SAP HANA ON AZURE (LARGE INSTANCES) SETUP

End to End Setup for SAP HANA on Azure Large Instances

Abstract

Learn the various steps required for the HANA large instance setup.

Sachin Ghorpade

Summary

This document helps you to understand the various steps involved for the SAP HANA on Azure Large Instances provisioning.

Disclaimer: This document is a "how to" version of the information posted on https://docs.microsoft.com/en-us/azure/virtual-machines/workloads/sap/hana-overview-architecture

This does NOT replace any of the SAP HANA on Azure Large Instances or SAP documentations. Rather it complements them. The intent of this blog is to make "How to?" part easy for the customers.

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End to End Setup for SAP HANA on Azure Large Instances

So, you are ready for "SAP HANA on Azure Large Instances" deployment, Great! And, you want to know the step by step process with screen shots to start the work? Then you are reading the right article.

This blog illustrates the various steps required for the SAP HANA on Azure Large Instances (or in short HANA Large Instances) setup.

Here are the high-level steps:

1. Setup the vNet
2. Provide the details to Microsoft for provisioning the HANA Large Instances
3. Connect your Azure vNet to HANA Large Instances
4. Test the connectivity from Azure VM to HANA Large Instances
5. Install the HANA on HANA Large Instances server

The following are considered completed from the customer's side, before you begin with the Step1.

- You have read the "Overview and Architecture" documentation
- SAP Sizing has been completed
- SAP Large Instance contract has been arranged (Microsoft account team arrange this)
- Operating system version have been validated to support your planned HANA version
- Operating system subscription/license have been obtained (You will need to activate operating system after the provisioning is complete by Microsoft team)
- SAP HANA licensing to install the HANA has been put in place

Definitions

Let's understand the various terms used in this documentation.

- SAP HANA on Azure Large Instances or in short HANA Large Instances: Official name for the offer in Azure to run HANA instances in on SAP HANA TDI certified hardware that is deployed in Large Instance stamps in different Azure regions. The related term HANA Large Instances is short for SAP HANA on Azure (Large Instances)
- VNet: Virtual Network. Your own network in the Azure
- P2P range: Point to Point range. Express route P2P Connections that connect Azure VNet to HANA Large Instances
- Address space: The virtual network address range
- Gateway: Azure Gateway

1. Setup the vNet

The very first step is to setup the vNet in the Azure. You will need to provide the following information to the Microsoft to setup the HANA Large Instances server and the Express Route circuit from Azure vNet to the HANA Large Instance server.

- vNet Address space
- P2P Range
- ServerIP Address Pool

Note	vNet address space, P2P range, and ServerIP address pool MUST NOT overlap with each other and/or with your other connected networks like on-prem or other Azure networks.

1.1 Pre-requisite

You have an Azure subscription. Please get one from Azure site https://portal.azure.com/, if needed.

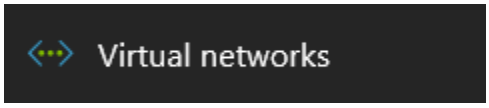
1.2 Create a Virtual Network

This section helps you to setup the vNet in Azure. We will use the following sample ranges to setup the vNet, Subnet and the Gateway.

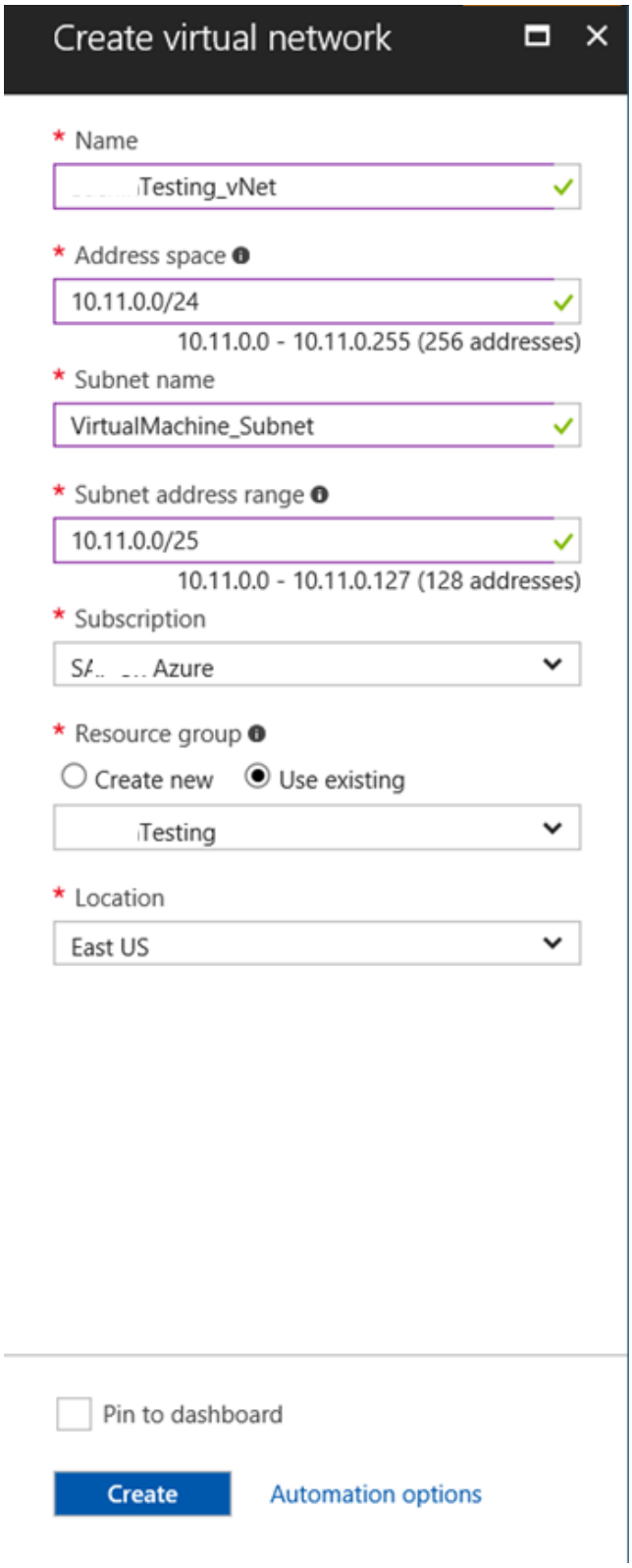
vNet Name: Testing_vNet
Address Space: 10.11.0.0/24, Range will be 10.11.0.0-10.11.0.255 (256 IP addresses)
Virtual Machine Subnet: 10.11.0.0/25, Range will be 10.11.0.0 - 10.11.0.127 (128 IPs for VMs)
Gateway Subnet: 10.11.0.128/27, Range will be10.11.0.128 - 10.11.0.159 (32 IPs for Gateway)

Note	If you want to calculate IP ranges, use any online CIDR calculators like http://www.ipaddressguide.com/cidr

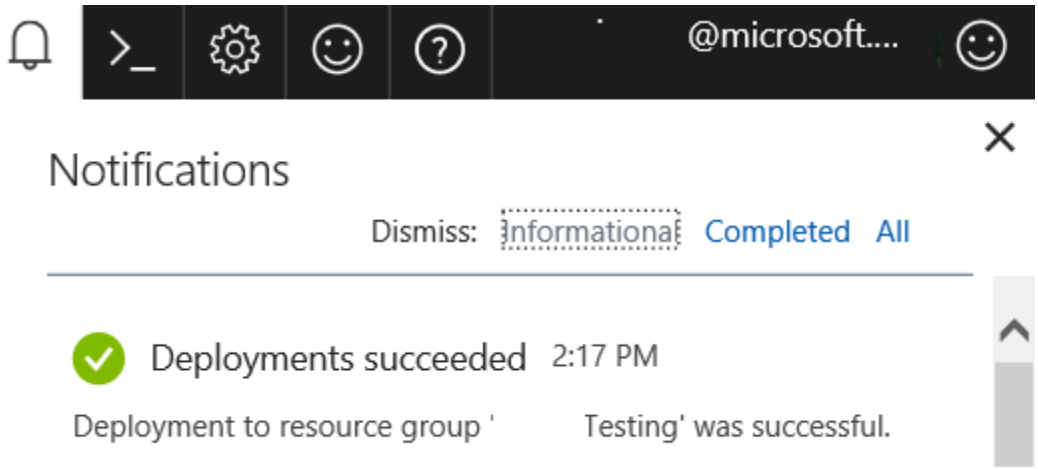
1. Login to Azure portal https://portal.azure.com/
2. From the services bar, click “Virtual Networks”



3. Click “Add”
4. Enter the Name, Address Space, SubnetName, Subnet address range, Subscription, Resource Groups, and location



5. Click Create
6. It takes about 30 seconds to create a vNet. You can see the status from “Notification” area



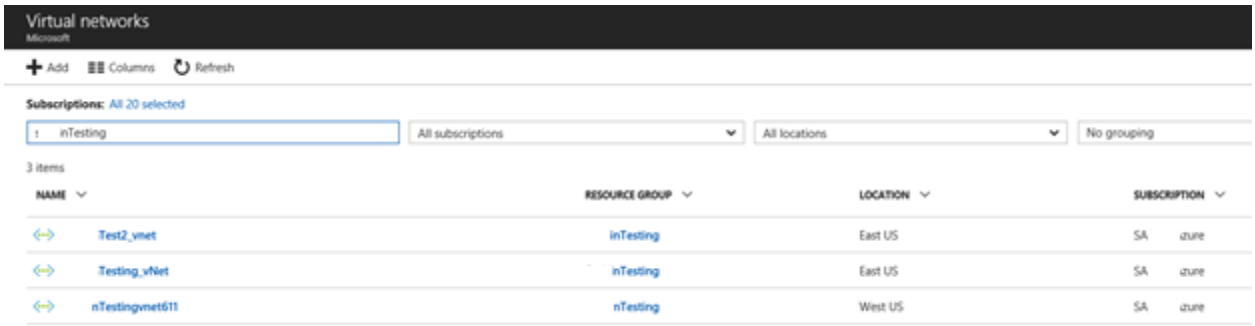
7. Now you have Virtual Network (vNet) created successfully

After the vNet is created, you can proceed to setup the GatewaySubnet.

