

# Windows Server 2022: Implement and Manage On-Premises and Hybrid Networking

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## Implement On-Premises and Hybrid Name Resolution



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# Overview



## **Integrate DNS with AD DS**

- Create and manage zones and records
- Implement DNSSEC

## **Integrate DNS with Azure VNets**

- Configure DNS forwarding/conditional forwarding
- Integrate Windows Server DNS with Azure DNS private zones



# Implement and Manage On-Premises and Hybrid Networking Infrastructure

**Implement On-Premises and Hybrid Name Resolution**

**Manage IP Addressing in On-Premises and Hybrid Scenarios**

**Implement On-Premises Network Connectivity**

**Implement Hybrid Network Connectivity**



# Windows Server Hybrid Administrator Associate

Take two exams



CERTIFICATION EXAM **AZ-800**  
**Administering Windows Server  
Hybrid Core Infrastructure**

AND



CERTIFICATION EXAM **AZ-801**  
**Configuring Windows Server  
Hybrid Advanced Services**

Earn the certification




ASSOCIATE CERTIFICATION  
**Microsoft Certified:  
Windows Server Hybrid  
Administrator Associate**

**One-year cert validity**



# Exercise Files



## Troubleshooting with Microsoft Azure Network Watcher

by Tim Warner


Microsoft now gives you packet-level access to your Windows Server and Linux virtual machines (VMs) running in Azure. You'll learn how to use Network Watcher to troubleshoot network security groups (NSGs), perform packet captures, and much more.


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These exercise files are intended to provide you with the assets you need to create a video-based hands-on experience. With the exercise files, you can follow along with the author and re-create the same solution on your computer. We find this to be even more effective than written lab exercises.

[Download exercise files](#)

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**Course info**

Level	Intermediate
Rating	★★★★★
My rating	★★★★★
Duration	2h 12m
Released	31 Oct 2017

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# Exercise Files

The screenshot displays a Windows desktop environment with three overlapping windows:

- File Explorer (Left):** Shows the directory `C:\Users\Tim\Downloads\azure`. It contains a list of folders named 02, 03, 04, 05, and 06. The status bar indicates `0 / 5 object(s) selected`.
- Code Editor (Center):** A window titled `microsoft-azure-ad-privileged-identity-management-configuring-m4-links.txt` displays the following text:

```
1 Module 4: Organize and Perform Azure AD PIM Access Reviews↵
2 ↵
3 Microsoft Azure↵
4 https://azure.microsoft.com/en-us/↵
5 ↵
6 Azure Documentation↵
7 https://docs.microsoft.com/en-us/azure/↵
8 ↵
9 Azure AD Privileged Identity Management (PIM) documentation | Microsoft Docs↵
10 https://docs.microsoft.com/en-us/azure/active-directory/
    privileged-identity-management/↵
11 ↵
12 Identity Governance - Azure Active Directory | Microsoft Docs↵
13 https://docs.microsoft.com/en-us/azure/active-directory/governance/
    identity-governance-overview↵
14 ↵
15 Create an access review of Azure resource roles in PIM - Azure Active Directory |
    Microsoft Docs↵
16 https://docs.microsoft.com/en-us/azure/active-directory/
    privileged-identity-management/pim-resource-roles-start-access-review↵
17 ↵
18 Review access to Azure AD roles in PIM - Azure Active Directory | Microsoft Docs↵
19 https://docs.microsoft.com/en-us/azure/active-directory/
    privileged-identity-management/pim-how-to-perform-security-review↵
20 ↵
21 View audit history for Azure AD roles in PIM - Azure Active Directory | Microsoft
    Docs↵
22 https://docs.microsoft.com/en-us/azure/active-directory/
    privileged-identity-management/pim-how-to-use-audit-log↵
```

The status bar at the bottom shows `Spaces: 4 UTF-8 CRLF Plain Text`.
- File Details Window (Right):** A small window titled `02\demos\` showing a table of file details:

