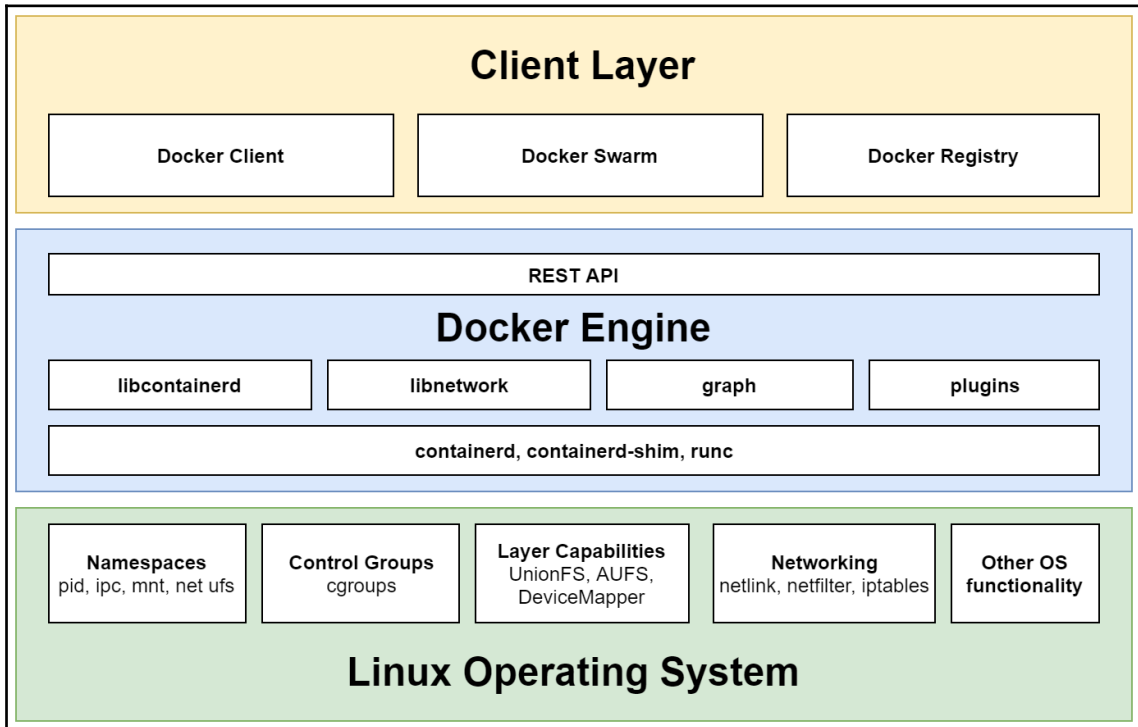
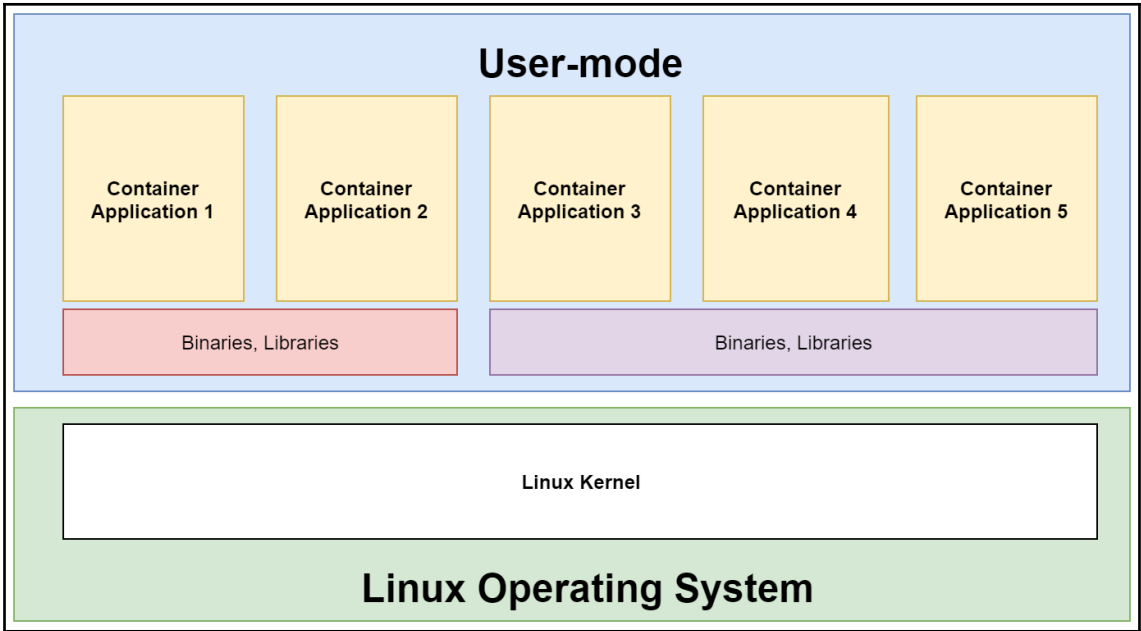
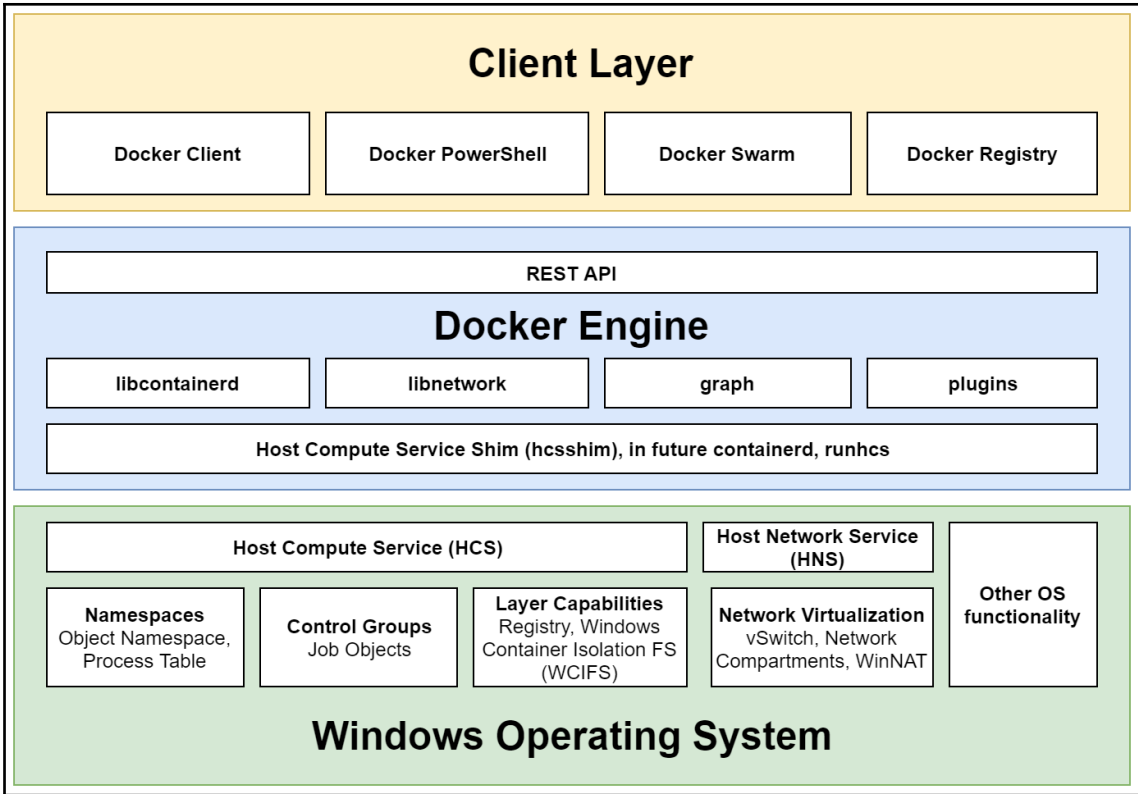
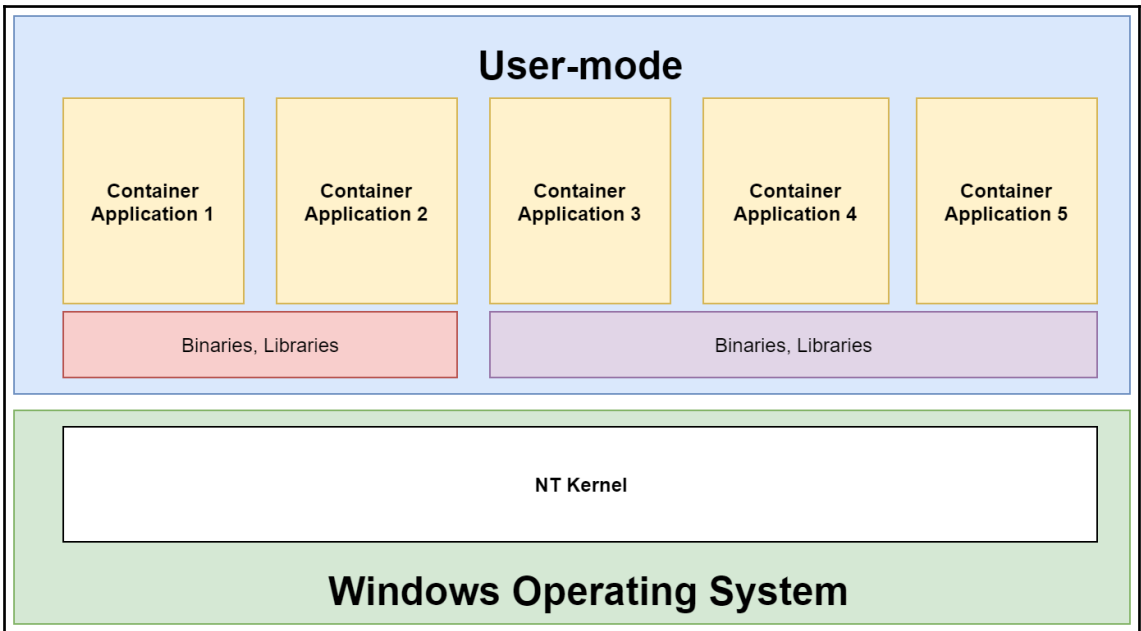
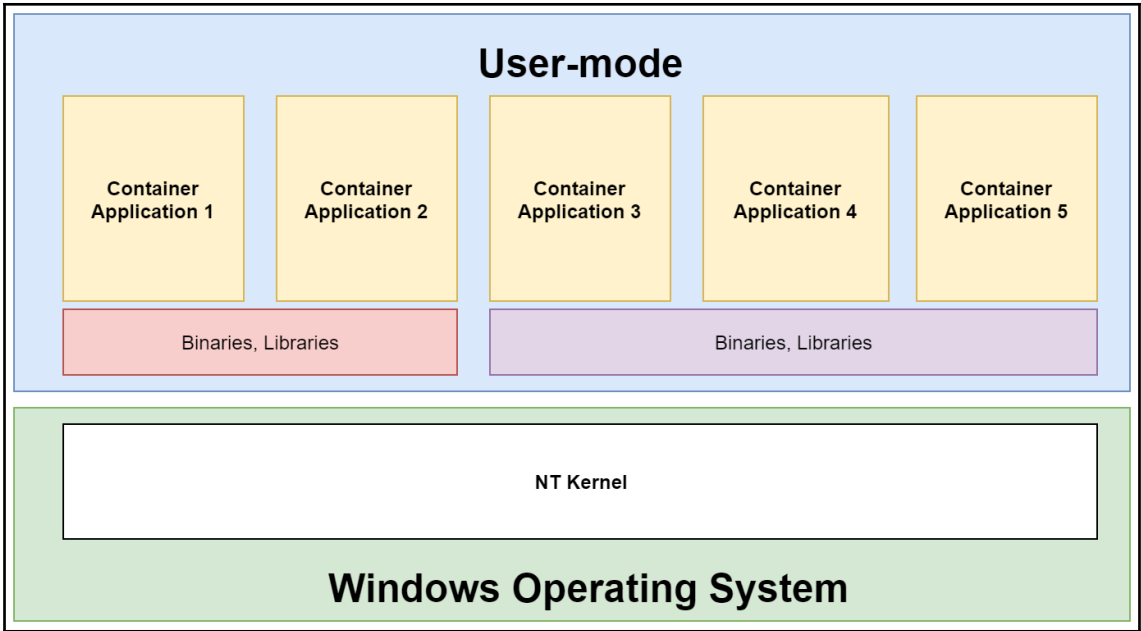


