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Administer Intersite Connectivity

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These Learn modules are part of the AZ-104: Configure and manage virtual networks for Azure administrators (<https://docs.microsoft.com/learn/paths/az-104-manage-virtual-networks/>) learning path.

Learning Objectives



Configure VNet Peering



Configure Network Routing and Endpoints

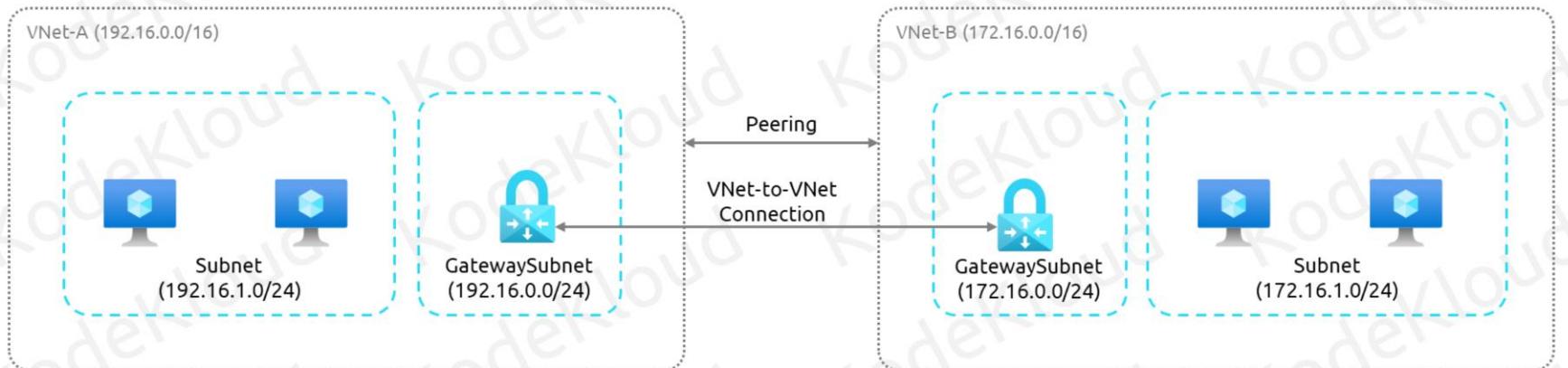
The 28 July 23 course update moved Routing and Endpoints here to balance out the module.

VPN Gateway and ER/VWAN moved to the end. This content will be removed during the next update. Look to AZ-700 for content.

