bi4dynamics
Transforming your data into knowledge

BI4Dynamics Process Automation

How to automatically update data from BC to Data Lake and finally to Analysis Services

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Revision 2.5

Contents

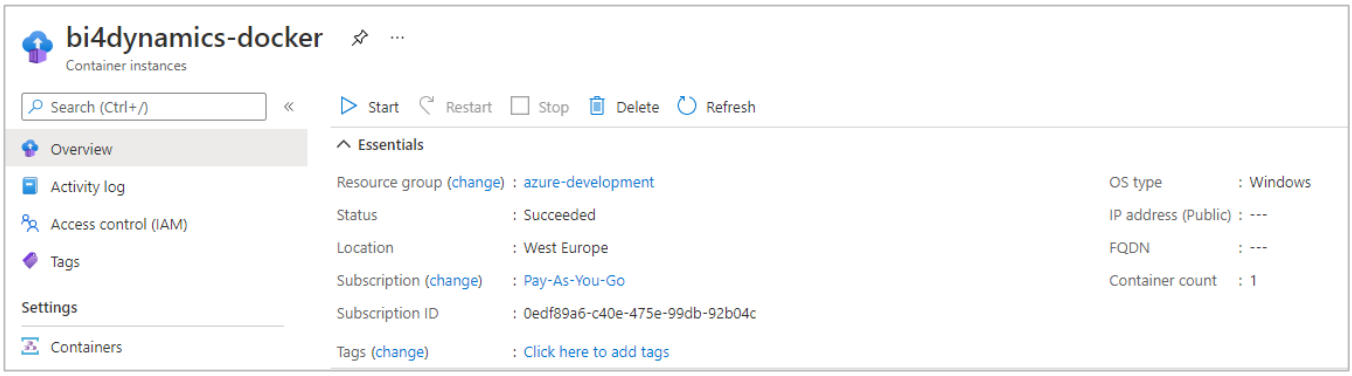
1 Process Automation #1 – Start Container Instance

1.1 Introduction

This automation process is for an Azure Container instance (Docker), which is a light virtual machine, based on BI4Dynamics image. These Container instances are used for running table export from BC to Blob storage. Through Logic apps docker will run on a scheduled day and time. Logic app will automatically start and terminate the docker after finishing the export.

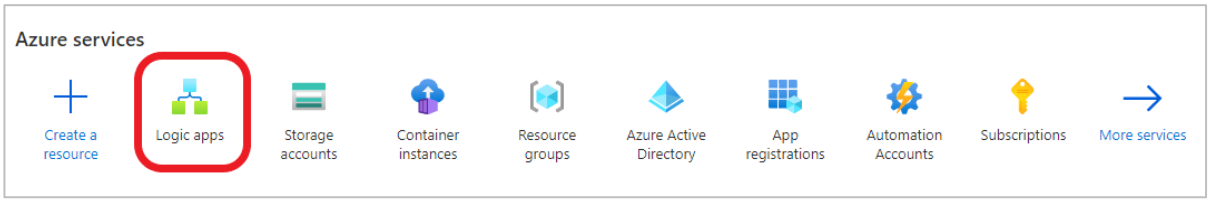
1.2 Prerequisite

For this manual you will need a working Container instance, which exports table data from BC to Blob storage. Picture below shows Container instance settings made as per instructions of BI4Dynamics in BI4Dynamics Application Installation Manual for BC Cloud on Local or Azure Virtual Machine.

