Remote Desktop Services on Azure

Azure Hands On Lab November 20th 2018

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2tCloud

Content

Introduction

Many companies use Remote Desktop Services (RDS) to facilitate a remote desktop or remote apps to their users. The same can be achieved by deploying RDS on Azure. However, the Azure platform has some additional features which assist to quickly create a standardized RDS deployment with minimum administration effort.

During the following exercises we will deploy several Azure services using general available templates, including virtual machines that will join Azure Active Directory Domain Services. Additionally, we will adjust resources to our needs and use automation to schedule starting and stopping of Virtual Machines. Also, automatic updates are being configured to reduce the management effort.

By leveraging the Azure Resource Manager this way, we will deploy a RDS solution in just a few hours instead of days. Also, the solution lowers the manual effort that is needed for day to day operation and management.

Estimated time to complete this lab

120 minutes

Objectives

During this lab, you will learn how to get started with Azure to;

- Make your way through the Azure Portal
- Deploy Azure Active Directory Domain Services
- Deploy a RDS farm by using a customized ARM template
- Resize workloads previously provisioned
- Use Automation to schedule your workloads
- Use Automation to arrange updates

Prequisites

To complete this course, you will be needing;

- Laptop/computer with Internet browser and WiFi connected
- Account with an Azure CSP Subscription

Materials

All student materials are available for download here:

https://github.com/Copaco/handsonlab/

Activity 1 : Getting Started

Estimated time to complete this activity

30 minutes

Objectives

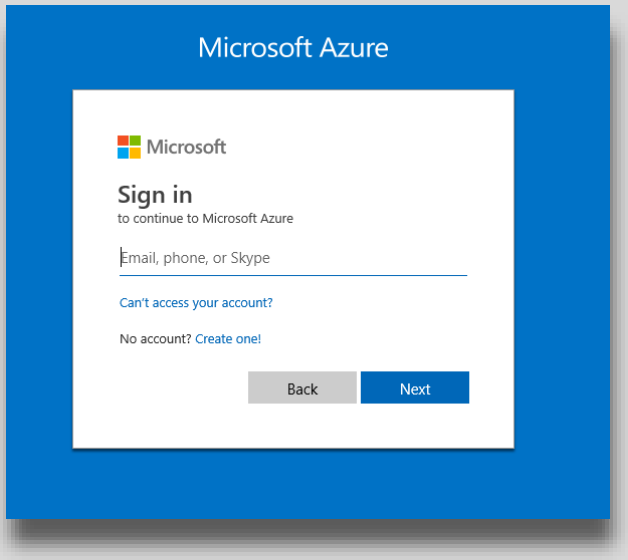
In this activity, you will configure the components necessary to perform this lab;

- Login to your Azure tenant
- Create a Resource Group
- Deploy Azure Active Directory Domain Services

Exercise 1a : Login to the Azure Portal

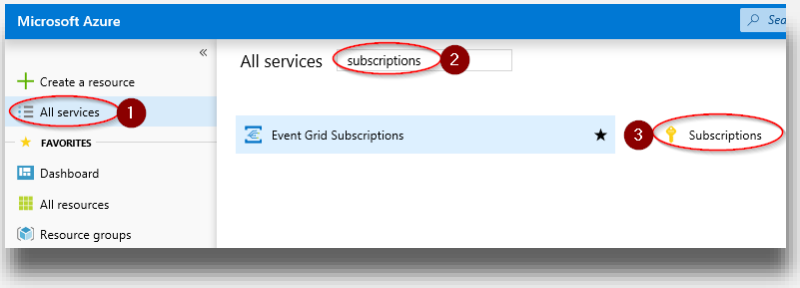
1) Using your *Work Account*, you can sign in to the Azure Portal at:

   https://portal.azure.com

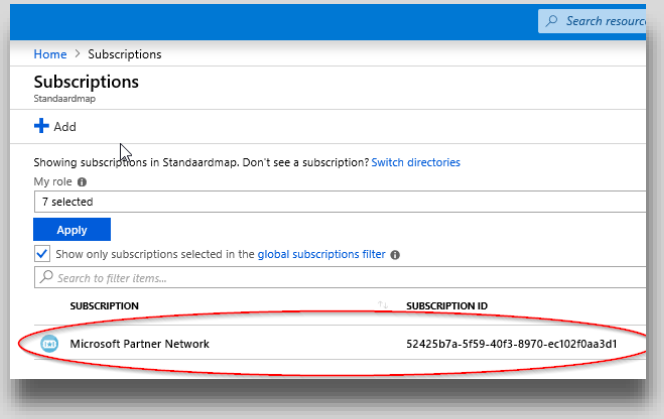


2) Using the navigation bar on the left, use the *All services* menu to browse to the *Subscriptions* pane.

   The *Search* filter on the top will help you to find what you need.

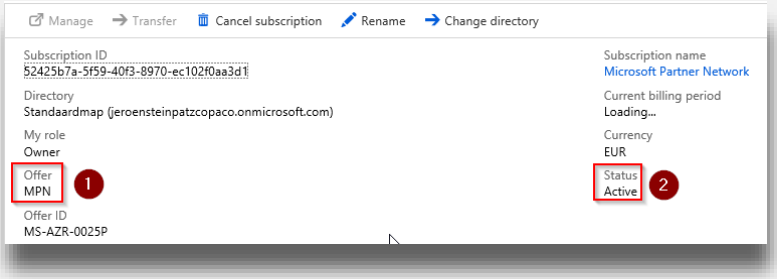


3) From the *Subscriptions* overview, click the active subscription.



4) In the *Overview* pane, check the Offer type for being either **CSP, MPN, MSDN, OPEN** or **EA**

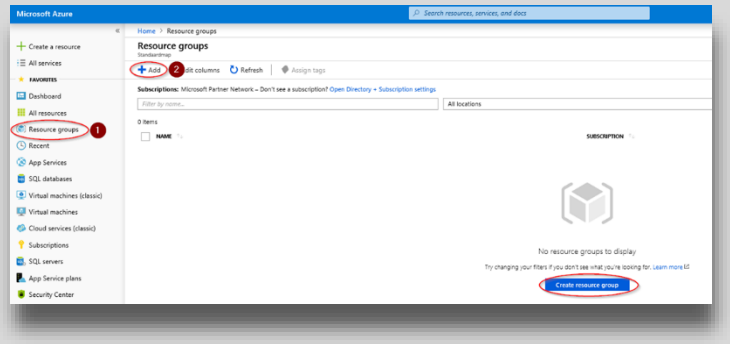
Check the *Status* for being **Active**.



We also strongly recommend that you use InPrivate browsing to ensure that you are not automatically logged on with other credentials during the registration / activation process.

Exercise 1b : Create a Resource Group

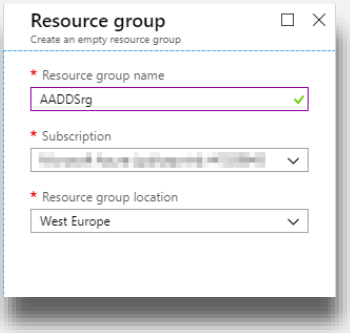
1) Click *Resource Groups*
Click *Add*



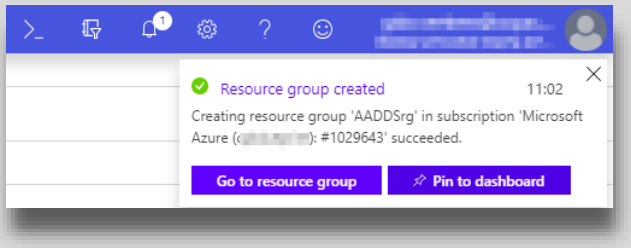
2) Add *Resource group name* **AADDSrg**

Select *Subscription* **Microsoft Azure (CSP)**

Select *Location* **West Europe**



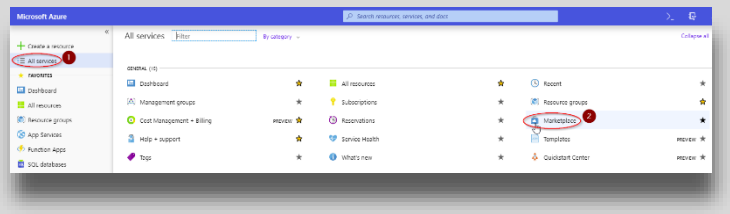
3) After a few moments, the Resource Group "**AADDSrg**" is created



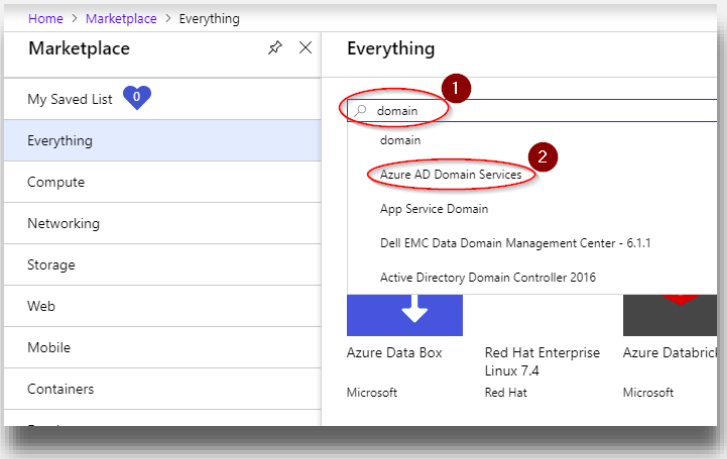
You can choose a different name for the resource group if you like. However, the scripts that will be used in the following steps don't support special characters in the Resource Group name. So please prevent the use of underscores or hyphens in the name, as this will result in failures later on.

Exercise 1c : Deploy Azure Active Directory Domain Services

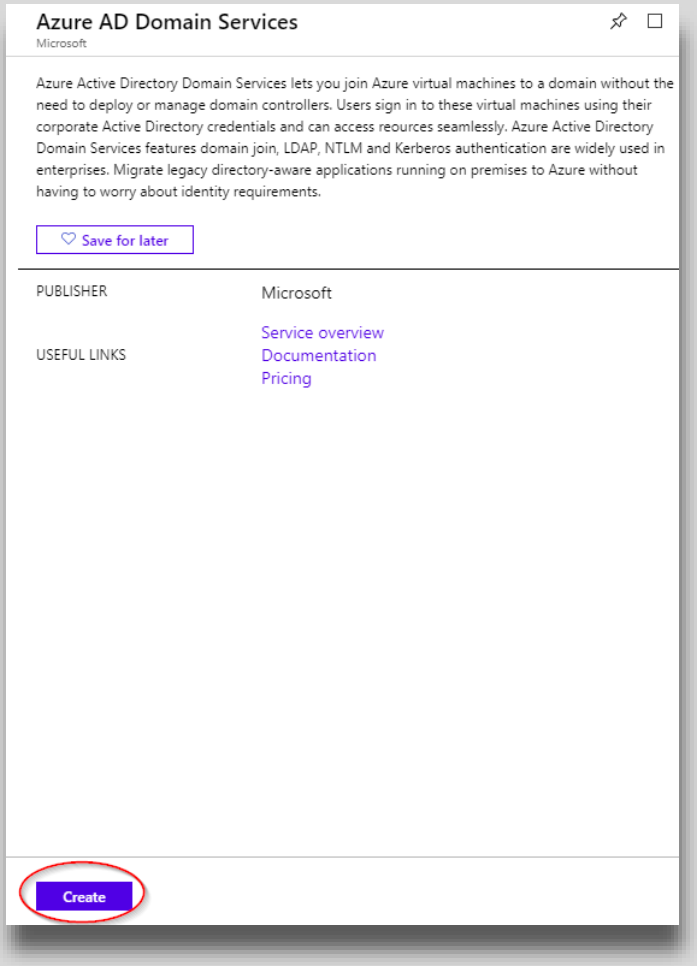
1) From the Azure Portal, click *All services* and go to the *Marketplace*



2) Use the Search Everything box to search and select *Azure AD Domain Services*



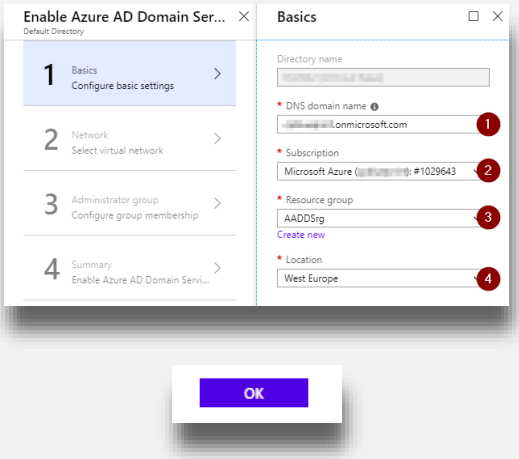
3) You will be presented with a summary of the service. Click the *Create* button.



