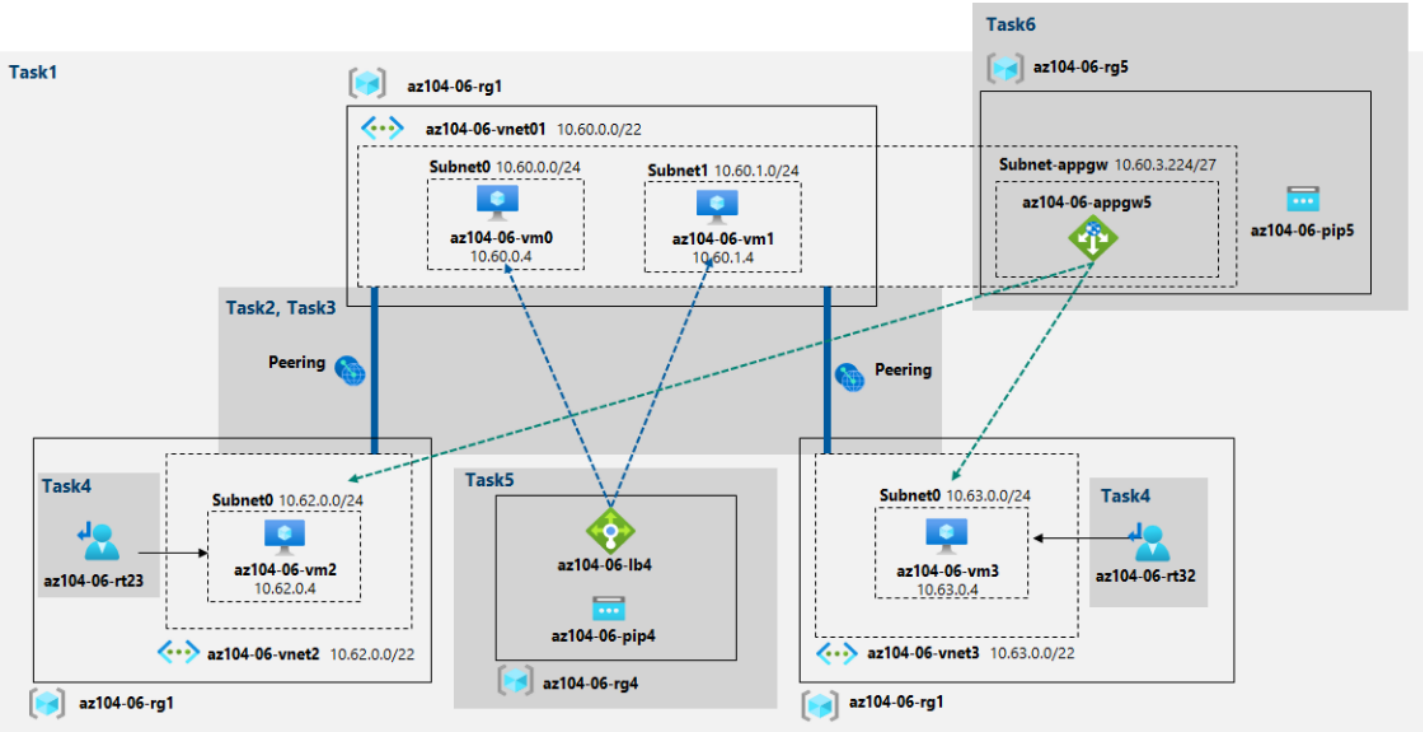
Implement Traffic Management

Topology 1.0:



Solution of Implement Traffic Management step by step:

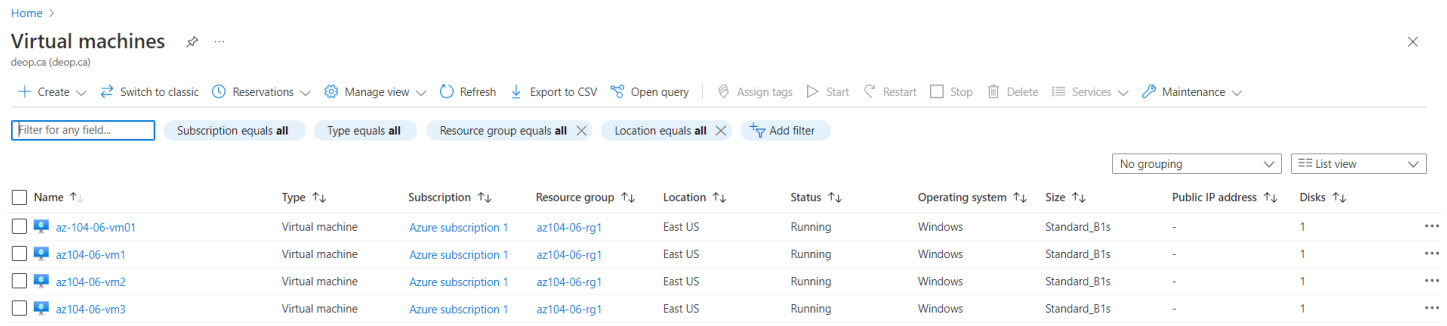
1. Provision the environment
2. Configure hub and spoke network topology
3. Test transitivity of virtual networking peering
4. Configure routing in the hub and spoke topology
5. Implement Azure Load Balancer
6. Implement Azure Application Gateway

Step 1:

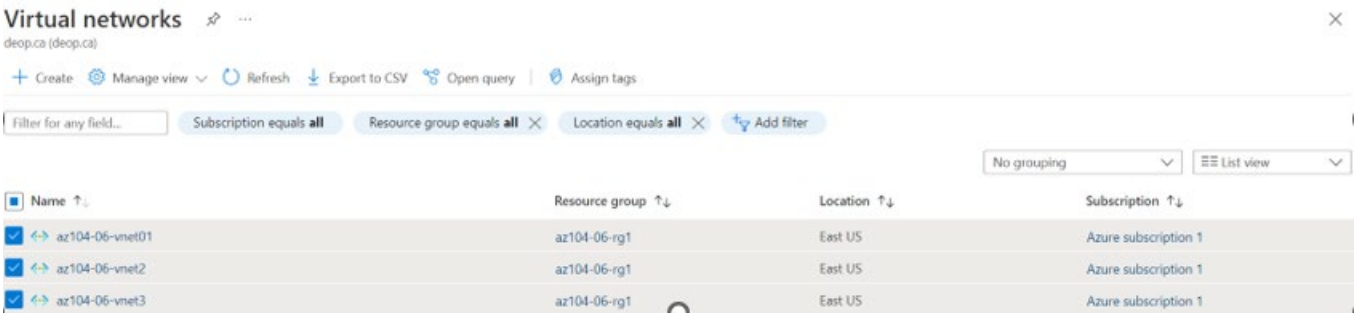
Created 4 virtual machines from azure portal according to the Topology 1.0 ;

- be careful **vnet**s and **subnet**s configurations
- there is no public ip on the vm's
- don't forget to save-download your json files
- all vm's will be in the same rg
- NEXT 6 pictures (1A…1G) show VMs, VNETs and RG configuration.
- On the file storage part on GitHub, you can see-download ARM templates as a separate file.