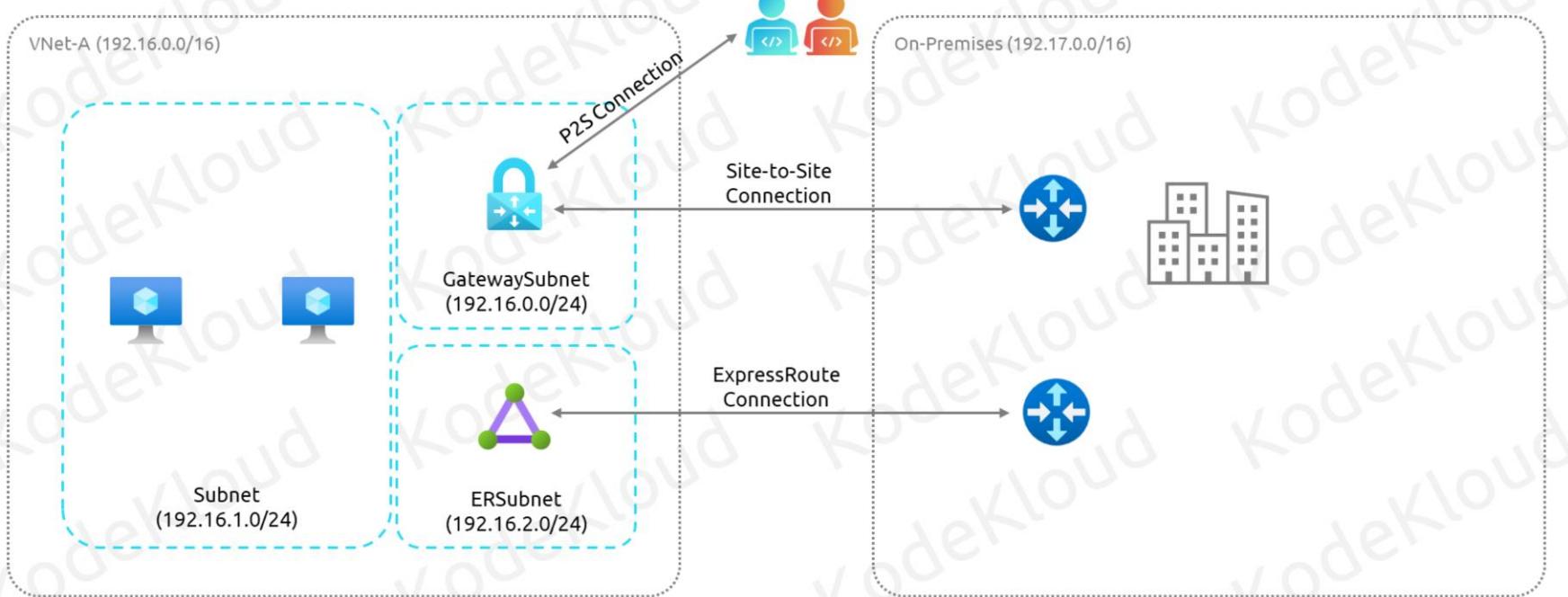


Intersite Connectivity

Intersite Connectivity – Azure-to-Azure Connectivity



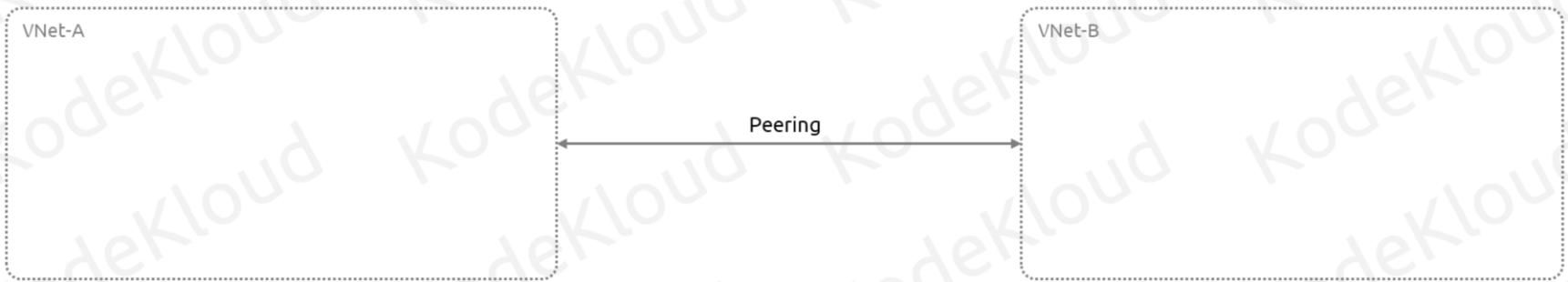
Intersite Connectivity – Azure-to-On-Premises Connectivity



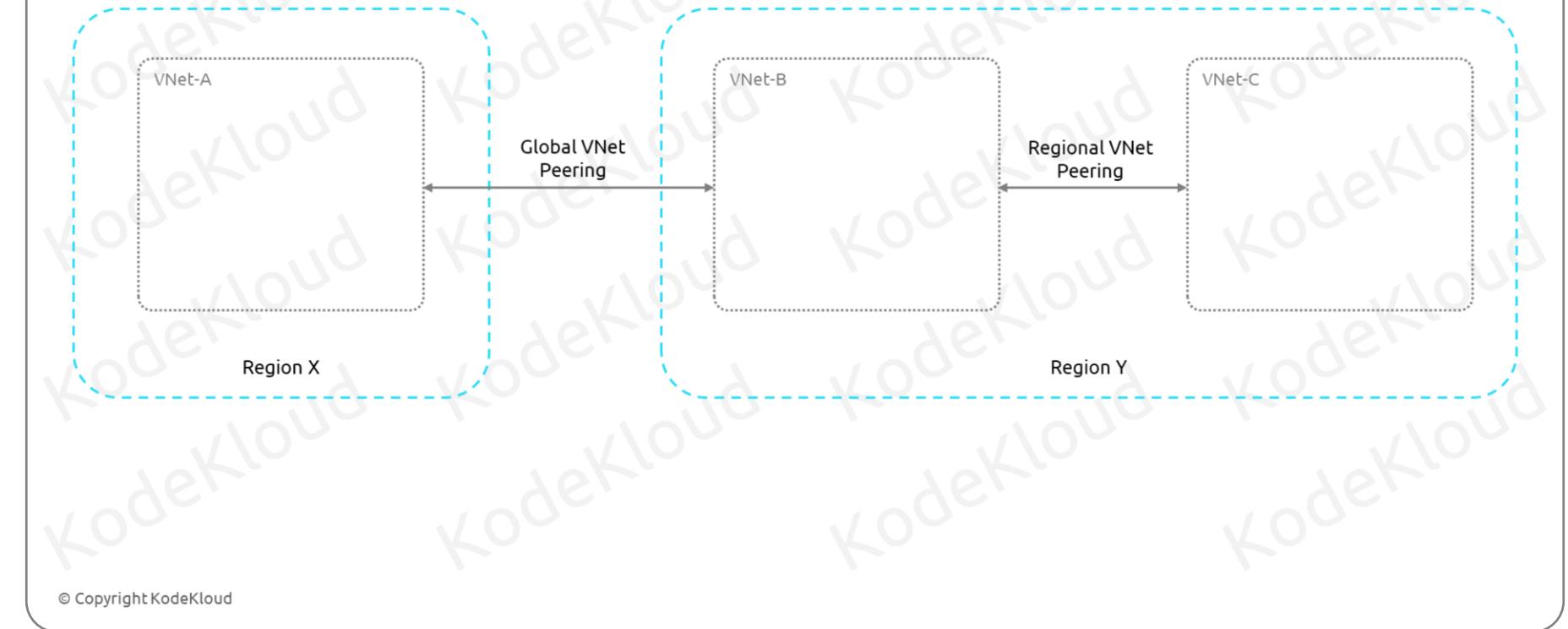


Virtual Network Peering

Virtual Network Peering



Virtual Network Peering



Virtual Network Peering

Types of peering: Global VNet Peering and Regional VNet Peering



High-speed data transfer, easy configuration, and great performance



Uses Microsoft backbone network for data transfer, offering privacy and low latency



