KodeKloud

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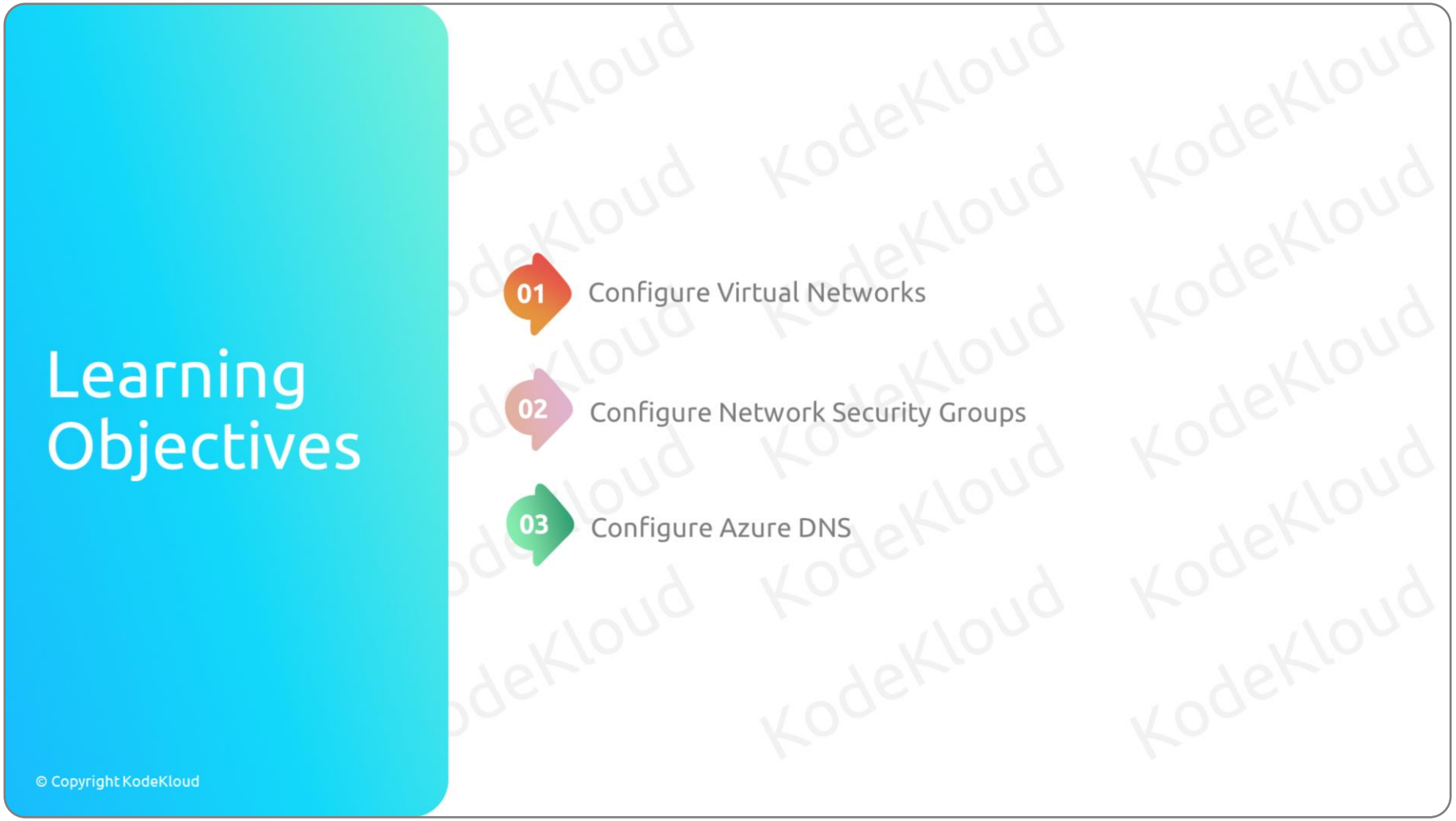
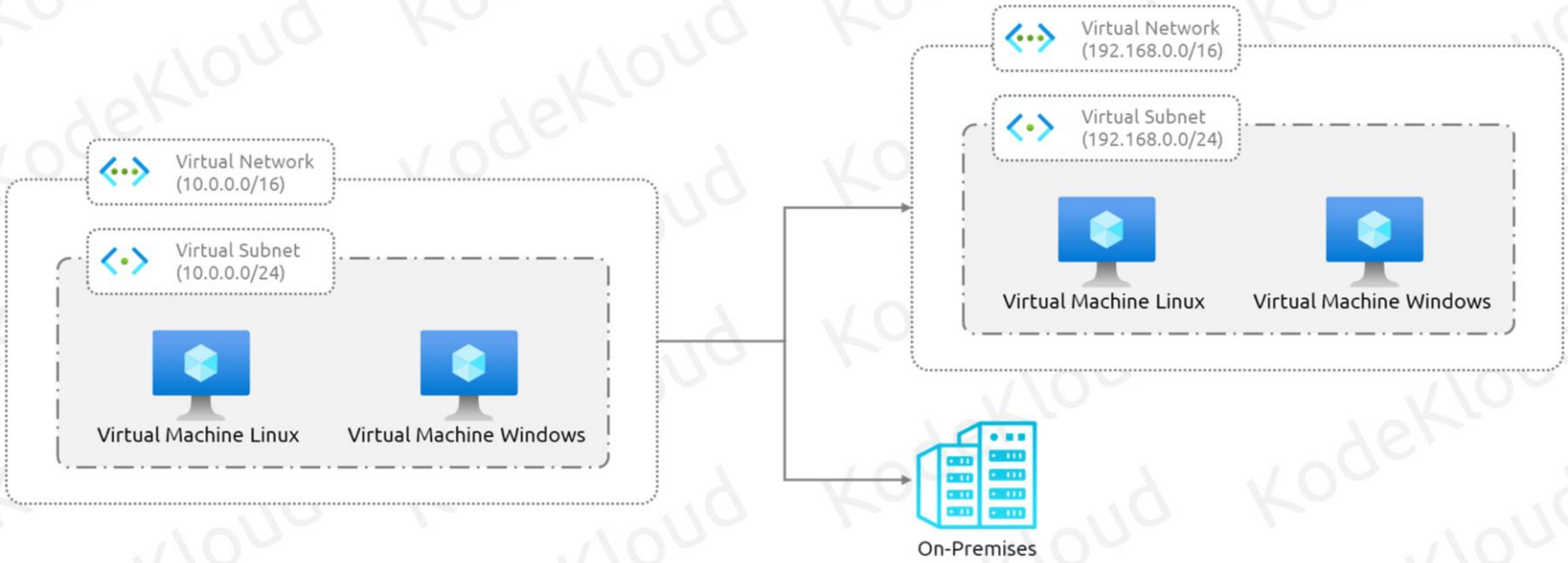
Administer Virtual Networking



Module overview

- A repeatable way to deliver software and infrastructure code to its destination
- Build and test code
- Deploy to on-prem or cloud resources
- CICD isn't just for software developers. It's also for infrastructure pros