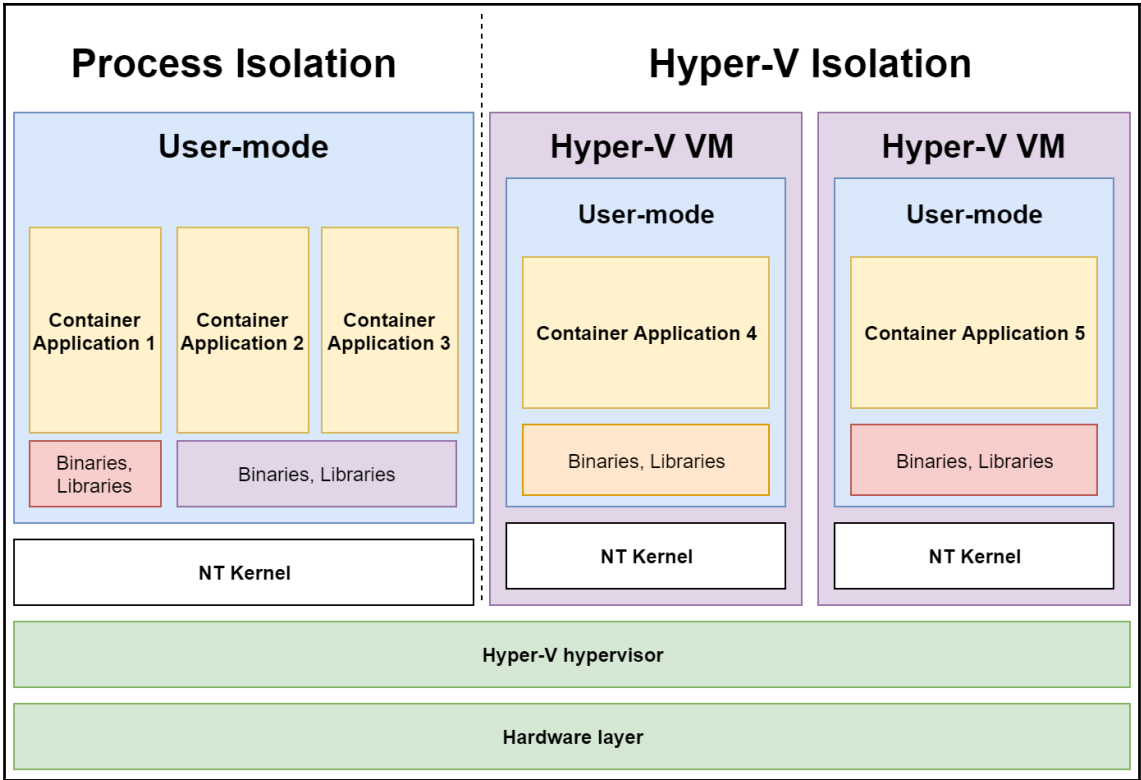
Chapter 1: Creating Containers

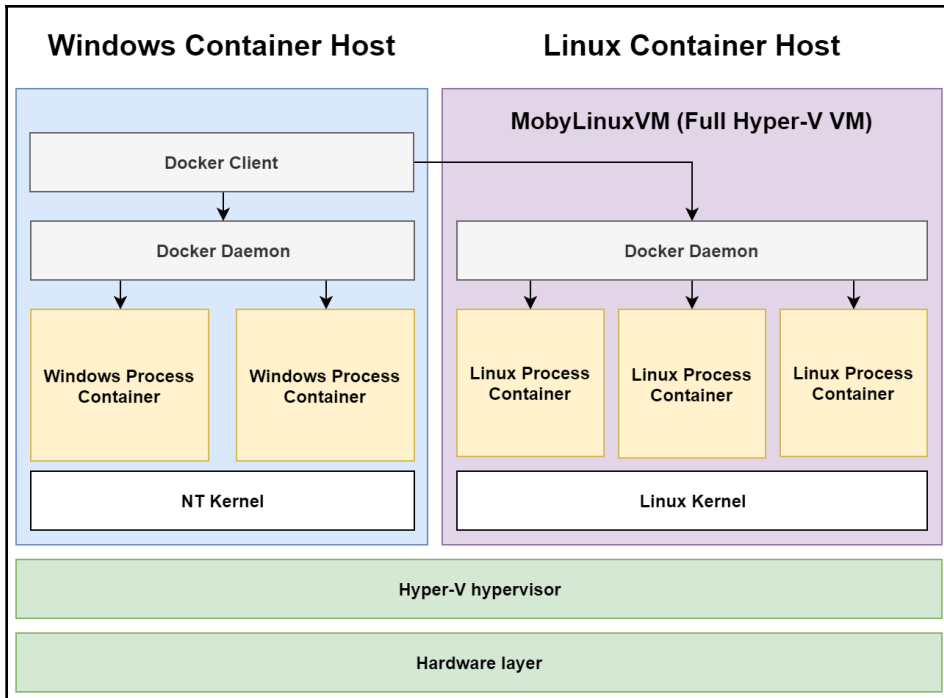


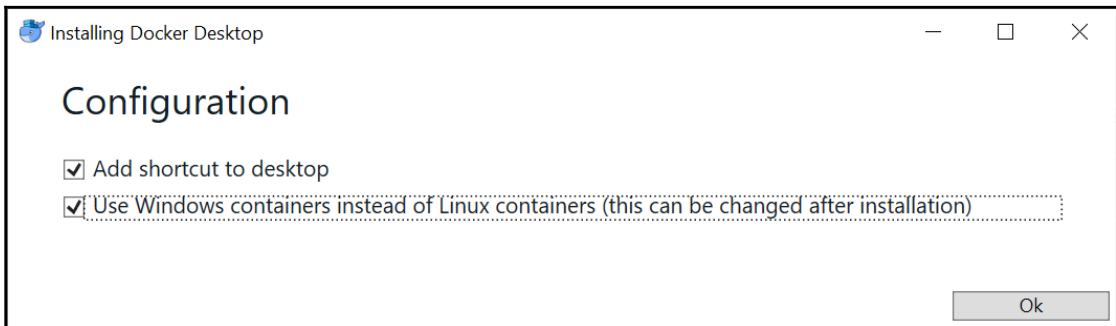
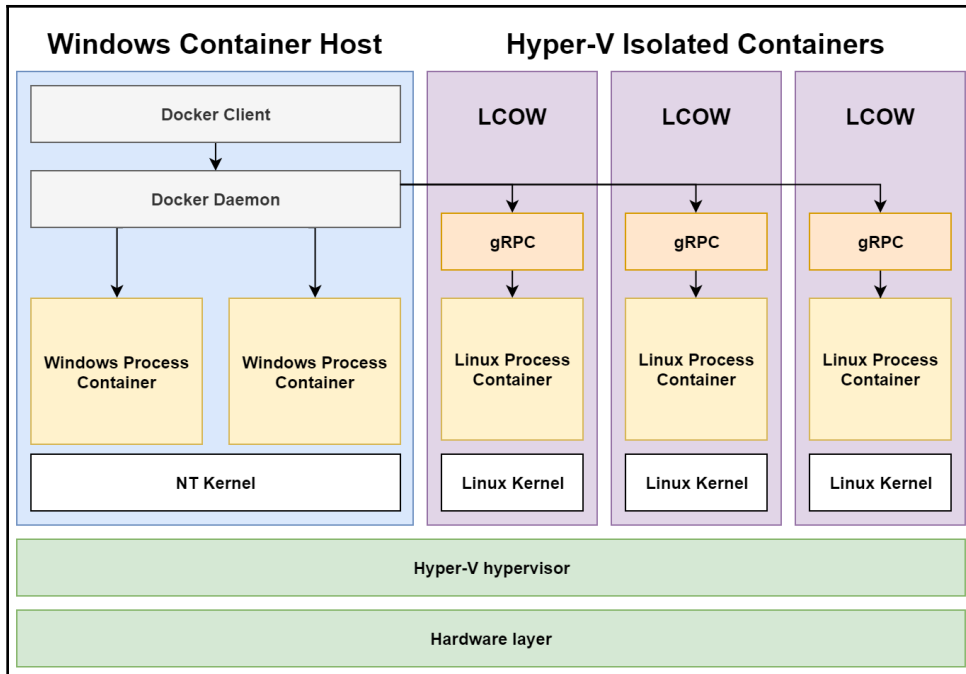


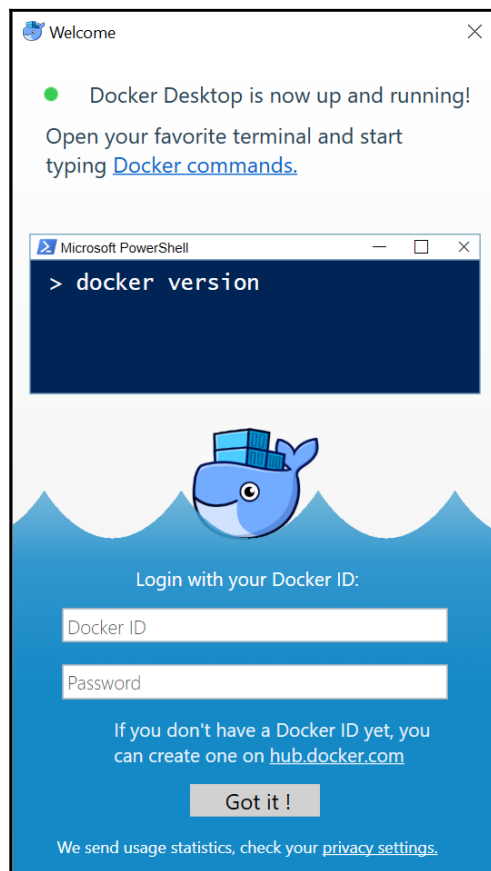
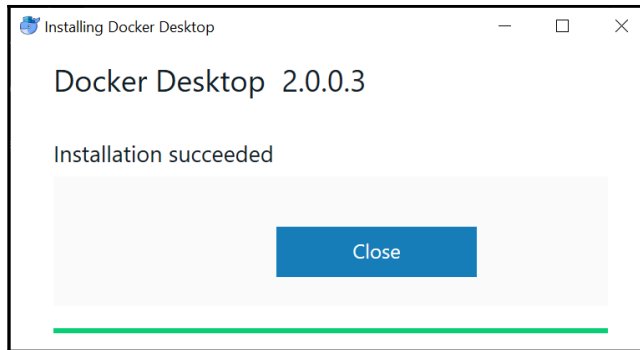













```

Administrator: Windows PowerShell
PS C:\WINDOWS\system32> docker run -it --rm mcr.microsoft.com/powershell pwsh -c 'Write-Host "Hello, world!"'
Unable to find image 'mcr.microsoft.com/powershell:latest' locally
latest: Pulling from powershell
6abc03819f3e: Pull complete
05731e63f211: Pull complete
0bd67c50d6be: Pull complete
7d3c8c82329d: Pull complete
bd8e894e1a26: Pull complete
Digest: sha256:87280f33d87d8fc6e4d6692f92c19f101324eb04de8b7241ffe6d9a92b211a95
Status: Downloaded newer image for mcr.microsoft.com/powershell:latest
Hello world!
PS C:\WINDOWS\system32>

```

```

Select Administrator: Windows PowerShell
PS C:\WINDOWS\system32> docker run -d --rm --isolation=process mcr.microsoft.com/windows/nanoserver:1809 cmd /c ping localhost -n 100
5dea51d473ee71a444b81c509a1b82dcd17d1c514f9f875d4a00900479e85b4c
C:\Program Files\Docke\Docke\bin\docker.exe: Error response from daemon: CreateComputeSystem 5dea51d473ee71a444b81c509a1b82dcd17d1c514f9f875d4a00900479e85b4c: The container operating system does not match the host operating system.
(extra info: {"SystemType": "Container", "Name": "5dea51d473ee71a444b81c509a1b82dcd17d1c514f9f875d4a00900479e85b4c", "Owner": "docker", "VolumePath": "\\\\.\\Volume{bfed3d7e-9b64-4fa1-a2cd-1485ca035098}", "IgnoreFlashesDuringBoot": true, "LayerFolderPath": "C:\ProgramData\Docke\windowsfilter\5dea51d473ee71a444b81c509a1b82dcd17d1c514f9f875d4a00900479e85b4c", "Layers": [{"ID": "d5e93563-3097-5e56-a999-c1130ba6f741", "Path": "C:\ProgramData\Docke\windowsfilter\763bf9063500f56c61b7252bd089af67f51585d0a31d6d1055aa87a17241dac4"}], "HostName": "5dea51d473ee", "HvPartition": false, "EndpointList": ["405E5452-C753-4CF7-8E1A-642CB61AA19A"], "AllowUnqualifiedDNSQuery": true}).
PS C:\WINDOWS\system32>

```

```

Administrator: Windows PowerShell
PS C:\WINDOWS\system32> docker run -d --rm --isolation=process mcr.microsoft.com/windows/nanoserver:1903 cmd /c ping localhost -n 100
a627beadb1297f492ec1f73a3b74c95d8bef2cfaf8f9d6a03e326a1997ec2c1
PS C:\WINDOWS\system32> docker ps
CONTAINER ID        IMAGE                                     COMMAND                  CREATED            STATUS              PORTS
a627beadb129      mcr.microsoft.com/windows/nanoserver:1903  "cmd /c ping localho..."  7 seconds ago     Up 5 seconds
distracted_bell
PS C:\WINDOWS\system32>

```

```

Select Administrator: Windows PowerShell
PS C:\WINDOWS\system32> docker top a627beadb1297f492ec1f73a3b74c95d8bef2cfaf8f9d6a03e326a1997ec2c1
Name                PID                CPU                Private Working Set
smss.exe             15128              00:00:00.078      262.1kB
csrss.exe            10544              00:00:00.015      446.5kB
wininit.exe          5284               00:00:00.046      671.7kB
services.exe        8084               00:00:00.218      1.298MB
lsass.exe            2732               00:00:00.234      2.306MB
svchost.exe          2988               00:00:00.046      1.36MB
svchost.exe          18304              00:00:00.031      1.454MB
svchost.exe          19884              00:00:00.218      2.376MB
svchost.exe          19904              00:00:00.031      1.233MB
CExecSvc.exe        10436              00:00:00.031      688.1kB
svchost.exe          18868              00:00:00.265      3.949MB
cmd.exe              3040               00:00:00.015      835.6kB
svchost.exe          18948              00:00:00.125      2.712MB
PING.EXE             6420               00:00:00.078      565.2kB
svchost.exe          7436               00:00:01.515      10.48MB
PS C:\WINDOWS\system32>