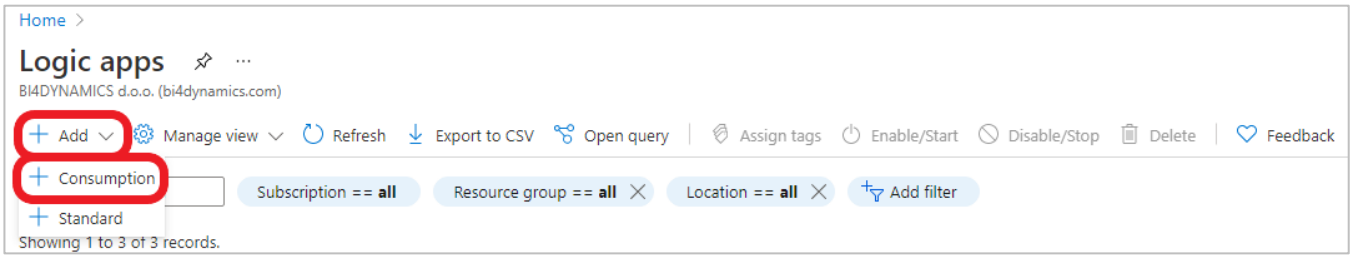


1.3 Setup Logic App

1. Search for **Logic Apps** in Azure.

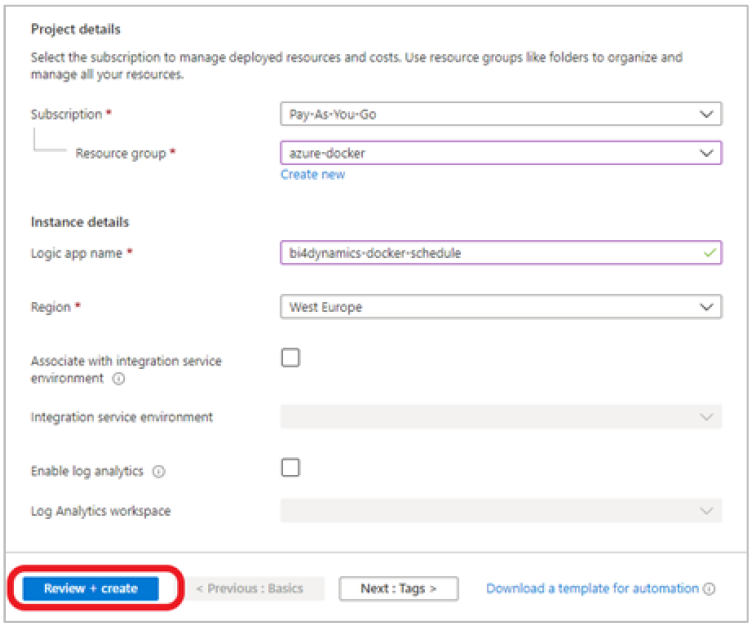


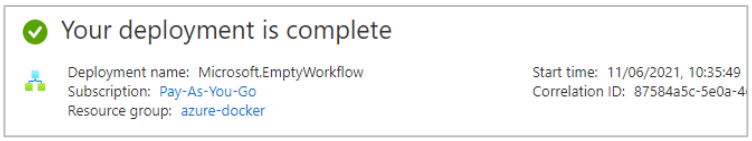
2. **Add** a logic app and select **Consumption**



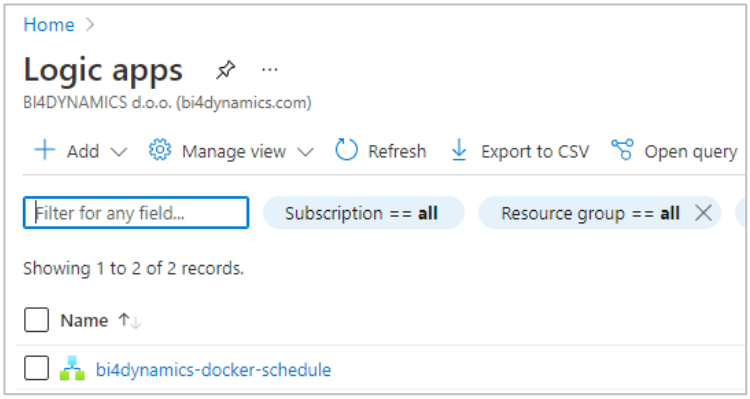
3. Enter **Subscription**, **Resource group** and create a meaningful **name** for your logic app.

Select the Region and click **Review + create**. Select **Create** in the next window.

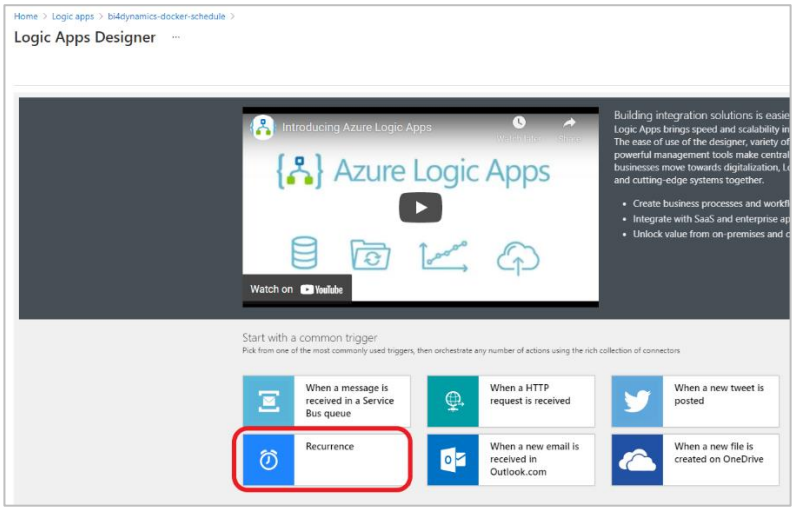




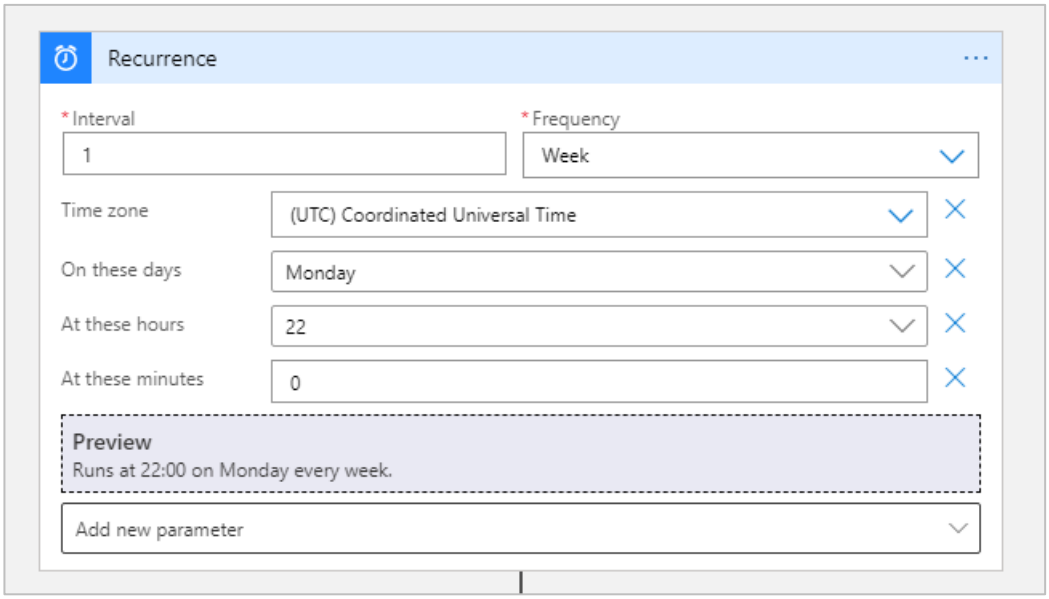
4. Go to **Logic apps** and open the newly created application.