Virtual Networks

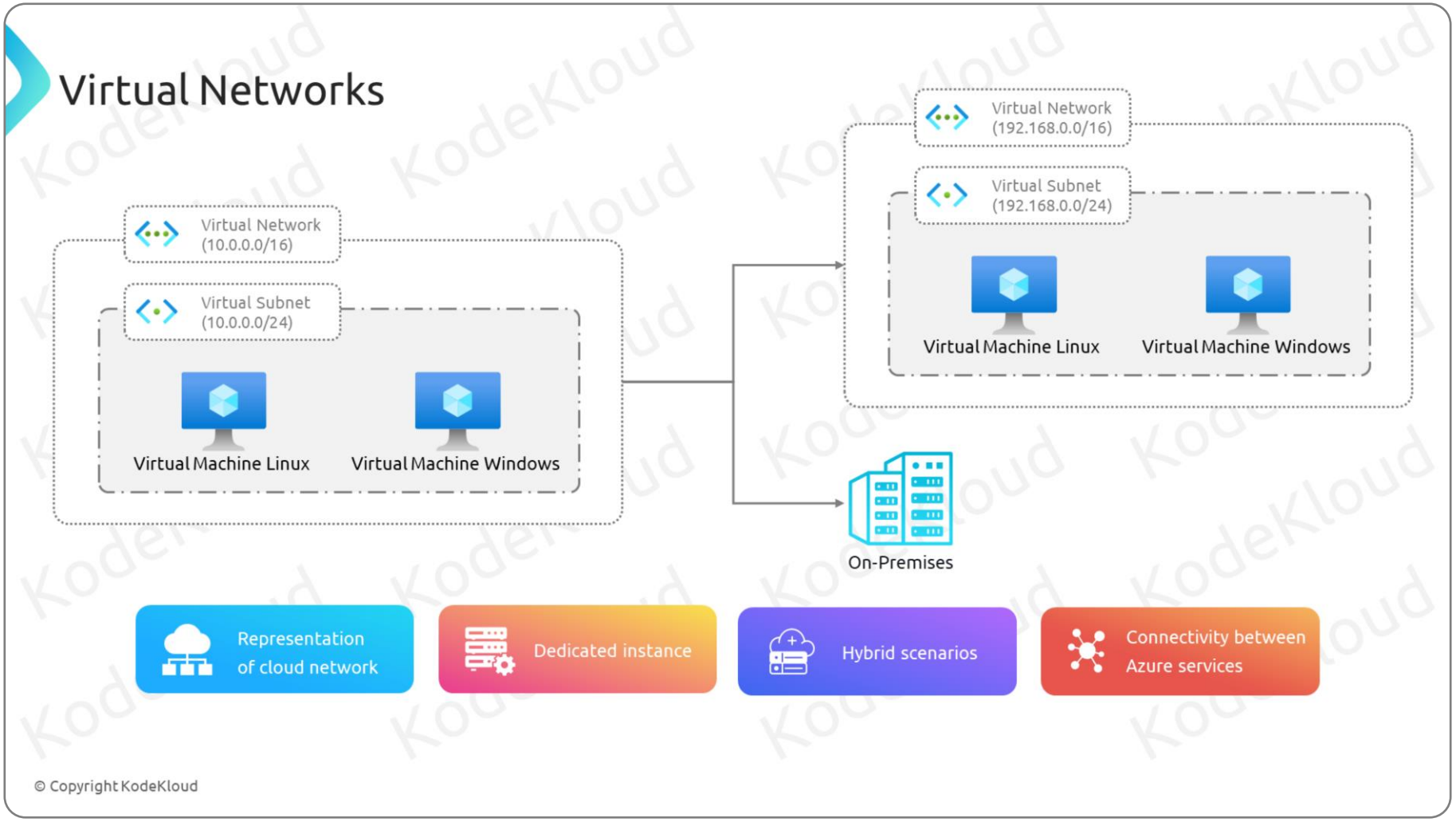


Management layer
Azure Resource Manager or ARM is the management layer responsible for creating, updating and managing resources.

Way to deploy resources
Regardless of whether you are using Azure Portal, Azure PowerShell, Azure CLI or REST API, Azure Resource Manager offers a way to deploy and manage the resources.

Features

Access Control, Locks, Tags, Resource Groups, and Templates are some of the features offered by ARM, which was not available in the previous model – Azure Service Manager



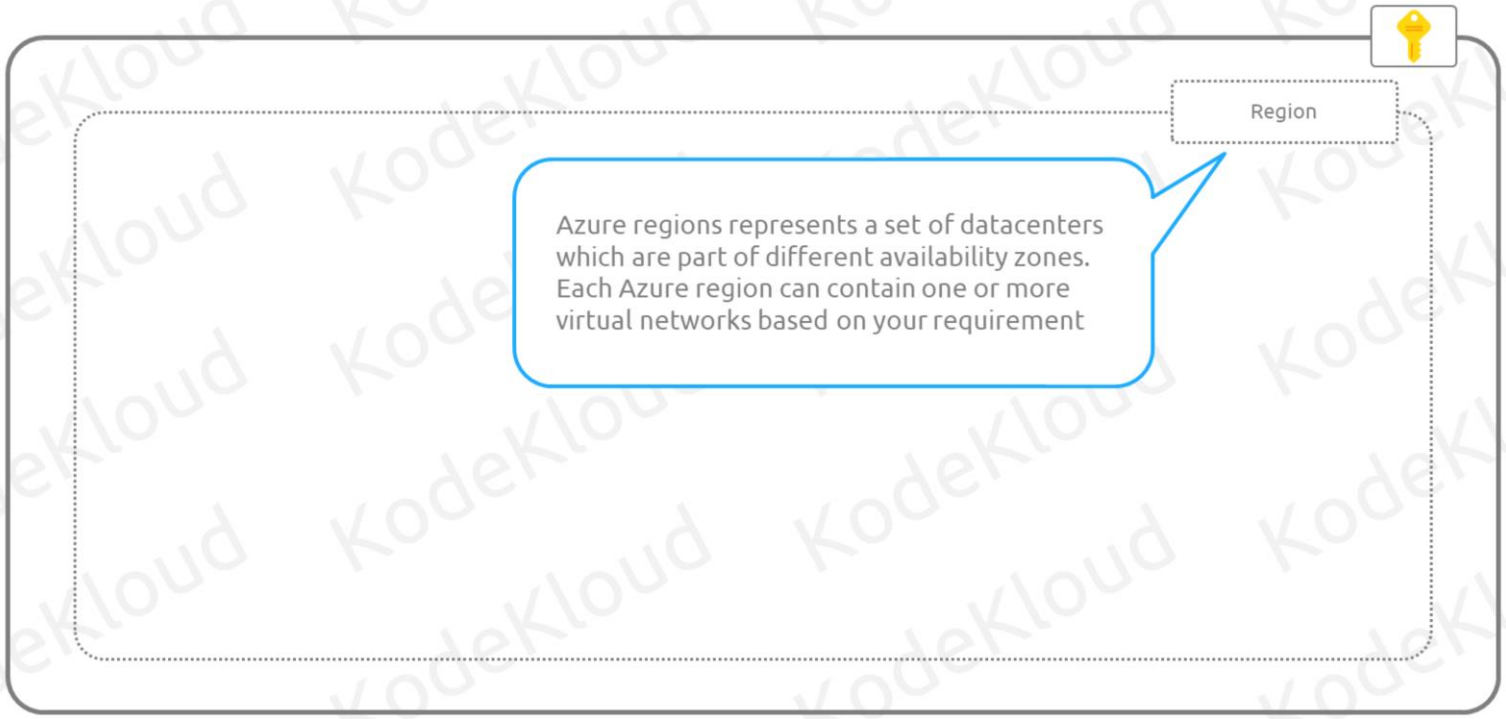
Representation of cloud network
Logical representation of your network in the cloud. Azure Virtual Networks (VNets) helps us to create and manage networking in Azure

