How to Build SQL Server 2019 DBA Real Time Home Lab   
in **Azure**

**Environment:** Single Subnet Cluster

1.one windows server 2019 As DC [No need to part of Availability set]

2.Two Windows Server 2019 VMs as member servers [need to be same Availability set]

3.Since it is Single Subnet so All VMs are part of the Single Subnet only.

**My environment:**

**Vnet:10.5.0.0/16**

**SubnetA:10.5.0.0/24**

|  |  |  |  |
| --- | --- | --- | --- |
|  | DC | Node1 | Node2 |
| IP | 10.10.0.4 | 10.10.0.5 | 10.10.0.6 |
| Always on listener1 |  | 10.10.0.100 | |
| Always on listener2 |  | 10.10.0.200 | |

**Basics steps we need to check For Error Free installation**

1. All Member servers should be part of the Domain

2. Firewall should be off

3. Check communication between and Domain and member servers

4. Login with Domain administrator or user which is having Domain Level Permissions every where

Note: Building a real time home lab in azure is different when compared to on prem. For single subnet we need load balancer for listener to connect from secondary nodes.

**Step By step:**

1.Create a Resource group and VNet with single subnets.

VNet:10.5.0.0/16   
Subnet A: 10.5.0.0/24   
  
2.Deploy one windows server 2019 with name of DC in Subnet A and install active directory domain Services & DNS & iSCSI Target Server and do configure domain with ABC.com

3.Deploy Two windows server 2019 OS with the names of Node1 & Node2 with same availability set.

4. Add DC Private IP address in Node1 & Node2 Azure portal and via restart the vms once done.

5.ADD all Servers into Multi desk for Easy administration (Optional)

6. Turn off the Domain, Public and Private firewall in Domain.

7. Join the Node1 & Node2 into Domain.

8. Disable the domain firewall rules in Node1 & Node2.

9. Create a Folder and do share in domain [which is also a SAN] and use it for file share witness

11. Install .Net 3.5, Failover cluster in Node1 & Node2

12. Install SSMS in node1 and node2

13. Install Standalone default SQL Server 2019 instances in Node1 & Node2

14.Validate and create the Cluster

15. Enable Always on feature On Both Standalone Instances in Node 1 & Node 2 and configure always on

16.Configure load balancer for always on listener as per below document  
[Configure a load balancer & availability group listener (Azure portal) - SQL Server on Azure VMs | Microsoft Learn](https://learn.microsoft.com/en-us/azure/azure-sql/virtual-machines/windows/availability-group-load-balancer-portal-configure?view=azuresql)

Finally, we build the real time home lab in Azure.

Note: Please share your Ideas and Doubts via comments. I am happy to help you.

**All the Best**