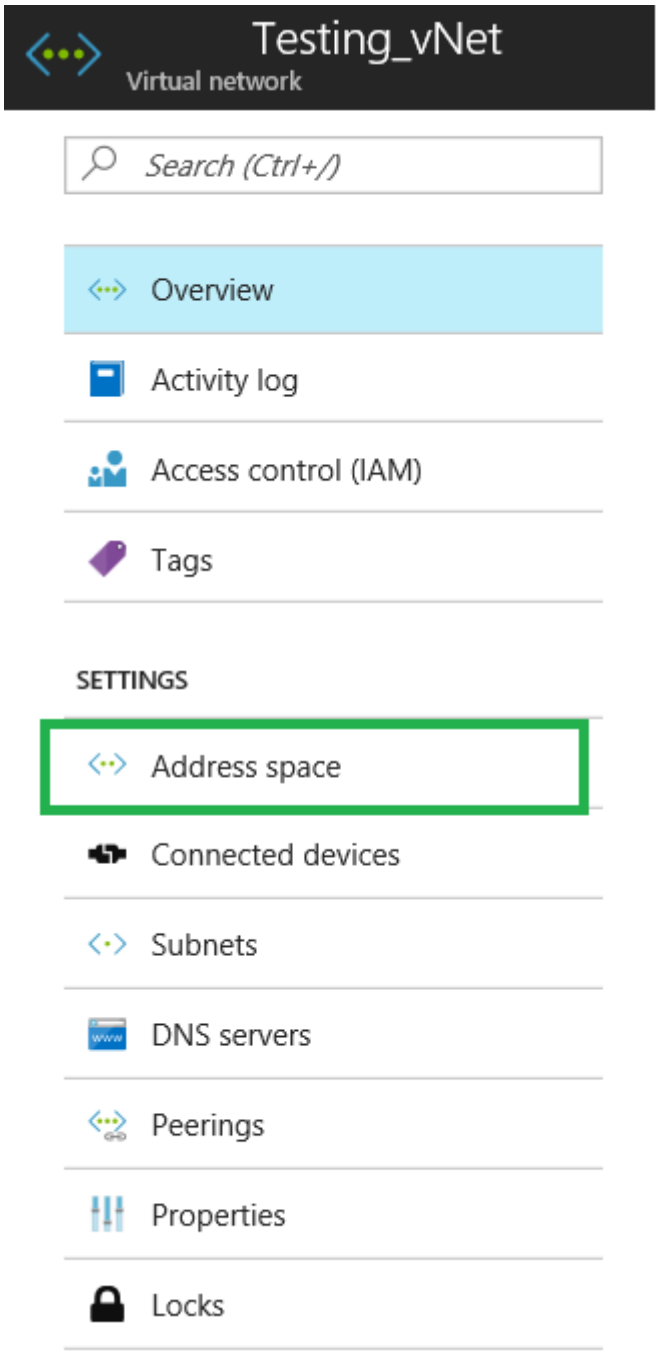
1.3 GatewaySubnet creation

Let's create a GatewaySubnet inside the Virtual Network.

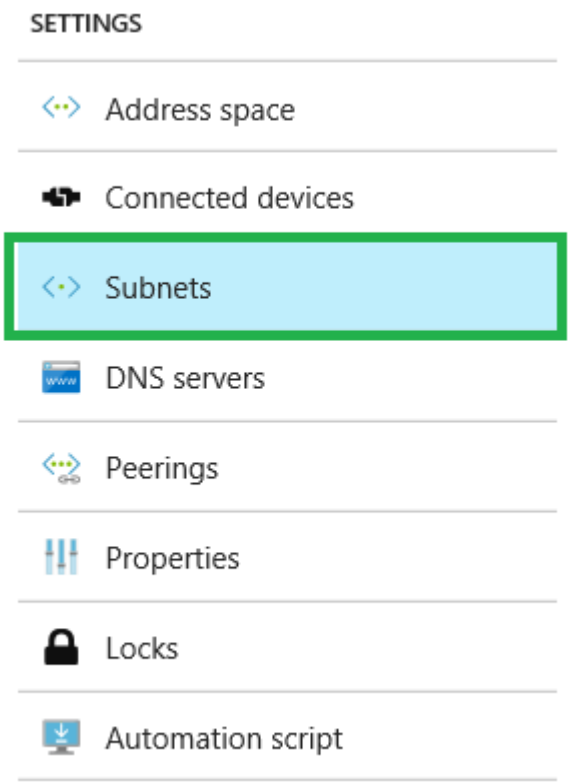
1. Go to "Virtual networks" and search for newly create virtual network

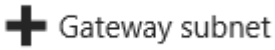


2. Click the name of the virtual network (In this example "Testing_vNet")
3. Click "Address space" under the "Settings"


Testing_vNet
Virtual network
Search (Ctrl+/)
Overview
Activity log
Access control (IAM)
Tags
SETTINGS
Address space
Connected devices
Subnets
DNS servers
Peerings
Properties
Locks

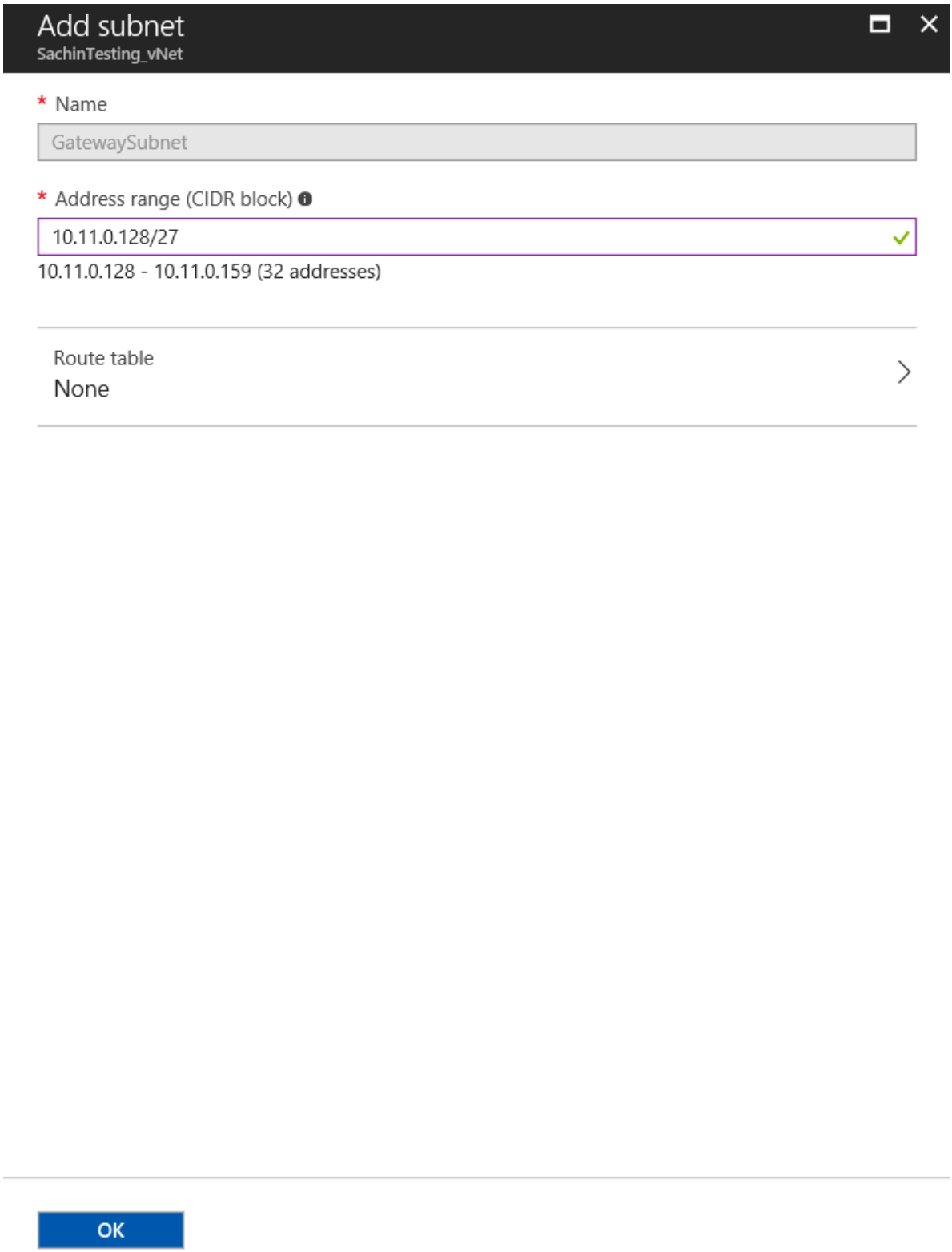
4. Validate this is the address space you wanted during setup
5. Now, let's create gateway subnet
6. Click on "Subnets"