5. Logic apps designer will open with premade templates to use. Select **Recurrence** in the template or search for it in the search dialog.

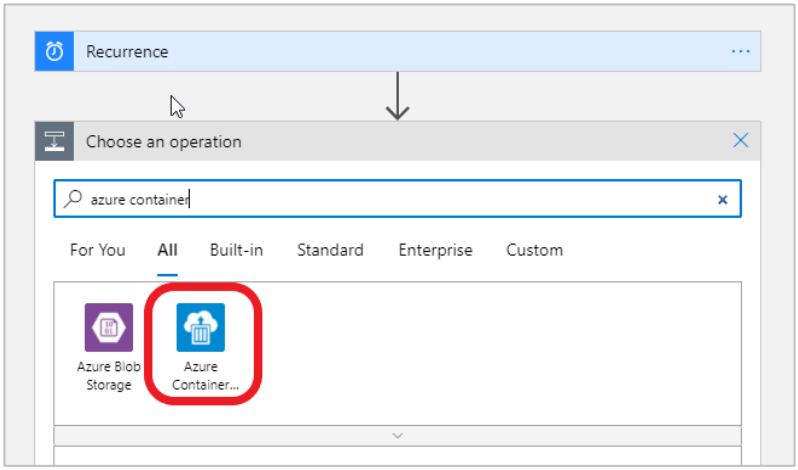


6. Select the **Interval** and **Frequency** at which you decide the docker should be run.

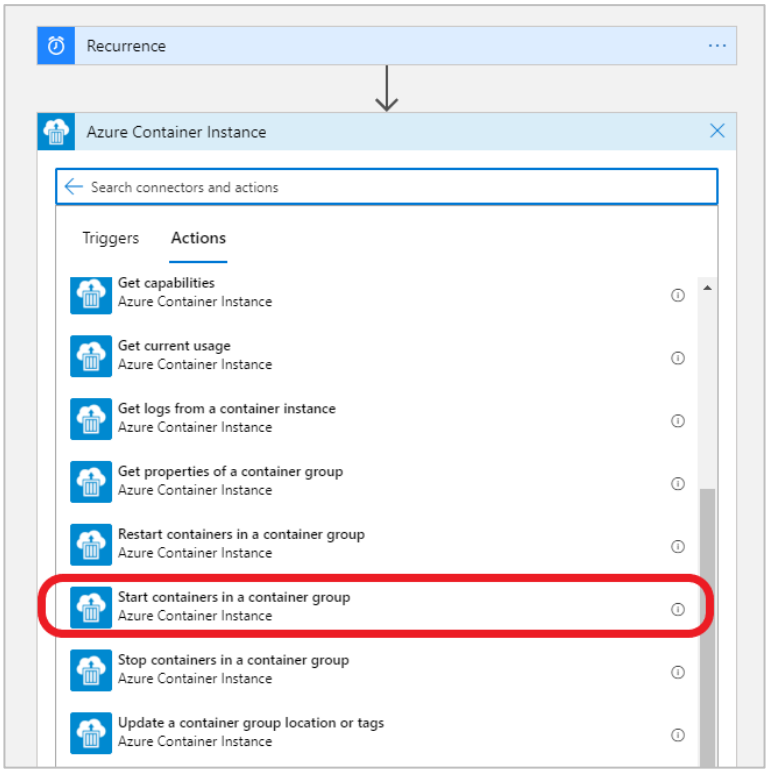


If the selected Frequency is Week, you can add new parameters which set the days, hours, and minutes when the application will run.

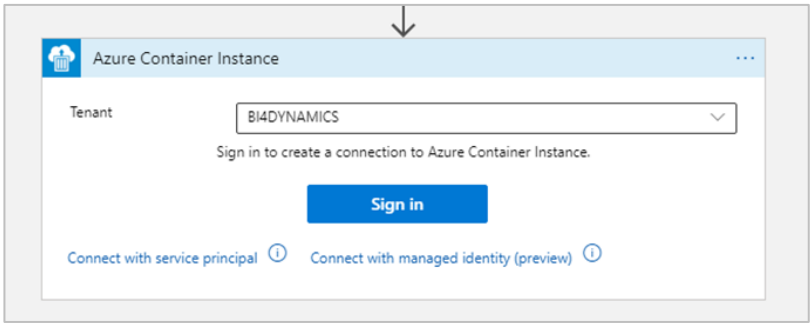
7. Click + **New step**, search for **Azure Container instance** and select it.



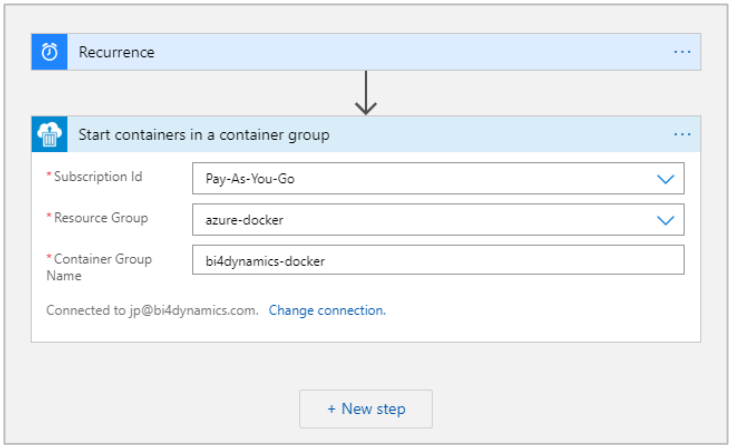
8. In the drop-down menu select **Start containers in a container group**.



