



Citrix Admin to Azure Rockstar

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Microsoft MVP Cloud & Datacenter
VMware vExpert



Carry on two distinct conversations at once (two sets of vocal cords)
Rest one half of their brain while the other remains active

Dunning-Kruger Effect

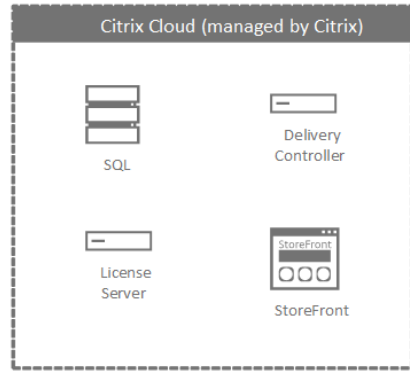
The ability to gauge what you know and what you don't know.

"Failure of metacognition"

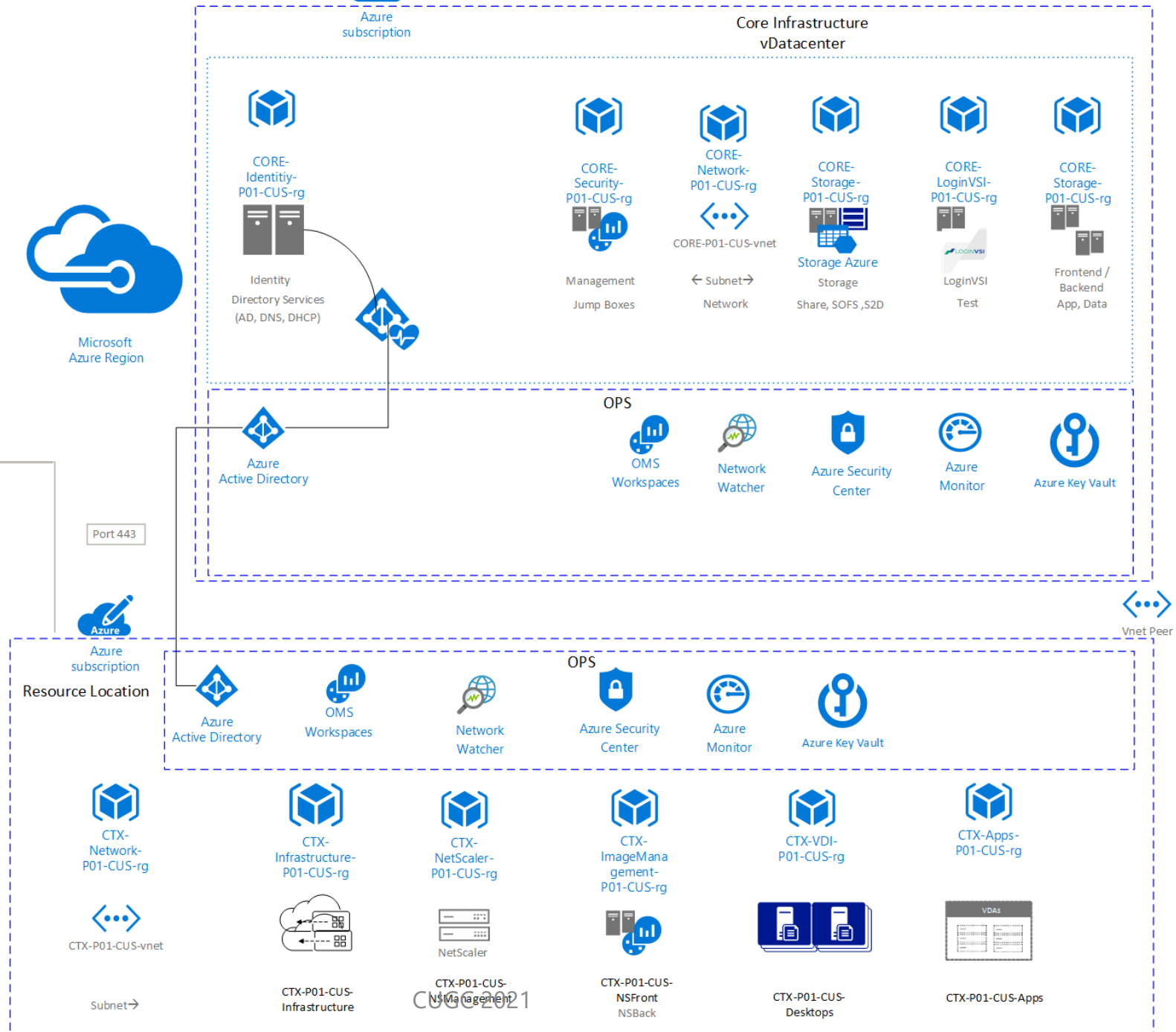


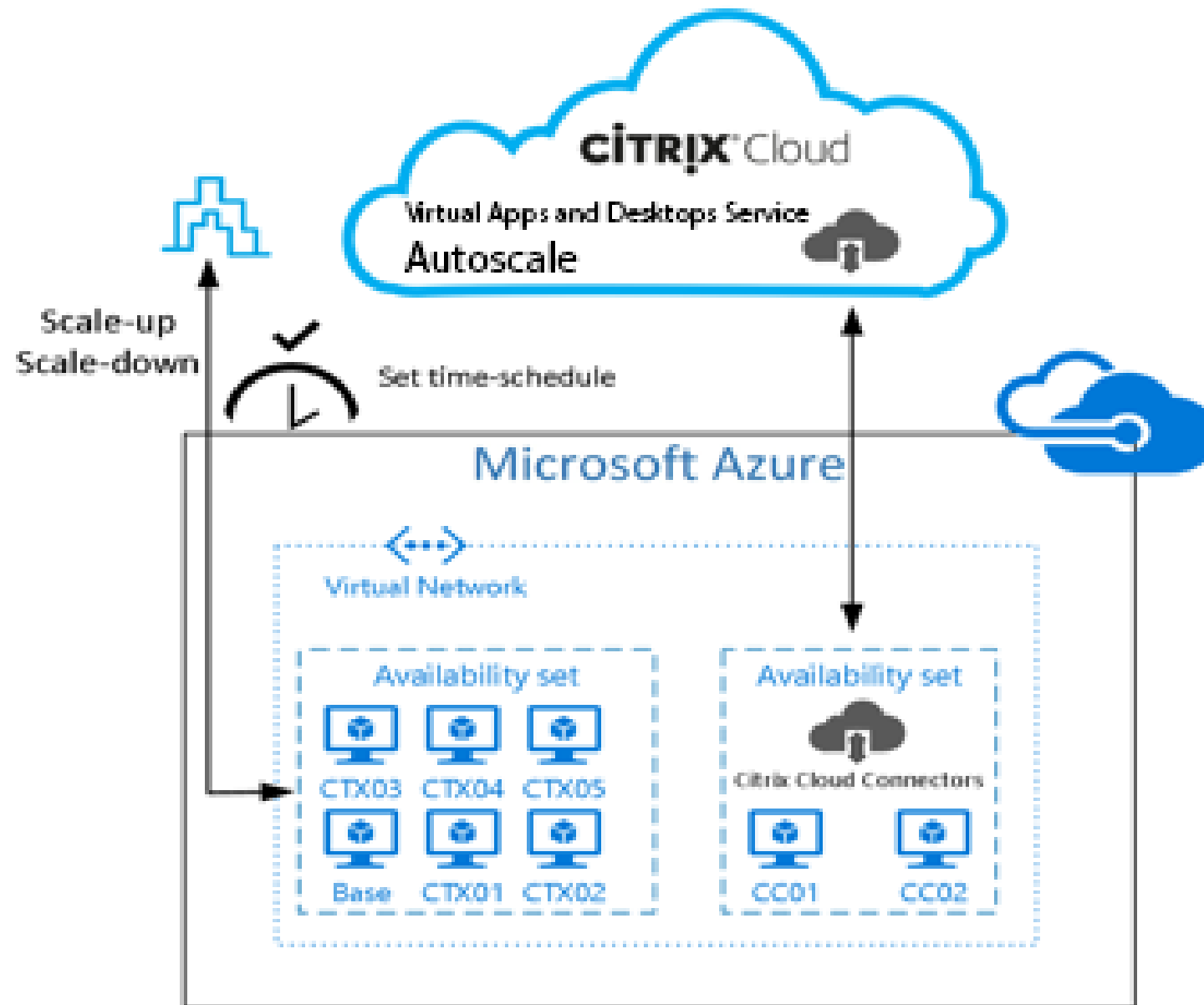
Topics

- Citrix & Azure
- Key Azure concepts
- Demos



AD Authentication Flow
DNS
Include Instance Size
Presentation
Azure AD – Directory ID
correlation in overview and
Best Practices





Accountability & Responsibility

Citrix's goal is to maintain at least 99.9% availability in any 30 calendar day period. Service interruptions and scheduled maintenance can be monitored on an ongoing basis at <http://status.cloud.com>.