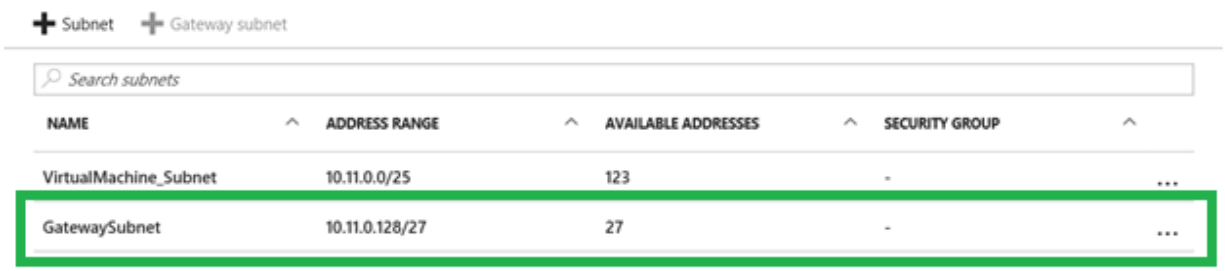


7. Select "Gateway subnet"
8. Enter the address range for Gateway subnet (10.11.0.128/27) and click OK

Note	Name of the GatewaySubnet is grayed out and you can NOT change it



9. You will see “GatewaySubnet” Created as below.



10. Once the Gateway subnet is created, we are ready to create a Gateway

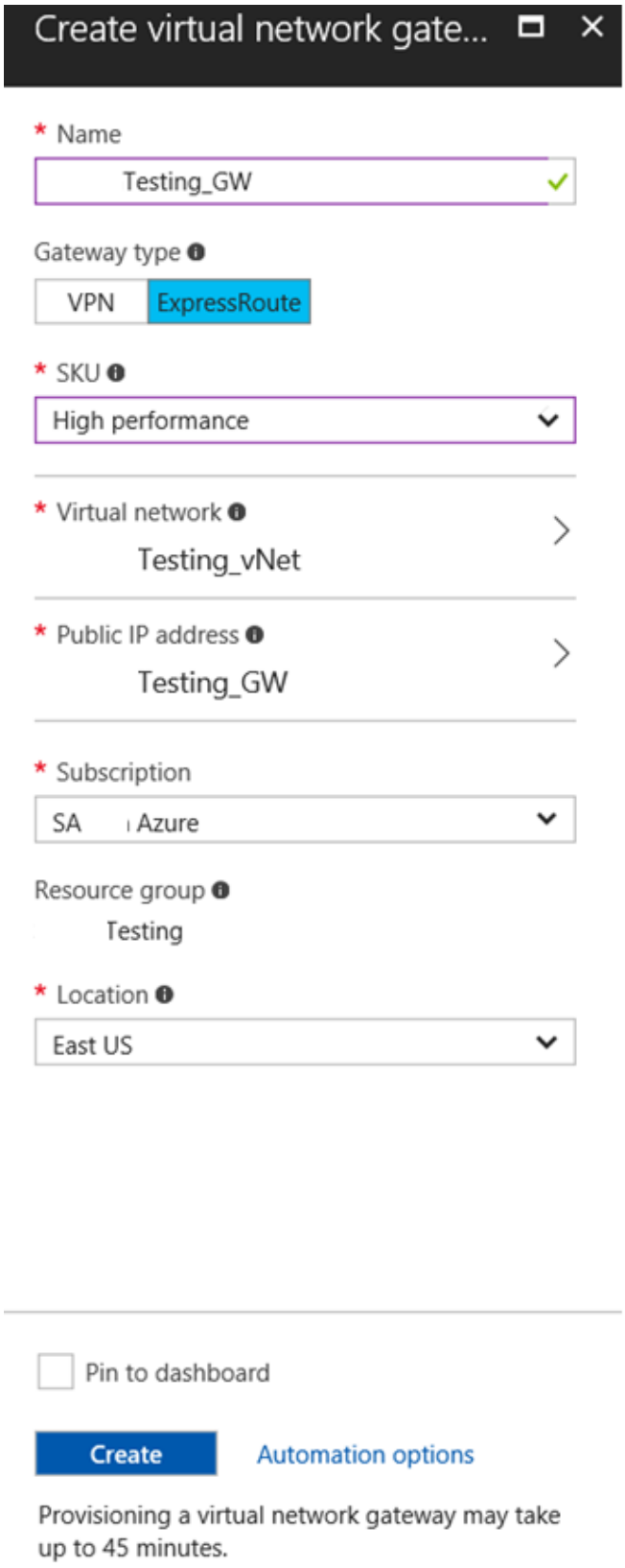
1.4 Gateway creation

1. From the services bar, please select "Virtual network gateway". If you don't find it, chose "More services" or search for it.

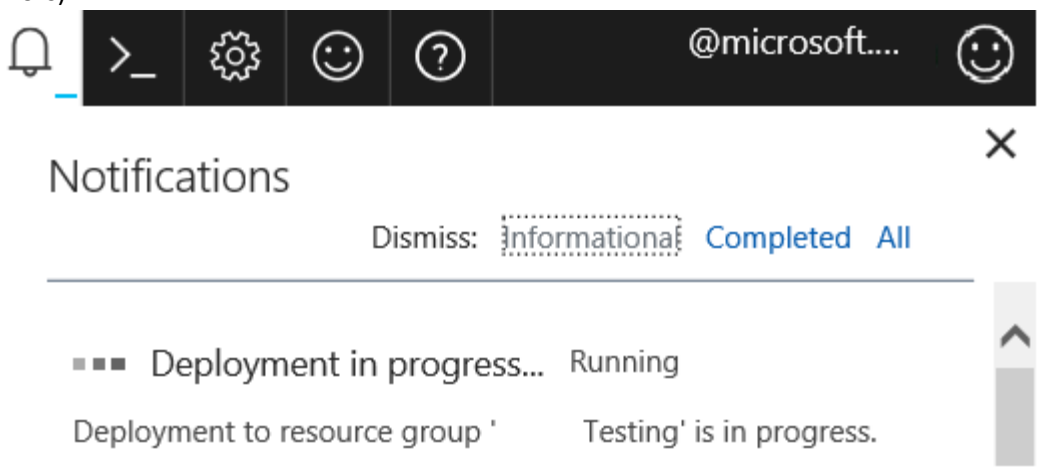
2. Create a new Gateway by clicking "Add" button

    a. Gateway Type: ExpressRoute
    b. SKU: High performance or Ultra performance

Note	Only High performance and Ultra performance SKUs are supported for HANA Large instances


Create virtual network gate...
* Name
Testing_GW
Gateway type
VPN
ExpressRoute
* SKU
High performance
* Virtual network
Testing_vNet
* Public IP address
Testing_GW
* Subscription
SA Azure
Resource group
Testing
* Location
East US
Pin to dashboard
Create
Automation options
Provisioning a virtual network gateway may take up to 45 minutes.

3. It may take up to 45 minutes to create gateway. You can check status from "Notification" area. You don't need to be on the page to monitor it. it will run in background and send the notification in "Notification" area when ready (or have any errors)



4. After the gateway is created, you are ready to provide the information to Microsoft team to provision the Express Route Circuit and the HANA Large Instance server.

2. Provide the details to Microsoft for provisioning HANA Large Instances

Once you are done with above step "Setup the vNet", please contact your Microsoft Account executive or Technical Account Manager (TAM) to reach out to Microsoft team to receive an onboarding form. In the onboarding form, you need to provide the following information.

- **vNet Address space**
  This you have setup in the step above "Setup the vNet". In this example, the value is 10.11.0.0/24
- **P2P Range**
  This range MUST be /29 subnet. Use 10.12.0.0/29 for example.
- **ServerIP Address Pool**
  The recommended range is /24. You can use 10.13.0.0/24 for example.
- **Server IP address**
  Please pick an IP from "ServerIP Address Pool". However, first 30 IP addresses are reserved for Microsoft infra configuration. So, in this example, your first IP for blade can be 10.13.0.30
- **Region**
  Which region you need HANA Large instances to be deployed. Example North America GA, US East
- **SKU**

You have various options for SKUs, please select one based on your requirements and per the enterprise agreement with Microsoft. Example: S192

- **HANA SID**
  HANA System Identifier you plan to use so storage mount points can be configured accordingly during the onboarding. Example: HLM
- **UID**
  Sidadm user ID. Example: 1005
- **GID**
  Sapsys group ID. Example 1001

Note	vNet address space, P2P range or ServerIP address pool MUST NOT overlap with each other and/or with your other connected networks like on-prem or other Azure networks.