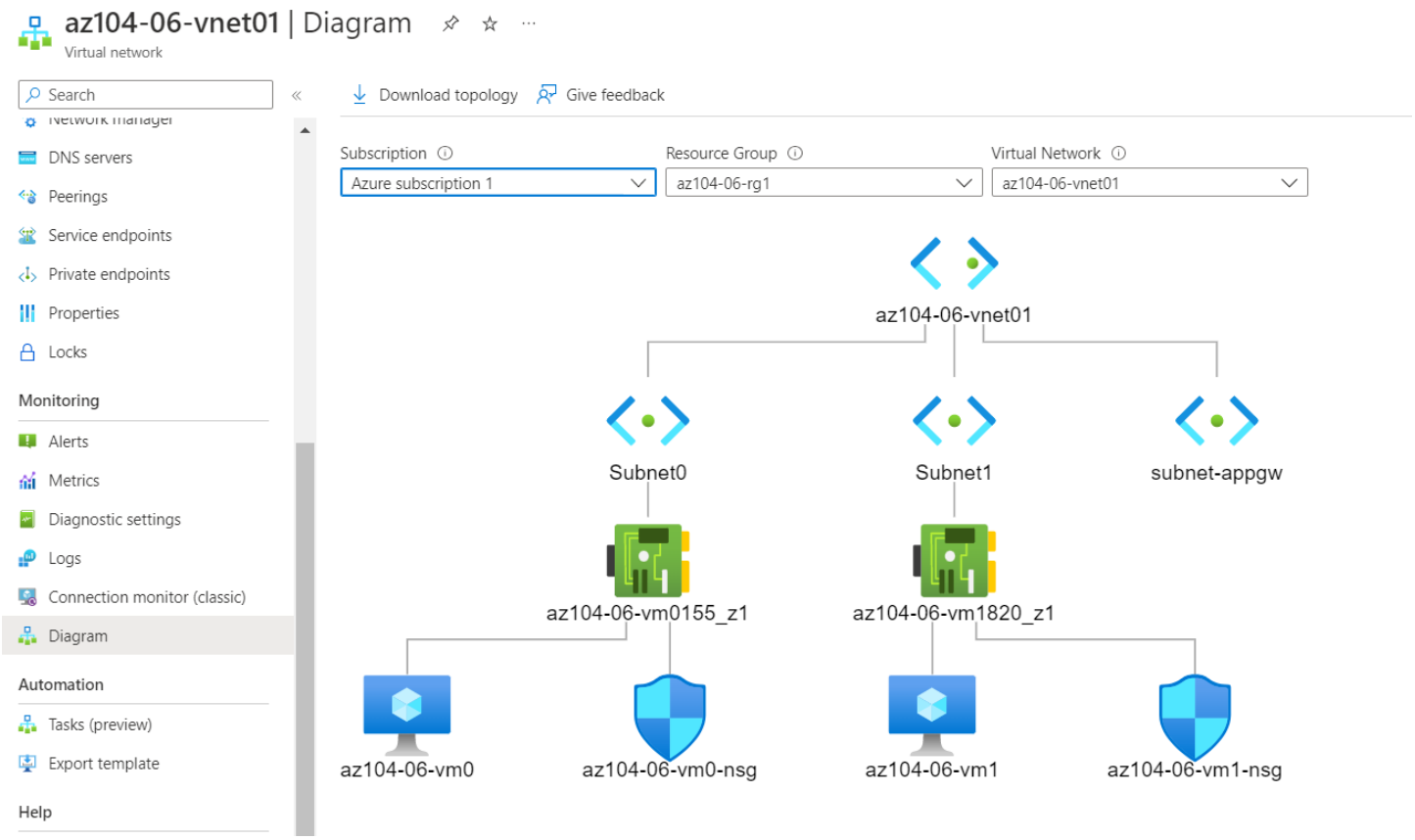
1A.


Home
Virtual machines
deop.ca (deop.ca)
Create
Switch to classic
Reservations
Manage view
Refresh
Export to CSV
Open query
Assign tags
Start
Restart
Stop
Delete
Services
Maintenance
Filter for any field...
Subscription equals all
Type equals all
Resource group equals all
Location equals all
Add filter
No grouping
List view
Name
Type
Subscription
Resource group
Location
Status
Operating system
Size
Public IP address
Disks
az-104-06-vm01 Virtual machine Azure subscription 1 az104-06-rg1 East US Running Windows Standard_B1s - 1
az104-06-vm1 Virtual machine Azure subscription 1 az104-06-rg1 East US Running Windows Standard_B1s - 1
az104-06-vm2 Virtual machine Azure subscription 1 az104-06-rg1 East US Running Windows Standard_B1s - 1
az104-06-vm3 Virtual machine Azure subscription 1 az104-06-rg1 East US Running Windows Standard_B1s - 1

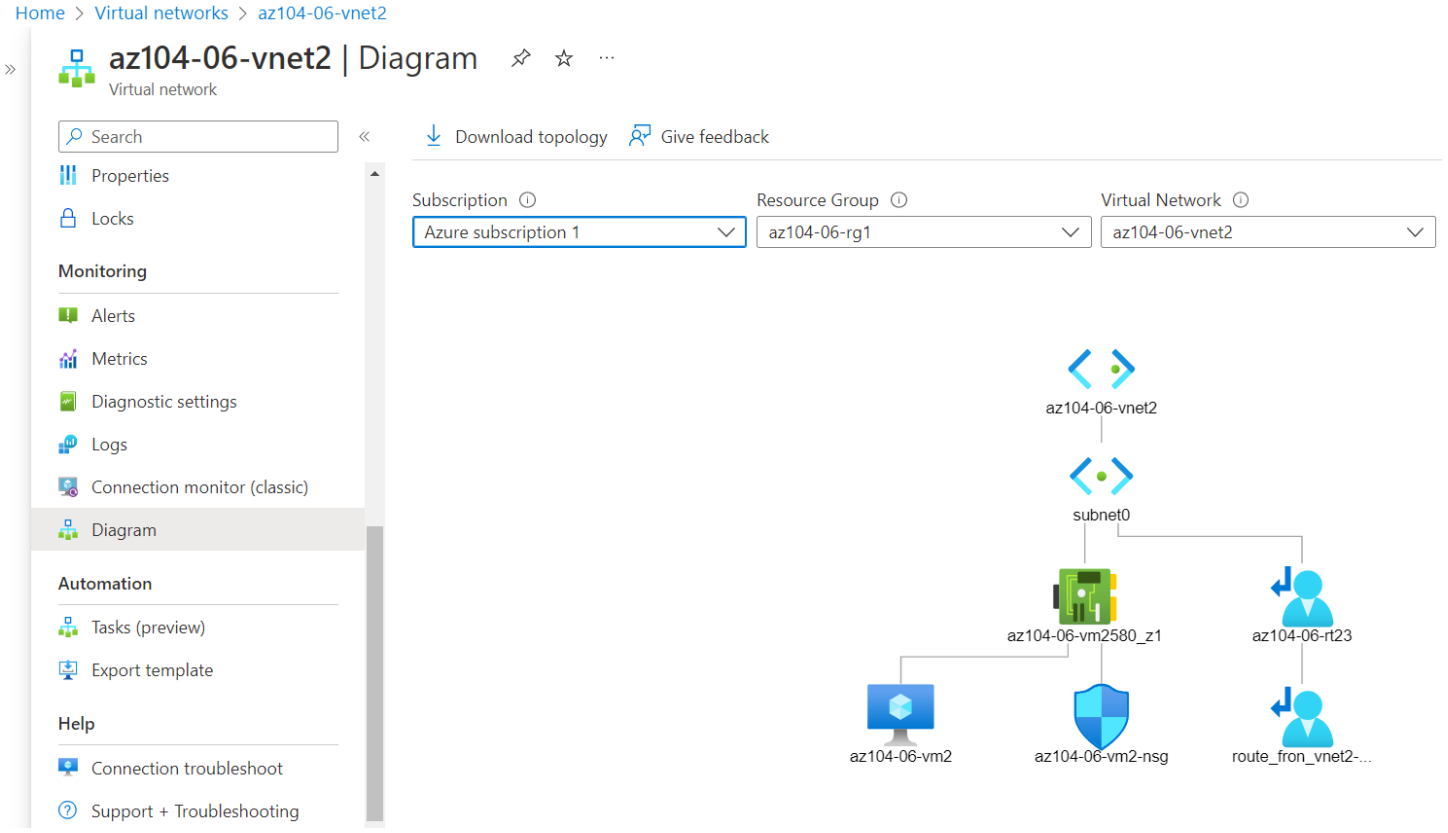
1B.