Dedicated instance
Every VNet instance in Azure is private and dedicated

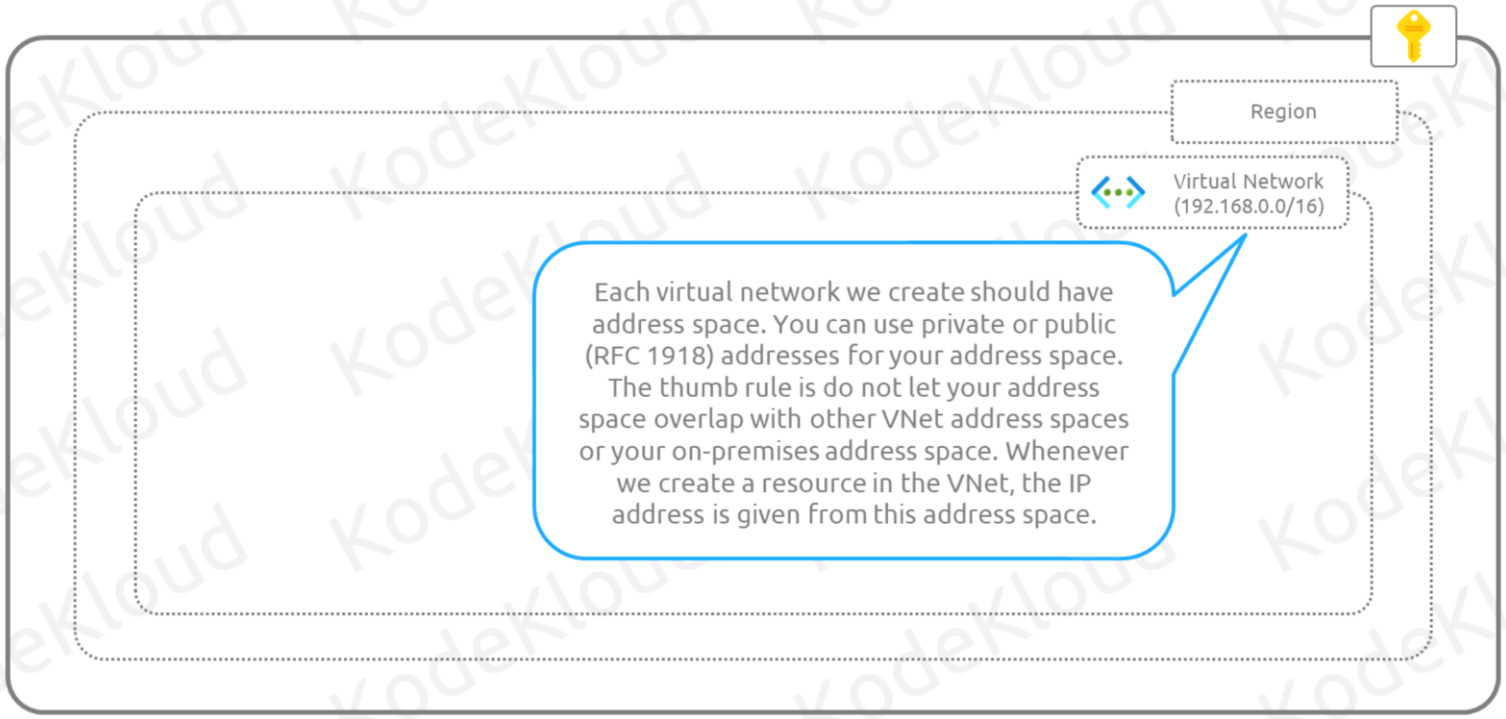
Hybrid scenarios
With the help of VNets, we can extend our communication to on-premises datacenters and other cloud providers securely.

Connectivity between Azure services
Virtual Network is responsible for facilitating connectivity between Azure Virtual Machines and other Azure services. Also, enables Azure VMs to connect to Internet.