3. Connect your Azure vNet to HANA Large Instances

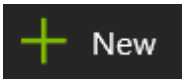
Once Microsoft team have completed the onboarding, they will provide you following information back to you.

- Circuit ID
- Authorization Key
- Root credentials
- IP address of the server (this is the same IP which you had provided in the onboarding form)
- Storage layout (Volume Size and the mount points created)

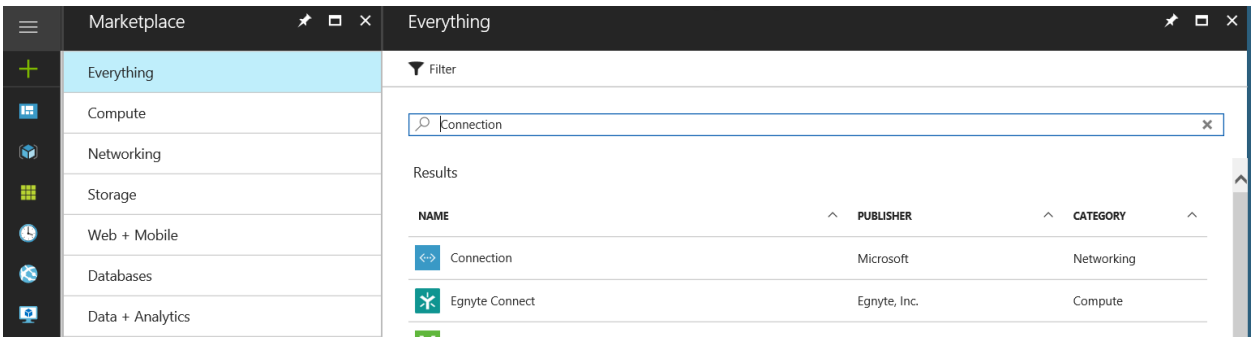
To connect the Azure vNet to HANA Large Instances, you will need Circuit ID and Authorization Key so you can connect them using Express-Route.

You can use Azure portal or PowerShell to connect the vNet for Large instance ER. We are going to use Portal in this blog. If you prefer PowerShell then the script to use is located here .

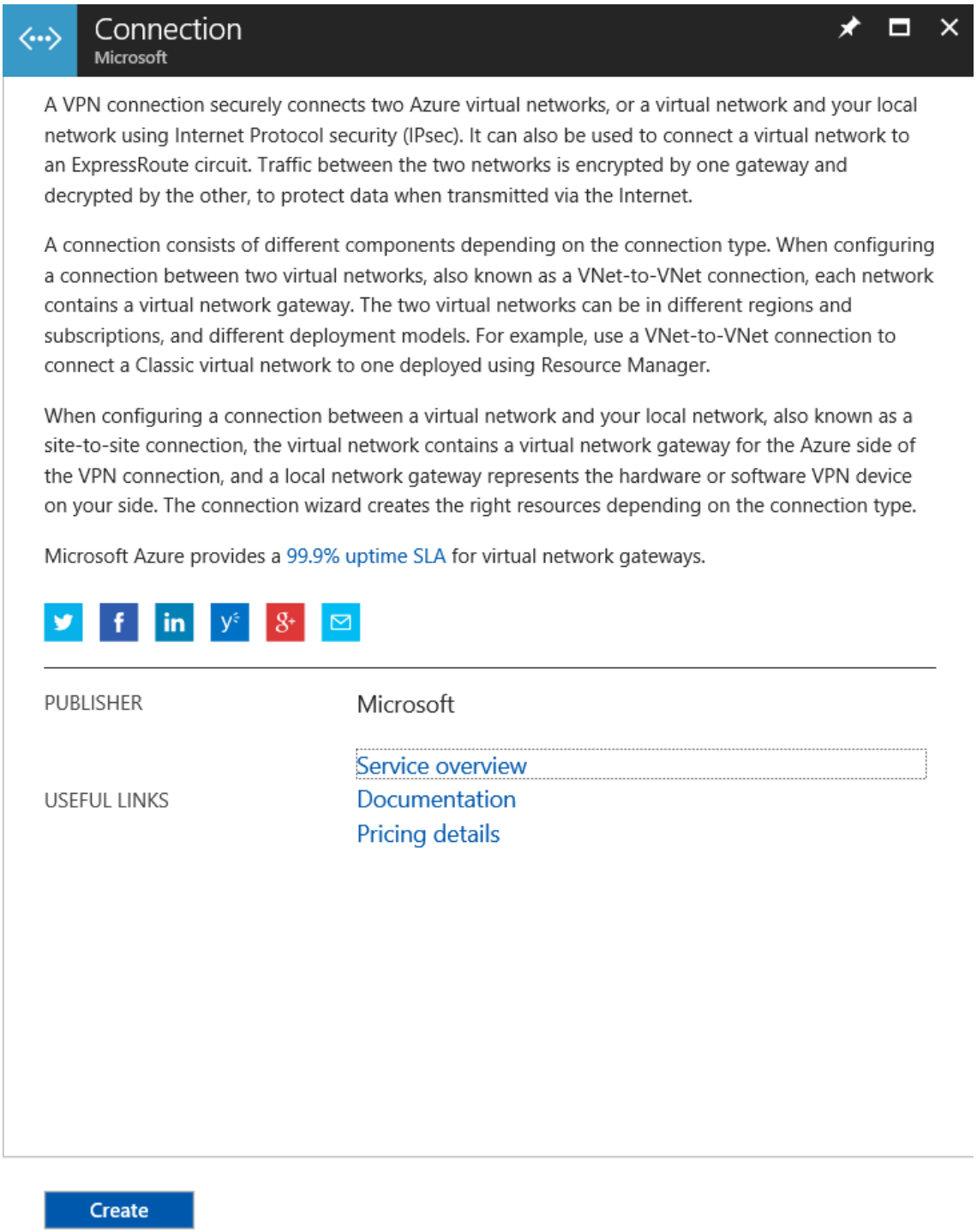
1. From the Services bar, click "Connection"

   a. If you don't find "Connection" please click the "+New" button 

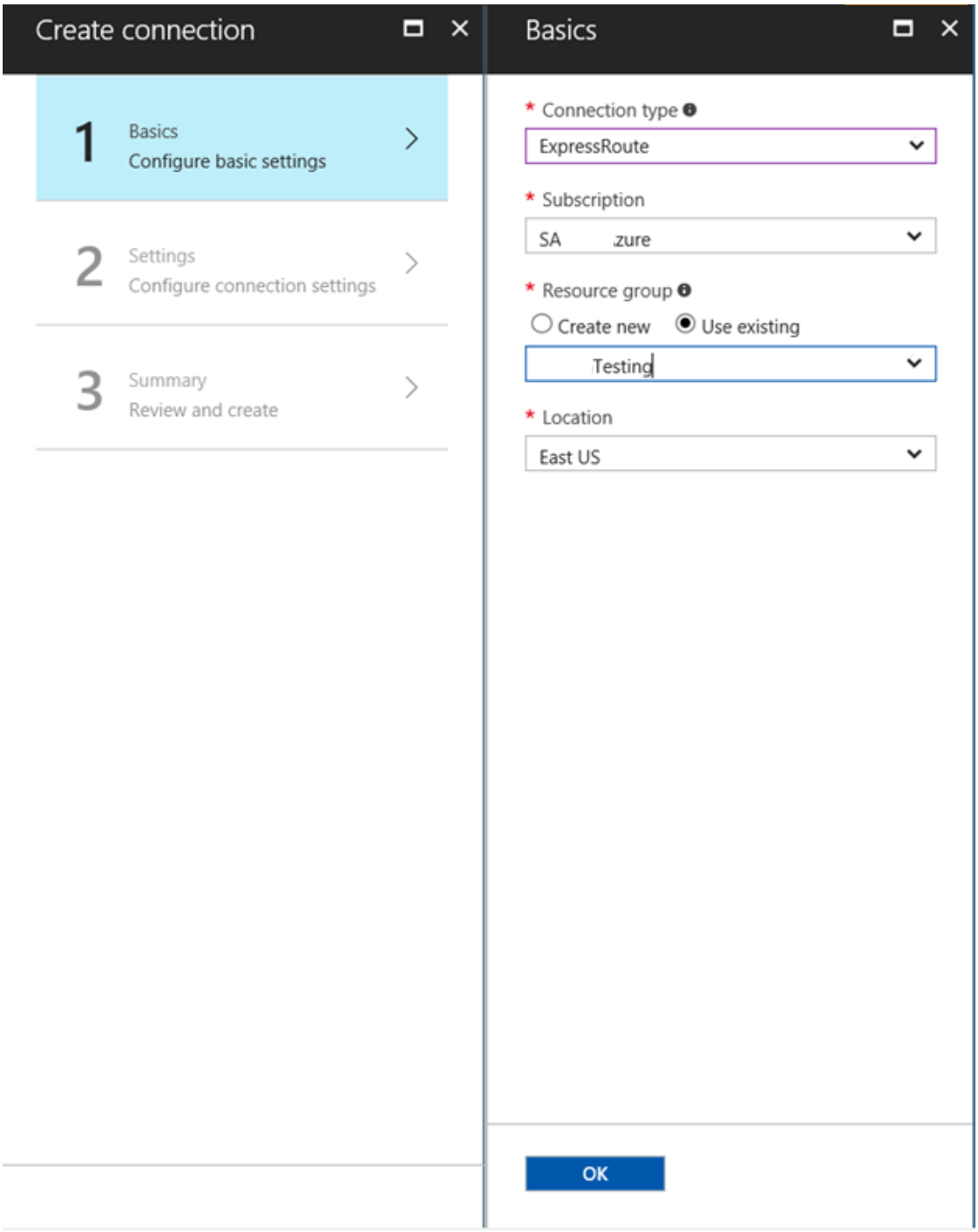
   and search for connection and click "Connection"