4) Now it is time to choose some setup preferences.

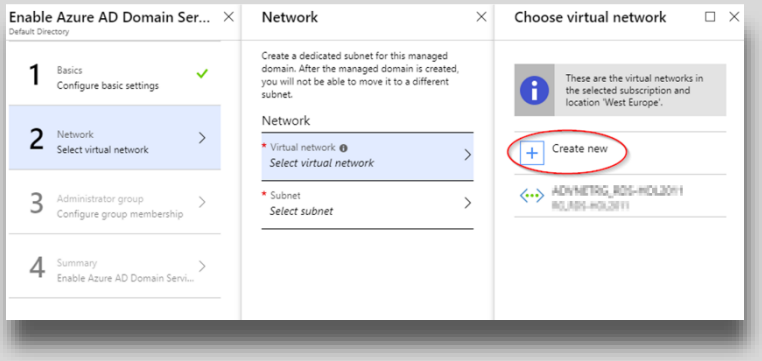
   For the domain name, accept the provided value. In production environment, you would use a custom public domain name.

   Choose the same Subscription, Resource Group and Location as used in earlier steps.

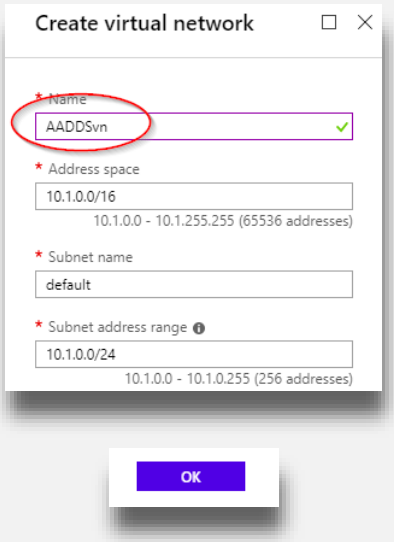


5) As AAD Domain Services are deployed in a Virtual Network, we'll have to create one.

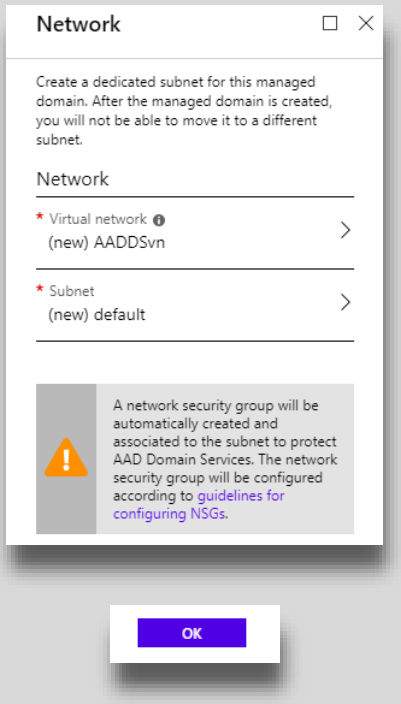
   Select *Create New*



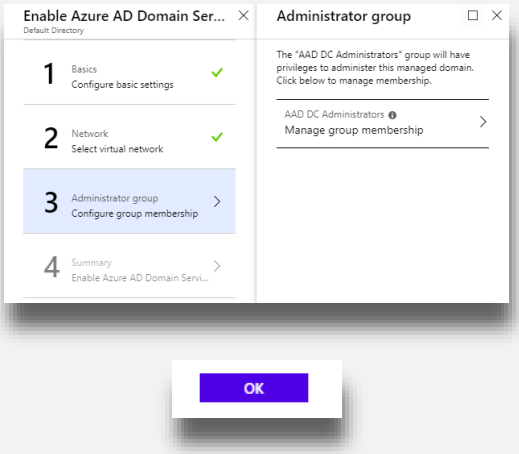
6) For this lab, we'll be fine using the defaults for this Virtual Network. Adjust only the VNET Name, so it aligns with the naming convention.



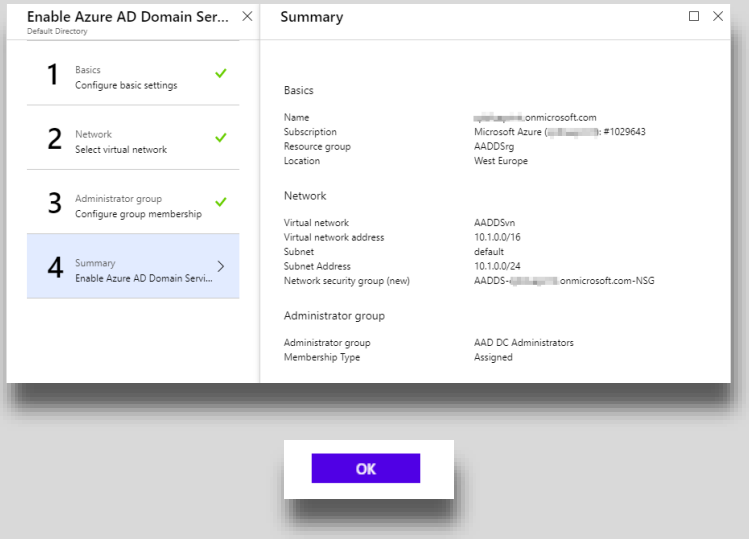
7) You'll be notified that a Network Security Group will be created. We won't be covering the details in this lab, but you can safely ignore the warning and proceed.



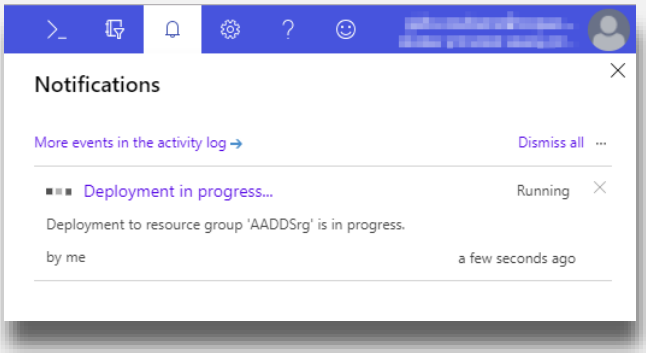
8) By default, a new security group will be created in the Azure Active Directory. Accept the suggested group.



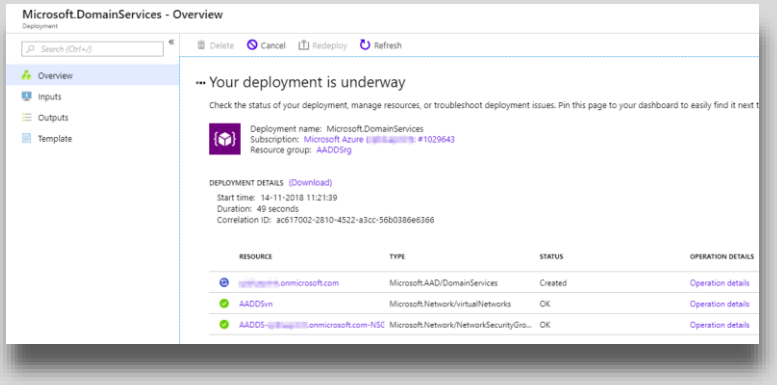
9) You will be prompted with a summary. Please review and correct if necessary before proceeding.



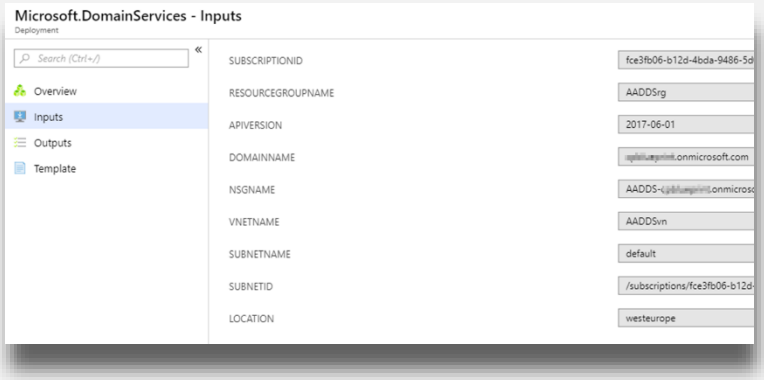
10) After you select OK, the deployment will start. In the notification pane, the deployment task will be shown. Select the *Deployment in progress* for details.



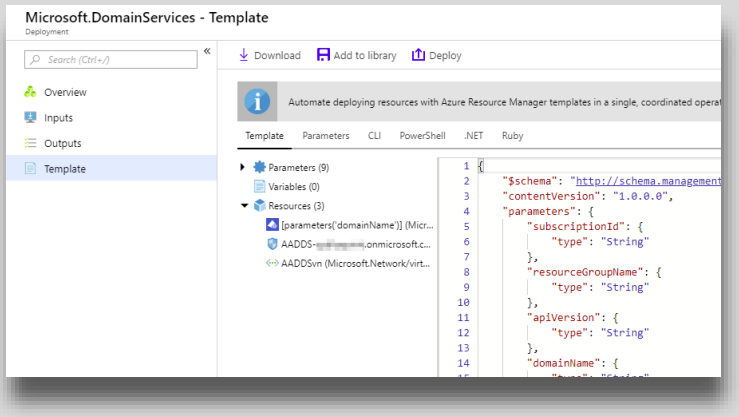
11) The deployment will be shown in detail. On the *Overview* pane, you'll get an overview of the resources deployed with their progress.



12) On the Inputs pane, the parameters used will be shown.



13) On the Template pane, you'll see the ARM template that the Azure Portal has generated with you input. This template can be used to redeploy this deployment or as a base for automating other deployments.



14) Your done for this exercise! Wait for the deployment to finish.