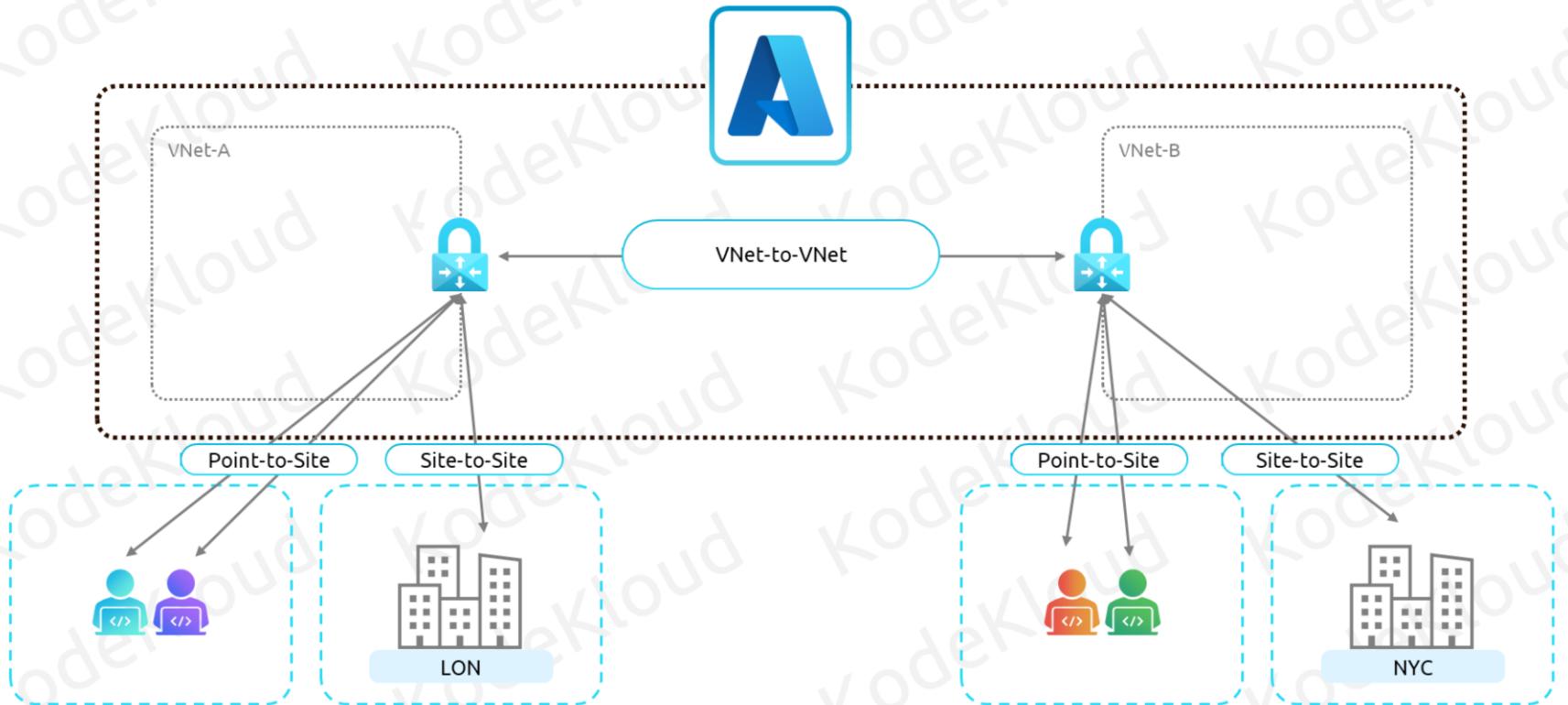
Facilitates connectivity across Azure virtual networks, whether in the same or different regions, subscriptions, or tenants





VPN Gateway

VPN Gateway



VPN Gateway SKUs

Gen	SKU	S2S/VNet-to-VNet Tunnels	P2S IKEv2 Connections	Throughput Benchmark
Gen 1	VpnGw1/Az	Max. 30	Max. 250	650 Mbps
Gen 1	VpnGw2/Az	Max. 30	Max. 500	1.0 Gbps
Gen 2	VpnGw2/Az	Max. 30	Max. 500	1.25 Gbps
Gen 1	VpnGw3/Az	Max. 30	Max. 1000	1.25 Gbps
Gen 2	VpnGw3/Az	Max. 30	Max. 1000	2.5 Gbps
Gen 2	VpnGw4/Az	Max. 100	Max. 5000	5.0 Gbps
Gen 2	VpnGw5/Az	Max. 100	Max. 10000	10.0 Gbps



SKU selection



Resizing



Basic SKU

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SKU selection

SKU is selected based on the number of connections and throughput you require.

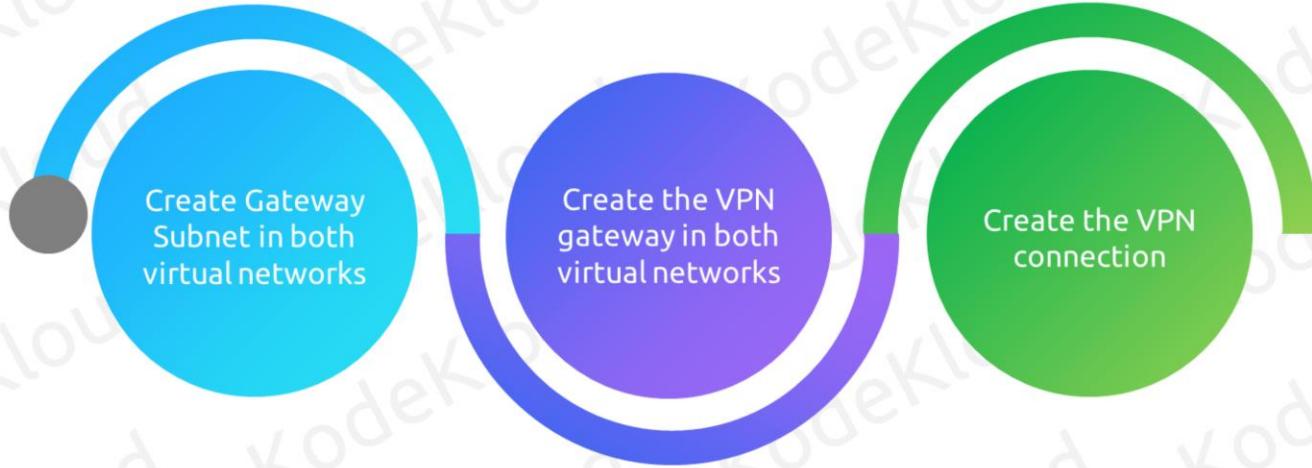
Resizing

Within generation, we can resize the VPN gateway based on the requirement.

Basic SKU

In addition to the above SKUs, we have Basic SKU which is considered as legacy and should not be used.

VNet-to-VNet Connection



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Gateway Subnet

VPN Gateways require a dedicated subnet to deploy the gateway. First, we need to create Gateway Subnet in both of our virtual networks.

VPN Gateway

Once the Gateway Subnet is created, we will deploy the VPN gateway to the subnet. Creating a VPN gateway would take

around approx.: 40 minutes.