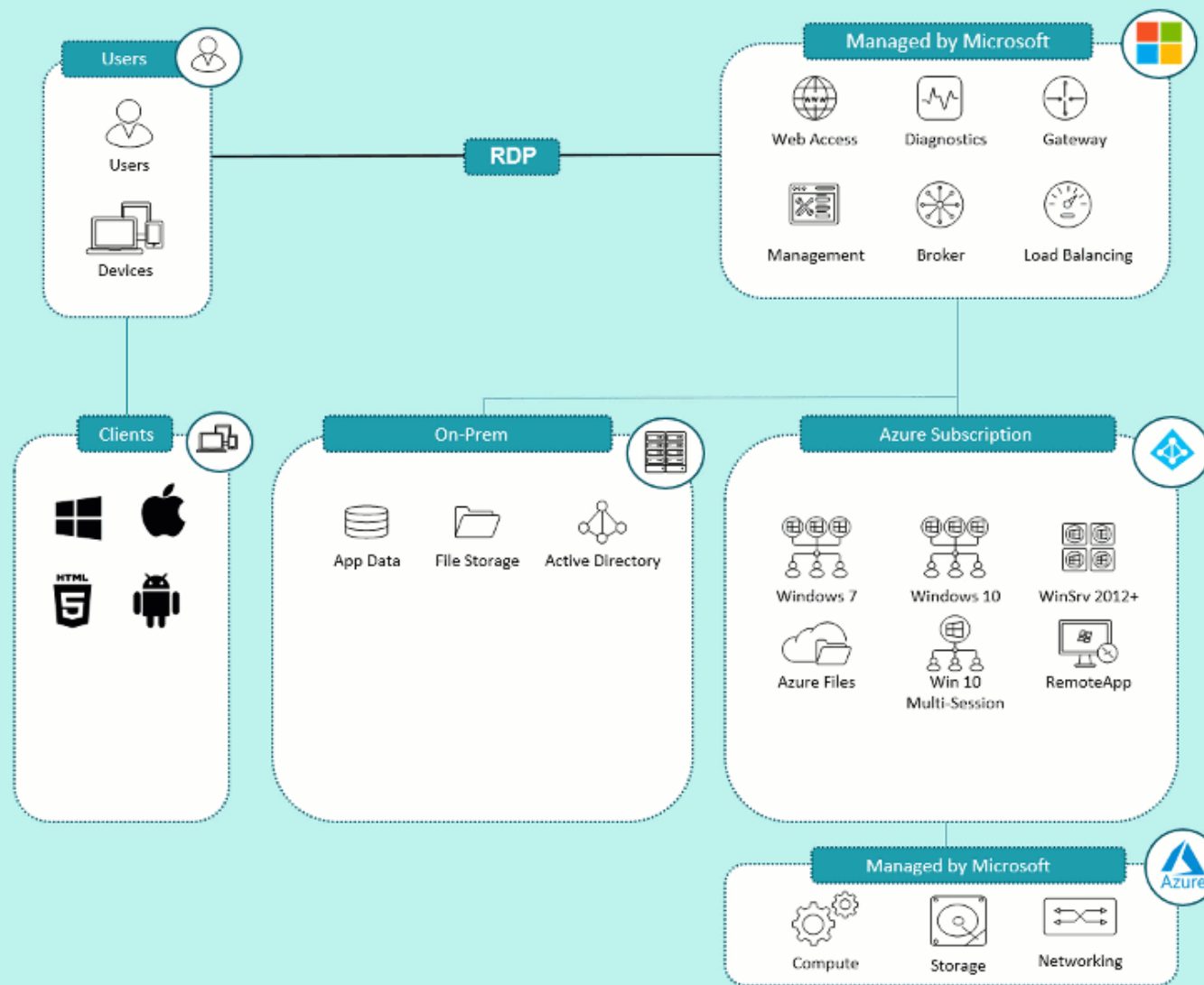
Limitations

The calculation of this Service Level Goal will not include loss of availability from the following causes:

Customer failure to follow configuration requirements for Citrix Cloud documented on <http://docs.citrix.com/en-us/citrix-cloud.html>.

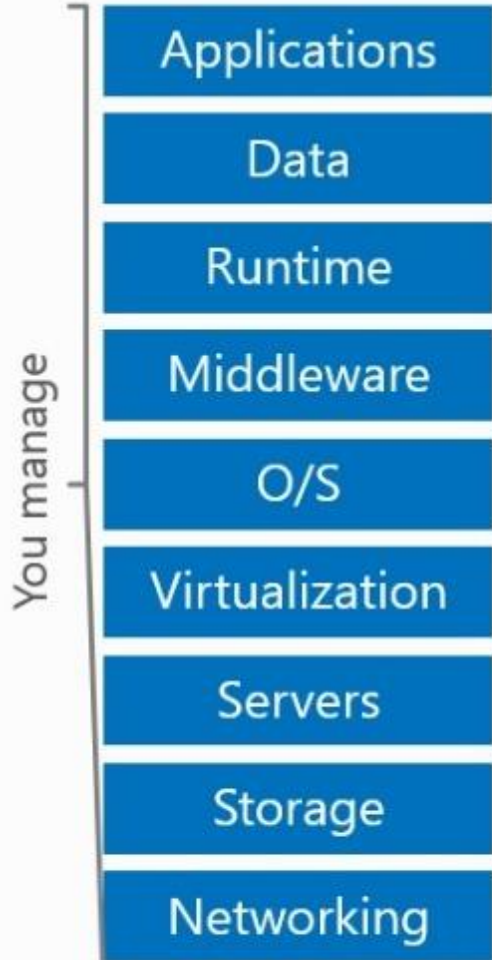
Any component not managed by Citrix including, but not limited to, customer controlled physical and virtual machines, customer installed and maintained operating systems and software, customer installed and controlled networking equipment or other hardware; customer defined and controlled security settings, group policies and other configuration policies; public cloud provider failures, Internet Service Provider failures or other external to Citrix's control.

