Migrating Application Workloads to Azure

Agosto/2021

Material Didático **versão 1.5**

Realização:

PROFISSÃO CLOUD

Apoio:

Microsoft

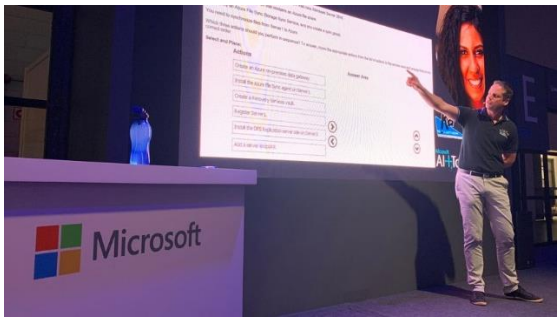
Sumário

Sobre o Autor

Zeca Nunes é Profissional de TI com 25 anos de carreira, Arquiteto de Nuvem e instrutor oficial Microsoft ® .

Ministra treinamentos de Cloud Computing desde 2017 para grandes corporações como Itaú, Bradesco, Porto Seguro, Casas Bahia e Petrobras.

Conecte-se comigo no Linkedin



Esse material é **dinâmico** não o deixe ficar **desatualizado**!

Você tem em mãos a **versão 1.5** dessa Apostila, sempre que passar por aqui verifique se está com a versão mais nova clicando AQUI nesse link.

Qualquer dúvida, nos envie um email para suporte@profissaocloud.com.br

Boas Vindas

Seja muito Bem Vindo (a) ao Workshop da Expedição Cloud!

Esse é Seu material de apoio para participar do Workshop de Cloud Computing, então prepare sua mochila e vamos começar!

Marque agora na agenda o nosso compromisso durante essa semana, sempre no **Horário de Brasília**:

		CLOUDFLIX 9:00hs	CertifiCAST 12:34hs	Workshop 20:00hs
SEG	23/08	Episódio #1	LIVE	Aula #1
TER	24/08		LIVE	Aula #2
QUA	25/08	Episódio #2	LIVE	Aula #3
QUI	26/08		LIVE	Aula #4
SEX	27/08	Episódio #3	LIVE	Aula #5

Aula 1 – Criando o seu Ambiente de Estudos

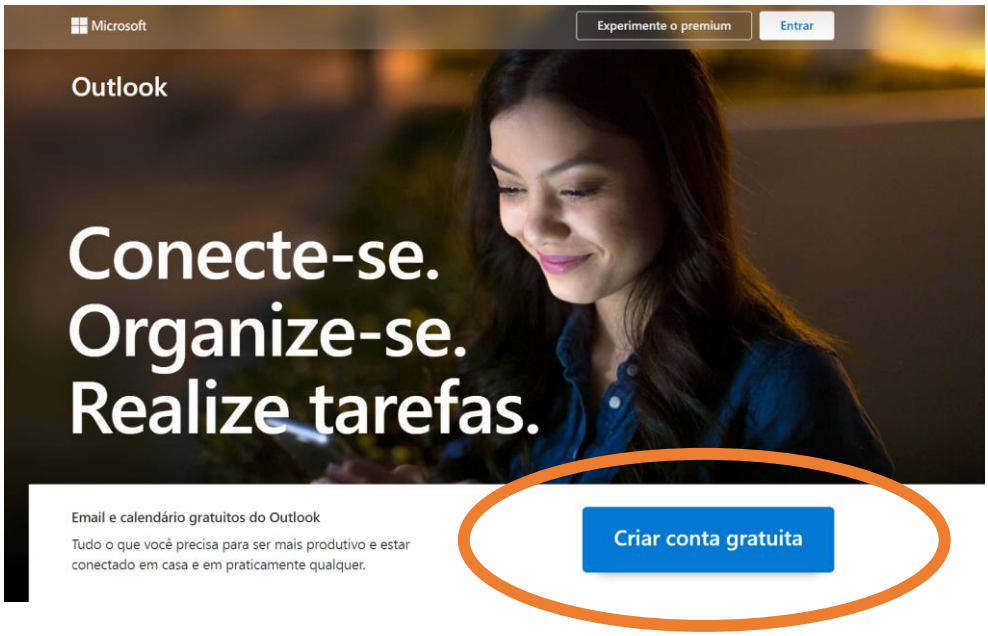
A melhor maneira de você aprender e conhecer esse novo mundo é Praticando e nesse momento você terá a oportunidade de levantar o seu ambiente de estudos Cloud Computing, lembre-se que a melhor parte do Workshop é a mão-na-massa e vamos utilizando o Microsoft Azure de verdade, sem enrolação...então vamos lá!

Pra facilitar ainda mais, todos os passos que você vai fazer daqui em diante eu apresento passo-a-passo nesse vídeo: https://youtu.be/SI4lV1GzLmw

1.1 Criação da nova conta Outlook.com para o Workshop

O primeito passo é criar um email exclusivo para esse evento, atenção: "não use o seu email pessoal, mesmo que você já tenha um outlook.com", faço questão e reforço que você crie um email novo será utilizado somente aqui nessa semana e depois pode apagar ou deixar de lado pois não vai mais precisar usar.

Abra navegador **em modo oculto (in-private ou anônimo)** e acesse o site Outlook.com.



Aperte em “Criar conta gratuita” e você deverá seguir os passos para criar um usuário/senha de estudos, por exemplo “zeca-profissaocloud@outlook.com” para começar.

Em seguida, **anote no seu caderno ou salve no seu notepad o Email e a Senha que você criou**, pois precisará desses dados durante todas as nossas atividades da semana.

1.2 Solicitando seus créditos

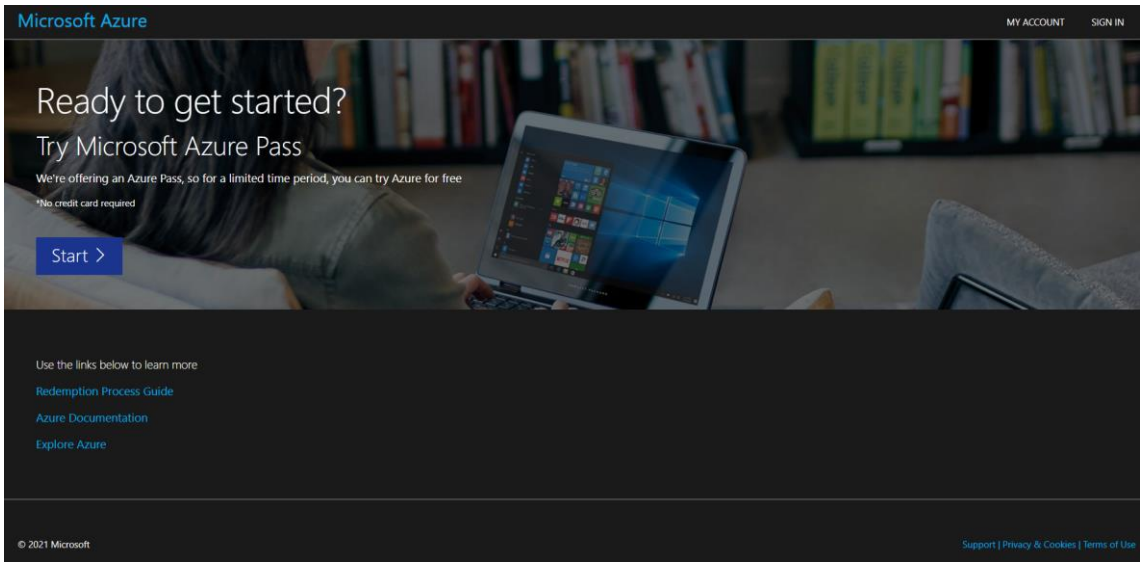
Agora você precisa acessar o seguinte site para solicitar os seus U100 para realizar todos os exercícios propostos em nosso workshop, você vai ter acesso ao Azure de verdade, então muita atenção nessa parte!

>> Clique AQUI para acessar o formulário de Solicitação

Preencha cuidadosamente cada campo e em poucos instantes você receberá um email em cada uma das contas de email que você inseriu no formulário. ATENÇÃO: Se esse email caiu na caixa **SPAM ou PROMOÇÕES**, mova imediatamente para a sua **Caixa de Entrada** para não perder as importantes comunicações do evento que vamos te enviar nos próximos dias.

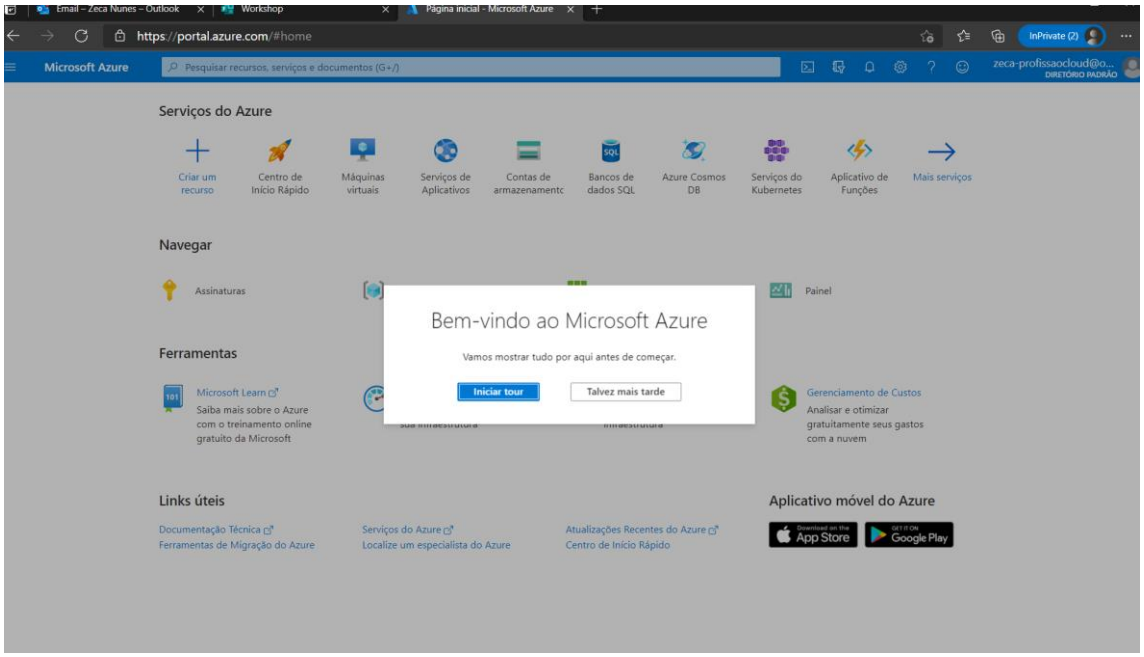
1.3 Resgatando o seu crédito

Em seguida, você deverá abrir uma nova **aba anônima** no MESMO navegador anônimo e digitar o seguinte site: microsoftazurepass.com



Nessa tela você deve apertar START, em seguida confirmar o endereço de email outlook.com que você acabou de criar, se tiver de digita-lo novamente faça com cuidado sempre observando para não errar nenhuma letra. Lembre-se, você só receberá UM crédito e se tiver problema não poderemos restitui-lo para você.

Muito bem, você já está lá dentro do seu ambiente de estudos no Microsoft Azure!



1.4 Passeio no Data Center da Nuvem

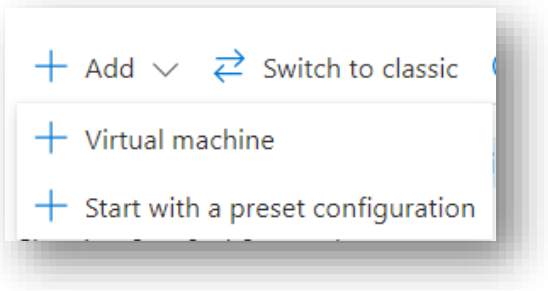
Para você conhecer por dentro de Data Center de Nuvem e dar um passeio virtual realistico, como apresentado na LIVE #1, basta você acessar o Link abaixo:

https://news.microsoft.com/stories/microsoft-datacenter-tour

1.5 Criando minha Primeira Maquina Virtual na Nuvem

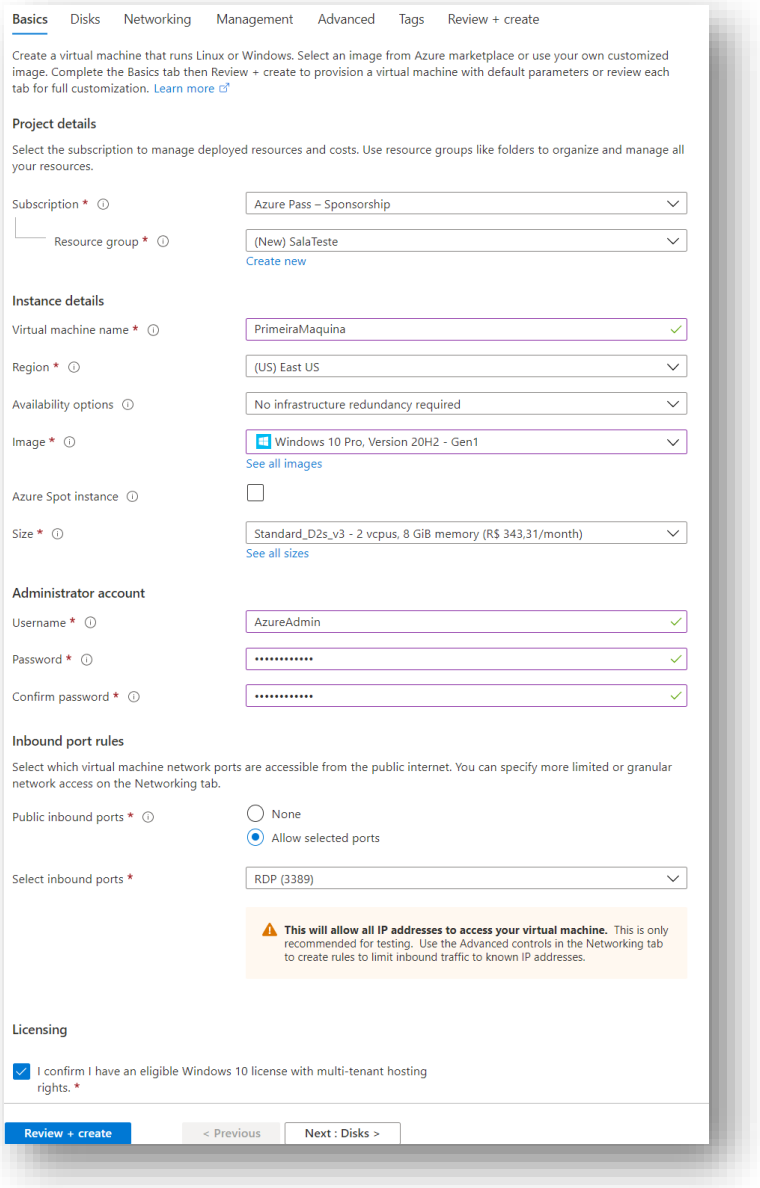
Com o Portal do Azure aberto e configurado em Inglês, siga os passos:

1. clique em Virtual Machine
2. clique em +Add e em seguida +Virtual machine

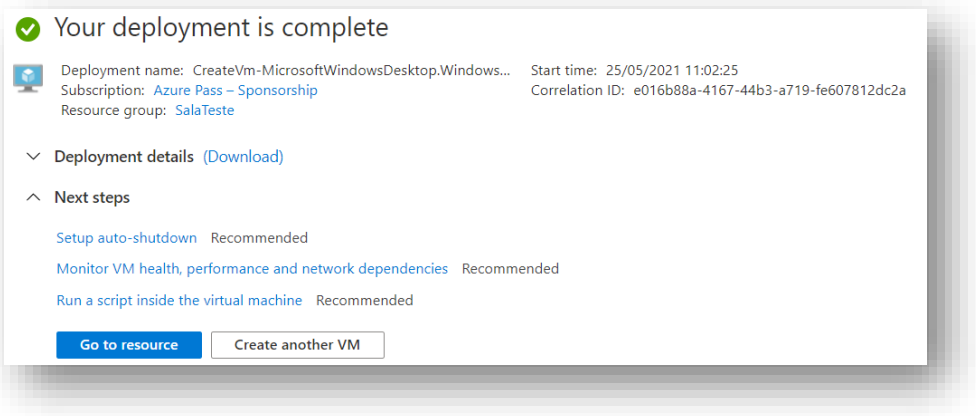


3. Na opção **Resource group** clique em **Create new** e digite o nome: “Teste”
4. Na opção **Virtual machine name**, digite: “PrimeiraMaquina”
5. Na opção **Image**, selecione “Windows 10 Pro, Version 20H2 – Gen1”
6. Na opção **Username**, digite: **demo!user123**
7. Nas opções **Password** e **Confirm password**, digite: **demo!pass123**
8. Na última opção **Licensing**, clique no checkbox para Confirmar

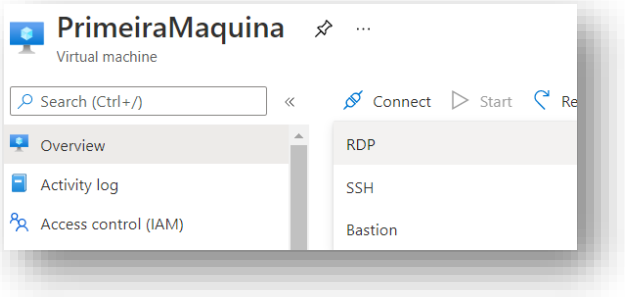
9. Pressione o botão **Review + Create**, como apresentado na imagem abaixo



10. Aguarde a validação e clique em **Create** para finalizar
11. Prontinho, se tudo correu bem, você vai receber essa mensagem ao final do processo, que pode levar de 1 a 5min.

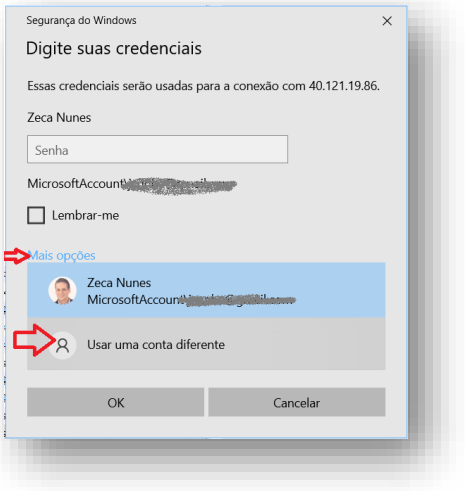


12. Nesse momento você pode clicar em **Go to resource**
13. Em seguida clique em **Connect** e em seguida **RDP**

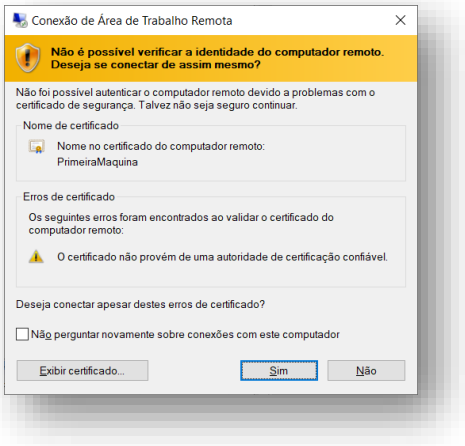


14. Na tela seguinte clique em **Download RDP File** para baixar o arquivo
15. Clique no arquivo baixado e aparece o seguinte tela

16. Clique em Conectar e será apresentado uma tela de senha
    Clique em **Mais Opções** e em seguida **Usar uma conta diferente**



17. Agora você pode digitar o Usuário e Senha que configuramos no passo 6 e 7 dessa sequência: **demo!user123** e **demo!pass123**
18. Uma próxima tela será apresentada, agora sobre certificado digital, basta aceitar clicando em SIM

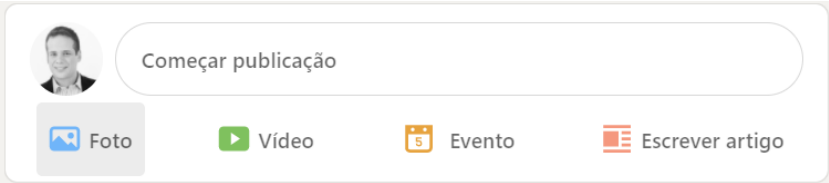


19. Tudo pronto, agora você está acessando a sua maquina Windows 10 PRO direto na Nuvem e pode instalar programas, navegar super veloz e fazer o que quiser!

1.6 Destrave a sua 1ª medalha

Parabéns, se você chegou até aqui você conseguiu acessar a sua Primeira Maquina Virtual (Virtual Machine) na Cloud!!! Estou muito feliz com essa vitória e quero te reconhecer com uma medalha de honra ao mérito e você deve postar no seu Linkedin para mostrar para toda a comunidade essa conquista.

1. Em uma nova aba, copie e cole o link da medalha: https://zecanunes.blob.core.windows.net/apostila/Migrating/medalha01.png
2. Clique com o botão direito do mouse sobre a imagem e Salve no seu computador para usar no próximo passo
3. Acesse seu Linkedin e na Opção de "**Começar publicação**" clique em **Foto**



4. Selecione a imagem da sua medalha e pressione **Concluído**
5. Agora no campo "**No que você está pensando**" digite o seguinte texto:

```
Estou participando do Workshop #ExpedicaoCloud e hoje eu coloquei a minha Primeira Virtual Machine na Nuvem com a ajuda do Zeca Nunes ☁
Participe comigo através do link https://zecanunes.com/inscreva
#BoraPraNuvem
```

6. Clique em **Publicar**

1.7 SoftSkill: Networking no Linkedin

Apresentei uma Técnica Secreta para o crescimento da sua rede de contatos no Linkedin, para isso é importante você realizar a etapa anterior a risca, nossa comunidade está em peso no Linkedin e o objetivo é fazer você ser encontrado nessa grande rede, por isso usaremos a postagem da medalha e o texto com a hashtag #ExpedicaoCloud.

Nesse momento você vai fazer uma busca no Linkedin para o termo: #ExpedicaoCloud e #BoraPraNuvem, visite pelos menos 10 perfis de pessoas que postaram a medalha e Conecte-se a cada um deles. Na hora de solicitar conexão, digite: "*Olá, conheci você através do Expedição Cloud*".

Usando essa técnica 1x por dia, até o final da semana você já terá pelo menos 50 novas conexões, observe que nosso objetivo são 500, então mãos a obra nesse trabalho de networking Super Qualificado para sua rede.

Até o final da semana, quero que você me fale quais resultados você obteve no seu perfil do Linkedin, então capricha 😊

1.8 Implementando o Ambiente “onPremises”

Maquina Virtual foi top, mas agora vamos evoluir bastante no aprendizado criando o ambiente de uma empresa inteira na nuvem com um só comando.

Você vai clicar com botão direito e **Copiar** essa URL abaixo:

https://portal.azure.com/#create/Microsoft.Template/uri/https%3A%2F%2Fcloudworkshop.blob.core.windows.net%2Fline-of-business-applicationmigration%2Fsept-2020%2FSmartHotelHost.json

Em seguida vai **Colar** em uma nova Aba Oculta do Navegador Anônimo que abrimos no começo do exercício e apertar **Enter.**

Atenção: Pode ser solicitada sua credencial do Azure nesse momento, então digite o usuário (@outlook.com) e senha que você criou e documentou anteriormente.

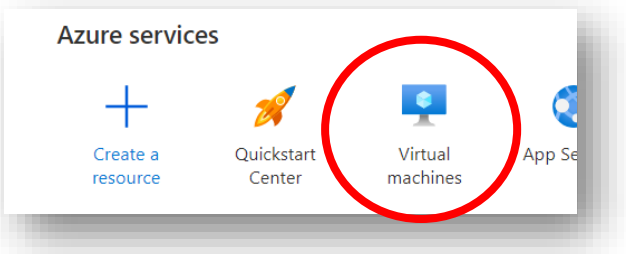
Com o Portal do Azure aberto e configurado em Inglês, siga os passos:

1. Na opção **Resource group** clique em **Create new** e digite o nome: “**SmartHotelRG**“ e pressione OK.
2. Em Region, escolha: **East US**
3. Ao final da página, pressione **Review + create** e aguarde a mensagem “Validation Passed”
4. Agora pressione o botão **Create** ao final da página.

Agora é só deixar a mágica acontecer, esse processo leva de 10min a 1h para concluir, mas você não precisa ficar aguardando, trata-se da criação automática de um ambiente completo de servidores que servirão para simular uma empresa inteira em nosso laboratório.

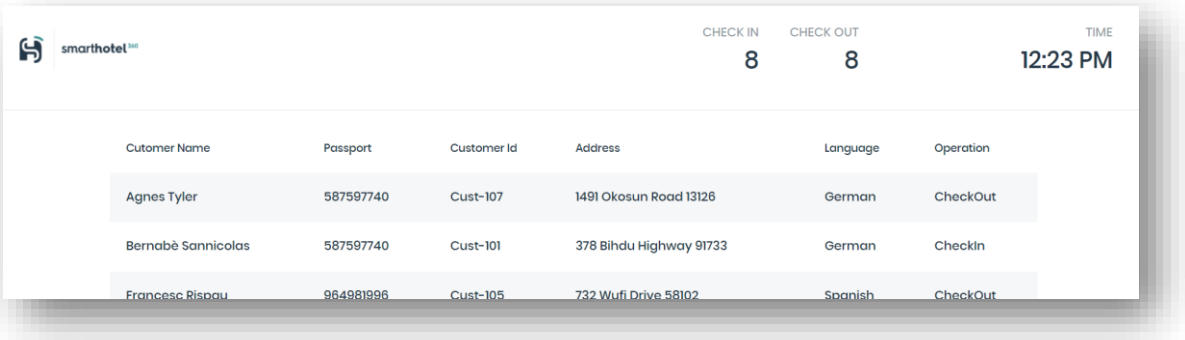
1.9 Verificando o Ambiente on-Premises

Depois de concluído o processo de implementação realizado no passo 1.6, uma tela de conclusão será apresentada, você pode ignorar e clicar na logo do Microsoft Azure no canto superior esquerdo. Agora, na área “Azure services” clique em **Virtual Machine**



Observe a maquina “SmartHotelHost” que será listada e anote o numero do “Public IP address” que é apresentado nas últimas colunas.

Abra uma nova aba no navegador anônimo e digite o numero do Public IP que você copiou anteriormente. A tela deve ser apresentada será:



Prontissimo! A sua empresa de Hoteis já está funcionando e o sistema de checkin está 100% operacional, pode testar clicando sobre o nome de alguns hóspedes fictícios para fazer/desfazer o checkin de cada um. Aproveite!

Aula 2 – Preparando o Ambiente "on Premises" para as Nuvens

2.1 Estudo de Caso – SmartHotel 360

A SmartHotel 360 é uma grande e conceituada rede de Hoteis fundada em 1972 e com sede em Columbus, Ohio, EUA, essa rede possui hotéis em toda extensão dos Estados Unidos e é muito consagrada pelo seu excelente atendimento e custos atraêntes. Os hóspedes vem de todos os lugares do mundo e se fielizam com a rede e é comum de se hospedarem em outras localidades da SmartHote 360. O faturamento em 2020 ultrapassou 350 milhões de dólares.

O CTO, James Lynch, foi contratado há 6 meses com a missão de lidar com os custos crescentes da TI. Ele identificou um extenso parque de máquinas, incluindo uma grande quantidade de servidoes legado. Já os novos servidores e serviços, foram acumulando ao longo do tempo sem consolidação com a infraestrutura existente e muita coisa está sem a devida documentação. Isso inclui:

- Servidores Windows, incluindo hardware x32 e x64 executando o Windows Server 2003 até 2016
- Servidores Linux executando uma combinação de RHEL 6.10 e 7 (7.2 a 7.6) e Ubuntu 16.04
- Os servidores acima incluem máquinas físicas e VMs hospedadas na infraestrutura VMware gerenciada pelo vCenter 6.5
- Vários mecanismos de banco de dados, incluindo Microsoft SQL Server, PostgreSQL e Cassandra

No total, 448 servidores e VMs foram identificados até o momento, distribuídos em 5 localidades distribuídas pelo EUA. Existe uma complexa cadeia de dependências entre os servidores e ninguém tem uma visão clara do todo. O medo de quebrar um sistema existente tem sido um dos responsáveis pelo aumento desordenado de novos servidores.

Para resolver isso, James propôs ao conselho que a SmartHotels deveria migrar o máximo possível da infraestrutura de TI existente para a nuvem. Além de eliminar as despesas gerais da infraestrutura de TI, essa será uma oportunidade de "limpar a casa" e criar um ambiente de TI moderno e adequado para a finalidade, além de obter economias de custo substanciais em relação à infraestrutura atual. O conselho concordou e o Microsoft Azure foi selecionado como candidato ao provedor de nuvem.

2.2 Necessidades do Cliente

- Identifique quais servidores (físicos e virtuais) podem ser migrados para o Azure e quais modificações (quando houver) serão necessárias.
- Crie um roteiro de migrações priorizadas, levando em consideração a facilidade de migração e dependências.
- Onde for adequado, migre os servidores e bancos de dados existentes para o Azure da forma mais eficiente possível.
- Onde os servidores existentes não podem ser migrados, identifique estratégias alternativas de migração (refatorar, re-arquitetar, etc.) e seus prós / contras.
- Antes da migração, preveja com precisão os custos associados a cada carga de trabalho migrada, incluindo quaisquer custos de licenciamento de terceiros.
- Certifique-se de que o ambiente do Azure usado para os aplicativos migrados siga as práticas recomendadas.
- Após a migração, seja capaz de rastrear custos, controlar o uso, cobrar cobranças cruzadas de proprietários de negócios e identificar oportunidades de economia de custos.

2.3 Objeções do Cliente

1. Os responsáveis de cada aplicação de negócios da empresa precisam aprovar qualquer alteração na aplicação, incluindo a própria migração. Esses responsáveis sinalizaram que gostariam de evidências de que a migração será bem-sucedida antes de conceder essa aprovação.

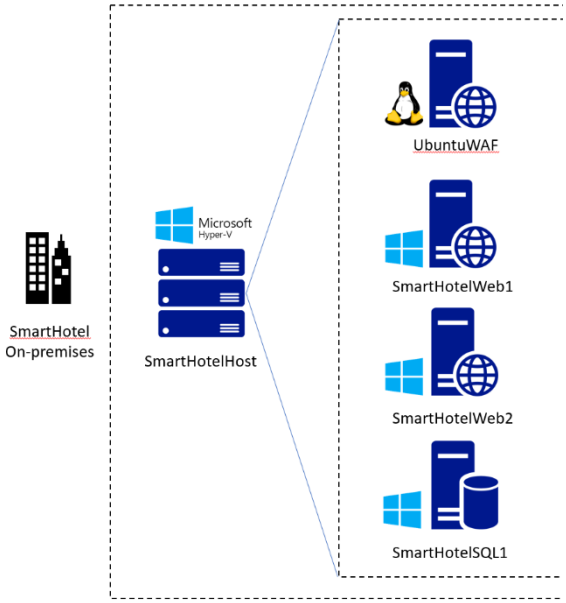
2. O SmartHotel 360 negociou junto a Microsoft um Contrato Corporativo (EA) para a utilização do Azure. Todas as estimativas de custo precisam refletir o desconto concedido pelo EA.
3. Muitas aplicações incluem vários componentes ou camadas. Como você pode garantir que as migrações serão orquestradas de maneira adequada?
4. Para reduzir o impacto nos negócios, cada migração deve ser projetada para minimizar o tempo de inatividade da aplicação. Além disso, para reduzir o risco, deve haver uma opção de retrocesso, caso a migração enfrente algum problema inesperado.
5. Esperamos mover toda a nossa infraestrutura existente para o Azure. A redução de nossos custos de servidor local deve proporcionar economias de custo substanciais. Você pode confirmar quanto de economia podemos esperar?

2.4 Desenhando a Solução

Durante esse laboratório você vai migrar uma aplicação inteira para o ambiente do Azure. Isso inclui relatar o ambiente de aplicação on-Premises usando o Azure Migrate, relatar a migração do banco de dados usando o Microsoft Data Migration Assistant (DMA), migrar a base de dados usando o Azure Database Migration Service (DMS) e migrar a camada de aplicação Web usando o Azure Migrate Server Migration. Esse ultimo passo inclui migração de ambos sistemas operacionais Windows e Linux.

A aplicação SmartHotel utiliza-se de 4 VMs hospedadas no Hyper-V:

- **Database tier** Hosted on the smarthotelSQL1 VM, which is running Windows Server 2016 and SQL Server 2017.
- **Application tier** Hosted on the smarthotelweb2 VM, which is running Windows Server 2012R2.
- **Web tier** Hosted on the smarthotelweb1 VM, which is running Windows Server 2012R2.
- **Web proxy** Hosted on the UbuntuWAF VM, which is running Nginx on Ubuntu 18.04 LTS.



2.5 Mão na Massa

Intro: Discover and assess the on-premises environment

Duration: 60 minutes

In this exercise, you will use Azure Migrate: Server Assessment to assess the on-premises environment. This will include selecting Azure Migrate tools, deploying the Azure Migrate appliance into the on-premises environment, creating a migration assessment, and using the Azure Migrate dependency visualization.

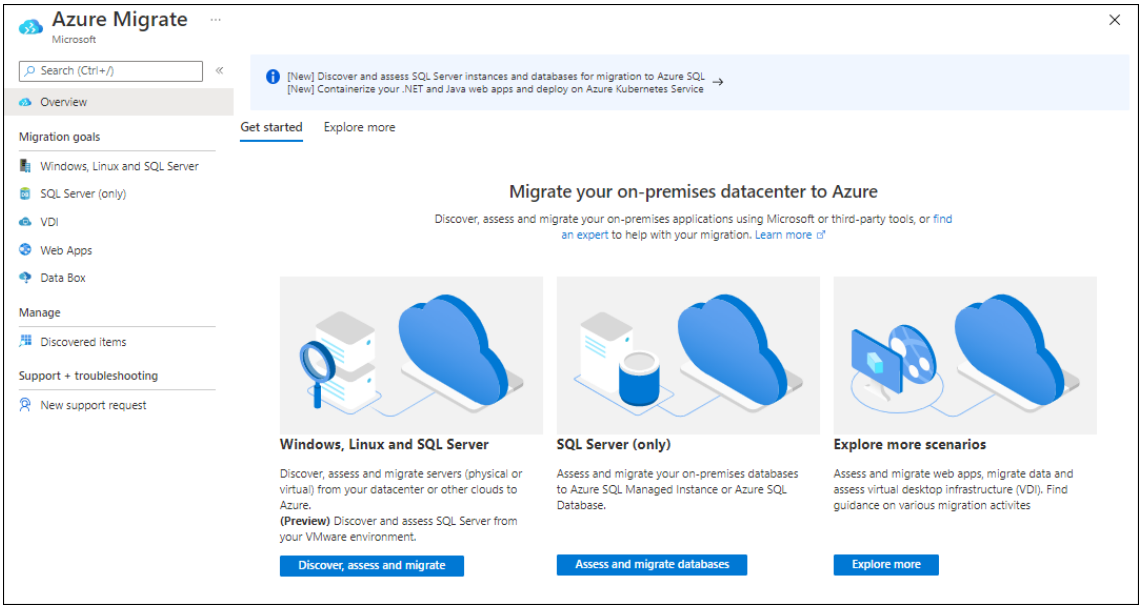
Task 1: Create the Azure Migrate project and add assessment and migration tools

In this task, you will create the Azure Migrate project and select the assessment and migration tools.

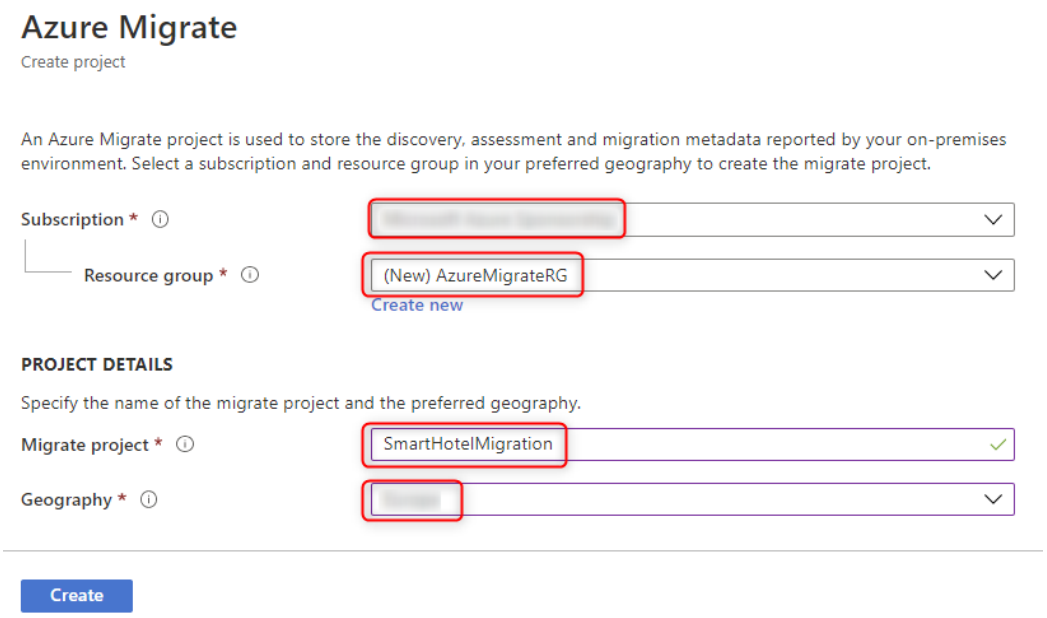
Note: In this lab, you will use the Microsoft-provided assessment and migration tools within Azure Migrate. A number of third-party tools are also integrated with Azure Migrate for both assessment and migration. You may wish to spend some time exploring these third-party options outside of this lab.

1. Open your browser, navigate to **https://portal.azure.com**, and log in with your Azure subscription credentials.

2. On search bar type **Azure Migrate** and click to open the Azure Migrate Get Started blade, shown below.

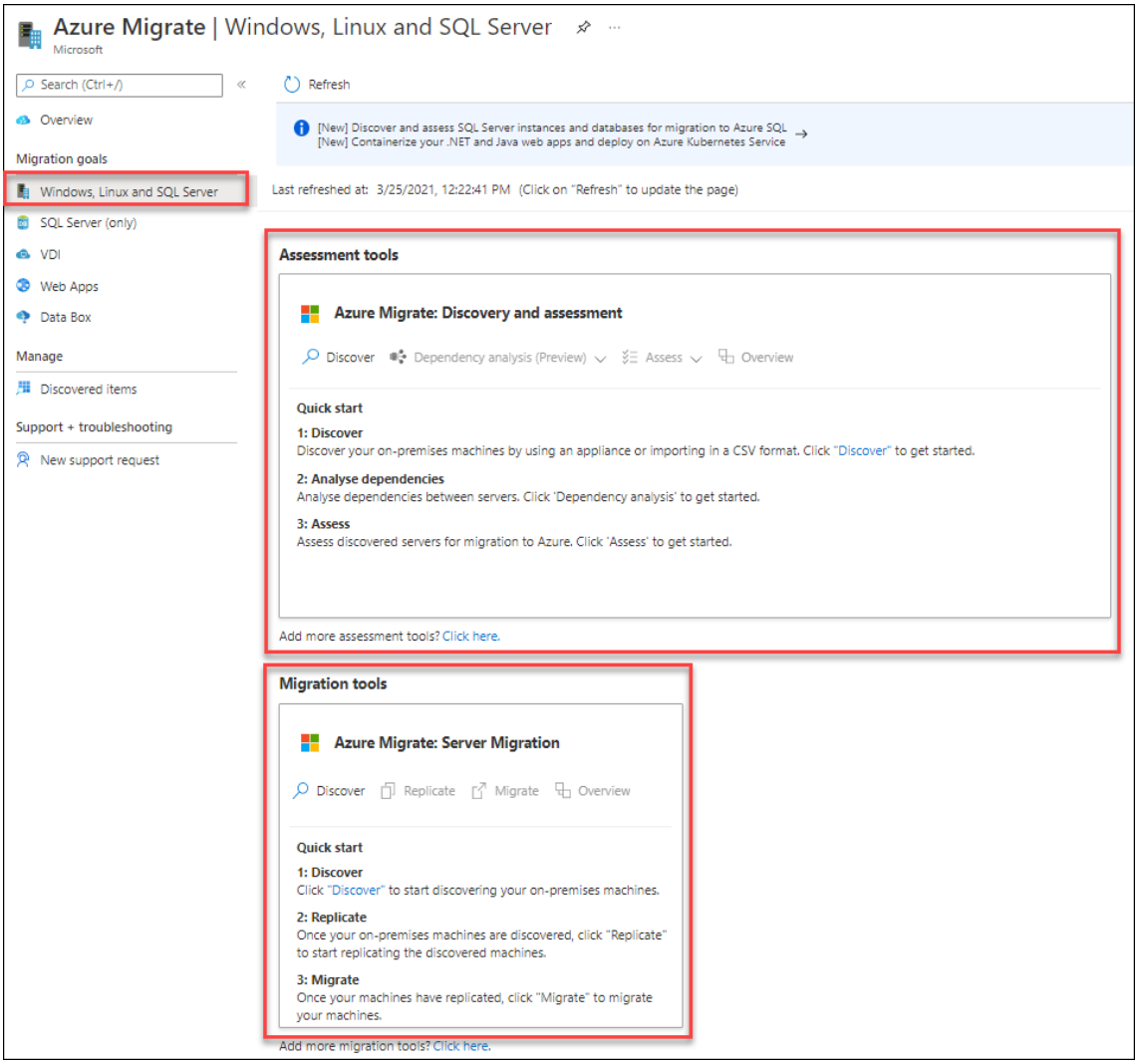


3. Select **Assess and migrate servers**, then **Create project**. Select your subscription and create a new resource group named **AzureMigrateRG**. Enter **SmartHotelMigration** as the Migrate project name, and choose **United States** as geography to store the migration assessment data. Then select **Create**.



4. The Azure Migrate deployment will start. Once it has completed, you should see the **Azure Migrate: Discovery and assessment** and **Azure Migrate: Server Migration** panels for the current migration project, as

shown below. If not, please click on link and add this tool to Assessment tools and then Migration tools.



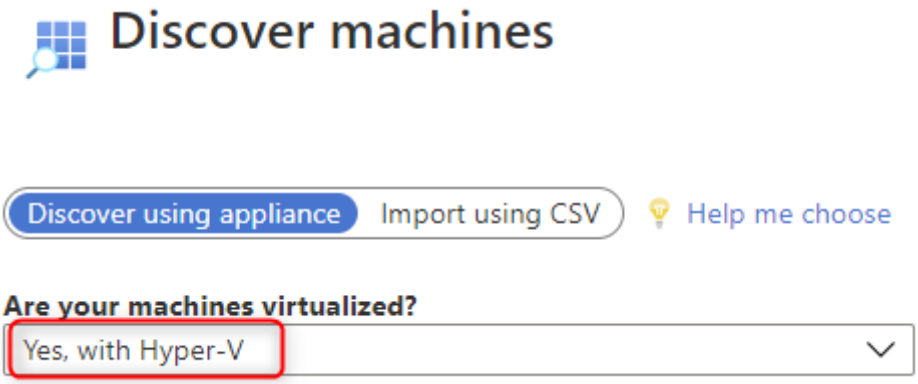
Task summary

In this task you created an Azure Migrate project, using the default built-in tools for server assessment and server migration.

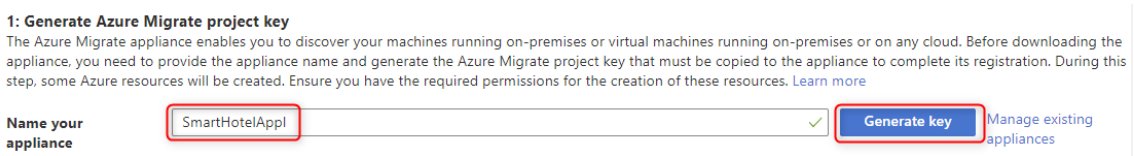
Task 2: Deploy the Azure Migrate appliance

In this task, you will deploy and configure the Azure Migrate appliance in the on-premises Hyper-V environment. This appliance communicates with the Hyper-V server to gather configuration and performance data about your on-premises VMs, and returns that data to your Azure Migrate project.

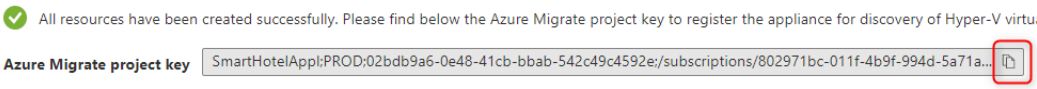
1. Under **Assessment tools** > **Azure Migrate: Discovery and assessment**, select **Discover** to open the **Discover machines** blade. Under **Are your machines virtualized?**, select **Yes, with Hyper-V**.



2. In **1: Generate Azure Migrate project key**, provide **SmartHotelAppl** as name for the Azure Migrate appliance that you will set up for discovery of Hyper-V VMs. Select **Generate key** to start the creation of the required Azure resources.

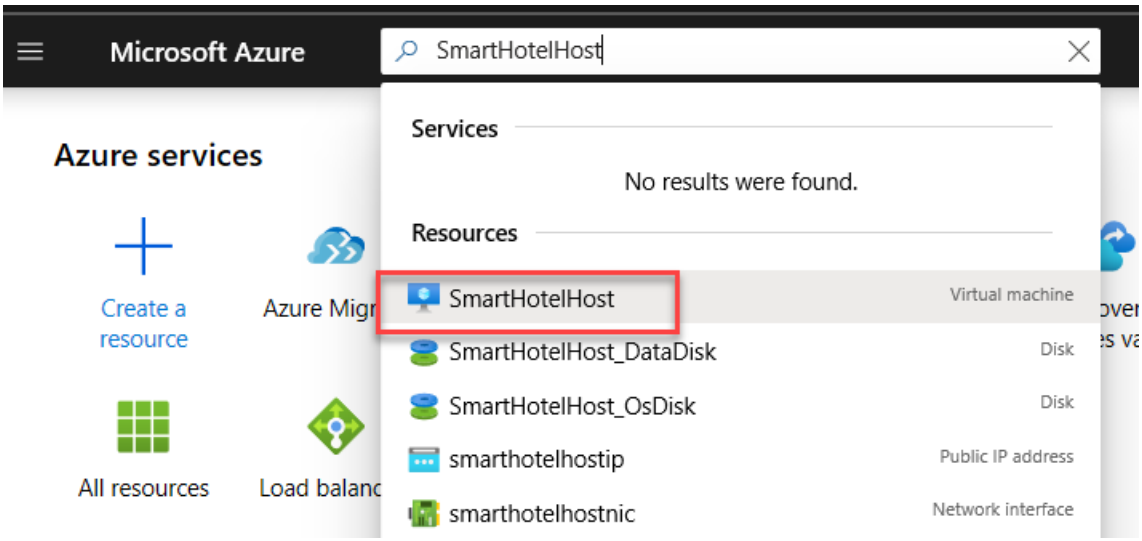


3. **Wait** about 5 minutes for the key to be generated, then copy the **Azure Migrate project key** to your clipboard.