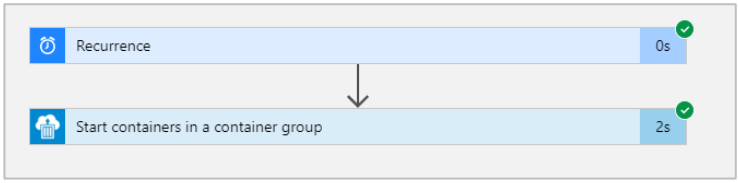
9. **Sign** into your tenant.



10. Enter your **Subscription Id**, **Resource Group** and **Container Group Name** (docker).

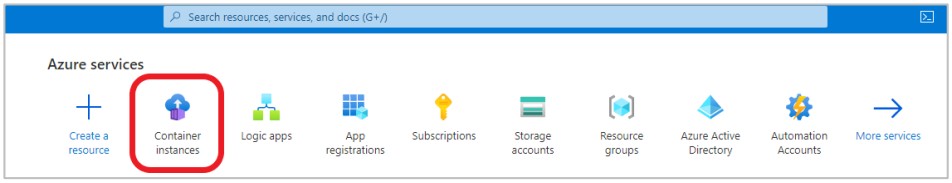


11. Click **Save** in the top left of the designer and press **Run** to test if the application is working correctly.

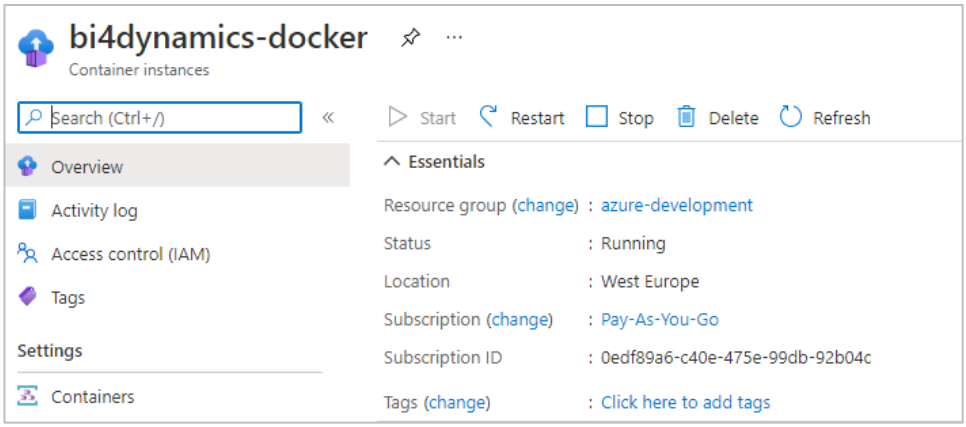


1.4 Test logic app

12. Go to **Container instances**.



13. Check the selected container instance (docker) if it is being **Created** or already **Running**.



You have now successfully created and tested a logic app that automatically starts container instance at specific times.

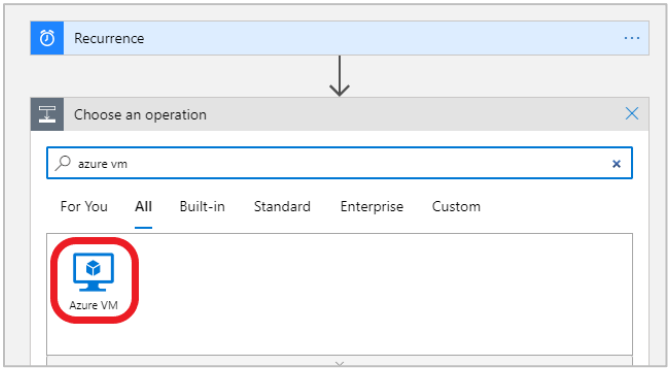
2 Process Automation #2 – Start and Stop Virtual Machine

Process automation for Virtual Machine on azure is very similar as for container instance. Steps 1 through 6 are the same. To test the Logic App go to Azure virtual machines and check if the VM is running.