Service disruption due to reasons beyond Citrix's control, including natural disaster, war or acts of terrorism, government action.

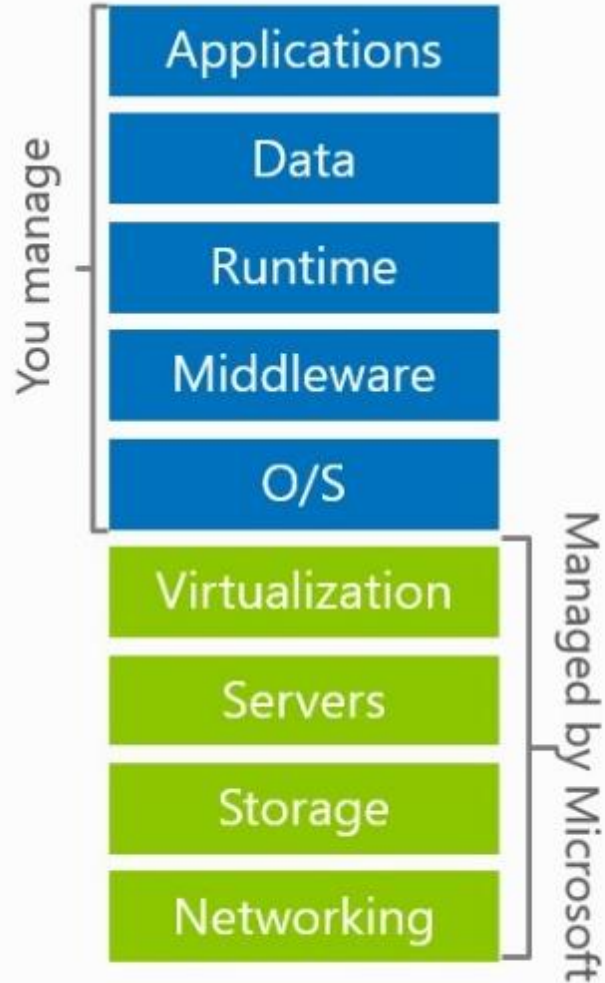


Cloud Models

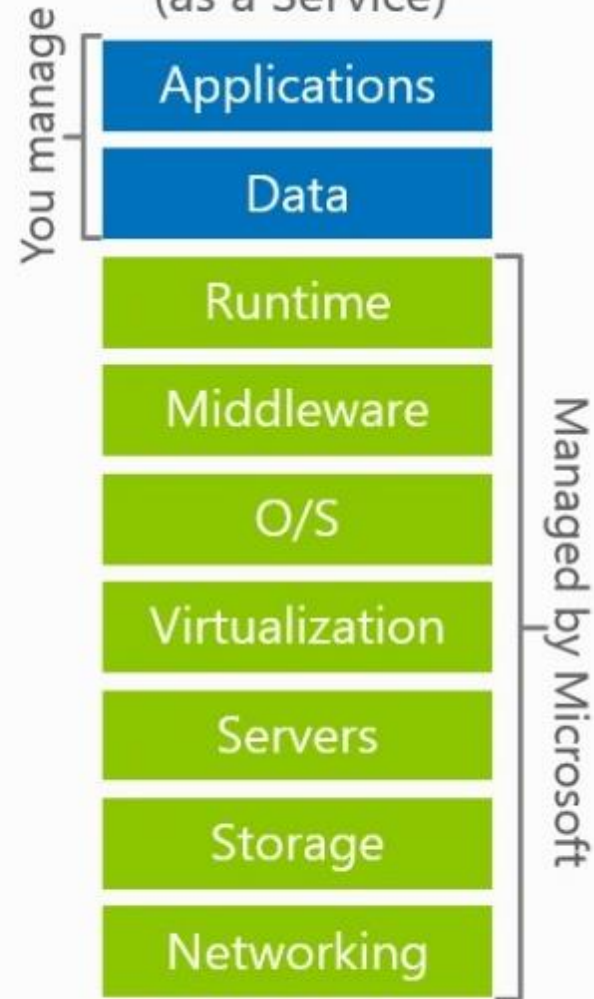
On Premises



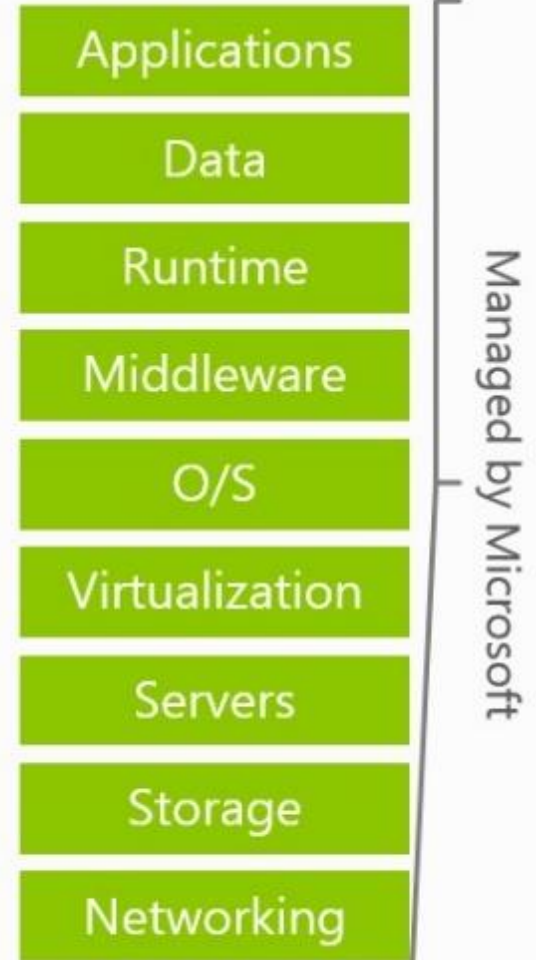
Infrastructure (as a Service)