Virtual networks
deop.ca (deop.ca)
Create
Manage view
Refresh
Export to CSV
Open query
Assign tags
Filter for any field...
Subscription equals all
Resource group equals all
Location equals all
Add filter
No grouping
List view
Name
Resource group
Location
Subscription
az104-06-vnet01 az104-06-rg1 East US Azure subscription 1
az104-06-vnet2 az104-06-rg1 East US Azure subscription 1
az104-06-vnet3 az104-06-rg1 East US Azure subscription 1

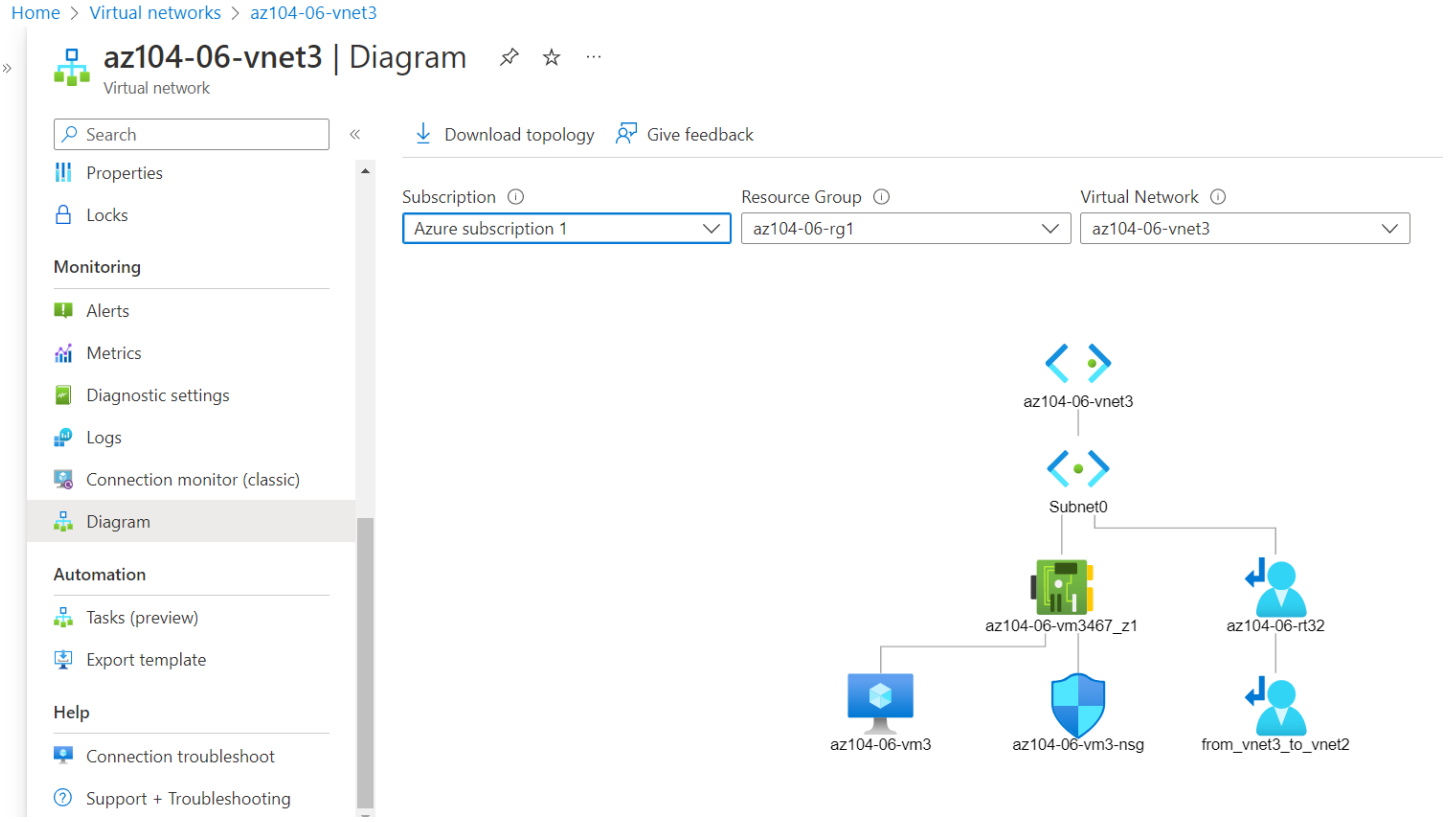
1C.


az104-06-vnet01 | Diagram
Virtual network
Search
DNS servers
Peerings
Service endpoints
Private endpoints
Properties
Locks
Monitoring
Alerts
Metrics
Diagnostic settings
Logs
Connection monitor (classic)
Diagram
Automation
Tasks (preview)
Export template
Help
Download topology
Give feedback
Subscription
Azure subscription 1
Resource Group
az104-06-rg1
Virtual Network
az104-06-vnet01
az104-06-vnet01
Subnet0
Subnet1
subnet-appgw
az104-06-vm0155_z1
az104-06-vm1820_z1
az104-06-vm0
az104-06-vm0-nsg
az104-06-vm1
az104-06-vm1-nsg