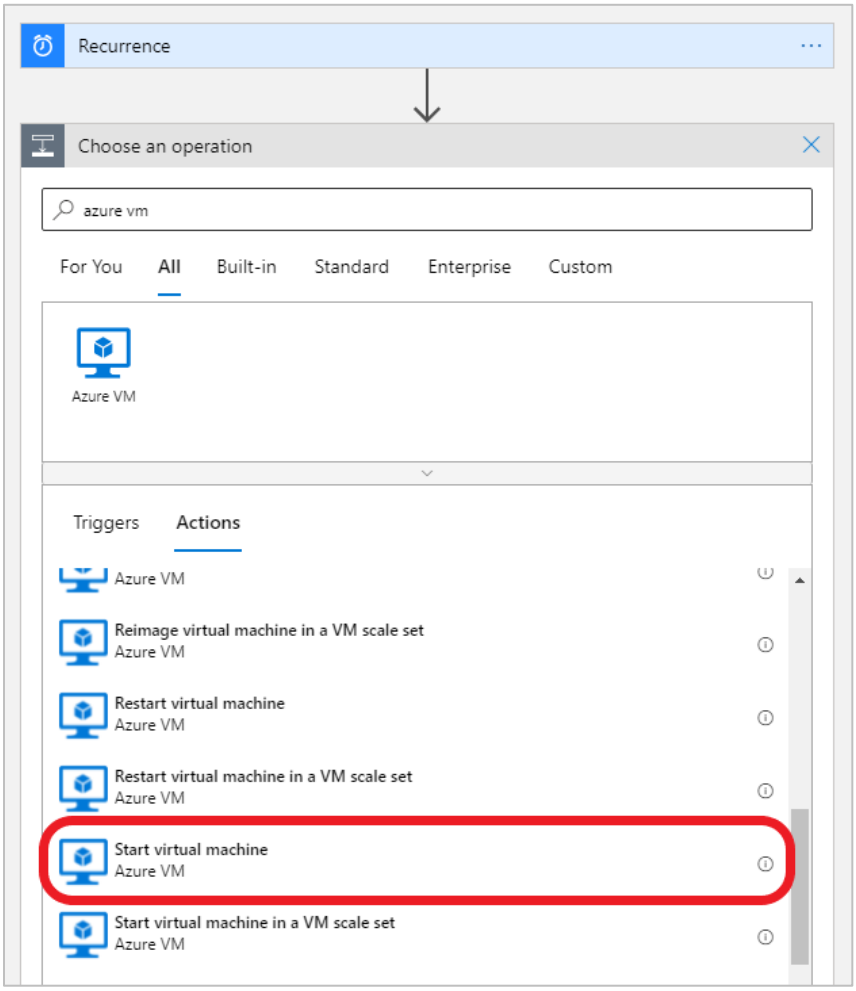
Note: We will create two logic apps, one for starting the VM and one for deallocating(stopping) it.

2.1 Start Virtual Machine

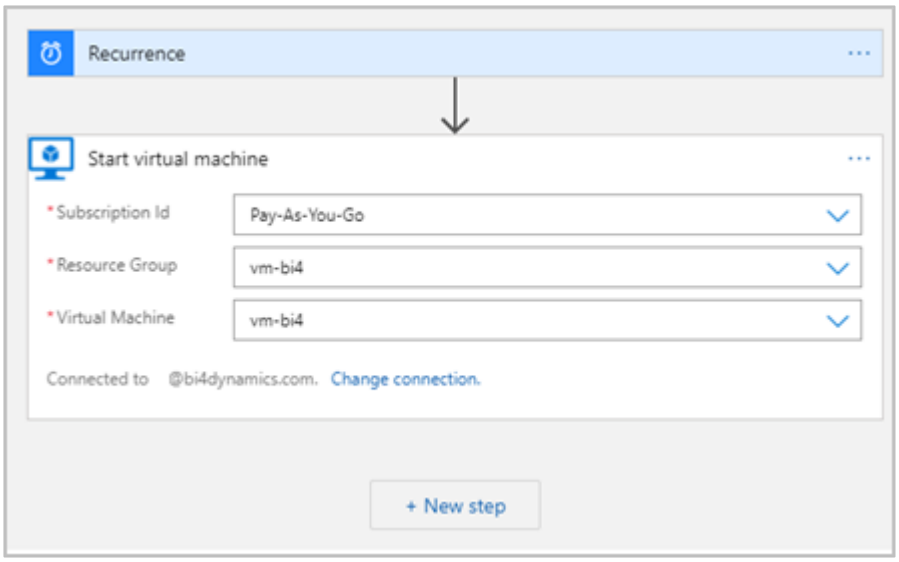
1. Search for **Azure VM** in search dialog and select it.



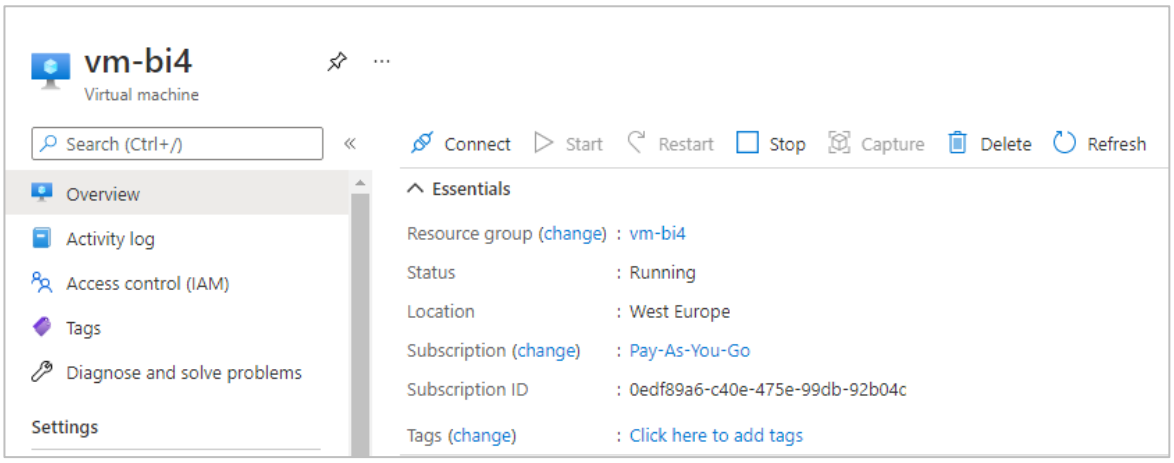
2. Select **Start virtual machine** option.