```

```
Select Administrator: Windows PowerShell
PS C:\WINDOWS\system32> Get-Process -Name ping

Handles  NPM(K)  PM(K)  WS(K)  CPU(s)  Id  SI ProcessName
-----  -
75       5       860    3352   0.09    6420  8  PING

PS C:\WINDOWS\system32>
```

```
Administrator: Windows PowerShell
PS C:\WINDOWS\system32> docker run -d --rm --isolation=hyperv mcr.microsoft.com/windows/nanoserver:1809 cmd /c ping localhost -n 100
c62f82f54cbce3a7673f5722e29629c1ab3d8a4645af9c519c0e60675730b66f
PS C:\WINDOWS\system32> docker ps

CONTAINER ID   NAMES          IMAGE                                     COMMAND                                CREATED        STATUS        PORTS
c62f82f54cbc   vigilant_leavitt mcr.microsoft.com/windows/nanoserver:1809 "cmd /c ping localho..." 4 seconds ago  Up 2 seconds

PS C:\WINDOWS\system32>
```

```
Select Administrator: Windows PowerShell
PS C:\WINDOWS\system32> docker top c62f82f54cbce3a7673f5722e29629c1ab3d8a4645af9c519c0e60675730b66f

Name          PID          CPU          Private Working Set
-----
smss.exe      940          00:00:00.031 249.9kB
csrss.exe     964          00:00:00.015 471kB
wininit.exe   1000         00:00:00.000 675.8kB
services.exe 1016         00:00:00.046 1.237MB
lsass.exe     272          00:00:00.062 2.83MB
svchost.exe   508          00:00:00.015 741.4kB
svchost.exe   752          00:00:00.015 720.9kB
svchost.exe   8            00:00:00.171 1.393MB
svchost.exe   372          00:00:00.015 872.4kB
CExecSvc.exe 1044         00:00:00.000 835.6kB
svchost.exe   1100         00:00:00.062 3.039MB
svchost.exe   1152         00:00:00.031 1.491MB
cmd.exe       1216         00:00:00.031 716.8kB
PING.EXE     1268         00:00:00.015 520.2kB
svchost.exe   1344         00:00:00.187 5.394MB

PS C:\WINDOWS\system32>
```

```
Administrator: Windows PowerShell
PS C:\WINDOWS\system32> Get-Process -Name ping
Get-Process : Cannot find a process with the name "ping". Verify the process name and call the cmdlet again.
At line:1 char:1
+ Get-Process -Name ping
+ ~~~~~
+ CategoryInfo          : ObjectNotFound: (ping:String) [Get-Process], ProcessCommandException
+ FullyQualifiedErrorId : NoProcessFoundForGivenName,Microsoft.PowerShell.Commands.GetProcessCommand

PS C:\WINDOWS\system32>
```

Settings

General


Proxies

Daemon

Reset

Daemon

Configure the Docker daemon by typing a json docker daemon [configuration file](#).



Basic

Experimental [features](#)

Insecure registries:

eg: my-registry.example:5000 or 127.0.0.0/8

Registry mirrors:

eg: https://my-registry.example:5000

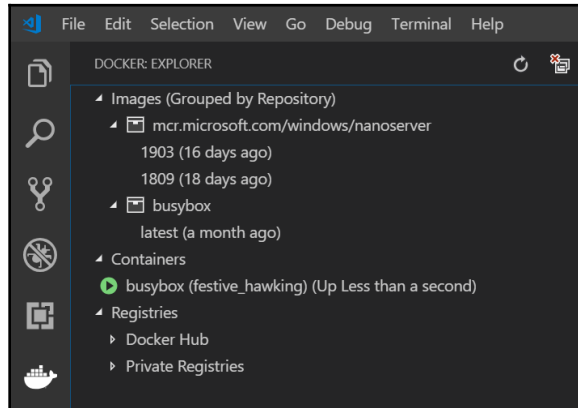
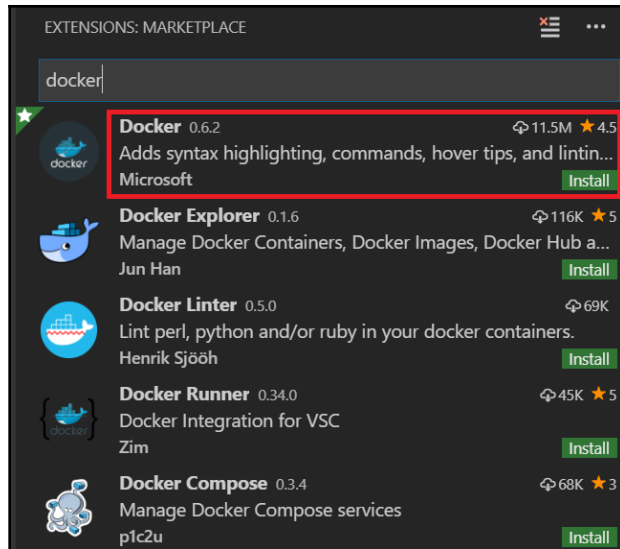
Docker is running

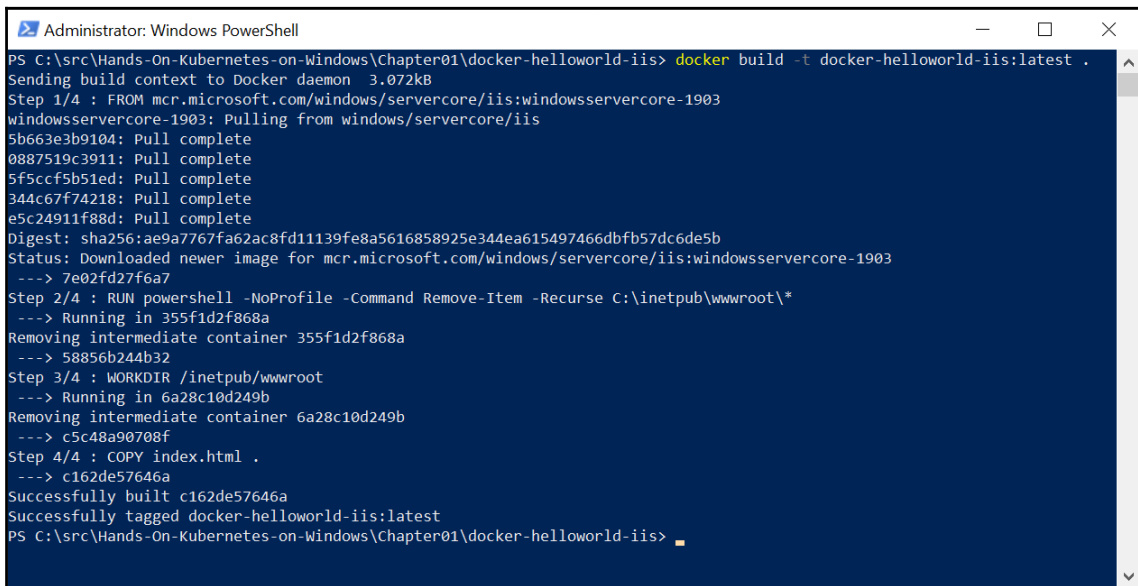
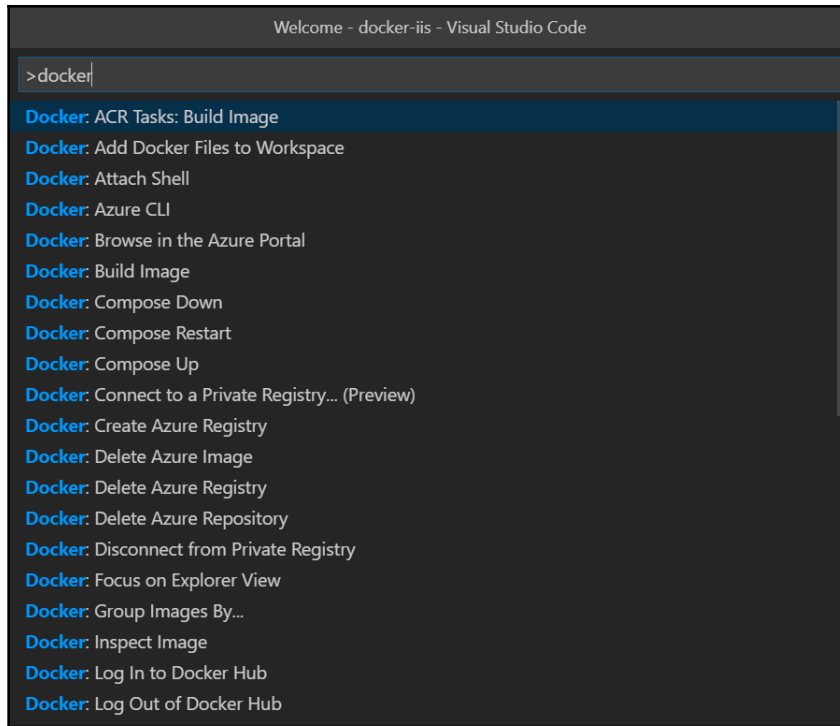
Docker will restart when applying these settings.

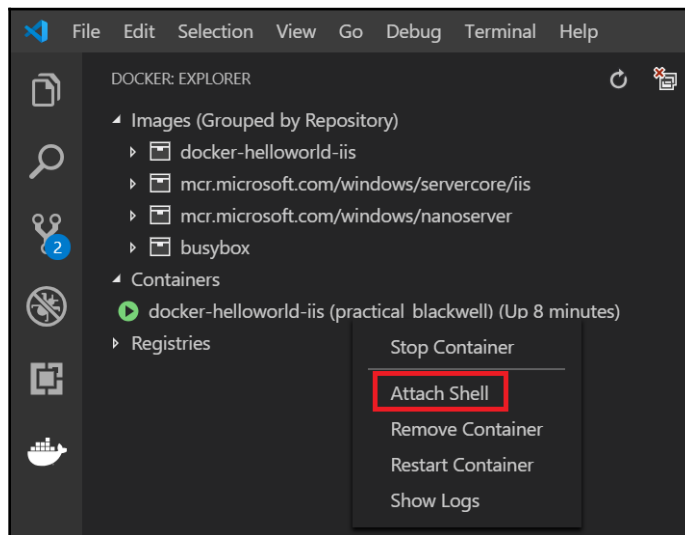
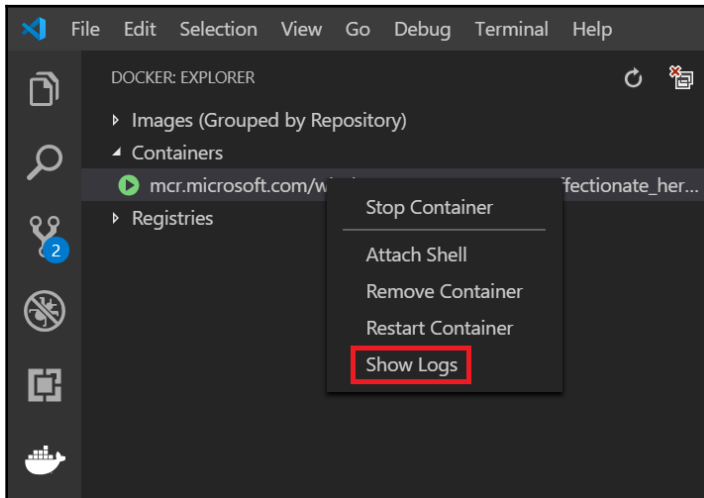
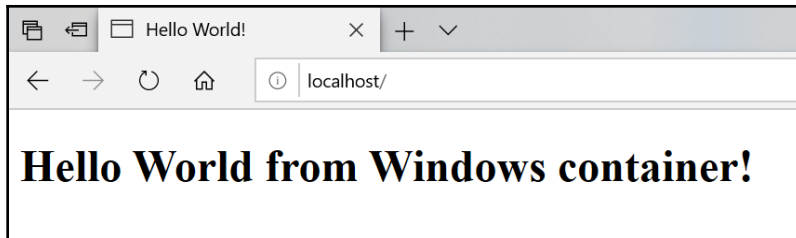
Apply

```
Administrator: Windows PowerShell
PS C:\WINDOWS\system32> docker run --rm -it --platform=linux busybox /bin/sh
/ # uname -a
Linux 9998acd00f52 4.14.35-linuxkit #1 SMP Mon Apr 23 11:11:13 UTC 2018 x86_64 GNU/Linux
/ #
```