VNet-to-VNet connection

After creating the VPN gateway, then we need to create VNet-to-VNet connection from the VPN Gateway

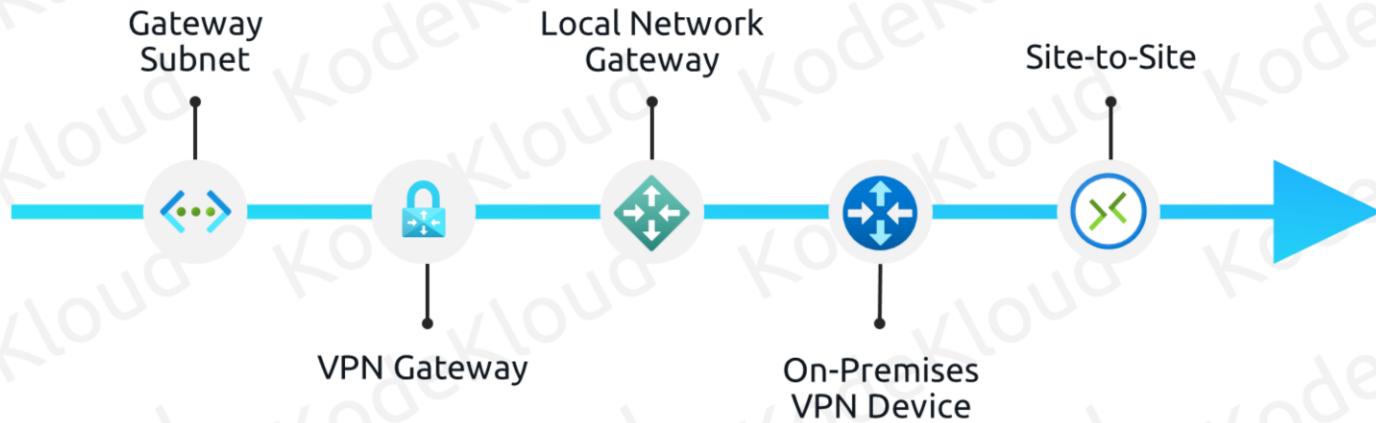
VNet Peering vs VNet-to-VNet Connection

Property	VNet Peering	VNet-to-VNet Connection
Number of connections	Up to 500 VNet peerings per VNet	One VNet can have only VPN Gateway and connection count is SKU dependent
Pricing	Ingress + Egress	Gateway hourly cost + egress
Encryption	No encryption. Software level is recommended.	IPsec/IKE
Bandwidth	No restrictions	SKU dependent
Route	Routed via Microsoft backbone network and is private	Routed via public internet, however encrypted
Public IP	No public IP or internet is used	Public IP is involved
Transitivity	Nontransitive	Transitive (BGP enabled)
Initial setup time	Fast	~ 30-40 minutes
Use cases	Data replication, database failover, and other scenarios needing frequent backups of large data.	Scenarios where encryption is needed and not latency/bandwidth sensitive.



Site-to-Site and Point-to-Site

Site-to-Site Connection



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Gateway Subnet

Create Gateway Subnet in Azure Virtual Network to deploy the VPN Gateway.

VPN Gateway

Deploy VPN Gateway to the Gateway Subnet in Azure virtual network

Local Network Gateway

Create LNG in Azure by providing the IP address or FQDN of your on-premises VPN device

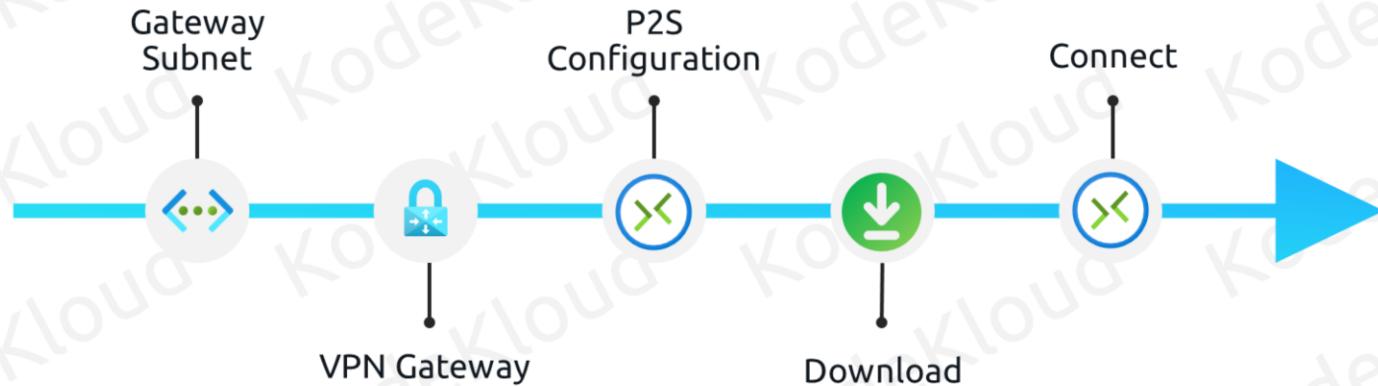
On-premises VPN device

Provide Public IP address of your Azure VPN Gateway in on-premises VPN device

Site-to-Site

Create Site-to-Site VPN connection

Point-to-Site Connection



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Gateway Subnet

Create Gateway Subnet in Azure Virtual Network to deploy the VPN Gateway.