📌 *This deployment will run for about 30 minutes.*

Activity 2 : Deploy Remote Desktop Services

Estimated time to complete this activity

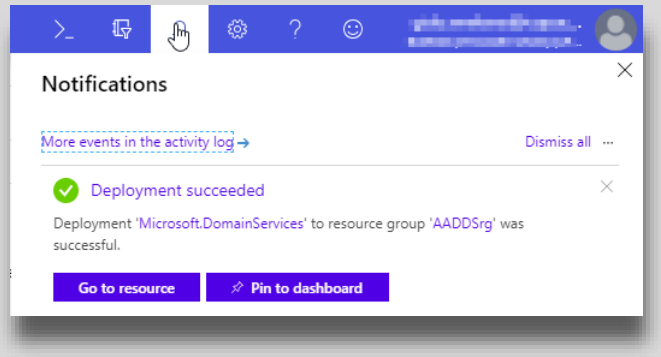
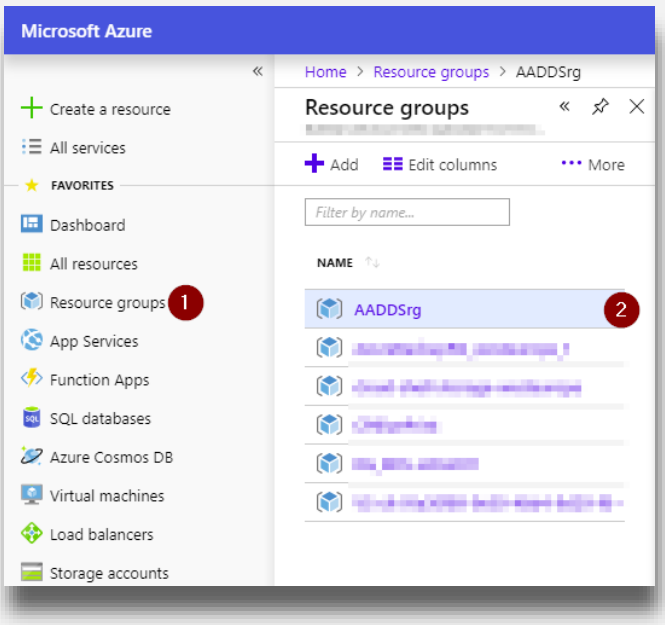
60 minutes

Objectives

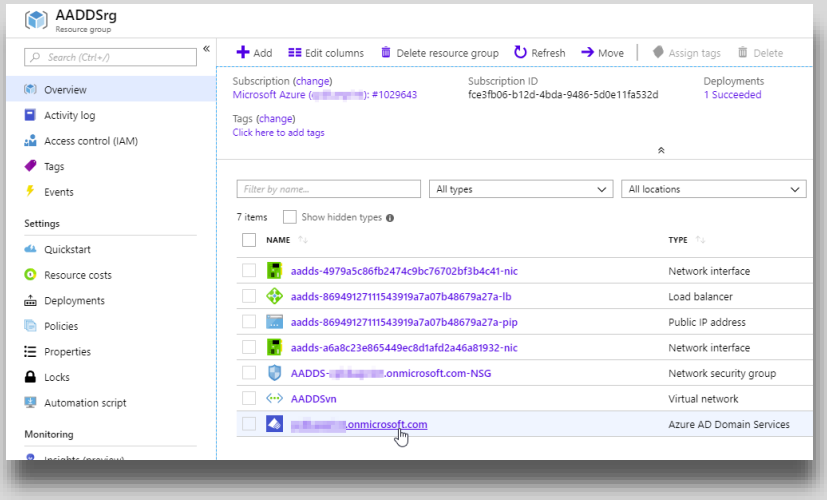
In this activity, you will configure the components necessary to perform this lab;

- Finalize the AAD Domain Services deployment
- Deploy RDS using a customized ARM template

Exercise 2a : Finalize the AAD Domain Services deployment

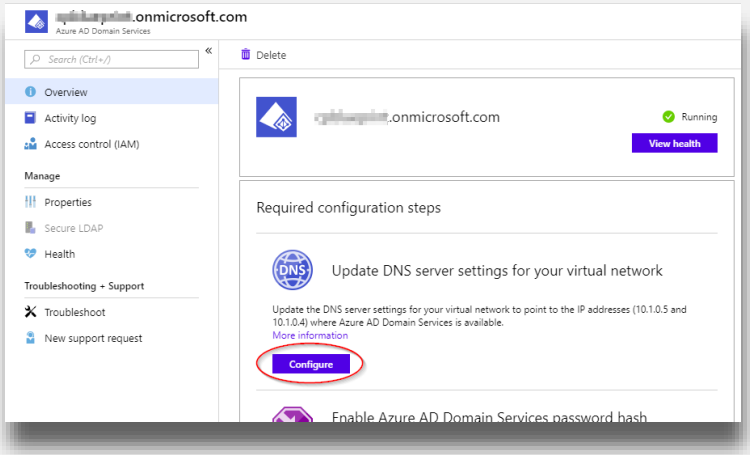
1) Verify that the deployment has finished successfully	
2) Click *Resource Groups* and open *AADDSrg*	

3) You can see there are several resources deployed. Open the *Azure AD Domain Services* resource by clicking the name.

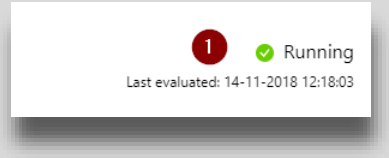


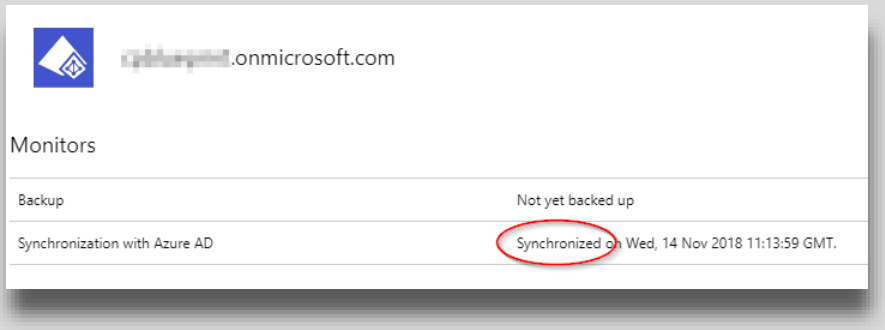
4) You'll see that AAD Domain Services is running. To make sure all VM's in the virtual network will use the corresponding DNS Servers, click the *Configure* button.

You will be notified to reboot all servers in the virtual network. As there are none, you can safely ignore the notification.

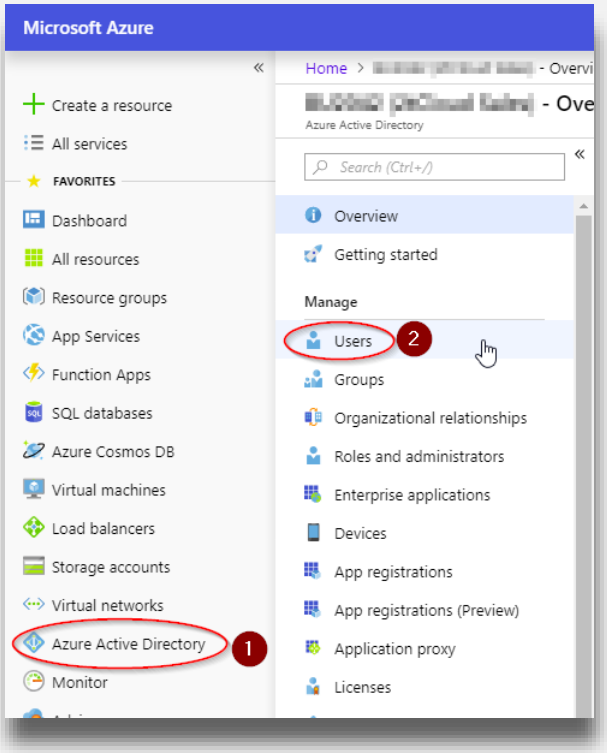


5) Browse to the *Health* pane and check if the service is *Running* and the *synchronization* between AAD and AAD Domain Services has taken place.

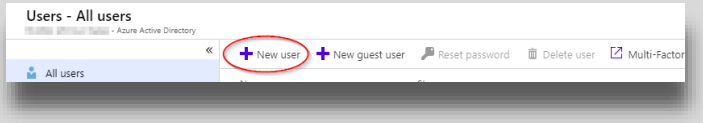




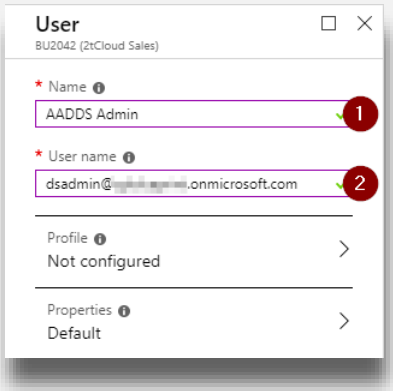
6) From the Azure Portal navigation bar, select *Azure Active Directory* and browse to *Users*.



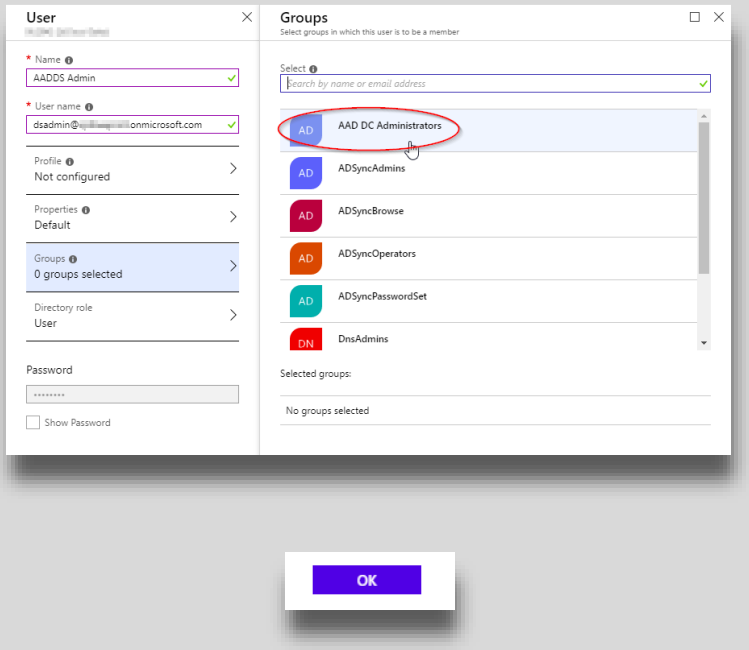
7) Create a New User



8) Give the new user a recognizable *Name*, as shown in the example. Also, choose a *User Name* like shown. Please be aware that you should use the same domain that AAD Domain Services is using.



9) Make the new user member of the *AAD DC Administrators* group.

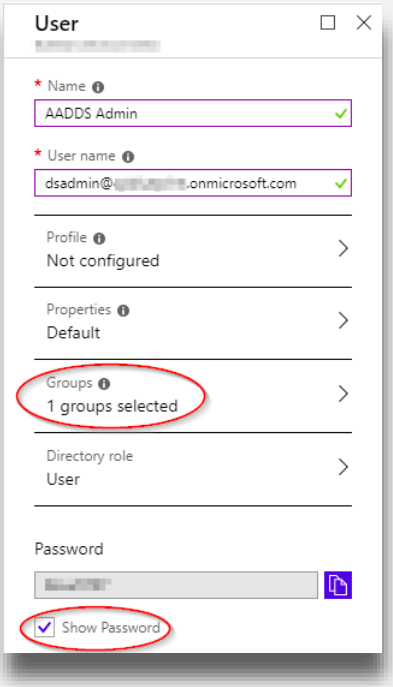


10) Make sure the amount of *Groups* have now changed.

Please note that this user doesn't need an administrative role in the Azure Active Directory.