	Size	Pack
	1 298	
	359	



# Integrate DNS with Active Directory Domain Services



# DNS Resource Records

**SOA: Zone metadata**

**NS: Name server**

**A/AAAA: Host IP  
address**

**CNAME: Alias**

**SRV: Service  
location**

**MX: Mail exchange**



# DNS Resource Records

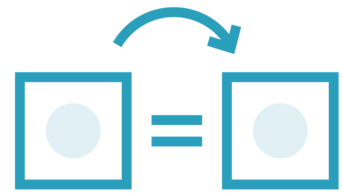
**TXT: Domain  
verification**

**ANAME: Apex  
routing**

**PTR: IP-to-domain  
name lookup**



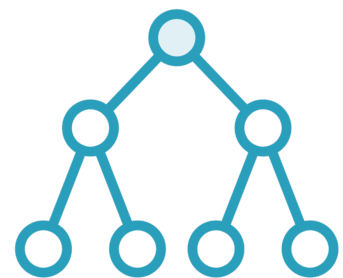
# Active Directory-Integrated DNS Zones



**Replicate DNS zone data to other domain controllers**



**DomainDNSZones application directory partition**



**ForestDNSZones application directory partition**



**Secure Dynamic Update**



DNSSEC



## Domain Name System Security Extensions

**Validates that query responses are genuine**

- RRSIG (existence)
- NSEC (non-existence)