VPN Gateway

Deploy VPN Gateway to the Gateway Subnet in Azure virtual network

P2S configuration

Configure your P2S in VPN gateway by selecting the address pool and authentication method

Download

Download the VPN client configuration to your client machine

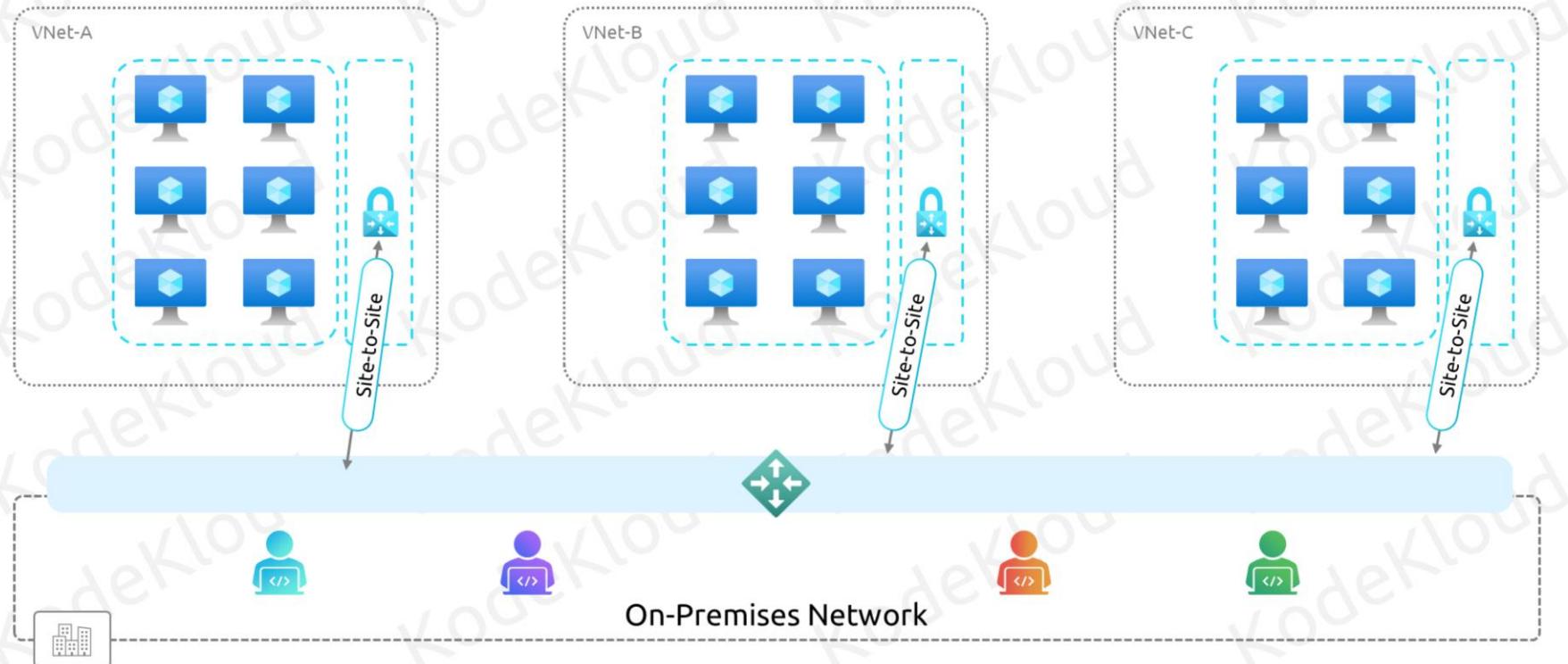
Connect

From your Windows, Linux, macOS or mobile clients; connect to the VPN