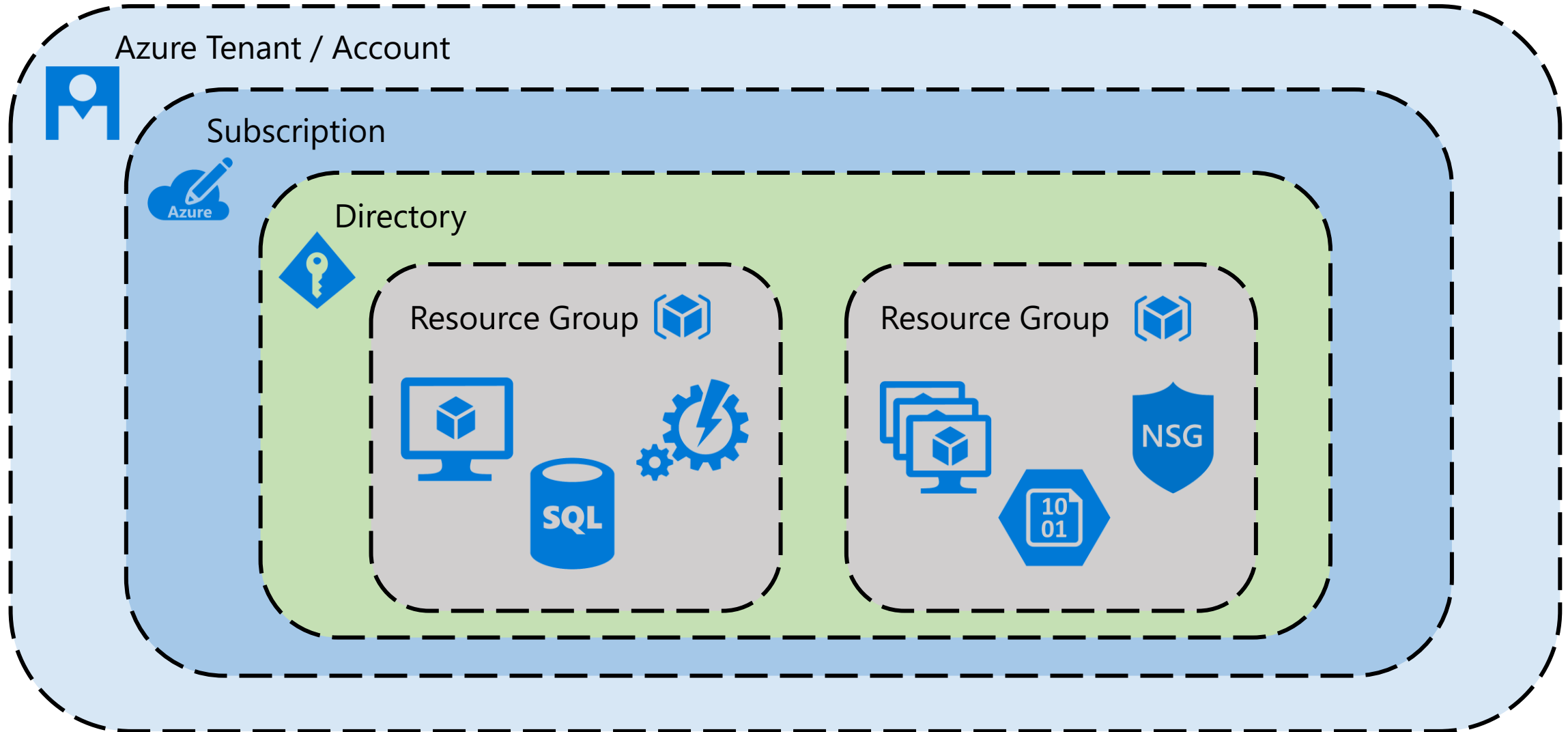


Platform (as a Service)



Software (as a Service)





- VPN
- ExpressRoute
- SD-WAN

Connectivity



- Tenant
- EA (License)
- Limits
- Access
- Management Groups

Subscriptions



- Portal
- RESTful API's/Graph
- VS (IDE)
- Cloud Shell
- ...

Manage



- Provisioning
- Orchestration
- Lifecycle
- ARM-as-Code

Resource Manager (ARM)



- Logical grouping
- RBAC
- 1-stop destroy (+/-)

Resource Groups



- Identity Access Management
- Object provisioning
- Resource & App control
- AD Sync

Active Directory (AAD)



- Web, SaaS, PaaS
- Provisioning
- Registrations

Applications



Azure Resource Manager

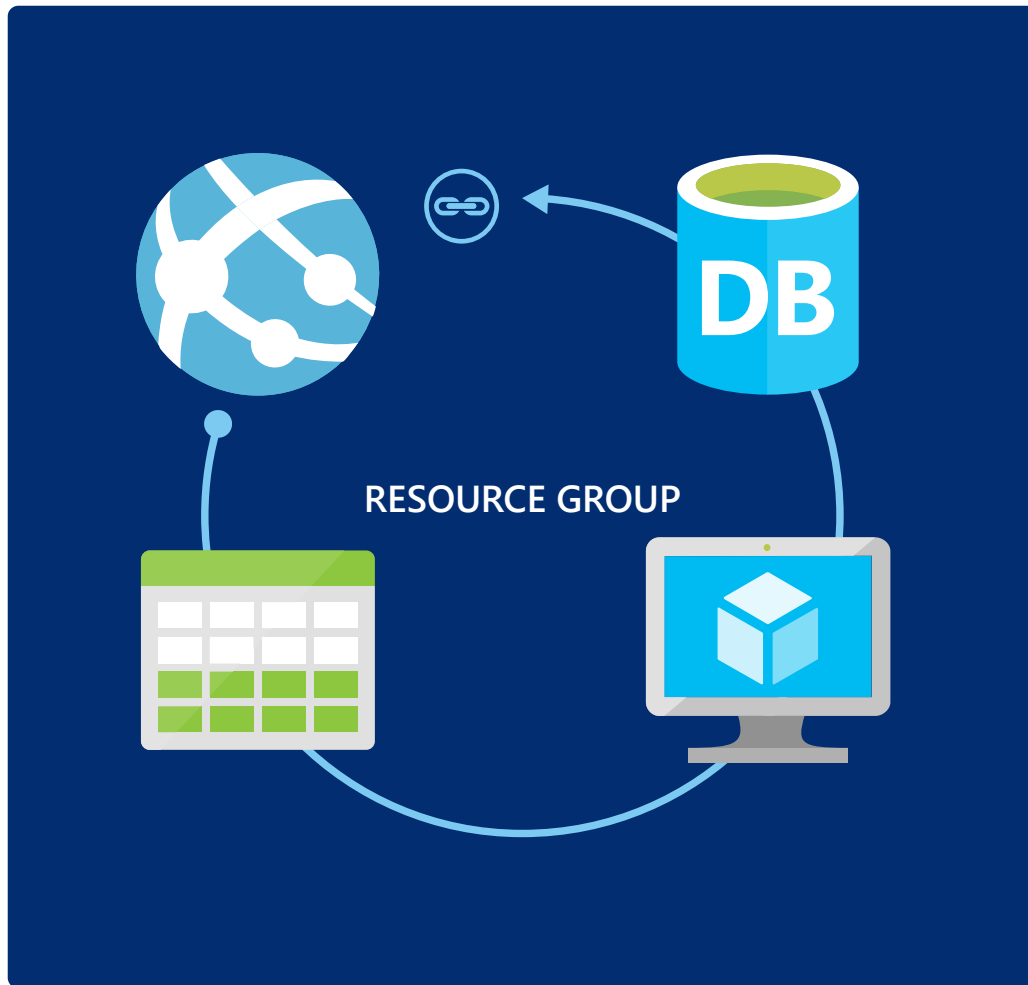
Application Lifecycle Container

Declarative solution for Deployment and Configuration

Consistent Management Layer

Azure Bicep





Resource Groups

- Tightly coupled containers of multiple resources of similar or different types
- Every resource **must** exist in one and only one resource group
- Resource groups can span regions