**Digitally sign the DNS zone**

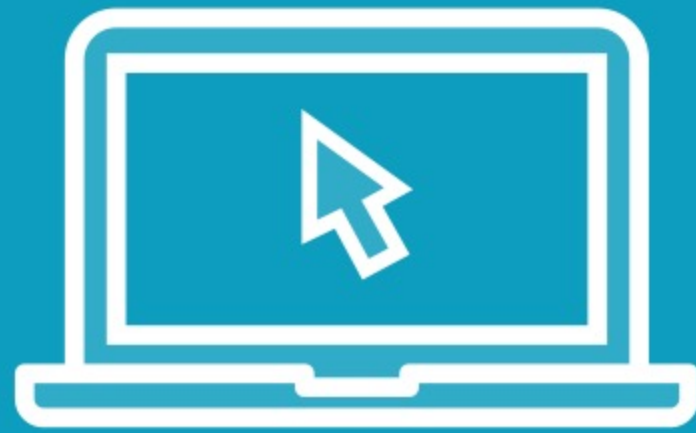
**Distribute "trust anchors"**

- public cryptographic key

**Populate Name Resolution Policy Table (NRPT)**



# Demo



# 1

**Create a new zone & show options**

**DNS replication edit**

**Secure dynamic update**

**Create CNAME record**

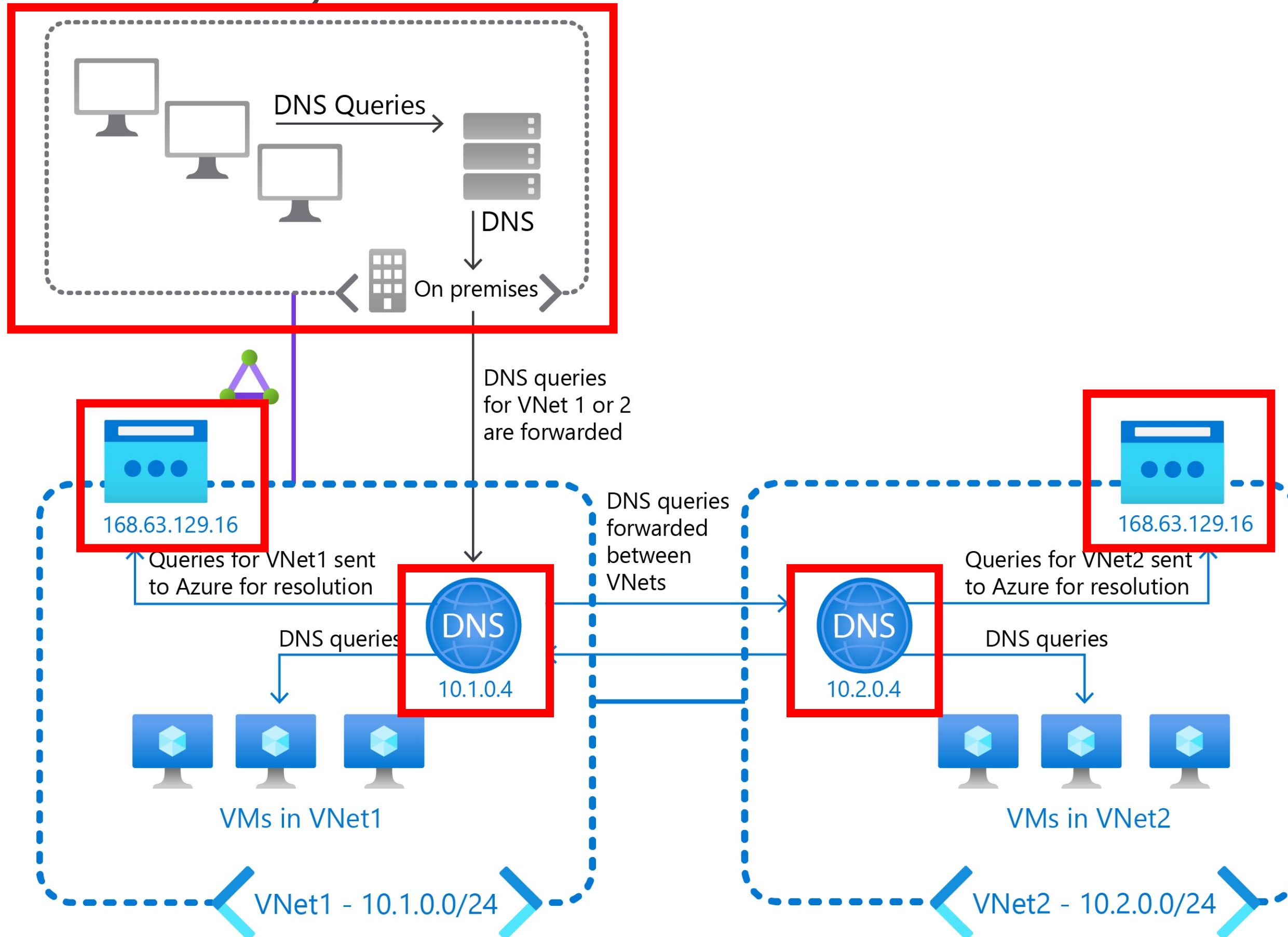
**DNSSEC & test**



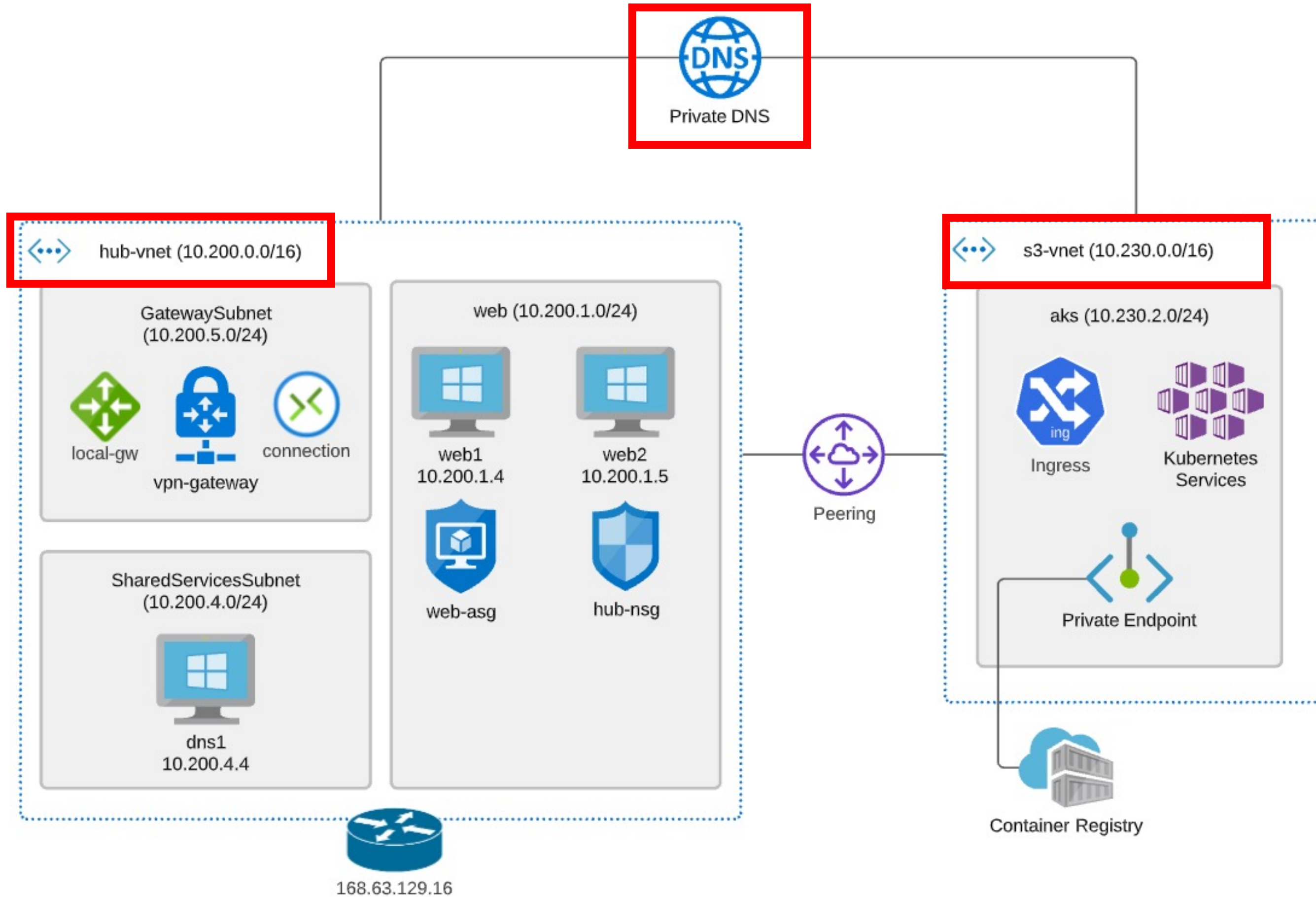
# Integrate DNS with Azure Virtual Networks