```
Administrator: Windows PowerShell
"Name": "/dazzling_shirley",
"RestartCount": 0,
"Driver": "lcow",
"Platform": "linux",
"MountLabel": "",
"ProcessLabel": "",
"AppArmorProfile": "",
"ExecIDs": null,
"HostConfig": {
  "Binds": null,
  "ContainerIDFile": "",
  "LogConfig": {
    "Type": "json-file",
    "Config": {}
  },
  "NetworkMode": "default",
  "PortBindings": {},
  "RestartPolicy": {
    "Name": "no",
    "MaximumRetryCount": 0
  },
  "AutoRemove": true,
  "VolumeDriver": "",
  "VolumesFrom": null,
  "CapAdd": null,
  "CapDrop": null,
  "Dns": [],
  "DnsOptions": [],
  "DnsSearch": [],
  "ExtraHosts": null,
  "GroupAdd": null,
  "IpcMode": "",
  "Cgroup": "",
  "Links": null,
  "OomScoreAdj": 0,
  "PidMode": "",
  "Privileged": false,
  "PublishAllPorts": false,
  "ReadonlyRootfs": false,
  "SecurityOpt": null,
  "UTSMode": "",
  "UsernsMode": "",
  "ShmSize": 0,
  "ConsoleSize": [
    32,
    136
  ],
  "Isolation": "hyperv",
  "CpuShares": 0,
  "Memory": 0,
```







```
Administrator: C:\Windows\System32\WindowsPowerShell\v1.0\powershell.exe
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell https://aka.ms/pscore6

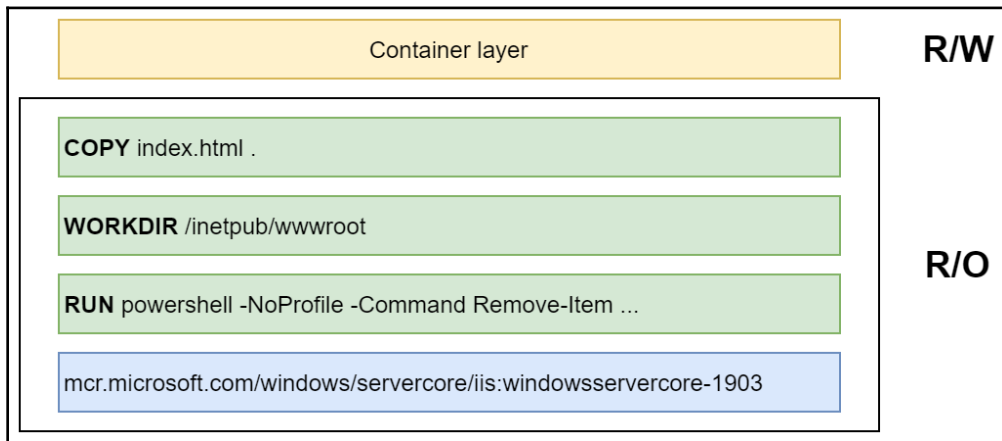
PS C:\inetpub\wwwroot>
```

```
Administrator: C:\Windows\System32\WindowsPowerShell\v1.0\powershell.exe
PS C:\inetpub\wwwroot> cat .\index.html
<!DOCTYPE html>
<html>
  <head>
    <title>Hello World!</title>
  </head>
  <body>
    <h1>Hello World from Windows container!</h1>
  </body>
</html>
PS C:\inetpub\wwwroot>
```

```
Administrator: C:\Windows\System32\WindowsPowerShell\v1.0\powershell.exe
PS C:\inetpub\wwwroot> cat ..\logs\LogFiles\W3SVC1\u_ex190607.log
#Software: Microsoft Internet Information Services 10.0
#Version: 1.0
#Date: 2019-06-07 21:55:24
#Fields: date time s-ip cs-method cs-uri-stem cs-uri-query s-port cs-username c-ip cs(User-Agent) cs(Referer) sc-status sc
-substatus sc-win32-status time-taken
2019-06-07 21:55:24 172.22.172.206 GET / - 80 - 10.0.75.1 Mozilla/5.0+(Windows+NT+10.0;+Win64;+x64)+AppleWebKit/537.36+(KH
TML,+like+Gecko)+Chrome/70.0.3538.102+Safari/537.36+Edge/18.18362 - 200 0 0 113
#Software: Microsoft Internet Information Services 10.0
#Version: 1.0
#Date: 2019-06-07 22:20:28
#Fields: date time s-ip cs-method cs-uri-stem cs-uri-query s-port cs-username c-ip cs(User-Agent) cs(Referer) sc-status sc
-substatus sc-win32-status time-taken
2019-06-07 22:20:28 172.22.172.206 GET / - 80 - 10.0.75.1 Mozilla/5.0+(Windows+NT+10.0;+Win64;+x64)+AppleWebKit/537.36+(KH
TML,+like+Gecko)+Chrome/70.0.3538.102+Safari/537.36+Edge/18.18362 - 304 0 0 57
2019-06-07 22:20:28 172.22.172.206 GET /favicon.ico - 80 - 10.0.75.1 Mozilla/5.0+(Windows+NT+10.0;+Win64;+x64)+AppleWebKit
/537.36+(KHTML,+like+Gecko)+Chrome/70.0.3538.102+Safari/537.36+Edge/18.18362 - 404 0 2 9
2019-06-07 22:20:29 172.22.172.206 GET / - 80 - 10.0.75.1 Mozilla/5.0+(Windows+NT+10.0;+Win64;+x64)+AppleWebKit/537.36+(KH
TML,+like+Gecko)+Chrome/70.0.3538.102+Safari/537.36+Edge/18.18362 - 304 0 0 0
2019-06-07 22:20:29 172.22.172.206 GET /favicon.ico - 80 - 10.0.75.1 Mozilla/5.0+(Windows+NT+10.0;+Win64;+x64)+AppleWebKit
/537.36+(KHTML,+like+Gecko)+Chrome/70.0.3538.102+Safari/537.36+Edge/18.18362 - 404 0 2 0
2019-06-07 22:20:42 172.22.172.206 GET / - 80 - 10.0.75.1 Mozilla/5.0+(Windows+NT+10.0;+Win64;+x64)+AppleWebKit/537.36+(KH
TML,+like+Gecko)+Chrome/70.0.3538.102+Safari/537.36+Edge/18.18362 - 200 0 0 0
PS C:\inetpub\wwwroot>
```


Chapter 2: Managing State in Containers

```
Administrator: Windows PowerShell
PS C:\WINDOWS\system32> docker history docker-helloworld-iis
IMAGE                CREATED              CREATED BY          SIZE      COMMENT
c162de57646a        2 months ago       cmd /S /C #(nop)  41.1kB
c5c48a90708f        2 months ago       cmd /S /C #(nop)  41kB
58856b244b32        2 months ago       cmd /S /C #(nop)  23.3MB
7e02fd27f6a7        2 months ago       cmd /S /C #(nop)  41kB
<missing>           2 months ago       cmd /S /C #(nop)  41kB
<missing>           2 months ago       cmd /S /C #(nop)  126MB
<missing>           2 months ago       Install update    1.16GB
<missing>           4 months ago       Apply image       3.48GB
PS C:\WINDOWS\system32>
```



```
Administrator: Windows PowerShell
PS C:\WINDOWS\system32> docker volume inspect test-named-volume
[
  {
    "CreatedAt": "2019-08-08T08:48:08+02:00",
    "Driver": "local",
    "Labels": {},
    "Mountpoint": "C:\\ProgramData\\Docker\\volumes\\test-named-volume\\_data",
    "Name": "test-named-volume",
    "Options": {},
    "Scope": "local"
  }
]
PS C:\WINDOWS\system32>
```

```

Administrator: Windows PowerShell
PS C:\src> az account show
{
  "environmentName": "AzureCloud",
  "id": "7f3c1d1e-1234-5678-9012-345678901234",
  "isDefault": true,
  "name": "Pay-As-You-Go",
  "state": "Enabled",
  "tenantId": "12345678-9012-3456-7890-123456789012",
  "user": {
    "name": "user@domain.com",
    "type": "user"
  }
}
PS C:\src>

```

Microsoft Azure

Home > Storage accounts > dockerstorageaccount - Files > docker-bind-mount-share

docker-bind-mount-share
File share

Search (Ctrl+F)

Overview
Access Control (IAM)
Settings
Access policy
Properties

Backup (Preview) is not enabled for this file share. Click here to enable backup.

Location: docker-bind-mount-share / ContainerData

Search files by prefix

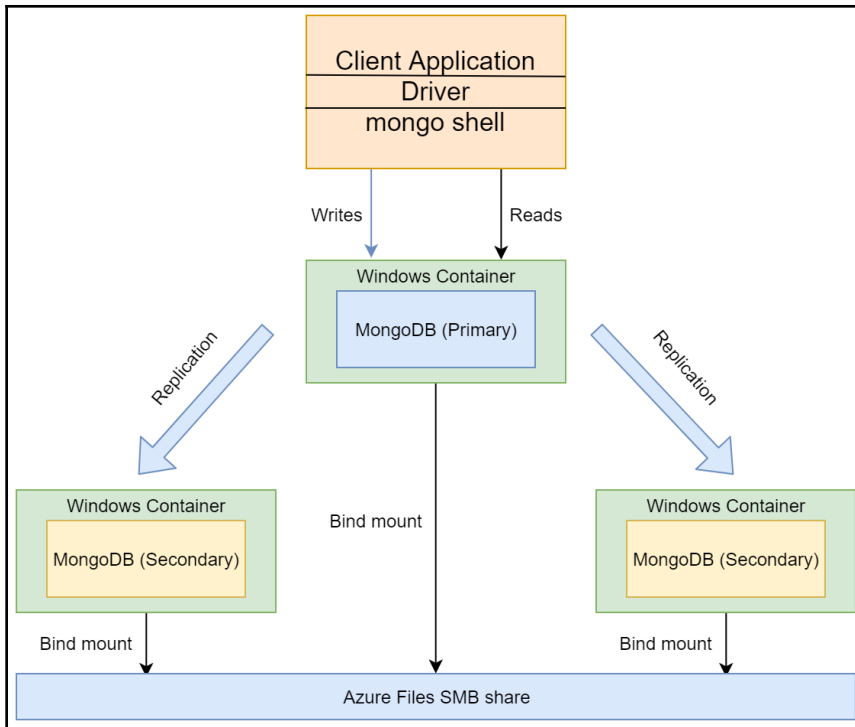
NAME	TYPE
[.]	
processes.txt	File

processes.txt - Notepad

```

File Edit Format View Help
-----
NPM(K)  PM(M)  WS(M)  CPU(s)  Id  SI  ProcessName
-----
5        1.05   2.58   0.05    16704  11  CExecSvc
5        0.91   2.40   0.02    16672  11  CompatTelRunner
7        1.18   3.64   0.09    3488   11  conhost
10       6.76   10.70  0.11    25280  11  conhost
12       1.82   3.91   0.23    18224  11  csrss
5        0.78   1.75   0.05    8172   11  fontdrvhost
0        0.06   0.01   0.00    0      0   Idle
24       5.54   12.82  0.31    20716  11  lsass
13       2.66   9.47   0.11    10272  11  msdtc
61       52.84  89.08  6.69    16564  11  pwsh
10       2.55   5.21   0.45    23868  11  services
4        1.27   1.24   0.14    16568  0   smss
23       13.88  26.31  2.59    5592   11  svchost
35       6.62   17.65  2.55    12484  11  svchost
8        1.67   4.22   0.05    13032  11  svchost
7        1.40   3.82   0.02    13708  11  svchost
35       18.93  33.69  14.75   18668  11  svchost
12       2.96   9.78   0.41    21736  11  svchost
16       8.06   12.50  0.38    22452  11  svchost
15       3.30   7.43   0.11    24432  11  svchost
16       2.98   7.59   0.33    24720  11  svchost
14       3.45   9.09   0.19    24960  11  svchost
0        0.20   2.03   2,554.88  4     0   System
12       1.85   4.77   0.09    21292  11  wininit
9        2.23   7.23   0.08    15900  11  WMIADAP
14       7.96   12.98  2.17    20064  11  WmiPrvSE

```



```

Administrator: Windows PowerShell
PS C:\WINDOWS\system32> docker ps
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS          NAMES
59b1a492a7e9   mongo-1903:latest  "mongod --bind_ip_al..."  19 seconds ago  Up 17 seconds  27017/tcp     mongo-node3
41eab16765fa   mongo-1903:latest  "mongod --bind_ip_al..."  22 seconds ago  Up 19 seconds  27017/tcp     mongo-node2
20cd032571f5   mongo-1903:latest  "mongod --bind_ip_al..."  28 seconds ago  Up 22 seconds  27017/tcp     mongo-node1
PS C:\WINDOWS\system32>

```

```

Administrator: Windows PowerShell
PS C:\WINDOWS\system32> docker run --isolation=process `
>>     --rm `
>>     --net mongo-cluster `
>>     mongo-dotnet-sample:latest
Connecting to MongoDB...
1
2
3
4
5
6
7
8
9
10

```

Microsoft Azure Search resources, services, and docs

Home > Storage accounts > dockerstorageaccount - Files > docker-bind-mount-share

docker-bind-mount-share

File share

Search (Ctrl+F)

Upload Add directory Refresh Delete directory Properties

Backup (Preview) is not enabled for this file share. Click here to enable backup.

Location: docker-bind-mount-share / MongoData1 / db

Search files by prefix

NAME	TYPE	SIZE
[.]		
diagnostic.data	Directory	
journal	Directory	
collection-0--6853221421465204875.wt	File	20 KiB
collection-10--6853221421465204875.wt	File	36 KiB
collection-11--6853221421465204875.wt	File	20 KiB
collection-13--6853221421465204875.wt	File	20 KiB
collection-15--6853221421465204875.wt	File	4 KiB
collection-17--6853221421465204875.wt	File	36 KiB
collection-19--6853221421465204875.wt	File	20 KiB
collection-2--6853221421465204875.wt	File	4 KiB
collection-4--6853221421465204875.wt	File	20 KiB
collection-6--6853221421465204875.wt	File	36 KiB
collection-8--6853221421465204875.wt	File	20 KiB
index-1--6853221421465204875.wt	File	20 KiB

Chapter 3: Working with Container Images