Coupling for Resources

A Resource Group is a unit of management

- **Lifecycle:** deployment, update, delete, status
- **Identity:** resources can talk to each other
- **Grouping:** Metering, billing, quota: applied & rolled up to group

Resource Group Lifecycle

Question:

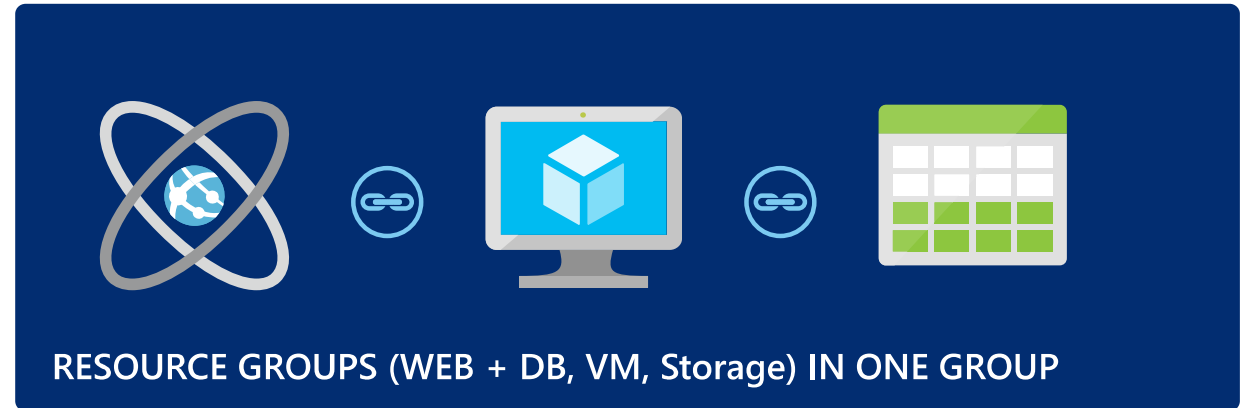
Should these resources be in the same group or a different one?

Hint:

Do they have common lifecycle and management?

Answer:

Up to you.