2. Click “Create” button to create a new connection



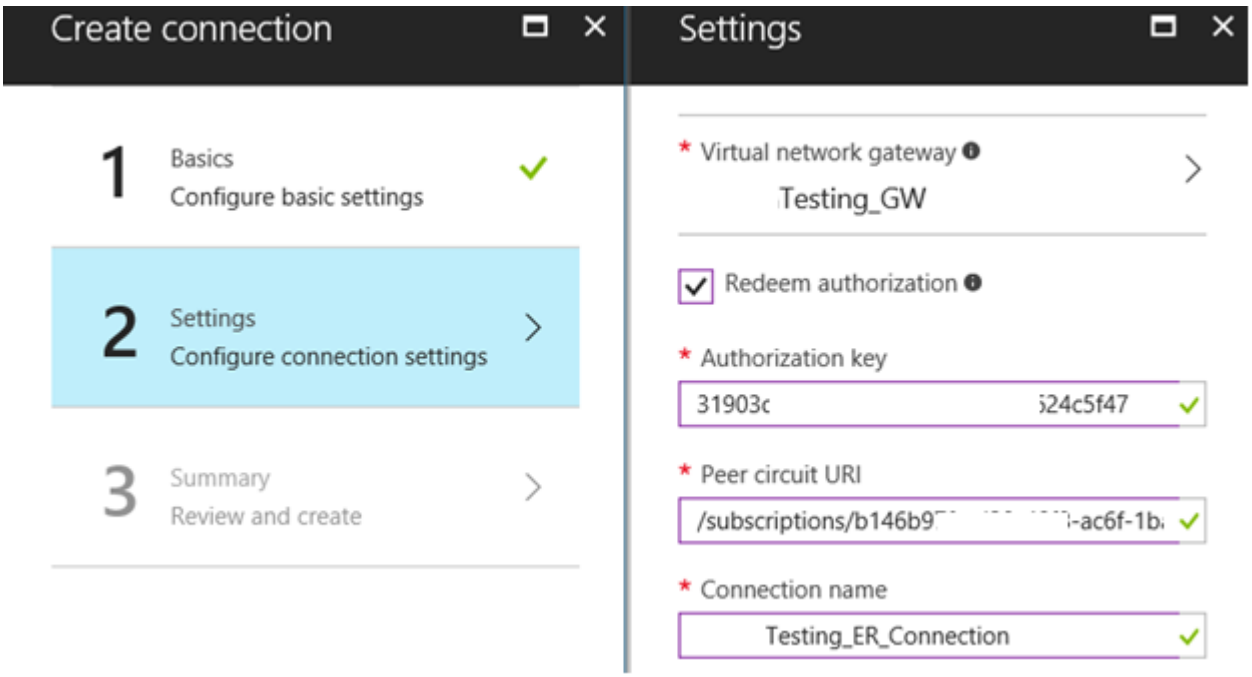
3. Fill out the Basics information. Ensure to select Connection type as “ExpressRoute”



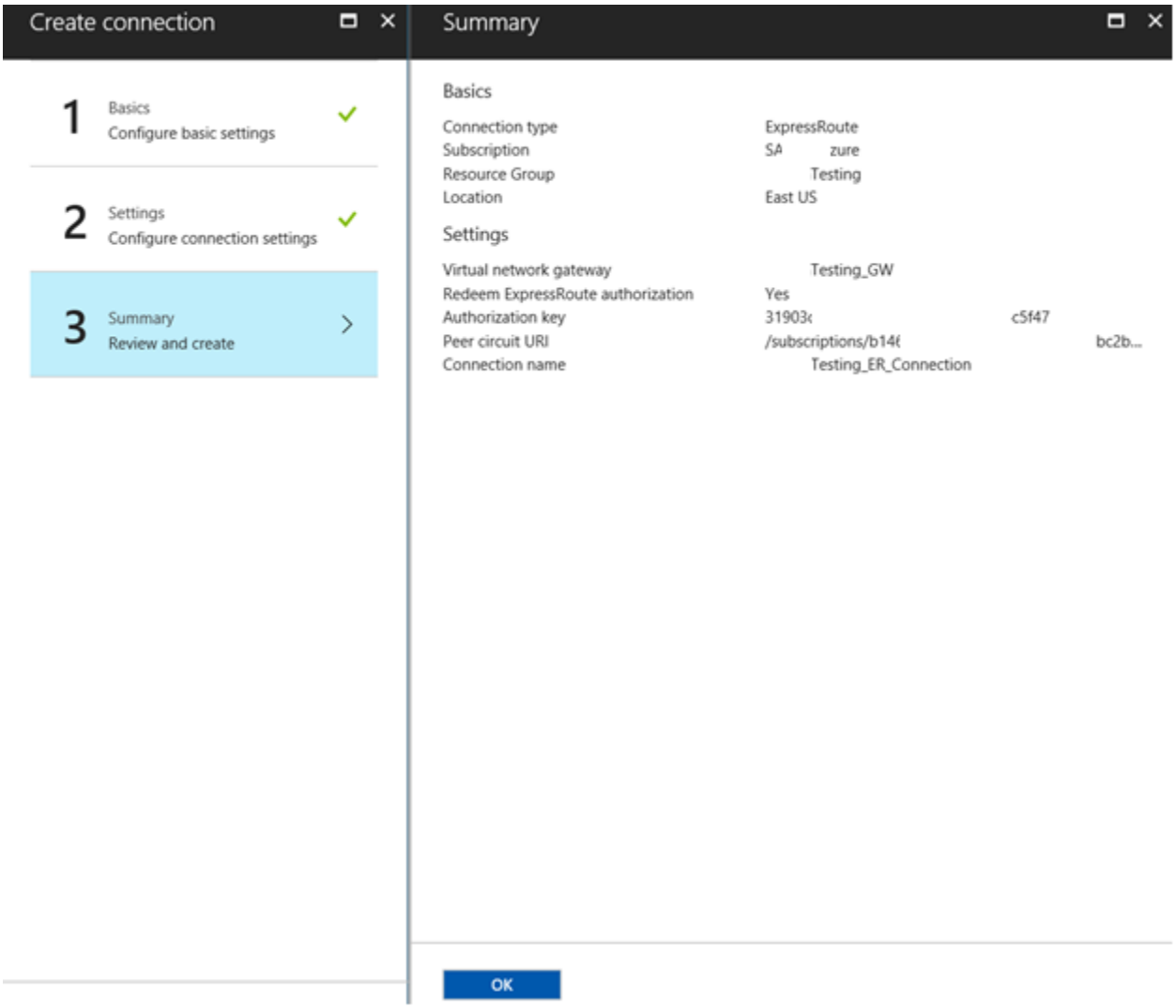
4. From Settings
    a. Select the Gateway you had created (In our example “Testing_GW”)
    b. Select Redeem authorization

c. Peer circuit URI should be in format and will be provided by Microsoft as part of Large Instance onboarding "/subscriptions/your_subscription_id/resourceGroups/resource_group_name/providers/Microsoft.Network/expressRouteCircuits/ExpressRoute_circuit_name"

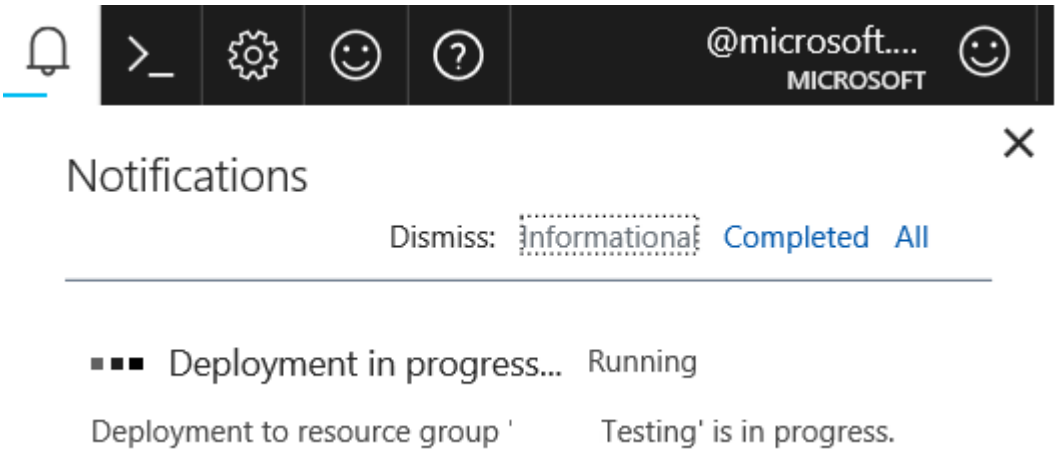
Note	You don't find the "Redeem authorization" option if you try to create connection directly from the Gateway.