# Azure Hybrid Cloud Name Resolution



# Azure DNS Private Zones

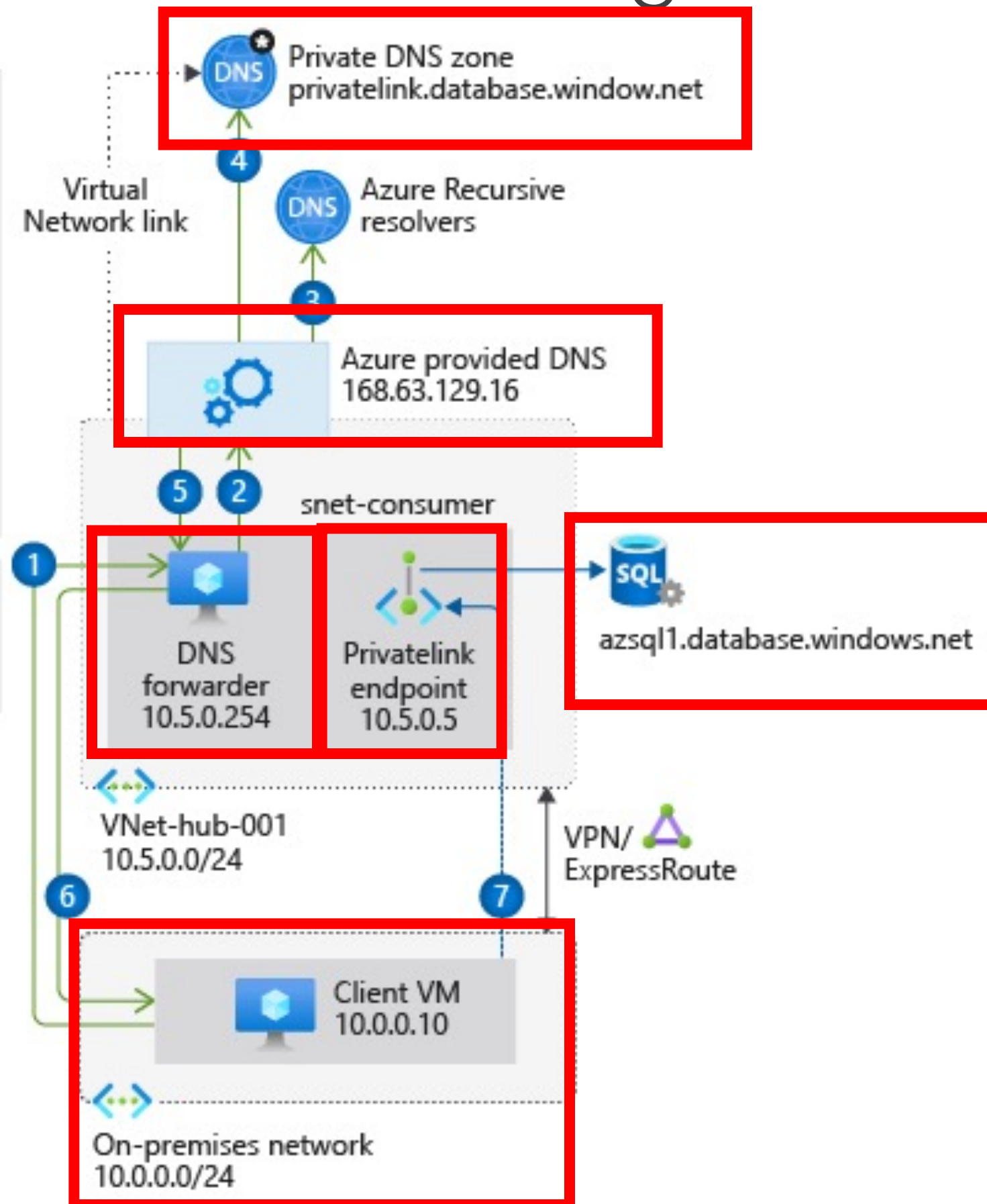


# Azure Private Endpoint DNS Configuration

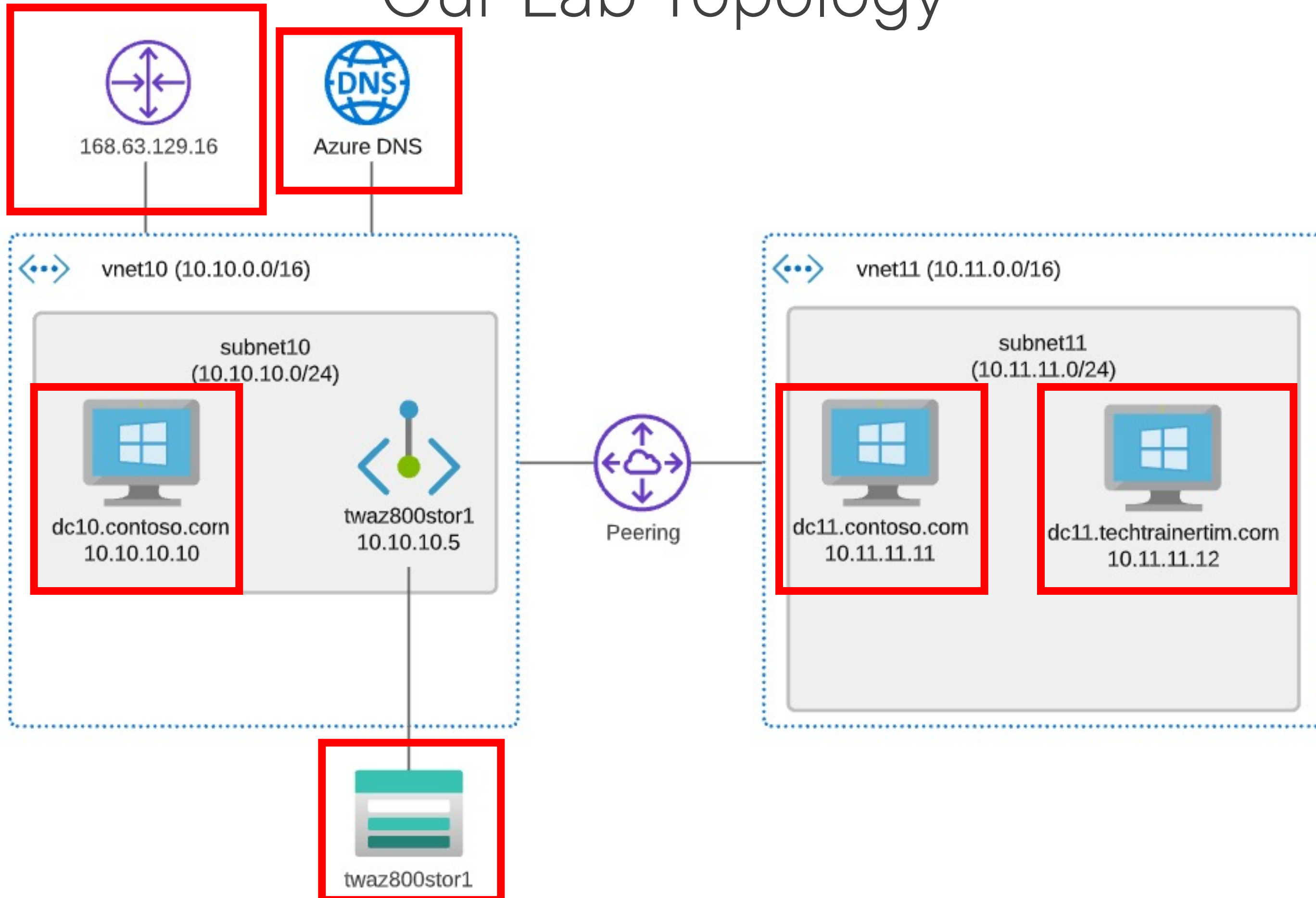
## DNS Resolution Flow

- 1 DNS query for azsql1.database.windows.net
- 2 Server level forwarder to 168.63.129.16
- 3 Authoritative DNS query for azsql1.database.windows.net  
Response: CNAME azsql1.**privatelink**.database.windows.net
- 4 DNS query for azsql1.**privatelink**.database.windows.net  
Response: private ip address 10.5.0.5
- 5 6 Response: CNAME azsql1.**privatelink**.database.windows.net  
A azsql1.**privatelink**.database.windows.net 10.5.0.5