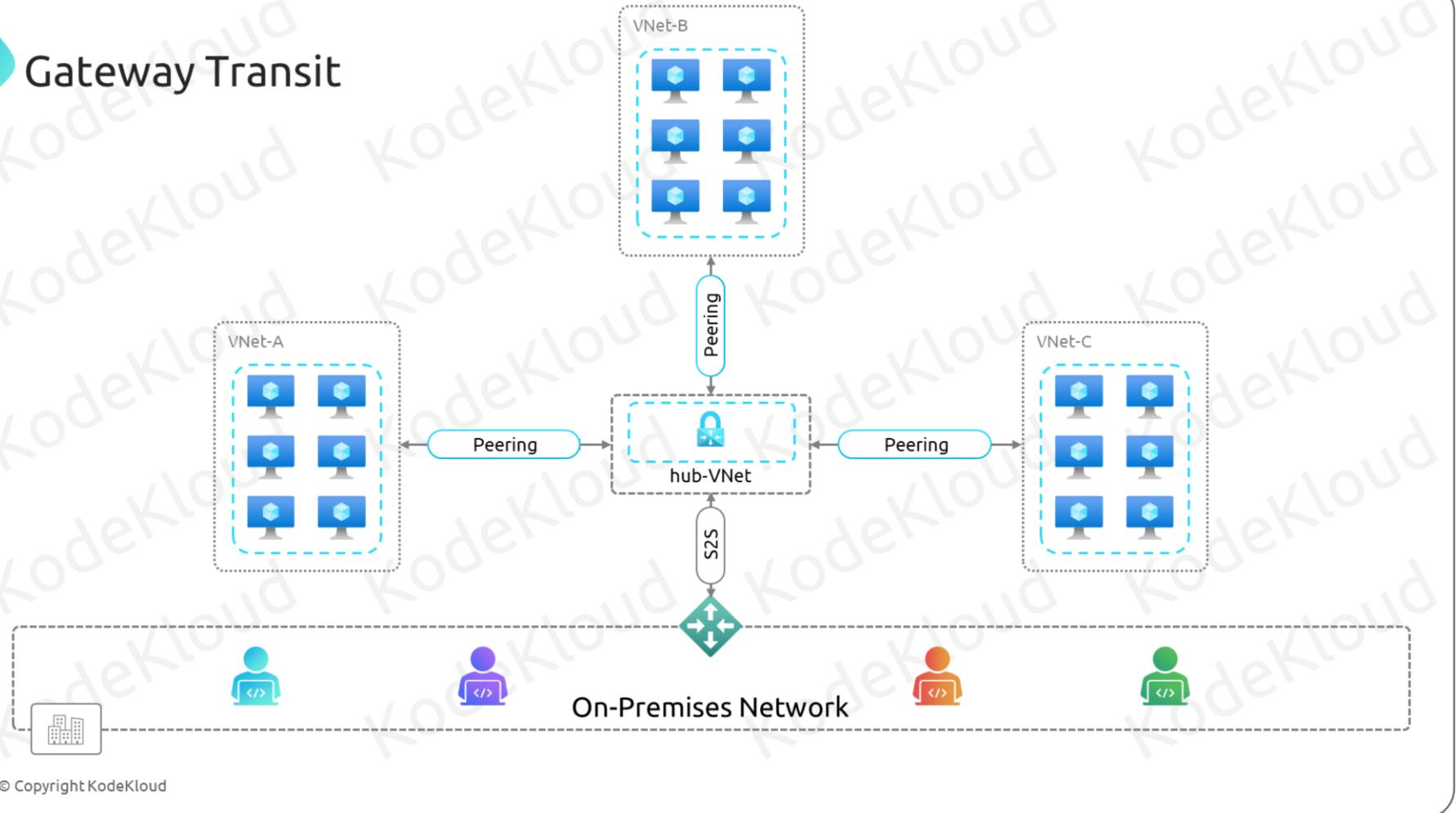


Gateway Transit

Gateway Transit



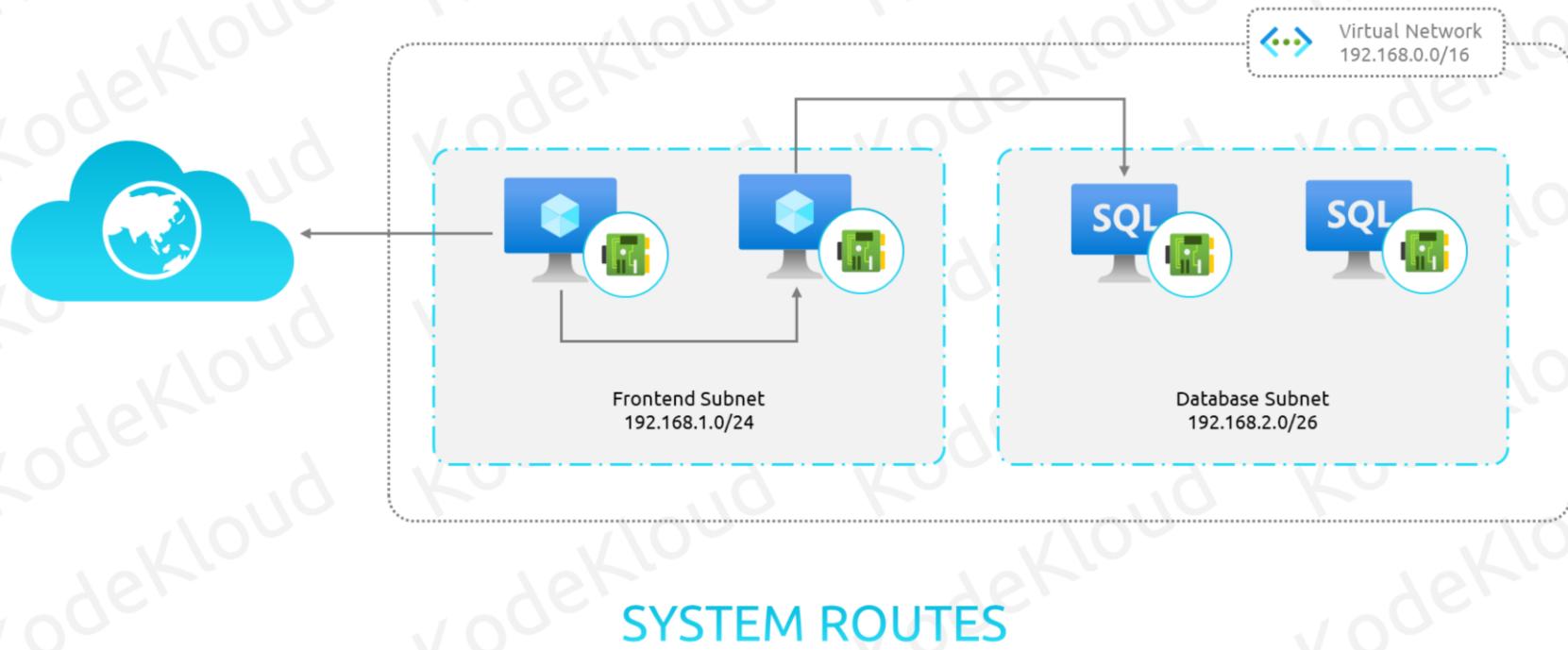
Gateway Transit





User-Defined Routes

User-Defined Routes



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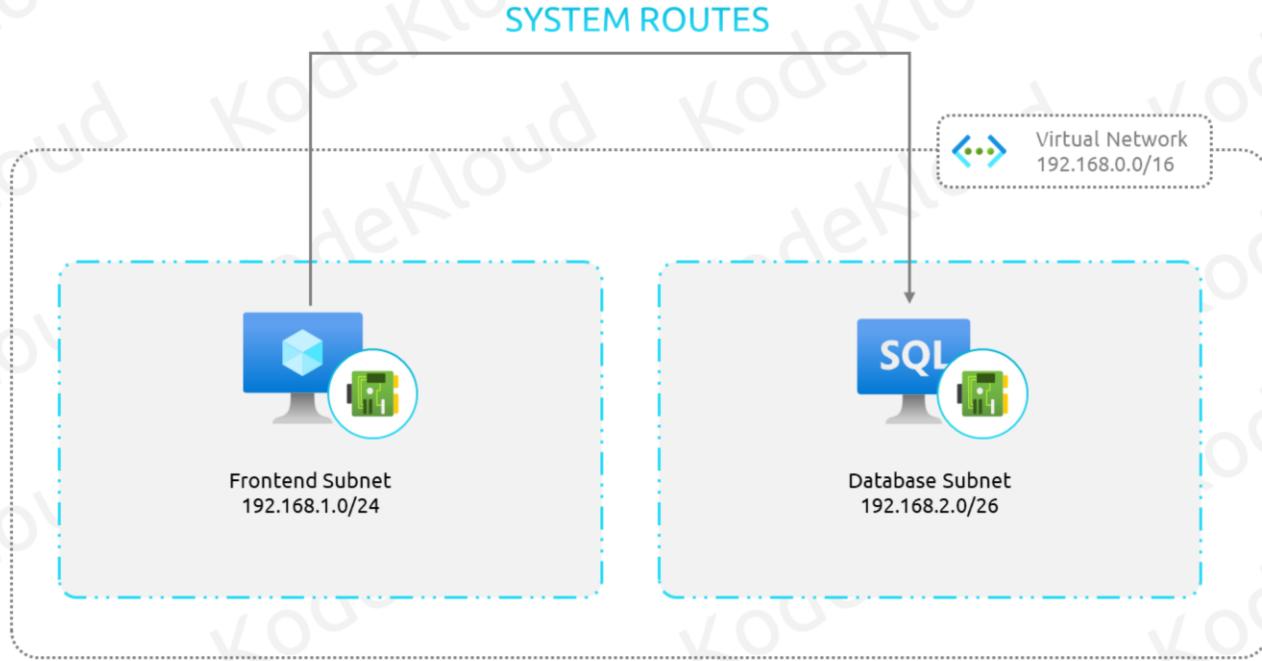
Communication between VMs in the same subnet