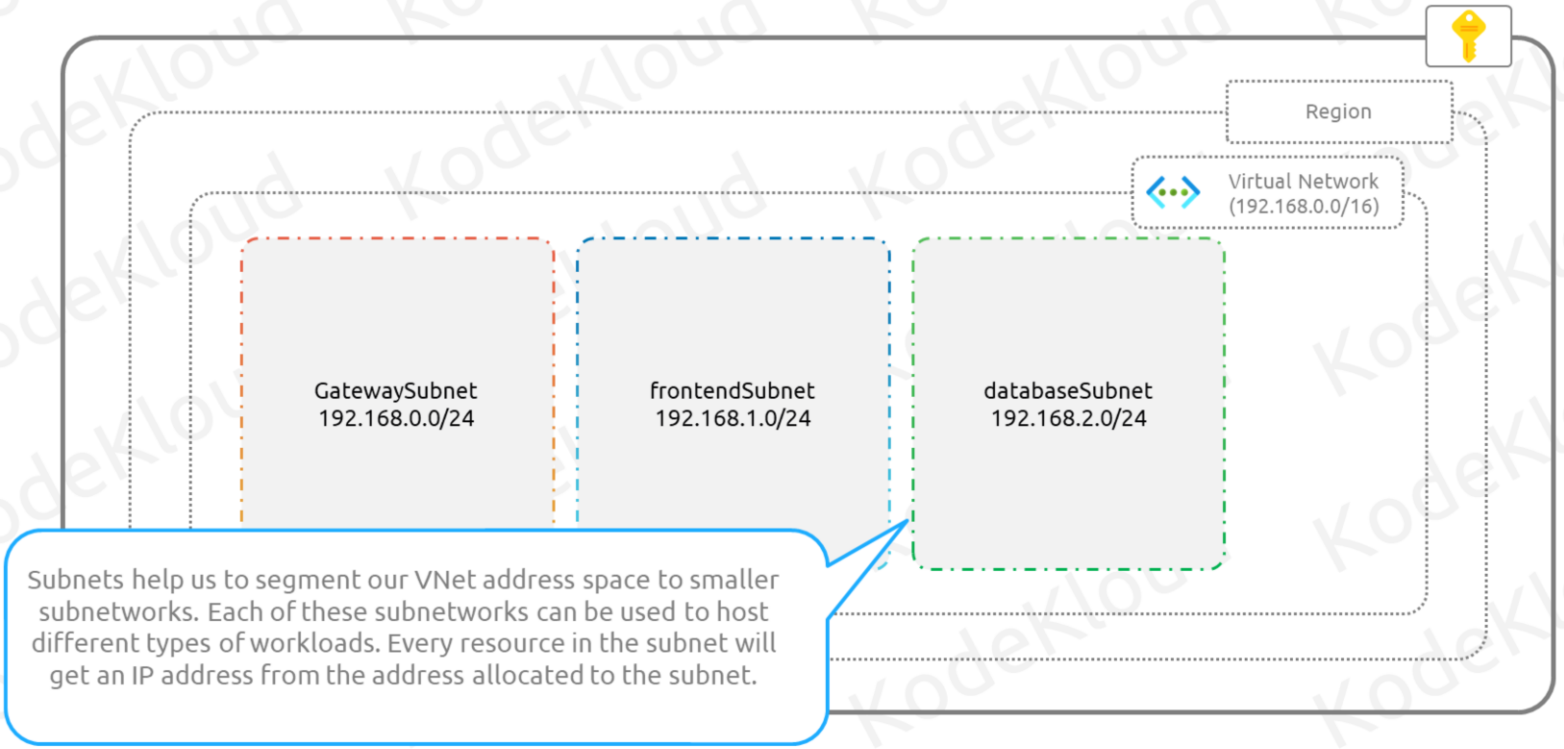
Virtual Network Concepts



Virtual Network Concepts



Virtual Network Concepts



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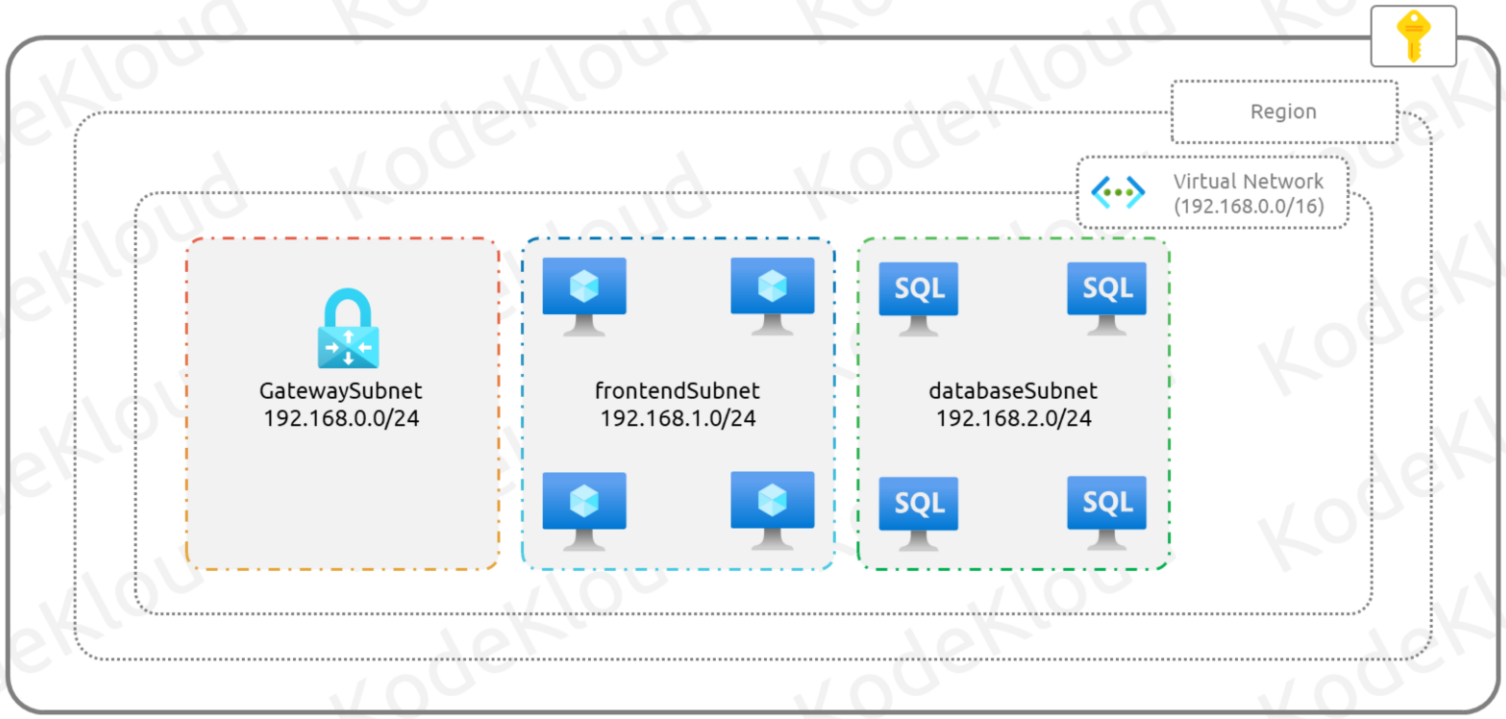
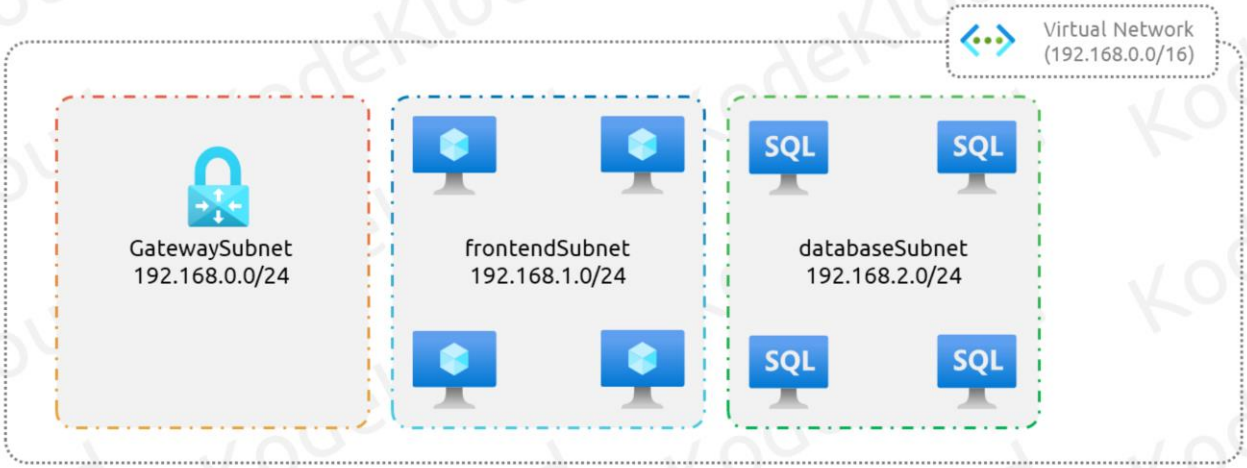


Private and Public IP Addresses

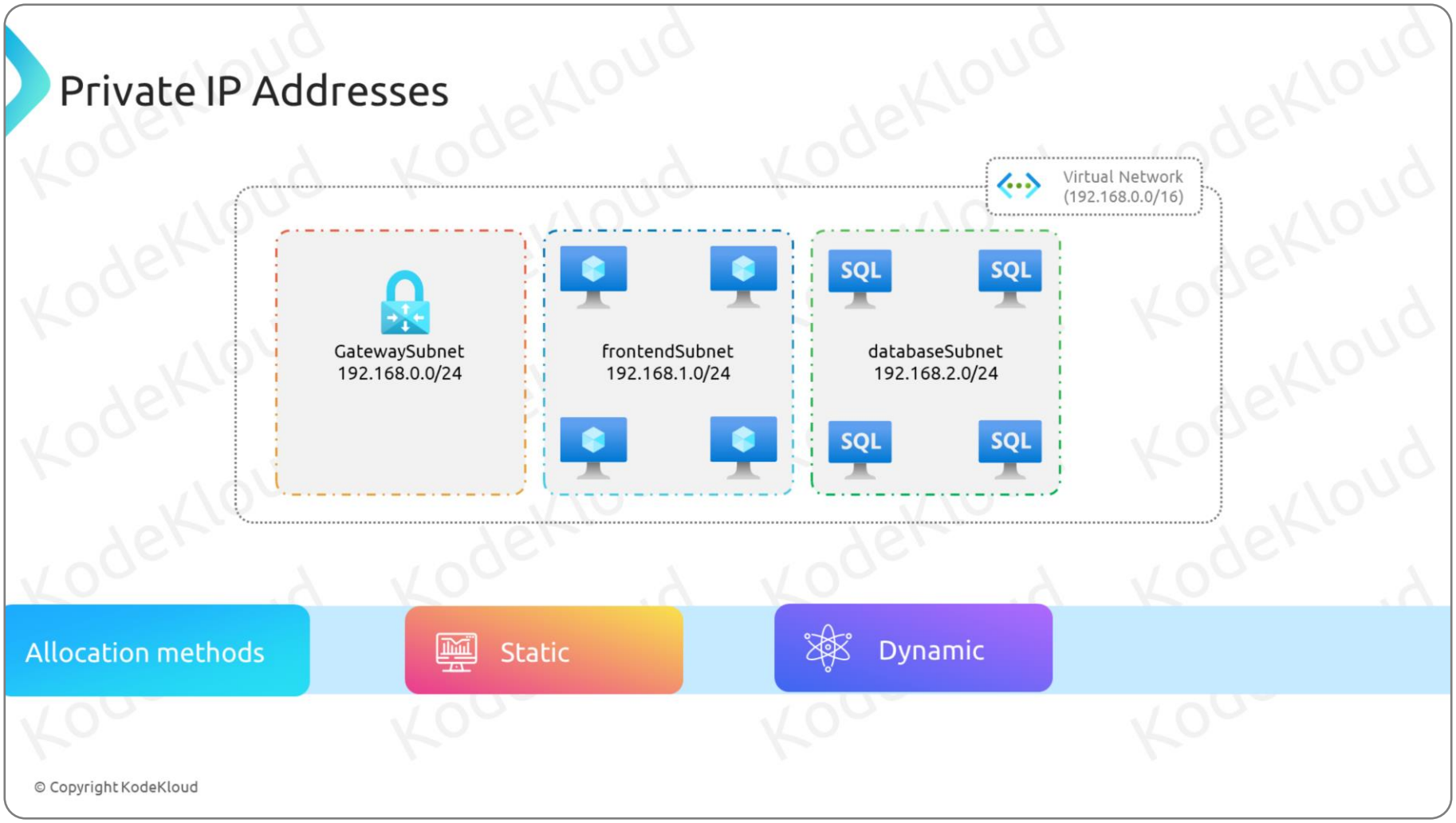
Private IP Addresses



Static
Helps in setting up static IP address for domain controllers, web servers and DNS servers which do not change even if the servers are rebooted. Also used with services such internal LBs and Application Gateways.

Dynamic
This is the default option, where the IP address is dynamically allocated from the address pool. If you restart a server and

if the previous IP address is not available, Azure will assign another available IP address from the address space.