Also, select the *Show Password* field.

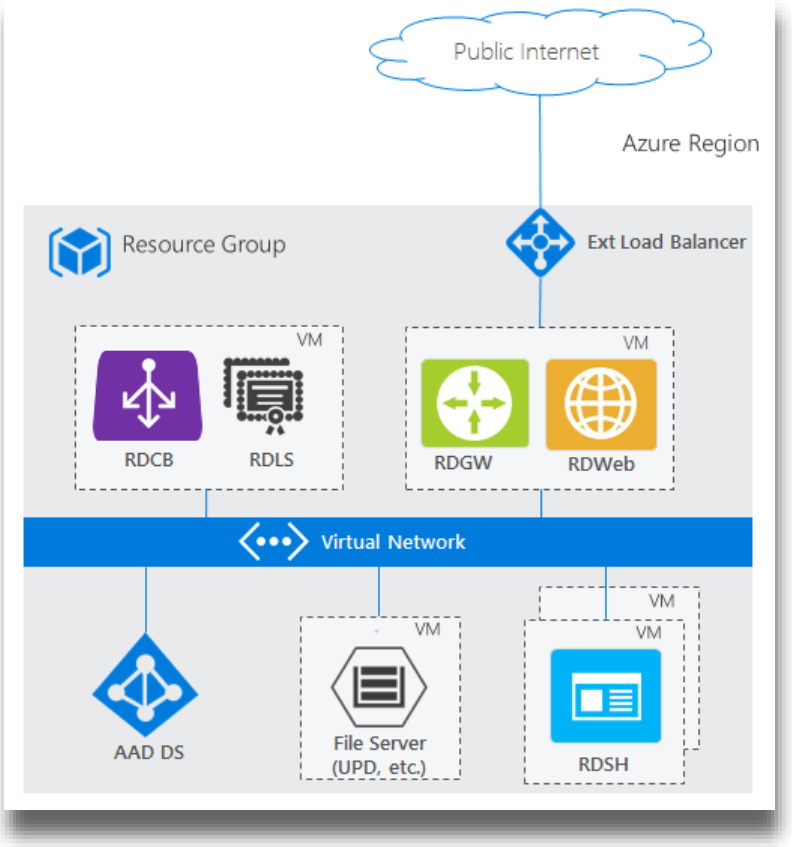
Make sure you remember the *User Name* and *Password*.



11) Open a different browser or open a new InPrivate browser session. Browse to: *myapps.microsoft.com* Log on using the newly created user account. As this is the first logon, the password has to be changed. Please do so.	
12) You will be logged on. You can safely close the browser session.	

Exercise 2b : Deploy RDS using a customized ARM template

For this exercise, we will be deploying a Remote Desktop Services environment that consist of the following resources;

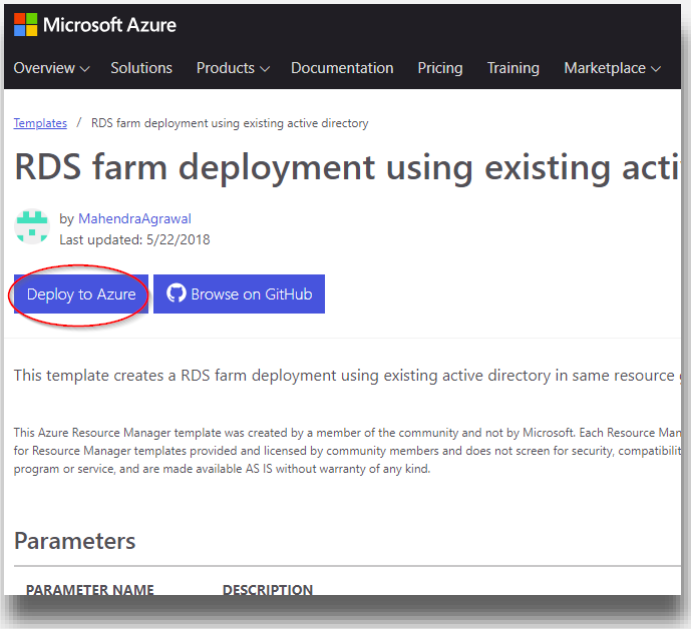


Just like we would do on-premises or on any other IaaS platform, we could manually deploy and configure the resources needed. However, by leveraging the Azure Resource Manager we can deploy complete solutions much faster. Besides that, deployments are standardized and re-deployable. There are many ready-to-use QuickStart templates available from Microsoft, so we don't always have to create our own.

1)	Open the ARM template we will be using to deploy the RDS farm to our existing Active Directory.	https://azure.microsoft.com/en-us/resources/templates/rds-deployment-existing-ad/

2) You will be presented an overview of the solution. Click to *Deploy to Azure*.

The template contains a predefined solution with multiple Virtual Machines and roles. It makes use of the already existing Domain Services, in the next step we will adjust the parameters to connect with the existing infrastructure.



3) Specify the following parameters;

1) *Resource Group*
ADDSrg

2) *DNS Label Prefix*
Choose a unique value. This will result in a new FQDN.

3) *AD Domain Name*
As specified in the Domain Services Domain Name in *Exercise 1c*

4) *AD VNET Name*
AADDSvn

5) *AD VNET RG*
AADDSrg

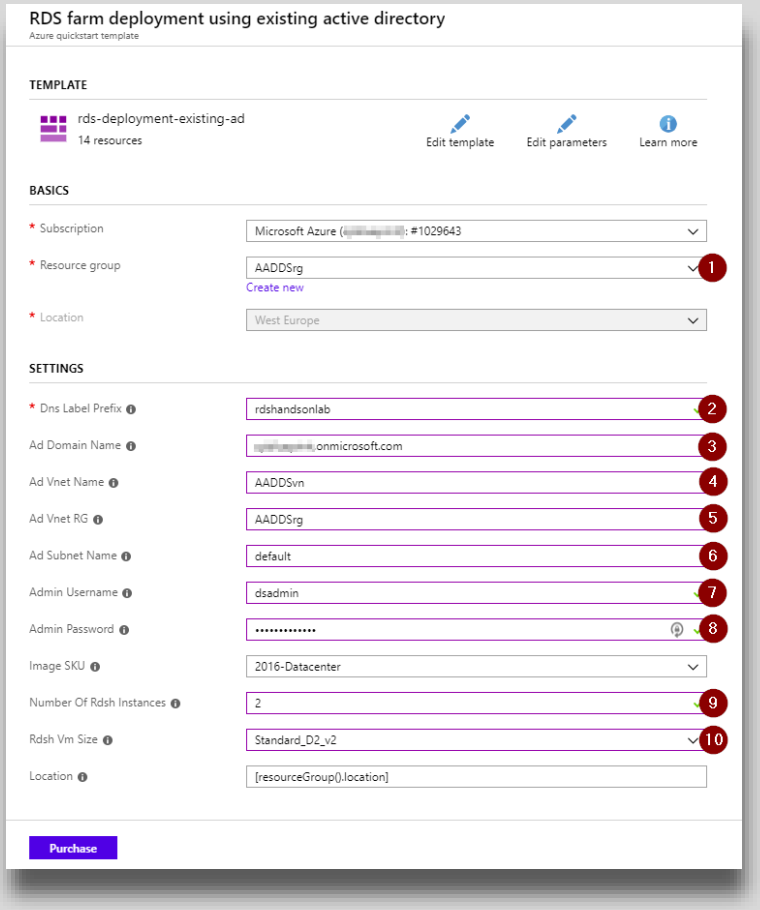
6) *AD Subnet Name*
default

7) *Admin username*
As specified in *Exercise 2a*

8) *Admin password*
As specified in *Exercise 2a*

9) *Amount of RDS Session Host*. For this lab, we will deploy **2** instances.

10) *RDS Session Host VM*



type. Select the **Standard D2 v2** instance.

4) Select the *Edit template* button

5) As we're not using a traditional DNS Server, we will have to remove some references. Use the *search function (CTRL-F)* to find the string **DNSServers**. There should be 3 results

6) Remove all the lines that define the DNSsettings, as shown in the example. A before and after have been included.

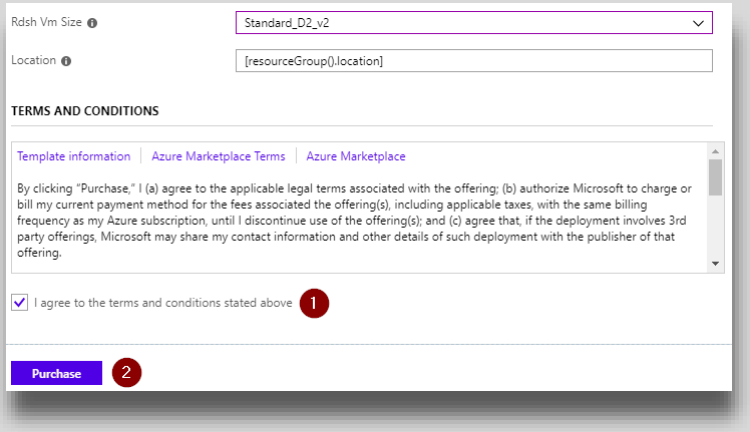
Repeat for all 3 results. Select the Save button will validate if the syntax is still correct.

Before

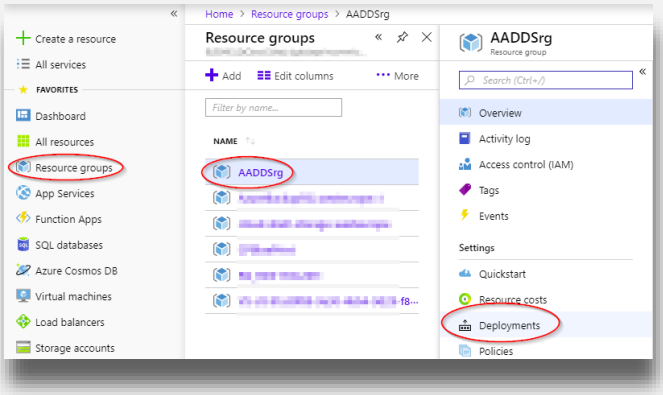
After

```
338            "properties": {
339                "ipConfigurations": [
340                    {
341                        "name": "ipconfig",
342                        "properties": {
343                            "privateIPAllocationMethod": "Dynamic",
344                            "publicIPAddress": {
345                                "id": "[resourceId('Microsoft.Network
346                            },
347                            "subnet": {
348                                "id": "[variables('subnet-id')]"
349                            }
350                        }
351                    }
352                ]
353            }
354        },
355        {
356            "apiVersion": "2015-06-15",
357            "type": "Microsoft.Network/networkInterfaces",
358            "name": "[concat('rdsh-', copyindex(), '-nic')]",
359            "location": "[parameters('location')]",
360            "copy": {
361                "name": "rdsh-nic-loop",
```

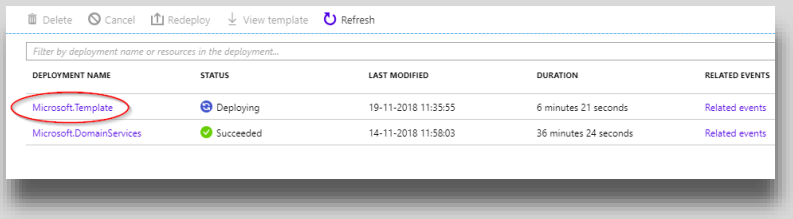
7) When the changes are made, click the Purchase button to deploy the solution with the customized ARM template and specified parameters. Don't forget to accept the terms at the bottom.