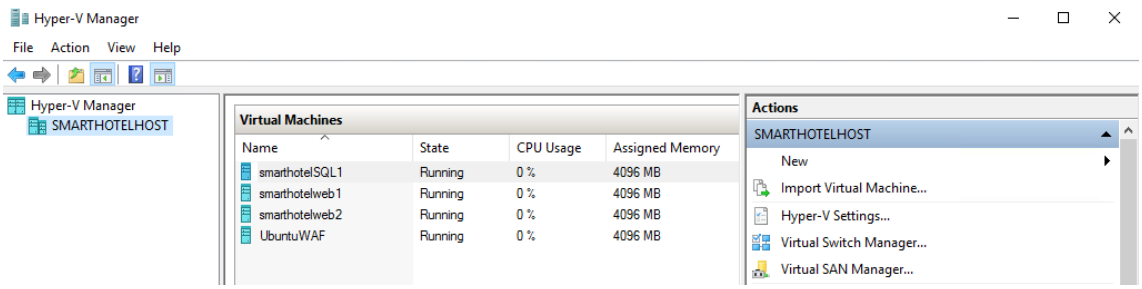
4. Read through the instructions on how to download, deploy and configure the Azure Migrate appliance. **Close the 'Discover machines' blade** (do not **download** the .VHD file or .ZIP file, the .VHD has already been downloaded for you).

5. In a separate browser tab, navigate to the Azure portal. In the global search box, enter **SmartHotelHost**, then select the **SmartHotelHost** virtual machine.



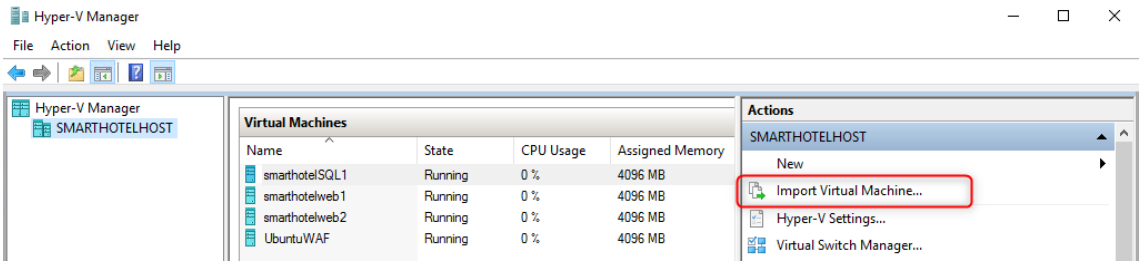
6. Select **Connect**, select **RDP**, then download the RDP file and connect to the virtual machine using username **demouser** and password **demo!pass123**

7. In Server Manager>Dashboard, select **Tools**, then **Hyper-V Manager** (if Server Manager does not open automatically, open it by selecting **Start**, then **Server Manager**). In Hyper-V Manager, select **SMARTHOTELHOST**. You should now see a list of the four VMs that comprise the on-premises SmartHotel application.



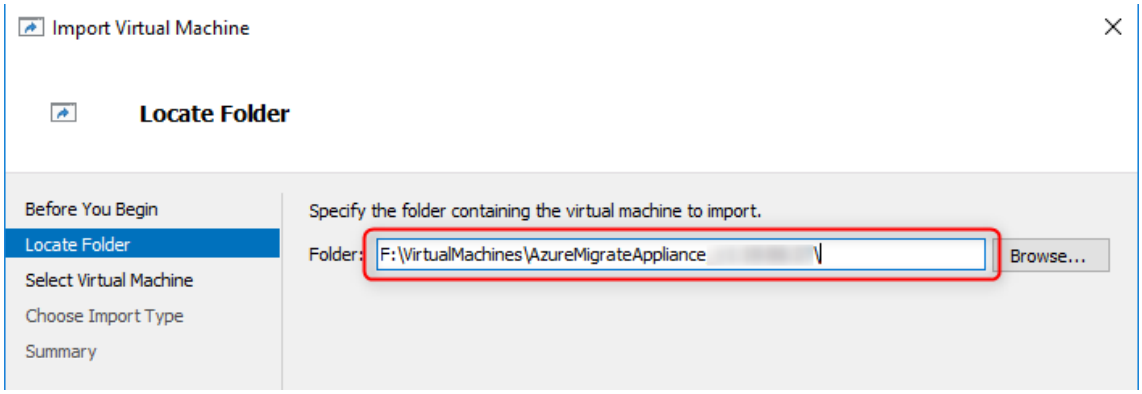
You will now deploy the Azure Migrate appliance virtual machine. Normally, you would first need to download the .ZIP file containing the appliance to your Hyper-V host, and unzip it. To save time, these steps have been completed for you.

8. In Hyper-V Manager, under **Actions**, select **Import Virtual Machine...** to open the **Import Virtual Machine** wizard.



9. At the first step, **Before You Begin**, select **Next**.

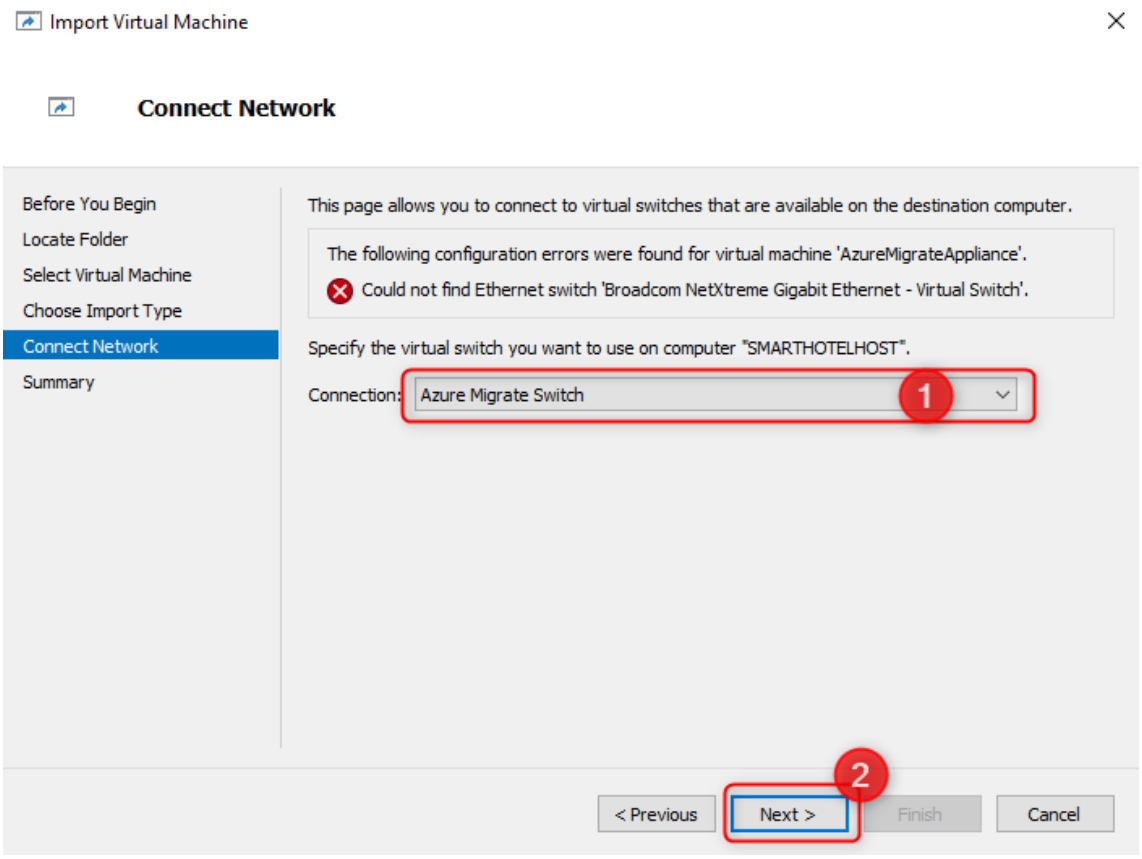
10. At the **Locate Folder** step, select **Browse** and navigate to **F:\VirtualMachines\AzureMigrateAppliance** (the folder name may also include a version number), then choose **Select Folder**, then select **Next**.



11. At the **Select Virtual Machine** step, the **AzureMigrateAppliance** VM should already be selected. Select **Next**.

12. At the **Choose Import Type** step, keep the default setting **Register the virtual machine in-place**. Select **Next**.

13. At the **Connect Network** step, you will see an error that the virtual switch previously used by the Azure Migrate appliance could not be found. From the **Connection** drop down, select the **Azure Migrate Switch**, then select **Next**.



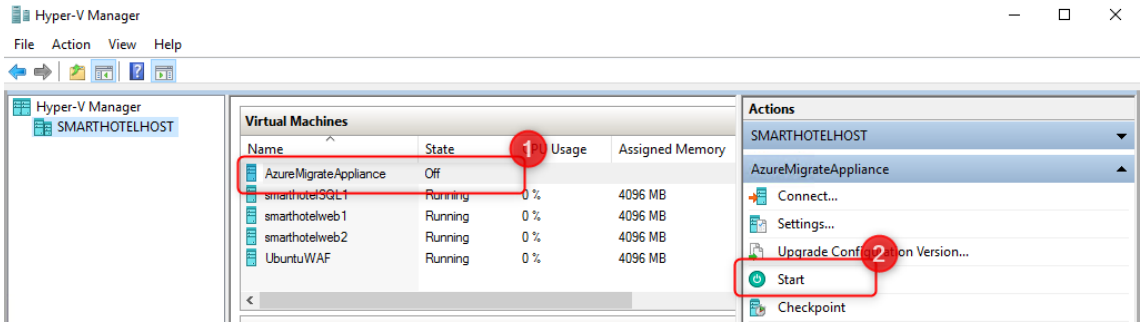
Note: The Azure Migrate appliance needs access to the Internet to upload data to Azure. It also needs access to the Hyper-V host. However, it does not need direct access to the application VMs running on the Hyper-V host. To protect the application environment, the Azure Migrate Appliance should be deployed to a separate subnet within Hyper-V, rather than in the same subnet as your application.

The Hyper-V environment has a NAT network using the IP address space 192.168.0.0/16. The internal NAT switch used by the SmartHotel application uses the subnet 192.168.0.0/24, and each VM in the application has been assigned a static IP address from this subnet.

The Azure Migrate Appliance will be connected to a separate subnet 192.168.1.0/24, which has been set up for you. Using the 'Azure Migrate Switch' connects the appliance to this subnet. The appliance is assigned an IP address from this subnet using a DHCP service running on the SmartHotelHost.

14. Review the summary page, then select **Finish** to create the Azure Migrate appliance VM.

15. In Hyper-V Manager, select the **AzureMigrateAppliance** VM, then select **Start** on the left.



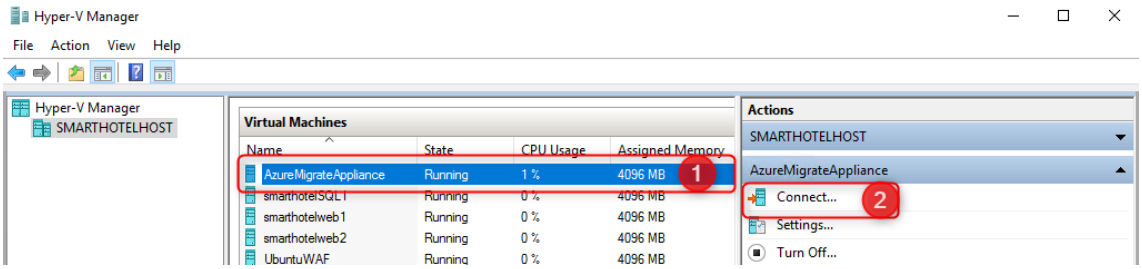
Task summary

In this task you deployed the Azure Migrate appliance in the on-premises Hyper-V environment.

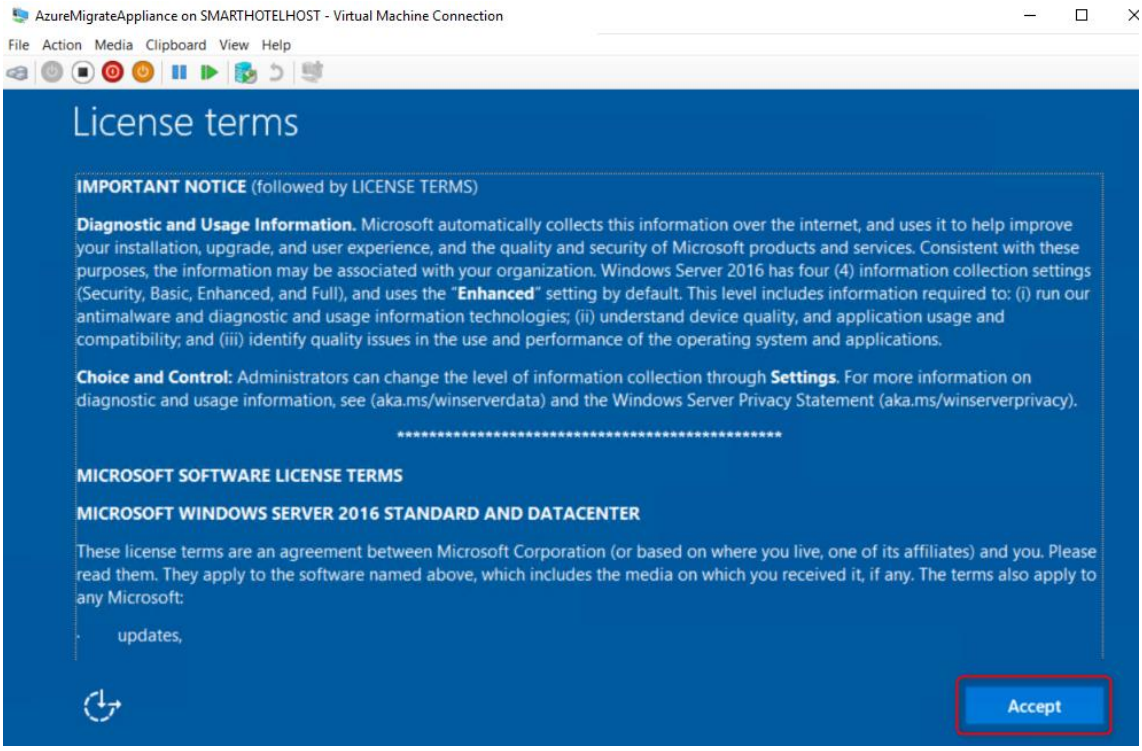
Task 3: Configure the Azure Migrate appliance

In this task, you will configure the Azure Migrate appliance and use it to complete the discovery phase of the migration assessment.

1. In Hyper-V Manager, select the **AzureMigrateAppliance** VM, then select **Connect** on the left.

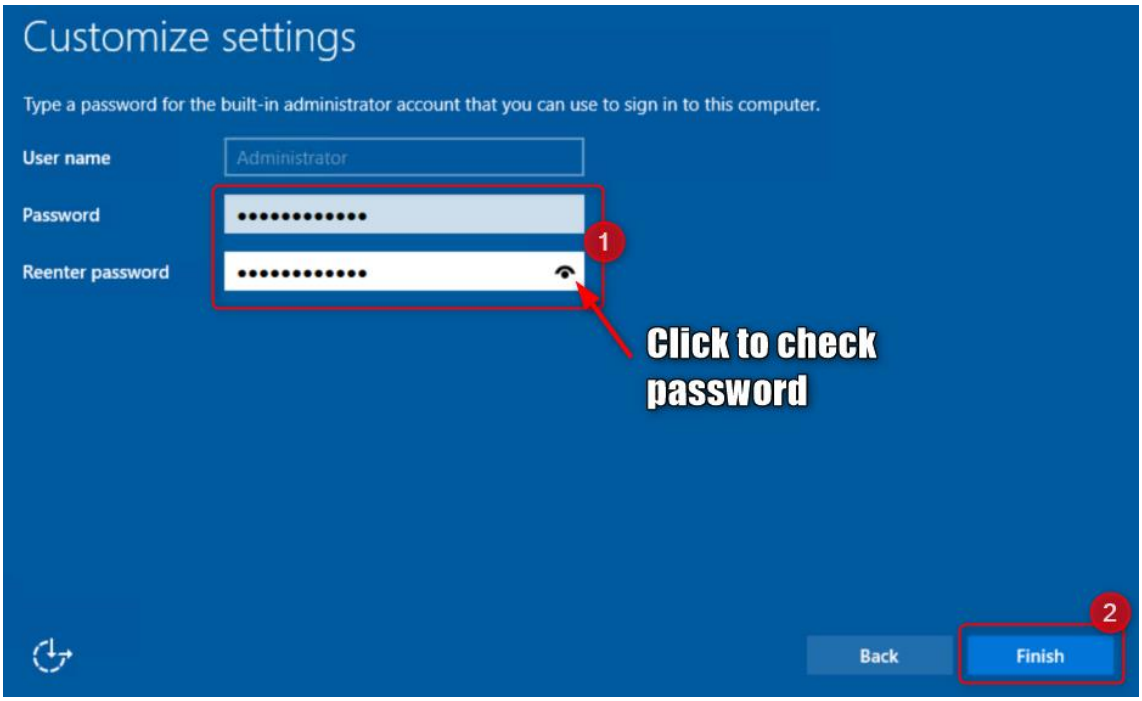


2. A new window will open showing the Azure Migrate appliance. Wait for the License terms screen to show, then select **Accept**.



3. On the **Customize settings** screen, set the Administrator password to **demo!pass123** (twice). Then select **Finish**.

   Note: When entering the password, the VM uses a US keyboard mapping. If you are using a non-US keyboard, some characters may be entered incorrectly. Select the 'eyeball' icon in the second password entry box to check the password has been entered correctly.

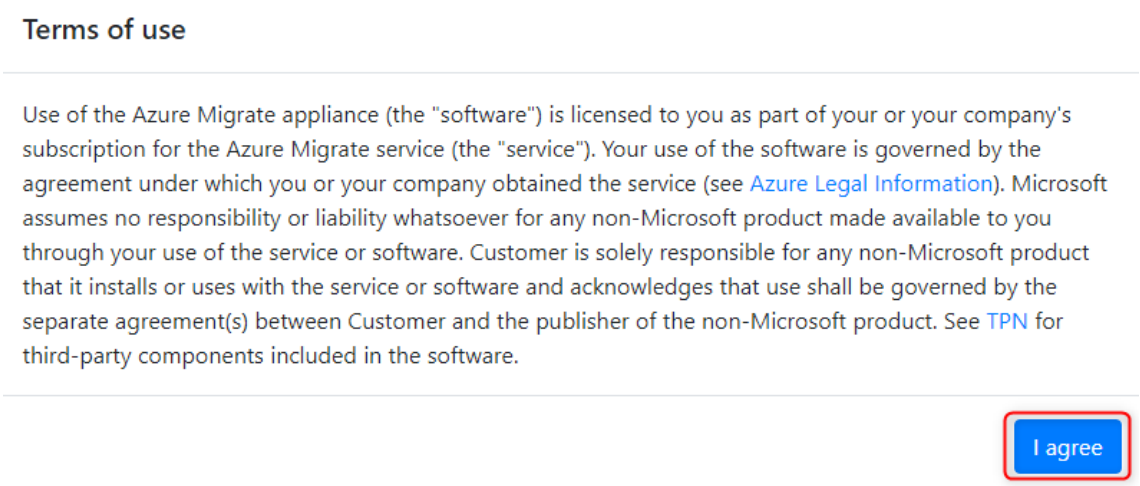


4. At the **Connect to AzureMigrateAppliance** prompt, set the appliance screen size using the slider, then select **Connect**.

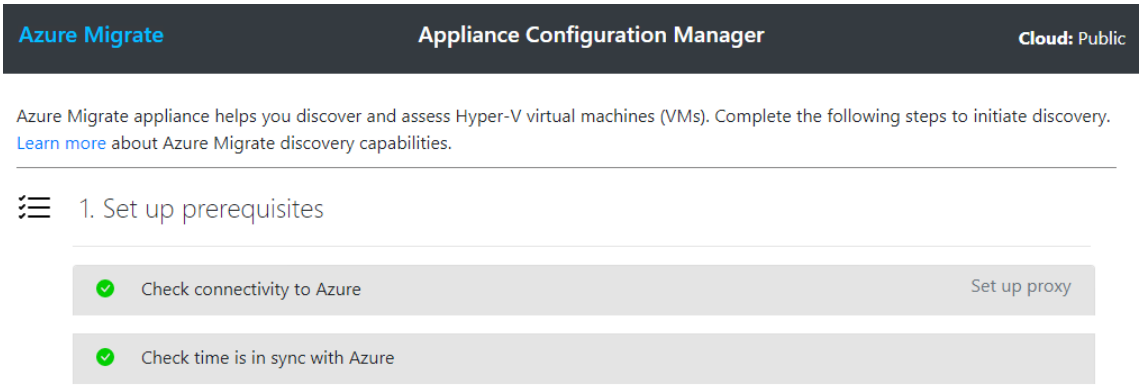
5. Log in with the Administrator password **demo!pass123** (the login screen may pick up your local keyboard mapping, use the 'eyeball' icon to check).

6. **Wait.** After a minute or two, the browser will open showing the Azure Migrate appliance configuration wizard (it can also be launched from the desktop shortcut).

   On opening of the appliance configuration wizard, a pop-up with the license terms will appear. Accept the terms by selecting **I agree**.

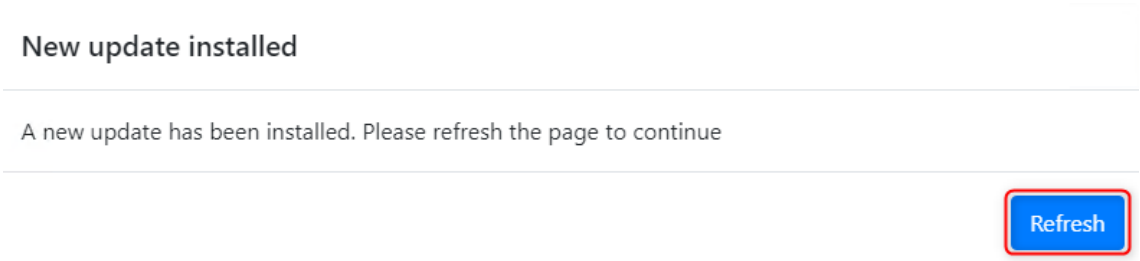


7. Under **Set up prerequisites**, the following two steps to verify Internet connectivity and time synchronization should pass automatically.



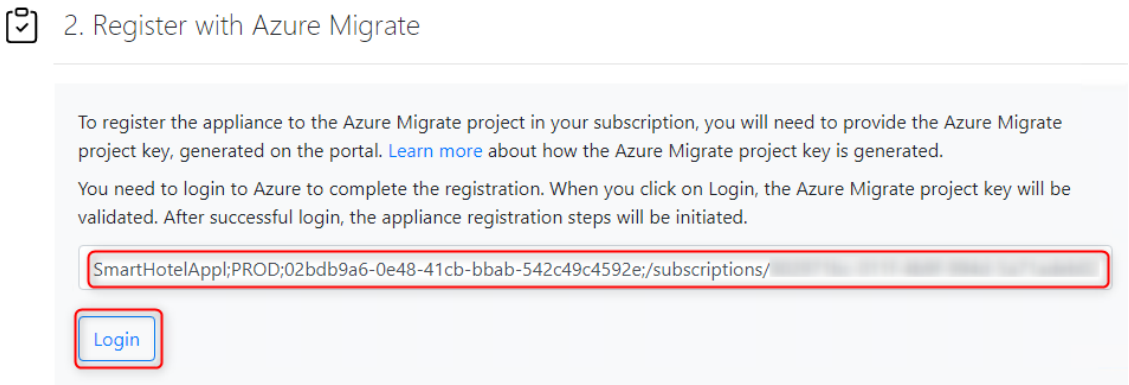
8. **Wait** while the wizard installs the latest Azure Migrate updates. If prompted for credentials, enter user name **Administrator** and password **demo!pass123**. Once the Azure Migrate updates are

completed, you may see a pop-up if the management app restart is required, and if so, select **Refresh** to restart the app.

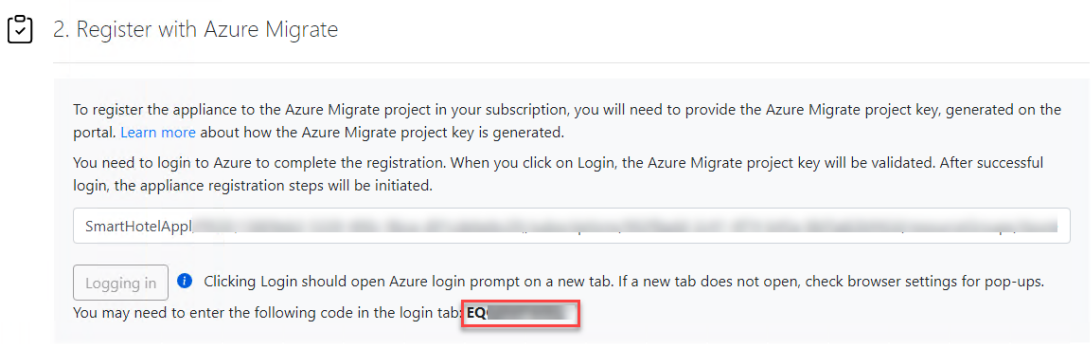


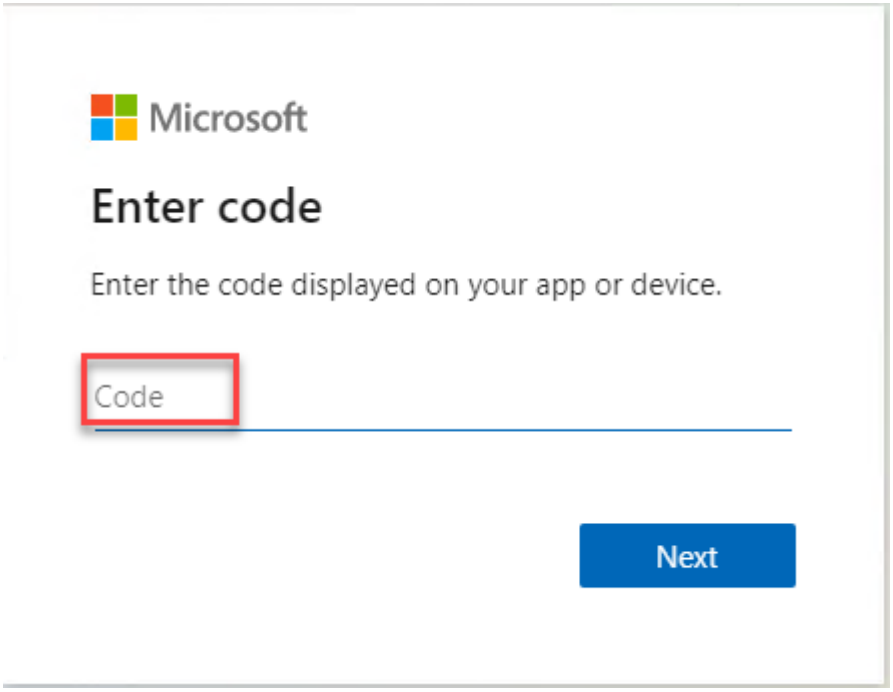
Once restarted, the 'Set up prerequisites' steps of the Azure Migrate wizard will re-run automatically. Once the prerequisites are completed, you can proceed to the next panel, **2. Register with Azure Migrate**.

9. At the next phase of the wizard, **Register with Azure Migrate**, paste the **Azure Migrate project key** copied from the Azure portal earlier. (If you do not have the key, go to **Server Assessment > Discover > Manage existing appliances**, select the appliance name you provided at the time of key generation and copy the corresponding key.)

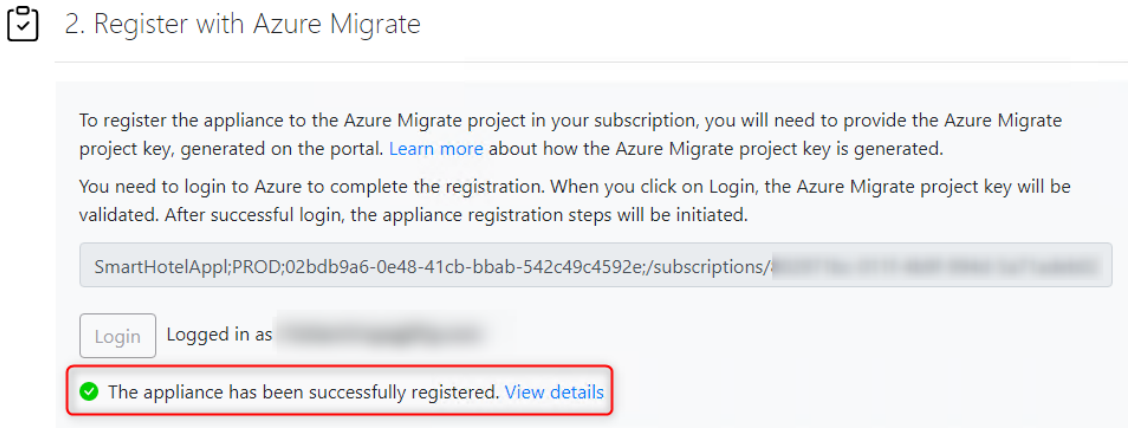


10. After you select **Login**, a new window will open asking for a code. This code is located below the **Azure Migrate project key**. Copy and paste this code in the login field. You will then be asked for your Azure portal credentials to complete the login process.



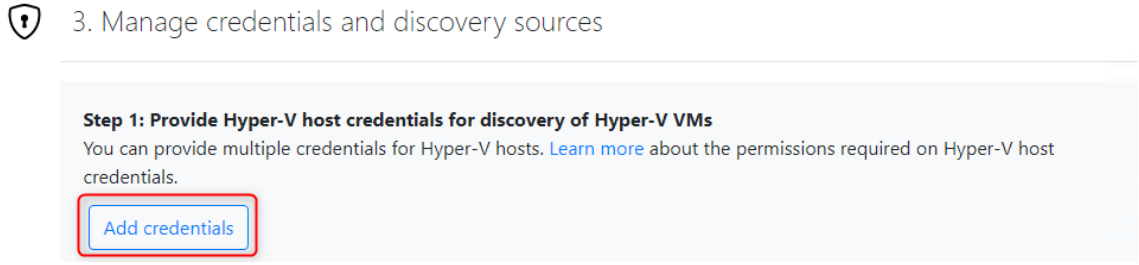


11. Select **Login**. This will open an Azure login prompt in a new browser tab (if it doesn't appear, make sure the pop-up blocker in the browser is disabled). Log in using your Azure credentials. Once you have logged in, return to the Azure Migrate Appliance tab and the appliance registration will start automatically.

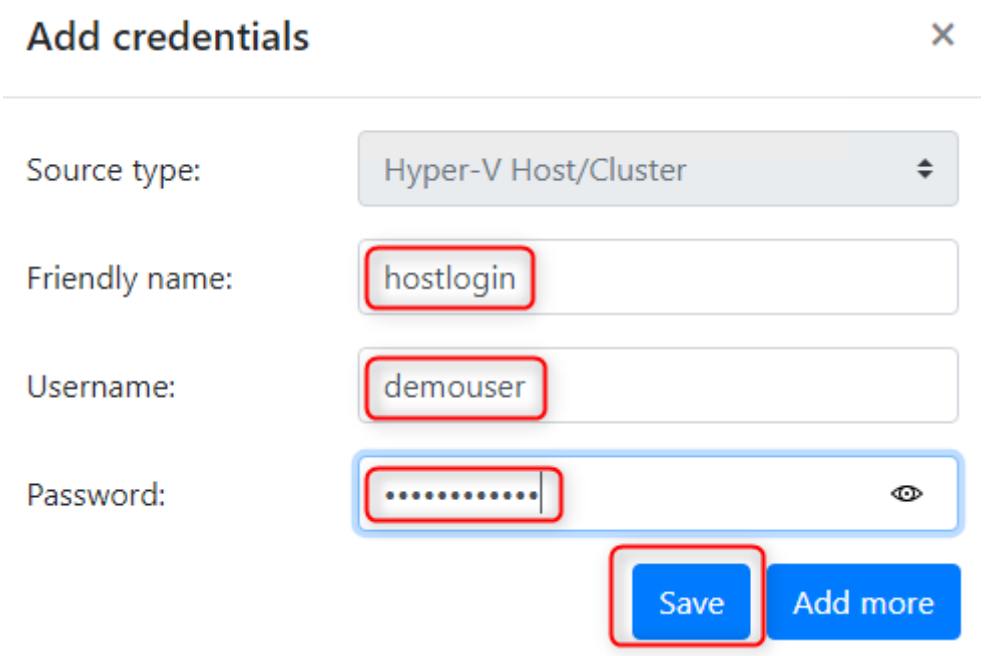


Once the registration has completed, you can proceed to the next panel, **3. Manage credentials and discovery sources**.

12. In **Step 1: Provide Hyper-V host credentials**, select **Add credentials**.

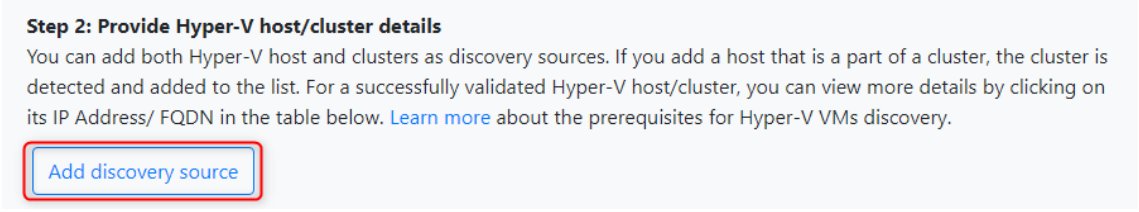


13. Specify **hostlogin** as the friendly name for credentials, username **demouser**, and password **demo!pass123** for the Hyper-V host/cluster that the appliance will use to discover VMs. Select **Save**.

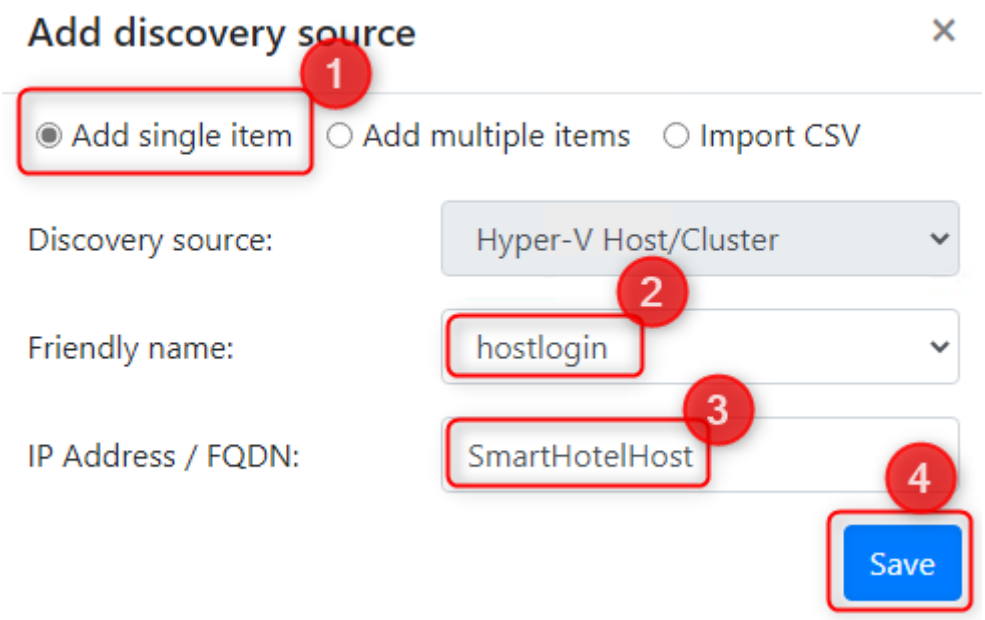


Note: The Azure Migrate appliance may not have picked up your local keyboard mapping. Select the 'eyeball' in the password box to check the password was entered correctly.
Note: Multiple credentials are supported for Hyper-V VMs discovery, via the 'Add more' button.

14. In **Step 2: Provide Hyper-V host/cluster details**, select **Add discovery source** to specify the Hyper-V host/cluster IP address/FQDN and the friendly name for credentials to connect to the host/cluster.

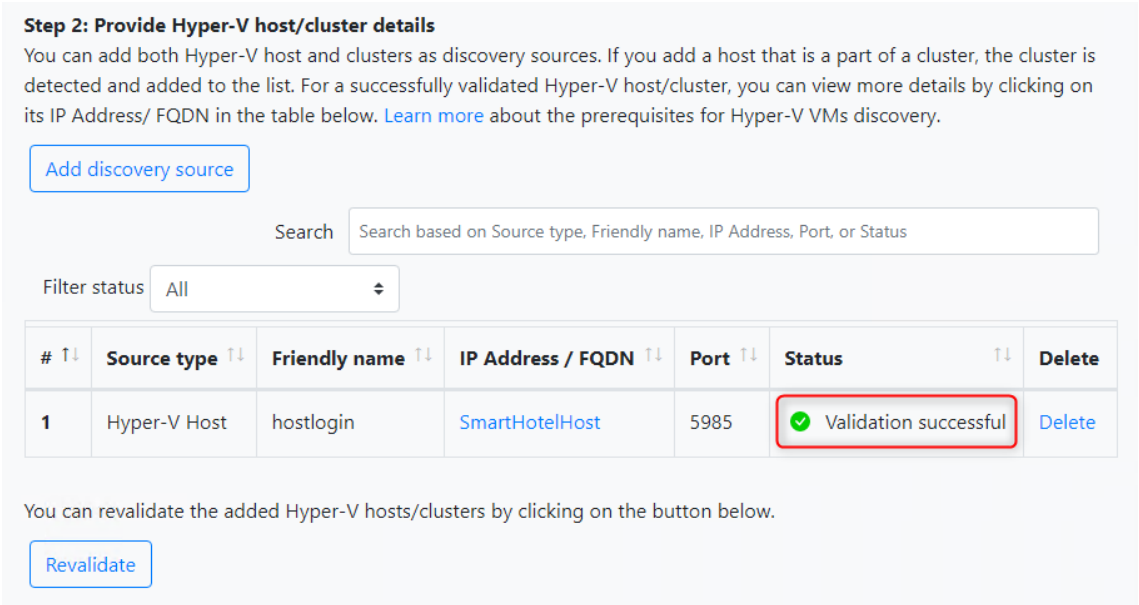


15. Select **Add single item**, select **hostlogin** as the friendly name, and enter **SmartHotelHost** under 'IP Address / FQDN'.



Note: You can either **Add single item** at a time or **Add multiple items** in one go. There is also an option to provide Hyper-V host/cluster details through **Import CSV**.

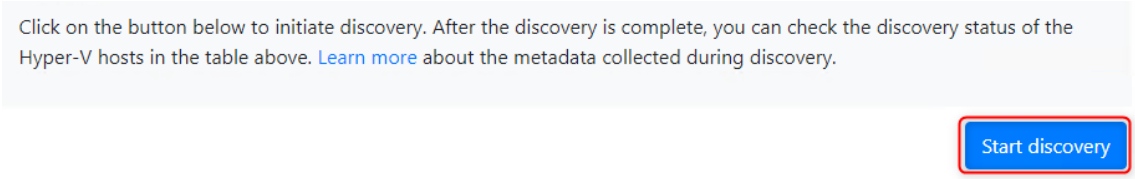
16. Select **Save**. The appliance will validate the connection to the Hyper-V hosts/clusters added and show the **Validation status** in the table against each host/cluster.



Note: When adding discovery sources:

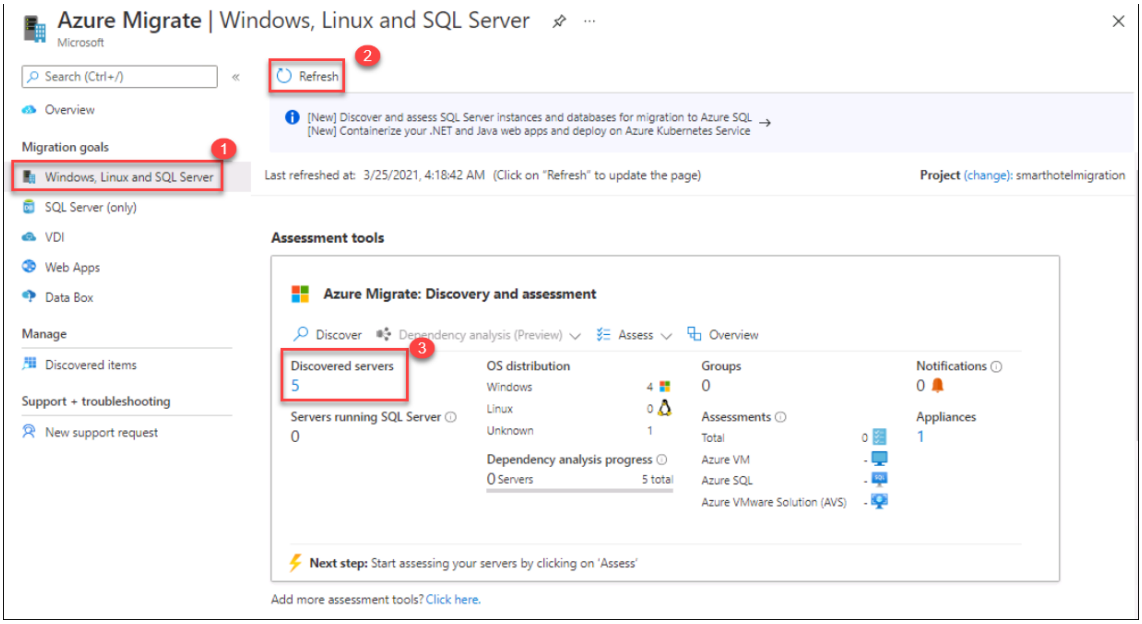
- For successfully validated hosts/clusters, you can view more details by selecting their IP address/FQDN.
- If validation fails for a host, review the error by selecting the Validation failed in the Status column of the table. Fix the issue and validate again.
- To remove hosts or clusters, select **Delete**.
- You can't remove a specific host from a cluster. You can only remove the entire cluster.
- You can add a cluster, even if there are issues with specific hosts in the cluster.

17. Select **Start discovery** to kick off VM discovery from the successfully validated hosts/clusters.



18. Wait for the Azure Migrate status to show **Discovery has been successfully initiated**. This will take several minutes. After the discovery has been successfully initiated, you can check the discovery status against each host/cluster in the table.

19. Return to the **Azure Migrate** blade in the Azure portal. Select **Servers**, then select **Refresh**. Under **Azure Migrate: Server Assessment** you should see a count of the number of servers discovered so far. If discovery is still in progress, select **Refresh** periodically until 5 discovered servers are shown. This may take several minutes.



Wait for the discovery process to complete before proceeding to the next Task.

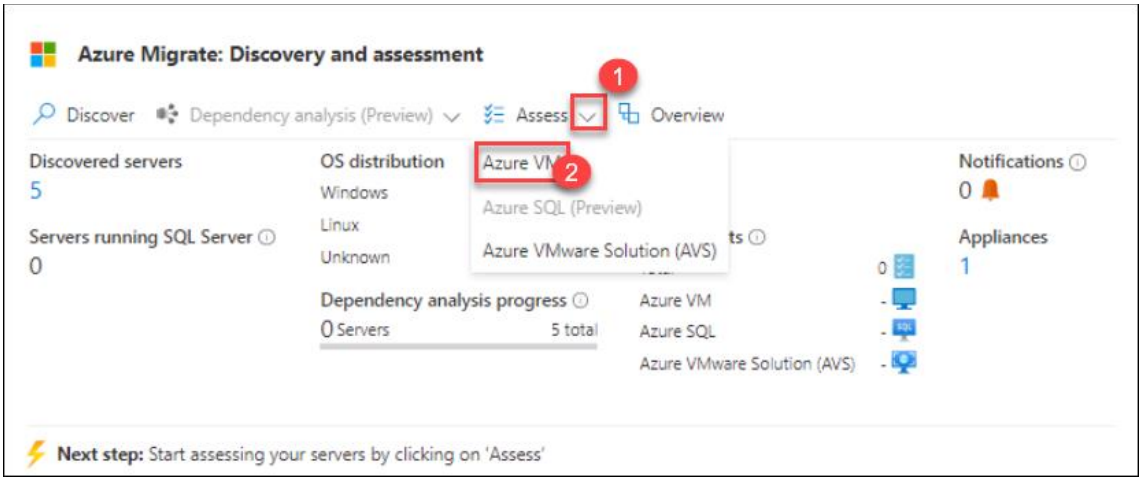
Task summary

In this task you configured the Azure Migrate appliance in the on-premises Hyper-V environment and started the migration assessment discovery process.

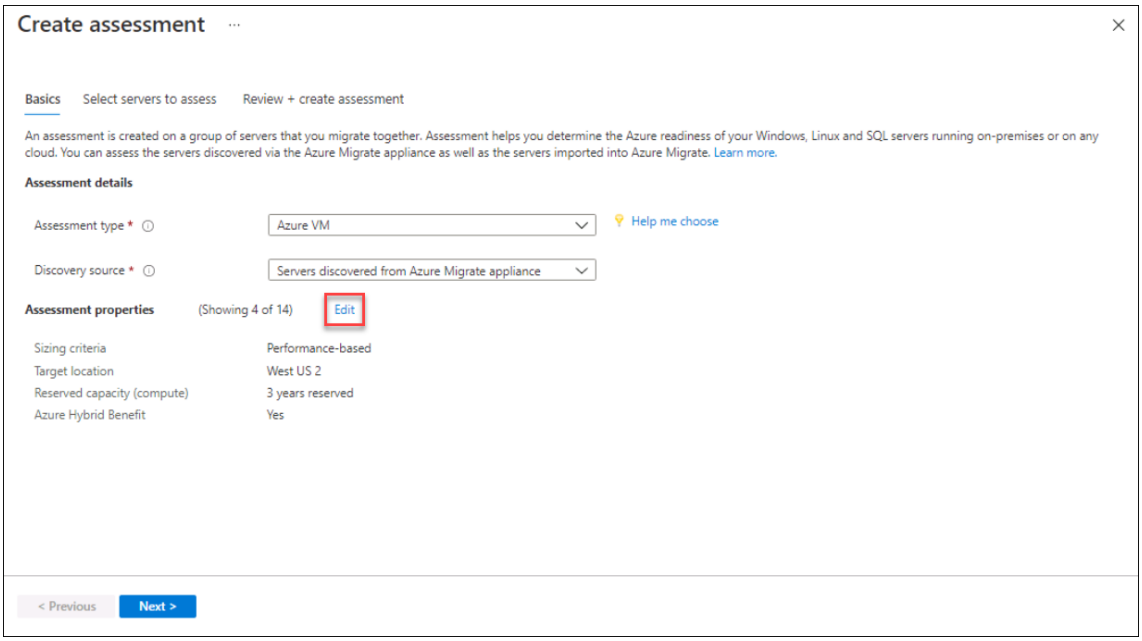
Task 4: Create a migration assessment

In this task, you will use Azure Migrate to create a migration assessment for the SmartHotel application, using the data gathered during the discovery phase.