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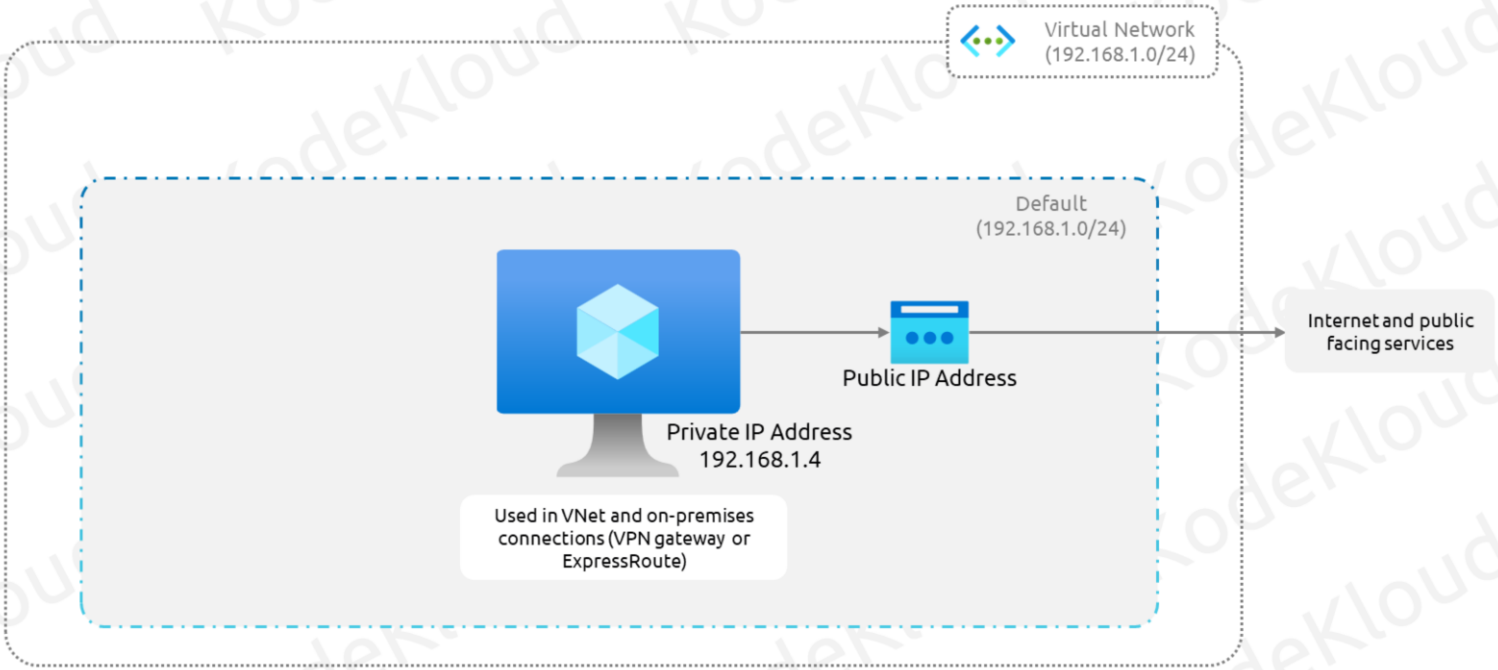
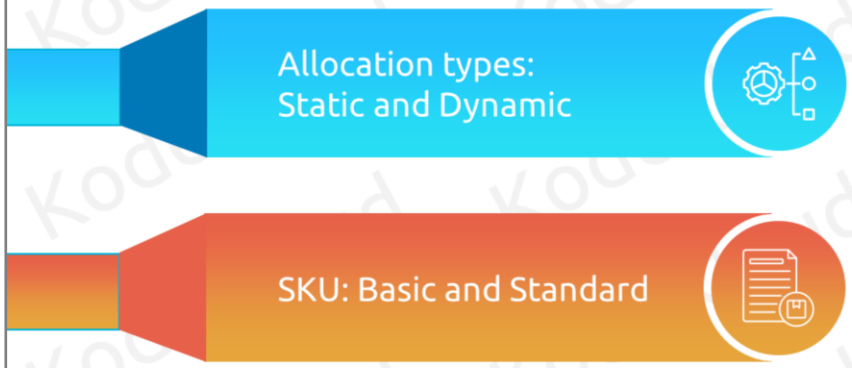
Public IP Addresses



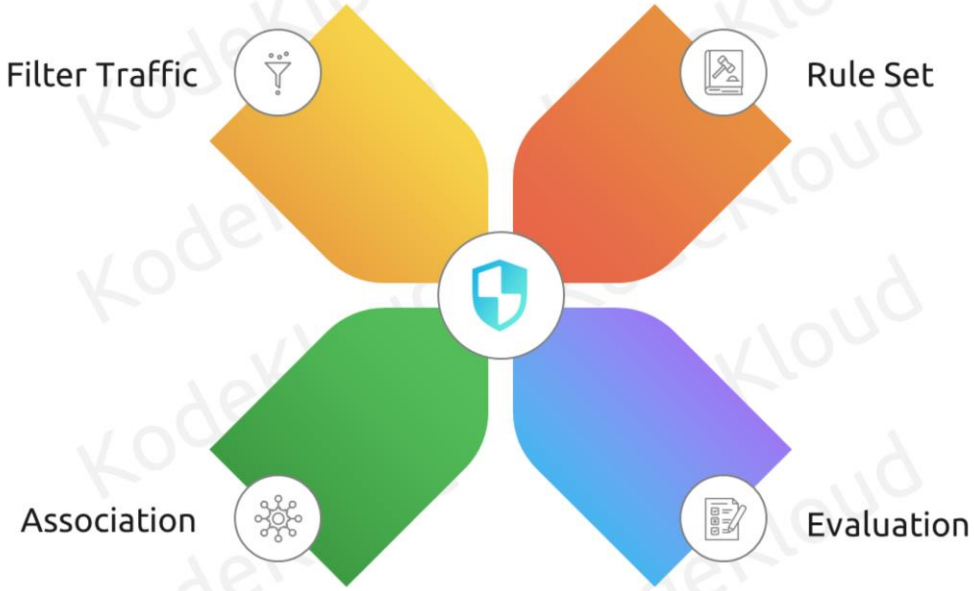
Public IP Addresses



Feature	Basic SKU	Standard SKU
IP Allocation	Static/Dynamic	Static
Security	By default, open	By default, closed
Resources	Virtual Machine NIC, VPN Gateways, Public Load Balancers, Application Gateways	Virtual Machine NIC, Public Load Balancers, Application Gateways
Redundancy	No zone redundancy	Zone redundant

Network Security Groups

Network Security Groups



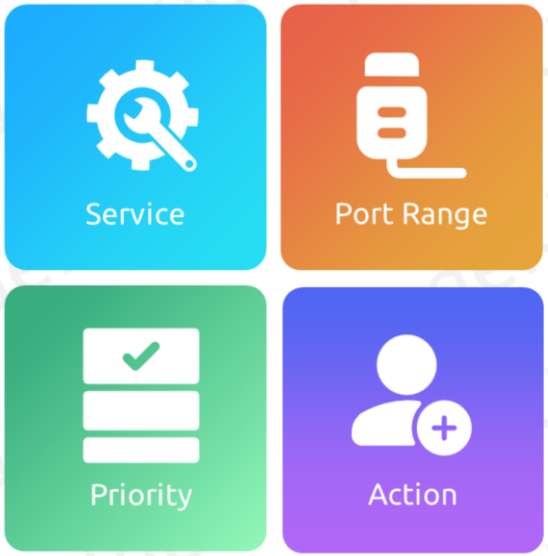
Filter traffic
NSG operate at layer 4 and allows us to filter the incoming and outgoing traffic from a virtual network

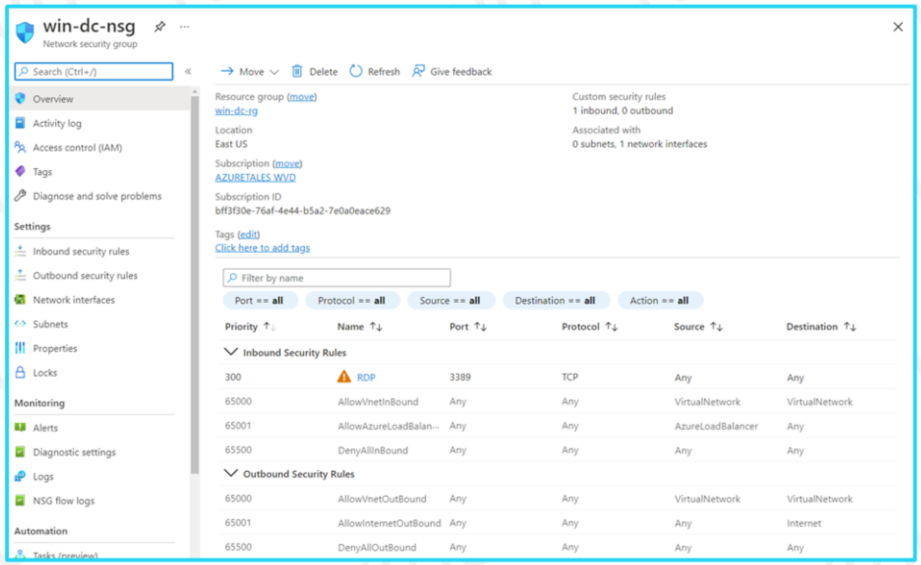
Rule set
NSG comprises a set of priority-based rules that can be used to allow or deny inbound or outbound traffic.