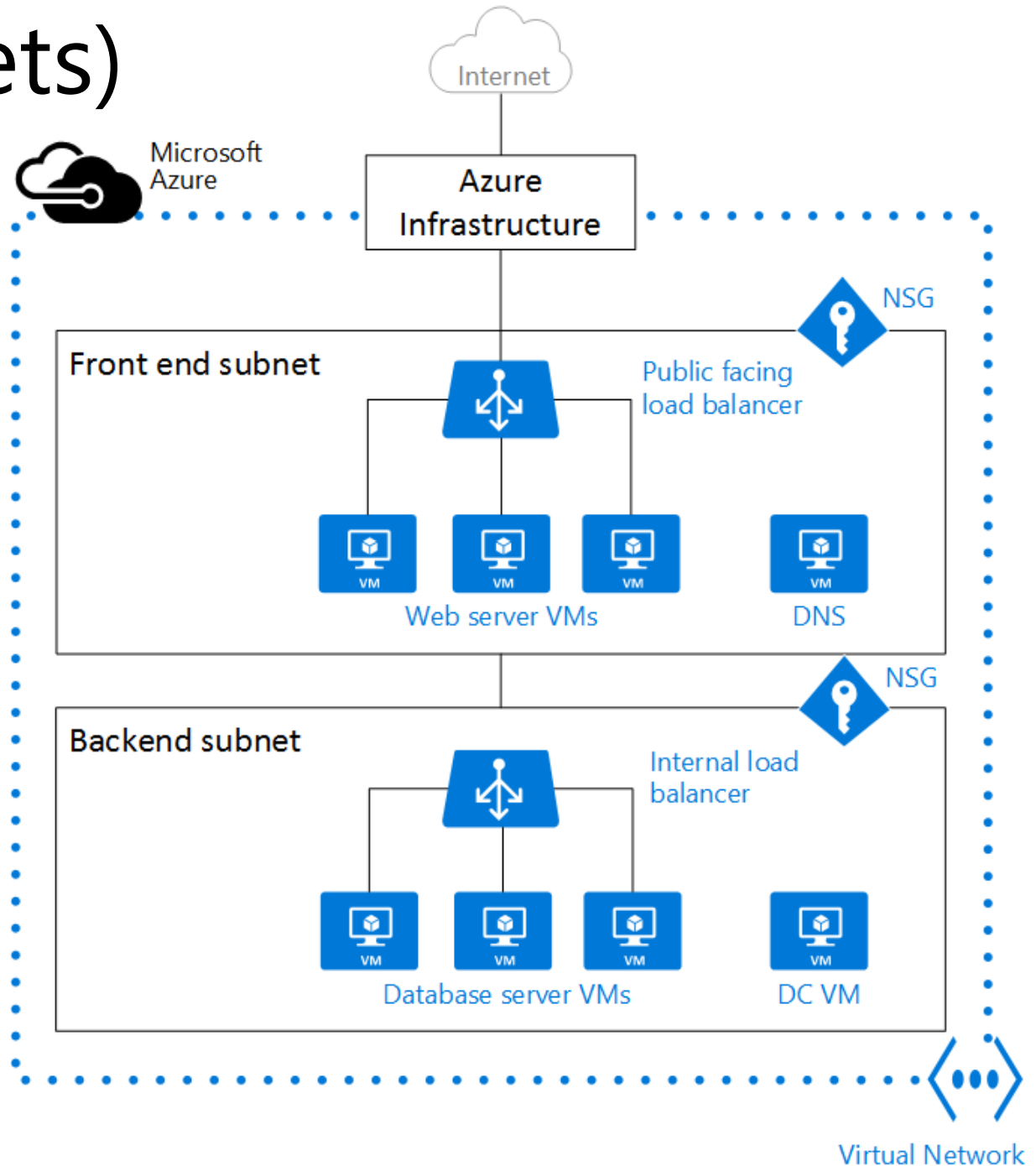


OR

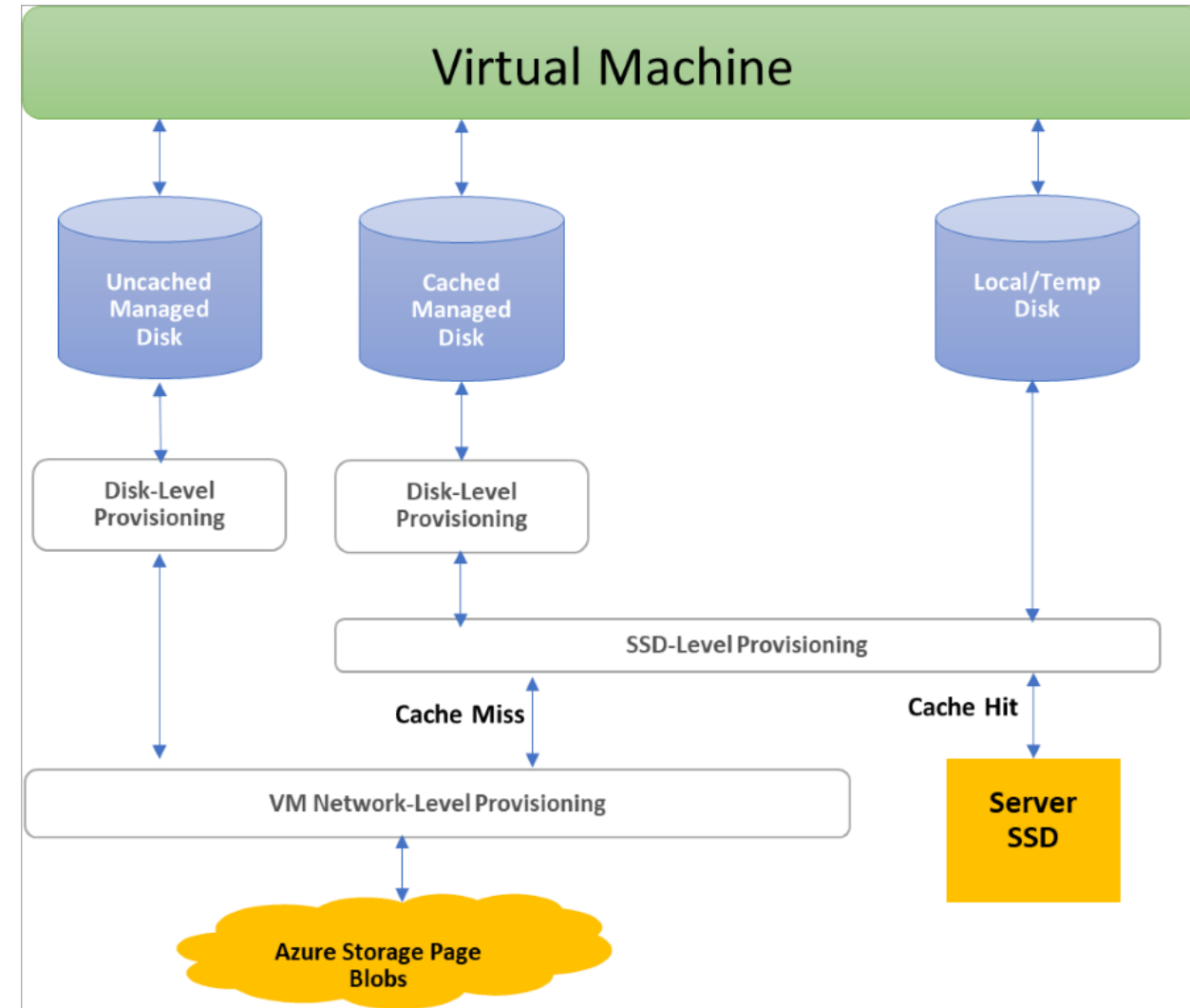
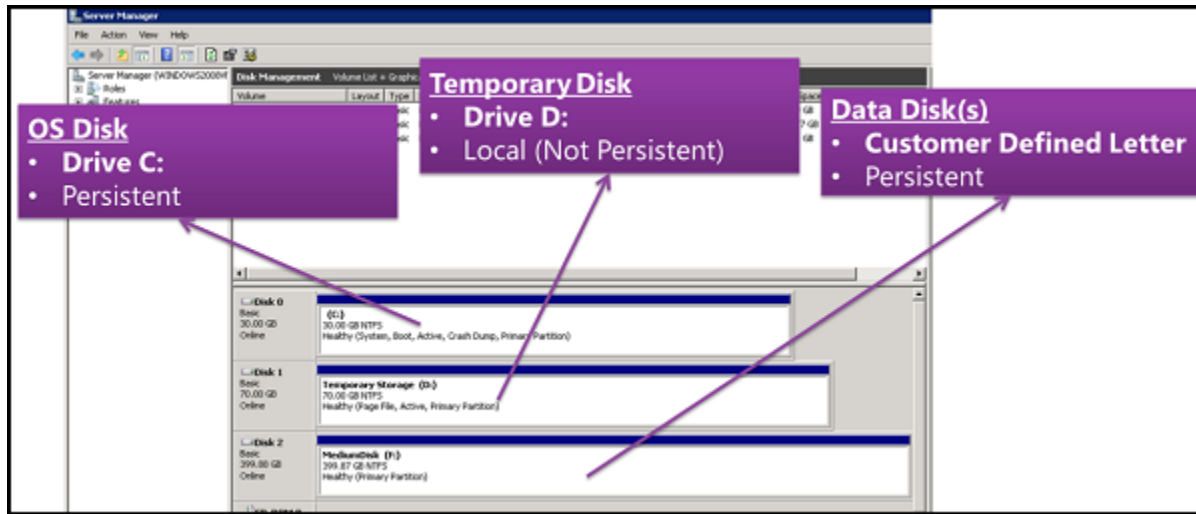


Virtual Networks (vNets)

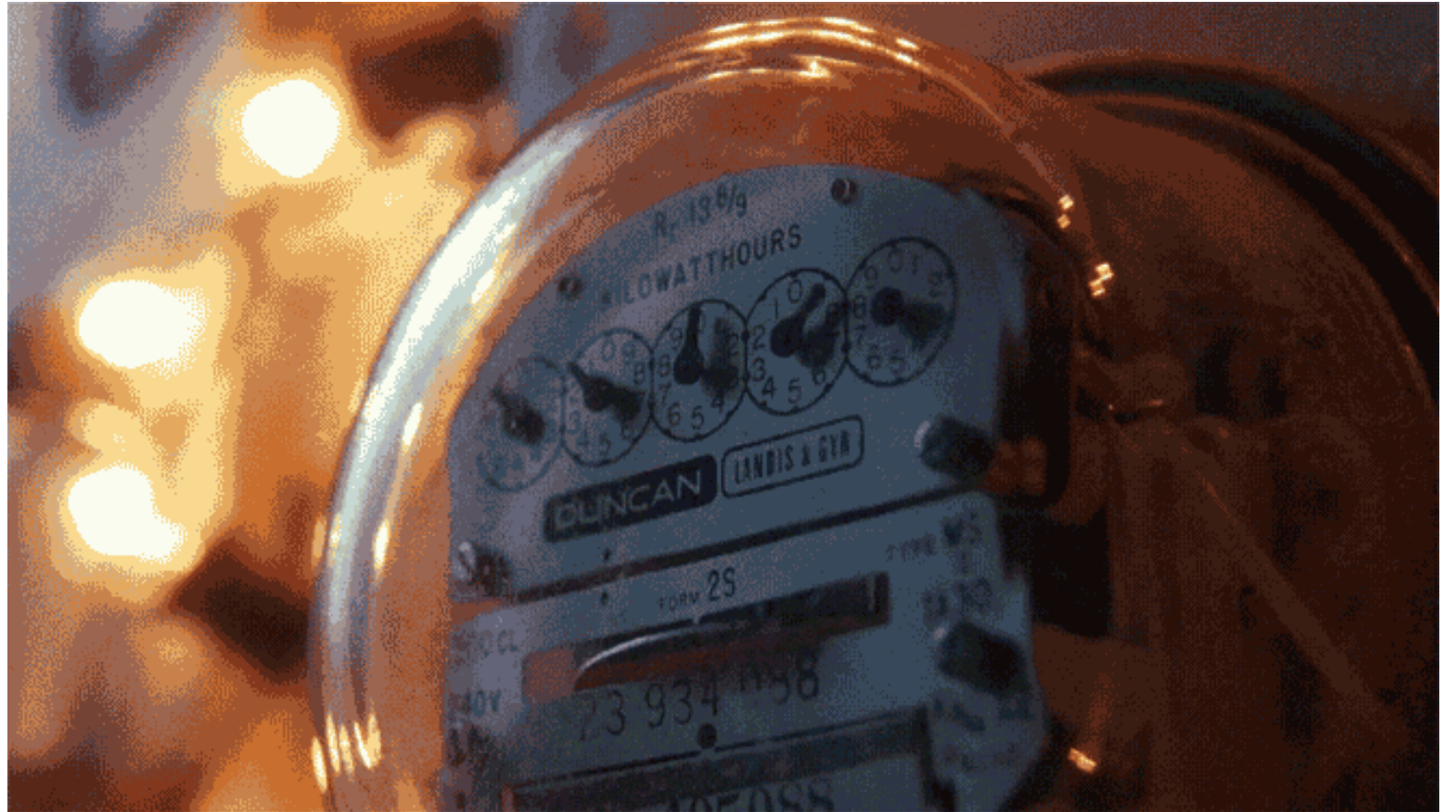
- BYON – Bring Your Own Network.
- All subnets use random private IP ranges.
- Every subnet has a load balancer.
- vNet Peering is essential for cross-subnets.
- NSG's are Network Security Groups (ACLs).
- You will want to enable Network Watchers.
- As simple or complex as you choose.