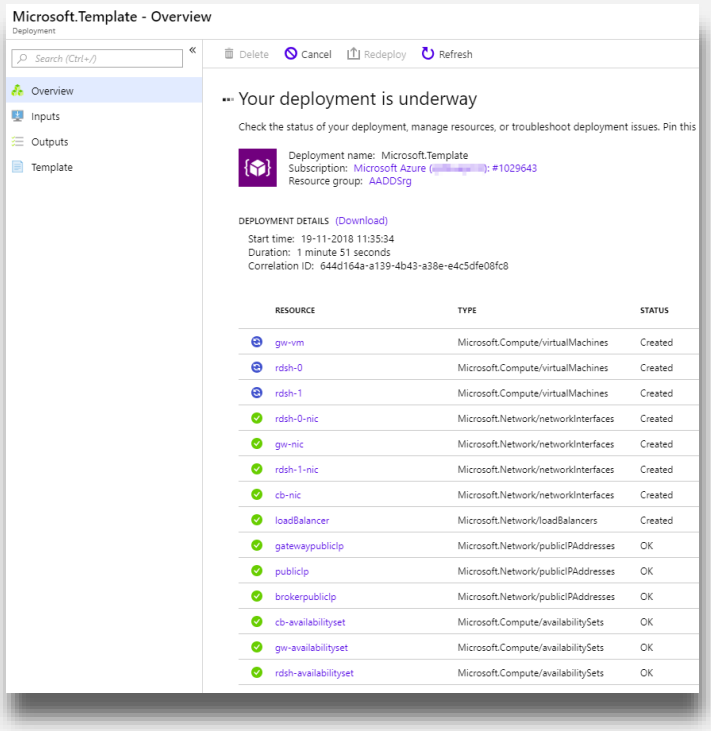
8) Navigate to *Resource Groups > AADDSrg > Deployments*



9) Select the *Microsoft.Template* deployment from the list.

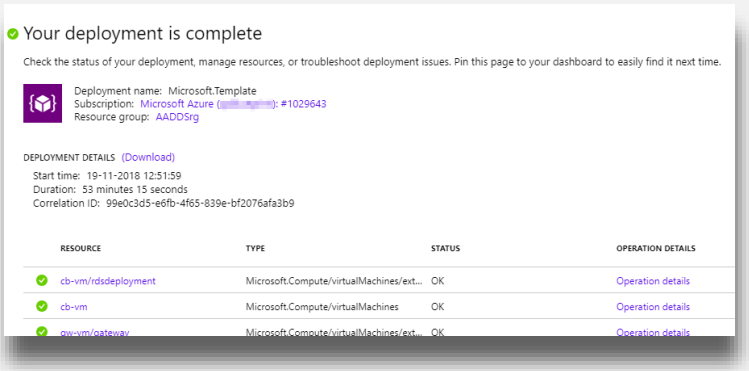


10) Check how the resources that are included in the ARM template are being deployed.



11) *[Optional]* If the deployment fails, you will get additional details from here. Remove the resources that were deployed. Try to resolve the issue and use the Redeploy button to try again.

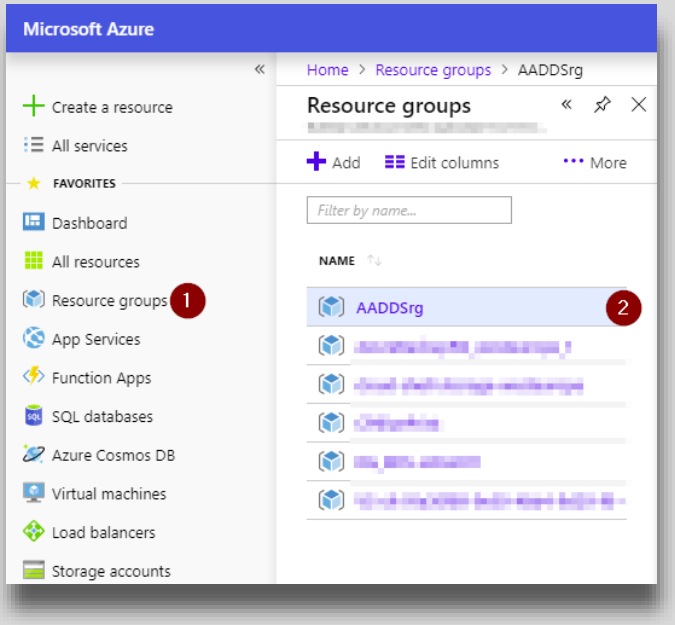
12) Your done for this exercise! Wait for the deployment to finish.



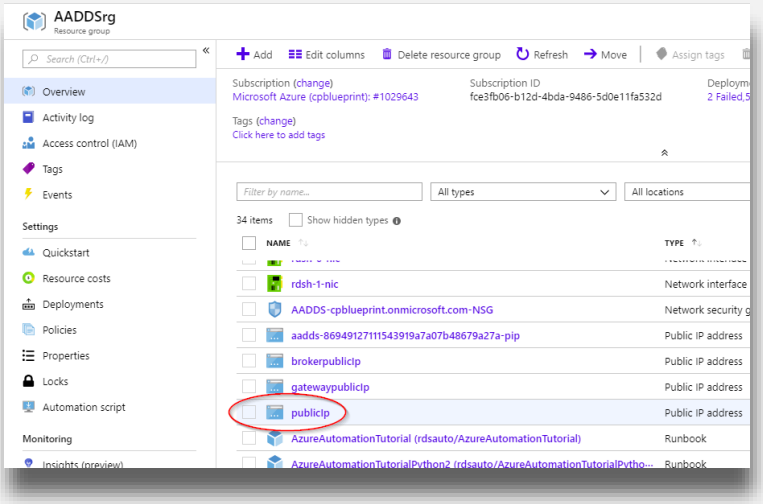
📌 *This deployment will run for about 55 minutes.*

Exercise 2c : Verify the RDS deployment

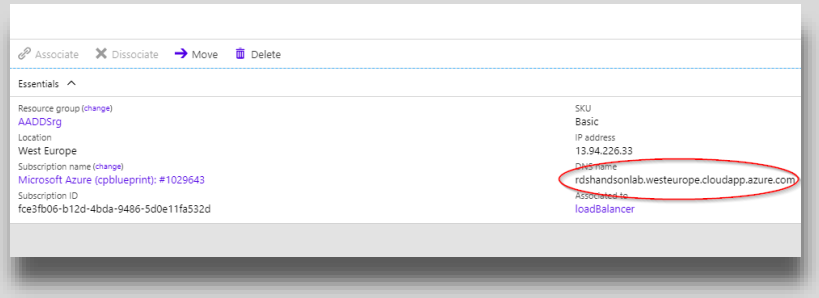
1) Click *Resource Groups* and open *AADDSrg*



2) Find and select the publicIP



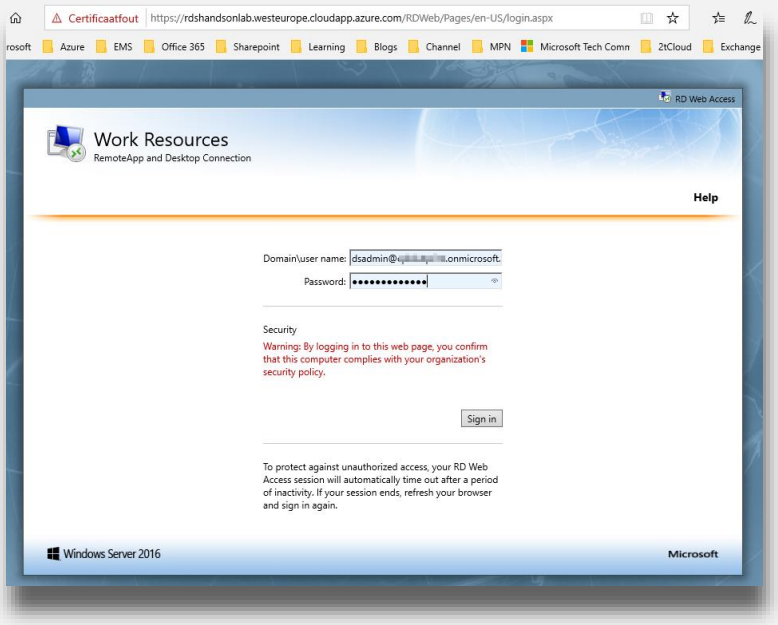
3) Collect the DNS Name, which contains the prefix that was given during deployment.



4) From a internet browser, open the URL.

To verify, try to logon using the admin account user credentials. Please note you can use the *UPN* instead of *domain\username* from this point.

https://[DNS Name]/RDweb



5) We now have a basic working deployment of Remote Desktop Services. We won't focus on configuration in this lab. Feel free to finetune the RDS configuration. For starters, make sure you add the RDS certificate to the trusted certificates on your computer's certificate store.

Activity 3 : Customize your RDS environment

Estimated time to complete this activity

45 minutes

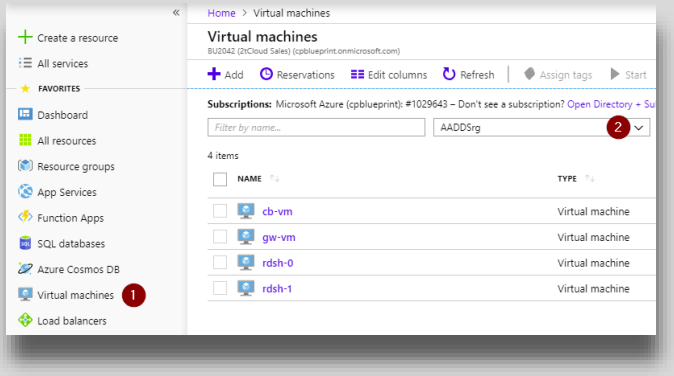
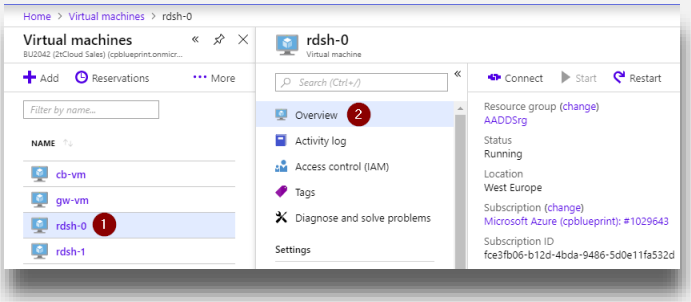
Objectives

In this activity, you will configure the components necessary to perform this lab;

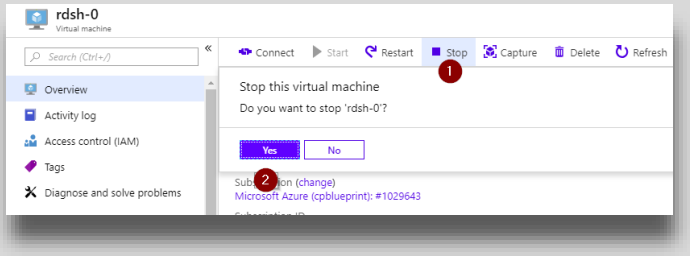
- Optimize the performance of the Virtual Machines and Managed Disks
- Deploy the Start/Stop VM Solution
- Implement Update Management using Automation

Exercise 3a : Optimize the performance of the Virtual Machines and Managed Disks

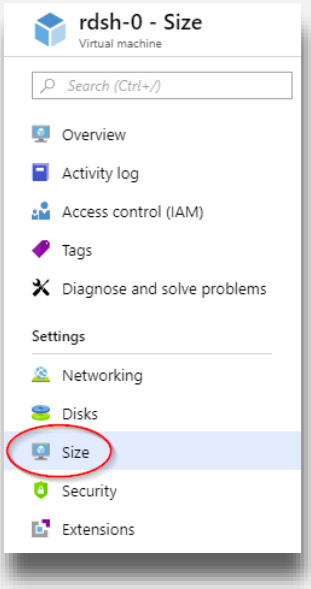
In the previous exercises we have deployed our environment with predefined VM sizes. To size this to match the organization needs, we'd like to change the VM sizes. Along with the CPU and memory specifications, a RDS Session Host should probably use Premium (SSD) Storage to meet IOPS demands. Therefor, also the disk size will be adjusted in this exercise.