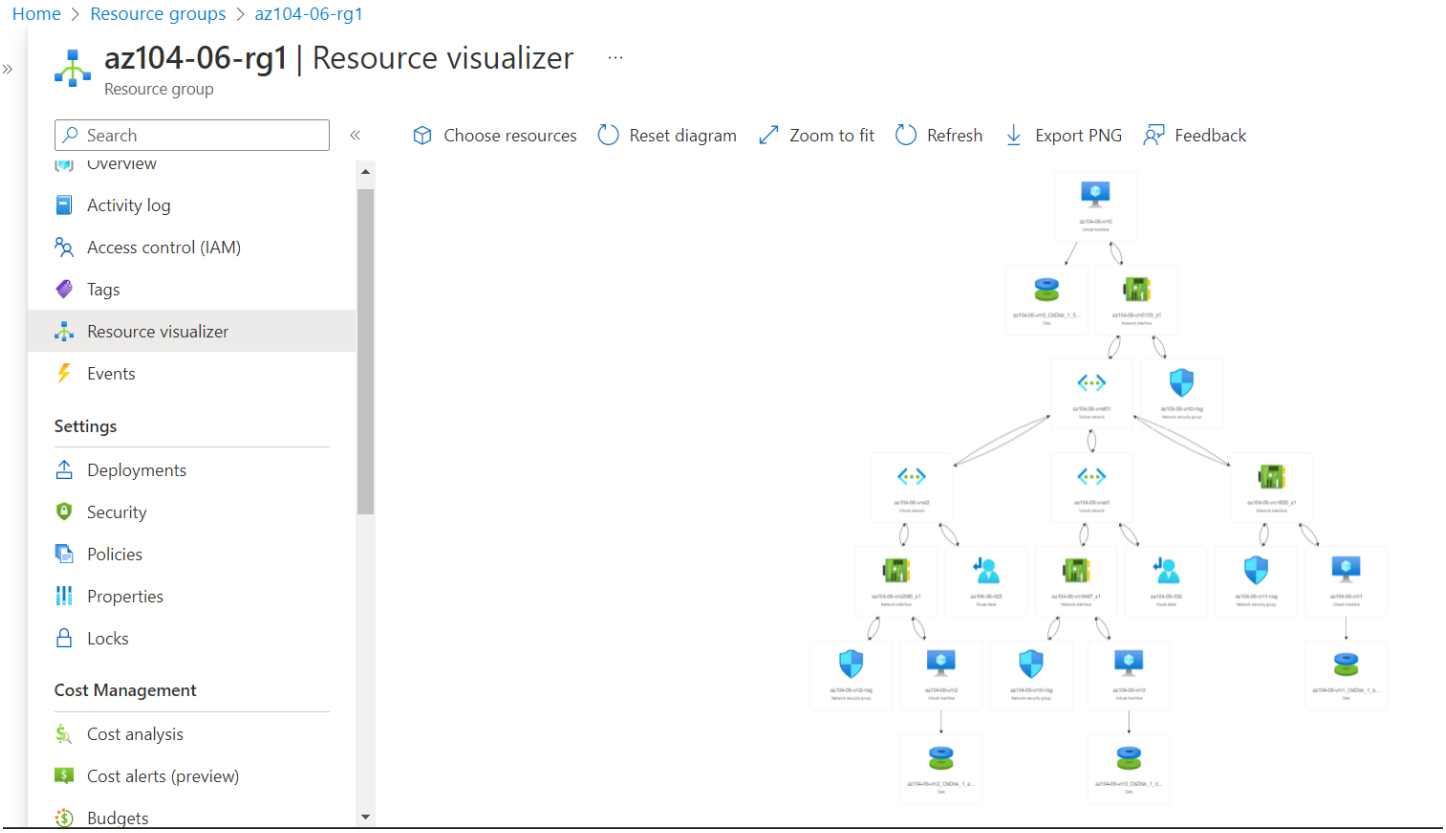
1D.


Home > Virtual networks > az104-06-vnet2
az104-06-vnet2 | Diagram
Virtual network
Search
Properties
Locks
Monitoring
Alerts
Metrics
Diagnostic settings
Logs
Connection monitor (classic)
Diagram
Automation
Tasks (preview)
Export template
Help
Connection troubleshoot
Support + Troubleshooting
Download topology
Give feedback
Subscription
Azure subscription 1
Resource Group
az104-06-rg1
Virtual Network
az104-06-vnet2
az104-06-vnet2
subnet0
az104-06-vm2580_z1
az104-06-rt23
az104-06-vm2
az104-06-vm2-nsg
route_fron_vnet2-...

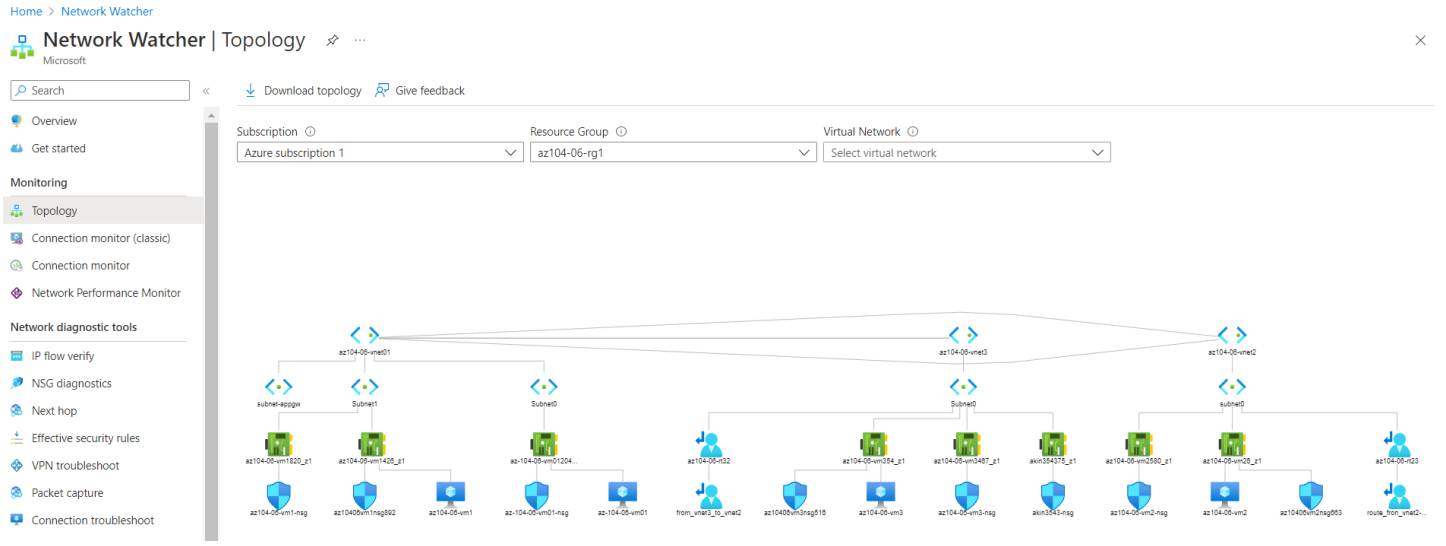
1E.


Home > Virtual networks > az104-06-vnet3
az104-06-vnet3 | Diagram
Virtual network
Search
Properties
Locks
Monitoring
Alerts
Metrics
Diagnostic settings
Logs
Connection monitor (classic)
Diagram
Automation
Tasks (preview)
Export template
Help
Connection troubleshoot
Support + Troubleshooting
Download topology
Give feedback
Subscription
Azure subscription 1
Resource Group
az104-06-rg1
Virtual Network
az104-06-vnet3
az104-06-vnet3
Subnet0
az104-06-vm3467_z1
az104-06-rt32
az104-06-vm3
az104-06-vm3-nsg
from_vnet3_to_vnet2

1F.



1G.