3. Insert values for **Subscription id**, **Resource group** and **Virtual Machine name**.



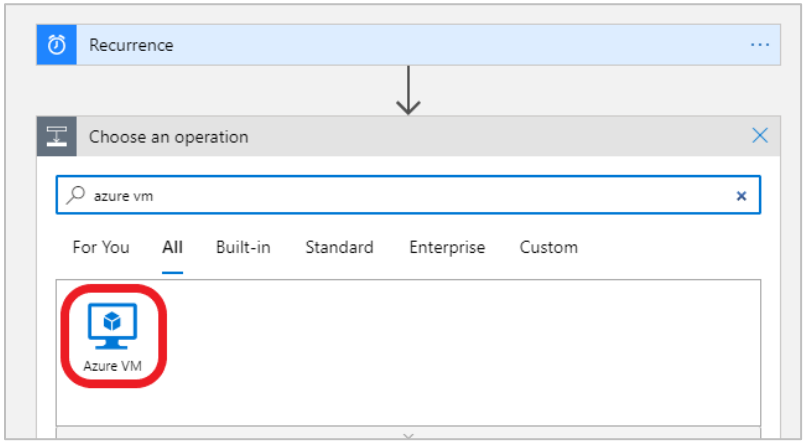
4. Next step is to **Save** and **Run** the application and go to **Virtual Machines** on Azure to check if it is **Running**.



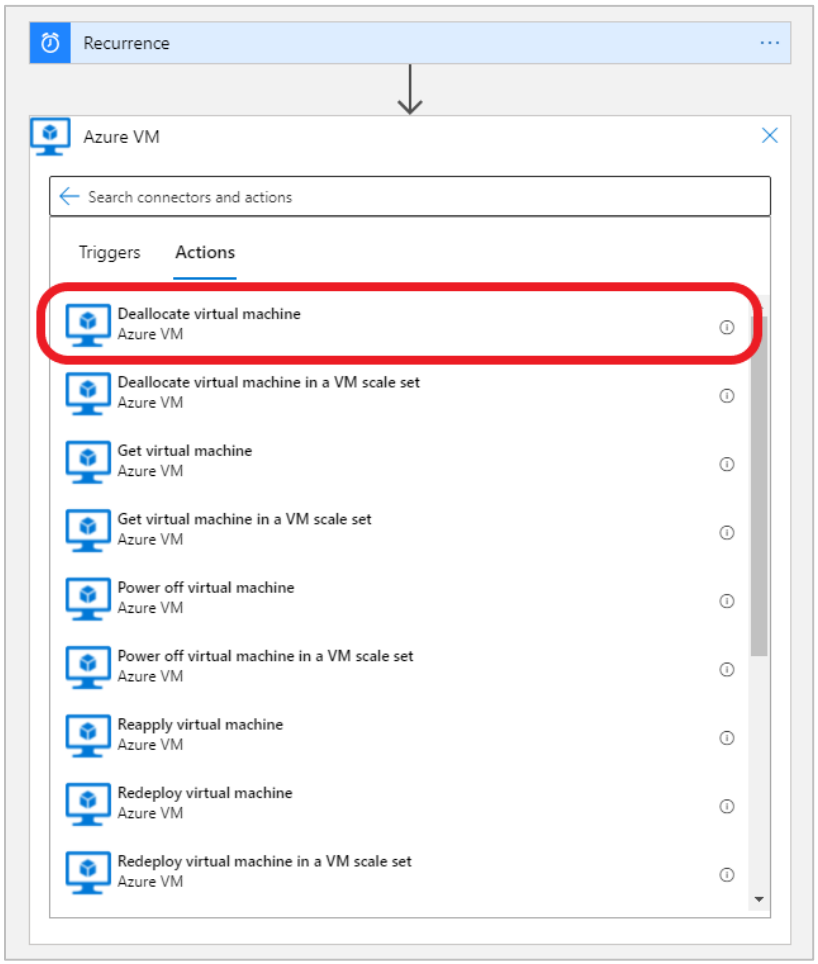
2.2 Deallocate Virtual Machine

Process automation for Virtual Machine Deallocation is almost identical to Start VM Logic app. First select the scheduled time when the VM should stop.

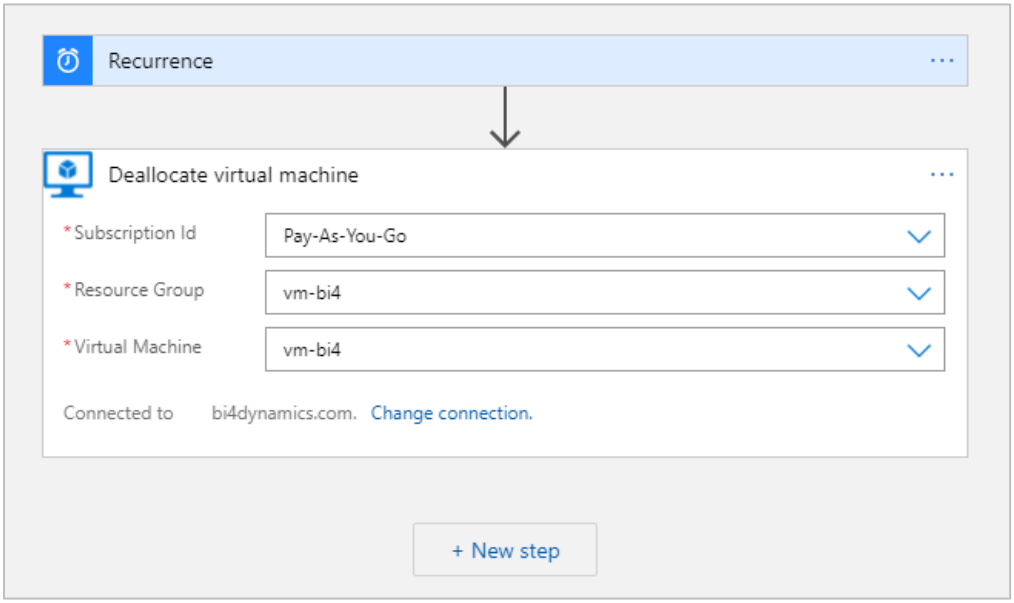
1. In **Logic Apps** select **Recurrence**, add a **new step** and search for **Azure VM**.