1) Browse to Virtual Machines and filter on the correct Resource Group.	
2) Select RDSH-0 and the VM Overview will open.	

3) Stop the VM, so we can make changes to the configuration. Some changes can be made on a running VM, but changing the disk for instance can only be applied on a stopped VM.



4) Browse to Size.



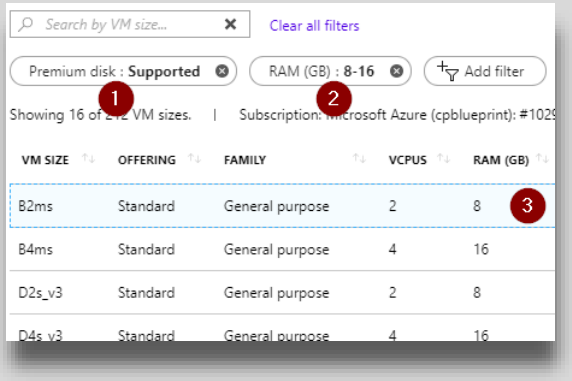
5) To select the wanted size, first *Add Filters*:

Premium Disk **Supported**

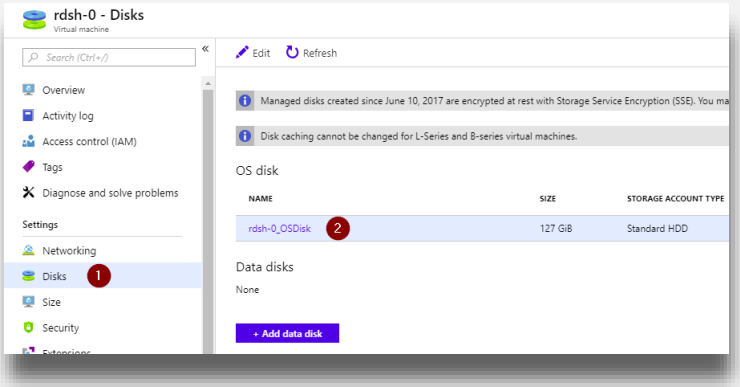
RAM (GB) between **8 and 16**

For this lab, select **B2ms**

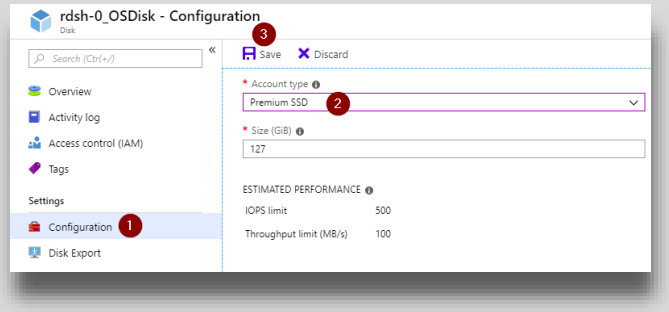
Select *Resize.*



6) Browse to *Disks* and select the *OS Disk*. Please note that it's currently a Standard HDD, which is not recommended for RDS Session Hosts.

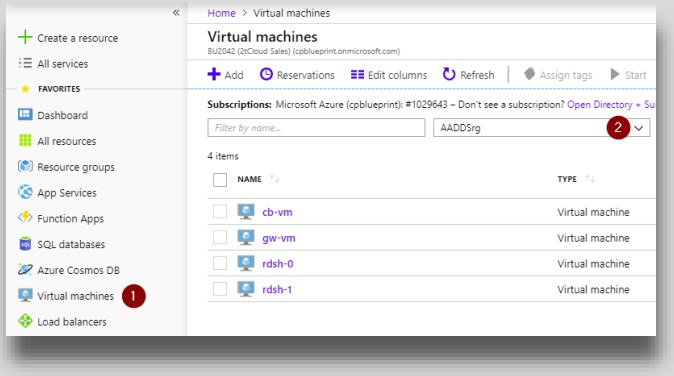


7) From *Configuration*, change the *Account Type* to **Premium SSD** and *Save.*

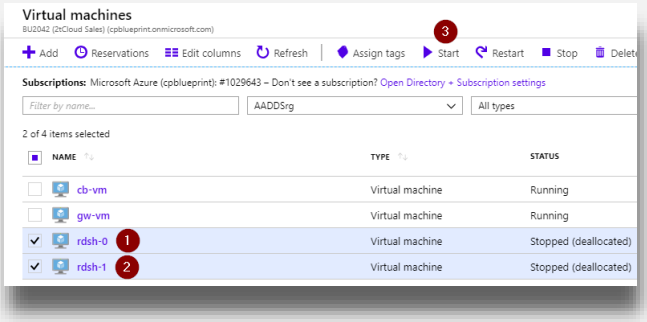


8) Please repeat *steps 2-7* for Virtual Machine *RDSH-1*, so both RDS Session Hosts have equal specifications.

9) Navigate back to the Virtual Machines from Resource Group AADDSrg



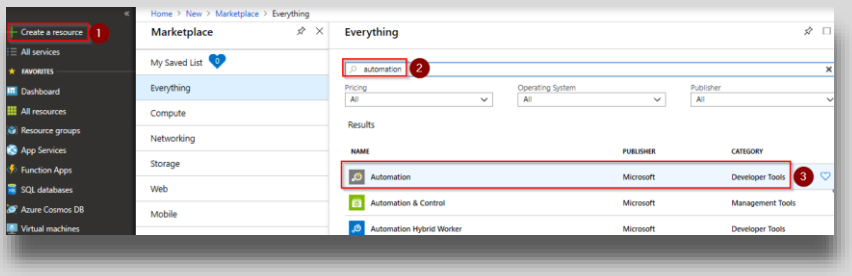
10) Select both RDS Session Host and select Start



Exercise 3b : Deploy the Start/Stop VM Extension

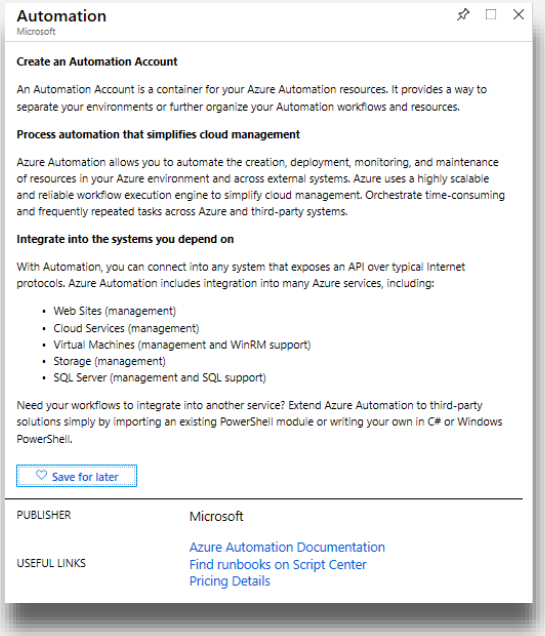
1) Using the navigation bar on the left, use the *Create a resource* menu to create the Automation Account.

2) Enter **Automation** in the Search bar.

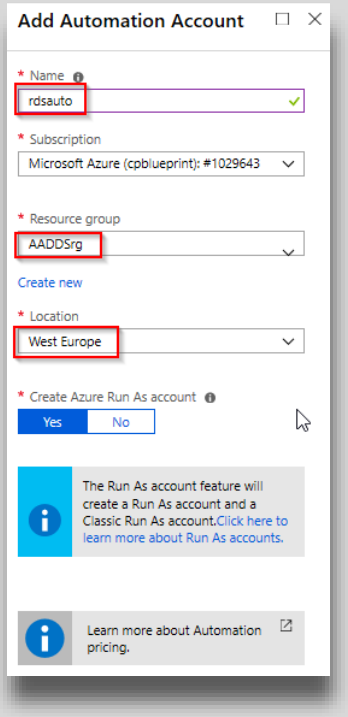


3) Select **Automation** at the marketplace items results.

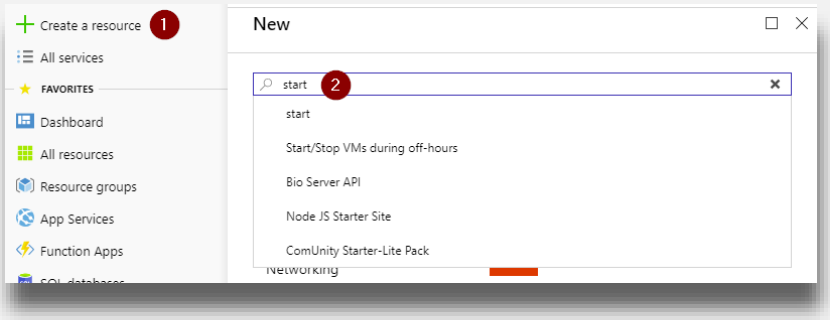
4) Click *Create*



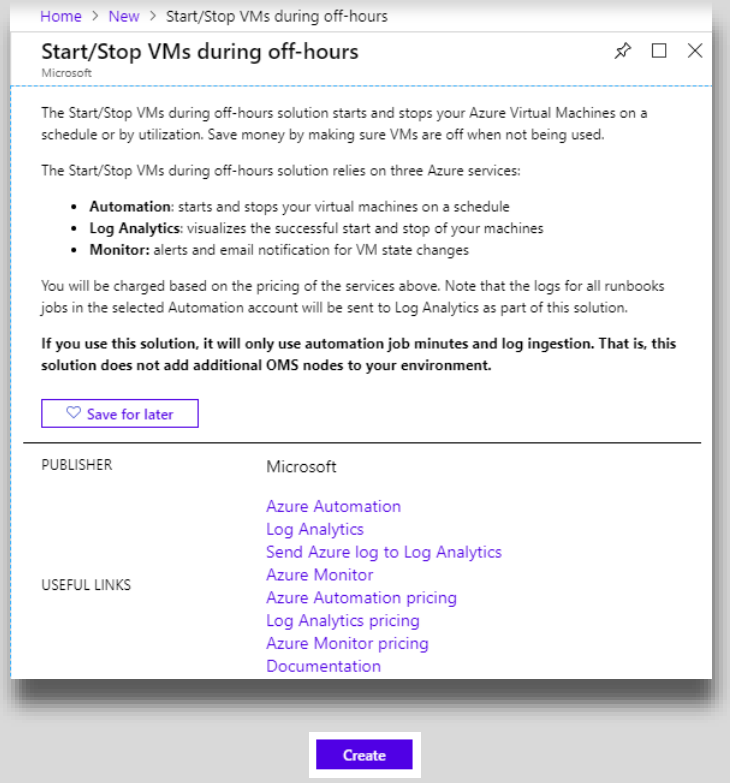
5) Enter **rdsauto**
6) Select Resource Group **AADDSrg**
7) Select Location **West Europe**
8) Click *Create*



9) Select *Create a Resource* and search for the **Start/Stop VM's** solution



10) You will be introduced with a summary of the solution. *Create* the solution.