Storage Disks



Consumption



VM Sizing

Multi-Session instances

Machine type	Sessions	Virtual CPU	Memory (GB)
Light (D2s v3)	16	2	8
Medium (D2s v3)	10	2	8
Heavy (D2s v3)	4	2	8
Custom	-	2, 4, 8	4, 8, 16, 32

Static/Random instances

Machine type	Virtual CPU	Memory (GB)
B2s	2	4
D2s v3	2	8
D4s v3	4	16
D8s v3	8	32

How much?

Control Your Spend

azprice.info

Azure Price Calculator							
Azure RHEL History Matrix Regions About							
PARAMETERS							
Sort by							
Pay-as-you-GO							
Currency							
USD							
© Azure Price Calculator - 2019. This site is not related to Microsoft or Azure. It was completely done by individuals to help people calculate prices for Azure Virtual Machines.							
Regions							
#	Region	PAYG	PAYG + AHUB	Reserved Instance			
				1 Year	+ AHUB	3 Years	+ AHUB
1	us-east	137.24	70.08	108.91	41.75	94.05	26.89
2	us-east-2	137.24	70.08	109.00	41.84	94.05	26.89
3	us-west-2	137.24	70.08	108.91	41.75	94.05	26.89
4	us-north-central	140.16	73.00	109.41	42.25	94.61	27.45
5	korea-south	140.89	73.73	107.16	40.00	94.61	27.45
6	central-india	143.81	76.65	111.74	44.58	95.27	28.11
7	europa-north	145.27	78.11	118.33	51.17	100.91	33.75
8	canada-central	148.19	81.03	113.66	46.50	97.35	30.19
9	canada-east	148.19	81.03	113.66	46.50	97.35	30.19
10	france-central	148.92	81.76	120.83	53.67	103.52	36.36
11	united-kingdom-south	151.84	84.68	120.83	53.67	103.52	36.36
12	united-kingdom-west	151.84	84.68	120.83	53.67	103.52	36.36
13	us-west	152.57	85.41	125.08	57.92	104.21	37.05
14	us-central	154.03	86.87	117.83	50.67	100.08	32.92
15	us-south-central	154.03	86.87	117.83	50.67	100.08	32.92
16	us-west-central	154.03	86.87	117.83	50.67	100.08	32.92
17	europa-west	154.76	87.60	122.99	55.83	105.58	38.42
18	uae-north	154.76	87.60	115.66	48.50	98.69	31.53
19	korea-central	156.95	89.79	117.25	50.09	101.46	34.30
20	west-india	156.95	89.79	119.41	52.25	100.10	32.94
21	us-east-1	157.24	90.08	120.91	53.75	104.05	26.89
22	us-east-2	157.24	90.08	120.91	53.75	104.05	26.89
23	us-west-1	157.24	90.08	120.91	53.75	104.05	26.89
24	us-west-2	157.24	90.08	120.91	53.75	104.05	26.89
25	us-north-central	160.16	93.00	121.41	54.25	104.61	27.45
26	korea-south	160.89	93.73	119.16	51.00	104.61	27.45
27	central-india	163.81	96.65	123.74	55.58	105.27	28.11
28	europa-north	165.27	98.11	130.33	62.17	110.91	33.75
29	canada-central	168.19	101.03	126.66	57.50	107.35	30.19
30	canada-east	168.19	101.03	126.66	57.50	107.35	30.19
31	france-central	168.92	101.76	133.83	64.67	113.52	36.36
32	united-kingdom-south	171.84	104.68	133.83	64.67	113.52	36.36
33	united-kingdom-west	171.84	104.68	133.83	64.67	113.52	36.36
34	us-west	172.57	105.41	138.08	68.92	114.21	37.05
35	us-central	174.03	106.87	130.83	61.67	110.08	32.92
36	us-south-central	174.03	106.87	130.83	61.67	110.08	32.92
37	us-west-central	174.03	106.87	130.83	61.67	110.08	32.92
38	europa-west	174.76	107.60	135.99	66.83	115.58	38.42
39	uae-north	174.76	107.60	128.66	59.50	108.69	31.53
40	korea-central	176.95	109.79	131.25	61.09	111.46	34.30
41	west-india	176.95	109.79	133.41	63.25	110.10	32.94
42	us-east-1	177.24	110.08	133.91	64.75	114.05	26.89
43	us-east-2	177.24	110.08	133.91	64.75	114.05	26.89
44	us-west-1	177.24	110.08	133.91	64.75	114.05	26.89
45	us-west-2	177.24	110.08	133.91	64.75	114.05	26.89
46	us-north-central	180.16	113.00	134.41	65.25	114.61	27.45
47	korea-south	180.89	113.73	132.16	62.00	114.61	27.45
48	central-india	183.81	116.65	136.74	66.58	115.27	28.11
49	europa-north	185.27	118.11	143.33	73.17	120.91	33.75
50	canada-central	188.19	121.03	139.66	68.50	117.35	30.19
51	canada-east	188.19	121.03	139.66	68.50	117.35	30.19
52	france-central	188.92	121.76	146.83	75.67	123.52	36.36
53	united-kingdom-south	191.84	124.68	146.83	75.67	123.52	36.36
54	united-kingdom-west	191.84	124.68	146.83	75.67	123.52	36.36
55	us-west	192.57	125.41	150.08	79.92	124.21	37.05
56	us-central	194.03	126.87	142.83	72.67	120.08	32.92
57	us-south-central	194.03	126.87	142.83	72.67	120.08	32.92
58	us-west-central	194.03	126.87	142.83	72.67	120.08	32.92
59	europa-west	194.76	127.60	147.99	77.83	125.58	38.42
60	uae-north	194.76	127.60	140.66	70.50	118.69	31.53
61	korea-central	196.95	129.79	143.25	72.09	121.46	34.30
62	west-india	196.95	129.79	145.41	74.25	120.10	32.94
63	us-east-1	197.24	130.08	145.91	75.75	124.05	26.89
64	us-east-2	197.24	130.08	145.91	75.75	124.05	26.89
65	us-west-1	197.24	130.08	145.91	75.75	124.05	26.89
66	us-west-2	197.24	130.08	145.91	75.75	124.05	26.89
67	us-north-central	200.16	133.00	146.41	76.25	124.61	27.45
68	korea-south	200.89	133.73	144.16	73.00	124.61	27.45
69	central-india	203.81	136.65	148.74	77.58	125.27	28.11
70	europa-north	205.27	138.11	155.33	84.17	130.91	33.75
71	canada-central	208.19	141.03	151.66	79.50	127.35	30.19
72	canada-east	208.19	141.03	151.66	79.50	127.35	30.19
73	france-central	208.92	141.76	158.83	86.67	133.52	36.36
74	united-kingdom-south	211.84	144.68	158.83	86.67	133.52	36.36
75	united-kingdom-west	211.84	144.68	158.83	86.67	133.52	36.36
76	us-west	212.57	145.41	162.08	90.92	134.21	37.05
77	us-central	214.03	146.87	154.83	83.67	130.08	32.92
78	us-south-central	214.03	146.87	154.83	83.67	130.08	32.92
79	us-west-central	214.03	146.87	154.83	83.67	130.08	32.92
80	europa-west	214.76	147.60	159.99	88.83	135.58	38.42
81	uae-north	214.76	147.60	152.66	81.50	128.69	31.53
82	korea-central	216.95	149.79	155.25	83.09	131.46	34.30
83	west-india	216.95	149.79	157.41	85.25	130.10	32.94
84	us-east-1	217.24	150.08	157.91	86.75	134.05	26.89
85	us-east-2	217.24	150.08	157.91	86.75	134.05	26.89
86	us-west-1	217.24	150.08	157.91	86.75	134.05	26.89
87	us-west-2	217.24	150.08	157.91	86.75	134.05	26.89
88	us-north-central	220.16	153.00	158.41	87.25	134.61	27.45
89	korea-south	220.89	153.73	156.16	84.00	134.61	27.45
90	central-india	223.81	156.65	160.74	88.58	135.27	28.11
91	europa-north	225.27	158.11	167.33	95.17	140.91	33.75
92	canada-central	228.19	161.03	163.66	90.50	137.35	30.19
93	canada-east	228.19	161.03	163.66	90.50	137.35	30.19
94	france-central	228.92	161.76	170.83	97.67	143.52	36.36
95	united-kingdom-south	231.84	164.68	170.83	97.67	143.52	36.36
96	united-kingdom-west	231.84	164.68	170.83	97.67	143.52	36.36
97	us-west	232.57	165.41	174.08	101.92	144.21	37.05
98	us-central	234.03	166.87	166.83	94.67	140.08	32.92
99	us-south-central	234.03	166.87	166.83	94.67	140.08	32.92
100	us-west-central	234.03	166.87	166.83	94.67	140.08	32.92
101	europa-west	234.76	167.60	171.99	99.83	145.58	38.42
102	uae-north	234.76	167.60	164.66	92.50	138.69	31.53
103	korea-central	236.95	169.79	167.25	94.09	141.46	34.30
104	west-india	236.95	169.79	169.41	96.25	140.10	32.94
105	us-east-1	237.24	170.08	169.91	96.75	144.05	26.89
106	us-east-2	237.24	170.08	169.91	96.75	144.05	26.89
107	us-west-1	237.24	170.08	169.91	96.75	144.05	26.89
108	us-west-2	237.24	170.08	169.91	96.75	144.05	26.89
109	us-north-central	240.16	173.00	170.41	97.25	144.61	27.45
110	korea-south	240.89	173.73	168.16	94.00	144.61	27.45
111	central-india	243.81	176.65	172.74	98.58	145.27	28.11
112	europa-north	245.27	178.11	179.33	105.17	150.91	33.75
113	canada-central	248.19	181.03	175.66	100.50	147.35	30.19
114	canada-east	248.19	181.03	175.66	100.50	147.35	30.19
115	france-central	248.92	181.76	182.83	107.67	153.52	36.36
116	united-kingdom-south	251.84	184.68	182.83	107.67	153.52	36.36
117	united-kingdom-west	251.84	184.68	182.83	107.67	153.52	36.36
118	us-west	252.57	185.41	186.08	111.92	154.21	37.05
119	us-central	254.03	186.87	178.83	104.67	150.08	32.92
120	us-south-central	254.03	186.87	178.83	104.67	150.08	32.92
121	us-west-central	254.03	186.87	178.83	104.67	150.08	32.92
122	europa-west	254.76	187.60	183.99	109.83	155.58	38.42
123	uae-north	254.76	187.60	176.66	102.50	148.69	31.53
124	korea-central	256.95	189.79	181.25	104.09	151.46	34.30
125	west-india	256.95	189.79	183.41	106.25	150.10	32.94
126	us-east-1	257.24	190.08	183.91	106.75	154.05	26.89
127	us-east-2	257.24	190.08	183.91	106.75	154.05	26.89
128	us-west-1	257.24	190.08	183.91	106.75	154.05	26.89
129	us-west-2	257.24	190.08	183.91	106.75	154.05	26.89
130	us-north-central	260.16	193.00	184.41	107.25	154.61	27.45
131	korea-south	260.89	193.73	182.16	104.00	154.61	27.45
132	central-india	263.81	196.65	186.74	108.58	155.27	28.11
133	europa-north	265.27	198.11	193.33	115.17	160.91	33.75
134	canada-central	268.19	201.03	189.66	110.50	157.35	30.19
135	canada-east	268.19	201.03	189.66	110.50	157.35	30.19
136	france-central	268.92	201.76	196.83	117.67	163.52	36.36

Be Aware of your Limits

<https://docs.microsoft.com/en-us/azure/azure-subscription-service-limits>

Resource	Default Limit	Max Limit
Cores per sub	20	10,000
VMs per sub (RM)	2500* per region	10,000 per region
VM total cores (RM)	20* per region	10,000 per region
VM per series	20* per region	10,000 per region
Resource Groups per sub	980	980*
RM API Reads	15000 per hour	15000 per hour
RM API Writes	1200 per hour	1200 per hour
RM API Request Size	4194304 bytes	4194304 bytes

Open Source – Websites - Toolsets - Frameworks

- <https://www.azure speed.com> - Azure Latency, CDN, Storage, and Info site
- <https://azurespeedtest.azurewebsites.net> - Latency measurements to Blob Storage
- <https://cloudharmony.com> - Most things cloud and cloud testing
- https://bgp.he.net/AS8075#_graph4 – Blame the network ;-)
- Azure API's
- PowerShell & CloudShell
- Windows Admin Center
- Grafana, Elastic Stack, Prometheus, Graphite, Telegraf, LogStash, Kibana, etc...
- Integrate with Zabbix, Nagios, Cacti, Icinga, OpenNMS, etc...



Demo

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