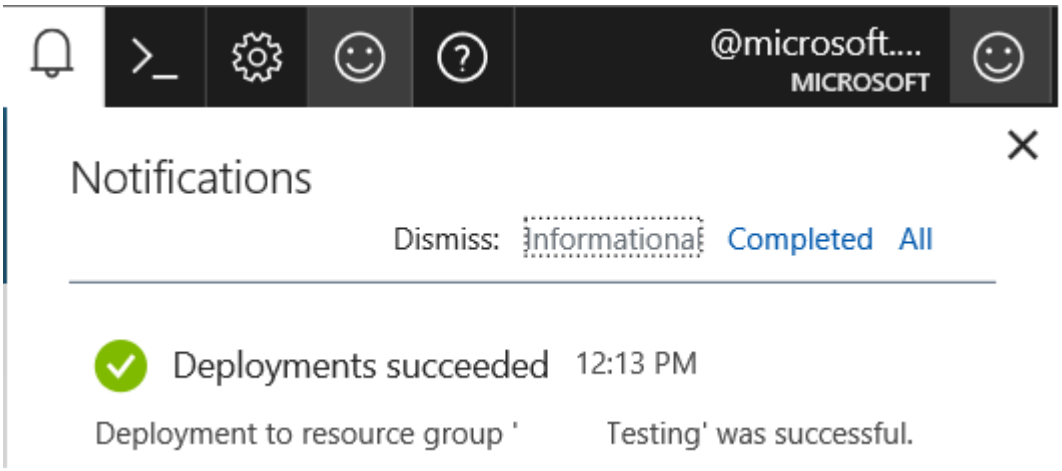
5. Review the details and click OK



6. You can check the status under the "Notifications"

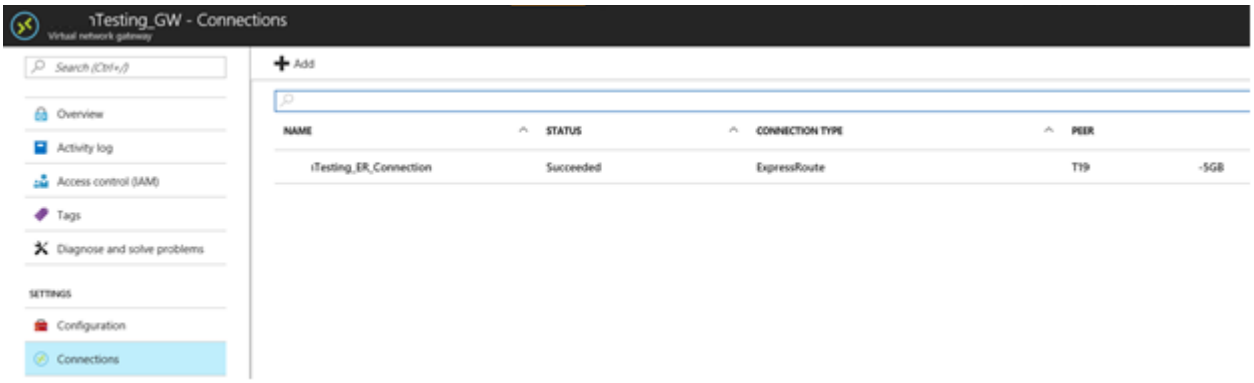


7. It takes few minutes to create a connection



8. After the connection is setup, you should be able to see the connection status in Gateway (Under the "Connection" option)

Note	Ensure that connection status is "Succeeded"



4. Test the connectivity from Azure VM to HANA Large Instance

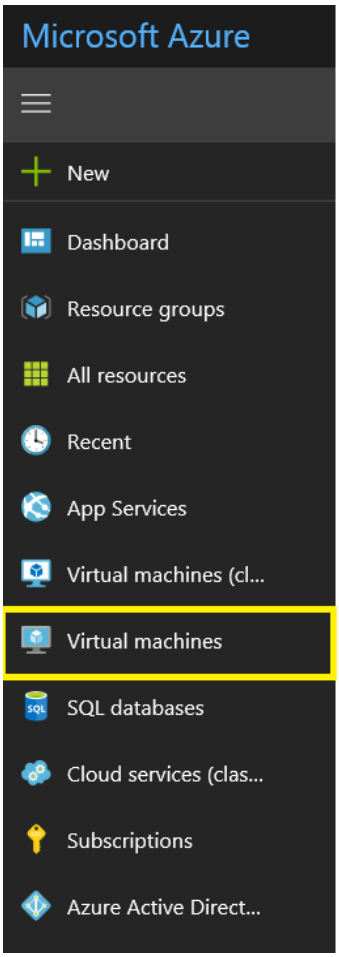
Since now you have large instance express route connection setup from the gateway, you are good to access your large instance server.

To access your large instance server, you need to setup a VM (let's call a jump box) in Azure under the same vNet from where you setup the ER connectivity.

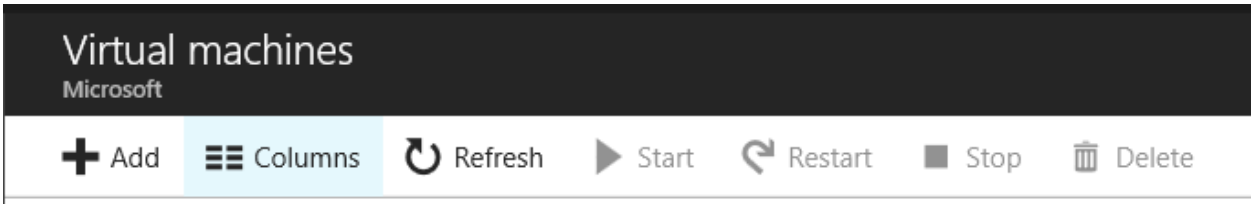
4.1 Setup a VM

Let's setup a VM called "TestingJB" (JB=Jump Box 😊). To create a VM, please follow the following steps.