```
Administrator: Windows PowerShell
PS C:\src\Hands-On-Kubernetes-on-Windows\Chapter03\01_iis-demo> docker push packtpubkubernetesonwindows/iis-demo
The push refers to repository [docker.io/packtpubkubernetesonwindows/iis-demo]
a739ac2b5de1: Pushed
0ac556df41fa: Pushed
22654ee65998: Pushed
f1627a8358bf: Pushed
118f3762d074: Pushed
4b775a679e59: Skipped foreign layer
734d75c7186c: Skipped foreign layer
latest: digest: sha256:fac1e2272d408bad97c27ddf518fc57cf7cba3aed4203401f905780142f1a601 size: 1993
PS C:\src\Hands-On-Kubernetes-on-Windows\Chapter03\01_iis-demo>
```

Create a new repository

A repository contains all project files, including the revision history. Already have a project repository elsewhere? [Import a repository.](#)

Owner **Repository name ***

hands-on-kubernetes-on-windows / nginx-demo-index

Great repository names are short and memorable. Need inspiration? How about **ideal-couscous**?

Description (optional)

Demonstration Linux Docker image for hosting a static webpage using nginx

Public
Anyone can see this repository. You choose who can commit.

Private
You choose who can see and commit to this repository.

Skip this step if you're importing an existing repository.

Initialize this repository with a README
This will let you immediately clone the repository to your computer.

Add .gitignore: None | Add a license: None ⓘ

Create repository

hands-on-kubernetes-on-windows / nginx-demo-index

Unwatch 1 Star 0 Fork 0

Code Issues 0 Pull requests 0 Projects 0 Wiki Security Insights Settings

Demonstration Linux Docker image for hosting a static webpage using nginx Edit

Manage topics

1 commit 1 branch 0 releases 1 contributor

Branch: master New pull request Create new file Upload files Find File Clone or download

ptylenda Docker image source code Latest commit 916391f now

Dockerfile	Docker image source code	now
index.html	Docker image source code	now

Linked Accounts