Communication between VMs in different subnets in the same virtual network.

Communication from VM to the Internet

Communication via Site-to-Site and ExpressRoute connection while using VPN gateways

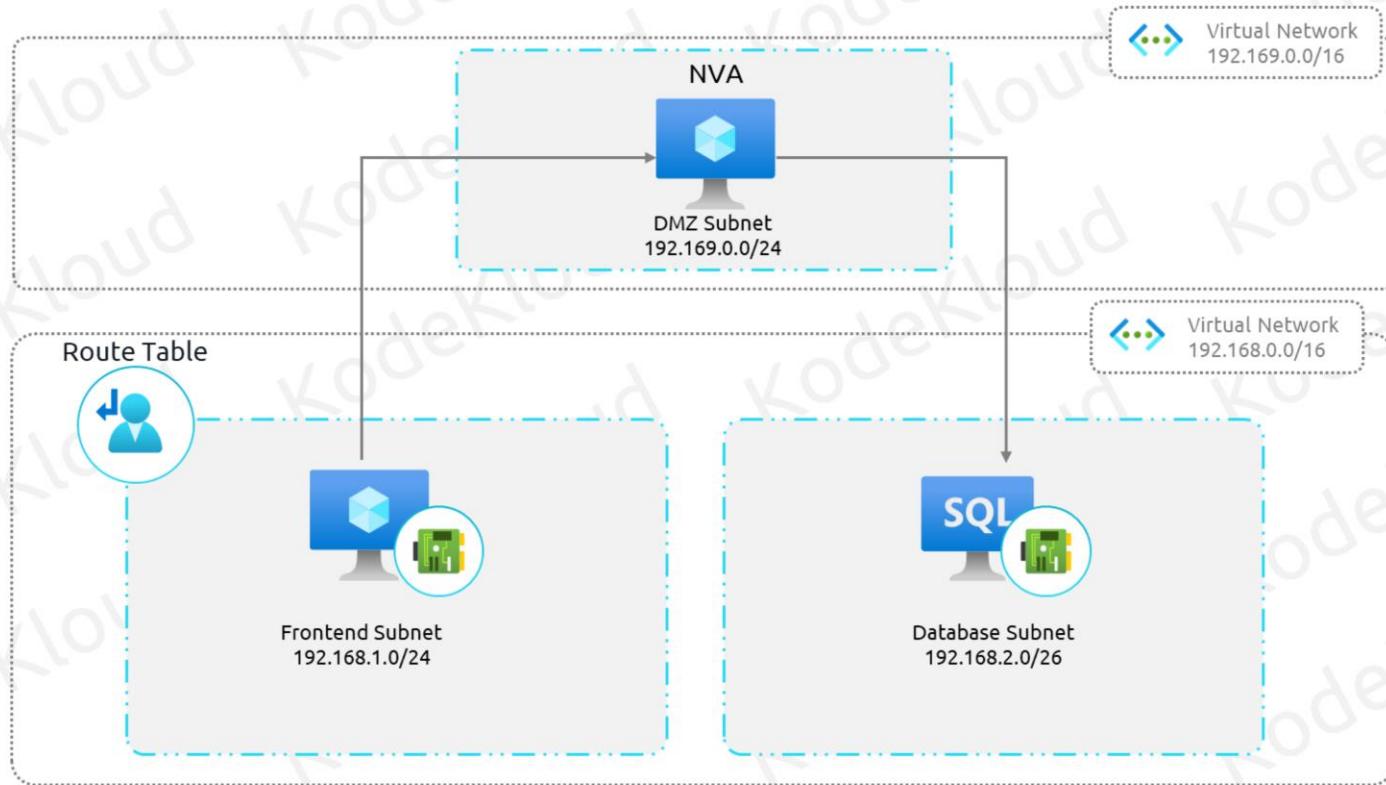
User-Defined Routes



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The next hope can be a virtual network gateway, virtual network, internet, or virtual appliance.