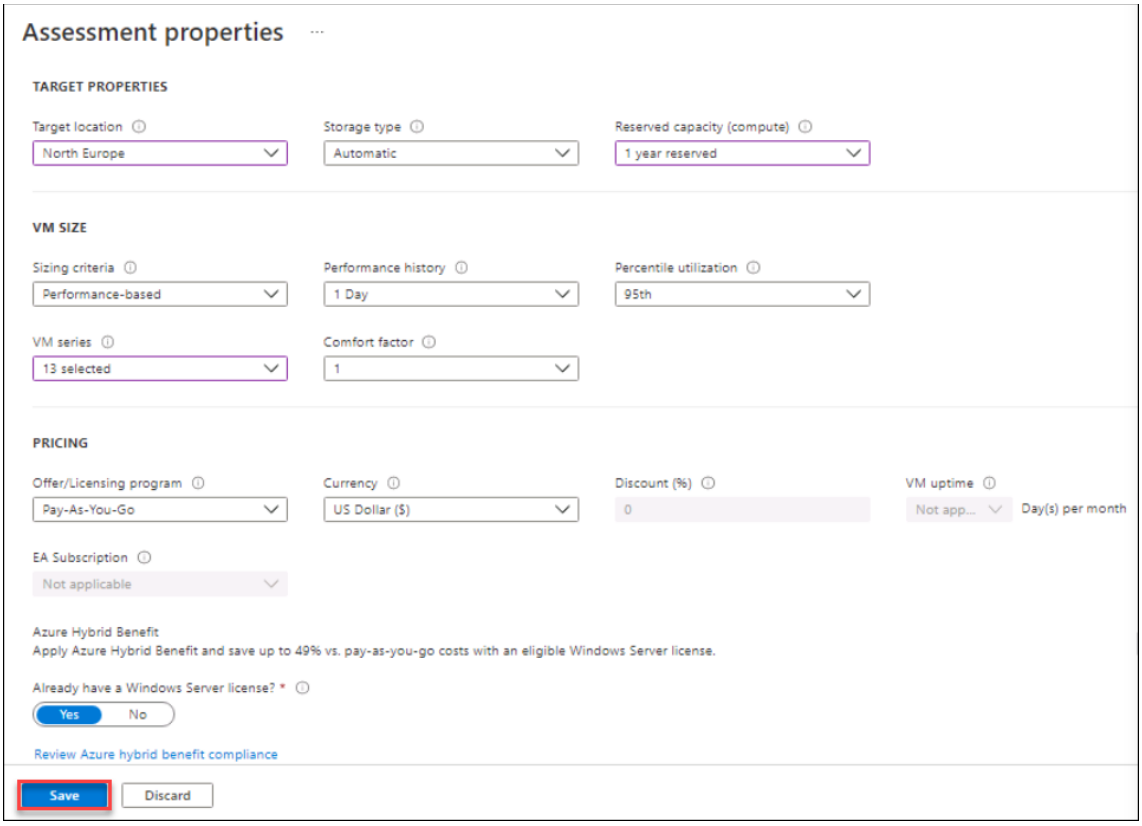
1. Continuing from Task 3, select **Assess** under **Azure Migrate: Server Assessment** to start a new migration assessment.



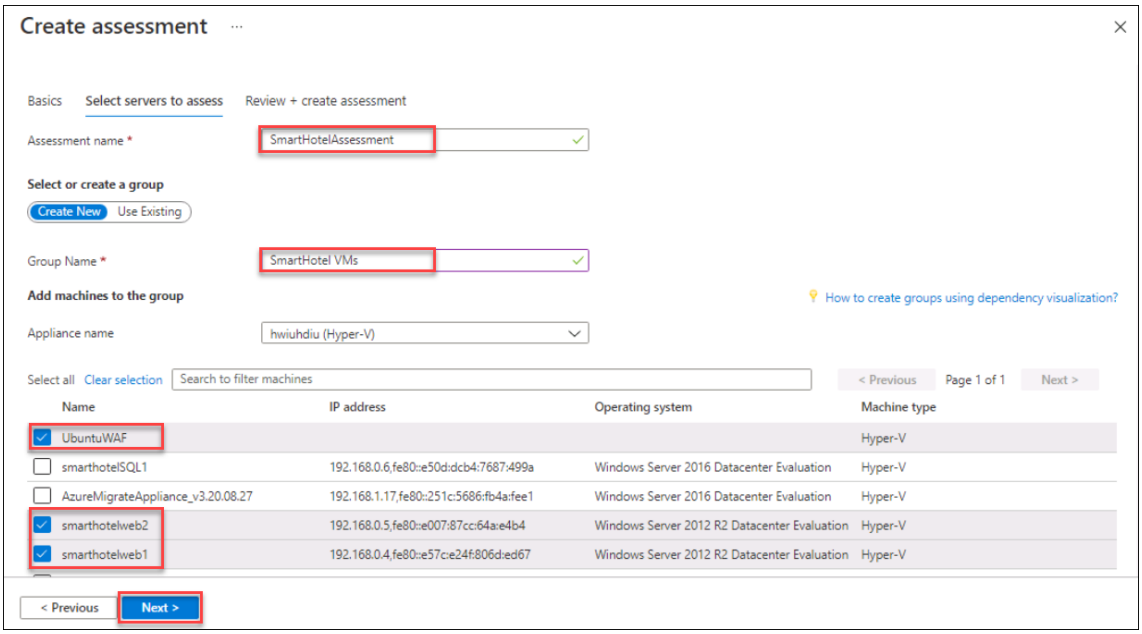
2. On the **Create Assessment Basics** blade, ensure the Assessment type to be Azure VM and Discovery Source to be Machines discovered from Azure Migrate Appliance. Under **Assessment properties**, select **Edit**.



3. The **Assessment properties** blade allows you to tailor many of the settings used when making a migration assessment report. Take a few moments to explore the wide range of assessment properties. Hover over the information icons to see more details on each setting. Choose any settings you like, then select **Save**. (You have to make a change for the Save button to be enabled; if you don't want to make any changes, just close the blade.)



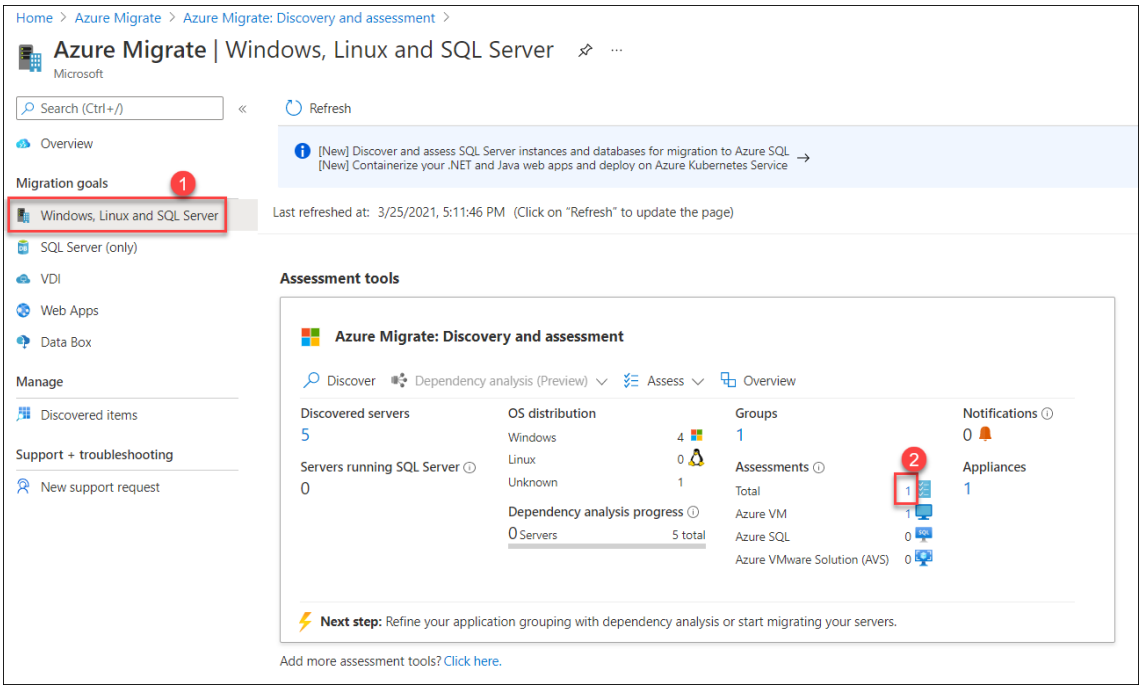
4. Select **Next** to move to the **Select machines to assess** tab. Choose **Create New** and enter the group name **SmartHotel VMs**. Select the **smarthotelweb1**, **smarthotelweb2** and **UbuntuWAF** VMs.



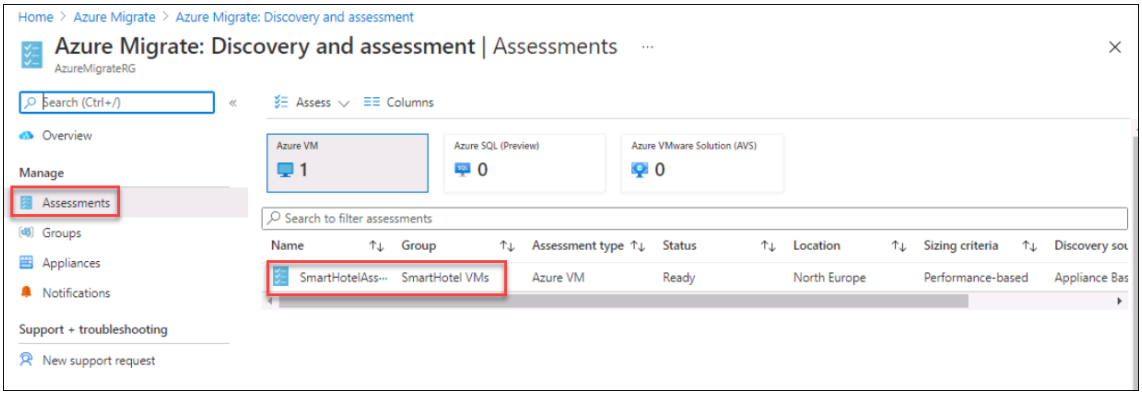
Note: There is no need to include the **smarthotelSQL1** or **AzureMigrateAppliance** VMs in the assessment, since they will not be migrated to Azure. (The SQL Server will be migrated

to the SQL Database service and the Azure Migrate Appliance is only used for migration assessment.)

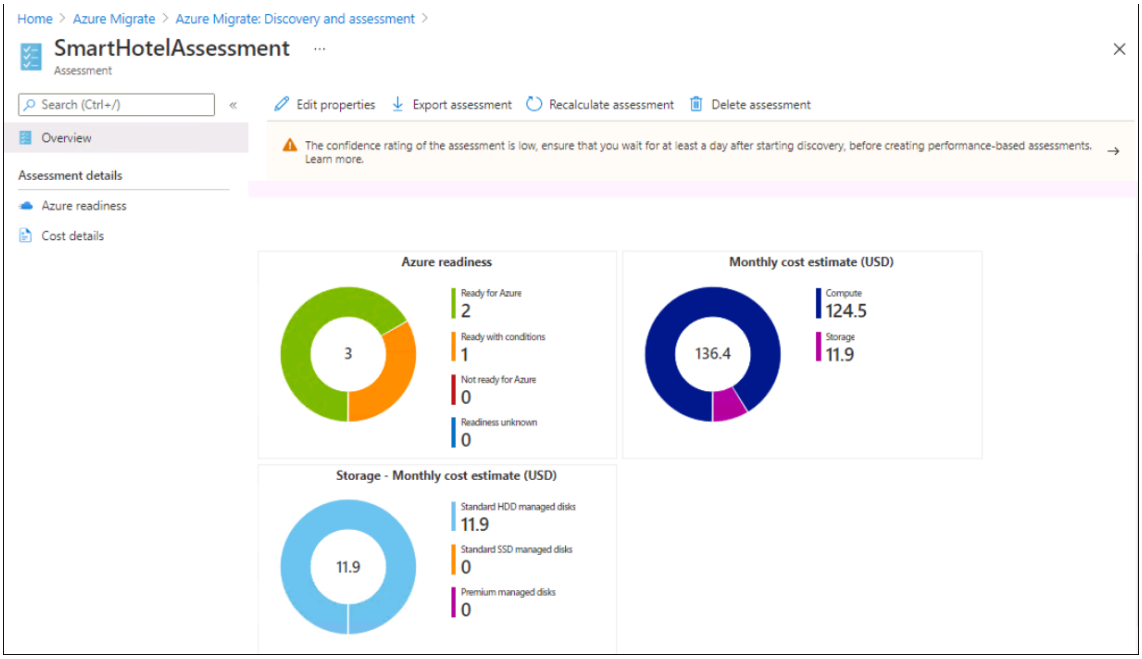
5. Select **Next**, followed by **Create assessment**. On the **Azure Migrate – Migration goals – Servers, databases and web apps** blade, select **Refresh** periodically until the number of assessments shown is **1**. This may take several minutes.



6. Select **Assessments** under **Azure Migrate: Discovery and assessment** to see a list of assessments. Then select the actual assessment.

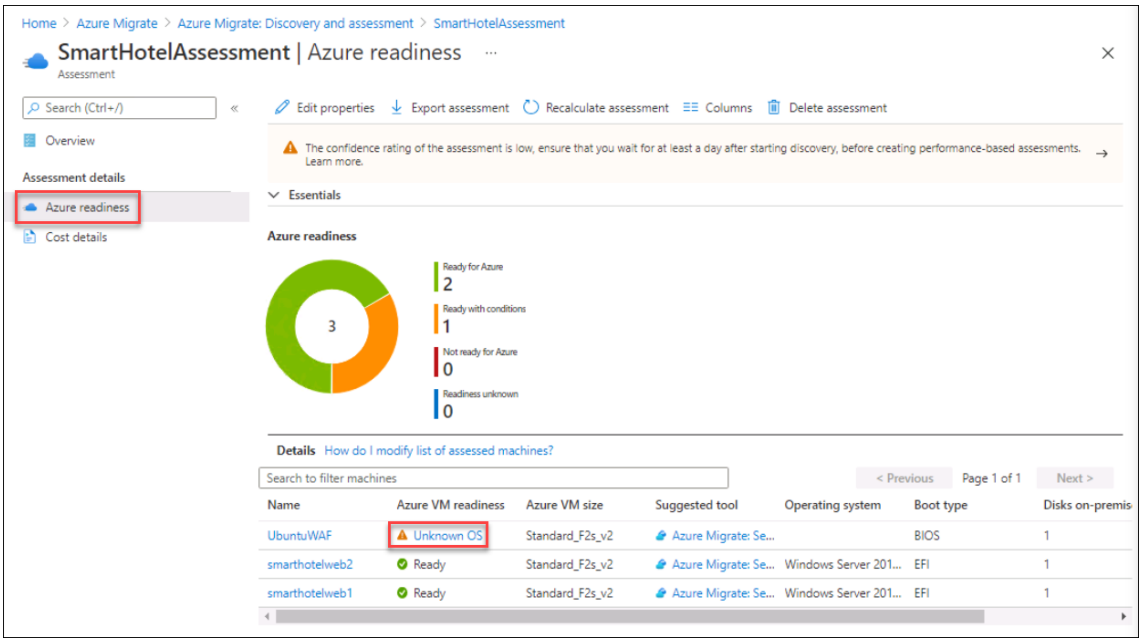


7. Take a moment to study the assessment overview.



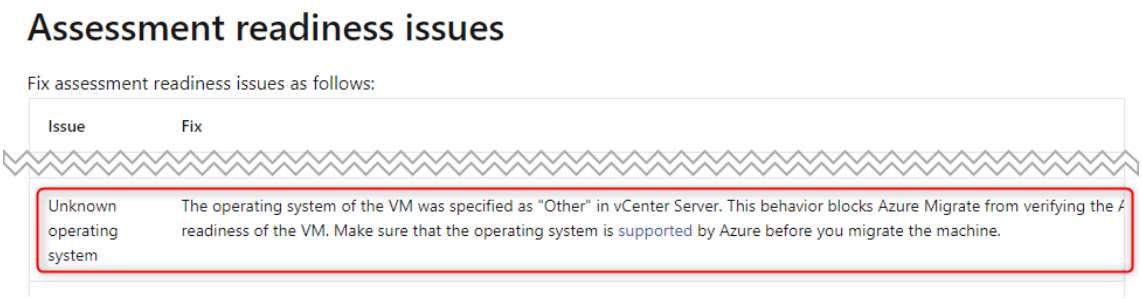
8. Select **Edit properties**. Note how you can now modify the assessment properties you chose earlier. Change a selection of settings, and **Save** your changes. After a few moments, the assessment report will update to reflect your changes.

9. Select **Azure readiness** (either the chart or on the left navigation). Note that for the **UbuntuWAF** VM, a specific concern is listed regarding the readiness of the VM for migration.

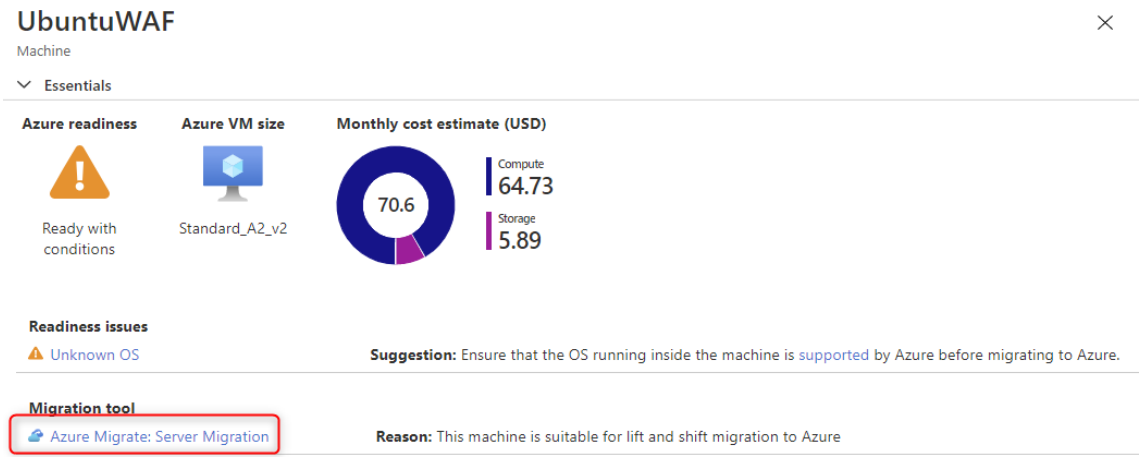


10. Select **Unknown OS** for **UbuntuWAF**. A new browser tab opens showing Azure Migrate documentation. Note on the page that the issue relates

the OS not being specified in the host hypervisor, so you must confirm the OS type and version is supported.



11. Return to the portal browser tab to see details of the issue. Note the recommendation to migrate the VM using **Azure Migrate: Server Migration**.



12. Take a few minutes to explore other aspects of the migration assessment.

Note: The process of gathering information of operating system environments (OSE) and migrating data of VMs between environments takes some time due to the nature of transferring data. However, there are a few steps that can be done to speed up and view how the system works. These are a few options:

Common steps to refresh data: (also see Troubleshoot Discovery)

- Server data not updating in portal – if the servers' data is not refreshing, this is a method to accelerate it.
- Do not see software inventory details – by default the software inventory is only refreshed once every 24 hours. This forces a refresh.
- Software inventory errors – during inventory there are sometimes error codes returned. This lists all the error codes and meanings.

Refresh Data

Many issues in the Migrate can be related to the appliance not refreshing the data due to regular schedules or data not being transferred. Forcing the data and information to be updated can be achieved with the following steps:

1. In Windows, Linux and SQL Servers > Azure Migrate: Discovery and assessment, select Overview.
2. Under Manage, select Appliances.
3. Select Refresh services.
4. Wait for the refresh operation to complete. You should now see up-to-date information.

Task summary

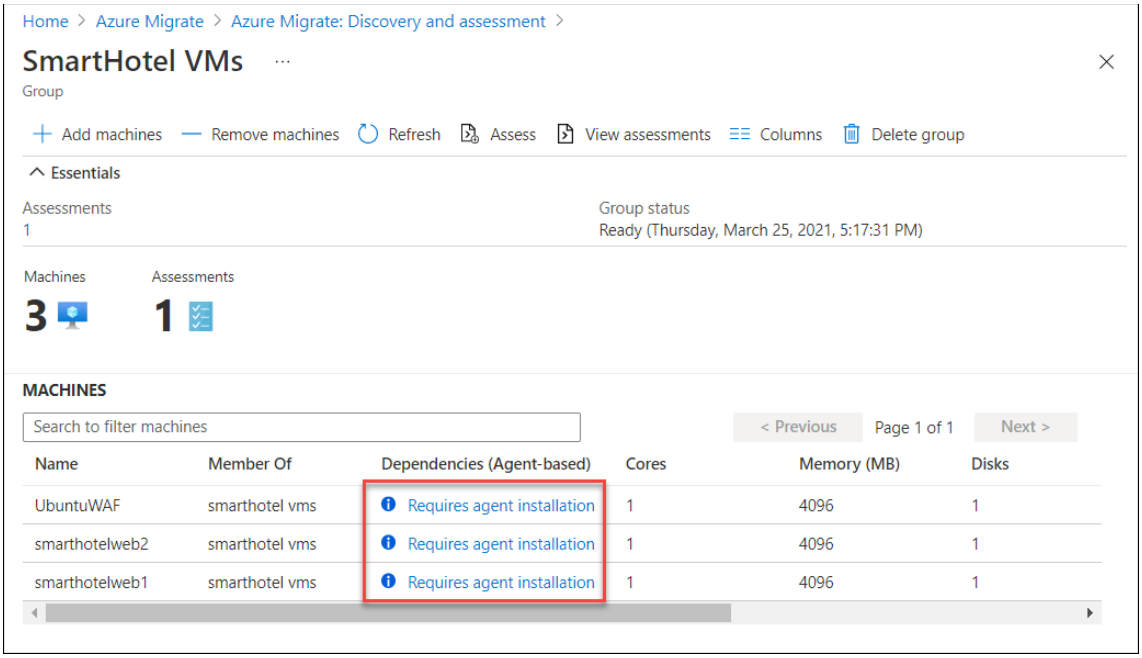
In this task you created and configured an Azure Migrate migration assessment.

Task 5: Configure dependency visualization (Optional)

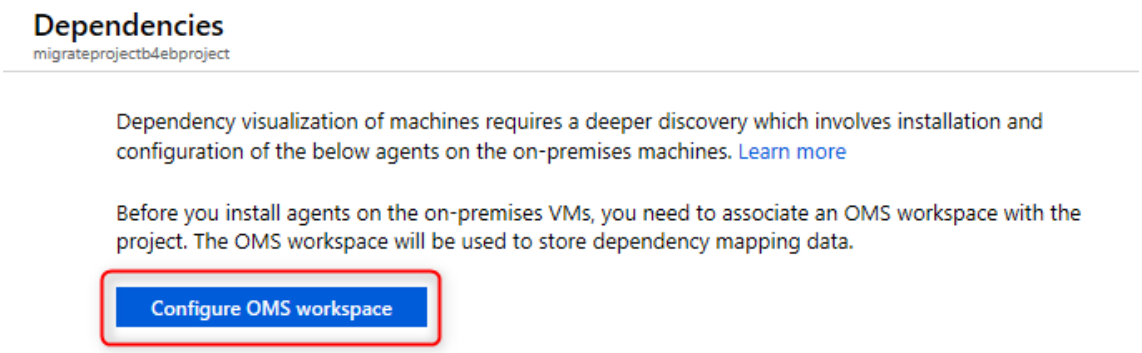
When migrating a workload to Azure, it is important to understand all workload dependencies. A broken dependency could mean that the application doesn't run properly in Azure, perhaps in hard-to-detect ways. Some dependencies, such as those between application tiers, are obvious. Other dependencies, such as DNS lookups, Kerberos ticket validation or certificate revocation checks, are not.

In this task, you will configure the Azure Migrate dependency visualization feature. This requires you to first create a Log Analytics workspace, and then to deploy agents on the to-be-migrated VMs.

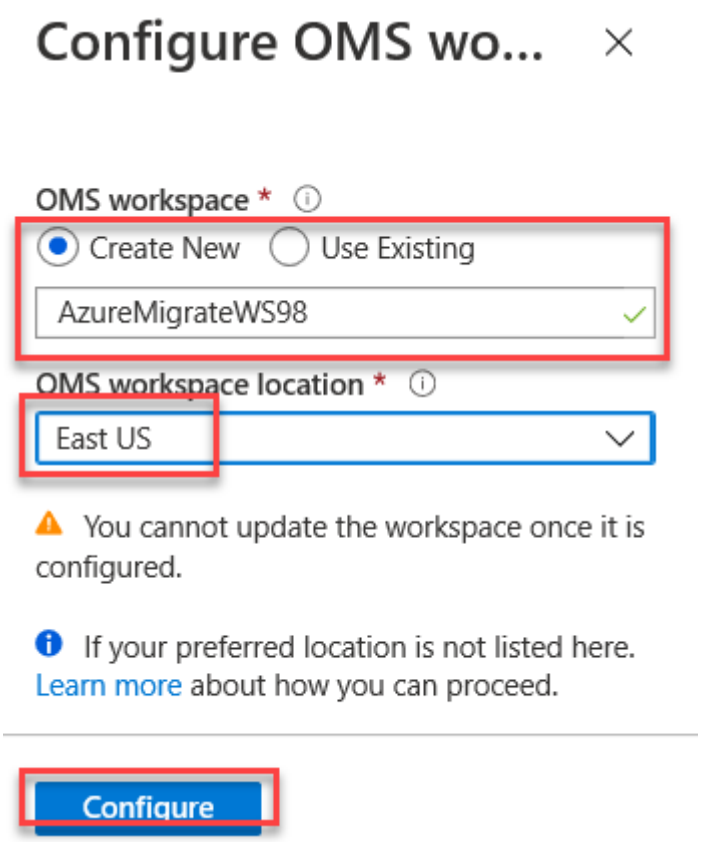
1. Return to the **Azure Migrate** blade in the Azure Portal, and select **Servers, databases and web apps**. Under **Azure Migrate: Discovery and assessment** select **Groups**, then select the **SmartHotel VMs** group to see the group details. Note that each VM has their **Dependencies** status as **Requires agent installation**. Select **Requires agent installation** for the **smarthotelweb1** VM.



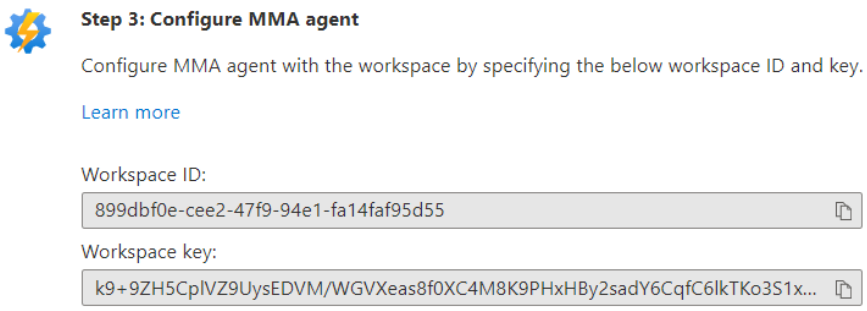
2. On the **Dependencies** blade, select **Configure OMS workspace**.



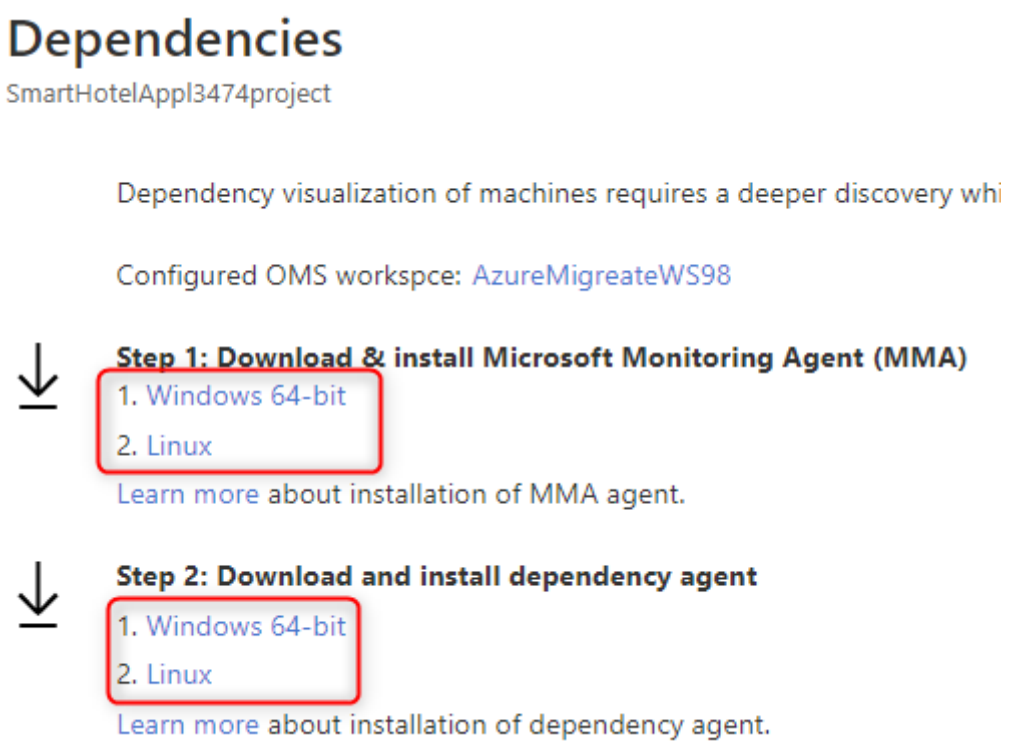
3. Create a new OMS workspace. Use **AzureMigrateWS<unique number>** as the workspace name, where <unique number> is a random number. Choose workspace location East US, close to your lab deployment, then select **Configure**.



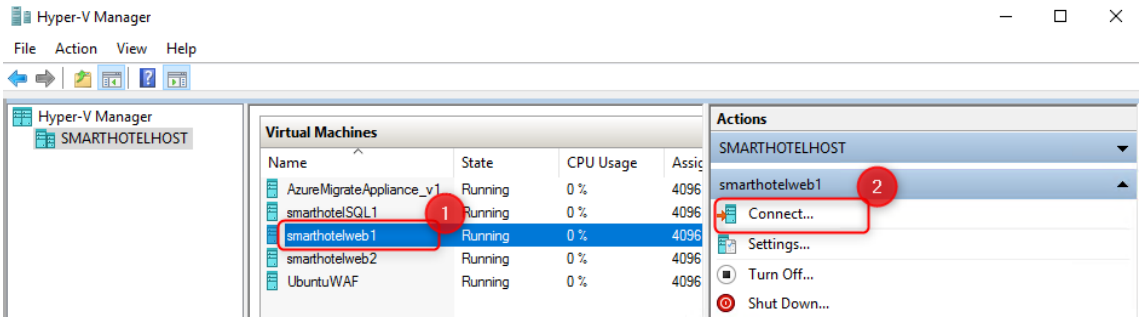
4. Wait for the workspace to be deployed. Once it is deployed, make a note of the **Workspace ID** and **Workspace Key** (for example by using Notepad).



5. Now copy each of the 4 agent download URLs and paste them alongside the Workspace ID and key you noted in the previous step.



6. Return to the RDP session with the **SmartHotelHost**. In **Hyper-V Manager**, select **smarthotelweb1** and select **Connect**.

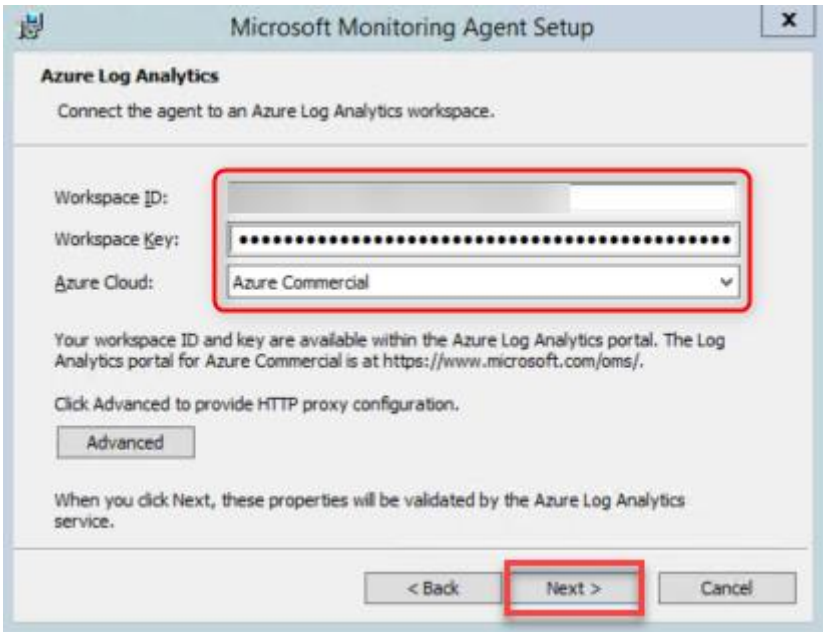


7. Select **Connect** again when prompted and log in to the **Administrator** account using the password **demo!pass123**

8. Open **Internet Explorer**, and paste the link to the 64-bit Microsoft Monitoring Agent for Windows, which you noted earlier. When prompted, **Run** the installer.

   Note: You may need to disable **Internet Explorer Enhanced Security Configuration** on **Server Manager** under **Local Server** to complete the download.

9. Select through the installation wizard until you get to the **Agent Setup Options** page. From there, select **Connect the agent to Azure Log Analytics (OMS)** and select **Next**. Enter the Workspace ID and Workspace Key that you copied earlier, and select **Azure Commercial** from the Azure Cloud drop-down. Select through the remaining pages and install the agent.



10. Paste the link to the Dependency Agent Windows installer into the browser address bar. **Run** the installer and select through the install wizard to complete the installation.

Note: You do not need to configure the workspace ID and key when installing the Dependency Agent, since it uses the same settings as the Microsoft Monitoring Agent, which must be installed beforehand.

11. Close the virtual machine connection window for the **smarthotelweb1** VM. Connect to the **smarthotelweb2** VM and repeat the installation process (steps 8-10) for both agents (the administrator password is the same **demo!pass123**).

You will now deploy the Linux versions of the Microsoft Monitoring Agent and Dependency Agent on the **UbuntuWAF** VM. To do so, you will first connect to the UbuntuWAF remotely using an SSH session.

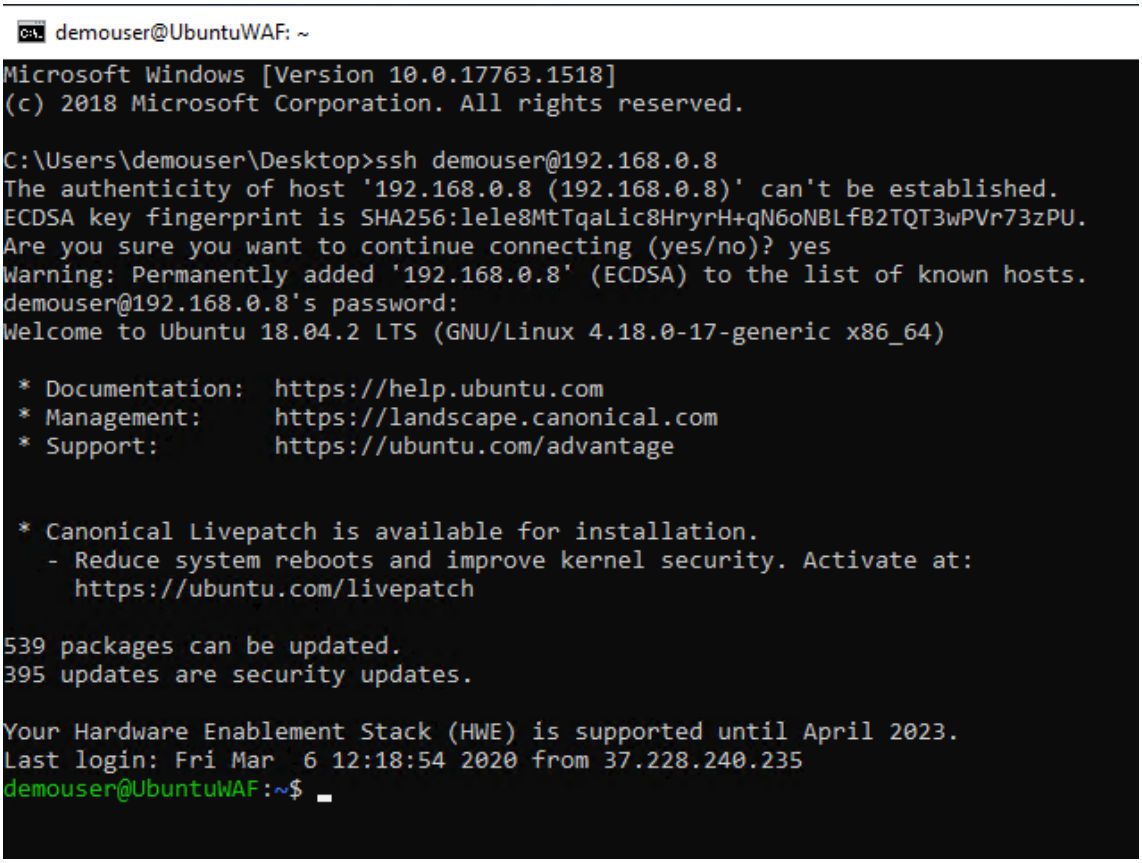
12. Return to the RDP session with the **SmartHotelHost** and open a command prompt using the desktop shortcut.

    Note: The SmartHotelHost runs Windows Server 2019 with the Windows Subsystem for Linux enabled. This allows the command prompt to be used as an SSH client. More info of supported Linux on Azure can be found here: https://Azure.com/Linux.

13. Enter the following command to connect to the **UbuntuWAF** VM running in Hyper-V on the SmartHotelHost:

```
ssh demouser@192.168.0.8
```

14. Enter 'yes' when prompted whether to connect. Use the password **demo!pass123**



15. Enter the following command, followed by the password **demo!pass123** when prompted:

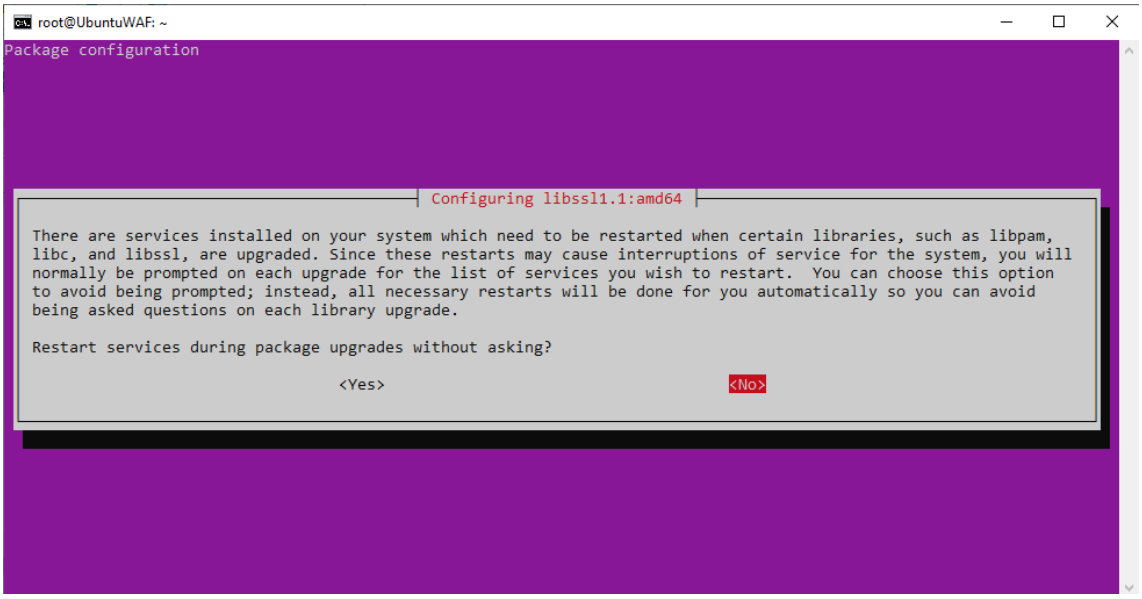
```
sudo -s
```

This gives the terminal session elevated privileges.

16. Enter the following command, substituting <Workspace ID> and <Workspace Key> with the values copied previously. Answer when prompted to restart services during package upgrades without asking.

```
wget https://raw.githubusercontent.com/Microsoft/OMS-Agent-for-Linux/master/installer/scripts/onboard_agent.sh && sh onboard_agent.sh -w <Workspace ID> -s <Workspace Key>
```

17. Select NO to restart this service



18. Enter the following command, substituting <Workspace ID> with the value copied earlier:

```
/opt/microsoft/omsagent/bin/service_control restart <Workspace ID>
```

19. Enter the following command. This downloads a script that will install the Dependency Agent.

```
wget --content-disposition https://aka.ms/dependencyagentlinux -O InstallDependencyAgent-Linux64.bin
```

20. Install the dependency agent by running the script download in the previous step.

```
sh InstallDependencyAgent-Linux64.bin -s
```

```
Dependency Agent installation was successful.
Refer to the logs under /var/opt/microsoft/dependency-agent/log for details.
root@UbuntuWAF:~#
```

21. The agent installation is now complete. Next, you need to generate some traffic on the SmartHotel application so the dependency visualization has some data to work with. Browse to the public IP address of the SmartHotelHost, and spend a few minutes refreshing the page and checking guests in and out.

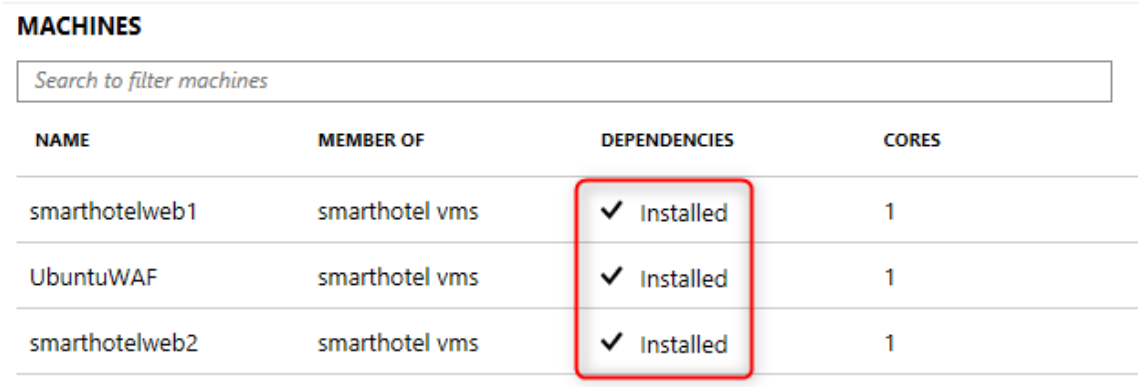
Task summary

In this task you configured the Azure Migrate dependency visualization feature, by creating a Log Analytics workspace and deploying the Azure Monitoring Agent and Dependency Agent on both Windows and Linux on-premises machines.

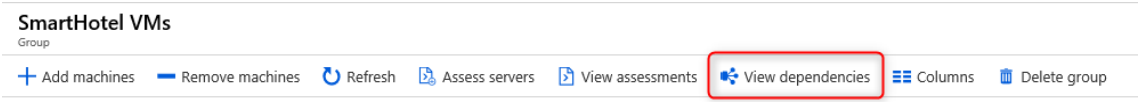
Task 6: Explore dependency visualization (Optional)

In this task, you will explore the dependency visualization feature of Azure Migrate. This feature uses data gathered by the dependency agent you installed in Task 5.

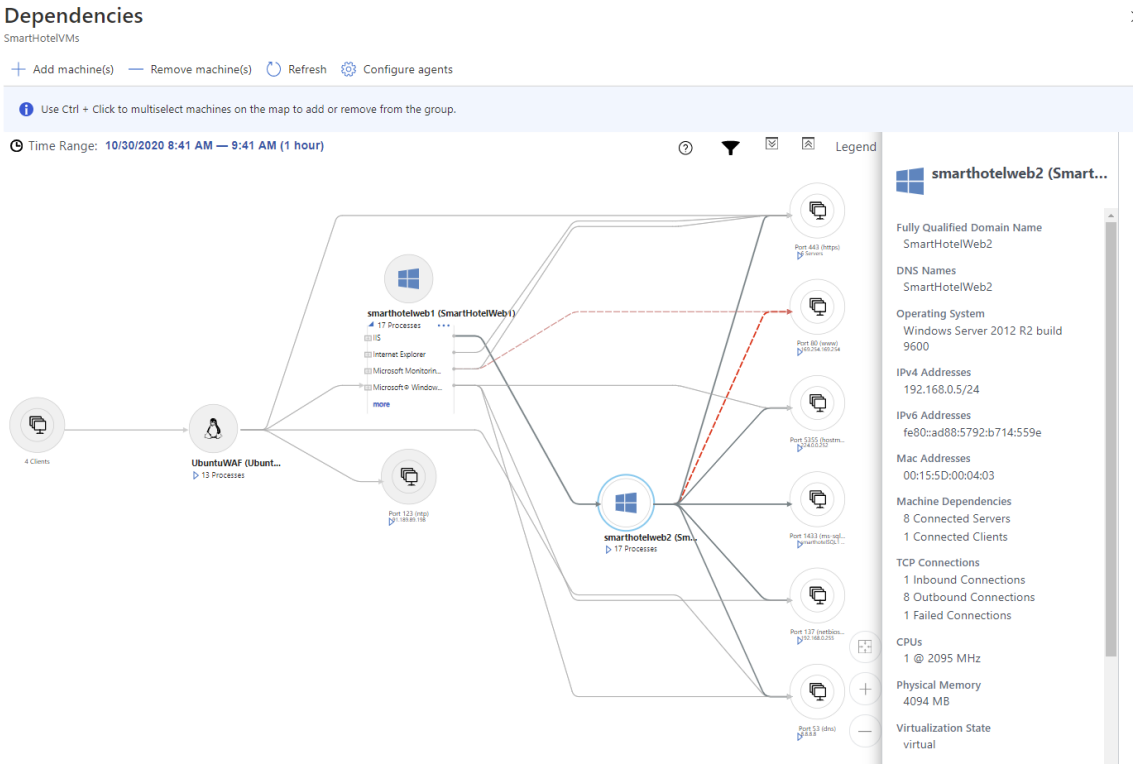
1. Return to the Azure Portal and refresh the Azure Migrate **SmartHotel VMs** VM group blade. The 3 VMs on which the dependency agent was installed should now show their status as 'Installed'. (If not, refresh the page **using the browser refresh button**, not the refresh button in the blade. It may take up to **5 minutes** after installation for the status to be updated.)



2. Select **View dependencies**.



3. Take a few minutes to explore the dependencies view. Expand each server to show the processes running on that server. Select a process to see process information. See which connections each server makes.



Task summary

In this task you explored the Azure Migrate dependency visualization feature.

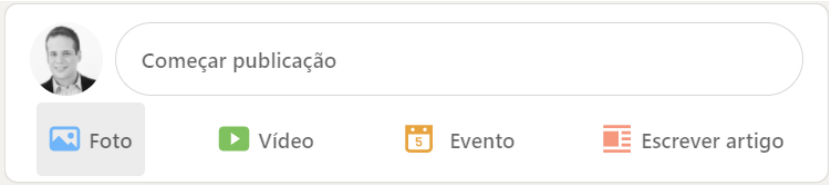
Exercise summary

In this exercise, you used Azure Migrate to assess the on-premises environment. This included selecting Azure Migrate tools, deploying the Azure Migrate appliance into the on-premises environment, creating a migration assessment, and using the Azure Migrate dependency visualization.

2.6 Destrave a sua 2ª medalha

Parabéns, se você chegou até aqui você conseguiu colocar o seu Primeiro Projeto de Migração na Nuvem!!! Estou muito feliz com essa vitória e quero te reconhecer com uma nova medalha de honra ao mérito e você deve postar no seu Linkedin para demonstrar para toda a comunidade a sua conquista.