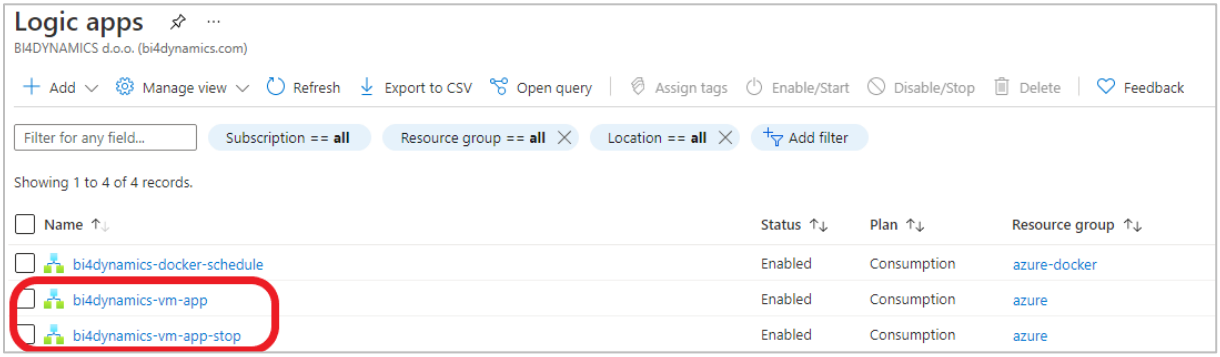
2. Next select **Deallocate virtual machine** option.



3. Insert values for **Subscription id**, **Resource group** and **Virtual Machine name**.



4. Click **Save** and exit Logic Apps Designer. Go to **Logic Apps** and check for apps VM start and VM stop.



5. To check if Logic apps are properly working first run the start VM app, after the Virtual machine is running, run the stop VM app and check if it is allocated.

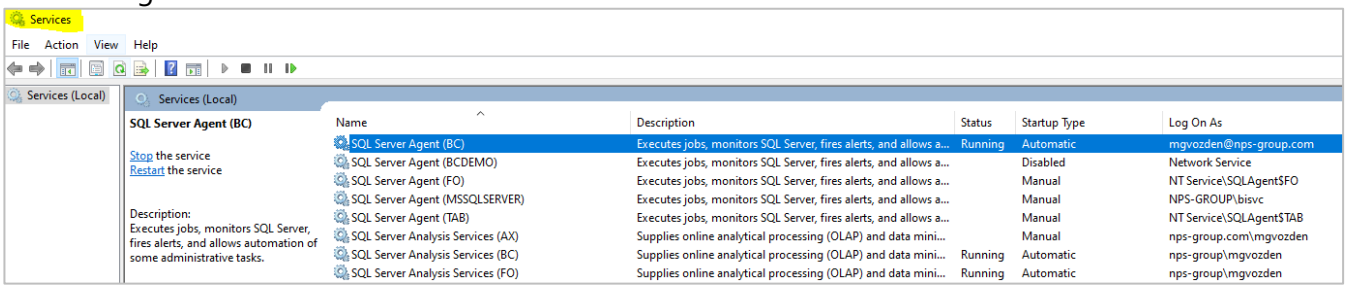
You have now successfully created a logic app that automatically starts virtual machine at specified times and a logic app that automatically stops(deallocates) the virtual machine at specified times.

3 Process Automation #3 – Start SQL server Agent (VM)

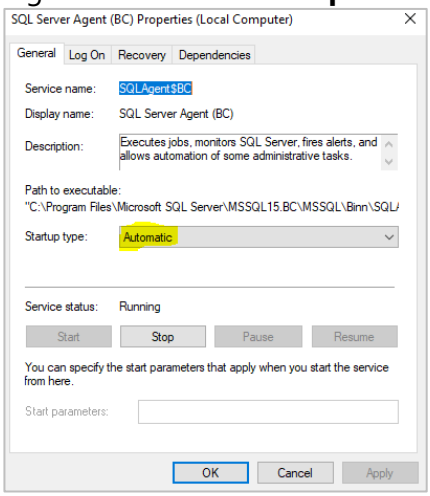
When Virtual machine is running, it is ready to process data. This process is triggered by SQL Server Agent feature, a part of SQL server.

1.1. Enable SQL Server agent

Go to **Services** and find the **SQL Server Agent** service. If you are using newly created Virtual Machine, it will probably be the only SQL Server Agent, but if you are running more SQL server engines, there may be more Agents.