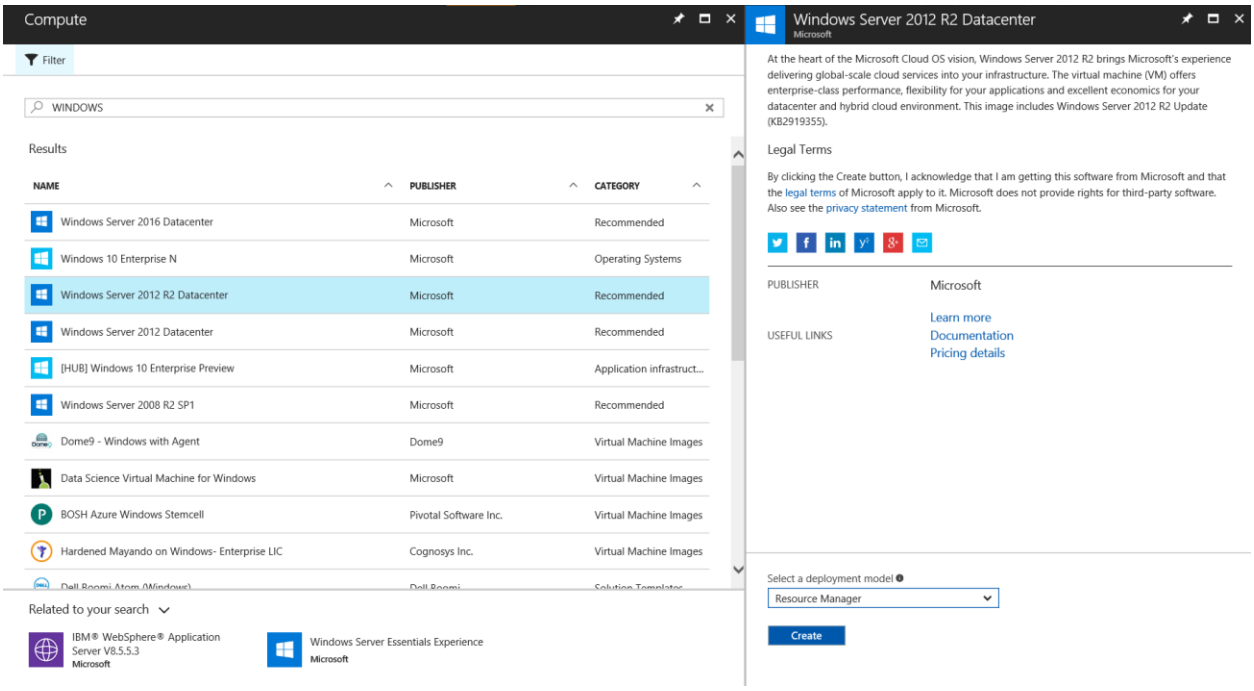
1. Click Virtual Machines



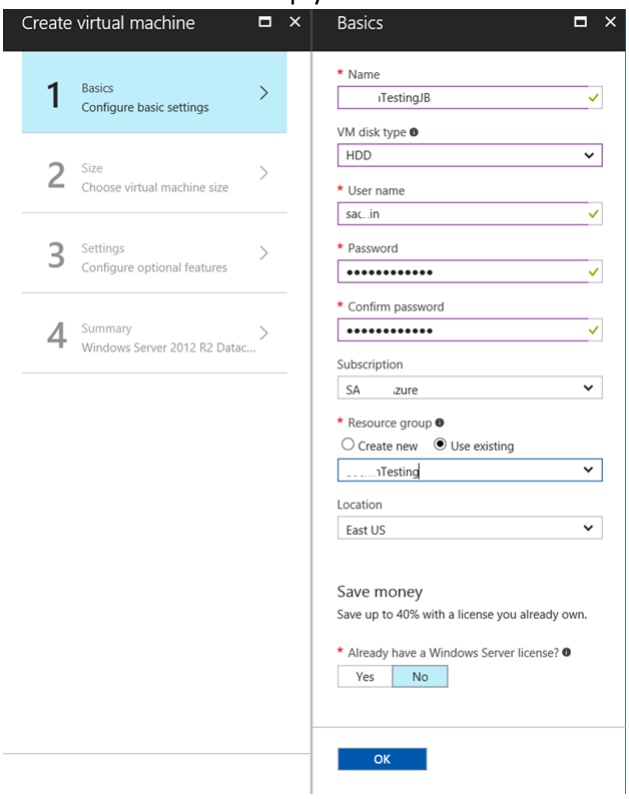
2. Click Add



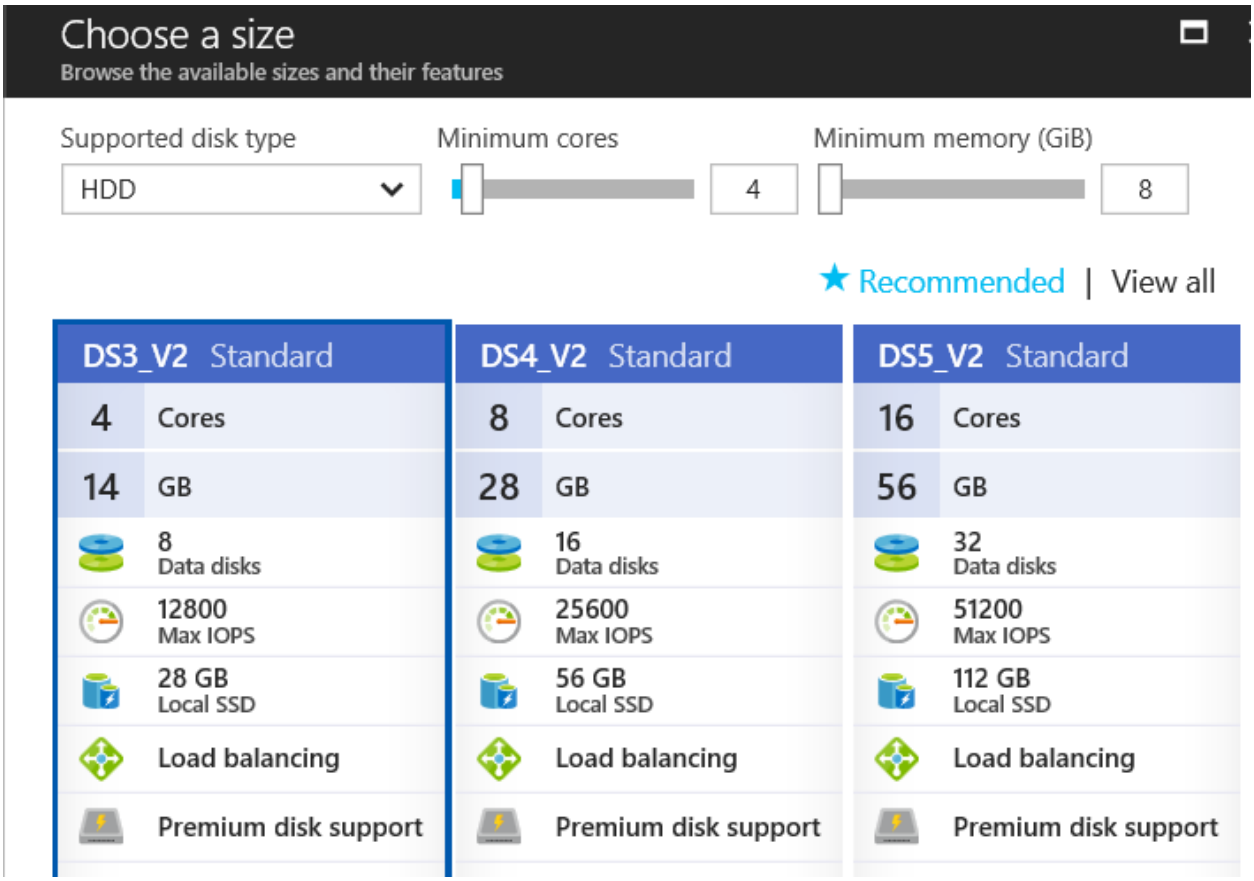
3. Select the WINDOWS operating system (I chose Windows Server 2012 R2 Datacenter)



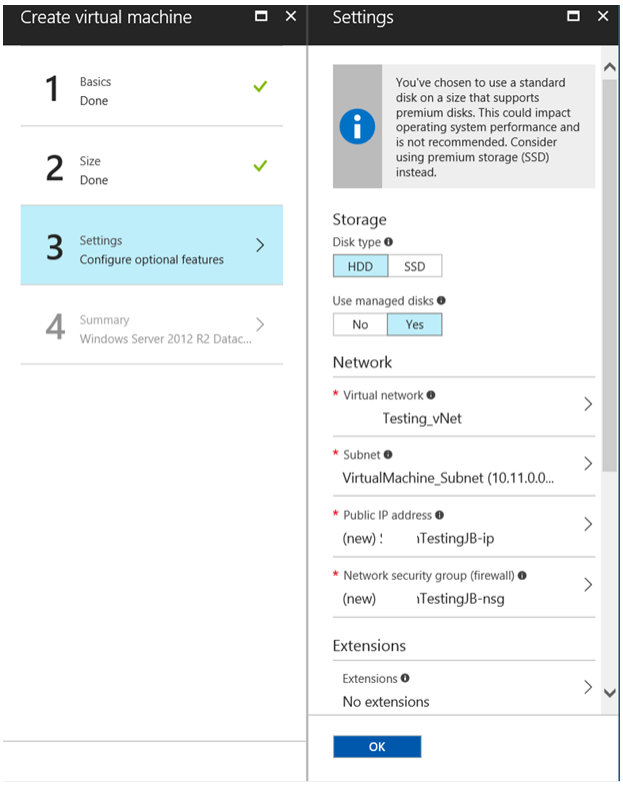
4. Click Create
5. Enter the details to setup your VM



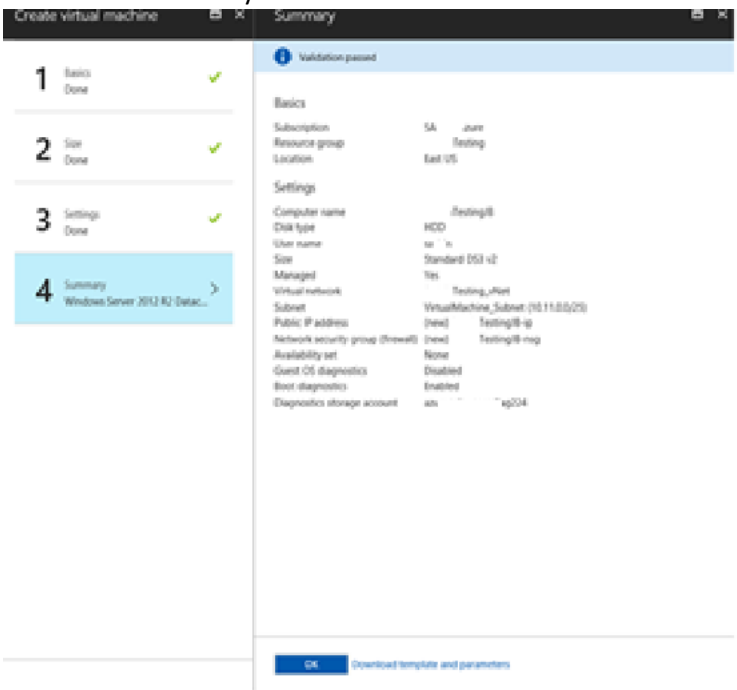
6. Chose a VM (I chose 4 core; 8GB)