User-Defined Routes



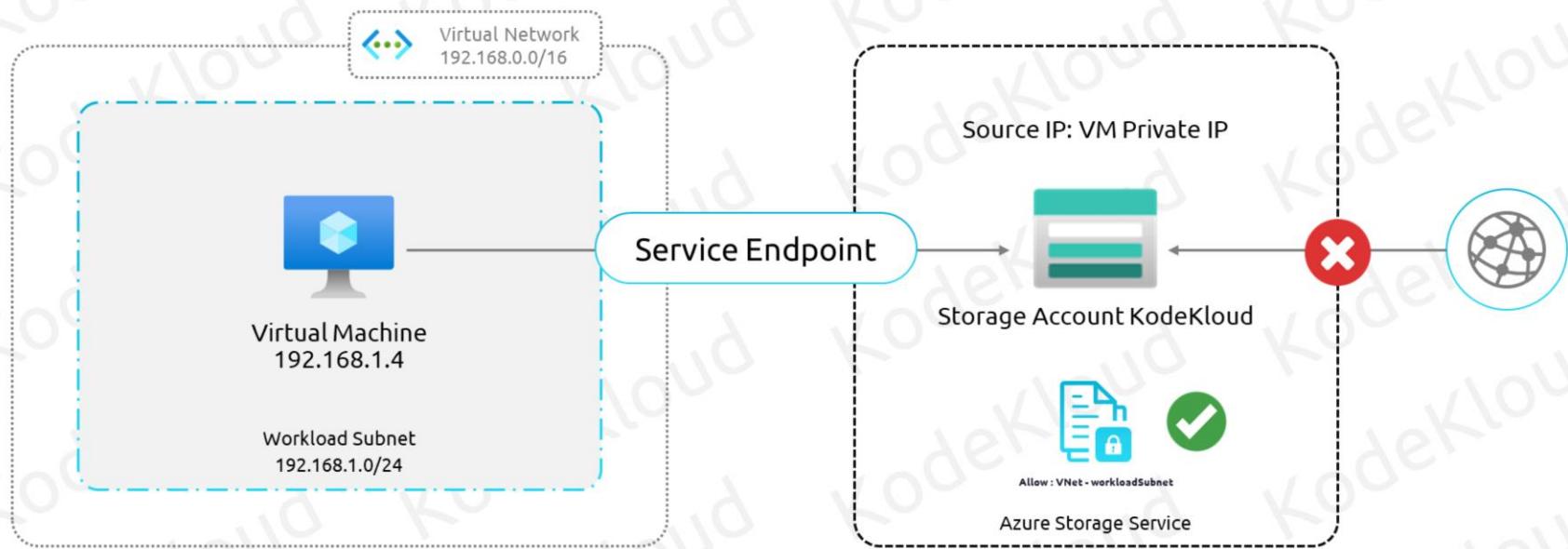
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The next hope can be a virtual network gateway, virtual network, internet, or virtual appliance.



Service Endpoints

Service Endpoints



Service Endpoints

Benefits



Access Azure services with
better security



Leverages Microsoft
backbone network



Ease of setup and
management



Supported services

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Access Azure services with better security

Leverages Microsoft backbone network

Ease of setup and management

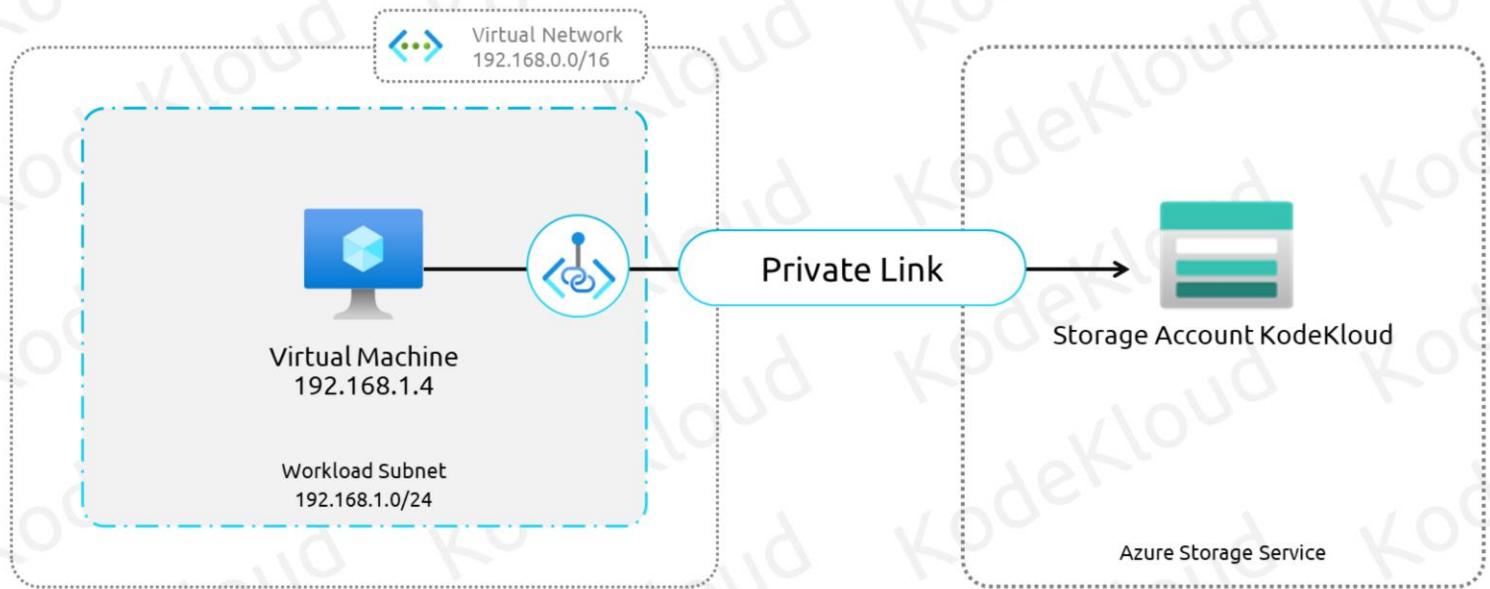
Supported services include Azure Storage, Azure SQL Database, Azure Synapse Analytics, Azure Database for PostgreSQL server, Azure Database for MySQL server, Azure Database for MariaDB server, Azure Cosmos DB, Azure Key Vault, Azure Service Bus, Azure Event Hubs, ADLS Gen1, Azure App Service, Azure Cognitive Services, and Azure Container Registry

(preview)



Private Endpoint

Private Endpoint



Private Endpoint

Benefits



Azure services via private connection



Seamless integration



Eliminates risk



Direct availability

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Connect to Azure services via private connection

Seamless integration with on-premises and peered networks

Eliminates risk of data exfiltration

Direct availability in Azure VNets



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