These account links are used for Automated Builds, so that Docker Hub can access your project lists and help you configure your Automated Builds. **Please note: A Github/Bitbucket account can only be connected to one Docker Hub account at a time.**

Service user (or machine/bot account) suggested

Attaching your personal Github or Bitbucket account to this Docker Hub organization will allow other organization owners to create builds from your private repositories. We suggest using a service user (also referred to as a machine user or bot account).

Provider	Account			
GitHub	No account linked			Connect
Bitbucket	No account linked			Connect

Create Repository

packtpubkubern... **nginx-demo-index**

Description

Visibility

Using 0 of 1 private repositories. [Get more](#)

Public Public repositories appear in Docker Hub search results
 Private Only you can view private repositories

Build Settings (optional)

Autobuild triggers a new build with every **git push** to your source code repository. [Learn More.](#)

Connected
 Disconnected

hands-on-kubernetes-on-windows x ▾
 nginx-demo-index x ▾

▶ [Click here to customize the build settings](#)

BUILD RULES +

The build rules below specify how to build your source into Docker images.

Source Type	Source	Docker Tag	Dockerfile location	Build Caching
Branch ▾	master	latest	Dockerfile	<input checked="" type="checkbox"/>

▶ [View example build rules](#)

Repositories > packtpubkubernetesonwindows / nginx-demo-index > Builds Using 0 of 1 private repositories. [Get more](#)

General Tags **Builds** Timeline Collaborators Webhooks Settings

⏸ **PENDING** Cancel

<p>🔑 Build in 'master' (916391fd)</p> <p>🔑 latest</p> <p>🔄 hands-on-kubernetes-on-windows/nginx-demo-index</p>	<p>📅 CREATED a few seconds ago ⓘ</p> <p>🕒 DURATION 0 min ⓘ</p>	<p>USER packtpubkubernetesonwindows</p> <p>LOCATION unknown</p> <p>IP 2.129.216.115</p>
---	--	---

Recent Builds