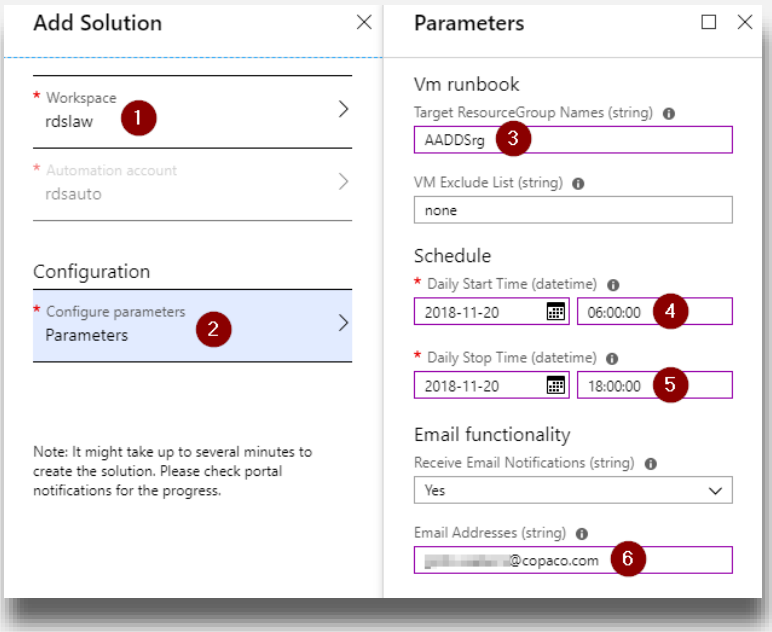


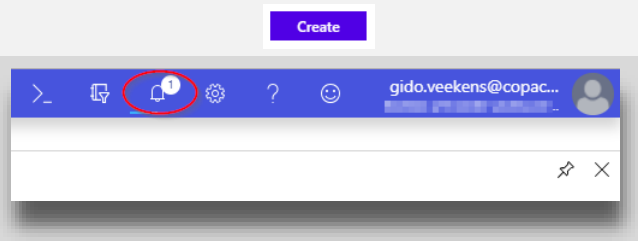
11) Select the *Workspace* we created before.
rdslaw

Define the *Resource Group* where our VM's are located in
AADDSrg

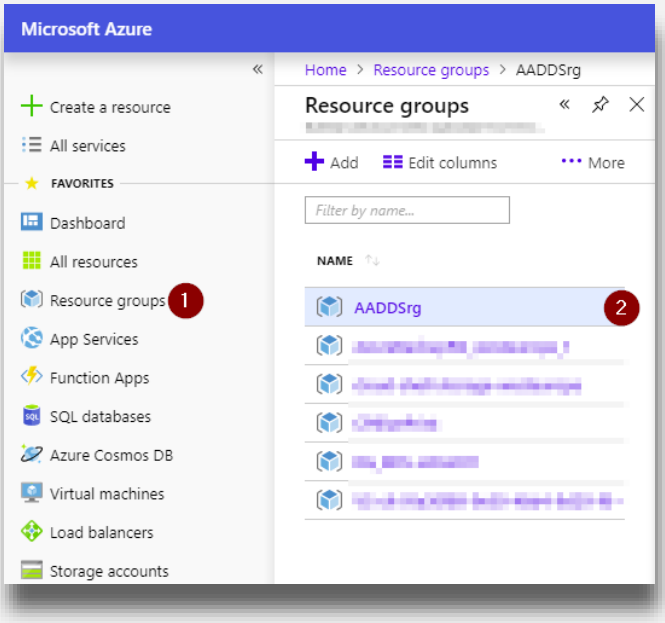
Specify the *daily start & stop times* for the VM's to boot and shutdown.

And optional, specify an *email address* to get a notification on each run.

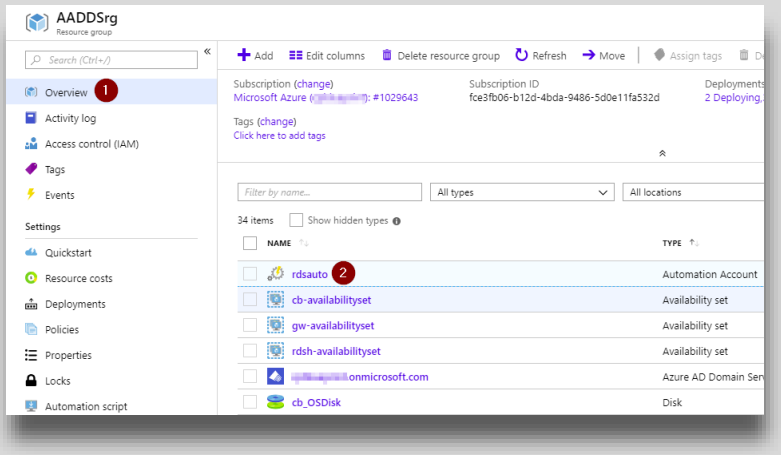




12) Wait for the deployment to finalize. You can check using the notification button on the top right.

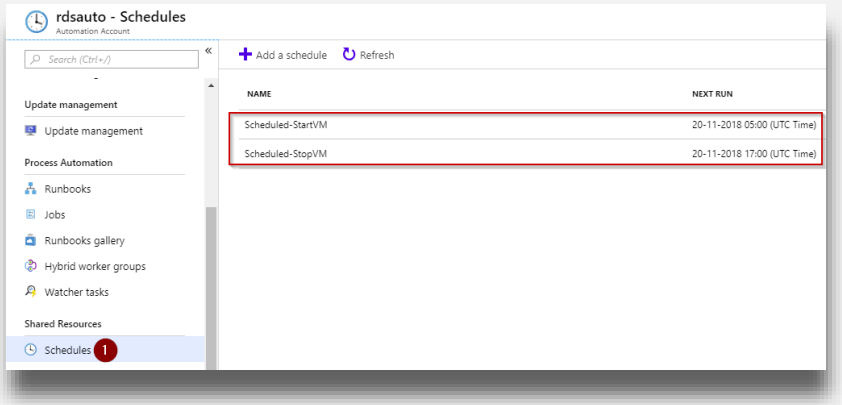


13) Click *Resource Groups* and open *AADDSrg*



14) Open the **rdsauto** Automation Account

15) From *Schedules*, verify that the *Start* and *Stop* times correspond with the given values. Please note that a different timezone could adjust the values entered before.

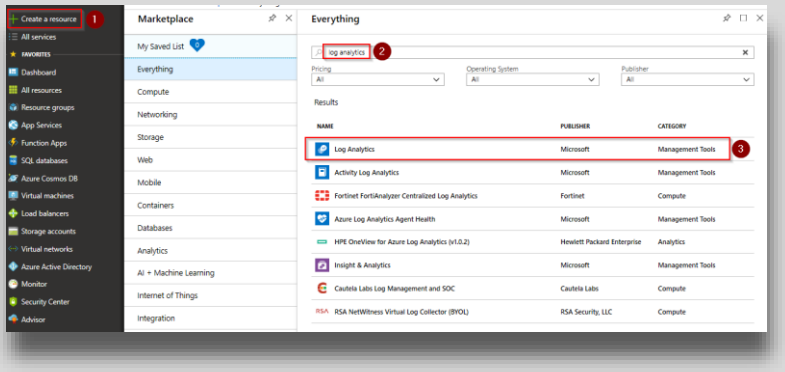


Exercise 3c : Implement Update Management using Automation

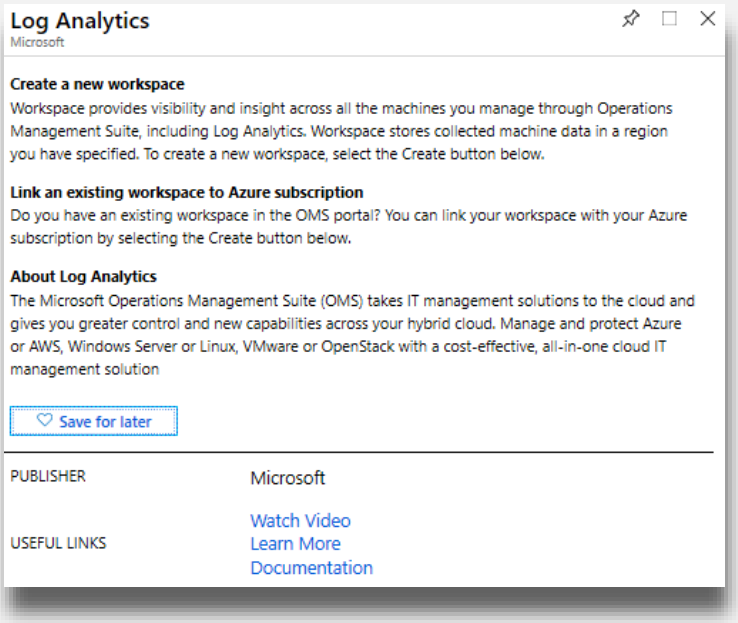
1) Using the navigation bar on the left, use the *Create a resource* menu to create the Log Analytics Workspace.

2) Enter **Log Analytics** in the Search bar.

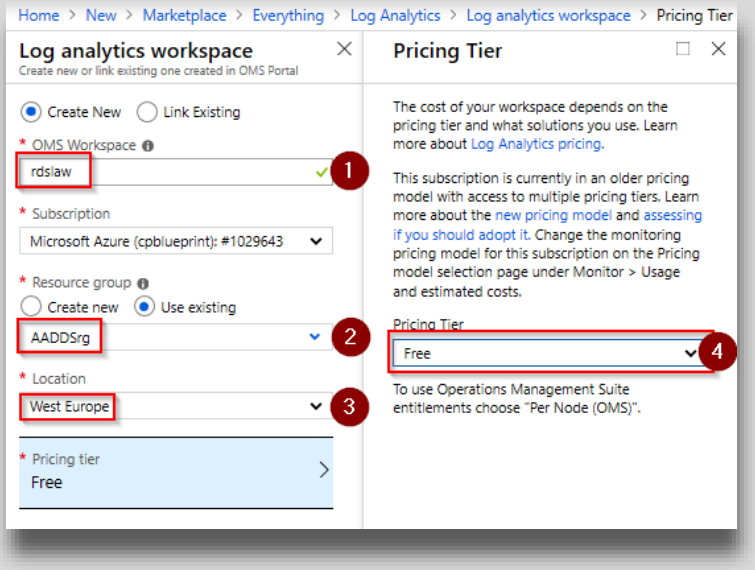
3) Select *Log Analytics* at the marketplace items results.