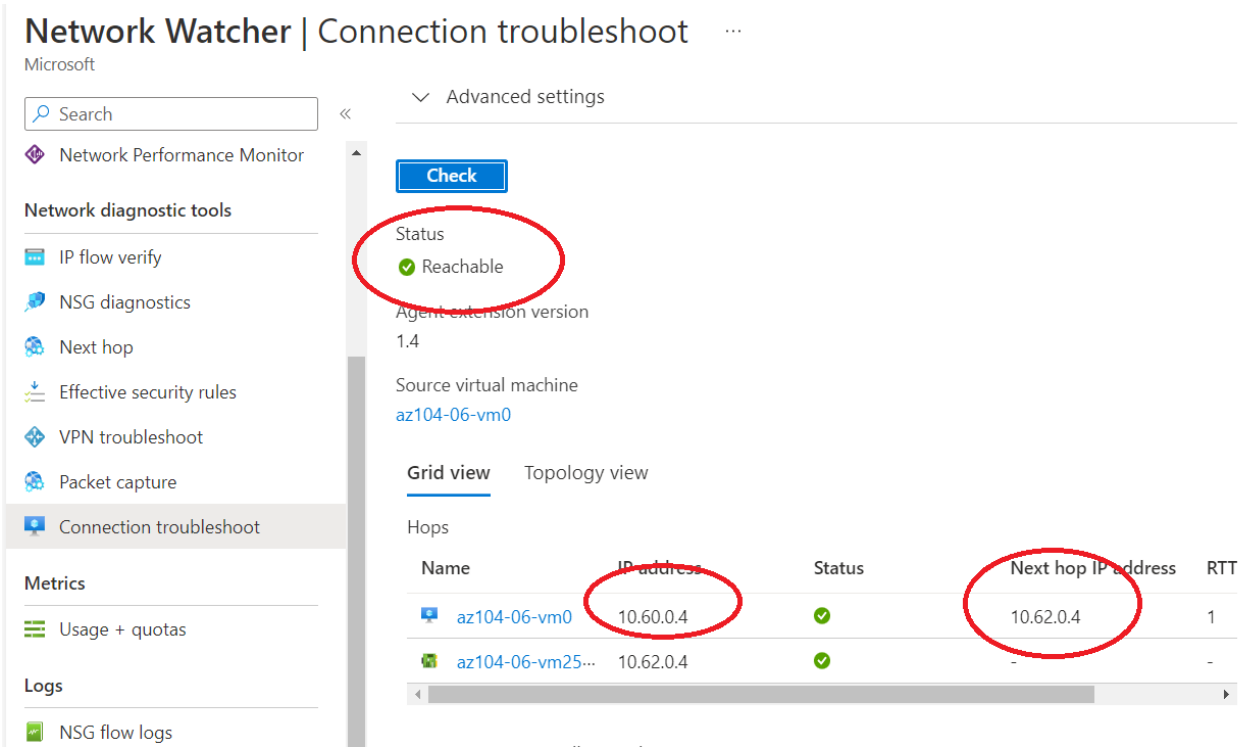


Step 2-3:

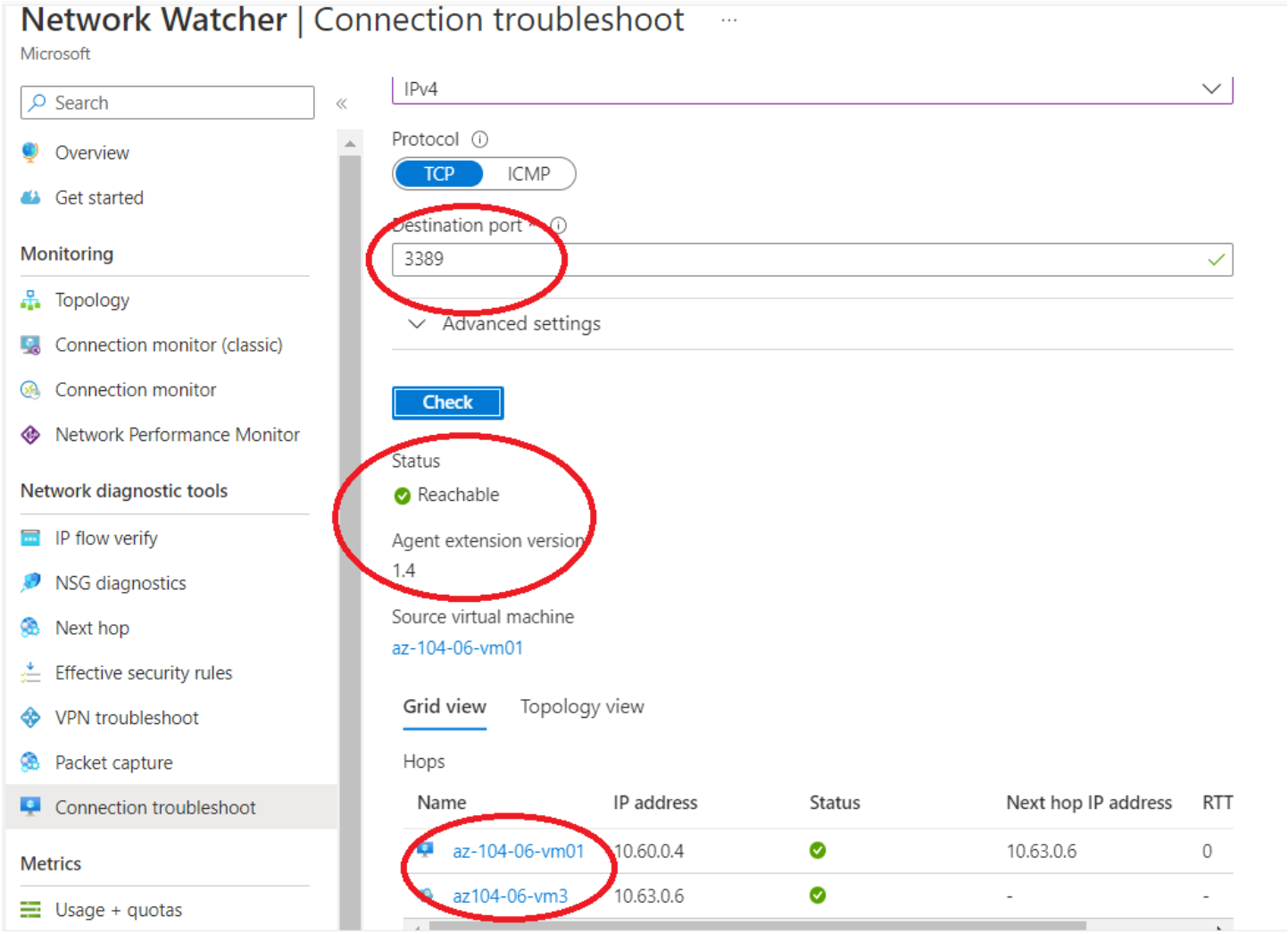
Created 2 VNET peering between vnet01-vnet2 and vnet01-vnet3 like on the Topology 1.0 ;

- After setting up 2 peering check the connectivity between them.
- To check the connectivity is used **Network Watcher** (after altering the NW on the left pane use connection troubleshooting)
- Next 2 pictures (2A-2B) demonstrated the connectivity, all details on it

2A.


Network Watcher | Connection troubleshoot
Microsoft
Search
Network Performance Monitor
Network diagnostic tools
IP flow verify
NSG diagnostics
Next hop
Effective security rules
VPN troubleshoot
Packet capture
Connection troubleshoot
Metrics
Usage + quotas
Logs
NSG flow logs
Advanced settings
Check
Status
Reachable
Agent extension version
1.4
Source virtual machine
az104-06-vm0
Grid view
Topology view
Hops
Name
IP address
Status
Next hop IP address
RTT
az104-06-vm0
10.60.0.4
10.62.0.4
1
az104-06-vm25···
10.62.0.4
-
-

2B.



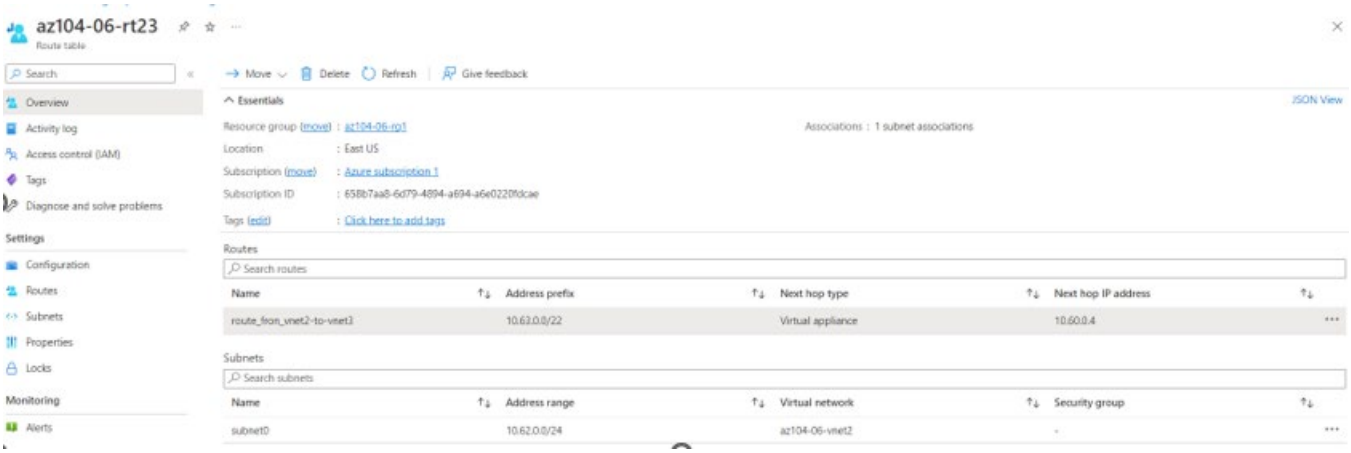
Step 4:

Created 2 route table which are route_from_vnet2-to-vnet3 and from_vnet3_to_vnet2.