⏸	Build in 'master' (See60004)	See6000	🔑 latest	🕒 2 minutes ago	🔍
✔	Build in 'master' (916391fd)	916391f	🔑 latest	🕒 19 minutes ago	
✔	Github Ping			🕒 19 minutes ago	

Hello World!

localhost:8080/

Hello World from nginx container! This is a new version of image for autobuild.

Hello World!

localhost:8080/

Hello World from IIS container! The image is provided by Azure Container Registry.

Settings / Developer settings

GitHub Apps
OAuth Apps
Personal access tokens

New personal access token

Personal access tokens function like ordinary OAuth access tokens. They can be used instead of a password for Git over HTTPS, or can be used to [authenticate to the API over Basic Authentication](#).

Note

Azure Container Registry build task automation

What's this token for?

Select scopes

Scopes define the access for personal tokens. [Read more about OAuth scopes.](#)

<input type="checkbox"/> repo	Full control of private repositories
<input checked="" type="checkbox"/> repo:status	Access commit status
<input type="checkbox"/> repo_deployment	Access deployment status
<input checked="" type="checkbox"/> public_repo	Access public repositories
<input type="checkbox"/> repo:invite	Access repository invitations

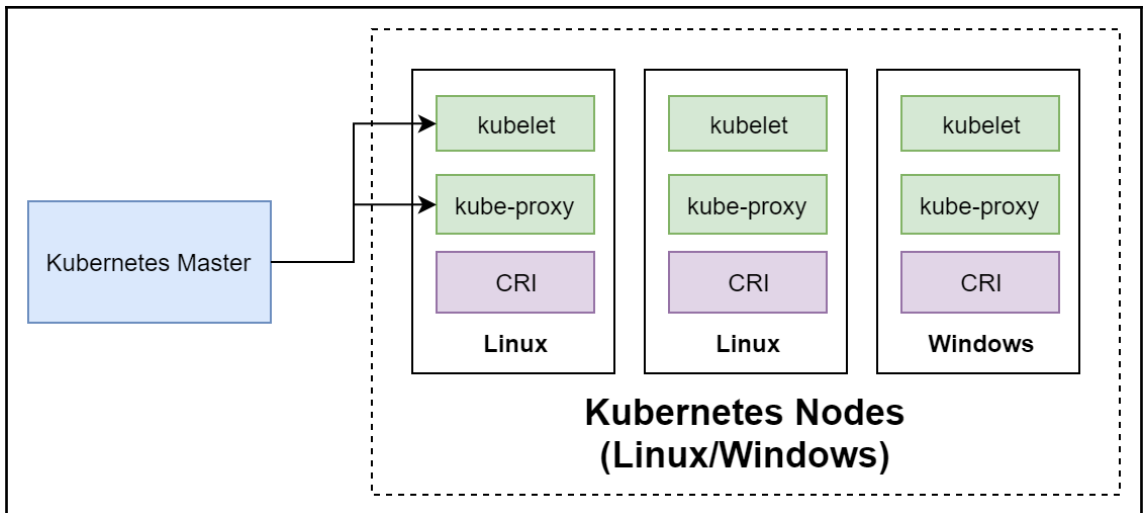
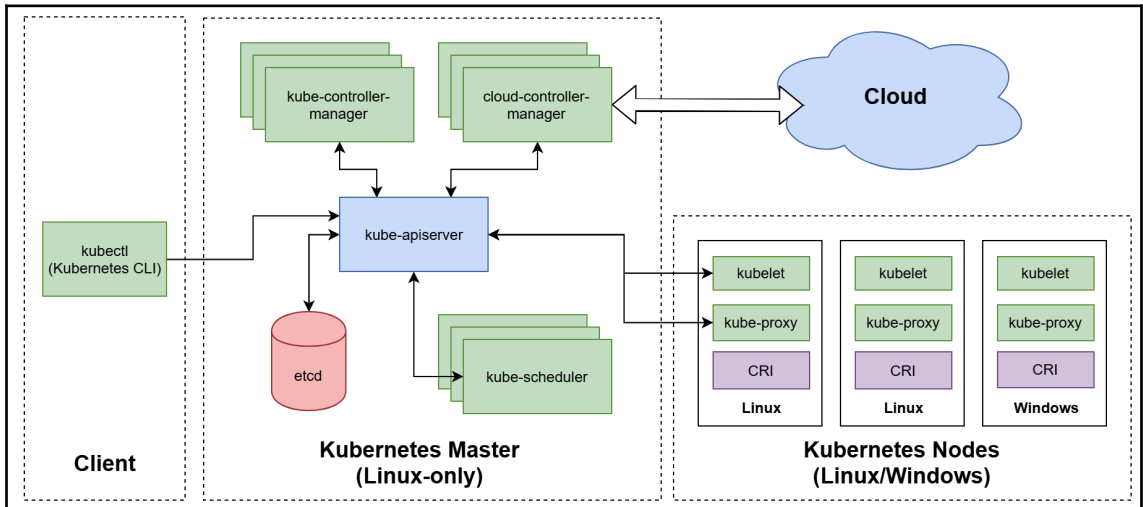
```
Administrator: Windows PowerShell
PS C:\src\Hands-On-kubernetes-on-windows\Chapter03\04_iis-demo-index> az acr task logs --registry handsonkubernetesonwin
registry
Showing logs of the last created run.
Run ID: cb5
2019/08/18 22:55:29 Downloading source code...
2019/08/18 22:55:40 Finished downloading source code
2019/08/18 22:55:42 Using acb_vol_7f760829-2575-48fe-8e6a-6872b10c280a as the home volume
2019/08/18 22:55:42 Setting up Docker configuration...
2019/08/18 22:55:55 Successfully set up Docker configuration
2019/08/18 22:55:55 Logging in to registry: handsonkubernetesonwinregistry.azurecr.io