- 7 Private connection to 10.5.0.5

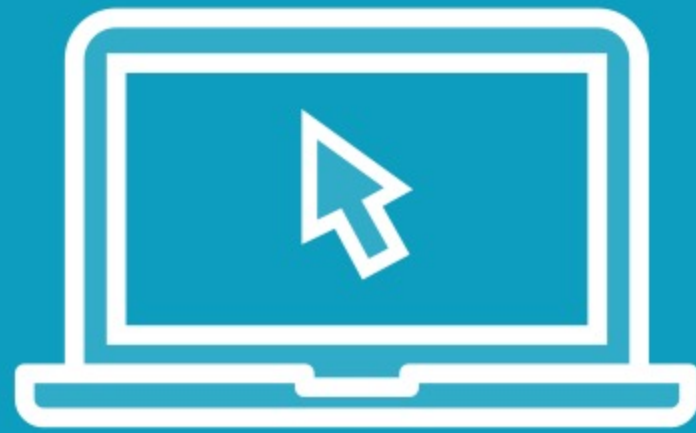
→ DNS traffic  
..... Virtual network link  
- - - Private connection



# Our Lab Topology



# Demo



# 2

**Forwarding**

**Conditional forwarding**

**Private link resolution**



## Summary



**Azure-provided DNS (168.63.129.16 VIP) does a LOT of heavy lifting for us**

**Think carefully about name resolution paths in your hybrid cloud**

**Private link is rapidly becoming a standard way to access Azure services**



Up Next:

Manage IP Addressing in On-Premises and Hybrid Scenarios

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