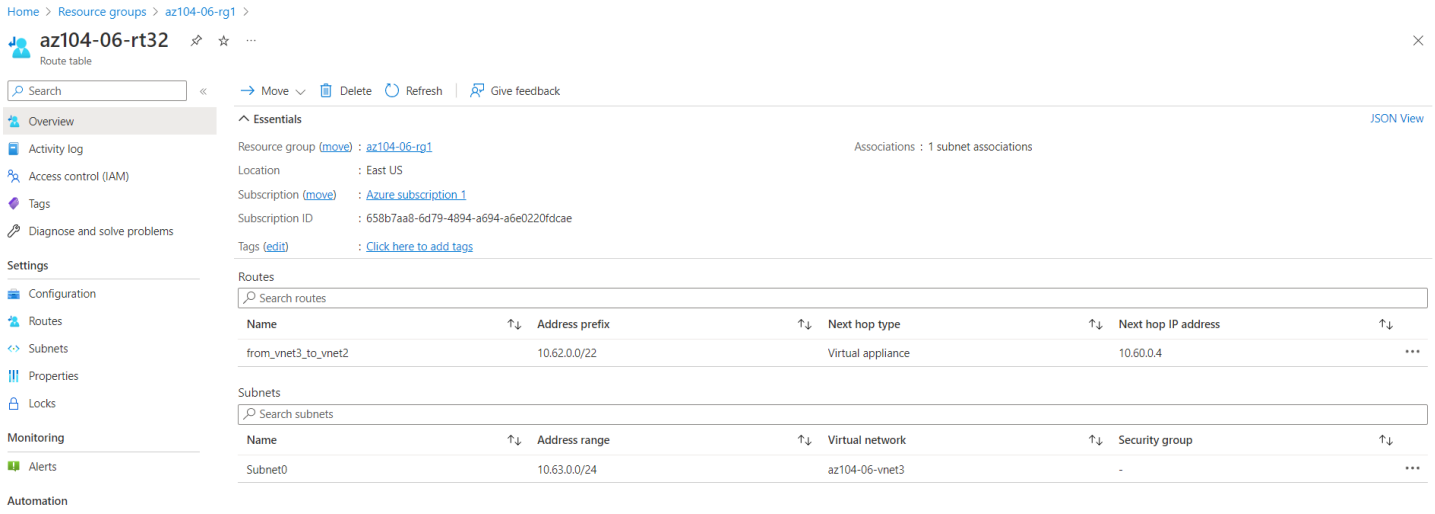
Topology 1.0 ;

- Configuration, Next hop type and Next hop IP address is shown on the pictures (3A-3B)

3.A



3.B

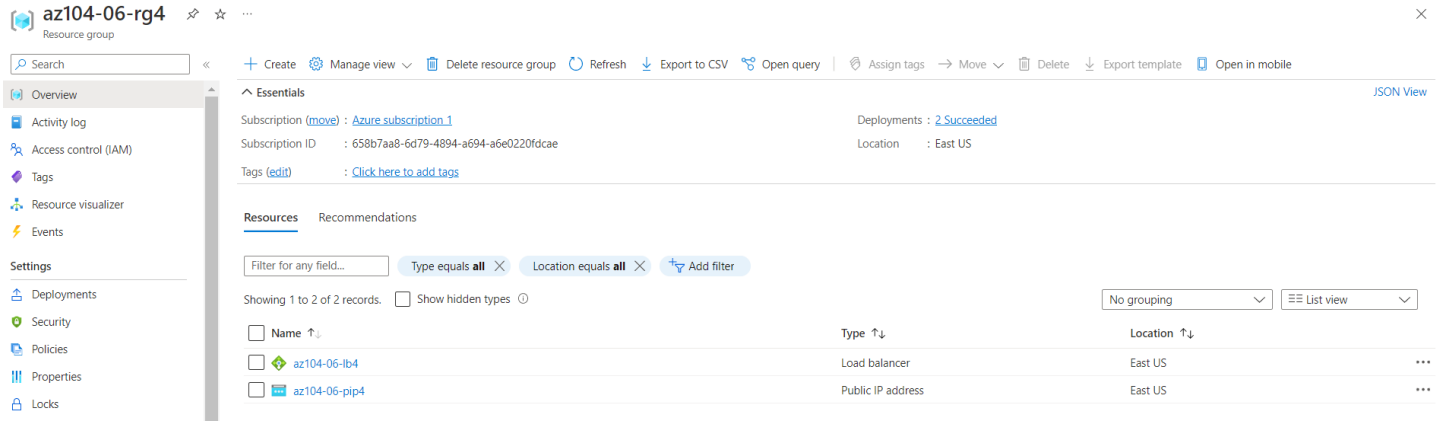


Step 5:

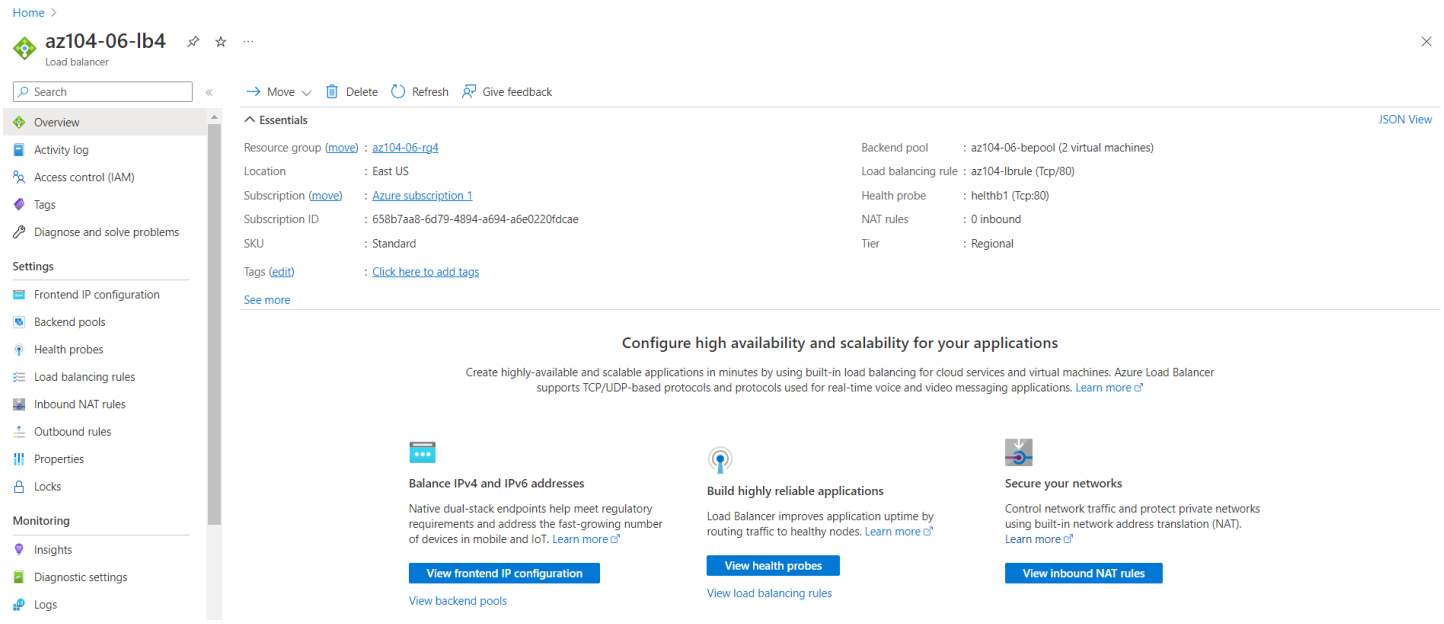
Implemented Azure Load Balancer on vm0 and vm1 and named az104-06-lb4 like on the Topology 1.0 ;