1. Em uma nova aba, copie e cole o link da medalha:
   https://zecanunes.blob.core.windows.net/apostila/Migrating/medalha02.png
2. Clique com o botão direito do mouse sobre a imagem e Salve no seu computador para usar no próximo passo
3. Acesse seu Linkedin e na Opção de "**Começar publicação**" clique em **Foto**



4. Selecione a imagem da sua medalha e pressione **Concluído**
5. Agora no campo "**No que você está pensando**" digite o seguinte texto:

```
Estou participando do Workshop #ExpedicaoCloud e hoje eu coloquei meu
Primeiro Projeto de Migração na Nuvem com a ajuda do Zeca Nunes ☁
Participe comigo através do link https://zecanunes.com/inscreva
#BoraPraNuvem
```

6. Clique em **Publicar**

Aula 3 – Migração de Banco de Dados

Duration: 60 minutes

Na nuvem você tem mil maneiras de fazer a mesma coisa e nesse exercício vou apresentar 2 métodos de migrar um Banco de dados: o Simples e o Profissional.

O Simples é o dia-a-dia do Profissional da antiga TI, ele quer praticidade para fazer as coisas, está atrasado na entrega desse trabalho e não tá bem ai pra boas práticas de segurança. Embora não é a prática mais segura de todas, é a mais utilizada a décadas.

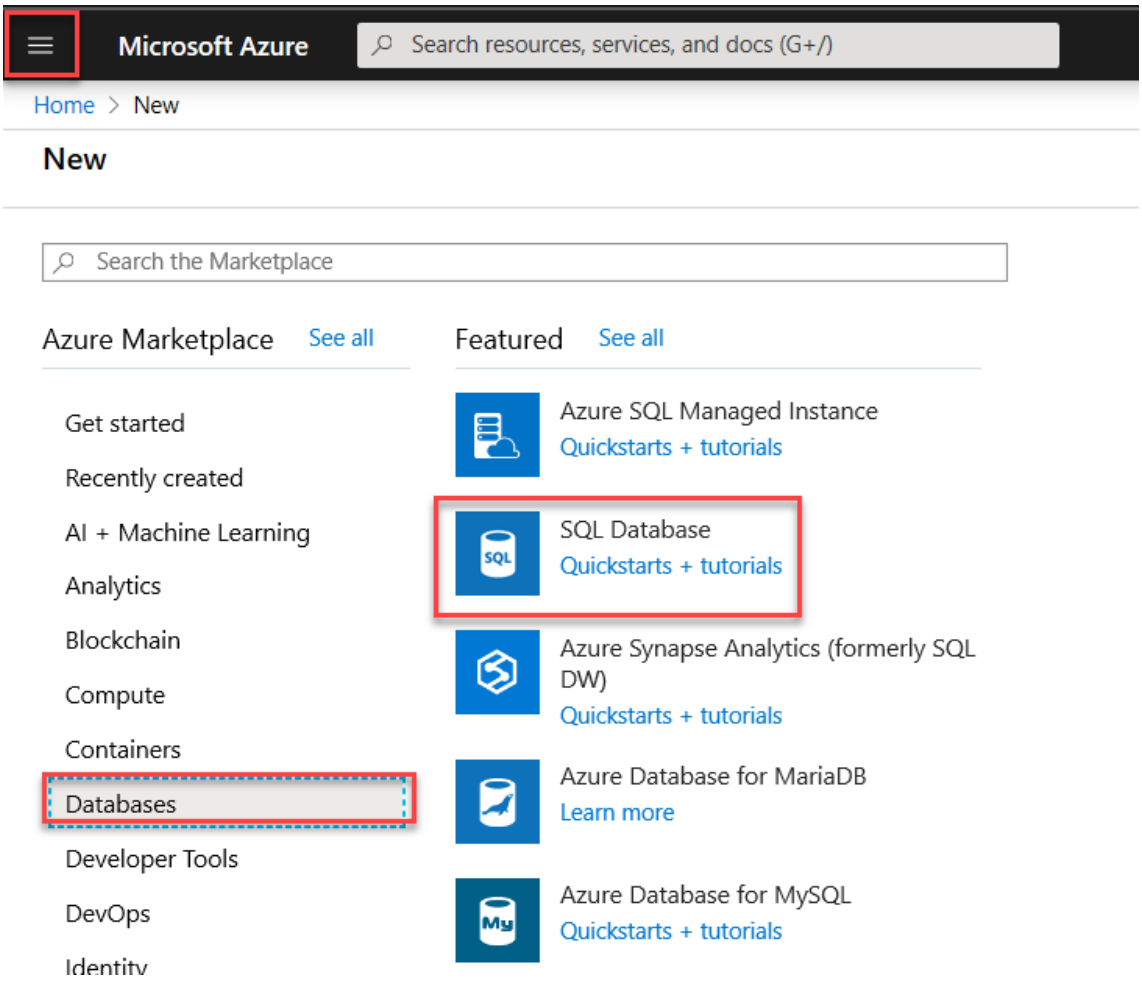
A Profissional utiliza-se de todas as boas práticas de segurança, privacidade e conformidade, é bem mais trabalhosa e trataremos aqui como um exercício Opcional.

Ambas vão atender a necessidade do nosso laboratório, mas **é importante que você escolha ema o Simples ou o Profissional para fazer esse procedimento**.

3.1 Método Simples

Tambem conhecido como “Dump de Banco”, o profissional faz literalmente uma cópia de todas as informações do banco em um único arquivo texto (conhecido como script), esse arquivo é transportado via internet ou pendrive até o outro banco de dados e em seguida importado pra essa nova base. Simples assim.

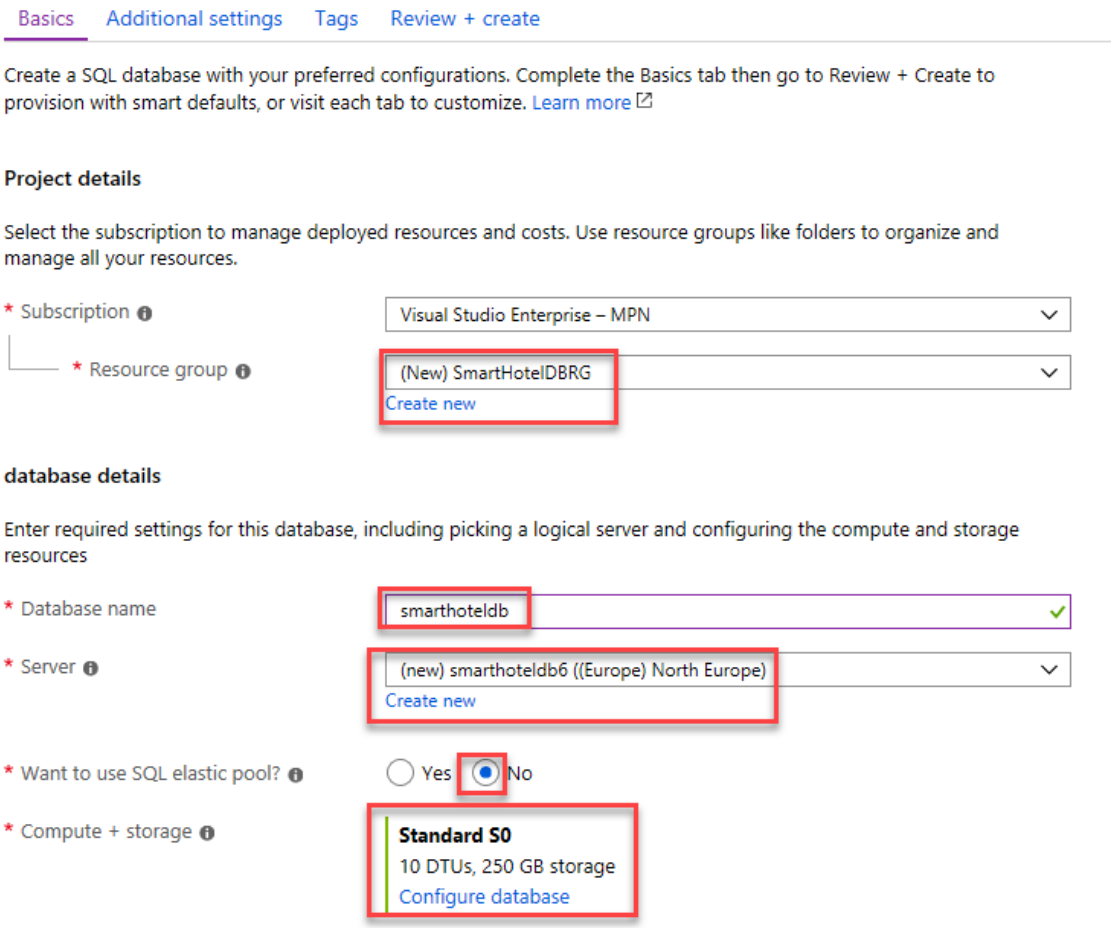
1. Open the Azure portal at https://portal.azure.com and log in using your subscription credentials if it's not still up.
2. Expand the portal's left navigation by selecting **Show portal menu** in the top left then select **+ Create a resource**, then select **Databases**, then select **SQL Database**.

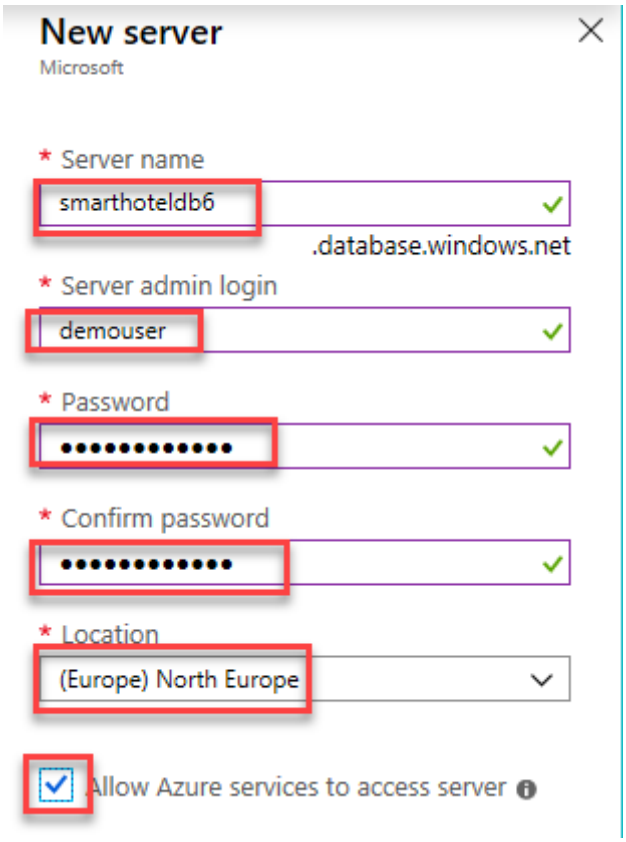


3. The **Create SQL Database** blade opens, showing the **Basics** tab. Complete the form as follows:
    - Subscription: **Select your subscription**.
    - Resource group: (create new) **SmartHotelDBRG**
    - Database name: **smarthoteldb**
    - Server: Select **Create new** and fill in the New server blade as follows then select **OK**:
        - Server name: **smarthoteldb[unique number]**
        - Server admin login: **demouser**
        - Password: **demo!pass123**
        - Location: **(US) West US**

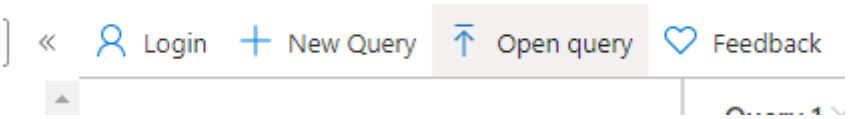
- Want to use SQL elastic pool?: **No**
- Compute + storage: Click Configure database: **Standard S0**

Note: To select the **Standard S0** database tier, click **Configure database** link, then select **Standard (For workloads with typical performance requirements)** on Service tier combobox and select **Apply**.



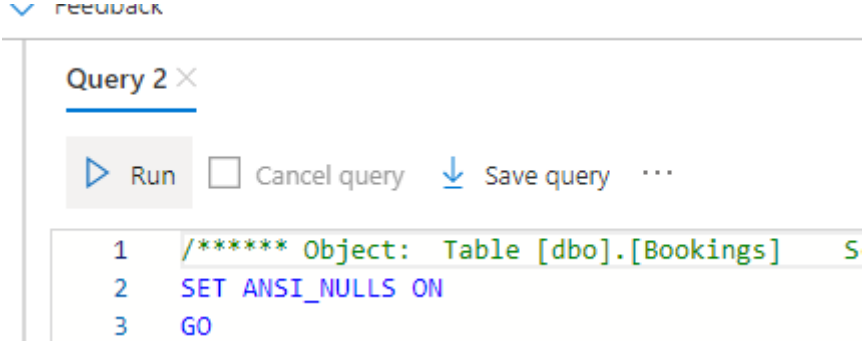


4. Select **Review + Create**, then select **Create** to create the database. Wait for the deployment to complete.
5. Click on **Go to resource**
6. Selcet **Query editor (preview)**
7. Type Password: **demo!pass123** and press **OK** button
8. On error message, select **Whitelist IP...**
9. Press **OK** again
10. Click on this link to downlad script file https://zecanunes.blob.core.windows.net/apostila/Migrating/script.sql
11. Select **Open query**



12. Browse the script file downloaded before

13. Select **Run**



14. Finish! Your Database is ready!!!

3.2 Método Profisional (Opcional)

In this exercise you will migrate the application database from the on-premises Hyper-V virtual machine to a new database hosted in the Azure SQL Database service. You will use the Azure Database Migration Service to complete the migration, which uses the Microsoft Data Migration Assistant for the database assessment and schema migration phases.

Task 1: Register the Microsoft.DataMigration resource provider

Prior to using the Azure Database Migration Service, the resource provider **Microsoft.DataMigration** must be registered in the target subscription.

1. Open the Azure Cloud Shell by navigating to **https://shell.azure.com** Log in using your Azure subscription credentials if prompted to do so, select a **PowerShell** session, and accept any prompts.

2. Run the following command to register the **Microsoft.DataMigration** resource provider:

```
Register-AzResourceProvider -ProviderNamespace
Microsoft.DataMigration
```

Note: It may take several minutes for the resource provider to register. You can proceed to the next task without waiting for the registration to complete. You will not use the resource provider until task 3.

You can check the status by running:

```
Get-AzResourceProvider -ProviderNamespace Microsoft.DataMigration |
Select-Object ProviderNamespace, RegistrationState, ResourceTypes
```

Task summary

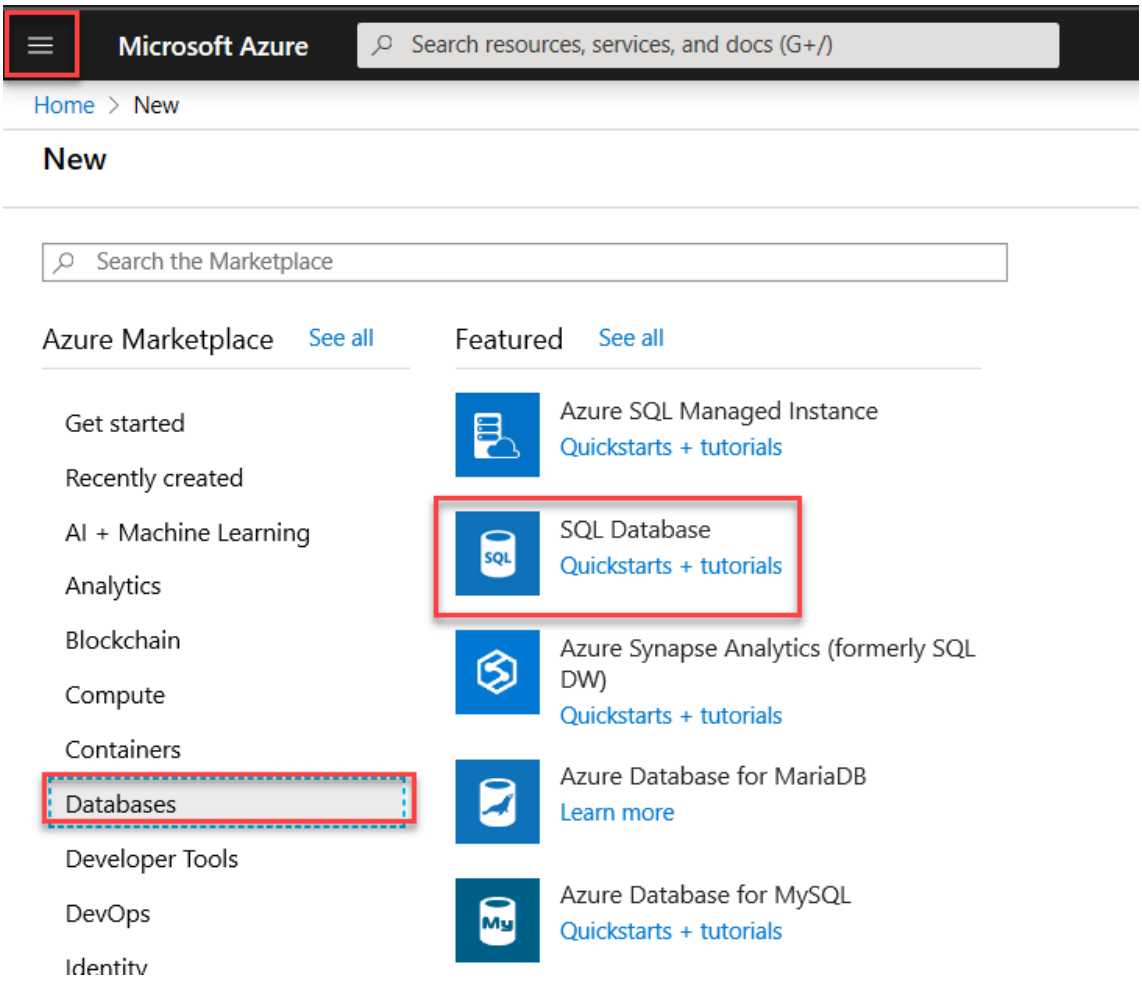
In this task you registered the **Microsoft.DataMigration** resource provider with your subscription. This enables this subscription to use the Azure Database Migration Service.

Task 2: Create an Azure SQL Database

In this task you will create a new Azure SQL database to migrate the on-premises database to.

15. Open the Azure portal at https://portal.azure.com and log in using your subscription credentials if it's not still up.

16. Expand the portal's left navigation by selecting **Show portal menu** in the top left then select **+ Create a resource**, then select **Databases**, then select **SQL Database**.



17. The **Create SQL Database** blade opens, showing the **Basics** tab. Complete the form as follows:

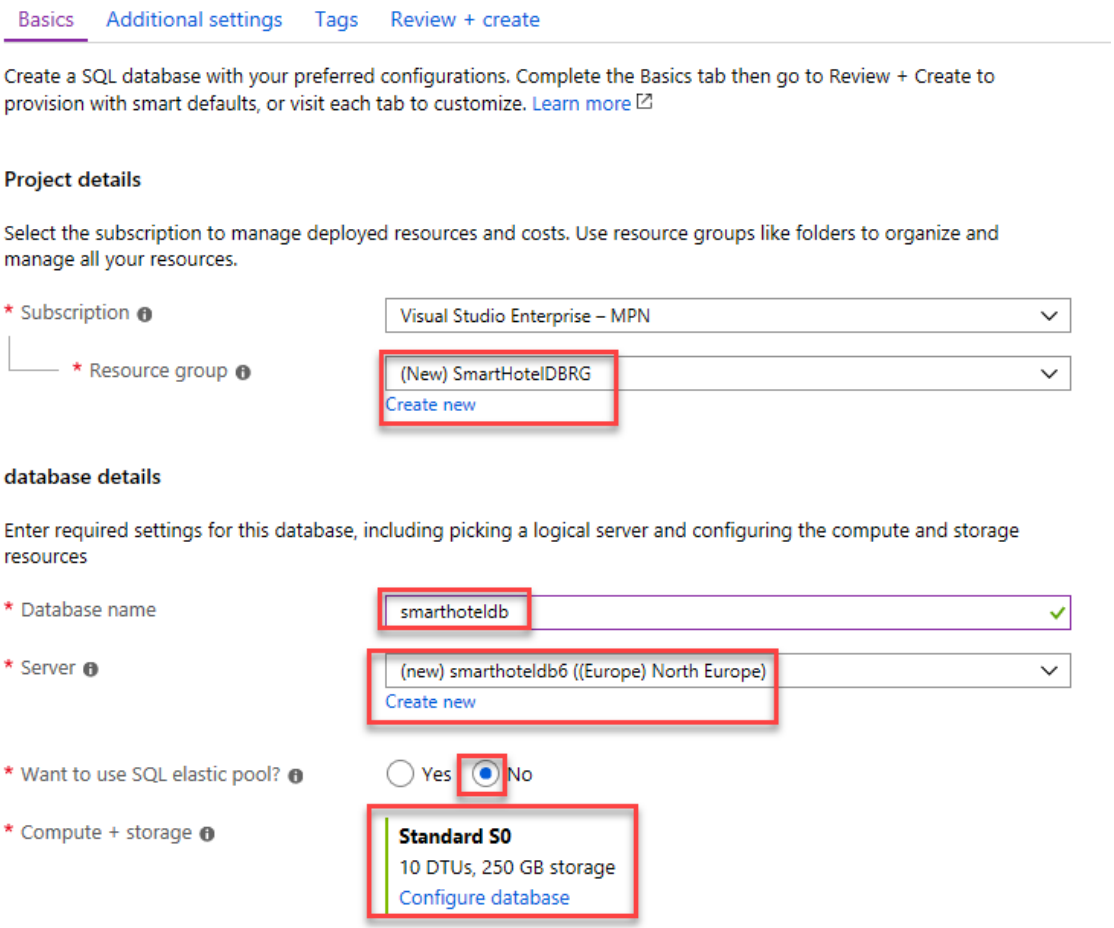
    - Subscription: **Select your subscription**.
    - Resource group: (create new) **SmartHotelDBRG**
    - Database name: **smarthoteldb**
    - Server: Select **Create new** and fill in the New server blade as follows then select **OK**:
        - Server name: **smarthoteldb[unique number]**
        - Server admin login: **demouser**
        - Password: **demo!pass123**
        - Location: **(US) West US**
          IMPORTANT: You are using an Azure Pass subscription,

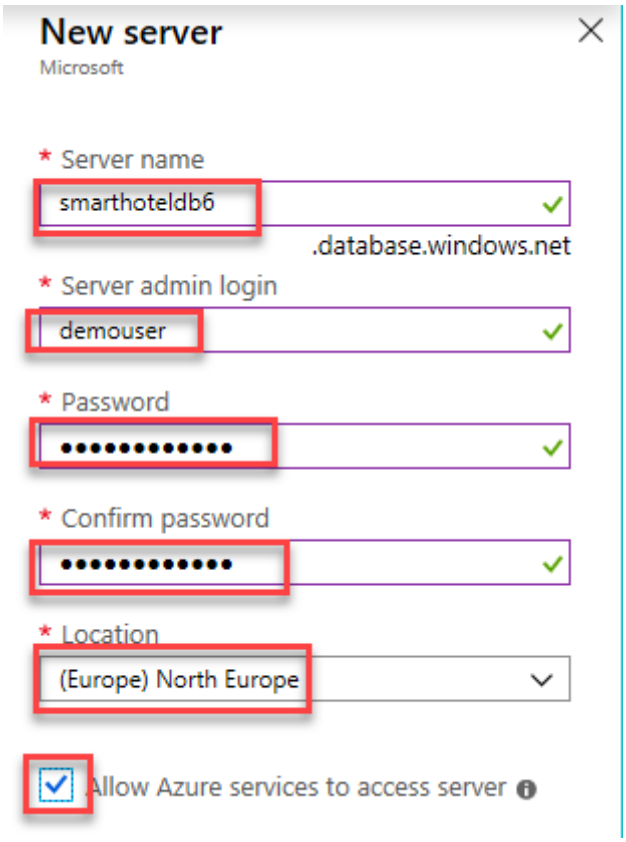
choose a different region to stay within the Total Regional vCPU limit.

Note: You can verify the location by opening another browser tab, navigating to https://portal.azure.com and selecting Virtual Machines on the left navigation. Use the same region as the **SmartHotelHost** virtual machine.

- Want to use SQL elastic pool?: **No**
- Compute + storage: **Standard S0**

Note: To select the **Standard S0** database tier, click **Configure database** link, then select **Standard (For workloads with typical performance requirements)** on Service tier combobox and select **Apply**.





18. Select **Next: Networking >** to move to the **Networking** tab. Confirm that **No access** is selected.

    Note: We will configure private endpoints to access our database later in the lab.

19. Select **Review + Create**, then select **Create** to create the database. Wait for the deployment to complete.

Task summary

In this task you created an Azure SQL Database running on an Azure SQL Database Server.

Task 3: Create the Database Migration Service

In this task you will create an Azure Database Migration Service resource. This resource is managed by the Microsoft.DataMigration resource provider which you registered in task 1.

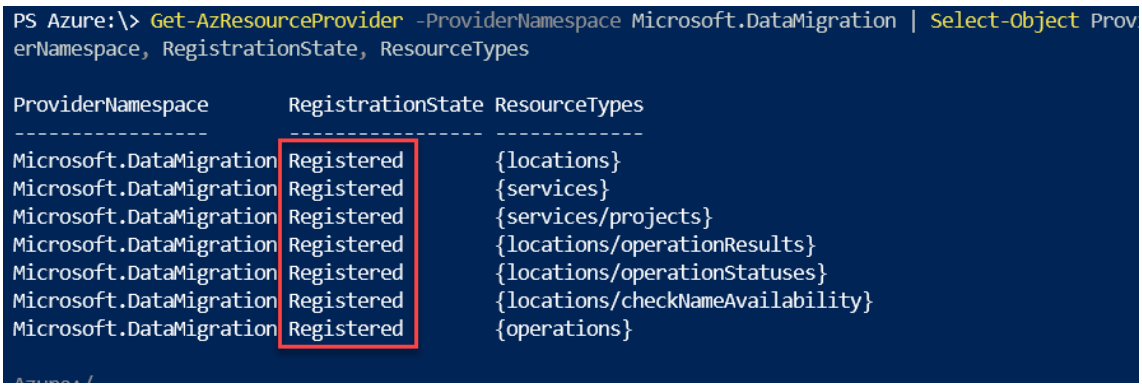
Note: The Azure Database Migrate Service (DMS) requires network access to your on-premises database to retrieve the data to transfer. To achieve this access, the DMS is deployed into an Azure VNet. You are then responsible for

connecting that VNet securely to your database, for example by using a Site-to-Site VPN or ExpressRoute connection.

In this lab, the 'on-premises' environment is simulated by a Hyper-V host running in an Azure VM. This VM is deployed to the 'smarthotelvnet' VNet. The DMS will be deployed to a separate VNet called 'DMSVnet'. To simulate the on-premises connection, these two VNet have been peered.

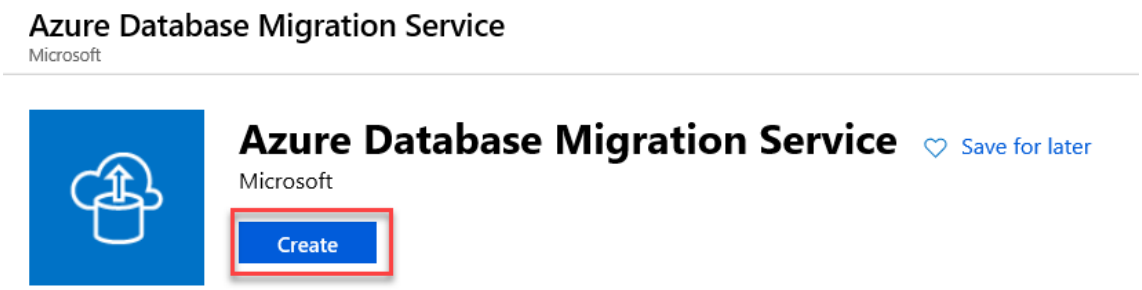
1. Return to the cloud shell browser tab you used in task 1 to register the Microsoft.DataMigration resource provider. Check that the registration has been completed by running the following command before proceeding further.

```
Get-AzResourceProvider -ProviderNamespace Microsoft.DataMigration |
Select-Object ProviderNamespace, RegistrationState, ResourceTypes
```



2. In the Azure portal, expand the portal's left navigation and select **+ Create a resource**, search for **migration**, and then select **Azure Database Migration Service** from the drop-down list.

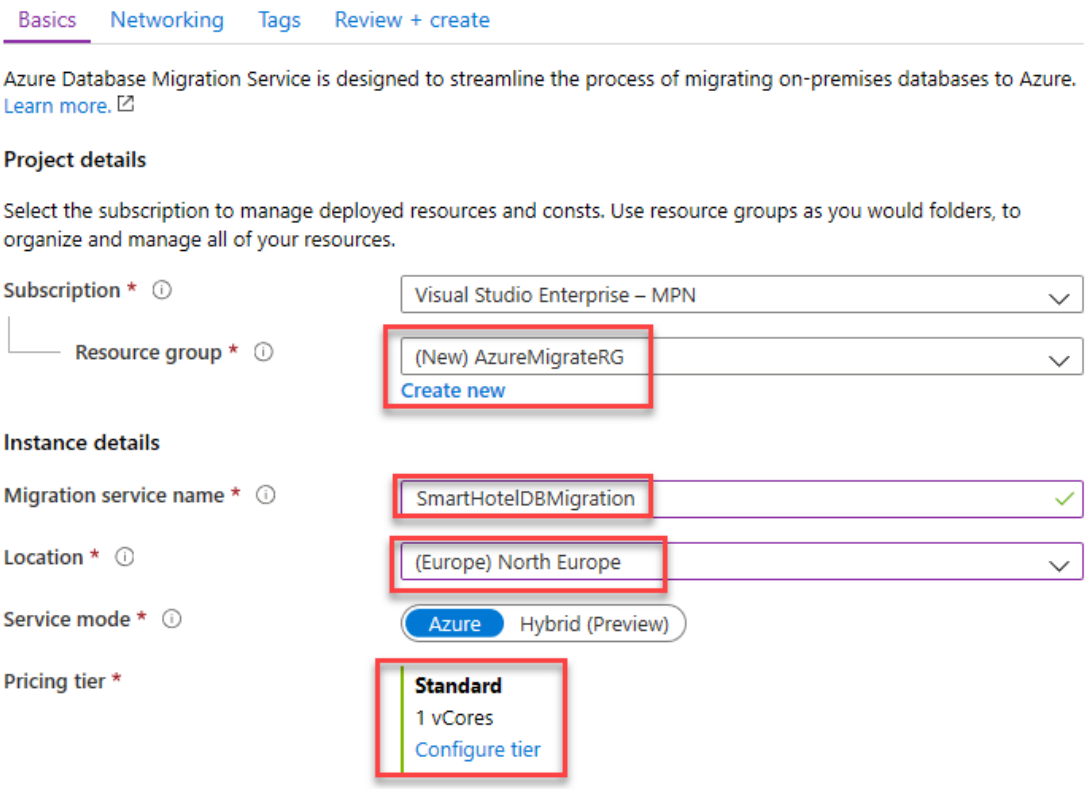
3. On the **Azure Database Migration Service** blade, select **Create**.



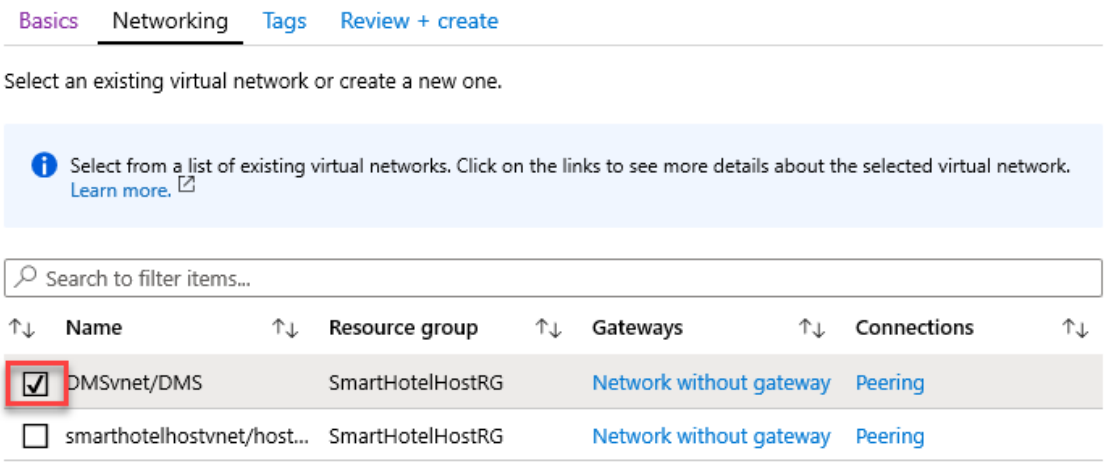
4. In the **Create Migration Service** blade, on the **Basics** tab, enter the following values:

    - Subscription: **Select your Azure subscription**.

- Resource group: **AzureMigrateRG**
- Service Name: **SmartHotelDBMigration**
- Location: **East US**
- Service mode: **Azure**
- Pricing tier: **Standard: 1 vCore**



5. Select **Next: Networking** to move to the **Networking** tab, and select the **DMSvnet/DMS** virtual network and subnet in the **SmartHotelHostRG** resource group.



6. Select **Review + create**, followed by **Create**.

Note: Creating a new migration service can take around 20 minutes. You can continue to the next task without waiting for the operation to complete. You will not use the Database Migration Service until task 5.

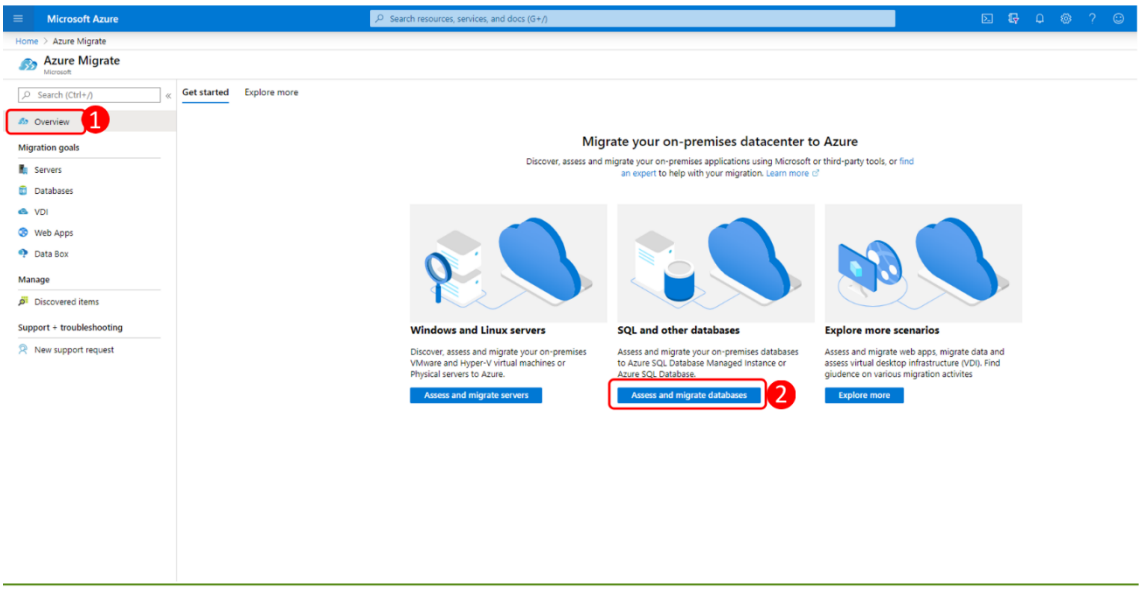
Task summary

In this task you created a new Azure Database Migration Service resource.

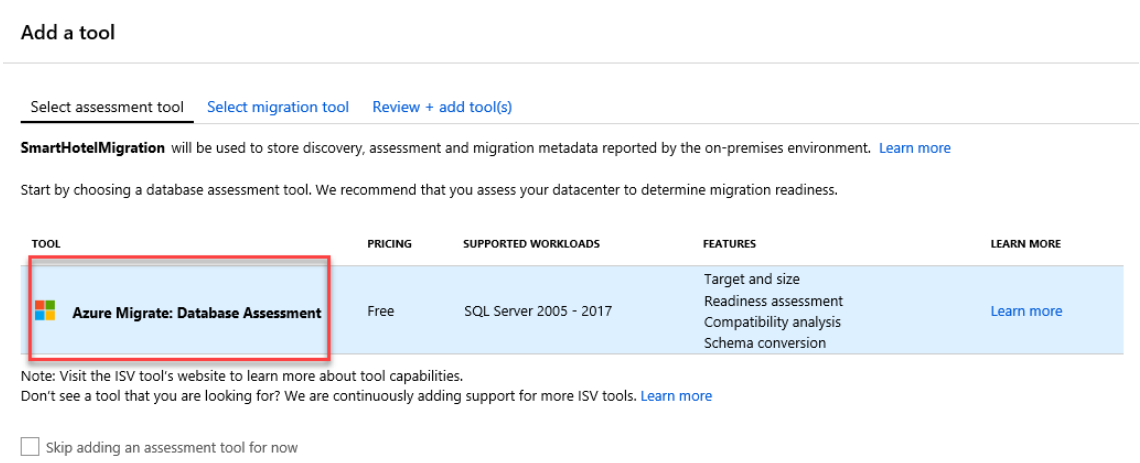
Task 4: Assess the on-premises database using Data Migration Assistant

In this task you will install and use Microsoft Data Migration Assistant (DMA) to assess the on-premises database. DMA is integrated with Azure Migrate providing a single hub for assessment and migration tools.

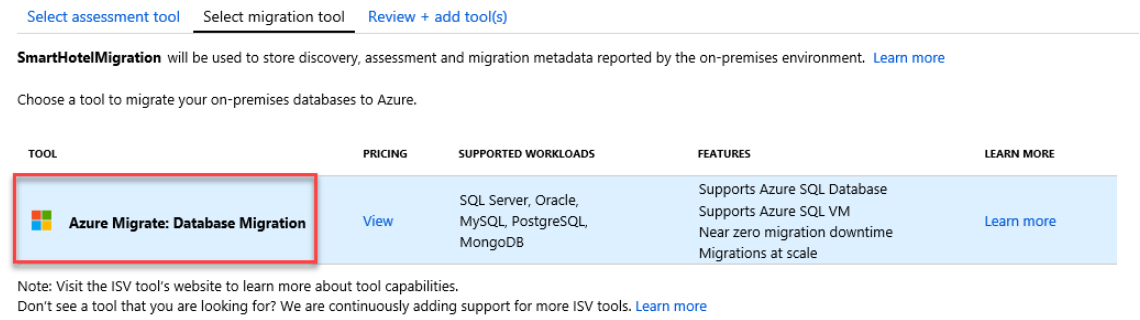
1. Return to the **Azure Migrate** blade in the Azure portal. Select the **Get started** panel, then select **Assess and migrate databases**.



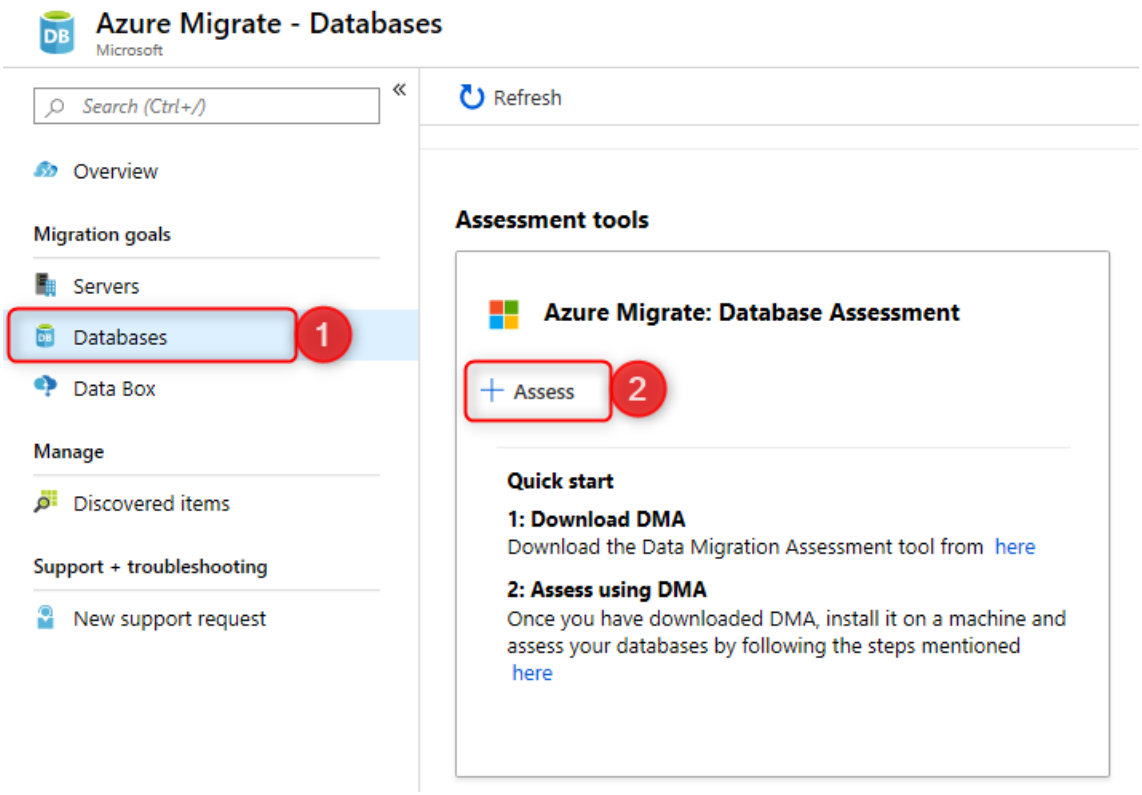
2. Under **Assessment tools**, grant that **Azure Migrate: Database Assessment** is showing, if not click + Assess and add thist tool.



3. Under **Migration tool**, grant that **Azure Migrate: Database Assessment** is showing, if not click + Assess and add thist tool.



4. Once the tools are installed in Azure Migrate, the portal should show the **Azure Migrate - SQL Server (only)** blade. Under **Azure Migrate: Database Assessment** select **+ Assess**.



5. Select **Download** to open the Data Migration Assistant download page. Copy the page URL to the clipboard.

6. Return to your remote desktop session with the **SmartHotelHost** VM. Open **Chrome** from the desktop and paste the Data Migration Assistant download URL into the address bar. **Download** and install the Data Migration Assistant, but do not launch it yet.

7. A error is showing .NET 4.8, copy this URL, install, restart th host and later install DMA:

```
https://go.microsoft.com/fwlink/?linkid=2088631
```

8. From within **SmartHotelHost**, open **Windows Explorer** and navigate to the **C:\Program Files\Microsoft Data Migration Assistant** folder. Open the **Dma.exe.config** file using Notepad. Search for **AzureMigrate** and remove the **<!--** and **-->** around the line setting the **EnableAssessmentUploadToAzureMigrate** key. **Save** the file and close Notepad when done.

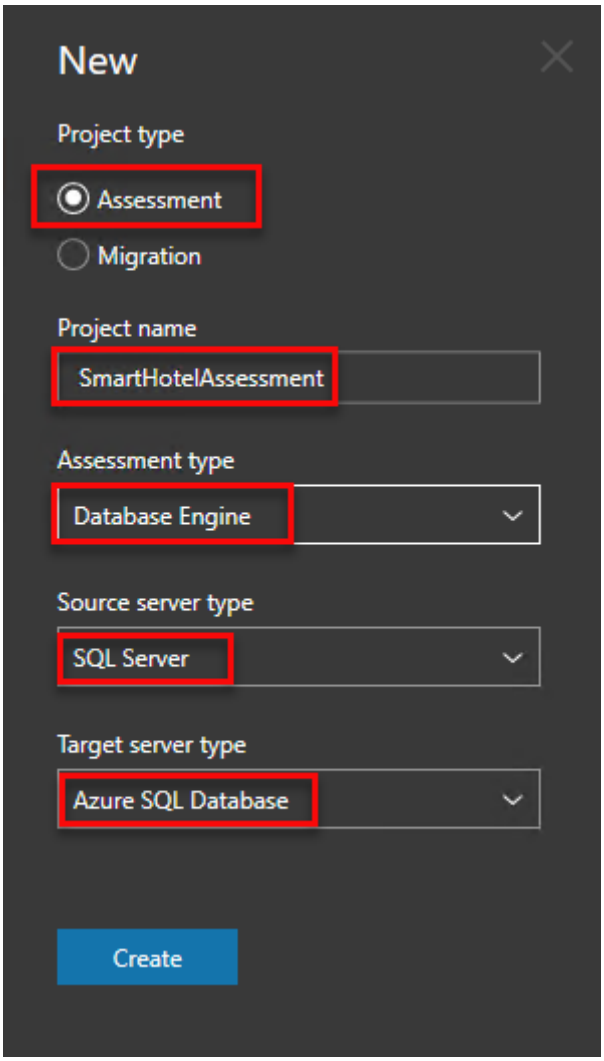
```
<add key="ComputerDiscoveryMaxResults" value="10" />
<!-- Configuration to enable/disable upload assessment to Azure Migrate Hub feature -->
<add key="EnableAssessmentUploadToAzureMigrate" value="true"/>
<add key="TraceEventsToCheck" value="RPT:Starting|SP:StmtStarting|SQL:BatchCompleted|RPC:C
<!-- TraceEventsToCheck tell SQLAzureMW which events to examine -->
```

8. From within **SmartHotelHost** launch **Microsoft Data Migration Assistant** using the desktop icon.

9. In the Data Migration Assistant, select the **+ New** icon. Fill in the project details as follows:

    - Project type: **Assessment**
    - Project name: **SmartHotelAssessment**
    - Assessment type: **Database Engine**
    - Source server type: **SQL Server**
    - Target server type: **Azure SQL Database**

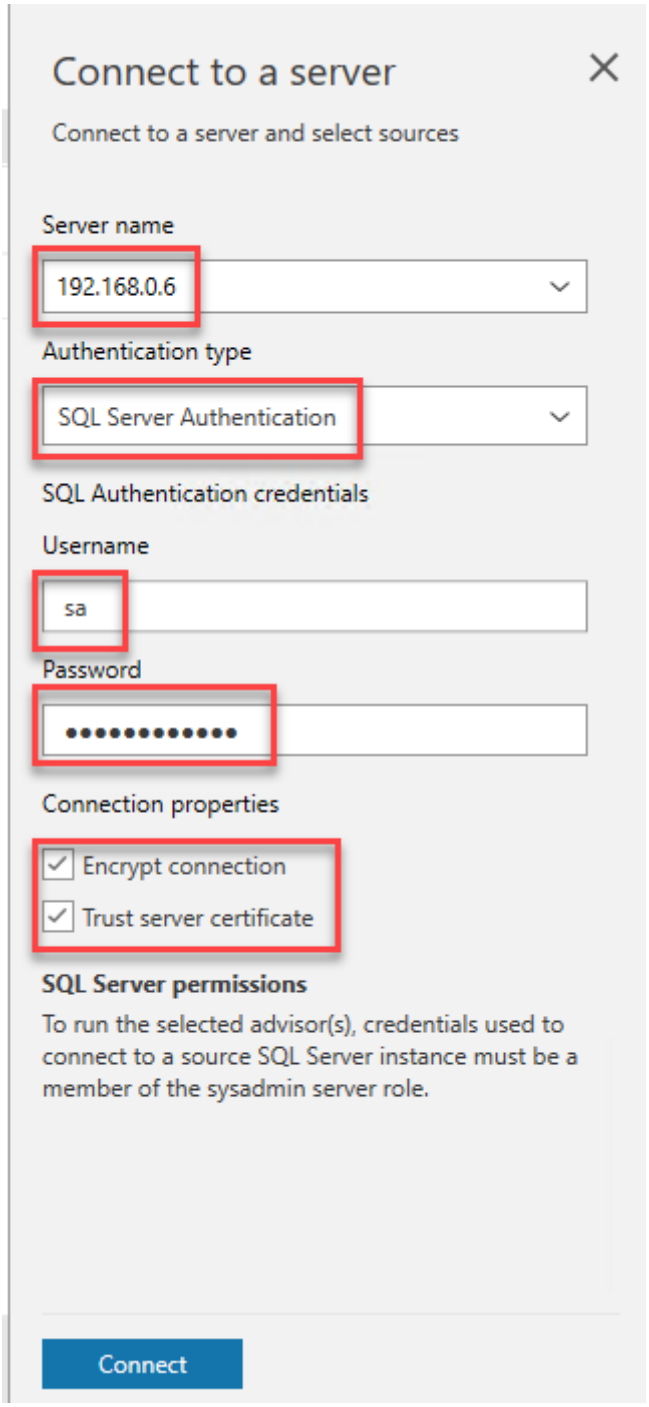
10. Select **Create** to create the project.