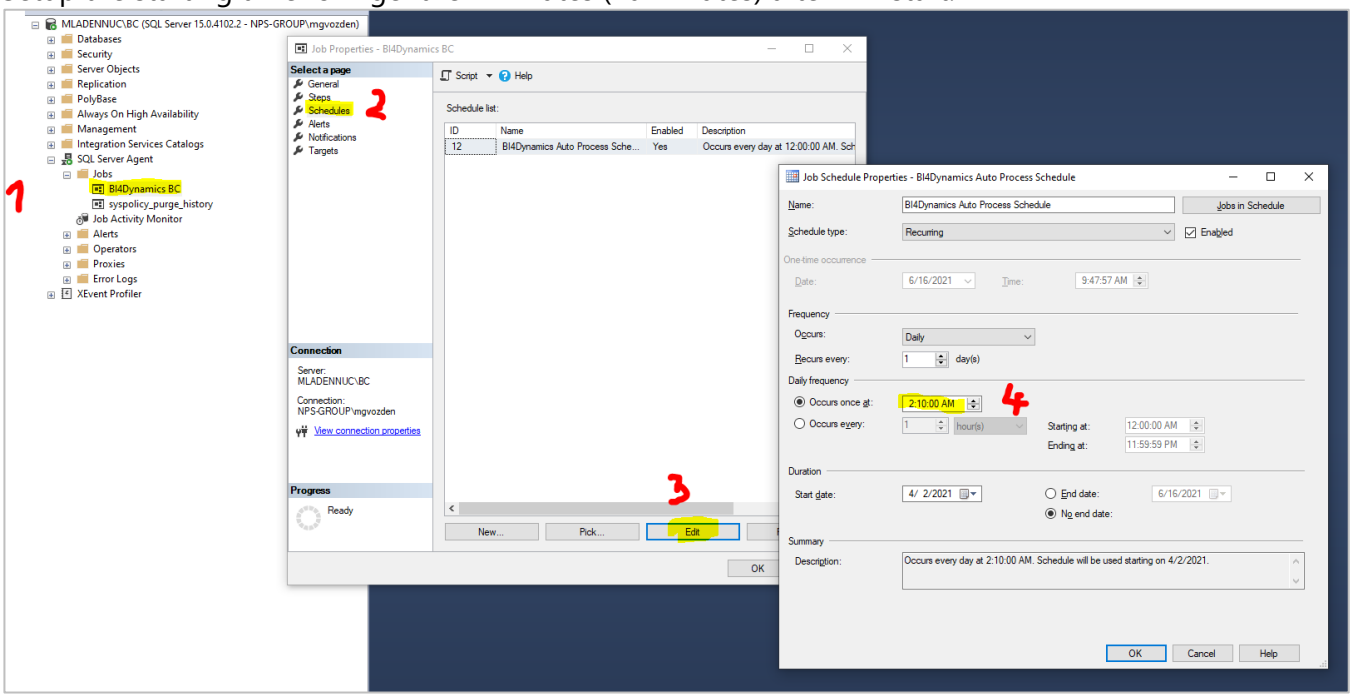
Right click and select **Properties** and set Start-up Type to Automatic.



Note: make sure that user running service is a domain admin user (not a service) and has permissions needed to process data warehouse and analysis services. On VM this would be the VM admin user.

3.1 Setup SQL Server Agent

Setup the starting time for Agent few minutes (10 minutes) after VM start.

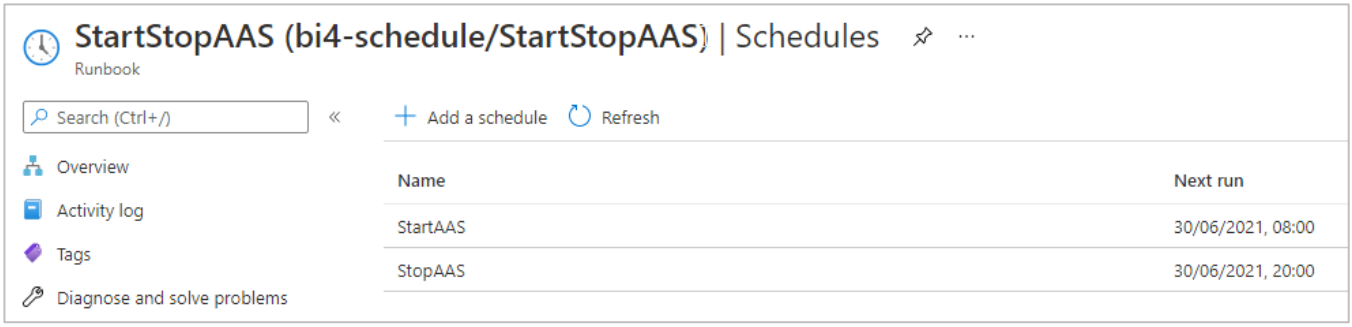


4 Process Automation #4 – Start and Stop Azure Analysis Services

Setup for process automation for Azure Analysis Services (AAS) can be found here:
https://microsoft-bitools.blogspot.com/2019/12/schedule-start-stop-of-azure-analysis.html

Authors **Joost van Rossum**, **Ricardo Schuurman** & **Mark de Groot** explain the process of automating schedule for Azure Analysis Services (AAS).

Note: There is no need to enter parameters into the script, as it gets the parameters from the schedules. We end up with two schedules, one to start and one to stop AAS.



5 Process Automation - Timing Schedule

Here is an example of processing schedule for daily update:

Step	Step description	Start Time	Duration	Comment
1	Start Container instance	22:00	45 min	BC export to data lake can run anytime after BC users are finishing their daily work. This process time can vary 30% (!) day by day, exporting same amount of data, in the after-office hours when no-one is using BC. Keep enough buffer time for next step.
2	Start Virtual Machine	07:00	2-3 min	VM hosts data warehouse that must be ready when DW processing start
3	Start Azure Analysis Services	07:00	2-3 min	Azure AS must be ready when DW processing start
4	Start SQL Server Agent	07:15	20 min	DW processing (data are in Azure AS)
5	Stop Virtual Machine	08:00		Leave some buffer time after DW is processed and then stop VM.
6	Stop Azure Analysis Services	17:00		AAS will run during business hours when users are querying data.