- Implementation take placed on the resource group 4 (rg4)
- Public ip assigned to the Load balancer which is called **az104-06-pip4**
- Configuration is shown on the picture(4A…4D)
- There is no NAT rules

4A.


az104-06-rg4
Resource group
Search
Overview
Activity log
Access control (IAM)
Tags
Resource visualizer
Events
Settings
Deployments
Security
Policies
Properties
Locks
Create
Manage view
Delete resource group
Refresh
Export to CSV
Open query
Assign tags
Move
Delete
Export template
Open in mobile
Essentials
JSON View
Subscription (move) : Azure subscription 1
Subscription ID : 658b7aa8-6d79-4894-a694-a6e0220fdcae
Tags (edit) : Click here to add tags
Deployments : 2 Succeeded
Location : East US
Resources
Recommendations
Filter for any field...
Type equals all
Location equals all
Add filter
Showing 1 to 2 of 2 records.
Show hidden types
No grouping
List view
Name
Type
Location
az104-06-lb4
Load balancer
East US
az104-06-pip4
Public IP address
East US

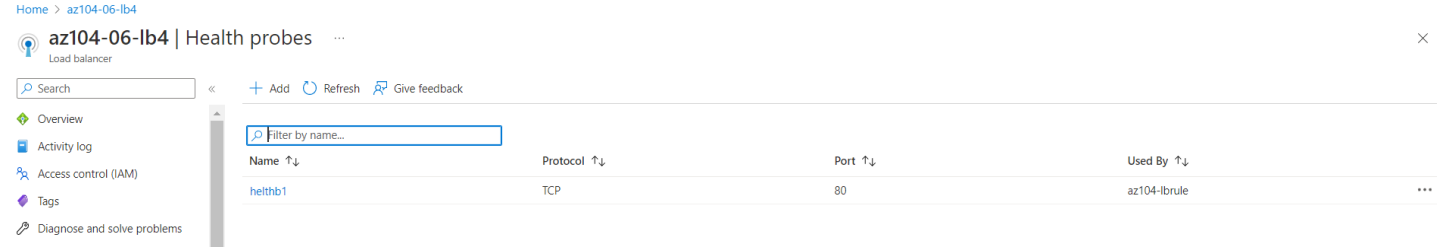
4B.


Home
az104-06-lb4
Load balancer
Search
Overview
Activity log
Access control (IAM)
Tags
Diagnose and solve problems
Settings
Frontend IP configuration
Backend pools
Health probes
Load balancing rules
Inbound NAT rules
Outbound rules
Properties
Locks
Monitoring
Insights
Diagnostic settings
Logs
Move
Delete
Refresh
Give feedback
Essentials
JSON View
Resource group (move) : az104-06-rg4
Location : East US
Subscription (move) : Azure subscription 1
Subscription ID : 658b7aa8-6d79-4894-a694-a6e0220fdcae
SKU : Standard
Tags (edit) : Click here to add tags
See more
Backend pool : az104-06-bepool (2 virtual machines)
Load balancing rule : az104-lbrule (Tcp/80)
Health probe : helthb1 (Tcp:80)
NAT rules : 0 inbound
Tier : Regional
Configure high availability and scalability for your applications
Create highly-available and scalable applications in minutes by using built-in load balancing for cloud services and virtual machines. Azure Load Balancer supports TCP/UDP-based protocols and protocols used for real-time voice and video messaging applications. Learn more
Balance IPv4 and IPv6 addresses
Native dual-stack endpoints help meet regulatory requirements and address the fast-growing number of devices in mobile and IoT. Learn more
View frontend IP configuration
View backend pools
Build highly reliable applications
Load Balancer improves application uptime by routing traffic to healthy nodes. Learn more
View health probes
View load balancing rules
Secure your networks
Control network traffic and protect private networks using built-in network address translation (NAT). Learn more
View inbound NAT rules

4C.


Home
az104-06-lb4
az104-06-lb4 | Frontend IP configuration
Load balancer
Search
Overview
Activity log
Access control (IAM)
Tags
Diagnose and solve problems
Add
Refresh
Give feedback
Filter by name...
Name
IP address
Rules count
az104-06-pip4
20.121.254.42 (az104-06-pip4)
1

4D.