Association
NSGs can be associated to subnets and network interfaces. You can associate multiple subnets and network interfaces to a single NSG.

Evaluation
Rules applied at subnet and network interface level is evaluated separately. Traffic requires “allow” rule at both levels to be admitted.

Network Security Group Rules





Rules are evaluated based on the priority. There is a set of default rules which cannot be modified or deleted. Nevertheless, we can override these rules by creating rules with higher priority. Rules can be created based on the following attributes besides the IP details:

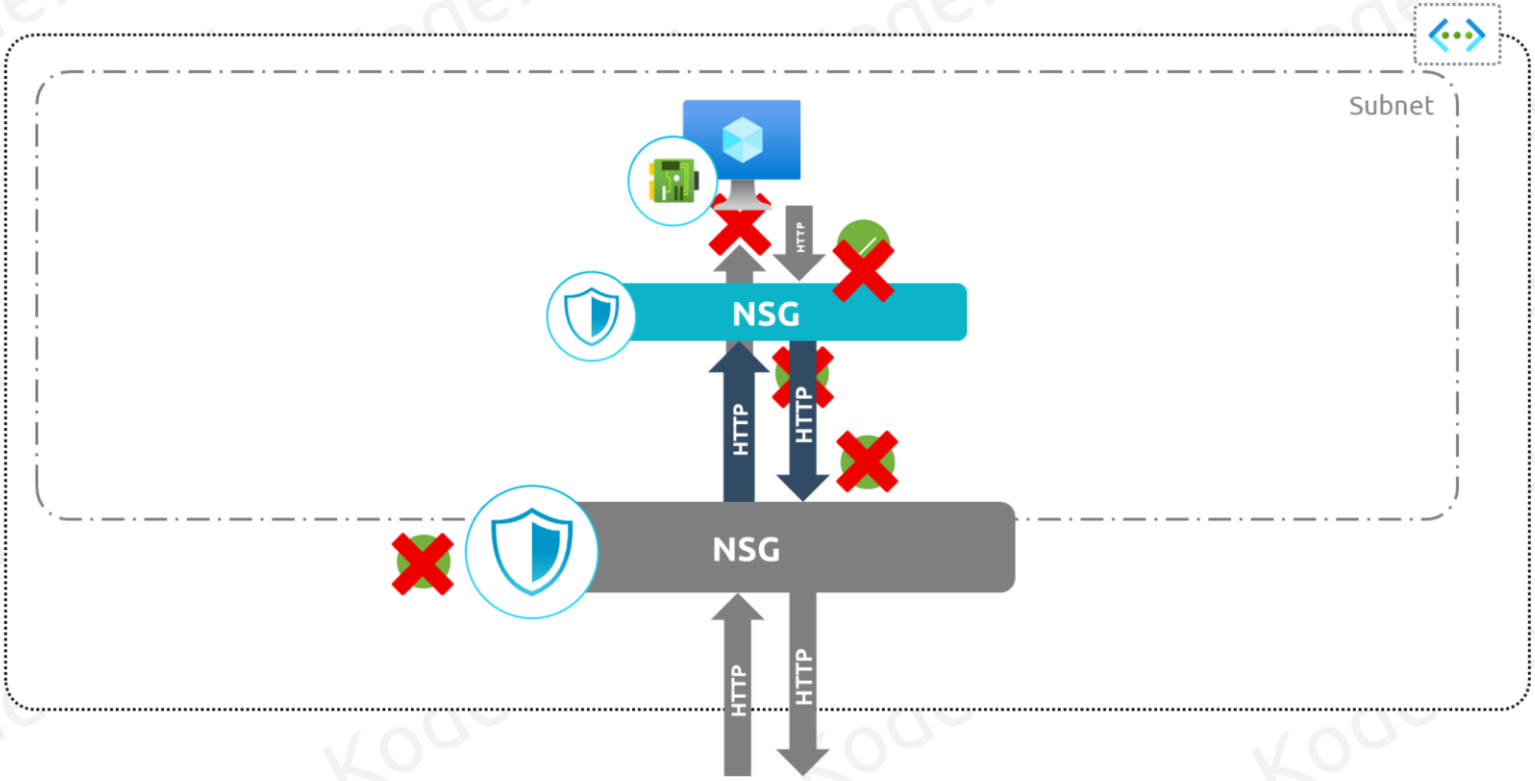
Service: You can choose custom or predefined services such as HTTP, HTTPS, RDP, SSH, etc. to allow the respective ports.

Port range: You can configure ports or a port range.

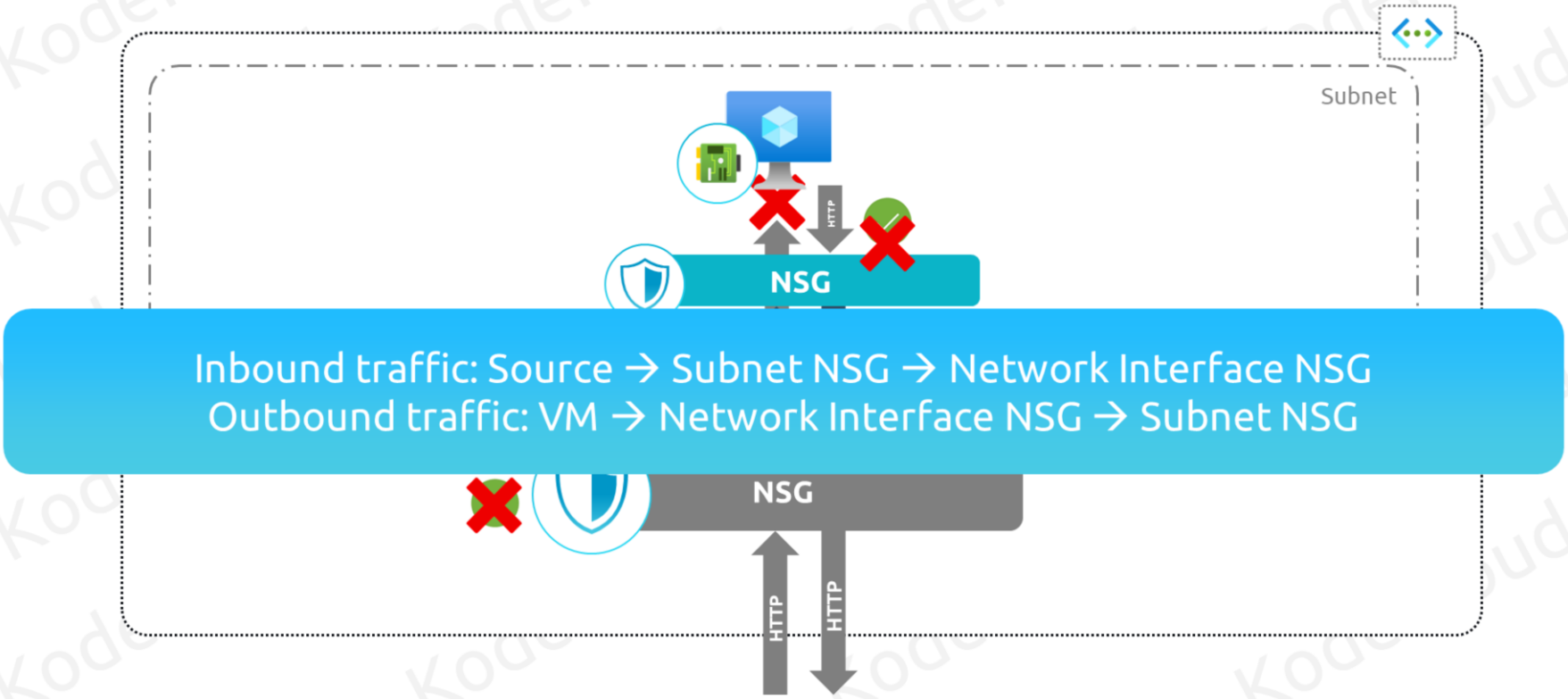
Priority: Lower the number higher the priority. Values range from 100-4096. Values in 65000 range is for default rules.

