Inflating: agenthome/lib/joda-time-2.9.jar
Inflating: agenthome/lib/commons-collections4-4.3.jar
Inflating: agenthome/lib/commons-net-3.6.jar
Inflating: agenthome/lib/nimbus-jose-jwt-8.2.jar
Inflating: agenthome/lib/jcip-annotations-1.0.1.jar
[opc@bob-instance-vm-oci-ohs-agent-20230117-1109-oci-agent]$ ./usr/bin/java -jar connectivityagent.jar
Proceeding to install a new agent ...
No Proxy Configuration Detected
Backing for trusted certificates ...
Making call to check OIC Version ...
Making call to check Agent group availability ...
Updating Agent with configuration details ...
Making call to register new agent instance ...
Making call for getting agent app id & keys... Starting Agent for message processing.
Done with Agent installation & configuration... Agent started successfully...Now available for new messages...

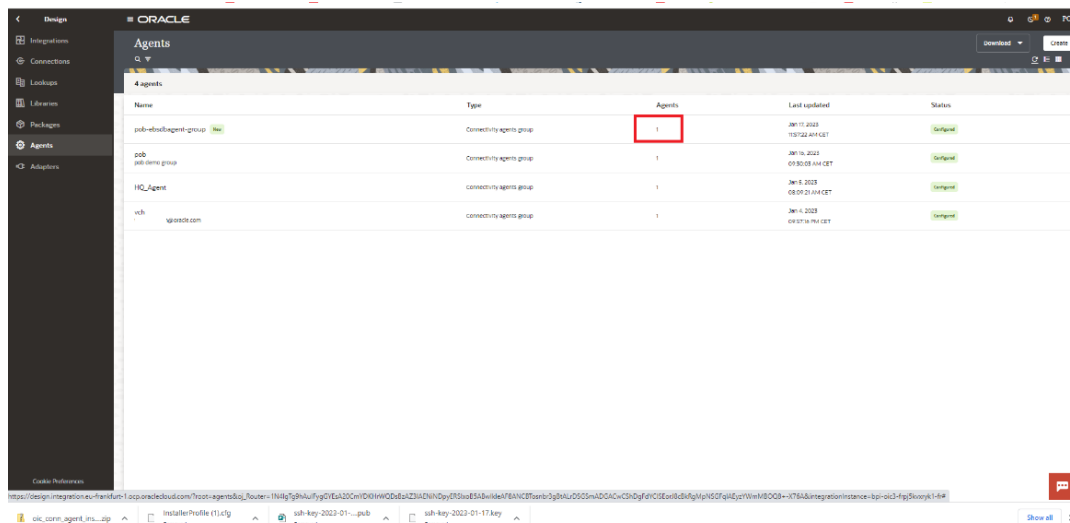
```

- Now in OIC console you should see that Agent is registered into the Agent Group. I recommend to kill the current running agent process and start it in background

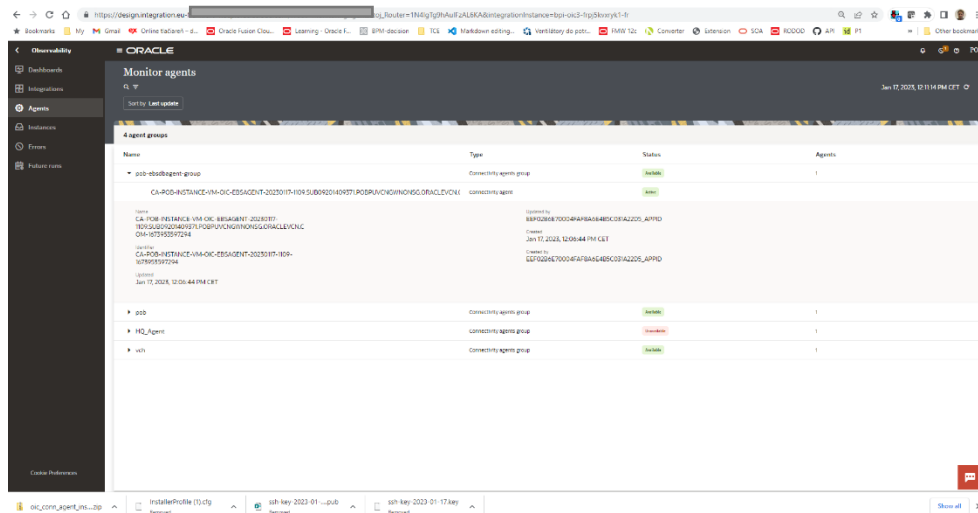
```

sudo -s
ps -ef | grep java
kill -9 <pid of the agent>
exit
nohup /usr/bin/java -jar connectivityagent.jar &

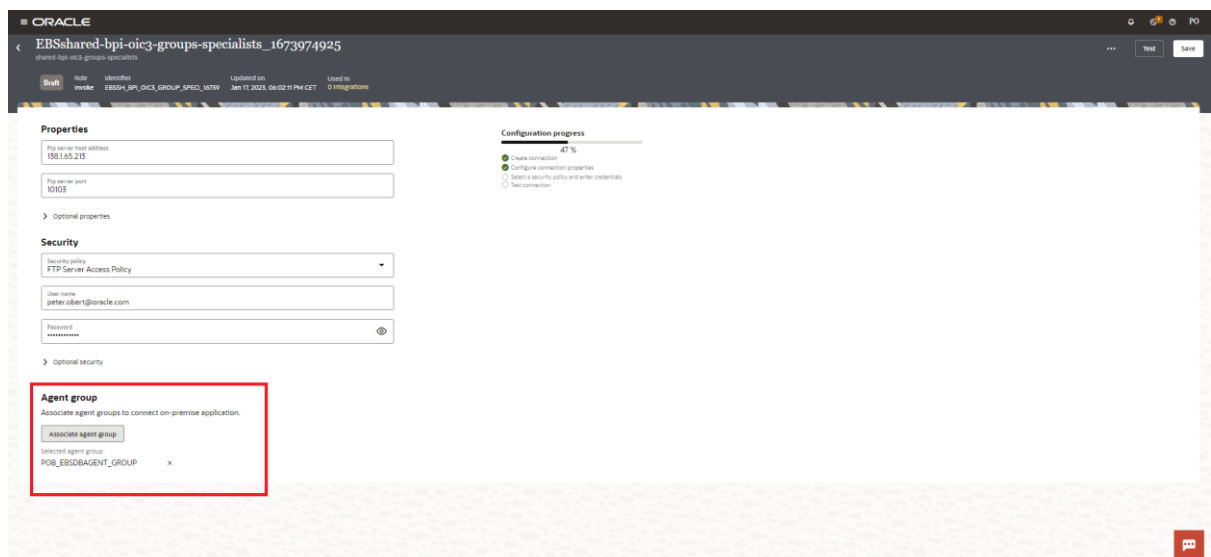
```



- Agent health can be monitored for its health through OIC menu – Home -> Observability -> Agents



- Now we can define Integration connection to EBS using connectivity agent through Associated Agent Group



Learn More

To learn more about Oracle Integration Cloud visit [Application-Integration](#) 🏠.

- [Bastion Service](#)
- [OIC Connectivity Agent](#)
- [OCI Networking](#)
- [OCI Compute Concepts](#)

I recommend to follow Oracle A-Team [Chronicles](#) and Niall Commiskey - Integration Product Director [blogs](#).

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