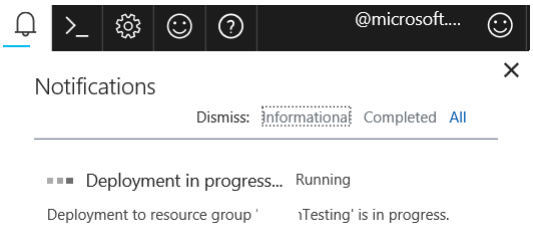
7. Select the storage and Network settings



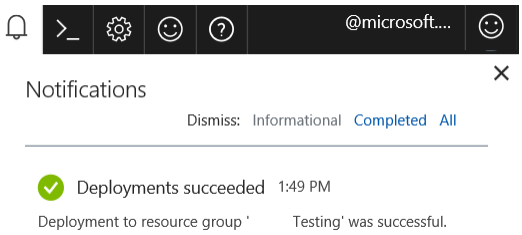
8. Review the Summary



9. You can check the status of VM creation under “Notification”



10. It takes few minutes to create a VM



11. After a VM is created, you can login to it by clicking ”Connect” button.

Note	If you have not setup VM in your domain, please use user name as “/your-username” during logon to the VM.

4.2 Download Putty

To access your HANA large instance server(s), you will need an SSH and telnet client like putty. You can download it from http://www.putty.org/

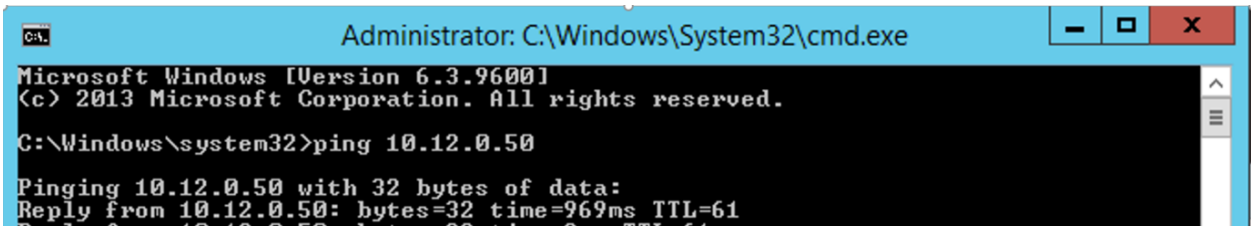
After you are done with download, copy the putty to your newly created VM (“TestingJB”). You can simply copy the putty installer file from your local on-prem machines and then paste to VM desktop in Azure.

After the file is copied to a VM, Extract the Putty installer.

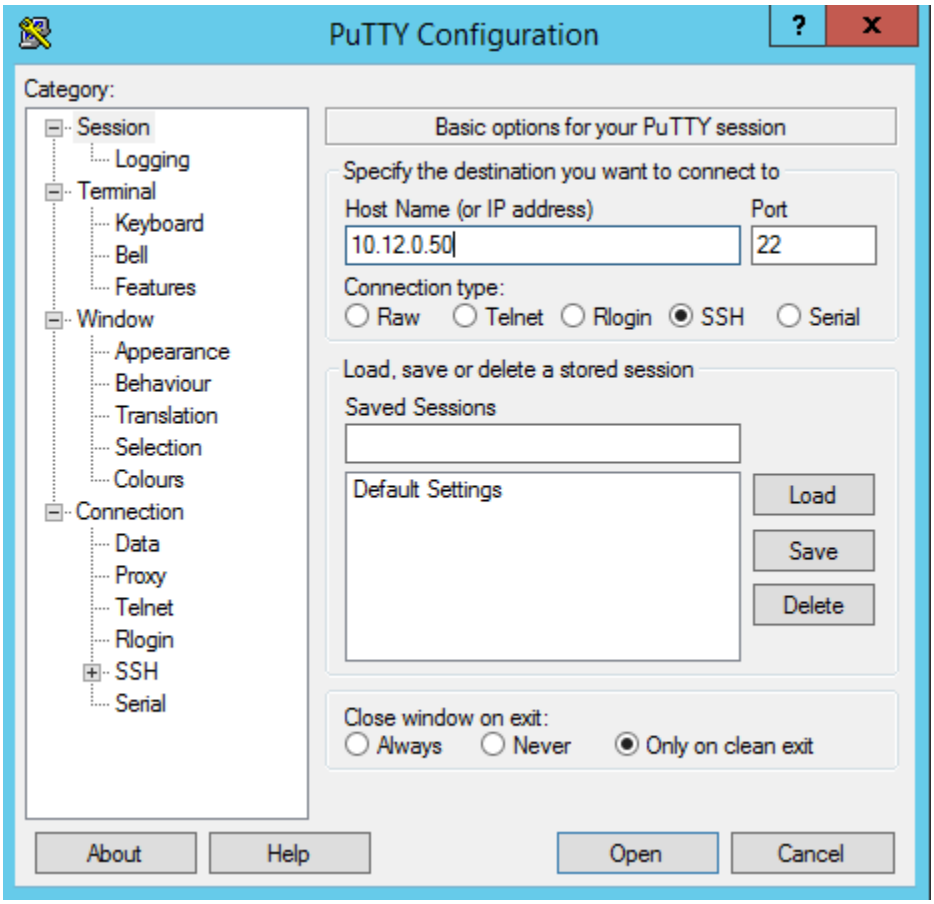
4.3 Connect the HANA Large Instances

Login to your Azure VM jump box.

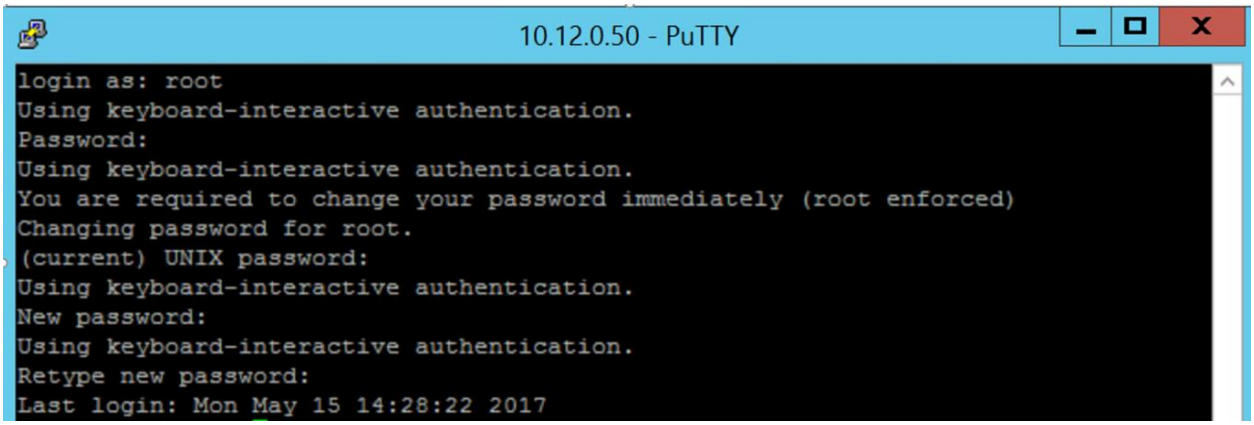
The very basic test it to ping the HANA Large Instances with the IP address (IP address of the Large Instance Server should have already been provided by the Microsoft team)



Open putty (A shortcut must be on your desktop after you have installed the putty)



Login to the Large Instance Server and change the temporary root password provided by the Microsoft team



4.4 Validate the server

After you connect to the HANA Large Instances server, you may want to validate the server. Here are few commands to validate the server components.

Command	Description
uname -n	Network hostname
uname -r	Kernel release
lscpu	CPU Information
df -h	Storage space, Mount Point etc.
ifconfig	Network Ethernet cards

5. Install the HANA on Large instances server

Before you start the HANA installation, please ensure to perform the following:

1. Time server (NTP) Setup
2. Register the operating system for permanent license
3. Patch the HANA Large Instances server to appropriate patch/service pack level
4. Review the SAP notes for pre-requisite and for post installation of SAP HANA. Here are few key notes

SAP Note 2235581 - SAP HANA: Supported Operating Systems
SAP Note 2009879 - SAP HANA Guidelines for RedHat Enterprise Linux (RHEL) Operating System
SAP Note 2292690 - SAP HANA DB: Recommended OS settings for RHEL 7.2
SAP Note 2247020 - SAP HANA DB: Recommended OS settings for RHEL 6.7
SAP Note 2001528 - Linux: SAP HANA Database SPS 08 revision 80 (or higher) on RHEL 6 or SLES 11
SAP Note 2228351 - Linux: SAP HANA Database SPS 11 revision 110 (or higher) on RHEL 6 or SLES 11
SAP Note 1943937 - Hardware Configuration Check Tool - Central Note (contains the user guide for HWCCT)

Congratulations, you are ready now to install the SAP HANA!