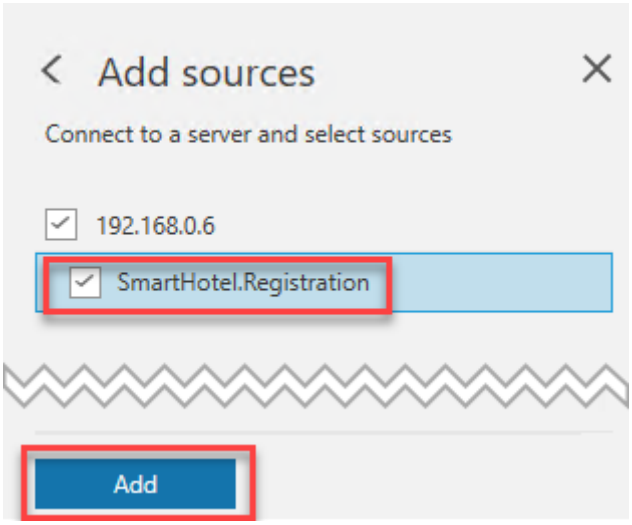
11. On the **Options** tab select **Next**.

12. On the **Select sources** page, in the **Connect to a server** dialog box, provide the connection details to the SQL Server, and then select **Connect**.

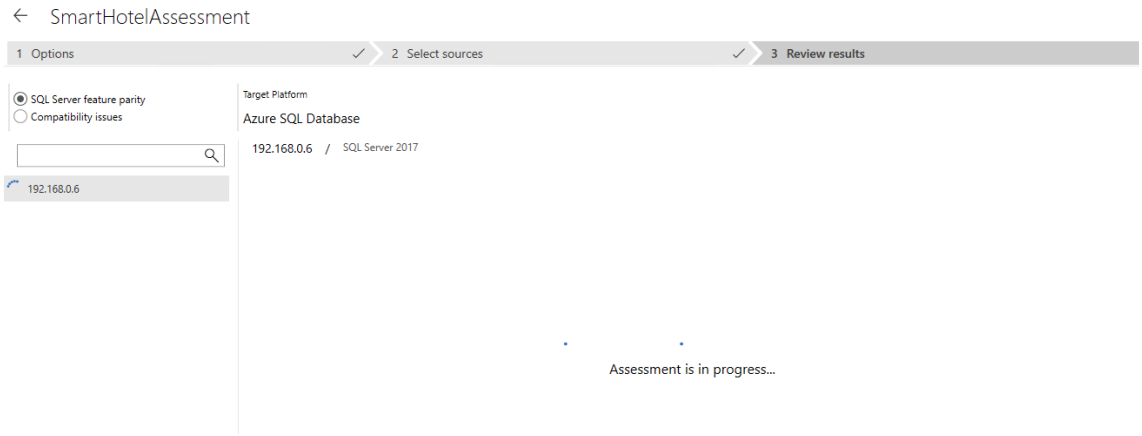
    - Server name: **192.168.0.6**
    - Authentication type: **SQL Server Authentication**
    - Username: **sa**
    - Password: **demo!pass123**
    - Encrypt connection: **Checked**
    - Trust server certificate: **Checked**



13. In the **Add sources** dialog box, select **SmartHotel.Registration**, then select **Add**.



14. Select **Start Assessment** to start the assessment.



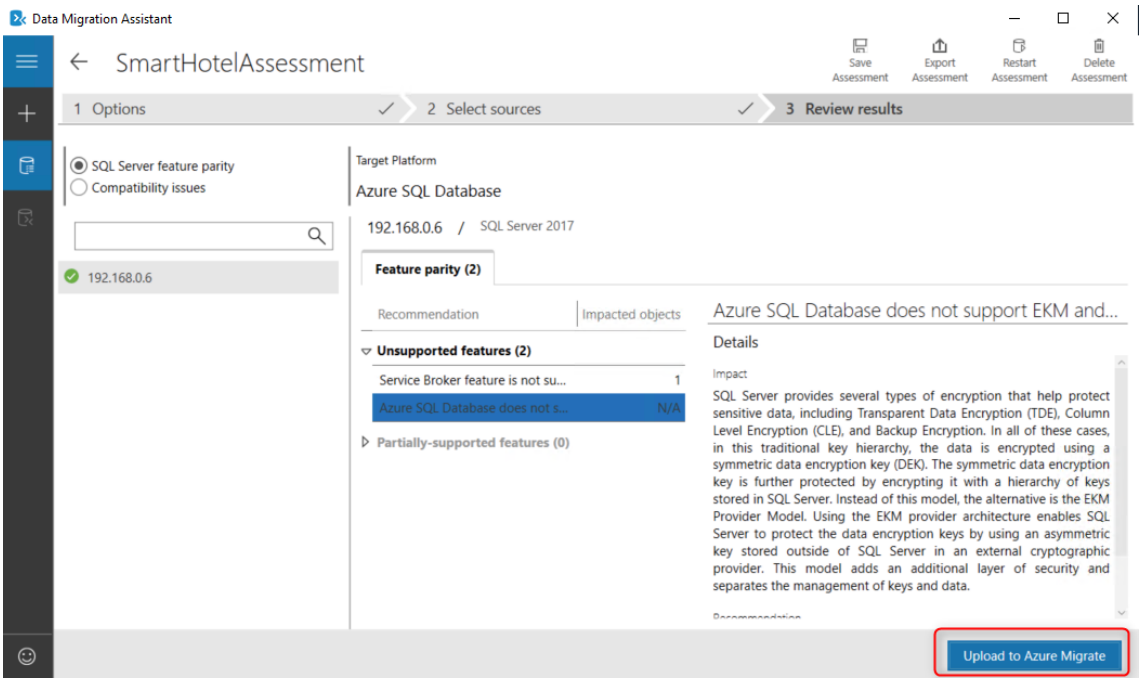
15. **Wait** for the assessment to complete, and review the results. The results should show two unsupported features, **Service Broker feature is not supported in Azure SQL Database** and **Azure SQL Database does not support EKM and Azure Key Vault integration**. For this migration, you can ignore these issues.

    Note: For Azure SQL Database, the assessments identify feature parity issues and migration blocking issues.

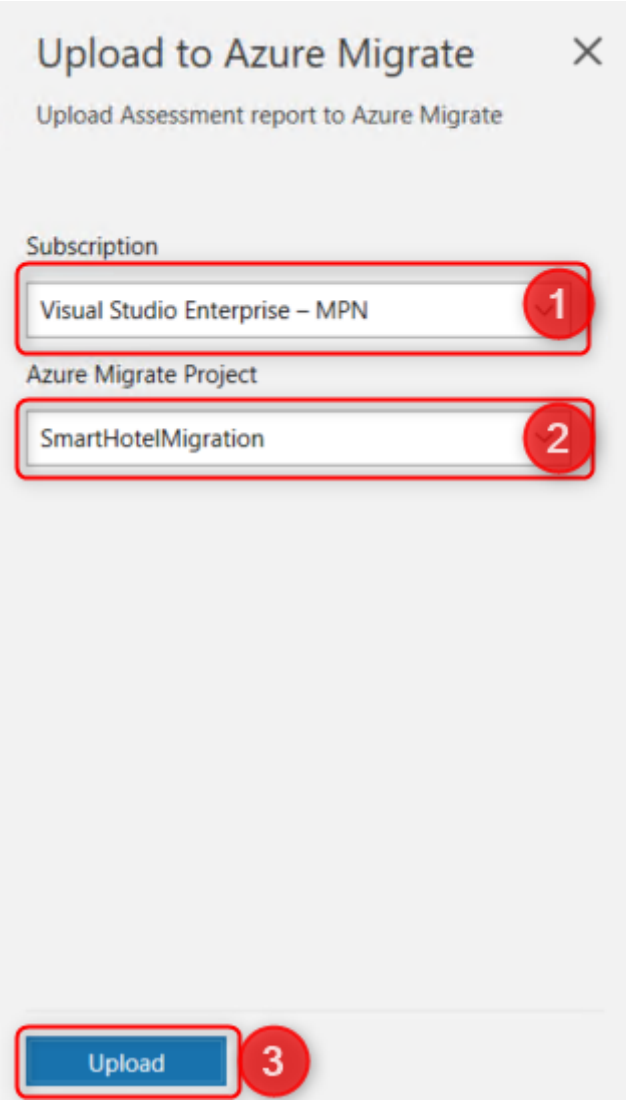
    - The SQL Server feature parity category provides a comprehensive set of recommendations, alternative approaches available in Azure, and mitigating steps to help you plan the effort into your migration projects.
    - The Compatibility issues category identifies partially supported or unsupported features that reflect compatibility issues that might block migrating on-premises SQL Server database(s) to Azure SQL

Database. Recommendations are also provided to help you address those issues.

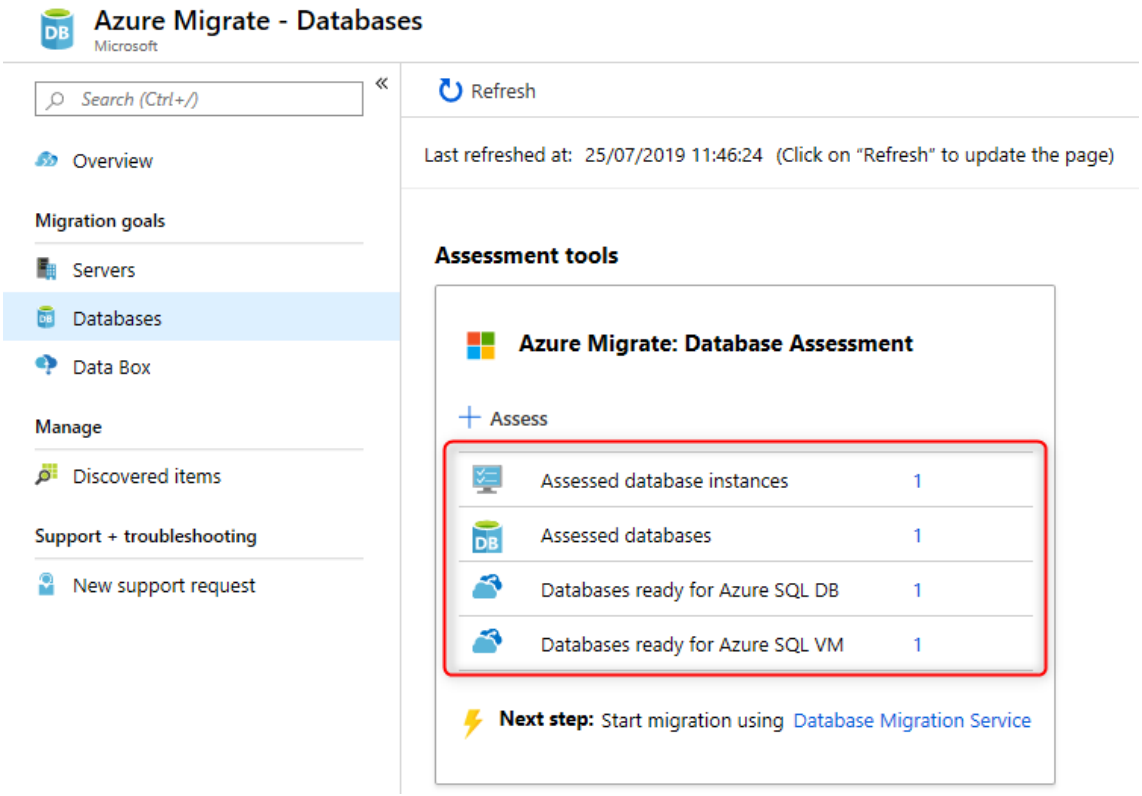
16. Select **Upload to Azure Migrate** to upload the database assessment to your Azure Migrate project (this button may take a few seconds to become enabled).



17. Select **Azure** from the dropdown on the right then select **Connect**. Enter your subscription credentials when prompted. Select your **Subscription** and **Azure Migrate Project** using the dropdowns, then select **Upload**. Once the upload is complete, select **OK** to dismiss the notification.



18. Minimize the remote desktop window and return to the **Azure Migrate - Databases** blade in the Azure portal. Refreshing the page should now show the assessed database.



Task summary

In this task you used Data Migration Assistant to assess an on-premises database for readiness to migrate to Azure SQL, and uploaded the assessment results to your Azure Migrate project. The DMA is integrated with Azure Migrate providing a single hub for assessment and migration tools.

Task 5: Create a DMS migration project

In this task you will create a Migration Project within the Azure Database Migration Service (DMS). This project contains the connection details for both the source and target databases. In order to connect to the target database, you will also create a private endpoint allowing connectivity from the subnet used by the DMS.

In subsequent tasks, you will use this project to migrate both the database schema and the data itself from the on-premises SQL Server database to the Azure SQL Database.

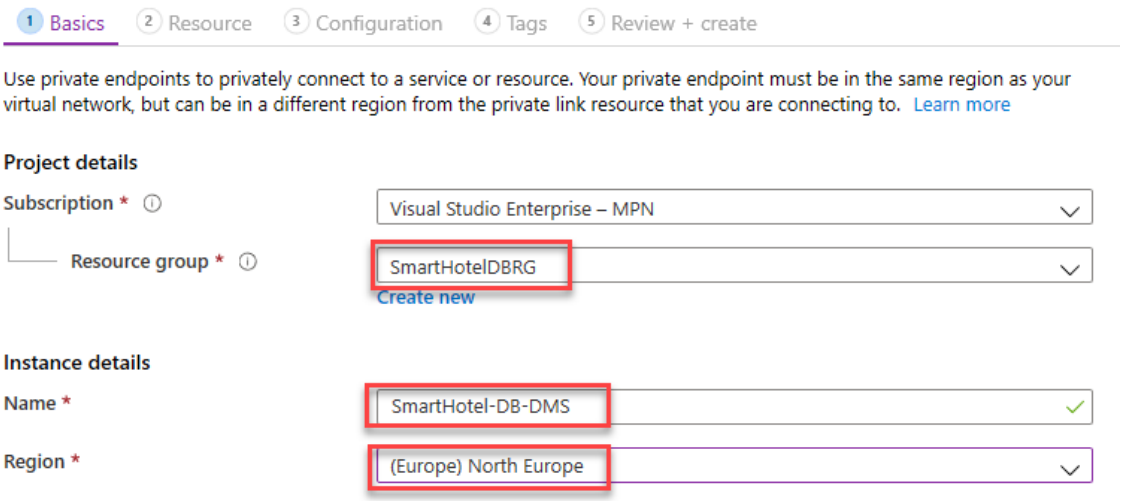
We'll start by creating the private endpoint that allows the DMS to access the database server.

1. In the Azure portal, navigate to the **SmartHotelDBRG** resource group, and then click on **smarthoteldn[numbers]**.

2. Select **Private endpoint connections** under **Security**, then **+ Private endpoint**.

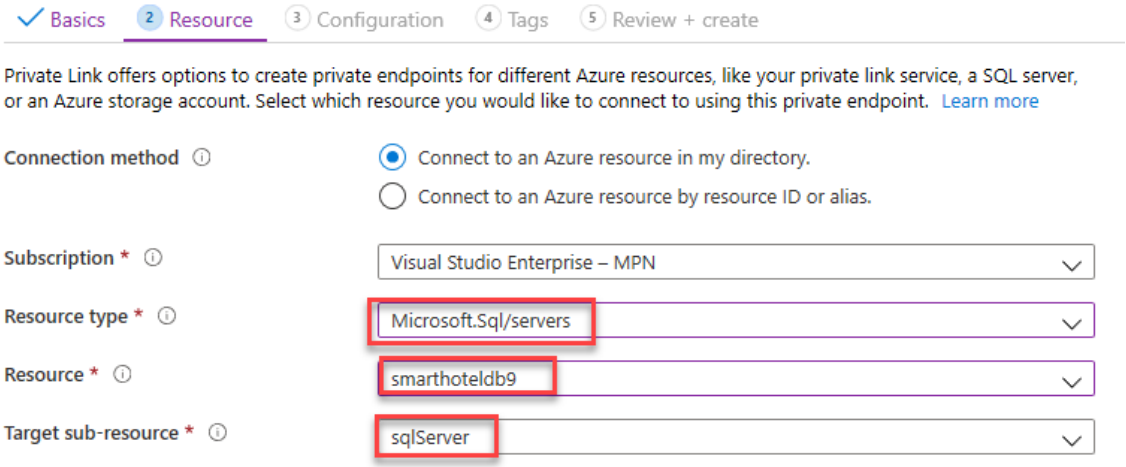
3. On the **Basics** tab that appears, enter the following configuration then select **Next: Resource**.

    - Resource group: **SmartHotelDBRG**
    - Name: **SmartHotel-DB-for-DMS**
    - Region: **East US**
      Select the same location as the DMSvnet

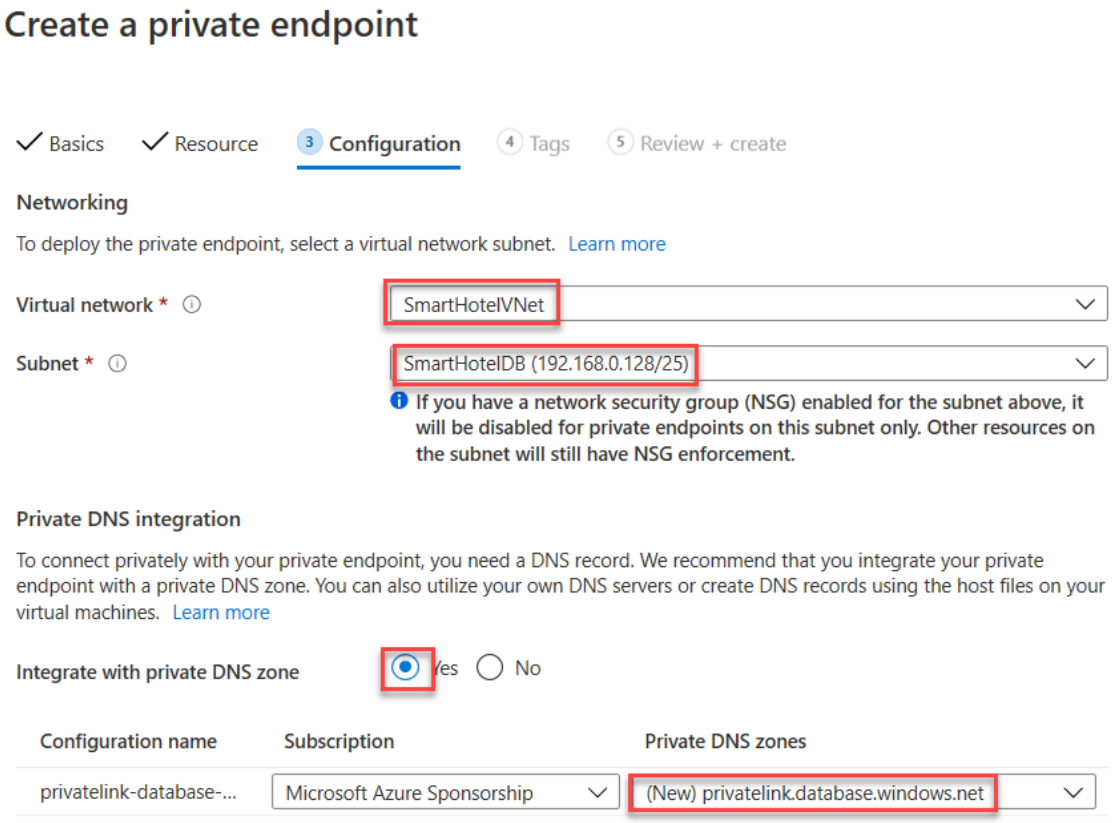


4. On the **Resource** tab, entering the following configuration then select **Next: Configuration**.

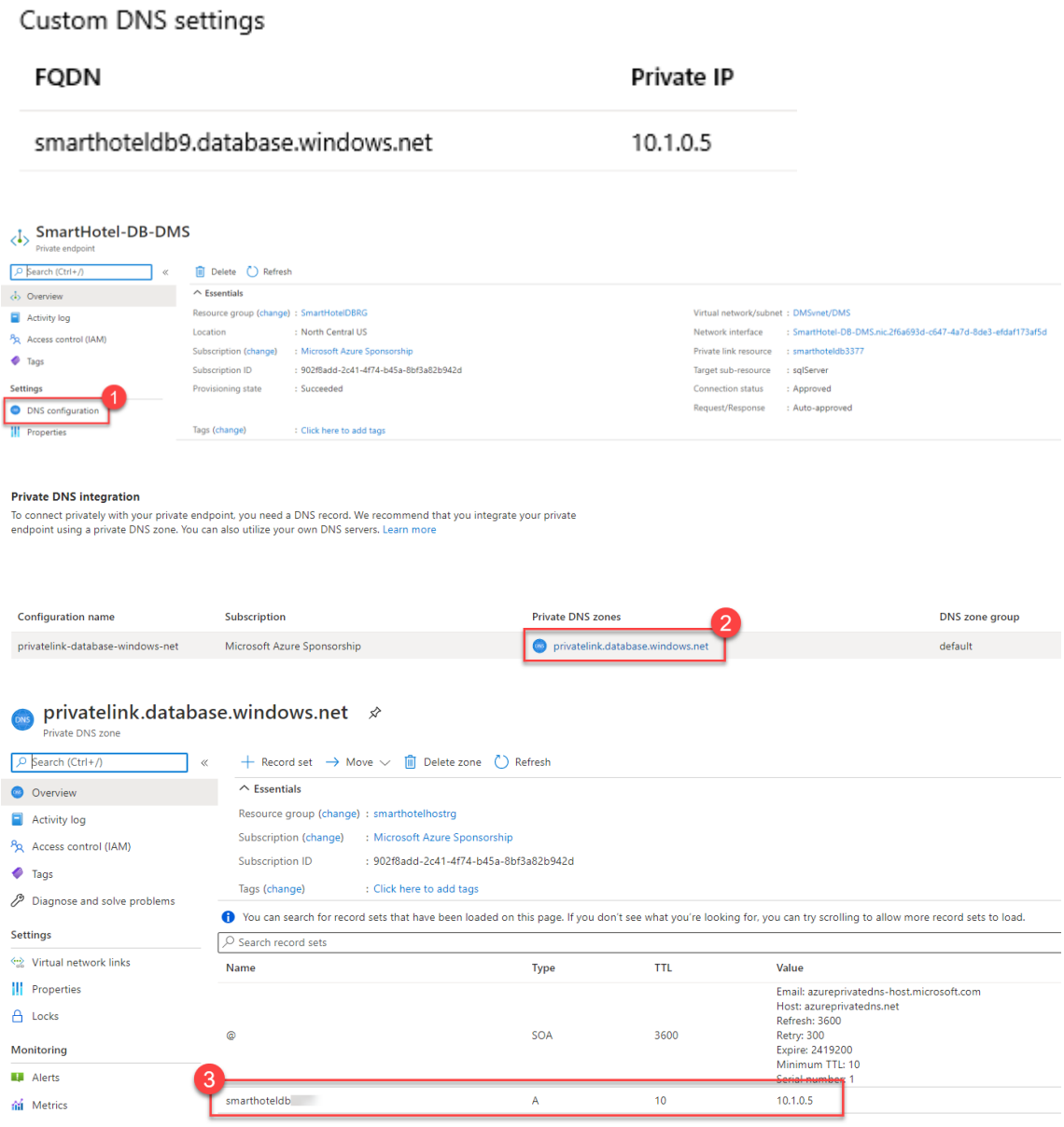
    - Connection method: **Connect to an Azure resource in my directory**.
    - Subscription: **Select your subscription**.
    - Resource type: **Microsoft.Sql/servers**
    - Resource: **Your SQL database server name**.
    - Target sub-resource: **sqlServer**



5. On the **Configuration** tab enter the following configuration then select **Review + create**, then **Create**.
    - Virtual network: **DMSvnet**
    - Subnet: **DMS (10.1.0.0/24)**
    - Integrate with private DNS zone: **Yes**
    - Private DNS zones: (default) **privatelink.database.windows.net**

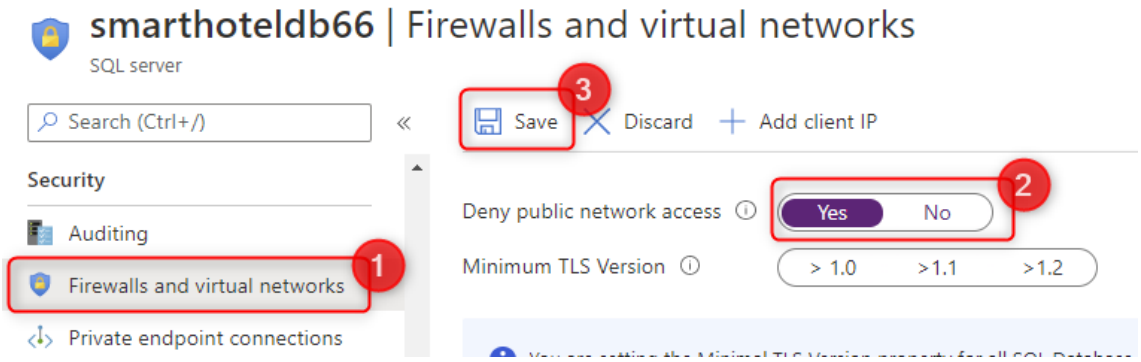


6. **Wait** for the deployment to complete. Open the Private Endpoint blade, and note that the FQDN for the endpoint is listed as **<your database>.database.windows.net**, with an internal IP address **10.1.0.5**.

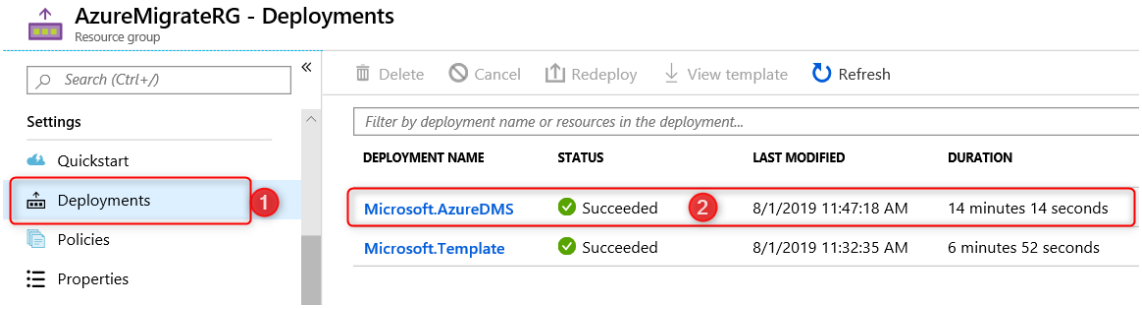


Note: Private DNS is used so that the database domain name, **<your server>.database.windows.net** resolves to the internal private endpoint IP address **10.1.0.5** when resolved from the DMSvnet, but resolves to the Internet-facing IP address of the database server when resolved from outside the DMSvnet. This means the same connection string (which contains the domain name) can be used in both cases.

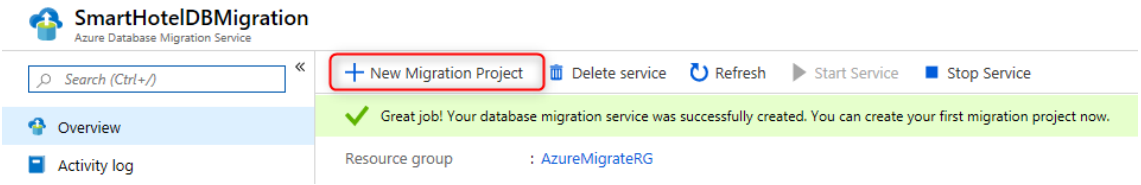
7. Return to the Database server blade. Under **Security**, select **Firewalls and virtual networks**. Set 'Deny public network access' to **Yes**, then **Save** your changes.



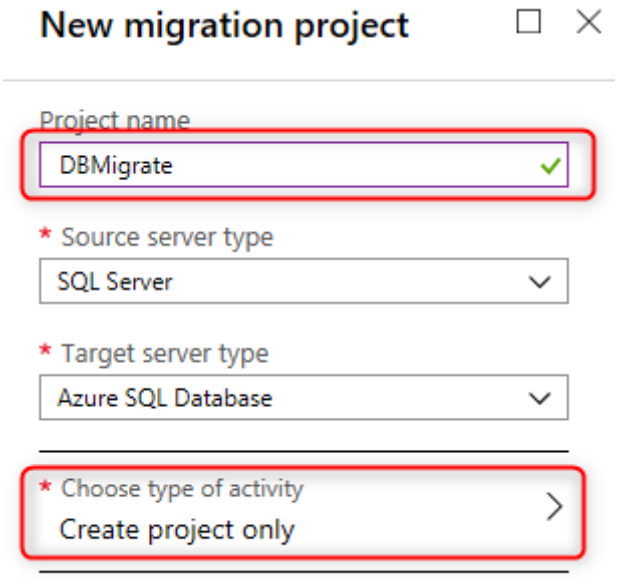
8. Check that the Database Migration Service resource you created in task 3 has completed provisioning. You can check the deployment status from the **Deployments** pane in the **AzureMigrateRG** resource group blade.



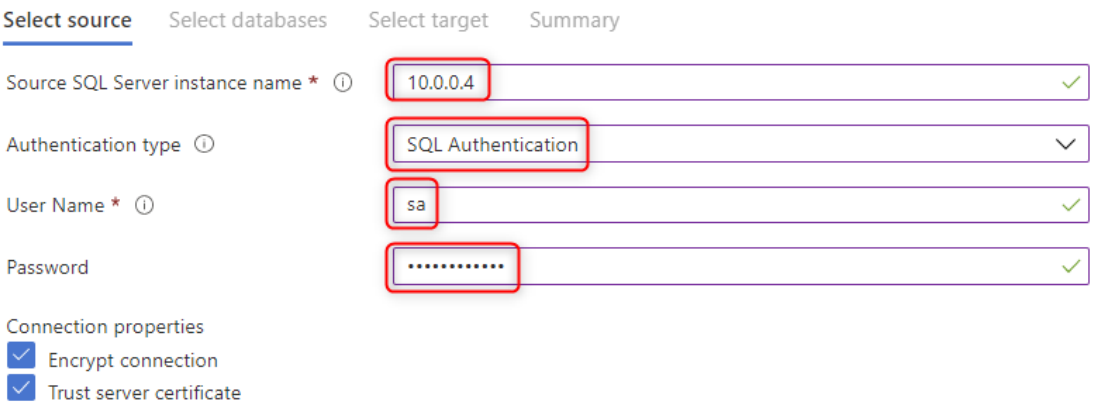
9. On **Overview** of **AzureMigrateRG** select SmartHotelDBMigration and select **+ New Migration Project**.



10. the **New migration project** blade, enter **DBMigrate** as the project name. Leave the source server type as **SQL Server** and target server type as **Azure SQL Database**. Select **Choose type of activity** and select **Create project only**. Select **Create**.



11. The Migration Wizard opens, showing the **Select source** step. Complete the settings as follows, then select **Next: Select databases**.
    - Source SQL Server instance name: **10.0.0.4**
    - Authentication type: **SQL Authentication**
    - User Name: **sa**
    - Password: **demo!pass123**
    - Encryption connection: **Checked**
    - Trust server certificate: **Checked**

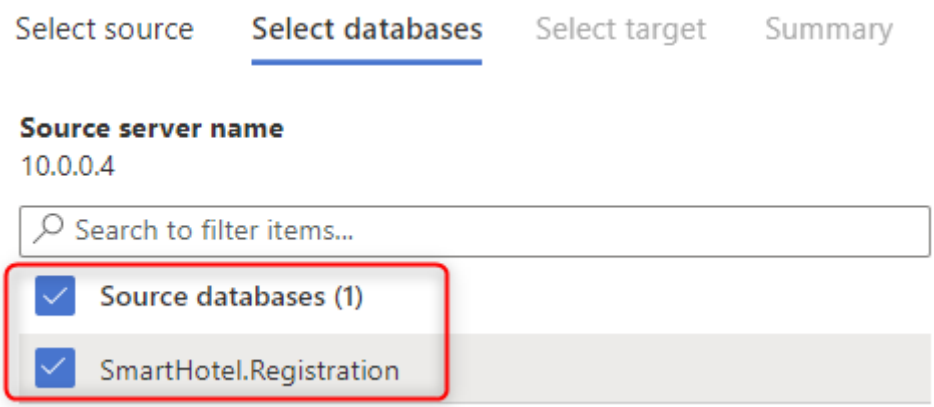


Note: The DMS service connects to the Hyper-V host, which has been pre-configured with a NAT rule to forward incoming SQL requests (TCP port 1433) to the SQL Server VM. In a real-world migration, the SQL

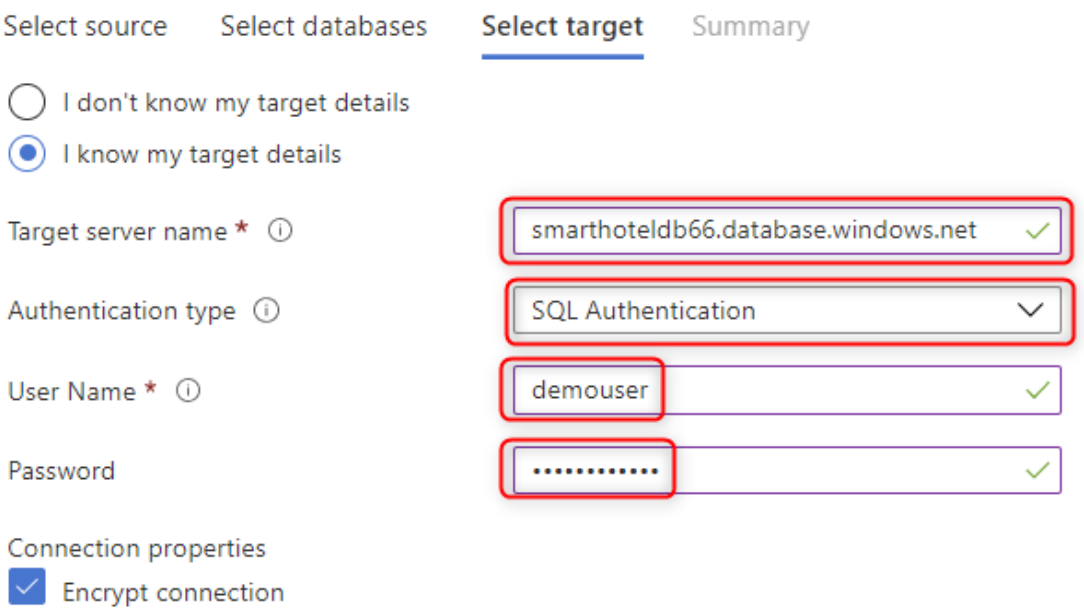
Server VM would most likely have its own IP address on the internal network, via an external Hyper-V switch.

The Hyper-V host is accessed via its private IP address (10.0.0.4). The DMS service accesses this IP address over the peering connection between the DMS VNet and the SmartHotelHost VNet. This simulates a VPN or ExpressRoute connection between a DMS VNet and an on-premises network.

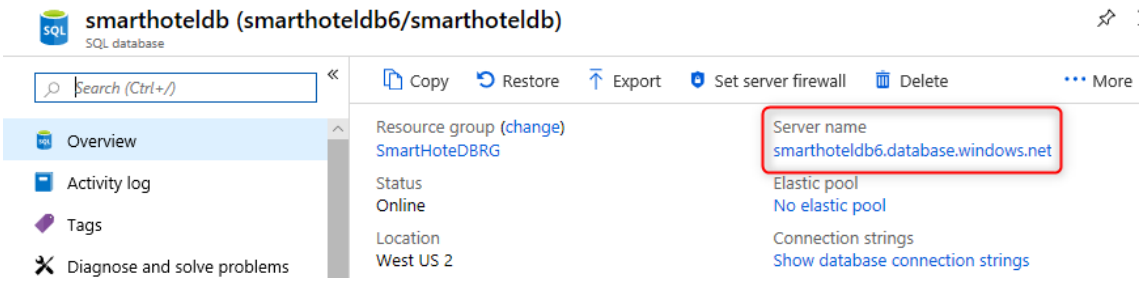
12. In the **Select databases** step, the **Smarthotel.Registration** database should already be selected. Select **Next: Select target**.



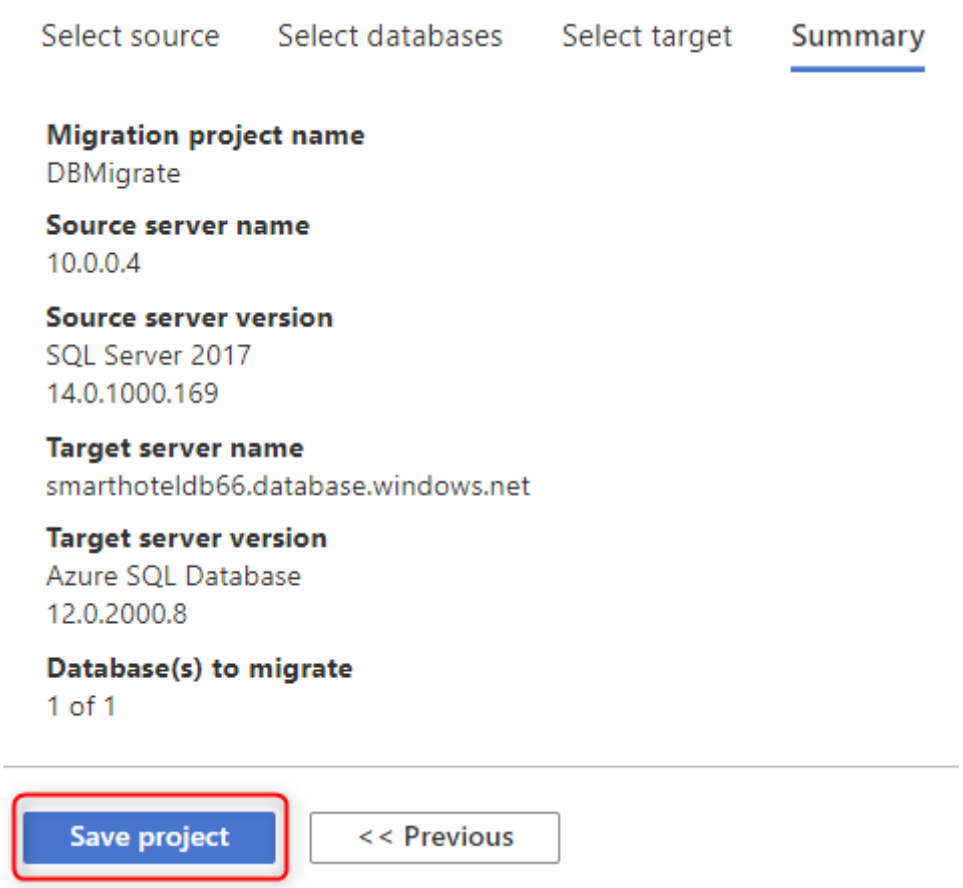
13. Complete the **Select target** step as follows, then select **Next: Summary**:
    - Target server name: Value from your database, **smarthoteldb[numbers].database.windows.net**.
    - Authentication type: **SQL Authentication**
    - User Name: **demouser**
    - Password: **demo!pass123**
    - Encrypt connection: **Checked**



Note: You can find the target server name in the Azure portal by browsing to your database.



14. At the **Project summary** step, review the settings and select **Save project** to create the migration project.



Task summary

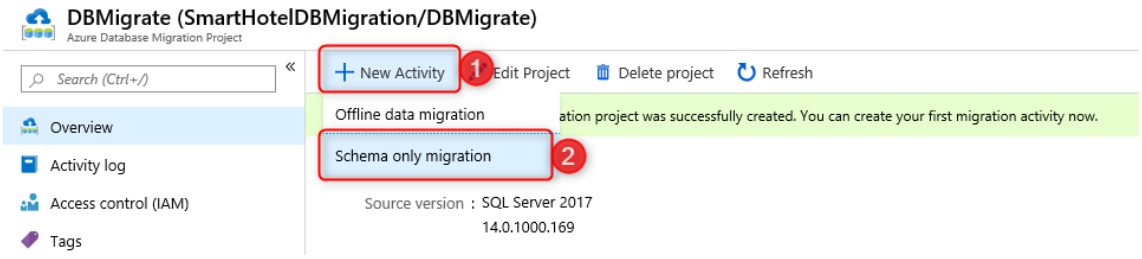
In this task you created a Migration Project within the Azure Database Migration Service. This project contains the connection details for both the source and target databases. A private endpoint was used to avoid exposing the database on a public IP address.

Task 6: Migrate the database schema

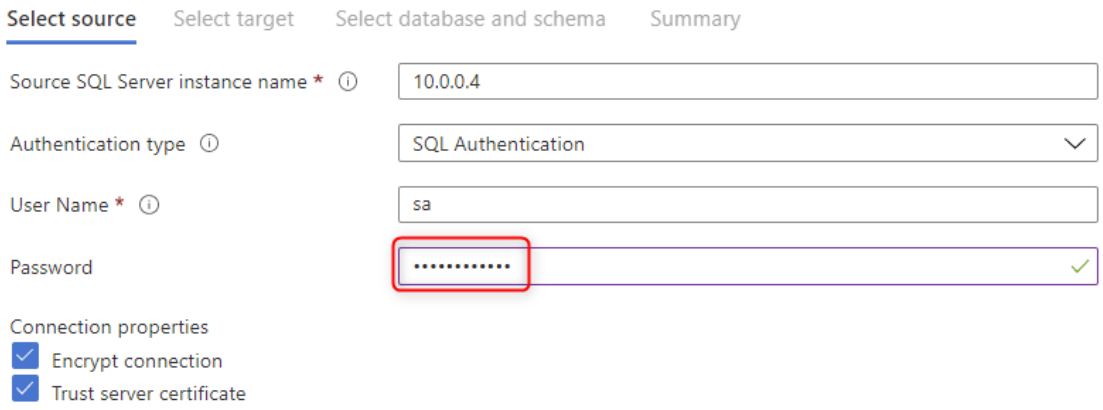
In this task you will use the Azure Database Migration Service to migrate the database schema to Azure SQL Database. This step is a prerequisite to migrating the data itself.

The schema migration will be carried out using a schema migration activity within the migration project created in task 5.

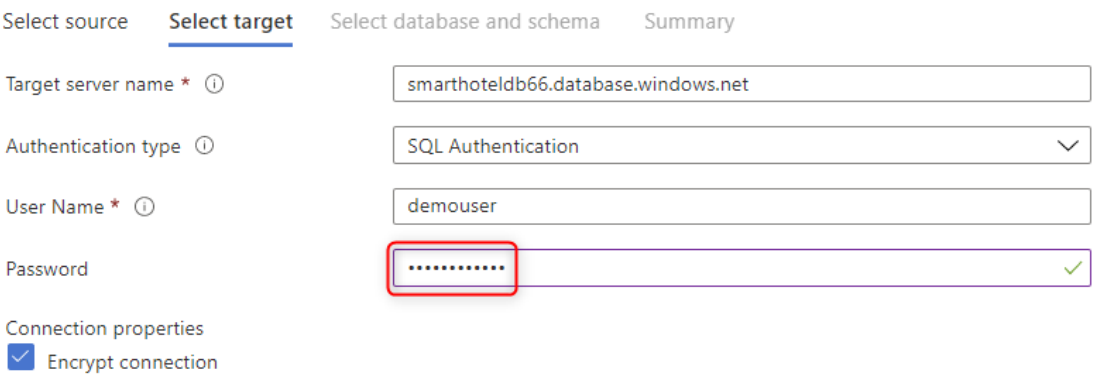
1. Following task 5, the Azure portal should show a blade for the DBMigrate DMS project. Select **+ New Activity** and select **Schema only migration** from the drop-down.



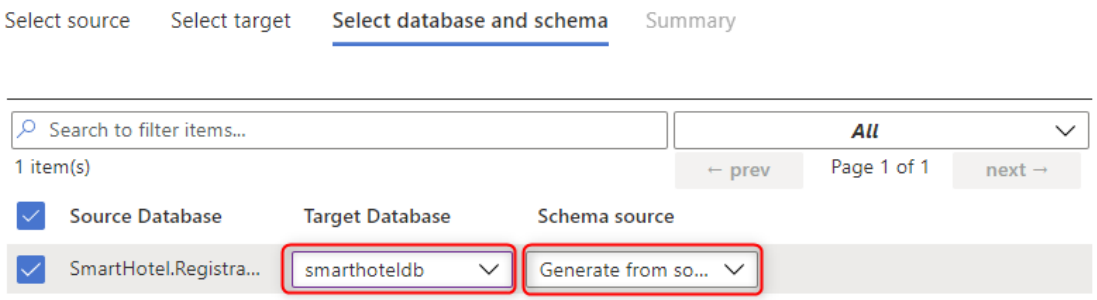
2. The Migration Wizard is shown. Most settings are already populated from the existing migration project. At the **Select source** step, re-enter the source database password **demo!pass123**, then select **Next: Select target**.