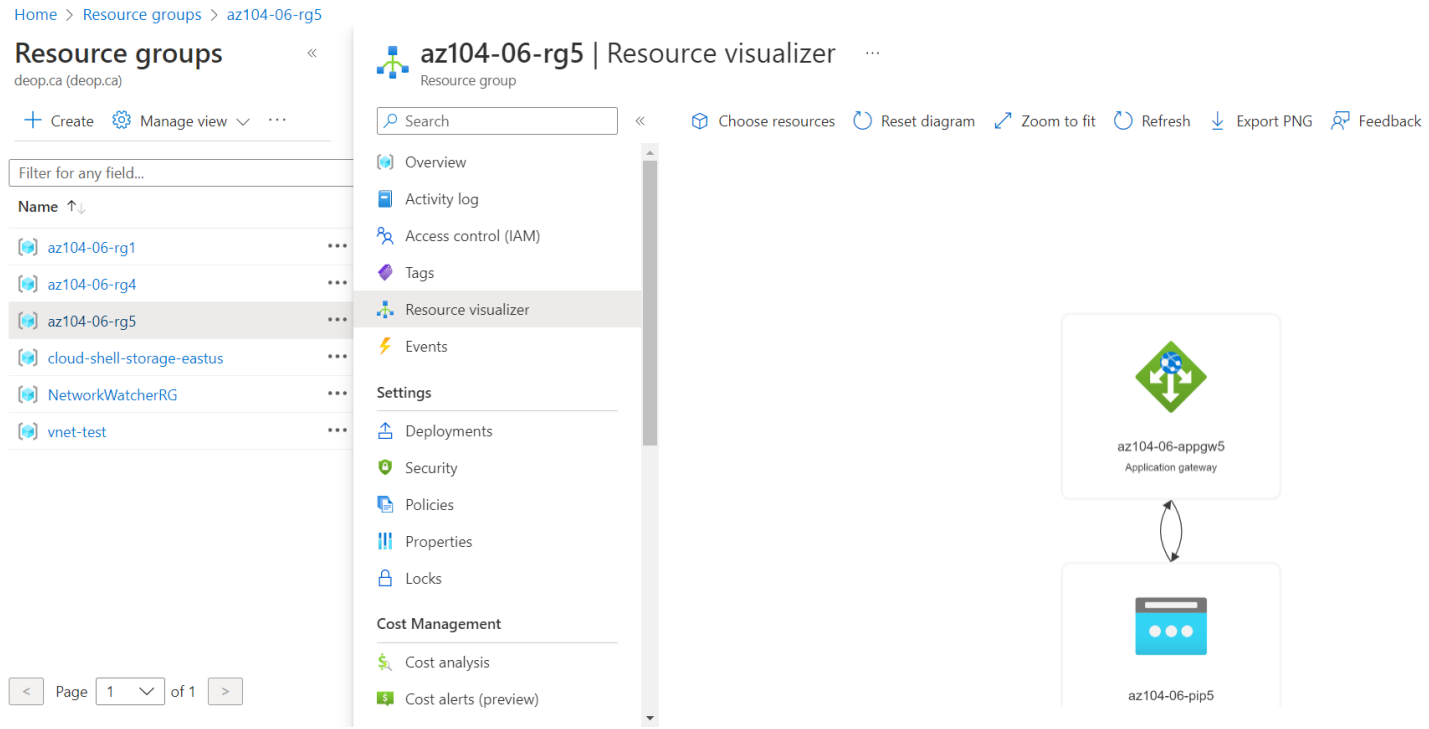

Home
az104-06-lb4
az104-06-lb4 | Health probes
Load balancer
Search
Overview
Activity log
Access control (IAM)
Tags
Diagnose and solve problems
Add
Refresh
Give feedback
Filter by name...
Name
Protocol
Port
Used By
helthb1
TCP
80
az104-lbrule

Step 6:

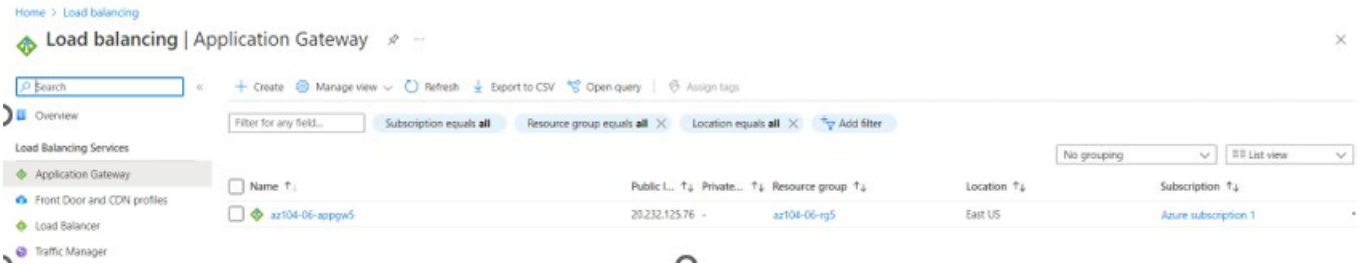
Implemented Azure Application Gateway on vm0 and vm1 and named az104-06-lb4 like on the Topology 1.0 ;

- Implementation take placed on the resource group 5 (rg5)
- Public ip assigned to the Load balancer which is called **az104-06-pip5**
- Configuration is shown on the picture(5A...5D)
- There is no NAT rules

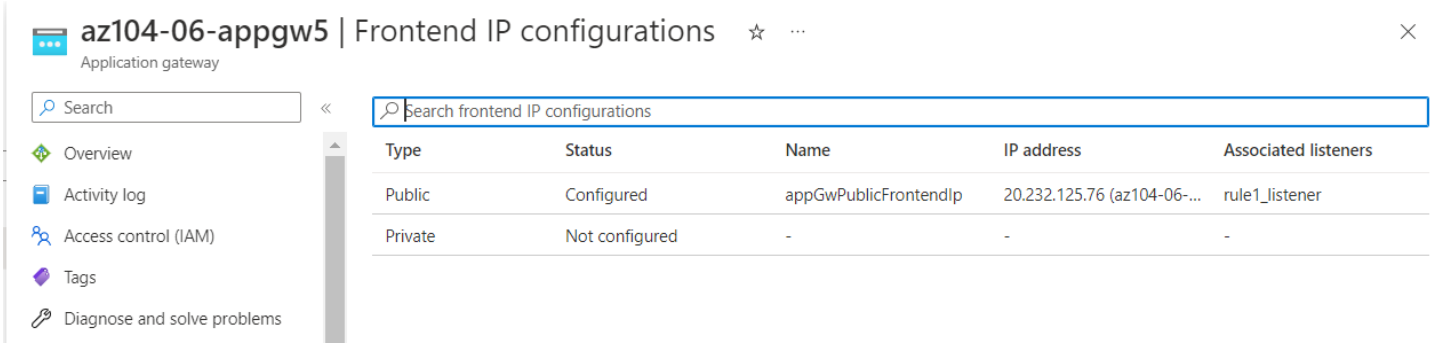
5A.



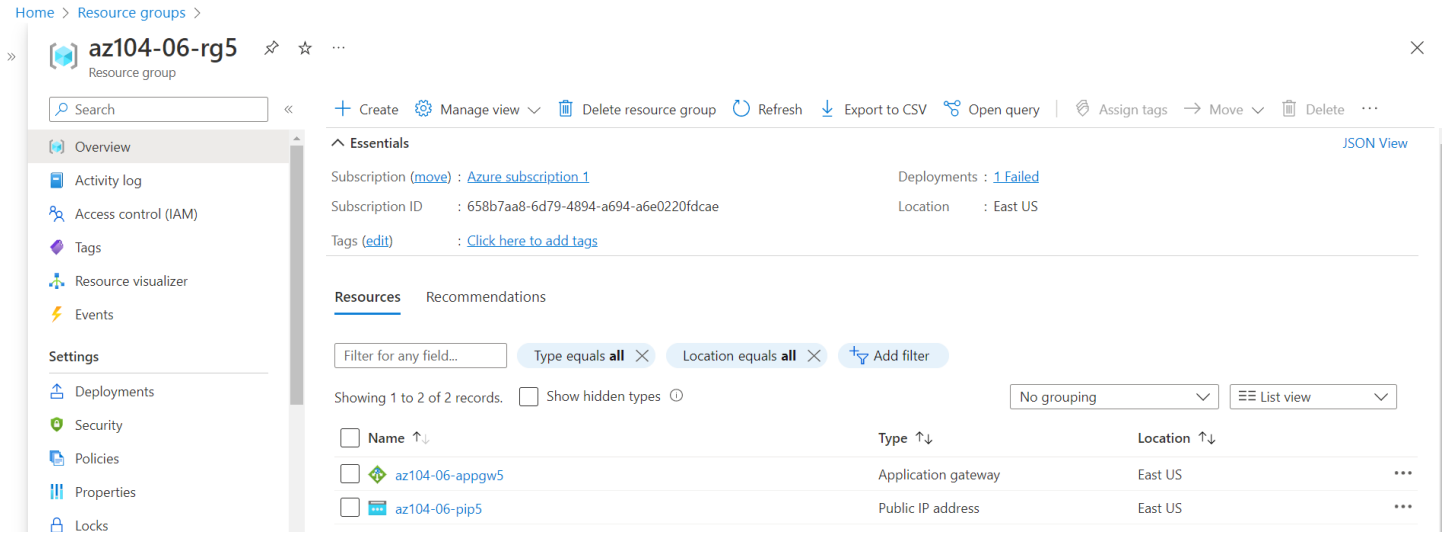
5B.



5C.



5D.



Final:

All configuration in a map.

THANK YOU FOR YOUR TIME