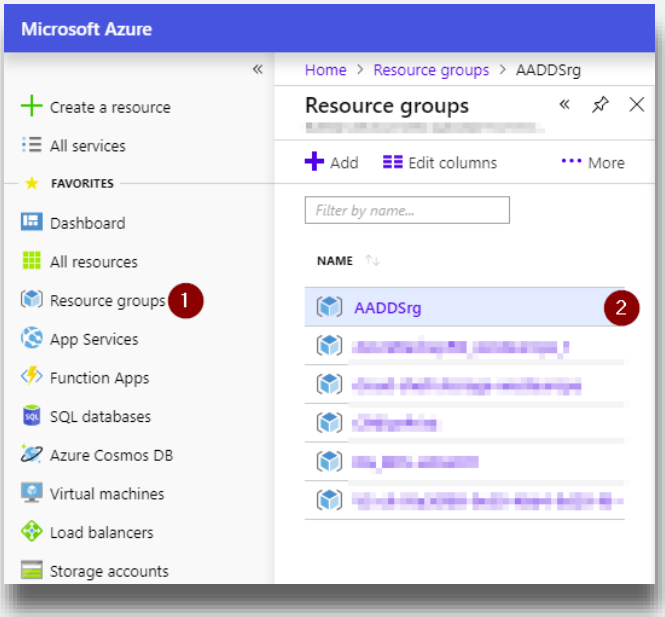
4) Click *Create*



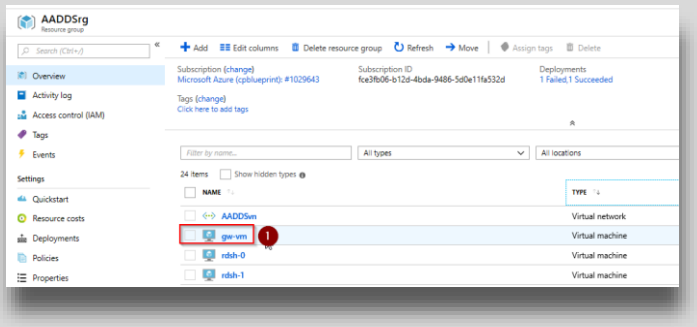
5) Enter **rdslaw**
6) Select Resource Group **AADDSrg**
7) Select Location **West Europe**
8) Select Pricing tier **Free**



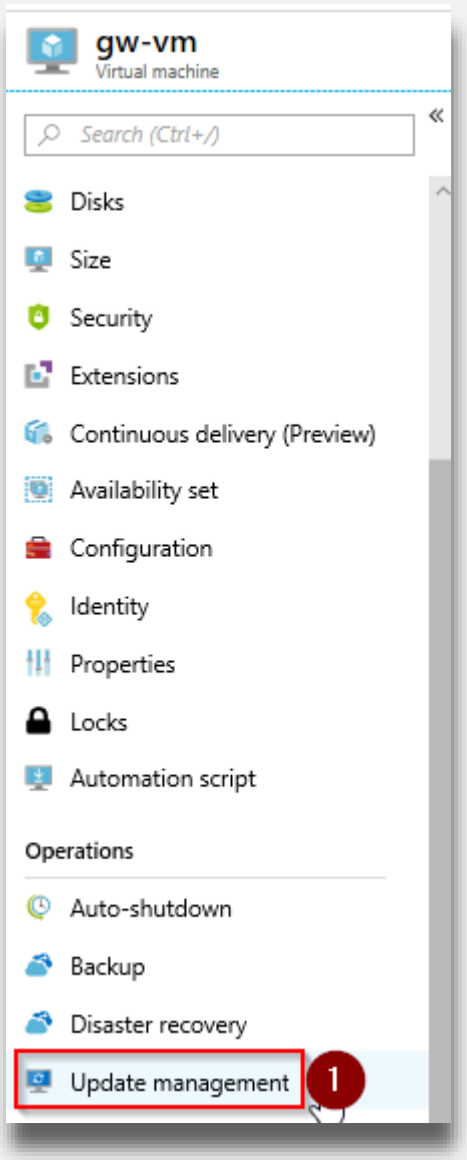
9) Click *Resource Groups* and open *AADDSrg*



10) You can see there are several resources deployed. Open the *Virtual machine "gw-vm"* resource by clicking the name.

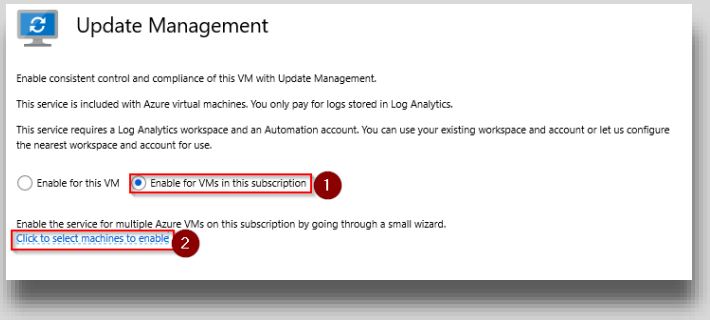


11) Scroll down. Open the *Update management* resource by clicking the name.



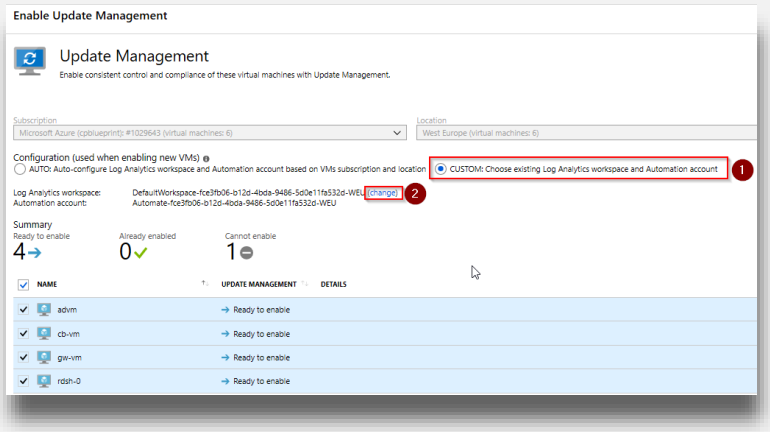
12) Now let's configure *Update management*.

Select **Enable for VMs in this subscription** and **Click to select machines to enable**

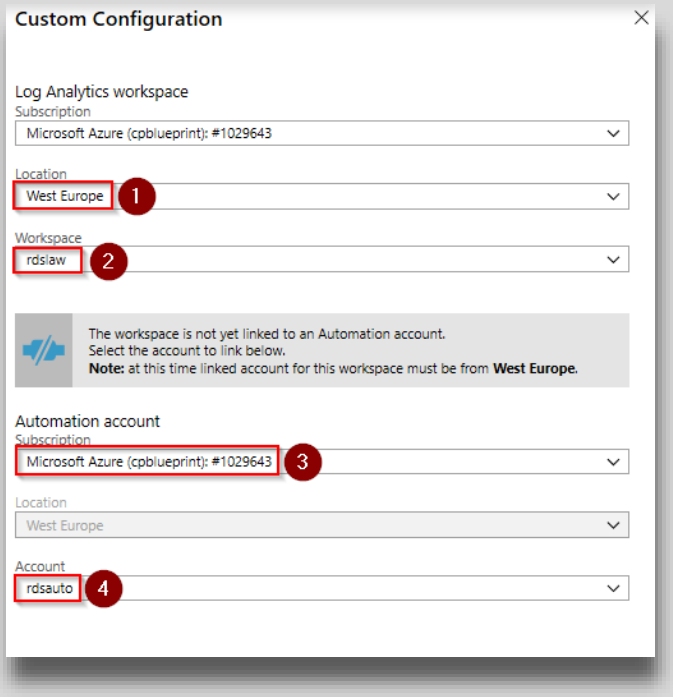


13) Click *CUSTOM*

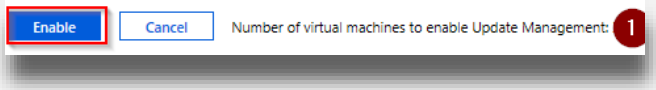
14) Click *Change*



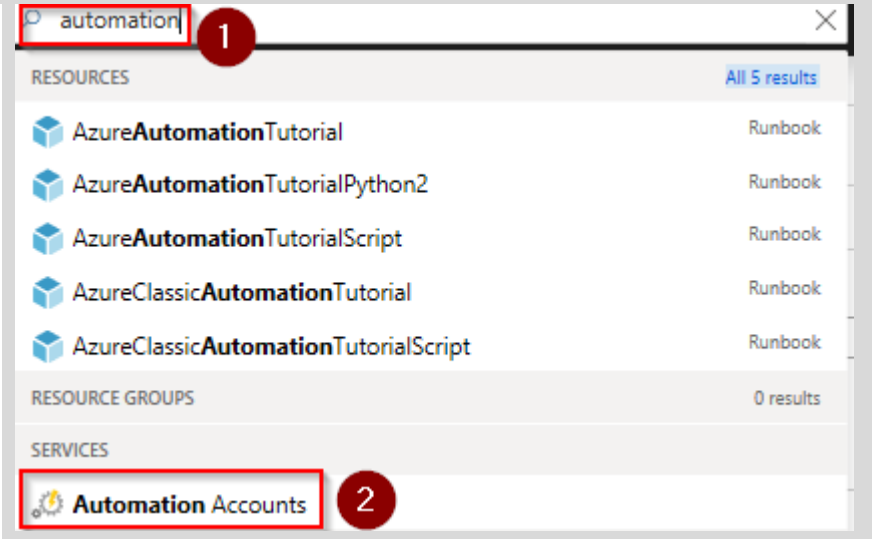
15) Select Location **West Europe**
16) Select Workspace **rdslaw**
17) Select Subscription **Microsoft Azure**
18) Select Account **rdsauto**
19) Click *OK*



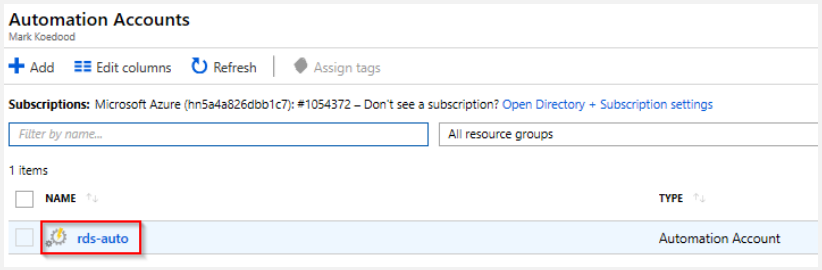
20) Click *Enable* to start the Update management deployment



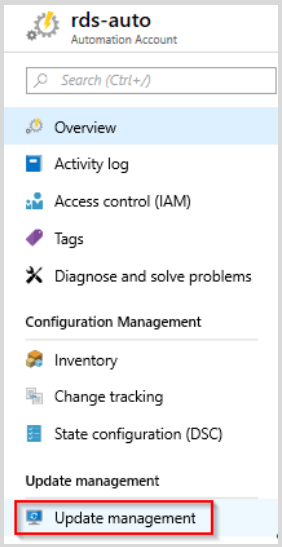
21) Search for **Automation** in the top bar



22) Select Automation Account *rdsauto*



23) In the navigation bar select *Update Management*



24) It can take a while until the VMs appear. Have a look at the **Update Management** solution.

Extra resources

RDS 2016 on Azure video

https://www.youtube.com/watch?v=Xi89A2b5b5w

RDS architecture designs

https://docs.microsoft.com/nl-nl/windows-server/remote/remote-desktop-services/desktop-hosting-logical-architecture#highly-available-deployment

RDS Geo redundant datacenter deployment

https://docs.microsoft.com/nl-nl/windows-server/remote/remote-desktop-services/rds-multi-datacenter-deployment

MFA extension

https://docs.microsoft.com/nl-nl/azure/active-directory/authentication/howto-mfa-nps-extension-rdg

Azure AD Domain Services

https://docs.microsoft.com/nl-nl/windows-server/remote/remote-desktop-services/rds-azure-adds

Azure AD Application Proxy

https://docs.microsoft.com/nl-nl/azure/active-directory/manage-apps/application-proxy-integrate-with-remote-desktop-services