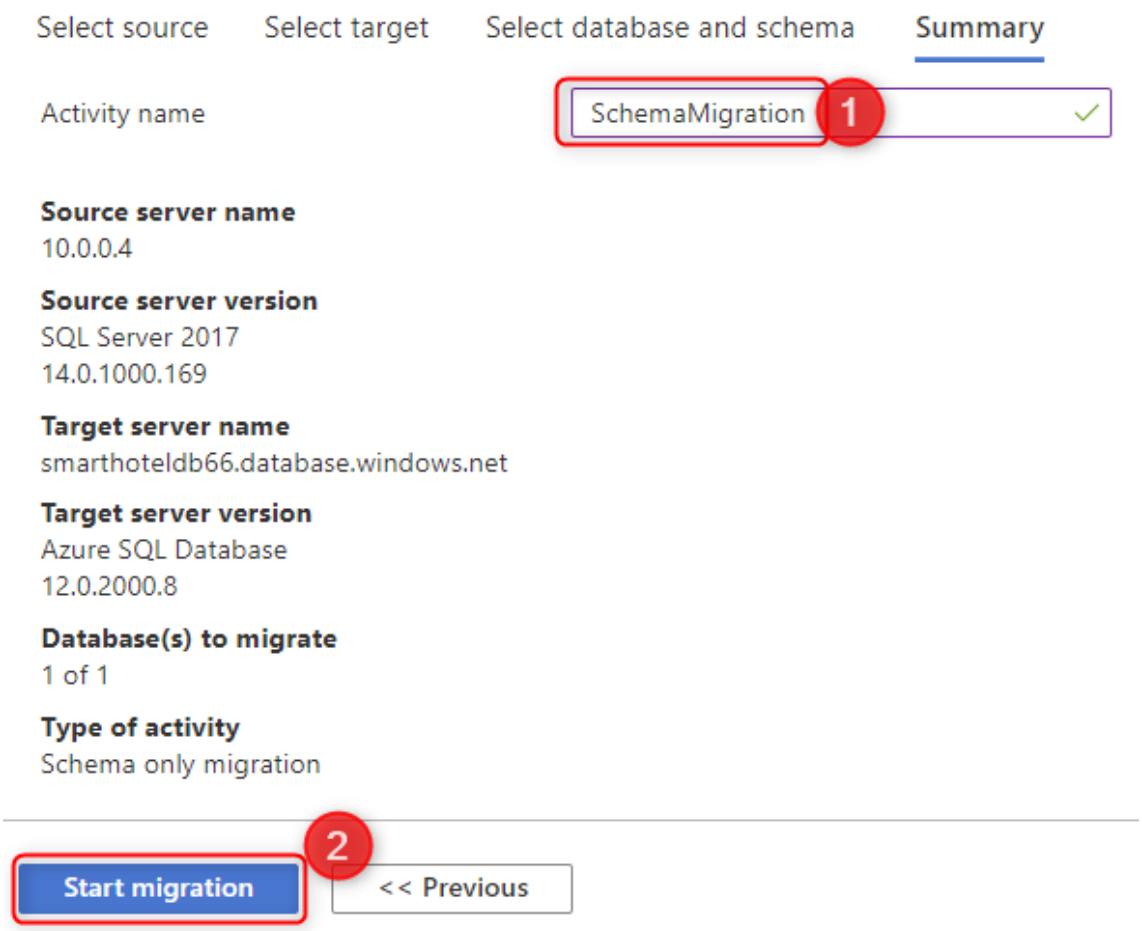
3. At the **Select target** step, enter the password **demo!pass123** and select **Next: Select database and schema**.



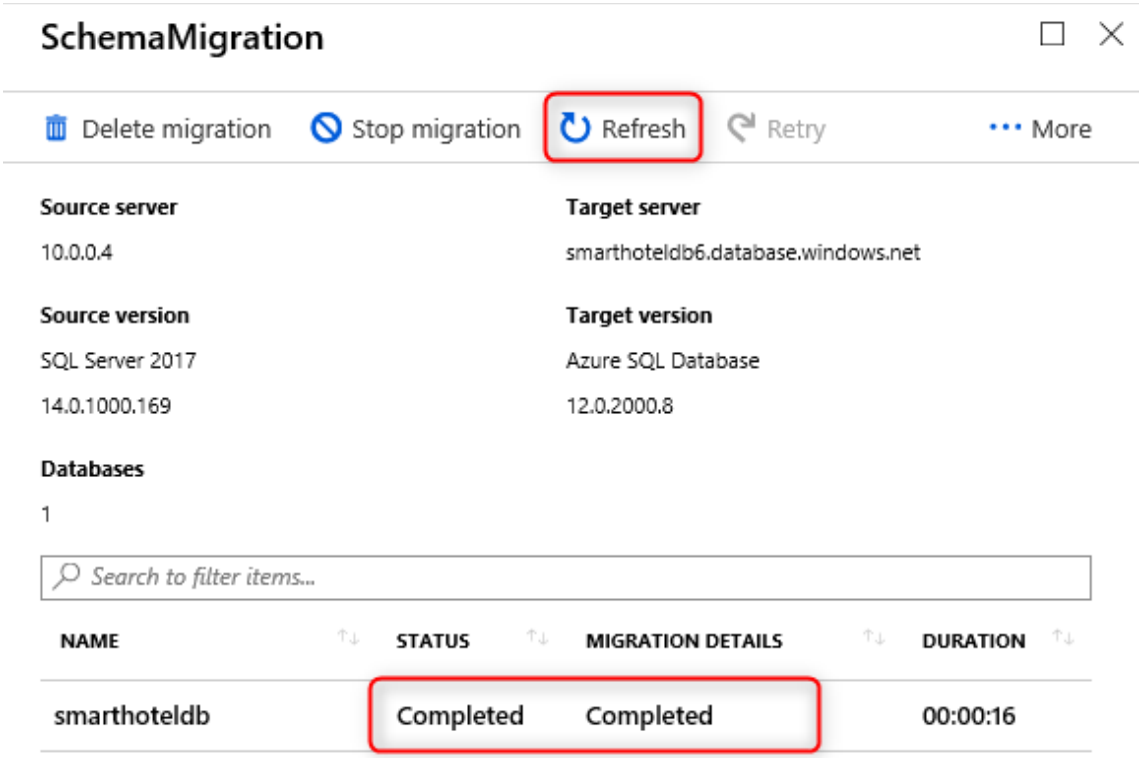
4. At the **Select database and schema** step, check that the **SmartHotel.Registration** database is selected. Under **Target Database** select **smarthoteldb** and under **Schema Source** select **Generate from source**. Select **Next: Summary**.



5. At the **Summary** step, enter **SchemaMigration** as the **Activity name**. Select **Start migration** to start the schema migration process.



6. The schema migration will begin. Select the **Refresh** button and watch the migration progress, until it shows as **Completed**.



Task summary

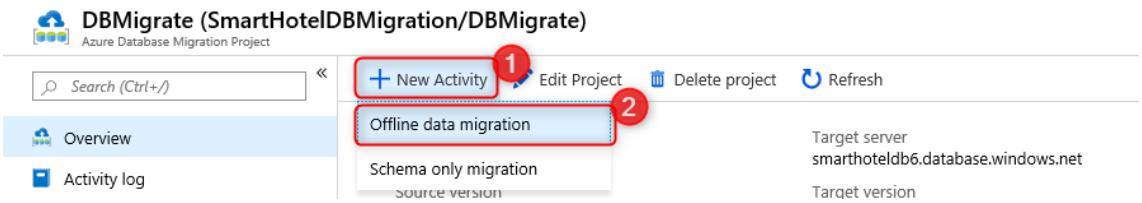
In this task you used a schema migration activity in the Azure Database Migration Service to migrate the database schema from the on-premises SQL Server database to the Azure SQL database.

Task 7: Migrate the on-premises data

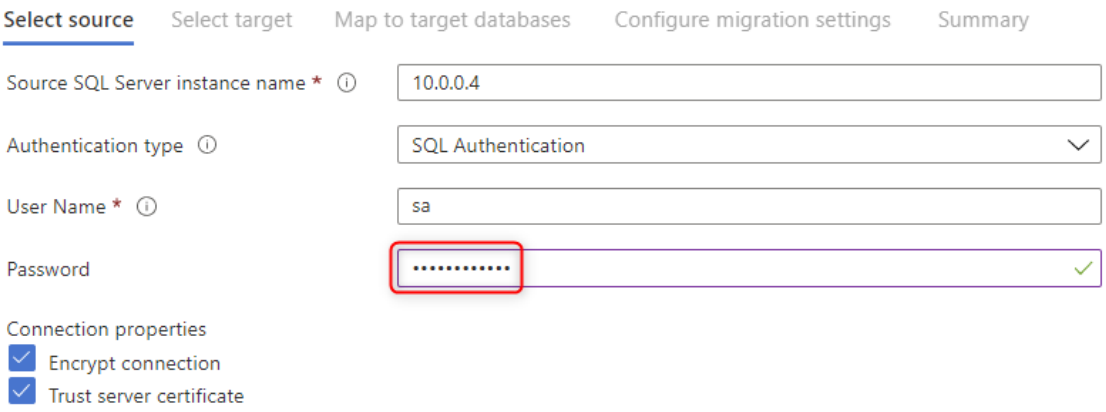
In this task you will use the Azure Database Migration Service to migrate the database data to Azure SQL Database.

The schema migration will be carried out using an offline data migration activity within the migration project created in task 5.

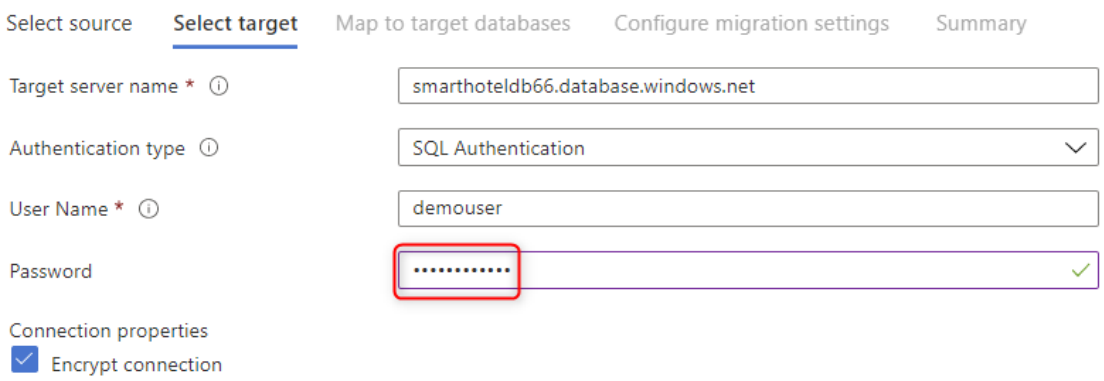
1. Return to the Azure portal blade form our **SmartHotelDBMigration** > **DBMigrate** project in DMS. Select **+ New Activity** and select **Data migration** from the drop-down.



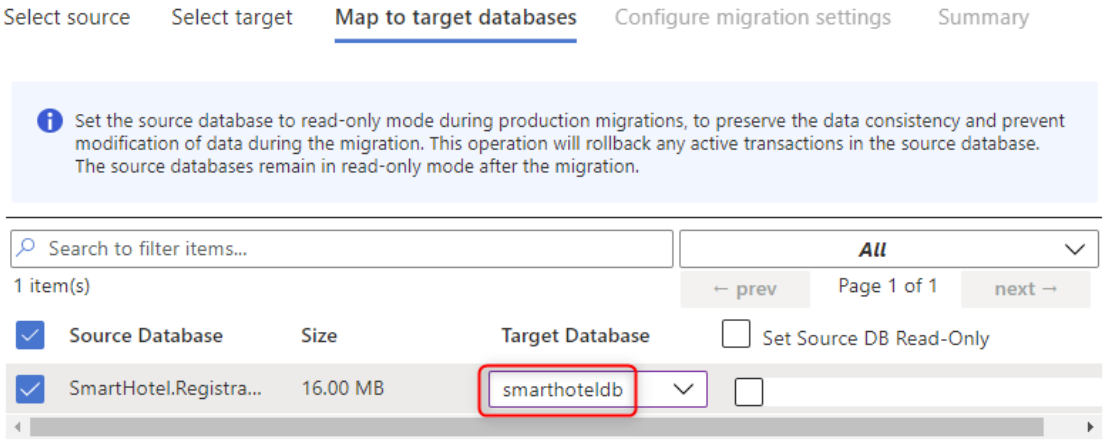
2. The Migration Wizard is shown. Most settings are already populated from the existing migration project. At the **Select source** step, re-enter the source database password **demo!pass123**, then select **Next: Select target**.



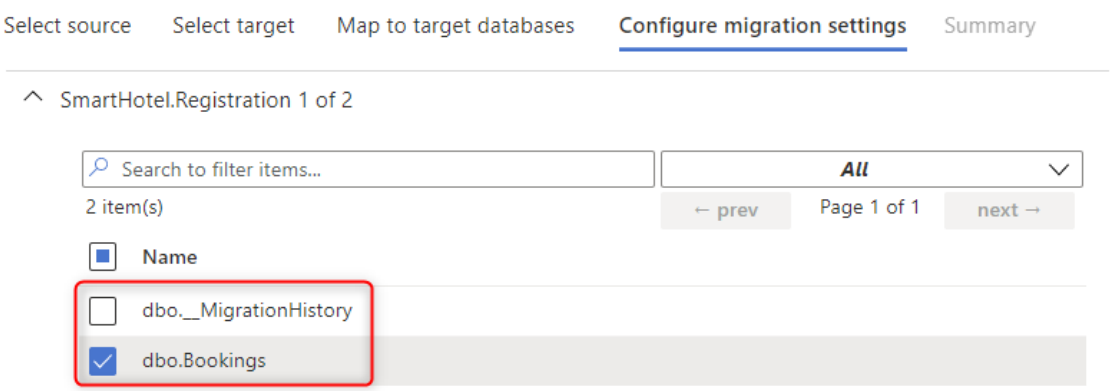
3. At the **Select target** step, enter the password **demo!pass123** and select **Next: Map to target databases**.



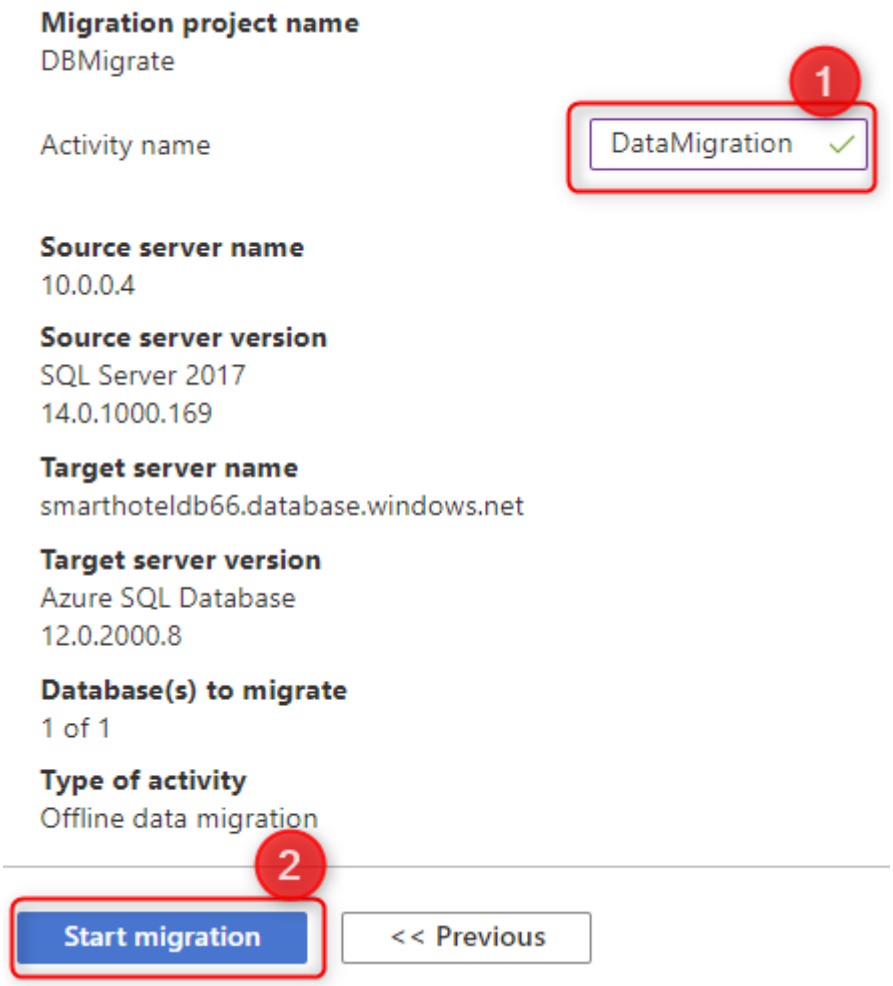
4. At the **Map to target databases** step, check the **SmartHotel.Registration** database. Under **Target Database** select **smarthoteldb**. Select **Next: Configure migration settings**.



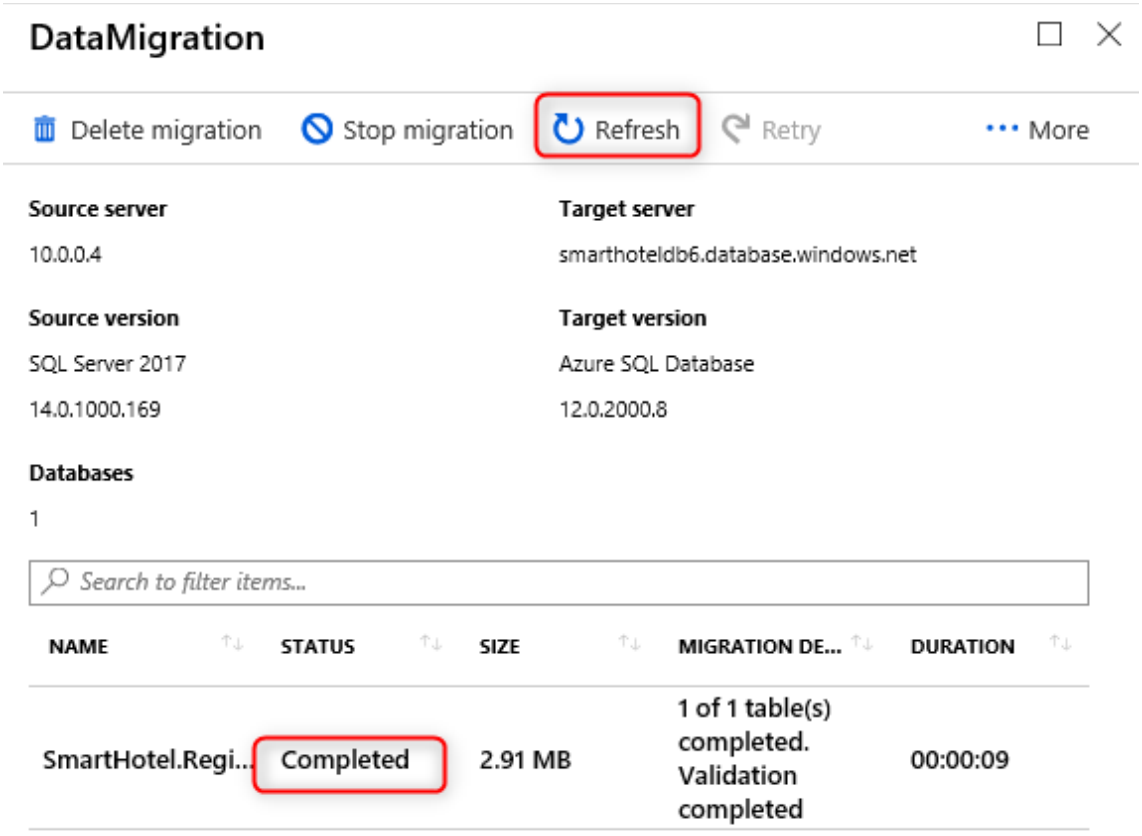
5. The **Configure migration settings** step allows you to specify which tables should have their data migrated. Select the **Bookings** table (Make sure the **MigrationHistory** table is not checked) and select **Next: Summary**.



6. At the **Migration summary** step, enter **DataMigration** as the **Activity name**. Select **Start migration**.



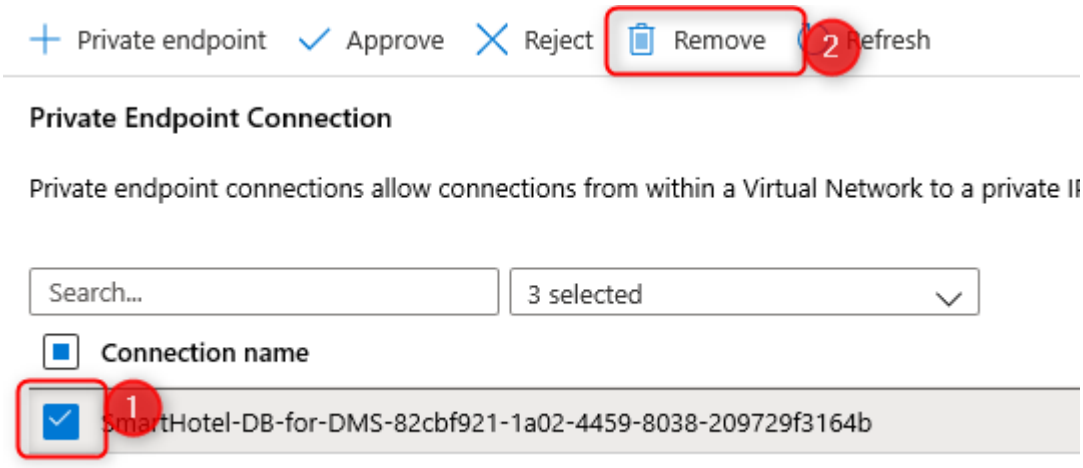
7. The data migration will begin. Select the **Refresh** button and watch the migration progress, until it shows as **Completed**.



As a final step, we will remove the private endpoint that allows the DMS service access to the database, since this access is no longer required.

8. In the Azure portal, navigate to the **SmartHotelDBRG** resource group, and then to the database server. Under **Security**, select **Private endpoint connections**.

9. Select the **SmartHotel-DB-for-DMS** endpoint added earlier, and select **Remove**, followed by **Yes**.



Task summary

In this task you used an off-line data migration activity in the Azure Database Migration Service to migrate the database data from the on-premises SQL Server database to the Azure SQL database.

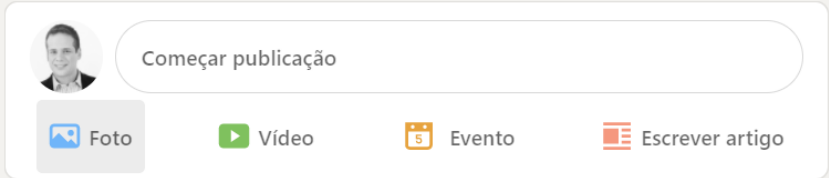
Exercise summary

In this exercise you migrated the application database from on-premises to Azure SQL Database. The Microsoft Data Migration Assistant was used for migration assessment, and the Azure Database Migration Service was used for schema migration and data migration.

3.3 Destrave a sua 3ª medalha

Uaaaaau, você chegou até aqui e conseguiu colocar o seu Primeiro Banco de Dados na Nuvem!!! Estou muito feliz com essa vitória e quero te reconhecer com uma nova medalha de honra ao mérito e você deve postar no seu Linkedin para demonstrar para toda a comunidade a sua conquista.

1. Em uma nova aba, copie e cole o link da medalha:
   https://zecanunes.blob.core.windows.net/apostila/Migrating/medalha03.png
2. Clique com o botão direito do mouse sobre a imagem e Salve no seu computador para usar no próximo passo
3. Acesse seu Linkedin e na Opção de "**Começar publicação**" clique em **Foto**



4. Selecione a imagem da sua medalha e pressione **Concluído**
5. Agora no campo "**No que você está pensando**" digite o seguinte texto:

```
Estou participando do Workshop #ExpedicaoCloud e hoje eu coloquei meu Primeiro Projeto de Migração na Nuvem com a ajuda do Zeca Nunes ☁
Participe comigo através do link https://zecanunes.com/inscreva
#BoraPraNuvem
```

6. Clique em **Publicar**

Aula 4 – Migração de Servidores

4.1 Migrando camada de Aplicação e Web

Duration: 90 minutes

In this exercise you will migrate the web tier and application tiers of the application from on-premises to Azure using Azure Migrate: Server Migration.

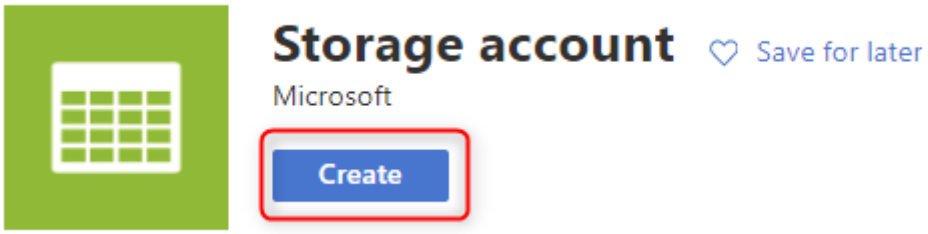
Having migrated the virtual machines, you will reconfigure the application tier to use the application database hosted in Azure SQL. This will enable you to verify that the migration application is working end-to-end.

Task 1: Create a Storage Account

In this task you will create a new Azure Storage Account that will be used by Azure Migrate: Server Migration for storage of your virtual machine data during migration.

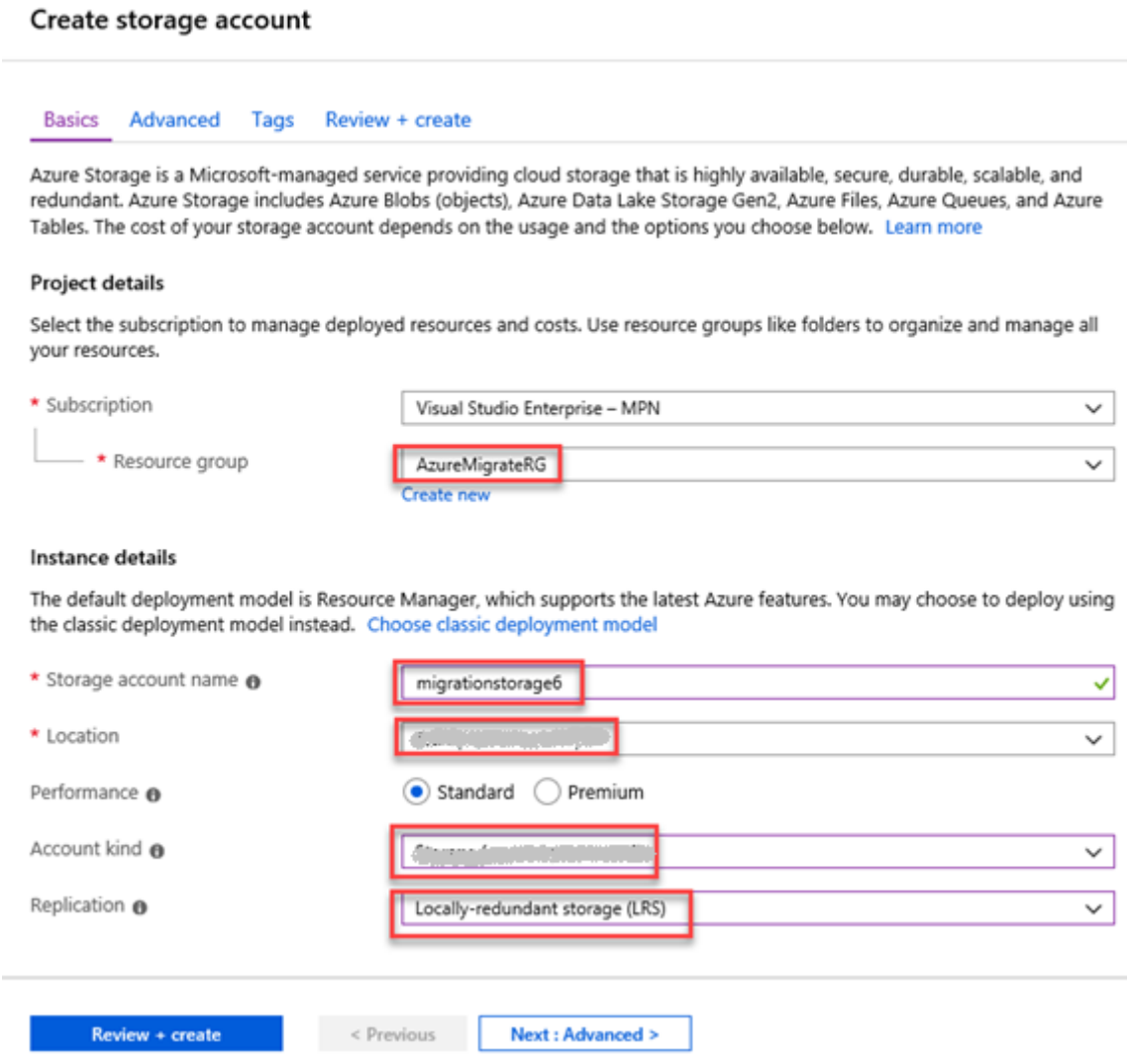
Note: This lab focuses on the technical tools required for workload migration. In a real-world scenario, more consideration should go into the long-term plan prior to migrating assets. The landing zone required to host VMs should also include considerations for network traffic, access control, resource organization, and governance. For example, the CAF Migration Blueprint and CAF Foundation Blueprint can be used to deploy a pre-defined landing zone, and demonstrate the potential of an Infrastructure as Code (IaC) approach to infrastructure resource management. For more information, see Azure Landing Zones and Cloud Adoption Framework Azure Migration landing zone Blueprint sample.

1. In the Azure portal's left navigation, select **+ Create a resource**, then search for and select **Storage account**, followed by **Create**.



2. In the **Create storage account** blade, on the **Basics** tab, use the following values:

- Subscription: **Select your Azure subscription**.
- Resource group: **AzureMigrateRG**
- Storage account name: **migrationstorage[unique numbers]**
- Location: **West US**
  IMPORTANT: Select the same location as your Azure SQL Database (can be found in the Azure portal).
- Performance: **Standard**
- Replication: **Locally-redundant storage (LRS)**



3. Select **Review + create**, then select **Create**.

Task summary

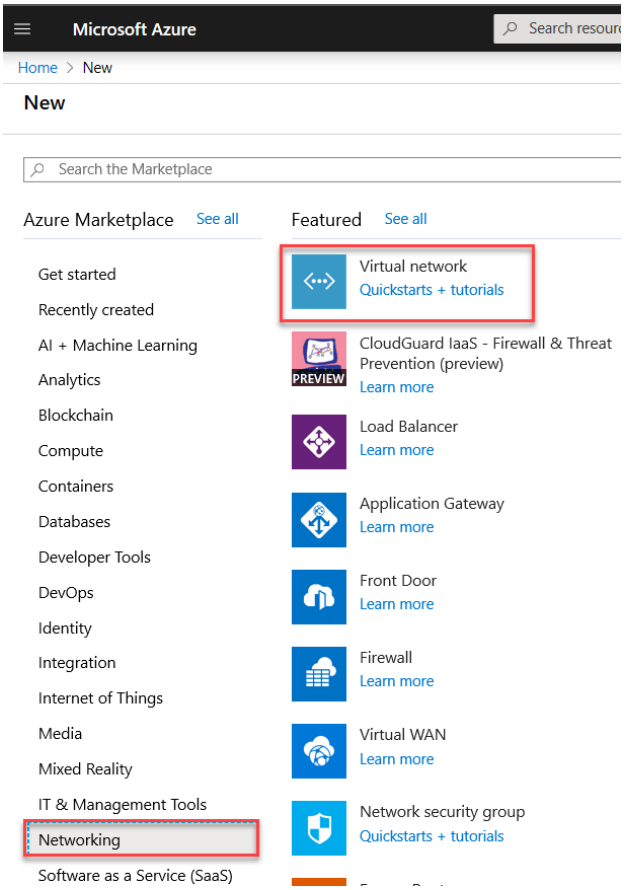
In this task you created a new Azure Storage Account that will be used by Azure Migrate: Server Migration.

Task 2: Create a Virtual Network

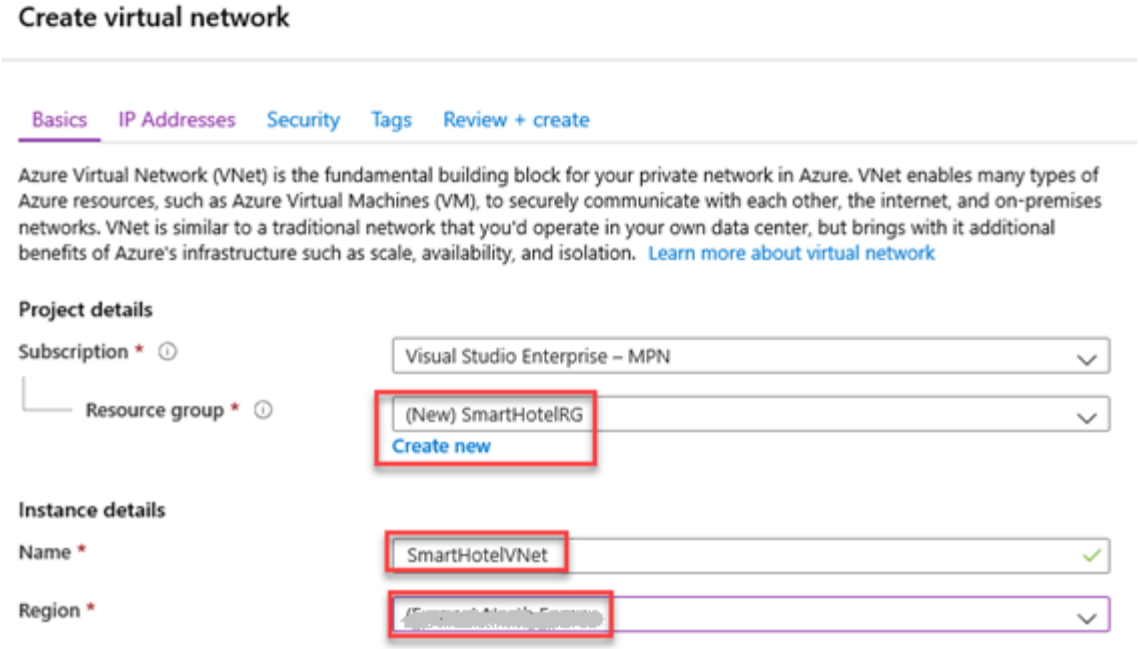
In this task you will create a new virtual network that will be used by your migrated virtual machines when they are migrated to Azure. (Azure Migrate will only create the VMs, their network interfaces, and their disks; all other resources must be staged in advance.)

Note: Azure provides several options for deploying the right network configuration. After the lab, if you'd like to better understand your networking options, see the network decision guide, which builds on the Cloud Adoption Framework's Azure landing zones.
You will also configure a private endpoint in this network to allow private, secure access to the SQL Database.

1. In the Azure portal's left navigation, select **+ Create a resource**, then select **Networking**, followed by **Virtual network**.

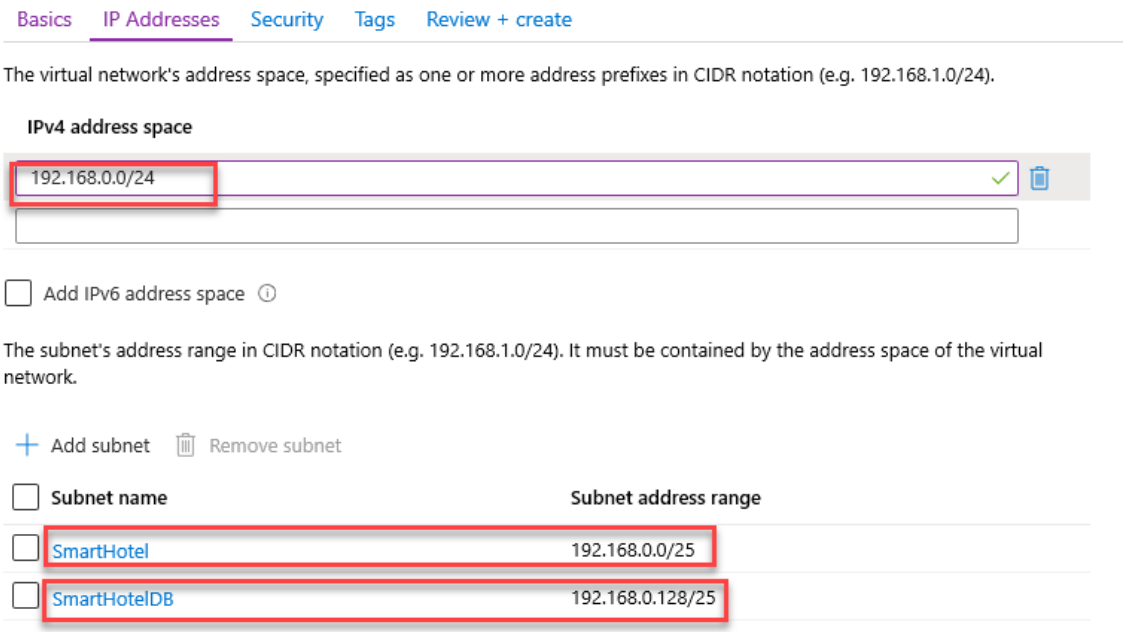


2. In the **Create virtual network** blade, enter the following values:
    - Subscription: **Select your Azure subscription**.
    - Resource group: (create new) **SmartHotelNewRG**
    - Name: **SmartHotelVNet**
    - Region: **West US**
      IMPORTANT: Select the same location as your Azure SQL Database.



3. Select **Next: IP Addresses >**, and enter the following configuration. Then select **Review + create**, then **Create**.
    - IPv4 address space: **192.168.0.0/24**
    - First subnet: Select +**Add subnet** and enter the following then select **Add**
        - Subnet name: **SmartHotel**
        - Address range: **192.168.0.0/25**
    - Second subnet: Select +**Add subnet** and enter the following then select **Add**.
        - Subnet name: **SmartHotelDB**

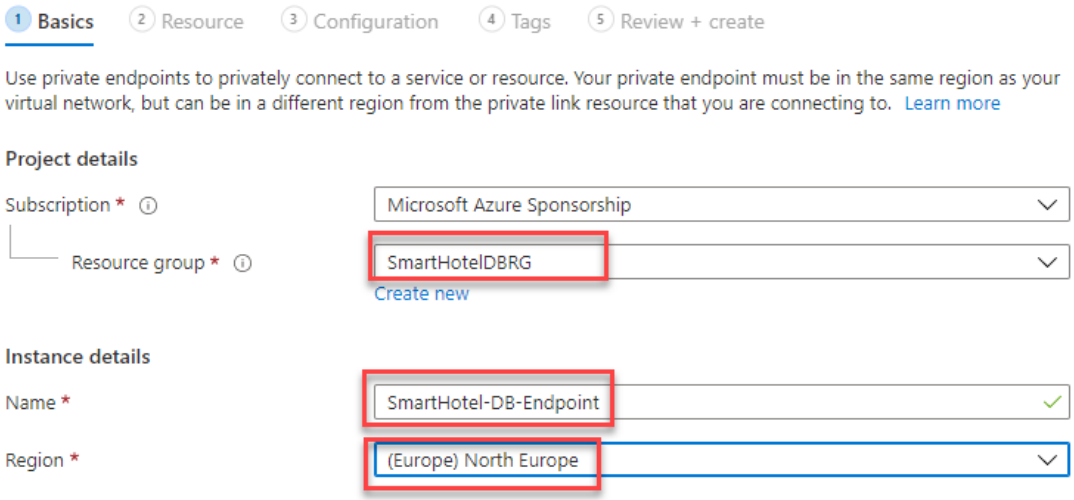
- Address range: **192.168.0.128/25**



4. Navigate to the **SmartHotelDBRG** resource group, and then to the database SQL server **smarthoteldb[numbers]**. Under **Security**, select **Private endpoint connections**, then select **+ Private endpoint**.

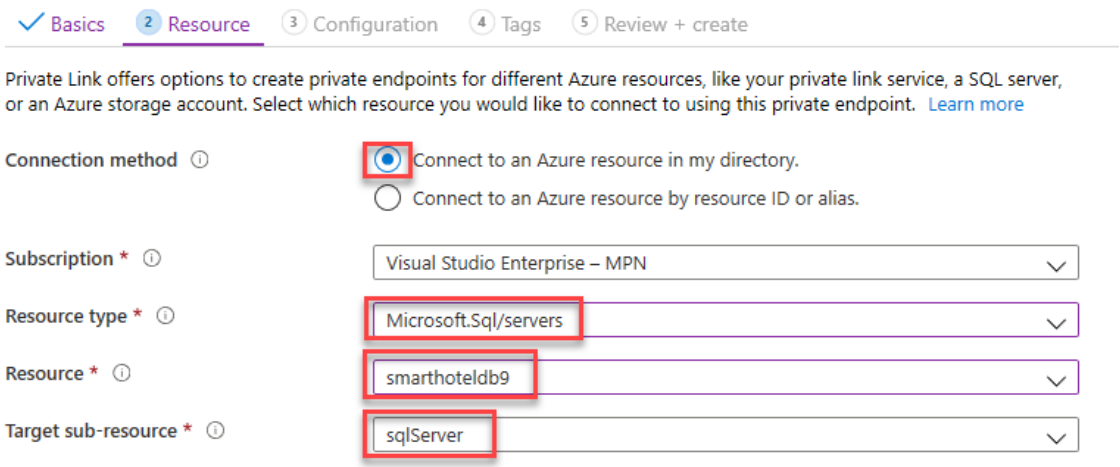
5. On the **Basics** tab, enter the following configuration then select **Next: Resource**:

    - Resource group: **SmartHotelDBRG**
    - Name: **SmartHotel-DB-Endpoint**
    - Region: **West US**
      Select the same location as the SmartHotelVNet**.**



6. On the tab, enter the following configuration then select **Next: Configuration**:

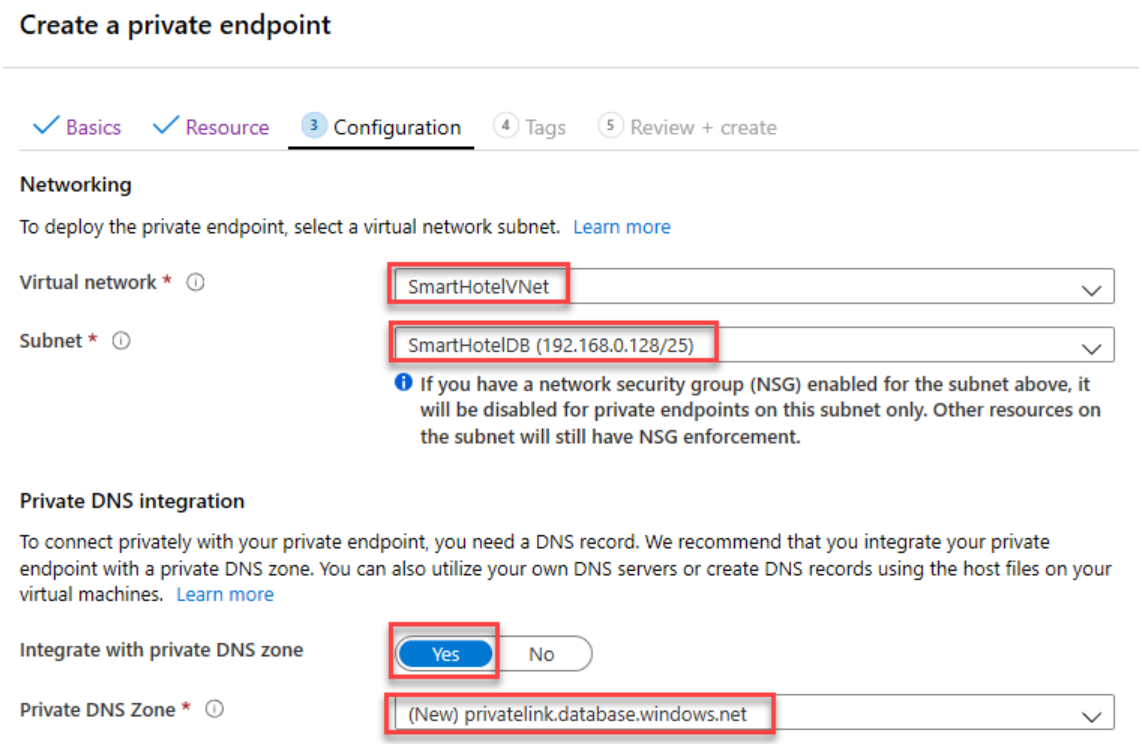
    - Connection method: **Connect to an Azure resource in my directory**.
    - Subscription: **Select your subscription**.
    - Resource type: **Microsoft.Sql/servers**
    - Resource: **smarthoteldb[numbers]**.
    - Target sub-resource: **sqlServer**



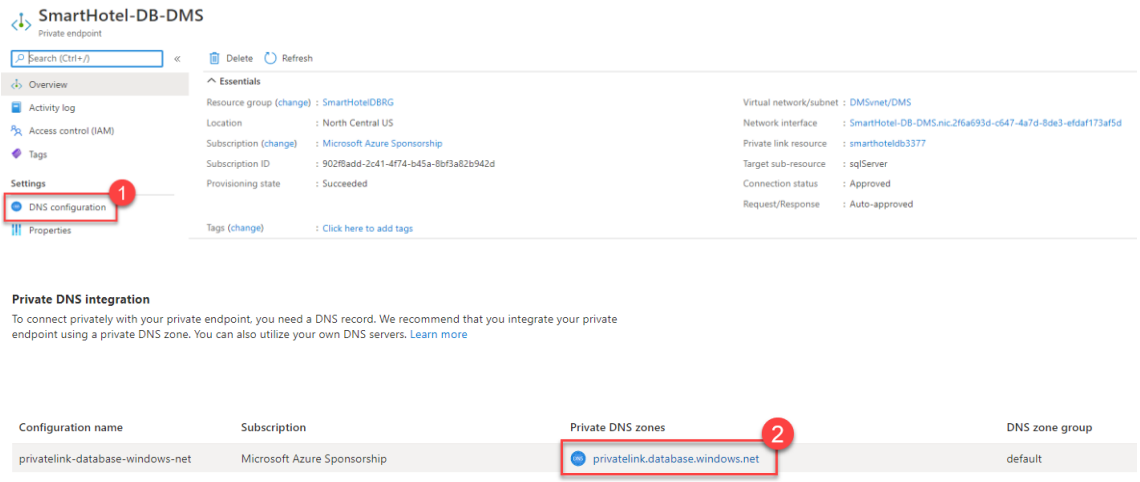
7. On the **Configuration** tab, enter the following configuration then select **Review + Create** then **Create**:

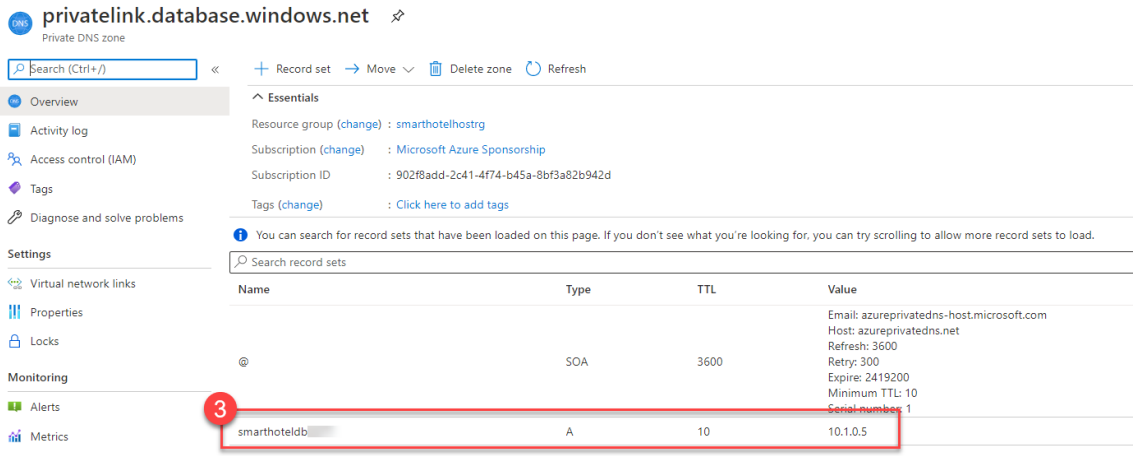
    - Virtual network: **SmartHotelVNet**

- Subnet: **SmartHotelDB (192.168.0.128/25)**
- Integrate with private DNS zone: **Yes**
- Private DNS zone: (default) **privatelink.database.windows.net**



8. **Wait** for the deployment to complete. Open the Private Endpoint blade, and note that the FQDN for the endpoint is listed as **<your database>.database.windows.net**, with an internal IP address **192.168.0.132**.