Action: Allow or Deny

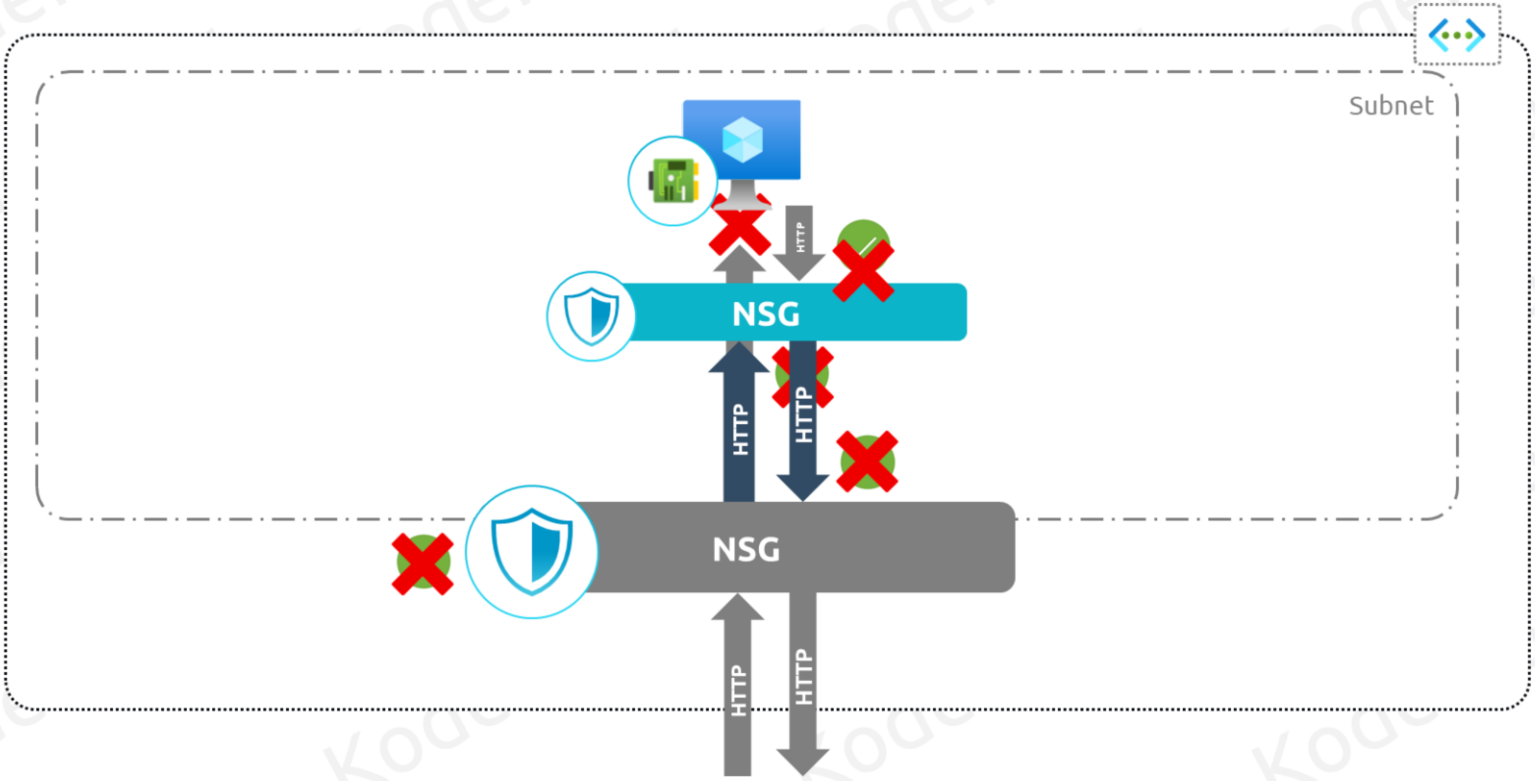
Effective Security Rules



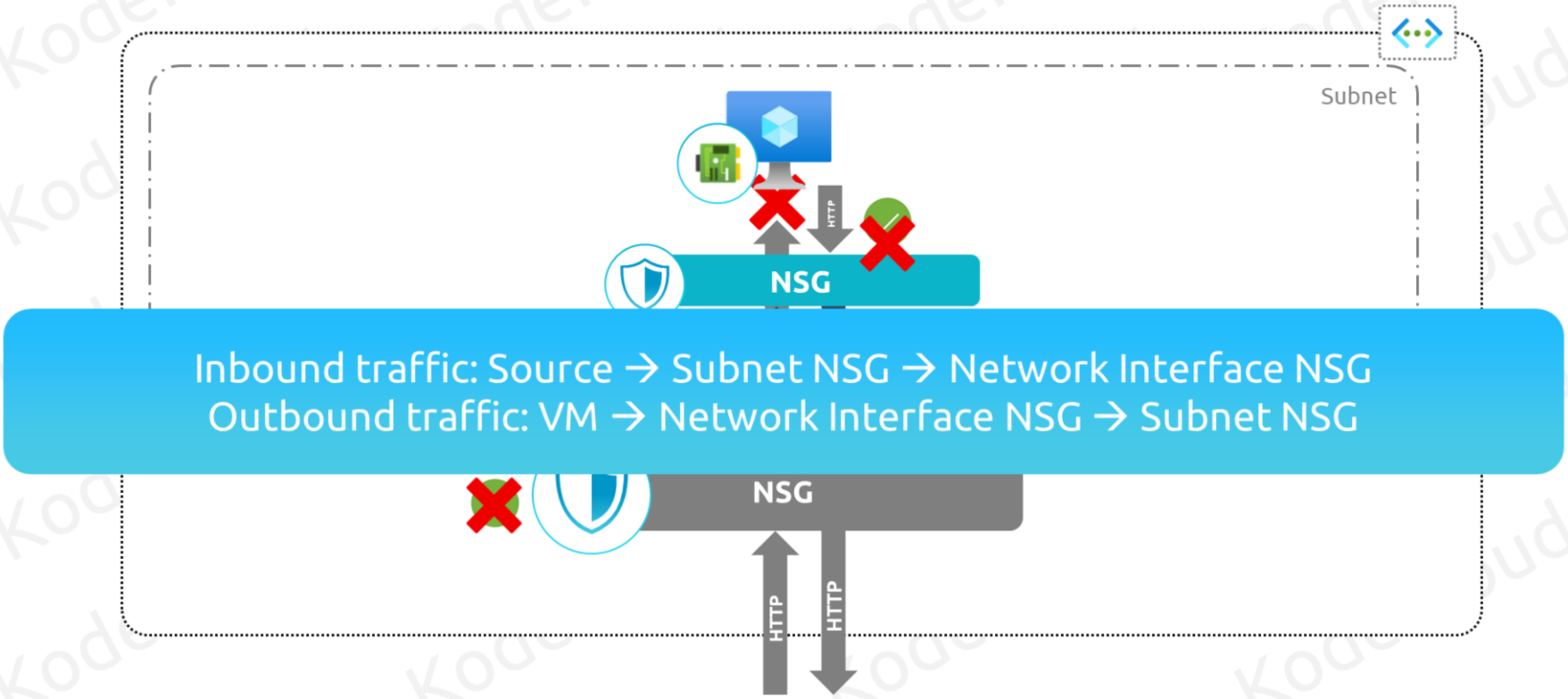
Effective Security Rules



Deploy Network Security Groups



Deploy Network Security Groups

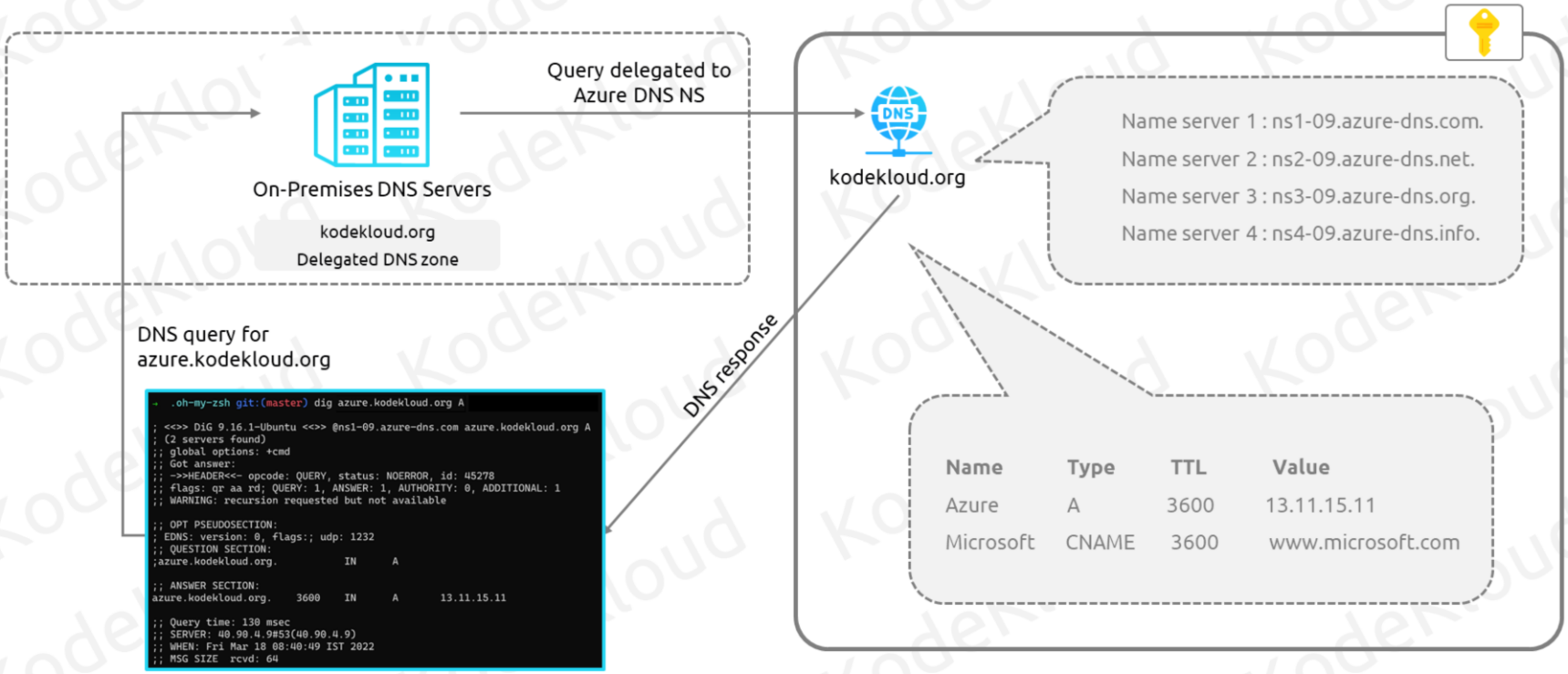


Application Security Groups

Azure DNS

Azure DNS

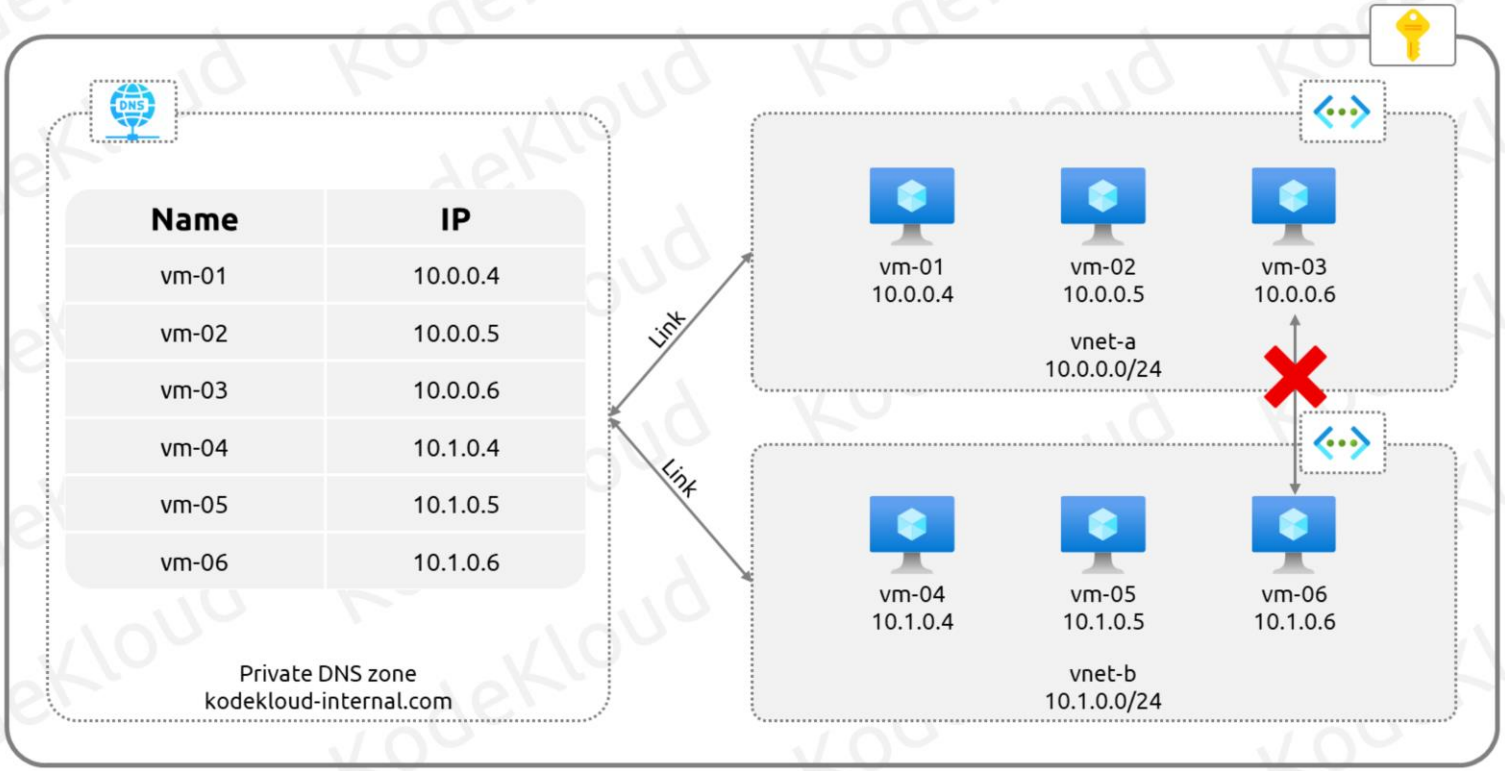
Azure DNS




```
→  .oh-my-zsh git:(master) dig azure.kodekloud.org A

; <<>> DiG 9.16.1-Ubuntu <<>> @ns1-09.azure-dns.com azure.kodekloud.org A
; (2 servers found)
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 45278
;; flags: qr aa rd; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1
;; WARNING: recursion requested but not available

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
;; QUESTION SECTION:
;azure.kodekloud.org.           IN      A

;; ANSWER SECTION:
azure.kodekloud.org.    3600    IN      A       13.11.15.11

;; Query time: 130 msec
;; SERVER: 40.90.4.9#53(40.90.4.9)
;; WHEN: Fri Mar 18 08:40:49 IST 2022
;; MSG SIZE  rcvd: 64
```

Private DNS Zones

Private DNS Zones



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