Note: Private DNS is used so that the database domain name, **<your server>.database.windows.net** resolves to the internal private endpoint IP address **192.168.0.132** when resolved from the SmartHotelVNet, but resolves to the Internet-facing IP address of the database server when resolved from outside the VNet. This means the same connection string (which contains the domain name) can be used in both cases.
Note: If the private endpoint connection fails to allow the IP address or database domain name to connect to the database, it may be required to create a new firewall rule to allow the IP address ranges of the database and the private link.

Task summary

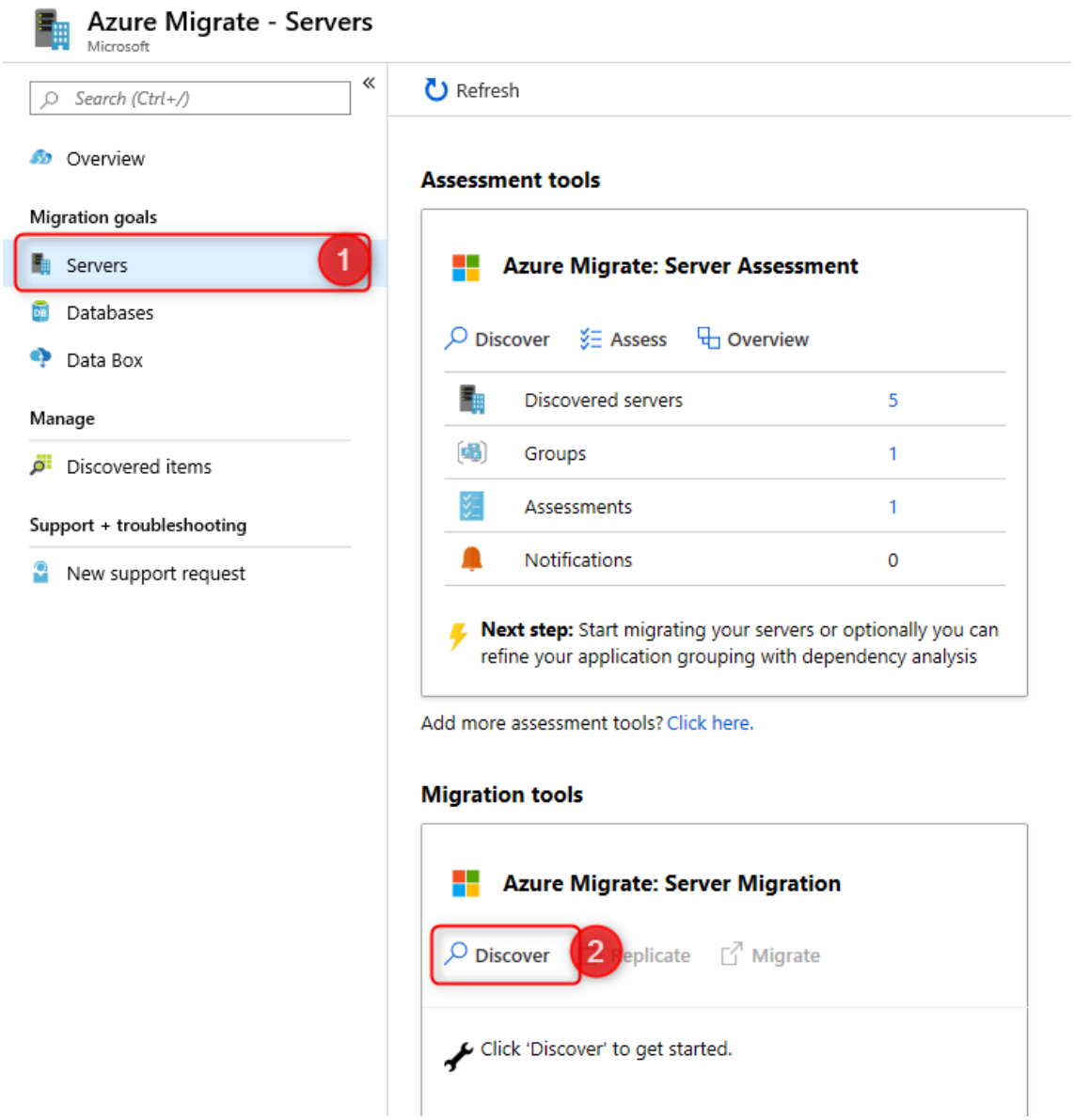
In this task you created a new virtual network that will be used by your virtual machines when they are migrated to Azure. You also created a private endpoint in this network, which will be used to access the SQL database.

Task 3: Register the Hyper-V Host with Azure Migrate: Server Migration

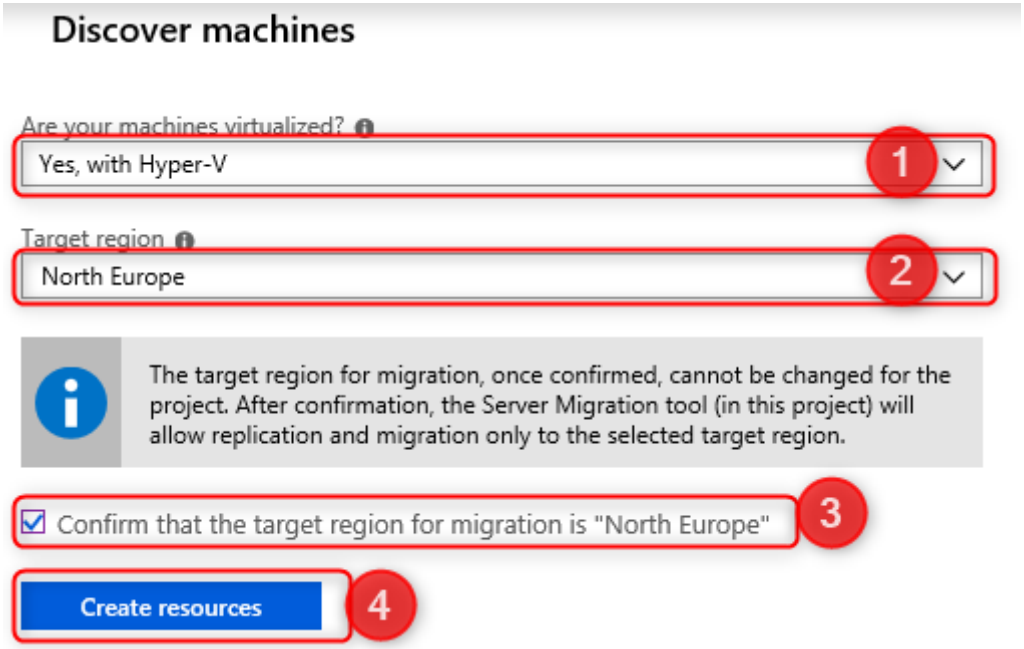
In this task, you will register your Hyper-V host with the Azure Migrate: Server Migration service. This service uses Azure Site Recovery as the underlying migration engine. As part of the registration process, you will deploy the Azure Site Recovery Provider on your Hyper-V host.

1. Return to the **Azure Migrate** blade in the Azure Portal, and select **Servers** under **Migration goals** on the left. Under **Migration Tools**, select **Discover**.

   Note: You may need to add the migration tool yourself by following the link below the **Migration Tools** section, selecting **Azure Migrate: Server Migration**, then selecting **Add tool(s)**.

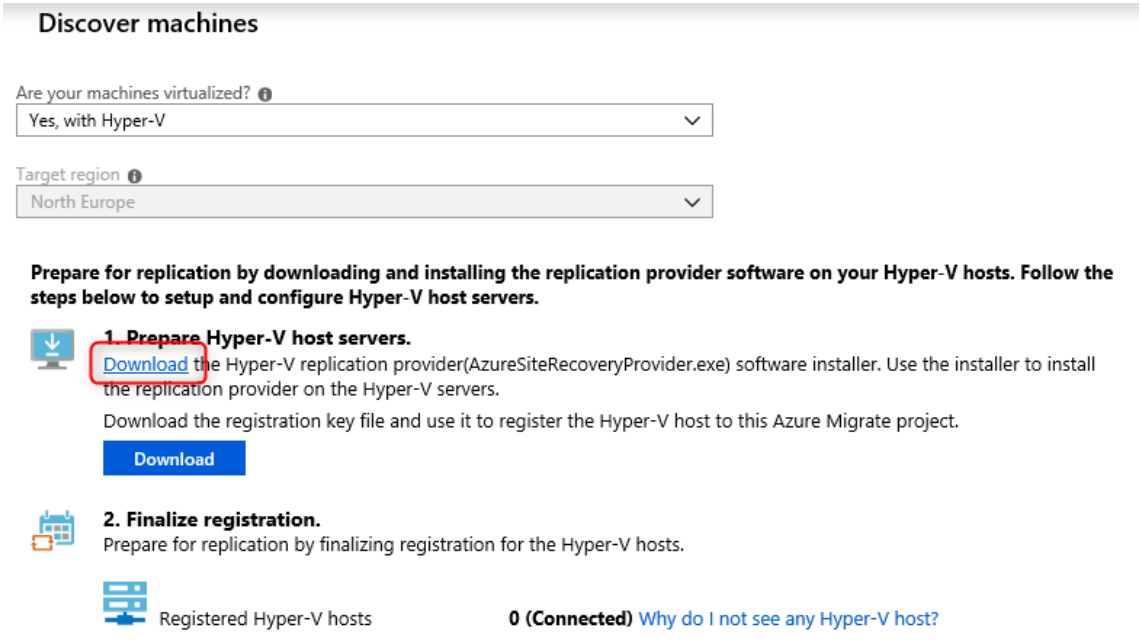


2. In the **Discover machines** panel, under **Are your machines virtualized**, select **Yes, with Hyper-V**. Under **Target region** enter **the same region as used for your Azure SQL Database** which can be found in the Azure portal and check the confirmation checkbox. Select **Create resources** to begin the deployment of the Azure Site Recovery resource used by Azure Migrate: Server Migration for Hyper-V migrations.



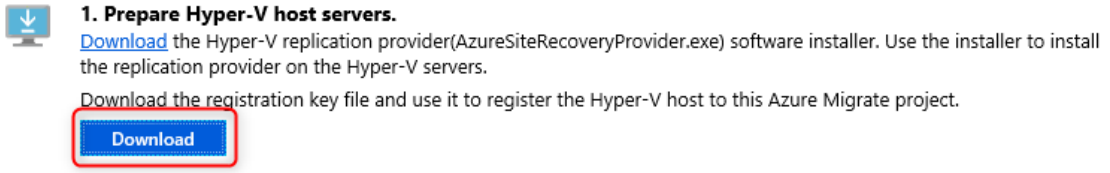
Once deployment is complete, the 'Discover machines' panel should be updated with additional instructions.

3. Copy the **Download** link for the Hyper-V replication provider software installer to your clipboard.



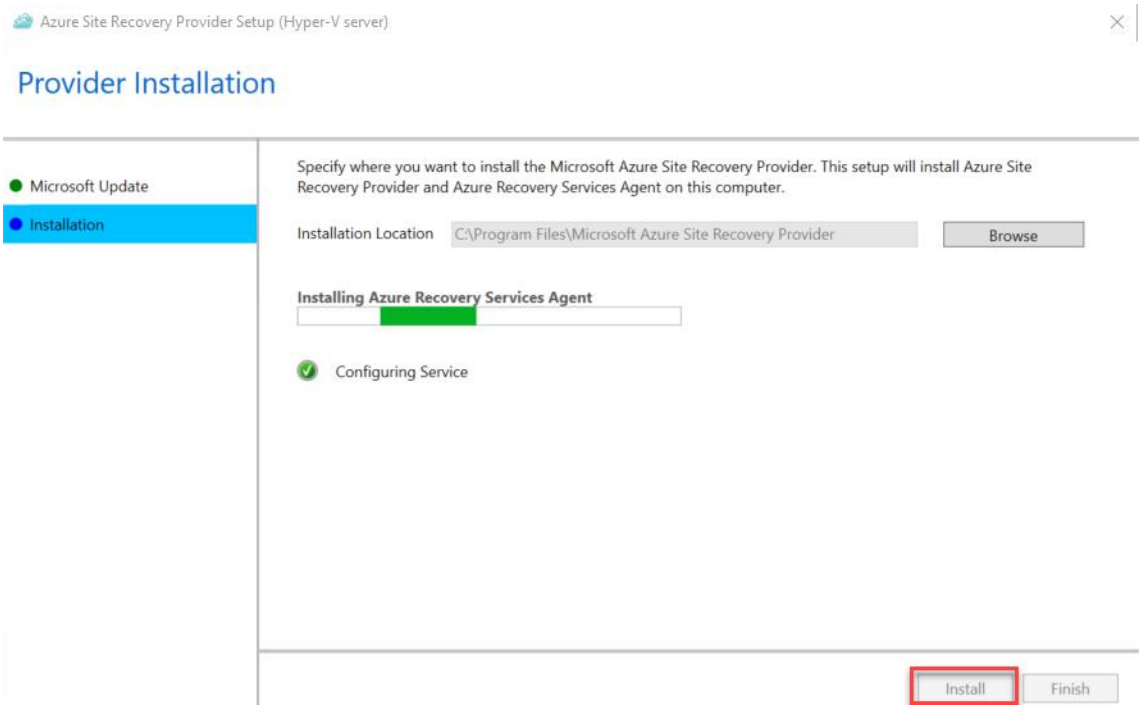
4. Open the **SmartHotelHost** remote desktop window, launch **Chrome** from the desktop shortcut, and paste the link into a new browser tab to download the Azure Site Recovery provider installer.

5. Return to the **Discover machines** page in your browser (outside the SmartHotelHost remote desktop session). Select the blue **Download** button and download the registration key file.

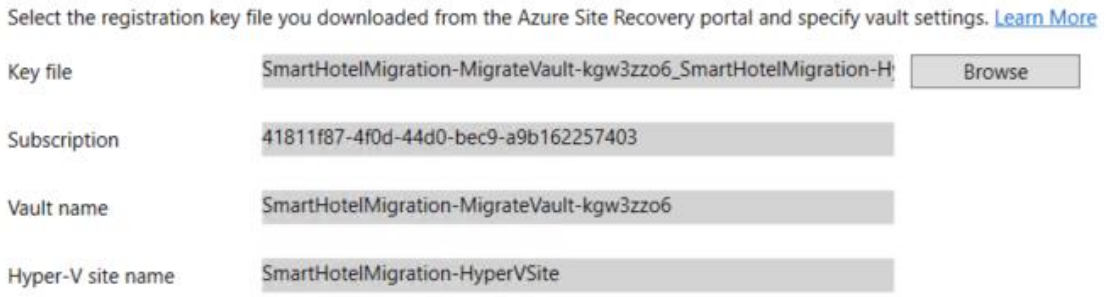


6. Open the file location in Windows Explorer, and copy the file to your clipboard. Return to the **SmartHotelHost** remote desktop session and paste the file to the desktop.

7. Still within the **SmartHotelHost** remote desktop session, open the **AzureSiteRecoveryProvider.exe** installer you downloaded a moment ago. On the **Microsoft Update** tab, select **Off** and select **Next**. Accept the default installation location and select **Install**.

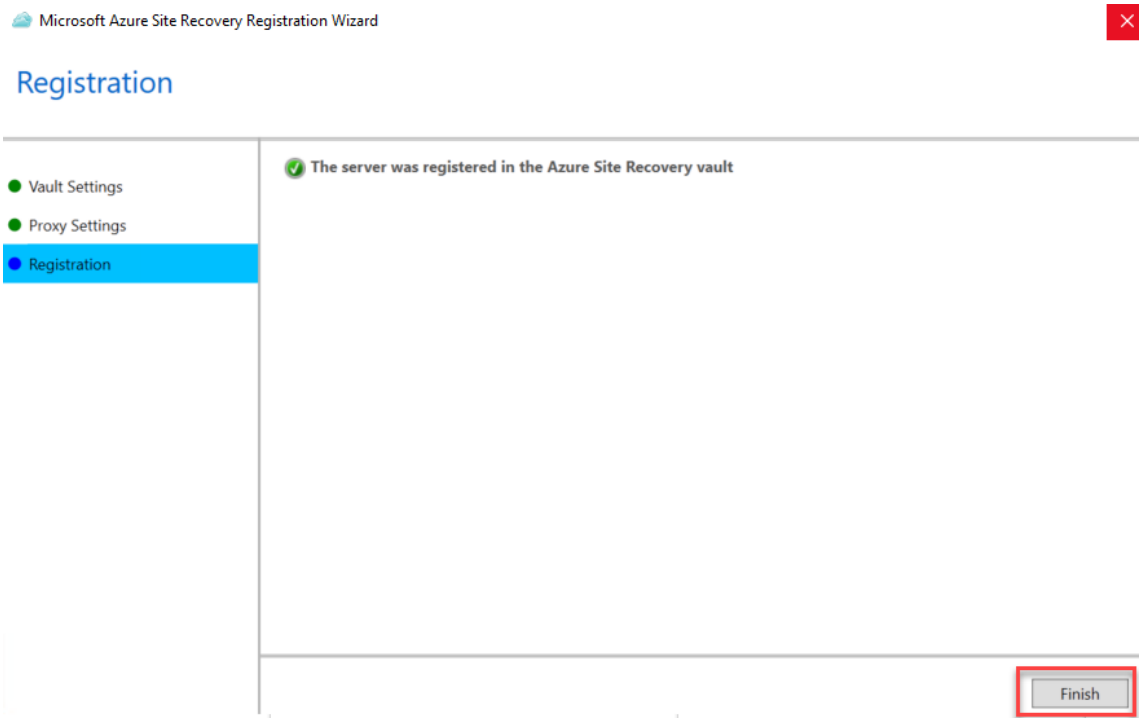


8. When the installation has completed select **Register**. Browse to the location of the key file you downloaded. When the key is loaded select **Next**.



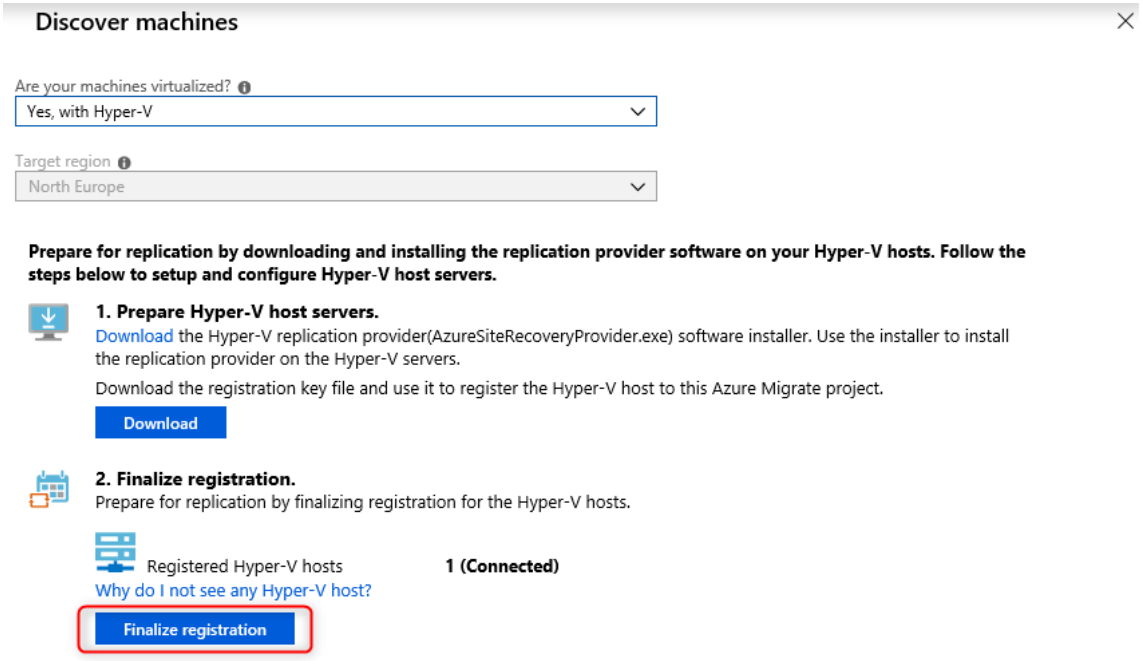
9. Select **Connect directly to Azure Site Recovery without a proxy server** and select **Next**. The registration of the Hyper-V host with Azure Site Recovery will begin.

10. Wait for registration to complete (this may take several minutes). Then select **Finish**.

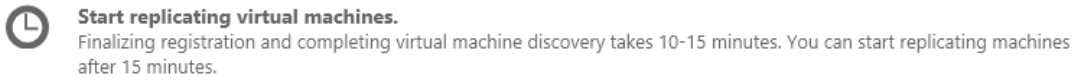


11. Minimize the SmartHotelHost remote desktop session and return to the Azure Migrate browser window. **Refresh** your browser, then re-open the **Discover machines** panel by selecting **Discover** under **Azure Migrate: Server Migration** and selecting **Yes, with Hyper-V** for **Are your machines virtualized?**.

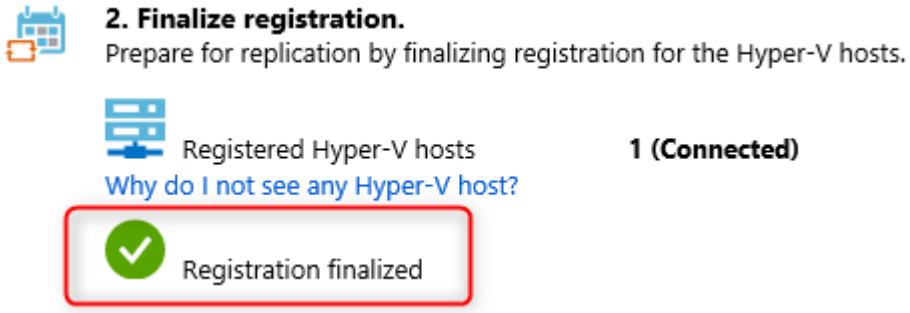
12. Select **Finalize registration**, which should now be enabled.



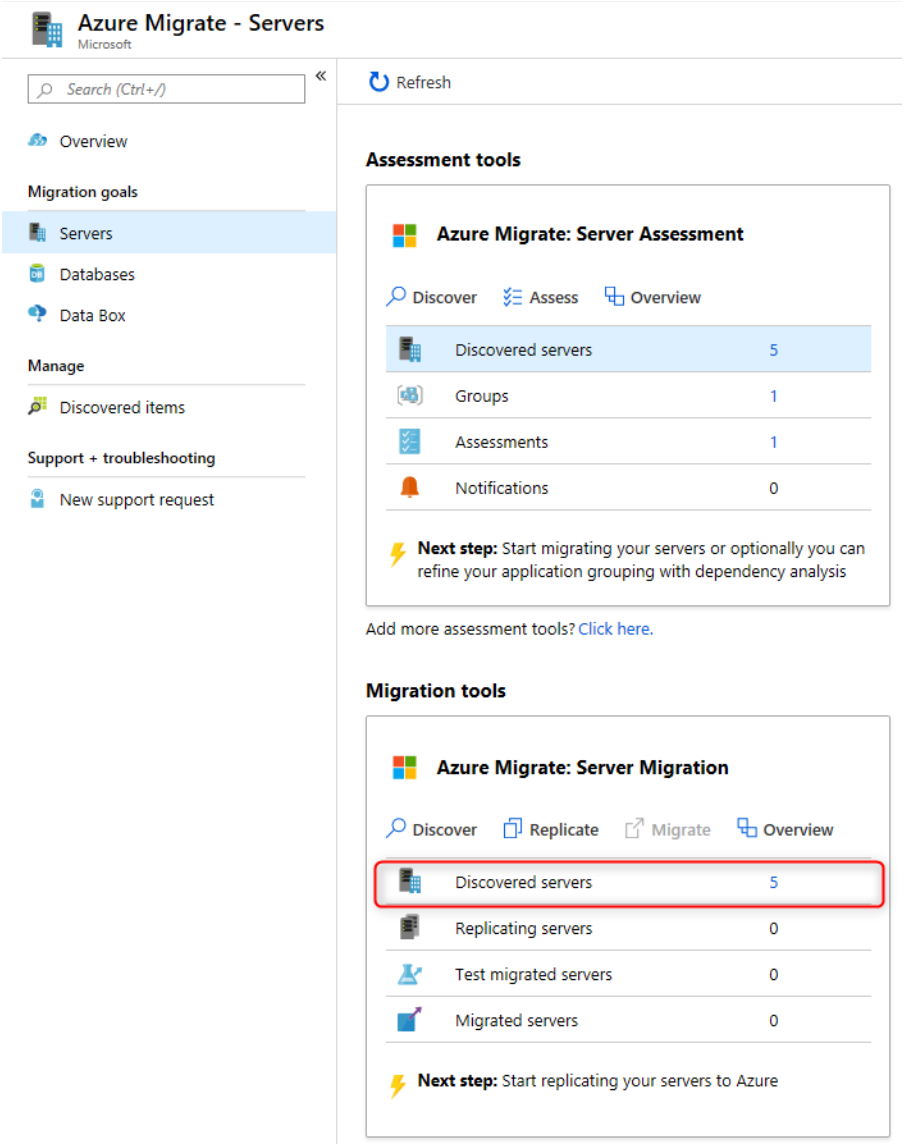
13. Azure Migrate will now complete the registration with the Hyper-V host. **Wait** for the registration to complete. This may take several minutes.



14. Once the registration is complete, close the **Discover machines** panel.



15. The **Azure Migrate: Server Migration** panel should now show 5 discovered servers.



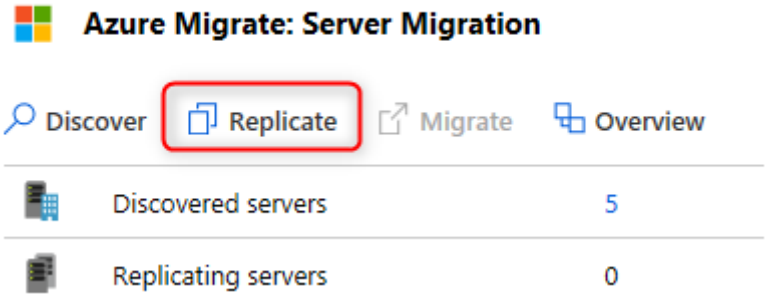
Task summary

In this task you registered your Hyper-V host with the Azure Migrate Server Migration service.

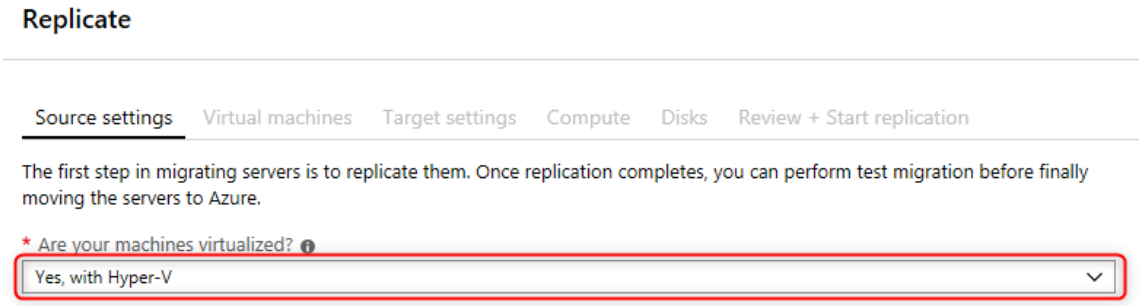
Task 4: Enable Replication from Hyper-V to Azure Migrate

In this task, you will configure and enable the replication of your on-premises virtual machines from Hyper-V to the Azure Migrate Server Migration service.

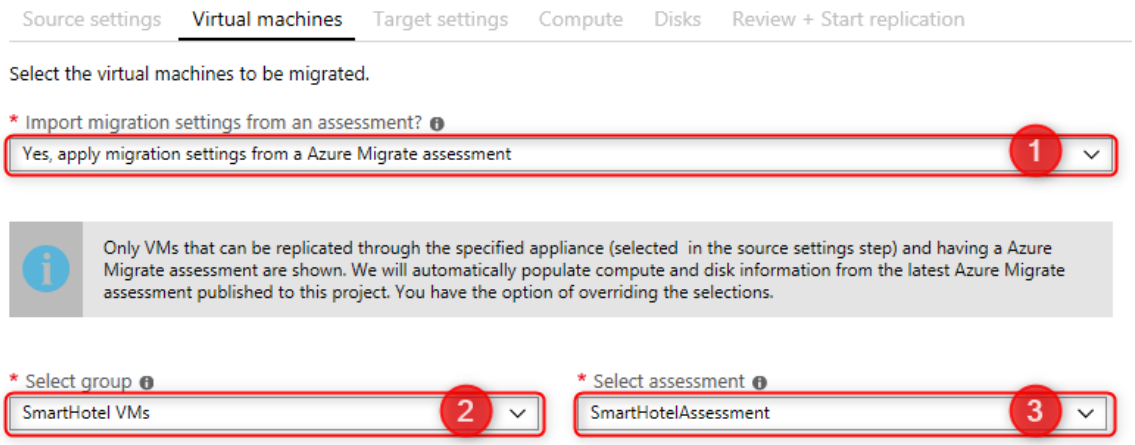
1. Under **Azure Migrate: Server Migration**, select **Replicate**. This opens the **Replicate** wizard.



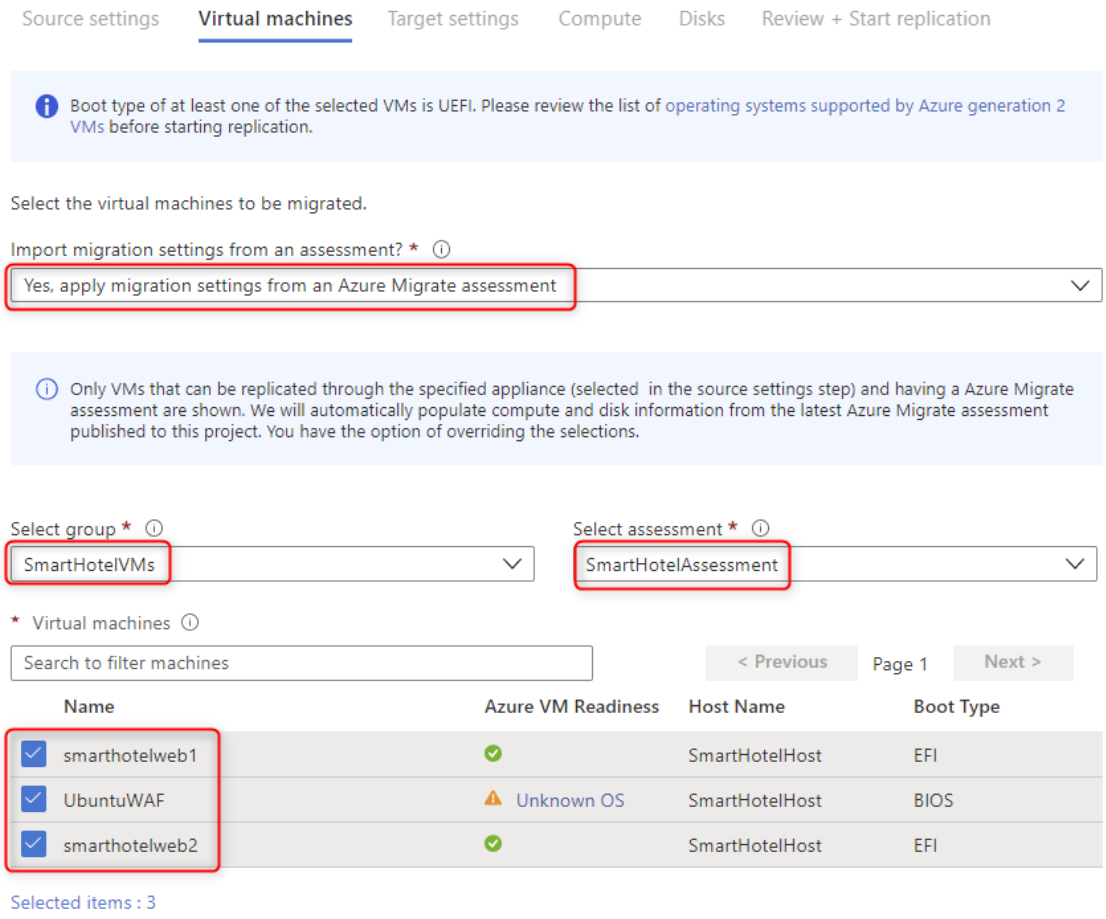
2. In the **Source settings** tab, under **Are your machines virtualized?**, select **Yes, with Hyper-V** from the drop-down. Then select **Next**.



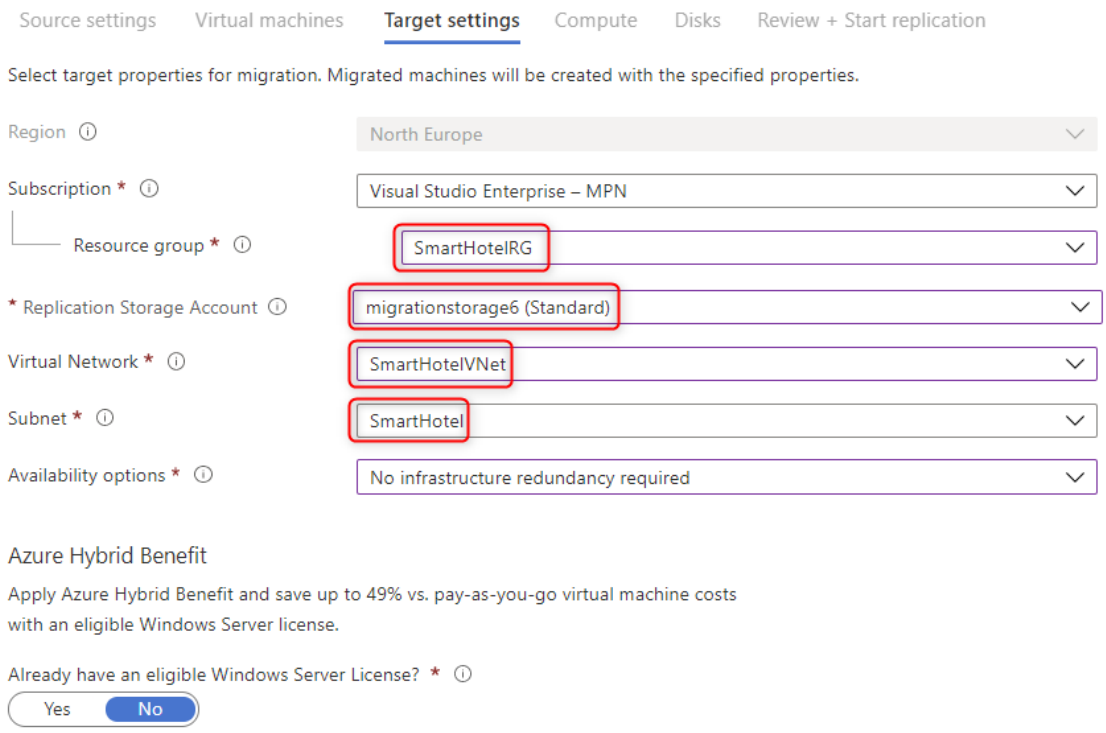
3. In the **Virtual machines** tab, under **Import migration settings from an assessment**, select **Yes, apply migration settings from an Azure Migrate assessment**. Select the **SmartHotel VMs** VM group and the **SmartHotelAssessment** migration assessment.



4. The **Virtual machines** tab should now show the virtual machines included in the assessment. Select the **UbuntuWAF**, **smarthotelweb1**, and **smarthotelweb2** virtual machines, then select **Next**.



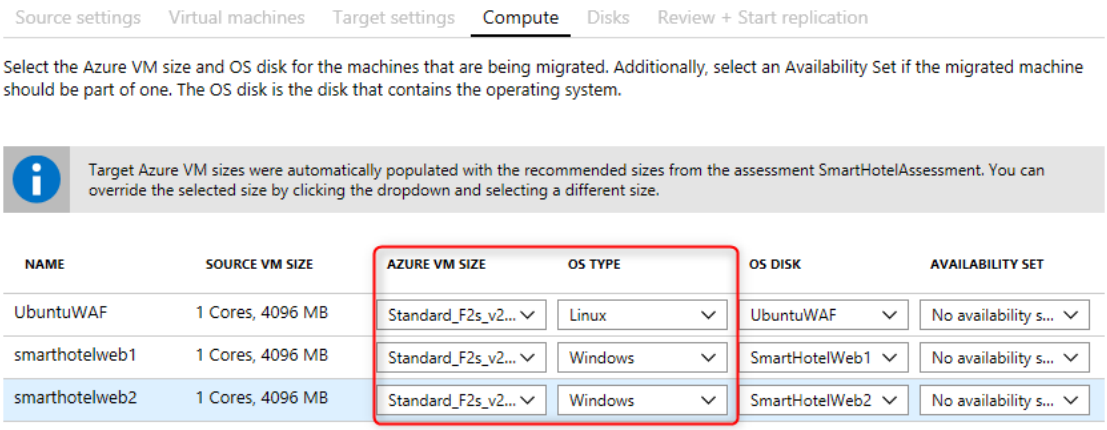
5. In the **Target settings** tab, select your subscription and the existing **SmartHotelNewRG** resource group. Under **Replication storage account** select the **migrationstorage...** storage account and under **Virtual Network** select **SmartHotelVNet**.
Under **Subnet** select **SmartHotel**. Select **Next**.



Note: For simplicity, in this lab you will not configure the migrated VMs for high availability, since each application tier is implemented using a single VM.

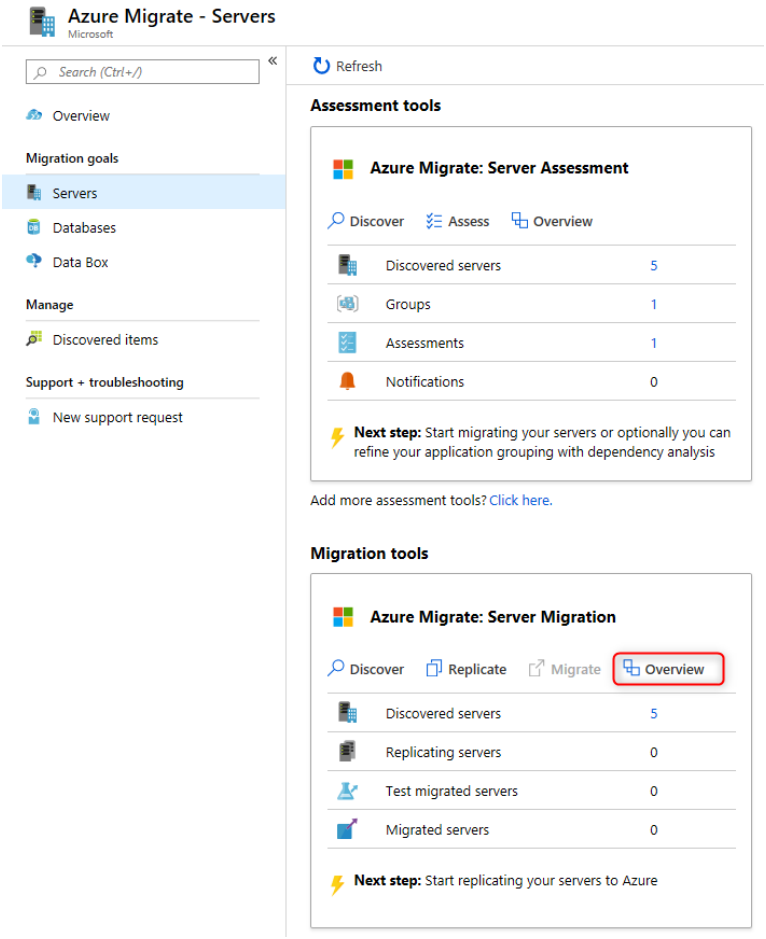
6. In the **Compute** tab, select the **Standard_F2s_v2** VM size for each virtual machine. Select the **Windows** operating system for the **smarthotelweb** virtual machines and the **Linux** operating system for the **UbuntuWAF** virtual machine. Select **Next**.

   Note: If you are using an Azure Pass subscription, your subscription may not have a quota allocated for FSv2 virtual machines. In this case, use **DS2_v2 or D2s_v3** virtual machines instead.

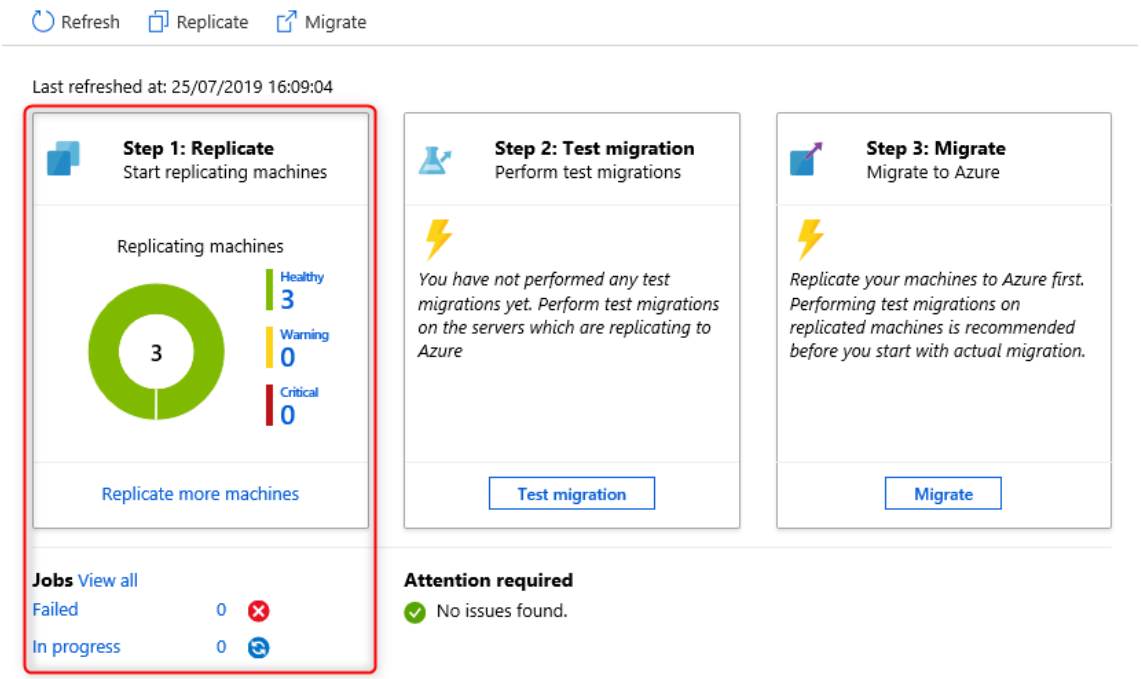


7. In the **Disks** tab, review the settings but do not make any changes. Select **Next**, then select **Replicate** to start the server replication.

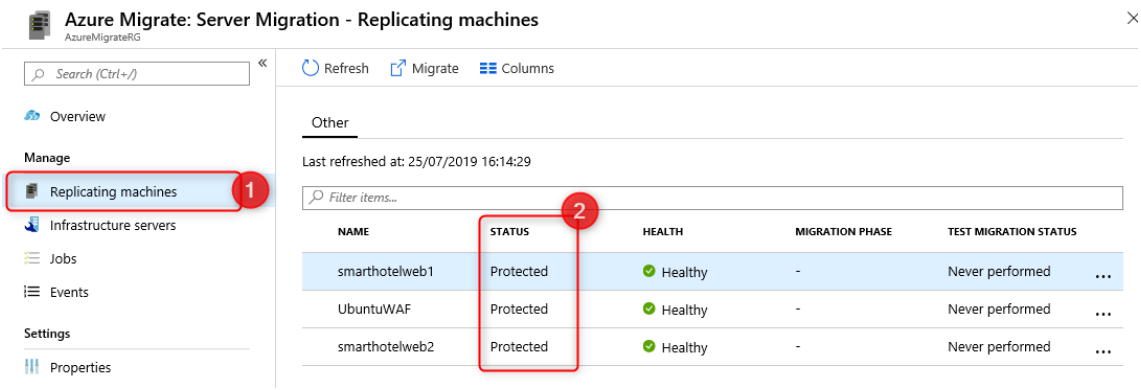
8. In the **Azure Migrate - Servers** blade, under **Azure Migrate: Server Migration**, select the **Overview** button.



9. Confirm that the 3 machines are replicating.



10. Select **Replicating Machines** under **Manage** on the left. Select **Refresh** occasionally and wait until all three machines have a **Protected** status, which shows the initial replication is complete. This will take several minutes.



Task summary

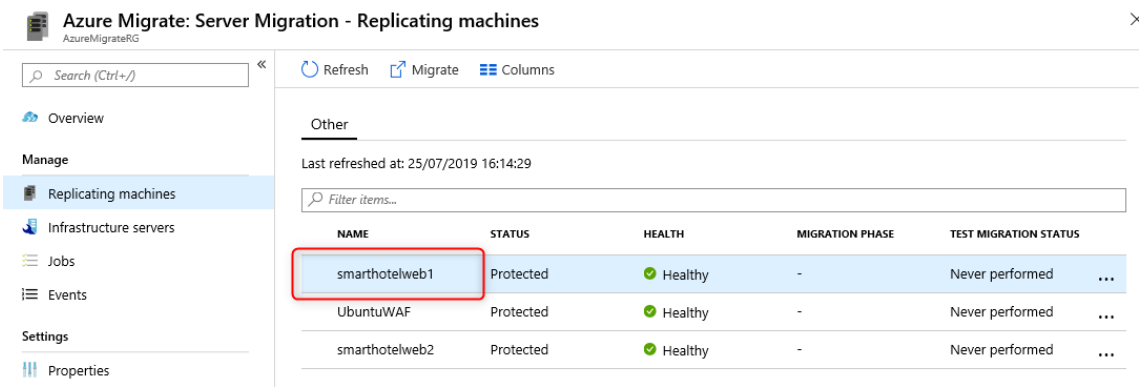
In this task you enabled replication from the Hyper-V host to Azure Migrate, and configured the replicated VM size in Azure.

Task 5: Configure static internal IP addresses for each VM

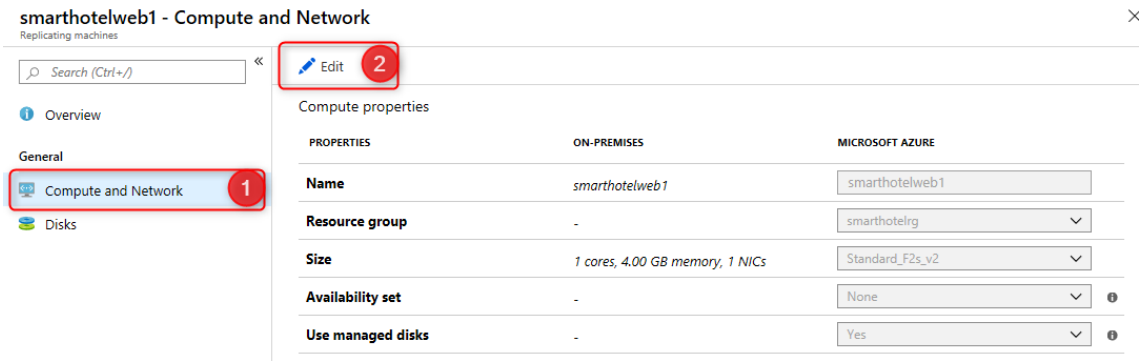
In this task you will modify the settings for each replicated VM to use a static private IP address that matches the on-premises IP addresses for that machine.

1. Still using the **Azure Migrate: Server Migration - Replicating machines** blade, select the **smarthotelweb1** virtual machine. This opens

a detailed migration and replication blade for this machine. Take a moment to study this information.

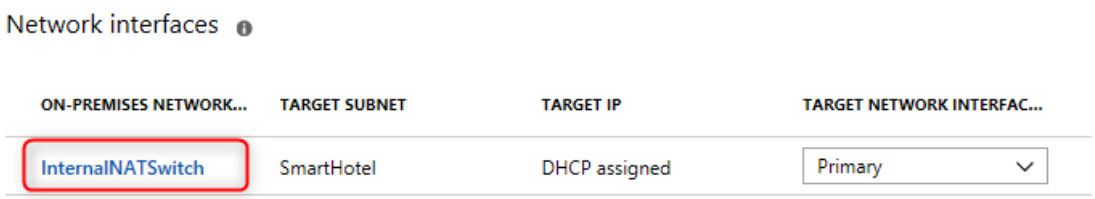


2. Select **Compute and Network** under **General** on the left, then select **Edit**.

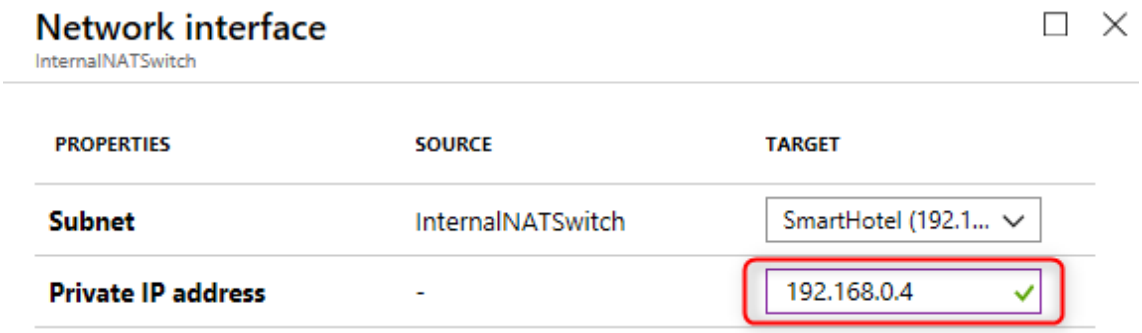


3. Confirm that the VM is configured to use the **F2s_v2** VM size (or **DS2_v2 or D2s_v3** if using an Azure Pass subscription) and that **Use managed disks** is set to **Yes**.

4. Under **Network Interfaces**, select **InternalNATSwitch** to open the network interface settings.



5. Change the **Private IP address** to **192.168.0.4**.



6. Select **OK** to close the network interface settings blade, then **Save** the **smarthotelweb1** settings.

7. Repeat these steps to configure the private IP address for the other VMs.

    - For **smarthotelweb2** use private IP address **192.168.0.5**
    - For **UbuntuWAF** use private IP address **192.168.0.8**

Task summary

In this task you modified the settings for each replicated VM to use a static private IP address that matches the on-premises IP addresses for that machine

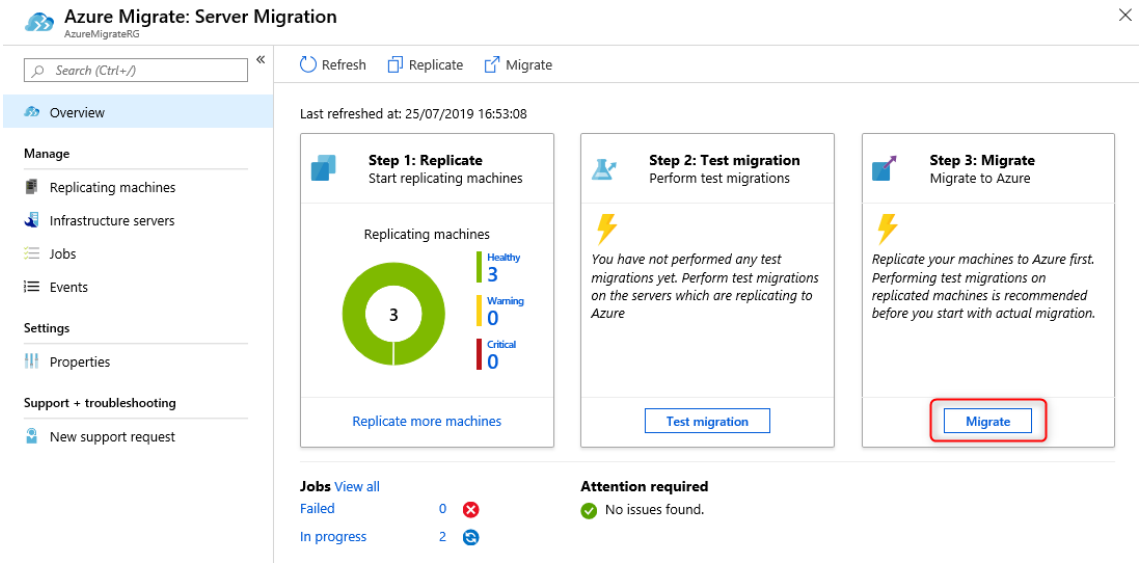
Note: Azure Migrate makes a "best guess" at the VM settings, but you have full control over the settings of migrated items. In this case, setting a static private IP address ensures the virtual machines in Azure retain the same IPs they had on-premises, which avoids having to reconfigure the VMs during migration (for example, by editing web.config files).

Task 6: Server migration

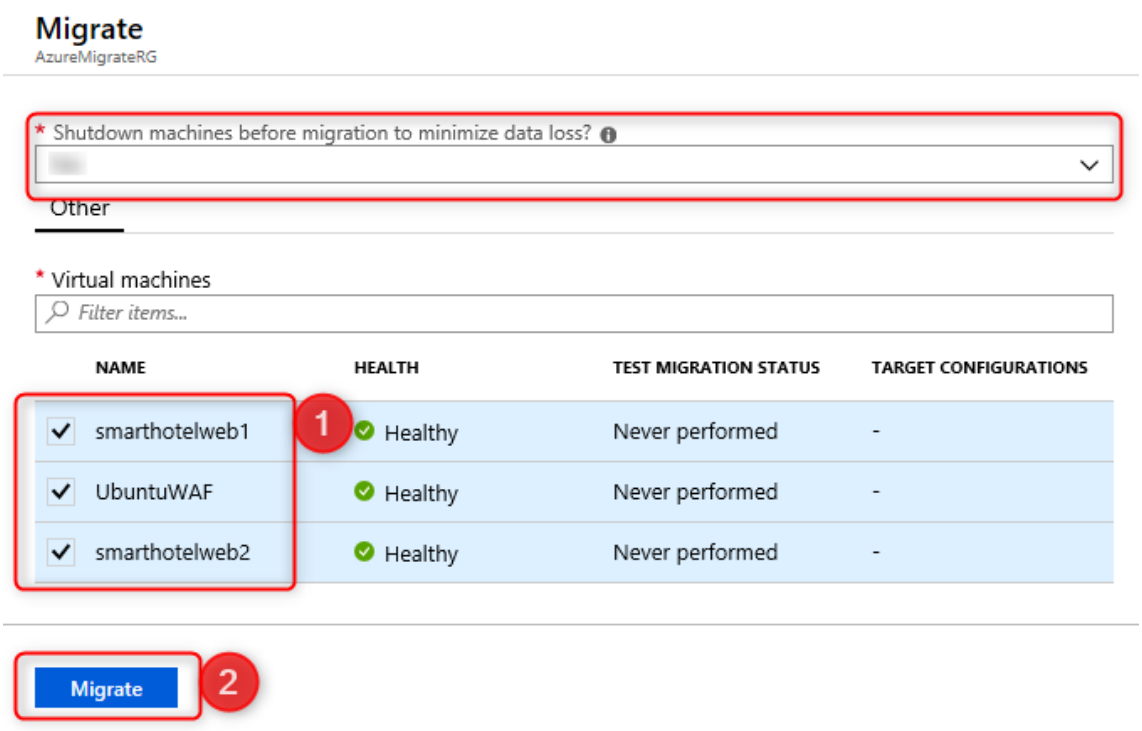
In this task you will perform a migration of the UbuntuWAF, smarthotelweb1, and smarthotelweb2 machines to Azure.

Note: In a real-world scenario, you would perform a test migration before the final migration. To save time, you will skip the test migration in this lab. The test migration process is very similar to the final migration.

1. Return to the **Azure Migrate: Server Migration** overview blade. Under **Step 3: Migrate**, select **Migrate**.

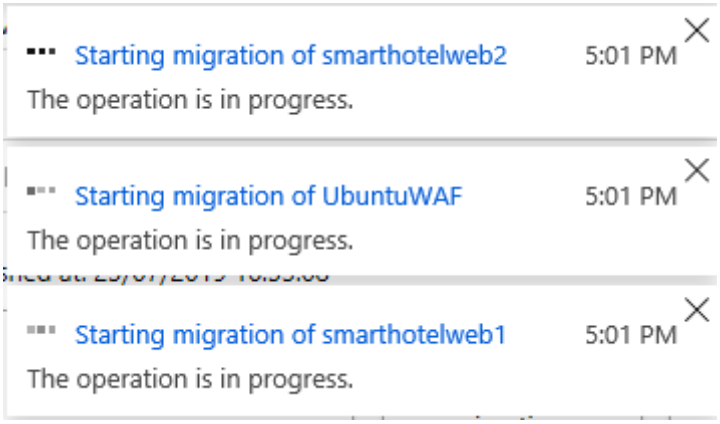


2. On the **Migrate** blade, select the 3 virtual machines then select **Migrate** to start the migration process.

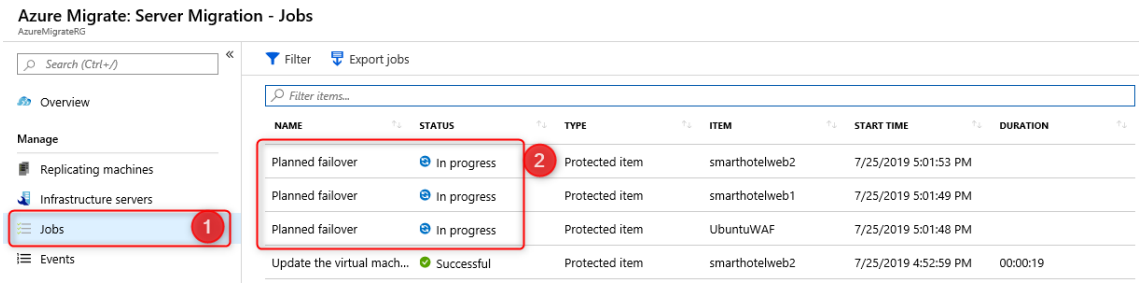


Note: You can optionally choose whether the on-premises virtual machines should be automatically shut down before migration to minimize data loss. Either setting will work for this lab.

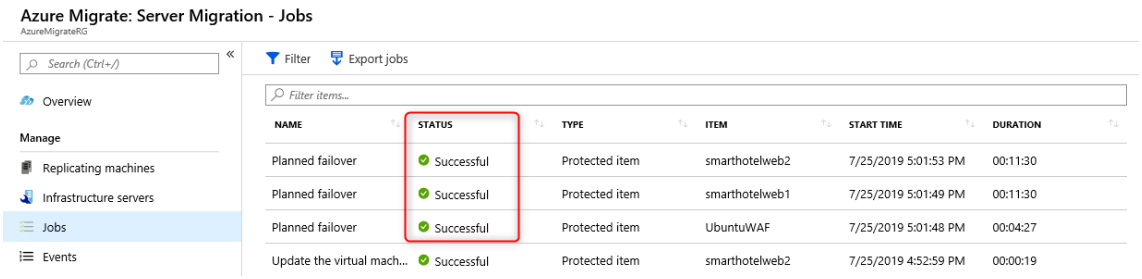
3. The migration process will start.



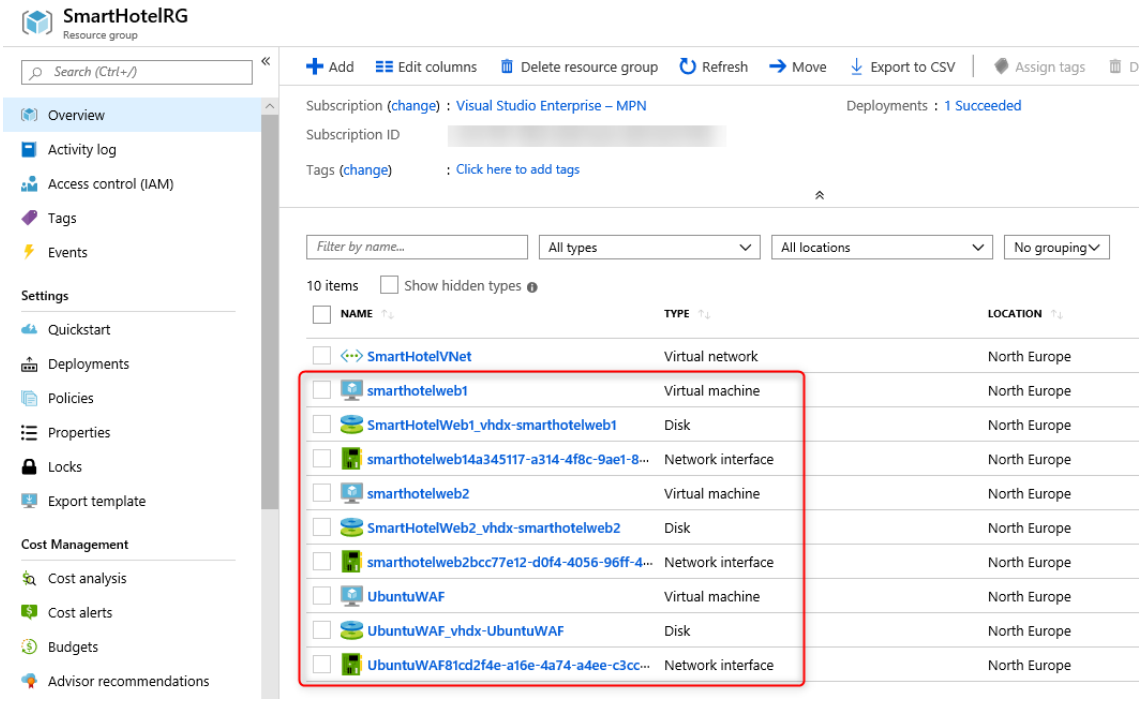
4. To monitor progress, select **Jobs** under **Manage** on the left and review the status of the three **Planned failover** jobs.



5. **Wait** until all three **Planned failover** jobs show a **Status** of **Successful**. You should not need to refresh your browser. This could take up to 15 minutes.



Navigate to the **SmartHotelNewRG** resource group and check that the VM, network interface, and disk resources have been created for each of the virtual machines being migrated.



Task summary

In this task you used Azure Migrate to create Azure VMs using the settings you have configured, and the data replicated from the Hyper-V machines. This migrated your on-premises VMs to Azure.

Task 7: Enable Azure Bastion

We will need to access our newly-migrated virtual machines to make some configuration changes. However, the machines do not currently have public IP addresses. Rather than add public IP addresses, we will access them using Azure Bastion.

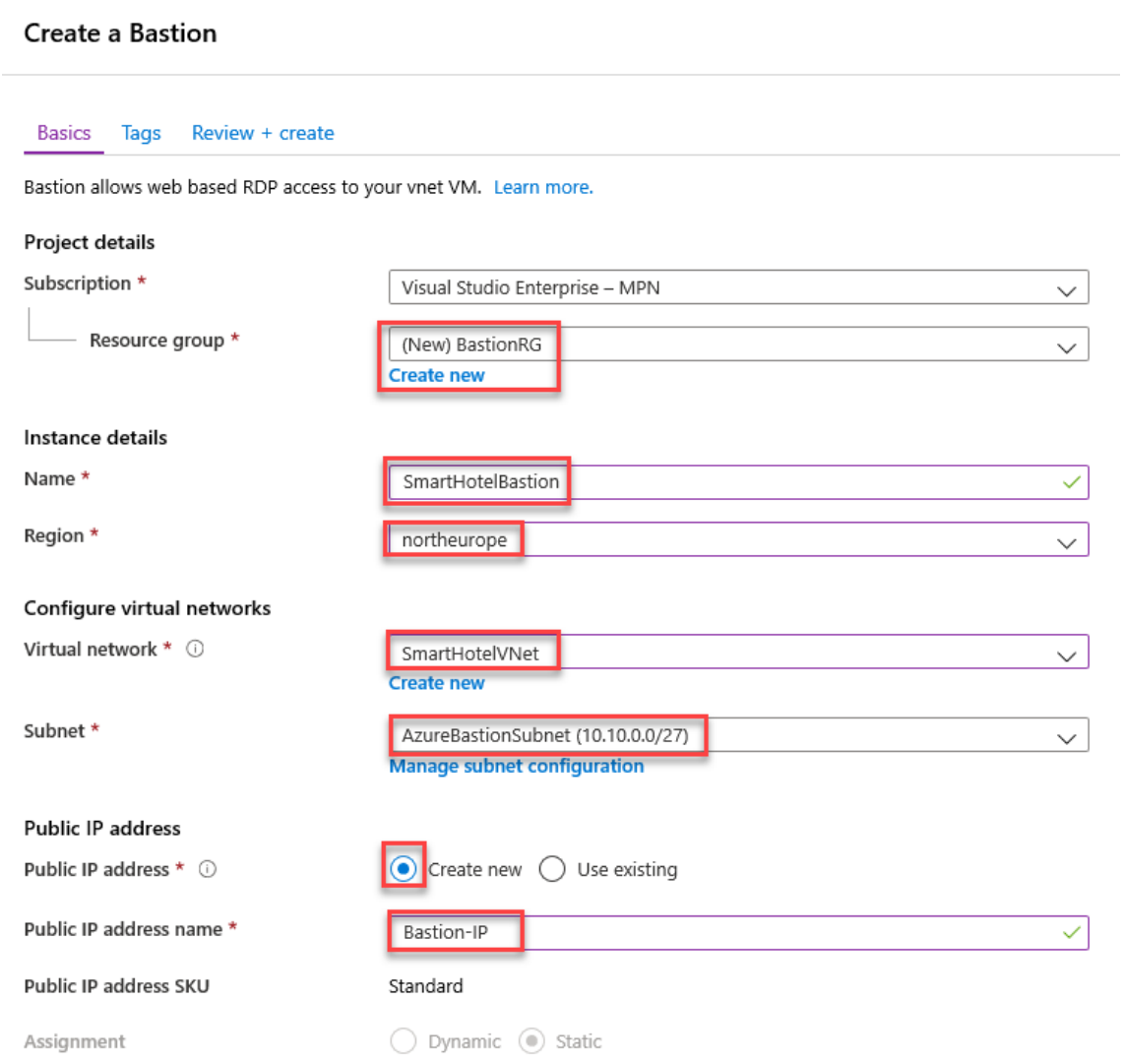
Azure Bastion requires a dedicated subnet within the same virtual network as the virtual machines. Unfortunately, our SmartHotelVNet does not have any free network space available. To address this, we will first extend the network space.

1. Navigate to the **SmartHotelVNet** virtual network, then select **Address space** under **Settings** on the left. Add the address space **10.10.0.0/24**, and **Save**.

2. Select **Subnets** under **Settings** on the left, and add a new subnet named **AzureBastionSubnet**, with address space **10.10.0.0/27**.

3. Select **+ Create a resource** in the portal's left navigation, then search for and select **Bastion**, then select **Create**.

4. Fill in the **Create a Bastion** blade as follows:
    - Subscription: **Your subscription**
    - Resource group: (Create new) **BastionRG**
    - Name: **SmartHotelBastion**
    - Region: **Same as SmartHotelVNet**
    - Virtual Network: **SmartHotelVNet**
    - Subnet: **AzureBastionSubnet**
    - Public IP address: (Create new) **Bastion-IP**



5. Select **Review + create**, then **Create**.
6. **Wait** for the Bastion to be deployed. This will take several minutes.

Task 8: Configure the database connection

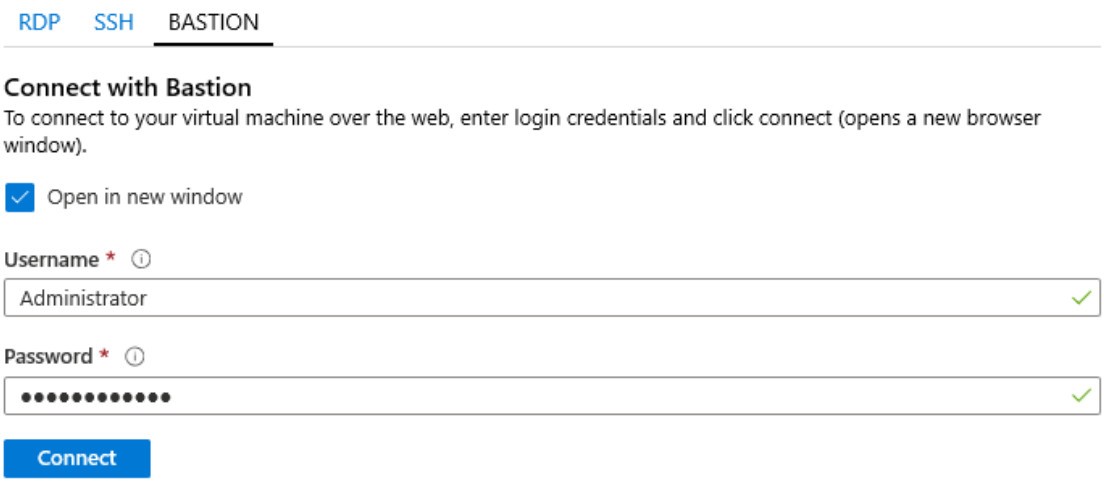
The application tier machine **smarthotelweb2** is configured to connect to the application database running on the **smarthotelsql** machine.

On the migrated VM **smarthotelweb2**, this configuration needs to be updated to use the Azure SQL Database instead.

Note: You do not need to update any configuration files on **smarthotelweb1** or the **UbuntuWAF** VMs, since the migration has preserved the private IP addresses of all virtual machines they connect with.

1. Navigate to the **smarthotelweb2** VM overview blade, and select **Connect**. Select **Bastion** and connect to the machine with the username **Administrator** and the password **demo!pass123**. When prompted, **Allow** clipboard access.

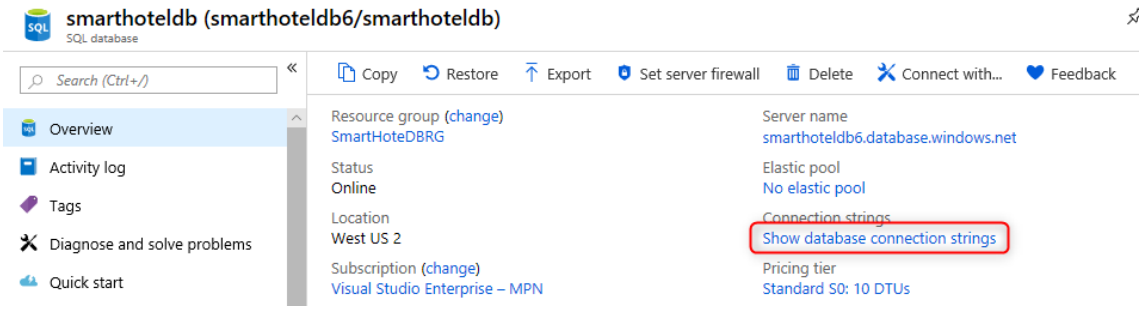
   Note: You may have to wait a few minutes and refresh to have the option to enter the credentials.



2. In the **smarthotelweb2** remote desktop session, open Windows Explorer and navigate to the **C:\inetpub\SmartHotel.Registration.Wcf** folder. Double-select the **Web.config** file and open with Notepad.

3. Update the **DefaultConnection** setting to connect to your Azure SQL Database.

   You can find the connection string for the Azure SQL Database in the Azure portal by browsing to the database, and selecting **Show database connection strings**.



Copy the **ADO.NET** connection string, and paste into the web.config file on **smarthotelweb2**, replacing the existing connection string. **Be careful not to overwrite the 'providerName' parameter which is specified after the connection string.**

Note: You may need to open the clipboard panel on the left-hand edge of the Bastion window, paste the connection string there, and then paste into the VM.

Before

```
<connectionStrings>
  <add name="DefaultConnection" connectionString="Server=tcp:192.168.0.6,1433;Initial Catalog=SmartHotel.Registration;Persi
</connectionStrings>
```

After

```
<connectionStrings>
  <add name="DefaultConnection" connectionString="Server=tcp:smarthoteldb545454.database.windows.net,1433;Initial Catalog=s
</connectionStrings>
```

Set the password in the connection string to **demo!pass123**.

```
ist Security Info=False;User ID=demouser;Password=demo!pass123;Mu
```

4. **Save** the `web.config` file and exit your Bastion remote desktop session.

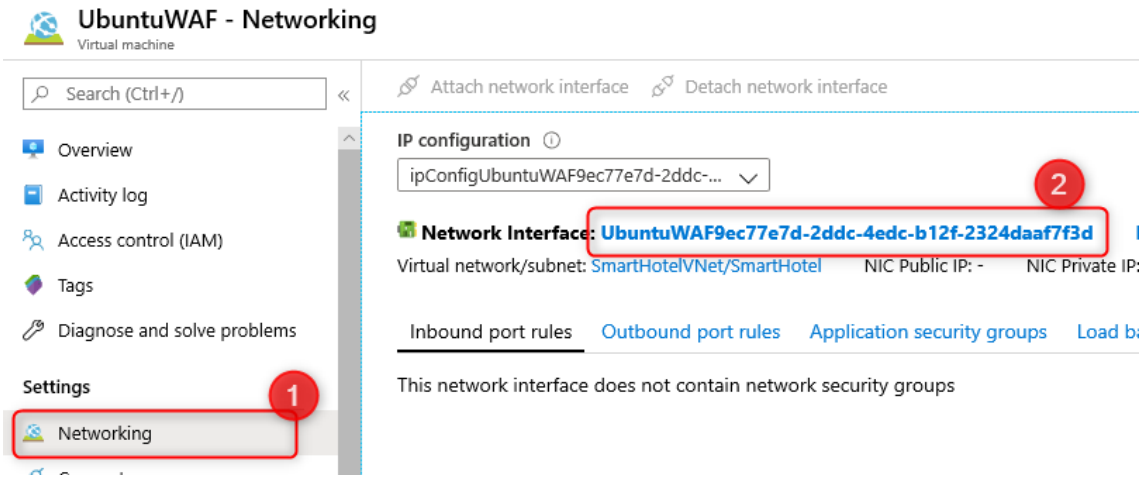
Task summary

In this task, you updated the **smarthotelweb2** configuration to connect to the Azure SQL Database.

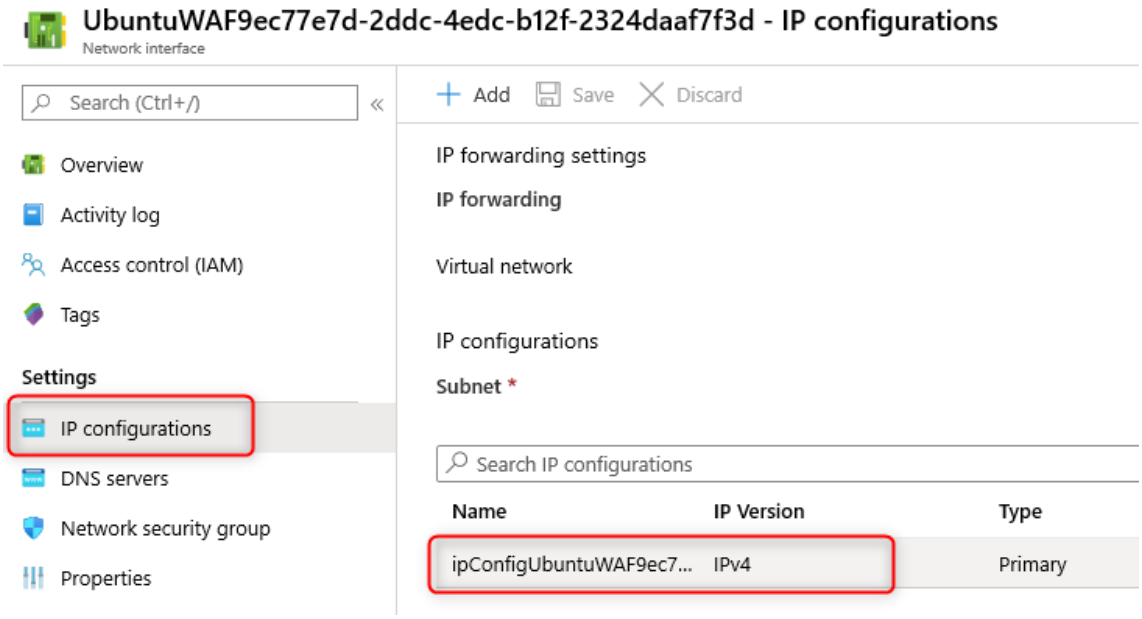
Task 9: Configure the public IP address and test the SmartHotel application

In this task, you will associate a public IP address with the UbuntuWAF VM. This will allow you to verify that the SmartHotel application is running successfully in Azure.

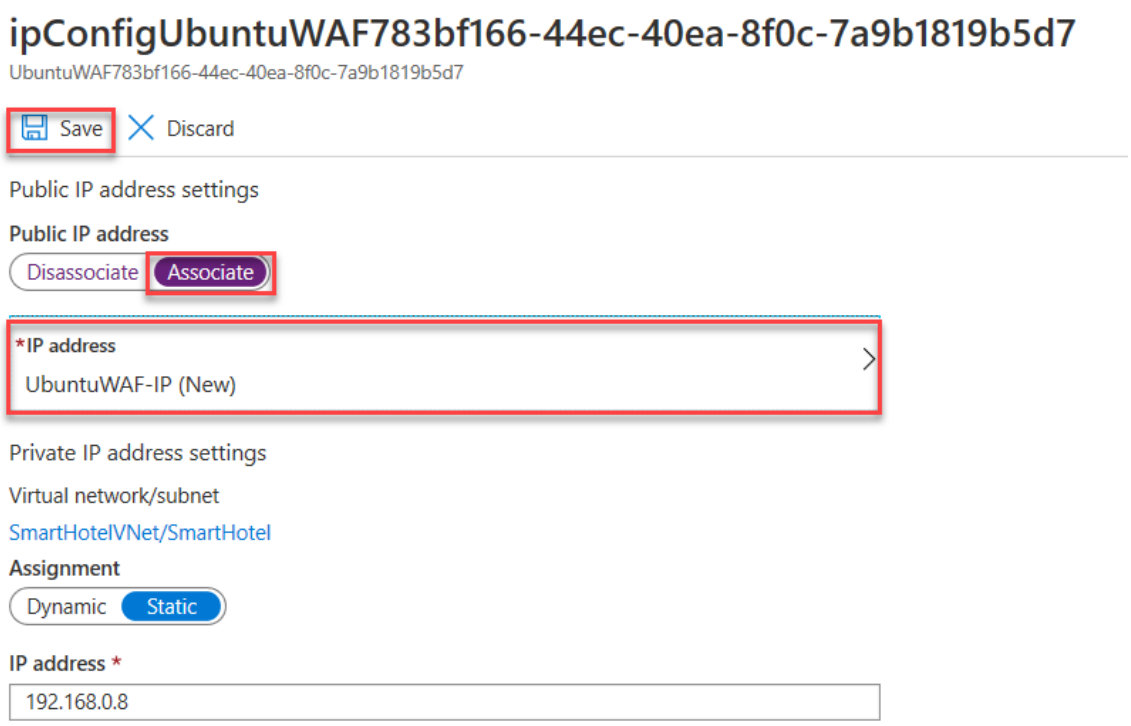
1. Navigate to the **UbuntuWAF** VM blade,
   select **Networking** under **Settings** on the left, then select the network interface (in bold text).



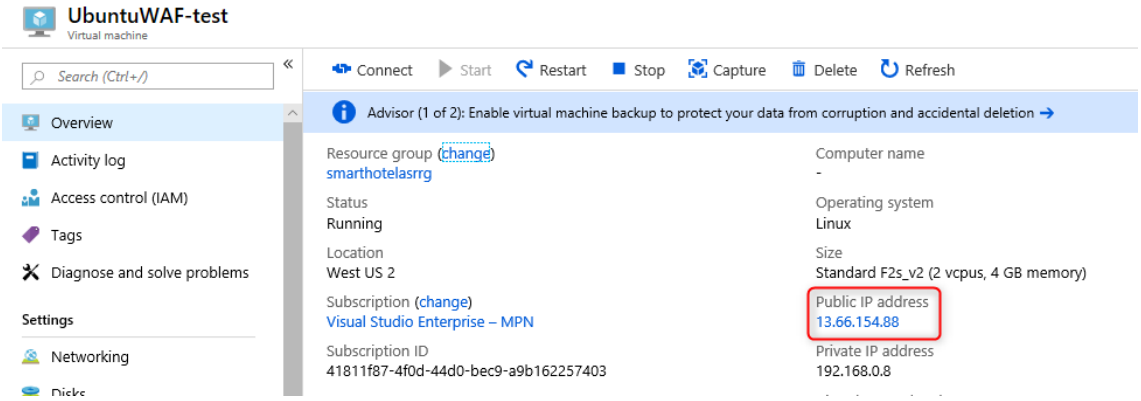
2. Select **IP configuration** under **Settings** on the left, then select the IP configuration listed.



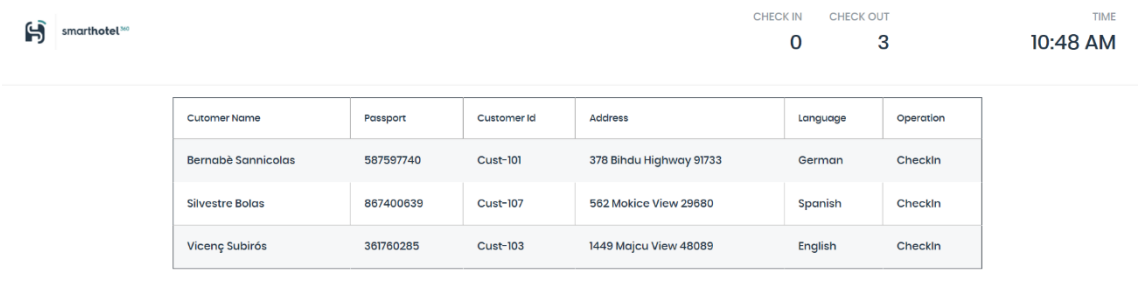
3. Set the **Public IP address settings** to **Associate**, and create a new public IP address named **UbuntuWAF-IP**. Choose a **Basic** tier IP address with **Dynamic** assignment. **Save** your changes.



4. Return to the **UbuntuWAF** VM overview blade and copy the **Public IP address** value.



5. Open a new browser tab and paste the IP address into the address bar. Verify that the SmartHotel360 application is now available in Azure.



Task summary

In this task, you assigned a public IP address to the UbuntuWAF VM and verified that the SmartHotel application is now working in Azure.

Task 10: Post-migration steps

There are a number of post-migration steps that should be completed before the migrated services is ready for production use. These include:

- Installing the Azure VM Agent
- Cleaning up migration resources
- Enabling backup and disaster recovery
- Encrypting VM disks
- Ensuring the network is properly secured
- Ensuring proper subscription governance is in place, such as role-based access control and Azure Policy
- Reviewing recommendations from Azure Advisor and Security Center

In this task you will install the Azure Virtual Machine Agent (VM Agent) on your migrated Azure VMs and clean up any migration resources. The remaining steps are common for any Azure application, not just migrations, and are therefore out of scope for this hands-on lab.

Note: The Microsoft Azure Virtual Machine Agent (VM Agent) is a secure, lightweight process that manages virtual machine (VM) interaction with the Azure Fabric Controller. The VM Agent has a primary role in enabling and executing Azure virtual machine extensions. VM Extensions enable post-deployment configuration of VM, such as installing and configuring software. VM extensions also enable recovery features such as resetting the administrative password of a VM. Without the Azure VM Agent, VM extensions cannot be used.

In this lab, you will install the VM agent on the Azure VMs after migration. Alternatively, you could instead install the agent on the VMs in Hyper-V before migration.

1. In the Azure portal, locate the **smarthotelweb1** VM and open a remote desktop session using Azure Bastion. Log in to the **Administrator** account using password **demo!pass123** (use the

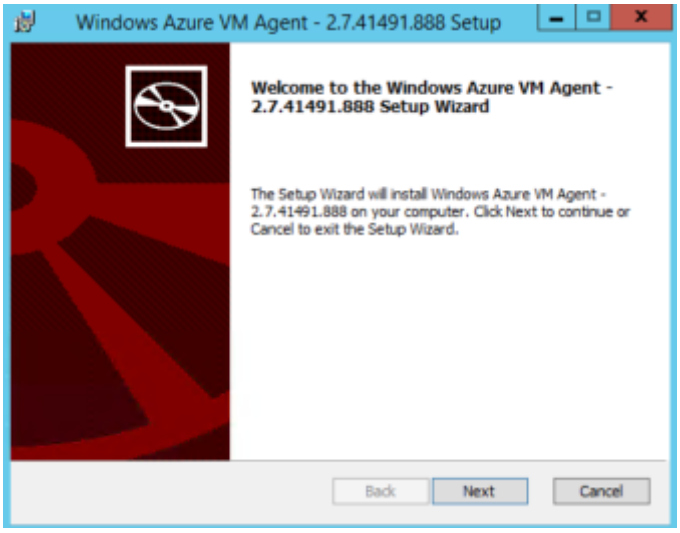
'eyeball' to check the password was entered correctly with your local keyboard mapping).

2. Open a web browser and download the VM Agent from:

   ```
   https://go.microsoft.com/fwlink/?LinkID=394789
   ```

   Note: You may need to open the clipboard panel on the left-hand edge of the Bastion window, paste the URL, and then paste into the VM.

3. After the installer has downloaded, run it. Select **Next**, Select **I accept the terms in the License Agreement**, and then **Next** again.
   Select **Finish**.



4. Close the smarthotelweb1 window. Repeat the Azure VM agent installation process on **smarthotelweb2**.

You will now install the Linux version of the Azure VM Agent on the Ubuntu VM. All Linux distributions supports by Azure have integrated the Azure VM Agent into their software repositories, making installation easy in most cases.

5. In the Azure portal, locate the **UbuntuWAF** VM and **Connect** to the VM using Azure Bastion, with the user name **demouser** and password **demo!pass123**. Since this is a Linux VM, Bastion will create an SSH session. You may need to enter the credentials again.

6. In the SSH session, enter the following command:

   ```
   sudo apt-get install walinuxagent
   ```

   When prompted, enter the password **demo!pass123**. At the *Do you want to continue?* prompt, type **Y** and press **Enter**.

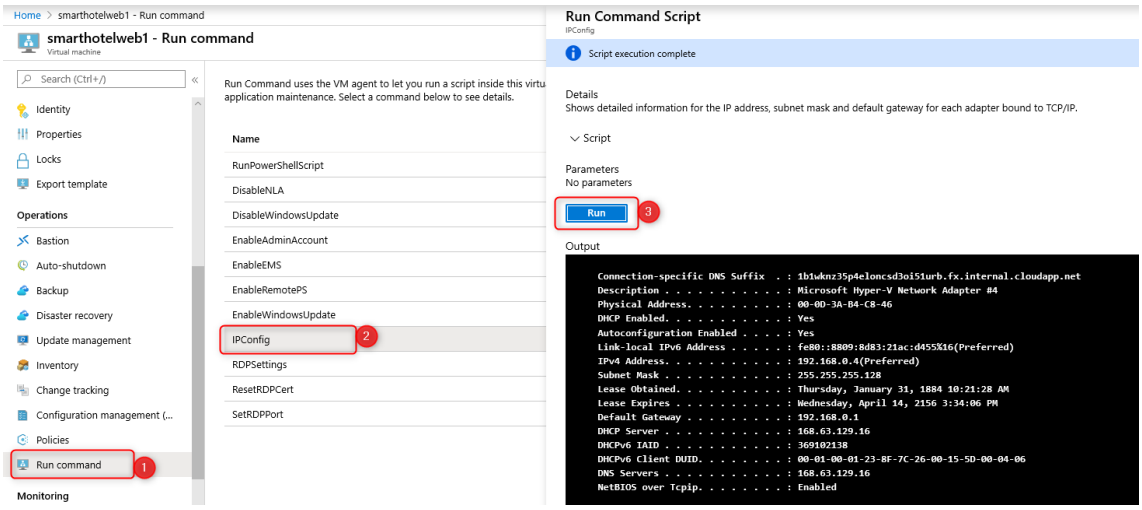
Note: You may need to open the clipboard panel on the left-hand edge of the Bastion window, paste the command, and then paste into the VM.

```
Created symlink /etc/systemd/system/cloud-init.target.wants/cloud-config.service → /lib/systemd/s
ystem/cloud-config.service.
Created symlink /etc/systemd/system/cloud-init.target.wants/cloud-final.service → /lib/systemd/sy
stem/cloud-final.service.
Created symlink /etc/systemd/system/cloud-init.target.wants/cloud-init-local.service → /lib/syste
md/system/cloud-init-local.service.
Created symlink /etc/systemd/system/cloud-init.target.wants/cloud-init.service → /lib/systemd/sys
tem/cloud-init.service.
Setting up walinuxagent (2.2.32-0ubuntu1~18.04.2) ...
update-initramfs: deferring update (trigger activated)
Created symlink /etc/systemd/system/multi-user.target.wants/walinuxagent.service → /lib/systemd/s
ystem/walinuxagent.service.
Created symlink /etc/systemd/system/multi-user.target.wants/ephemeral-disk-warning.service → /lib
/systemd/system/ephemeral-disk-warning.service.
Processing triggers for rsyslog (8.32.0-1ubuntu4) ...
Processing triggers for ureadahead (0.100.0-20) ...
Processing triggers for initramfs-tools (0.130ubuntu3.7) ...
update-initramfs: Generating /boot/initrd.img-4.18.0-17-generic
demouser@UbuntuWAF:~$
```

7. Wait for the installer to finish, then close the terminal window and the Ubuntu VM window.

To demonstrate that the VM Agent is installed, we will now execute the 'Run command' feature from the Azure portal. For more information on the VM Agent, see Windows VM Agent and Linux VM Agent.

8. Navigate to the **smarthotelweb1** blade. Under **Operations**, select **Run command**, followed by **IPConfig**, followed by **Run**. After a few seconds, you should see the output of the IPConfig command.



9. As a final step, you will now clean up the resources that were created to support the migration and are no longer needed. These include the Azure Migrate project, the Recovery Service Vault (Azure Site Recovery resource) used by Azure Migrate: Server Migration, and the Database

Migration Service instance. Also included are various secondary resources such as the Log Analytics workspace used by the Dependency Visualization, the storage account used by Azure Migrate: Server Migration, and a Key Vault instance.

Because all of these temporary resources have been deployed to a separate **AzureMigrateRG** resource group, deleting them is as simple as deleting the resource group. Simply navigate to the resource group blade in the Azure portal, select **Delete resource group** and complete the confirmation prompts.

Task summary

In this task you installed the Azure Virtual Machine Agent (VM Agent) on your migrated VMs. You also cleaned up the temporary resources created during the migration process.

Exercise summary

In this exercise you migrated the web tier and application tiers of the application from on-premises to Azure using Azure Migrate: Server Migration. Having migrated the virtual machines, you reconfigured the application tier to use the migrated application database hosted in Azure SQL Database, and verified that the migrated application is working end-to-end. You also installed the VM Agent on the migrated virtual machines, and cleaned up migration resources.

4.2 Destrave a sua 4ª medalha

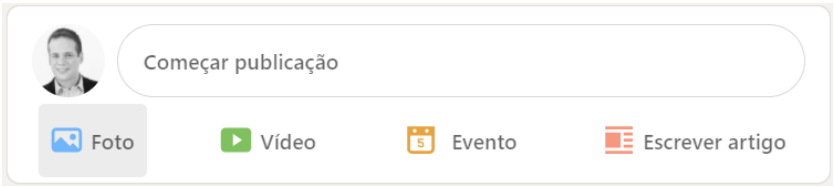
Incrível, você arrasou chegando até aqui!!! Acabou de Migrar seus primeiros Servidores para a Nuvem!!! Estou muito feliz com essa vitória e temos uma nova medalha para celebrar no seu Linkedin e demonstrar para toda a comunidade a sua nova conquista.

1. Em uma nova aba, copie e cole o link da medalha:

   https://zecanunes.blob.core.windows.net/apostila/Migrating/medalha04.png

2. Clique com o botão direito do mouse sobre a imagem e Salve no seu computador para usar no próximo passo

3. Acesse seu Linkedin e na Opção de “**Começar publicação**” clique em **Foto**



4. Selecione a imagem da sua medalha e pressione **Concluído**
5. Agora no campo “**No que você está pensando**” digite o seguinte texto:

```
Estou participando do Workshop #ExpedicaoCloud e hoje eu Migrei
Servidores para a Nuvem com a ajuda do Zeca Nunes ☁ Participe comigo
através do link https://zecanunes.com/inscreva #BoraPraNuvem
```

6. Clique em **Publicar**

Aula 5 – Apresentando o Estudo de Caso

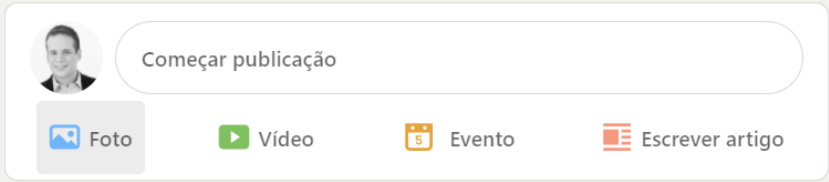
5.1 Fechamento do Estudo de Caso na LIVE

Acompanhe em: https://youtu.be/IMKCemy23uo

5.2 Destrave a sua 5ª medalha

Enfim chegou a última e mais esperada medalha, você conseguiu, meus parabéns! Acabou de entregar sua Primeira Migração de um Ambiente inteiro para a Nuvem, realmente esse é um trabalho de muita responsabilidade, mas agora você está pronto para migrar muitos outros!!! Estou muito feliz com sua conquista e temos agora a última medalha para celebrar no seu Linkedin e demonstrar para toda a comunidade a sua definitiva conquista.

1. Em uma nova aba, copie e cole o link da medalha:
   https://zecanunes.blob.core.windows.net/apostila/Migrating/medalha05.png
2. Clique com o botão direito do mouse sobre a imagem e Salve no seu computador para usar no próximo passo
3. Acesse seu Linkedin e na Opção de "**Começar publicação**" clique em **Foto**



4. Selecione a imagem da sua medalha e pressione **Concluído**
5. Agora no campo "**No que você está pensando**" digite o seguinte texto:

```
Estou participando do Workshop #ExpedicaoCloud e hoje concluí a Minha Migração de Ambientes para a Nuvem com a ajuda do Zeca Nunes ☁
Participe comigo através do link https://zecanunes.com/inscreva
#BoraPraNuvem
```

6. Clique em **Publicar**

5.3 Apagando Tudo

Duration: 10 minutes

Task 1: Clean OnPremises Resources

You should complete all of these steps *after* attending the Hands-on lab. Failure to delete the resources created during the lab will result in continued billing.

1. Delete the **SmartHotelRG** resource group containing the SmartHotelHost.

2. Delete the **AzureMigrateRG** resource group containing the Azure Migrate resources (if not done already at the end of Exercise 3).

Task 2: Clean Cloud Resources

1. Delete the **SmartHotelDBRG** resource group containing the Azure SQL Database.

2. Delete the **BastionRG** resource group containing the Azure Bastion.

3. Delete the **SmartHotelRGNew** resource group containing the migrated VMs and related infrastructure resources.

You should follow all steps provided *after* attending the Hands-on lab.