2019/08/18 22:56:01 Successfully logged into handsonkubernetesonwinregistry.azurecr.io
2019/08/18 22:56:01 Executing step ID: build. Timeout(sec): 28800, Working directory: '', Network: ''
```

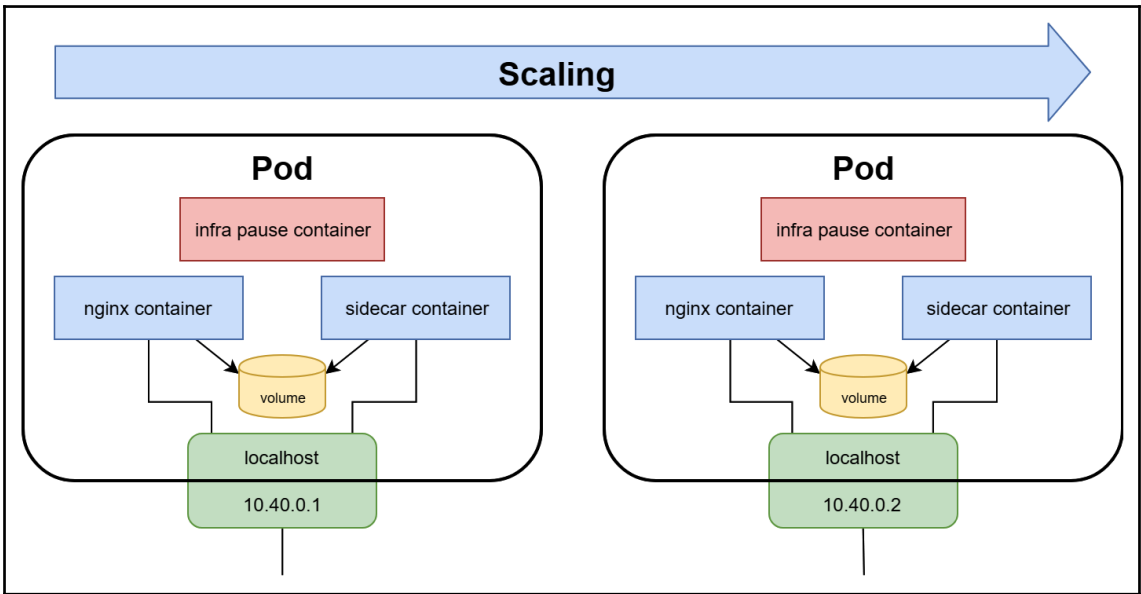
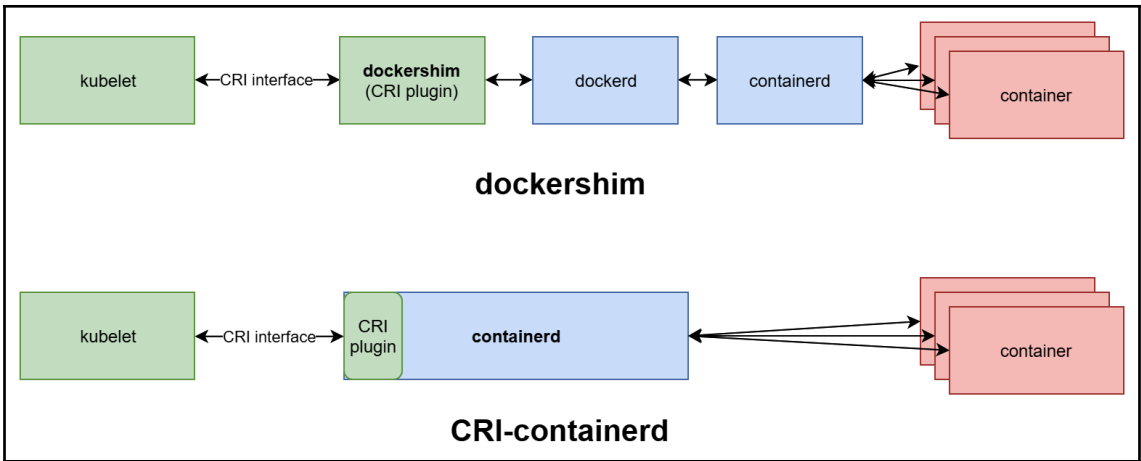
Hello World!

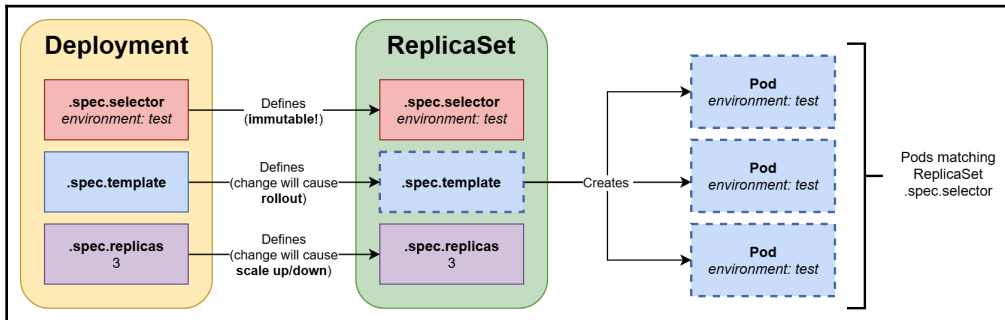
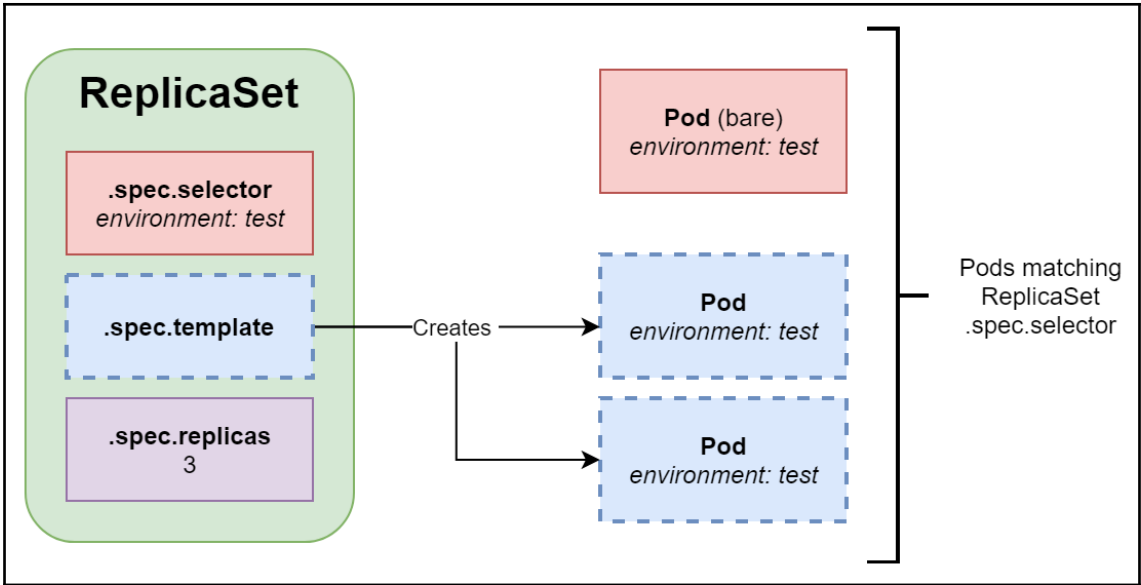
localhost:8080/

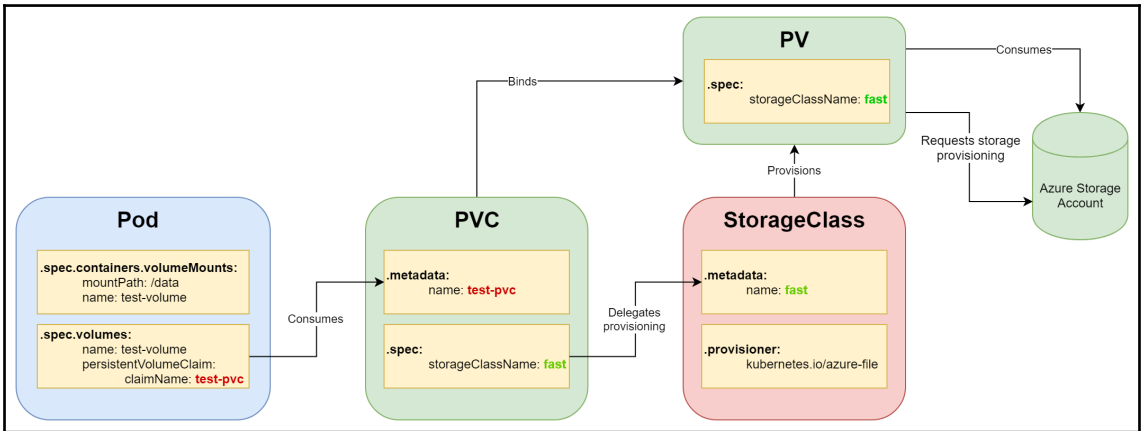
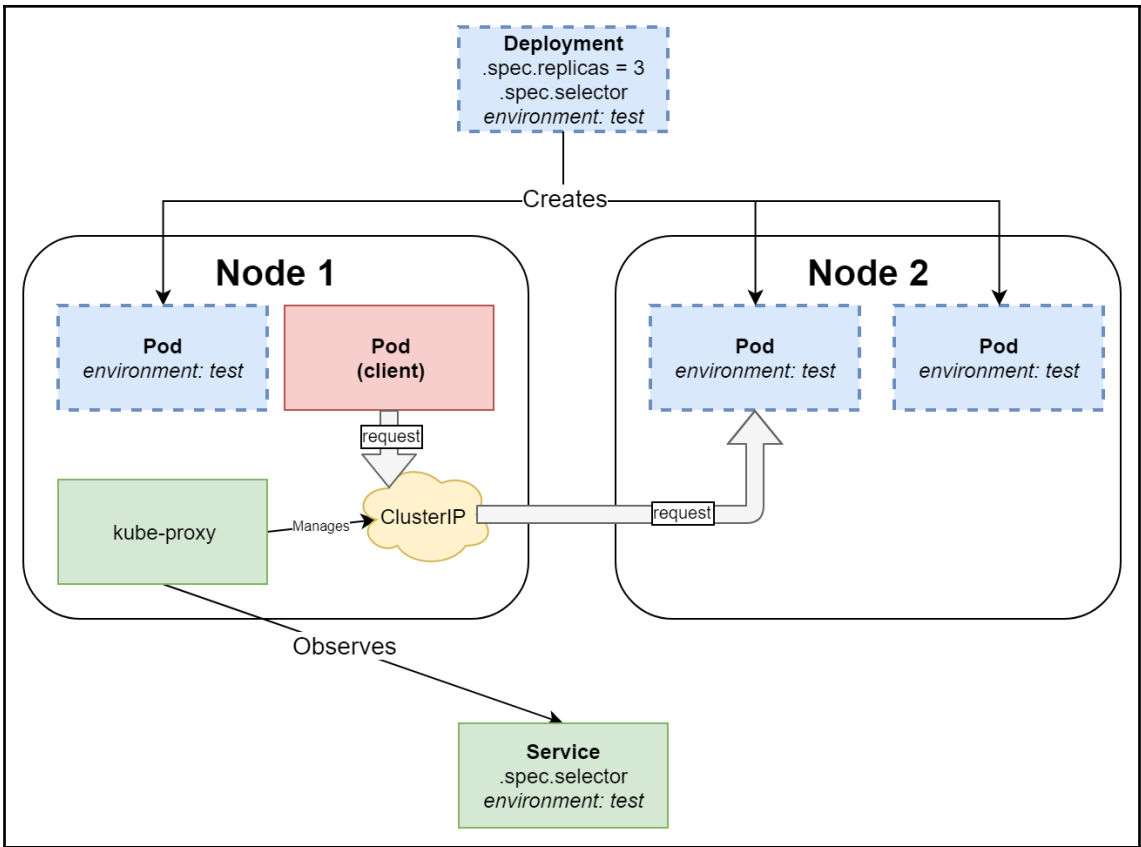
Hello World from IIS container! The image is provided by Azure Container Registry and automatically built by Azure Container Registry task.

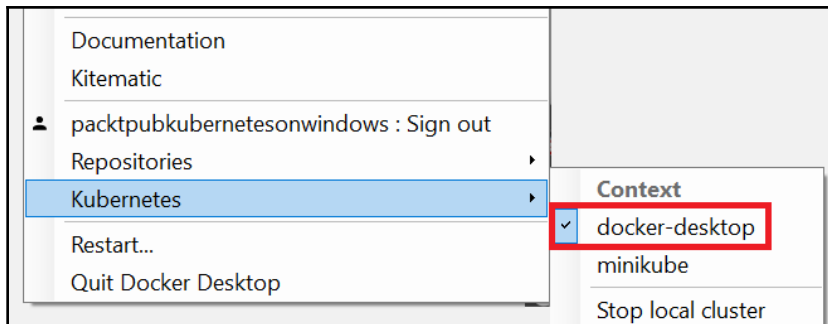
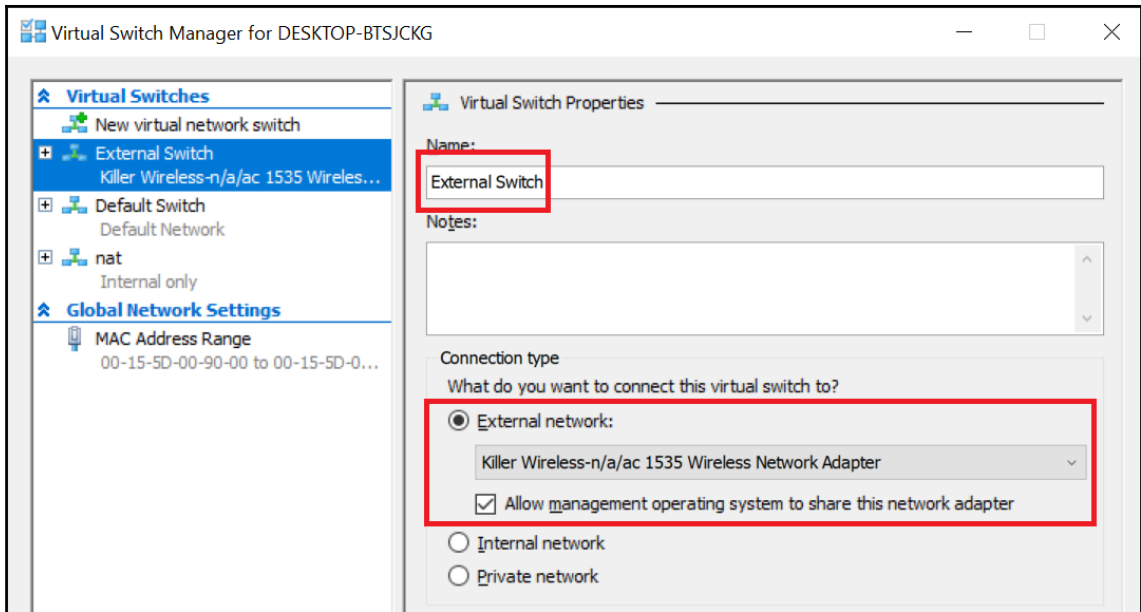
Chapter 4: Kubernetes Concepts and Windows Support

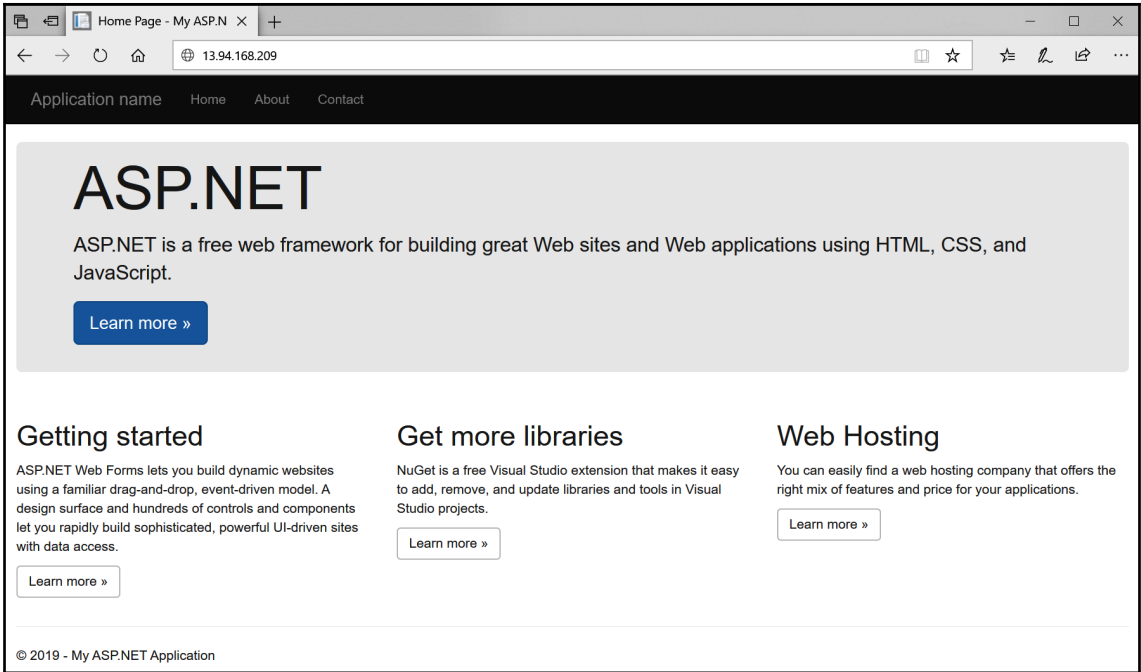




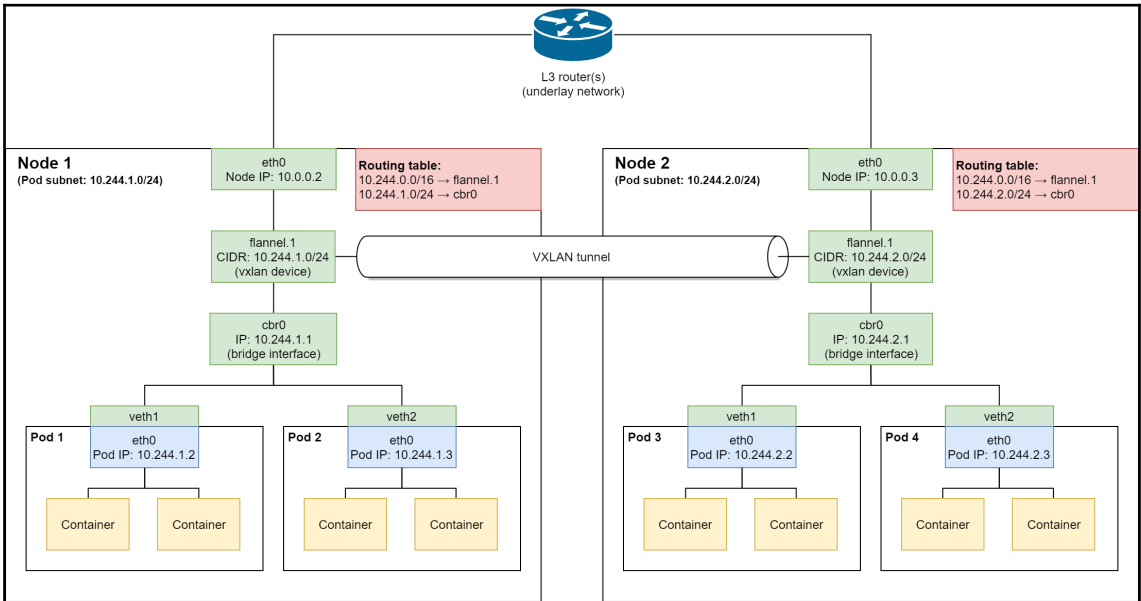
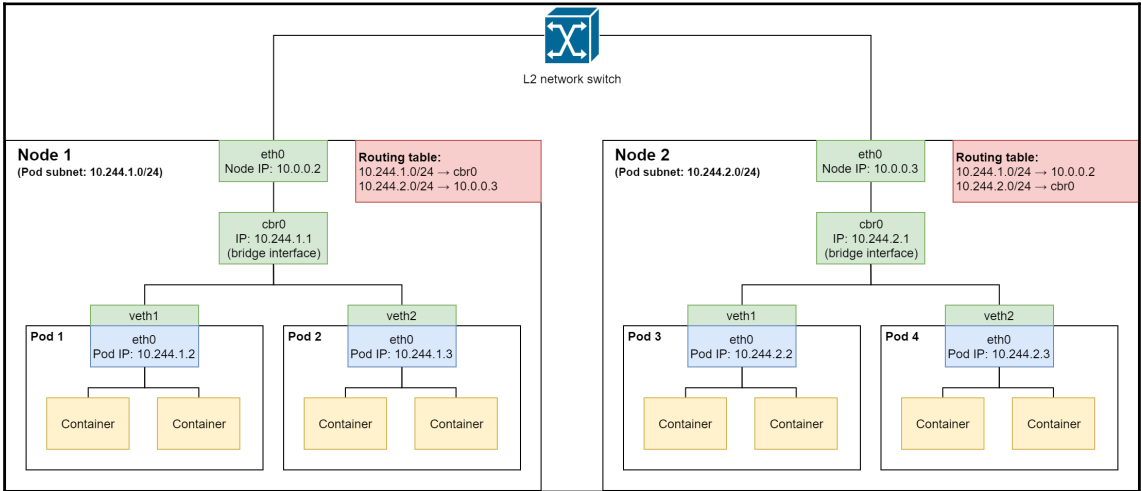


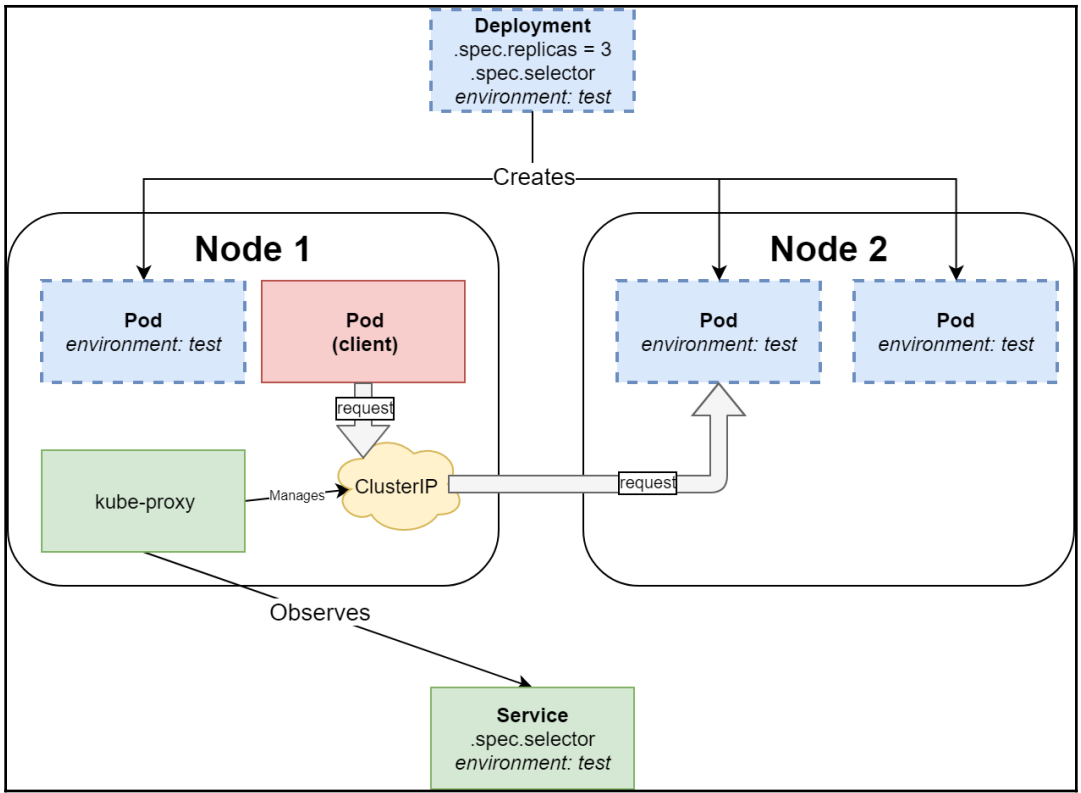


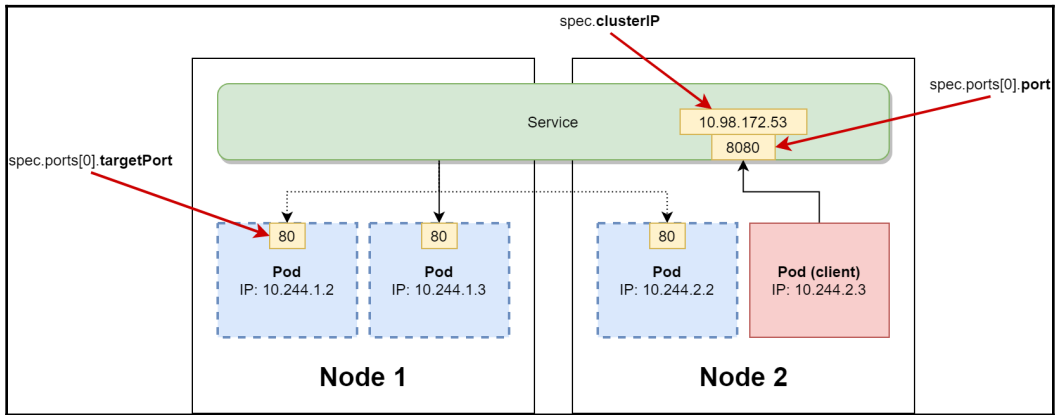
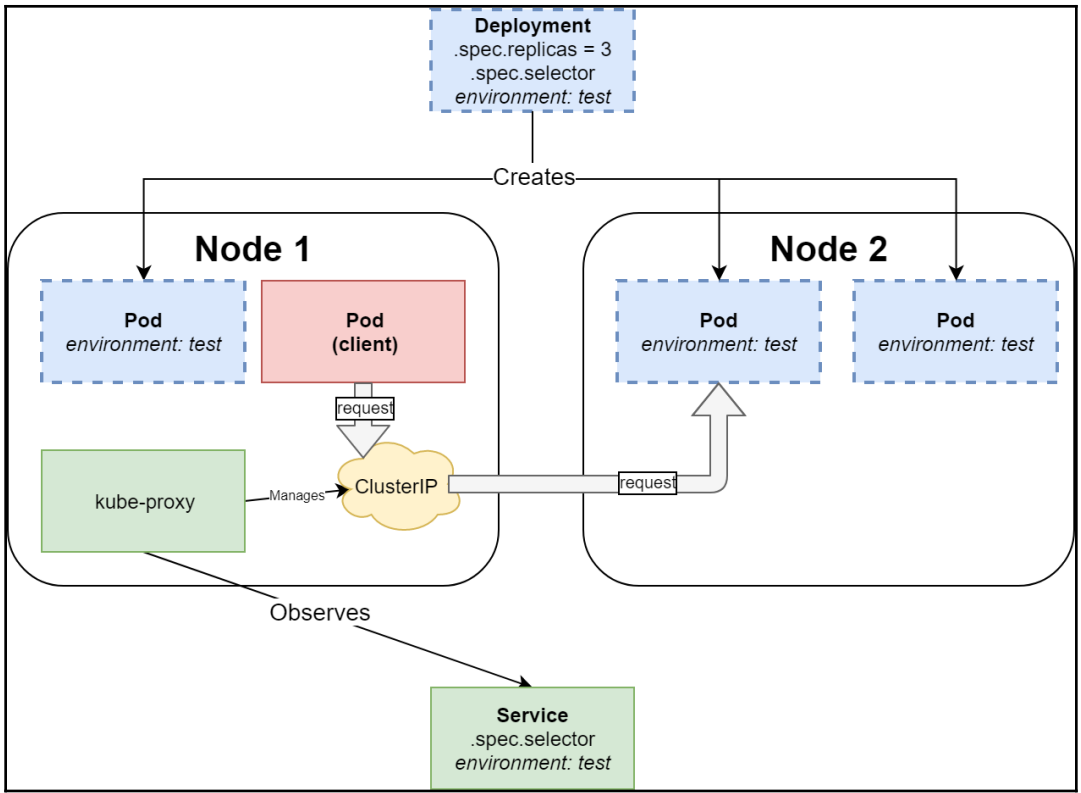


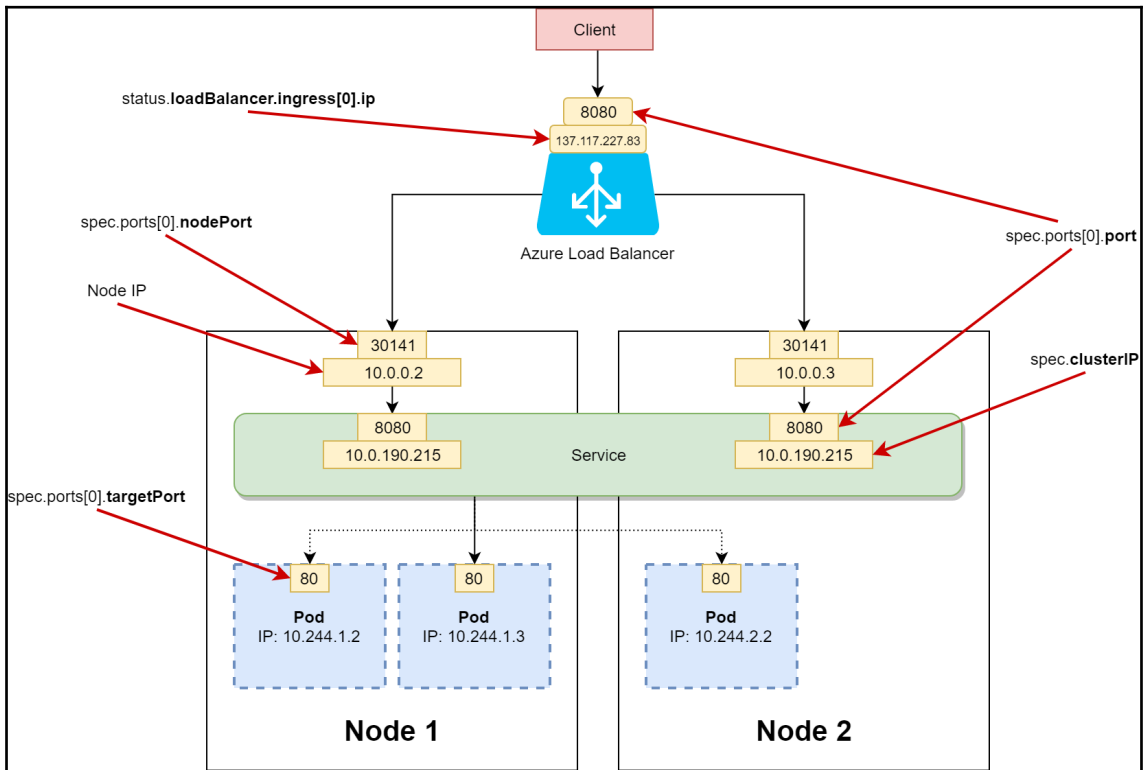
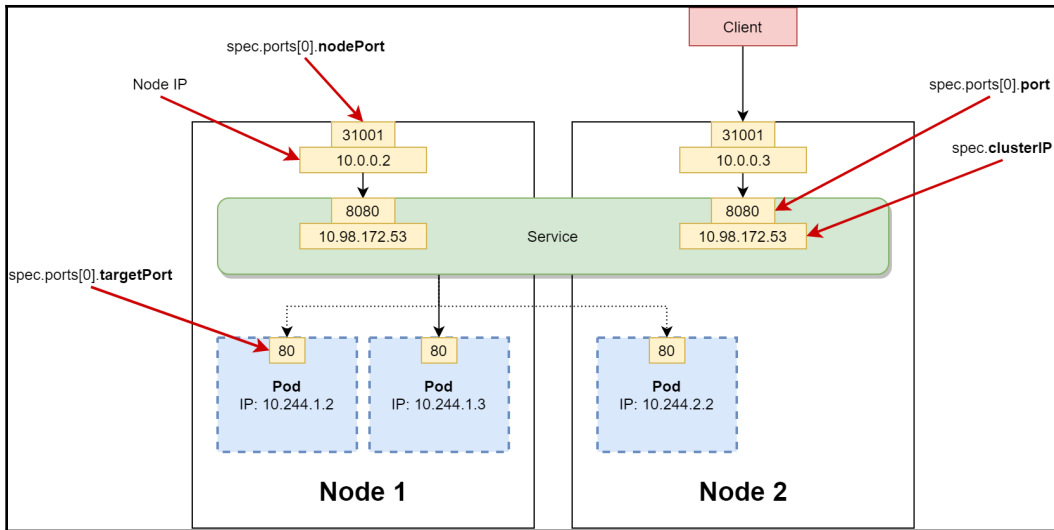


Chapter 5: Kubernetes Networking









Home > kubernetes - Backend pools

kubernetes - Backend pools

Search (Ctrl+V)

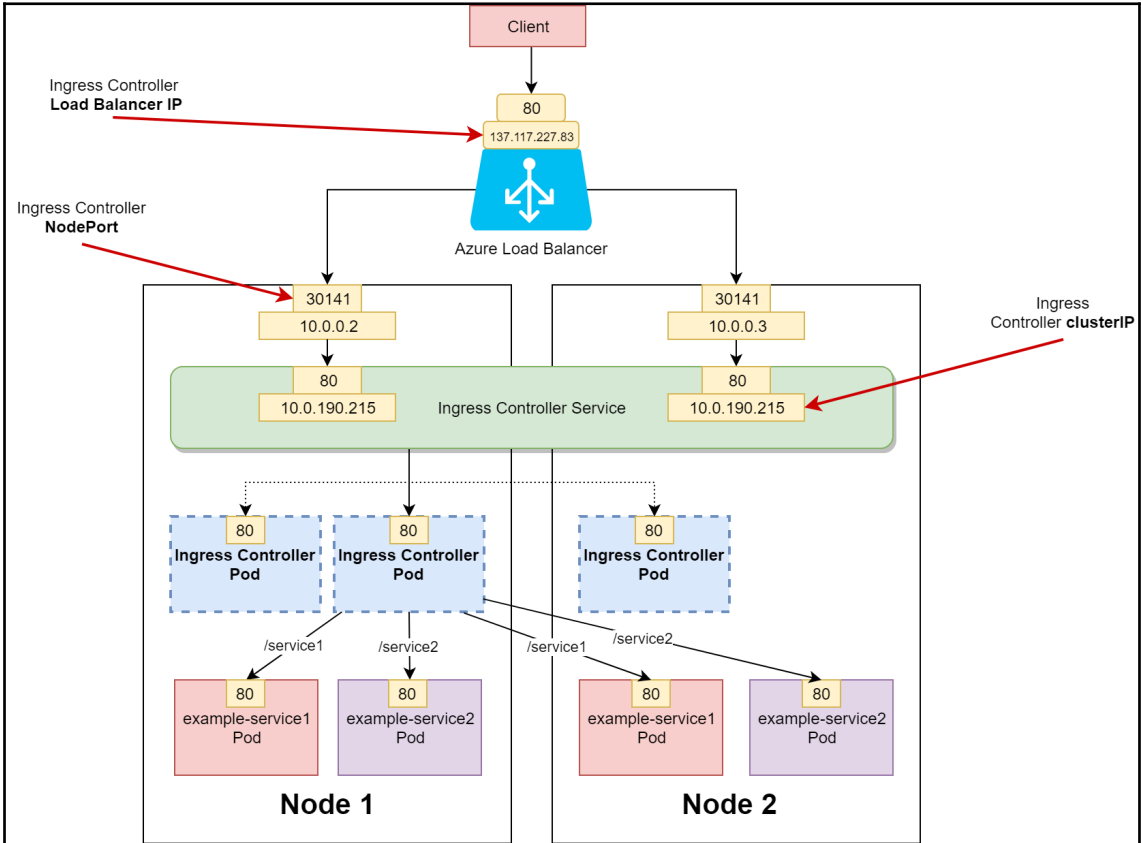
+ Add Refresh

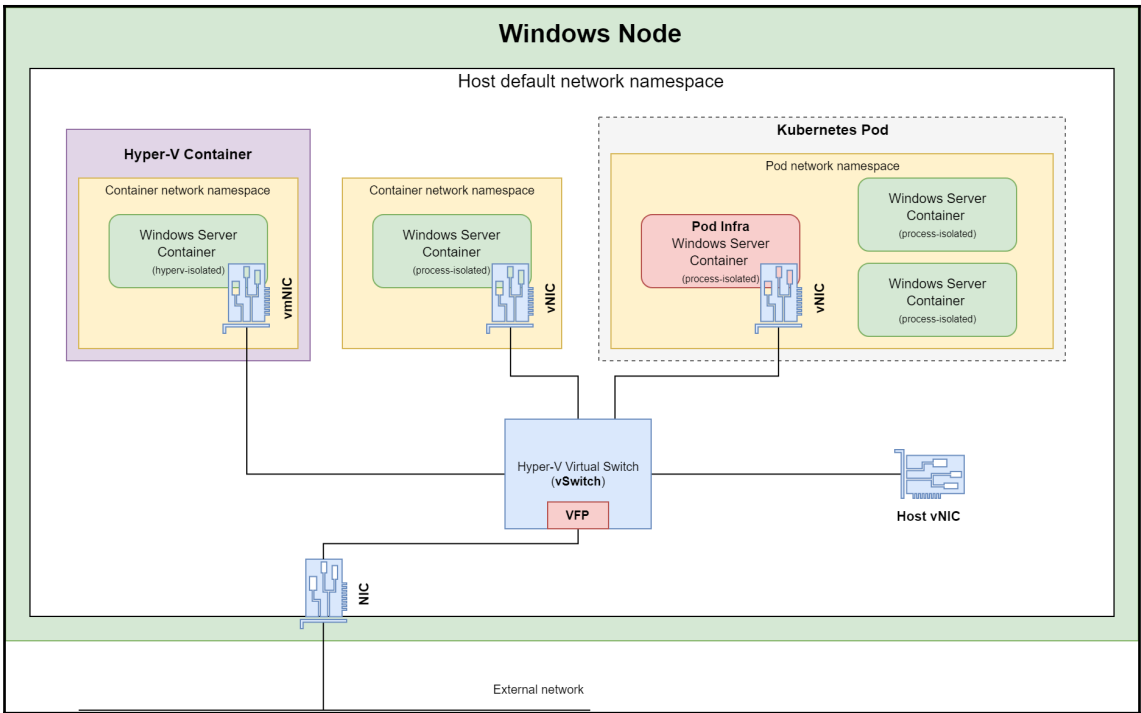
Backend pool 'kubernetes' was removed from Virtual machine scale set 'aks-nodepool1-26948119-vmss'. Upgrade all the instances of 'aks-nodepool1-26948119-vmss' for this change to apply.

aks-nodepool1-26948119-vmss

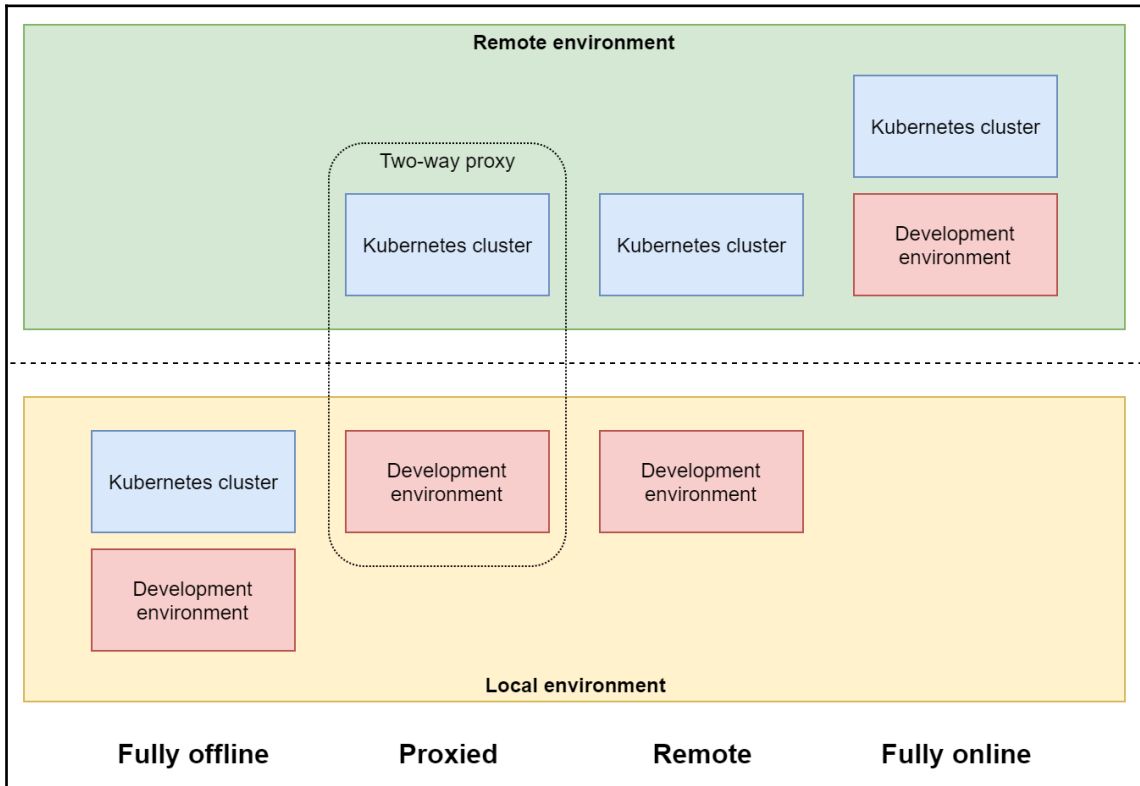
Search backend address pools

VIRTUAL MACHINE	VIRTUAL MACHINE STATUS	NETWORK INTERFACE	PRIVATE IP ADDRESS
kubernetes (2 virtual machines)			
aks-nodepool1-26948119-vmss (instance 0)	-	aks-nodepool1-26948119-vmss	10.240.0.4
aks-nodepool1-26948119-vmss (instance 1)	-	aks-nodepool1-26948119-vmss	10.240.0.35





Chapter 6: Interacting with Kubernetes Clusters

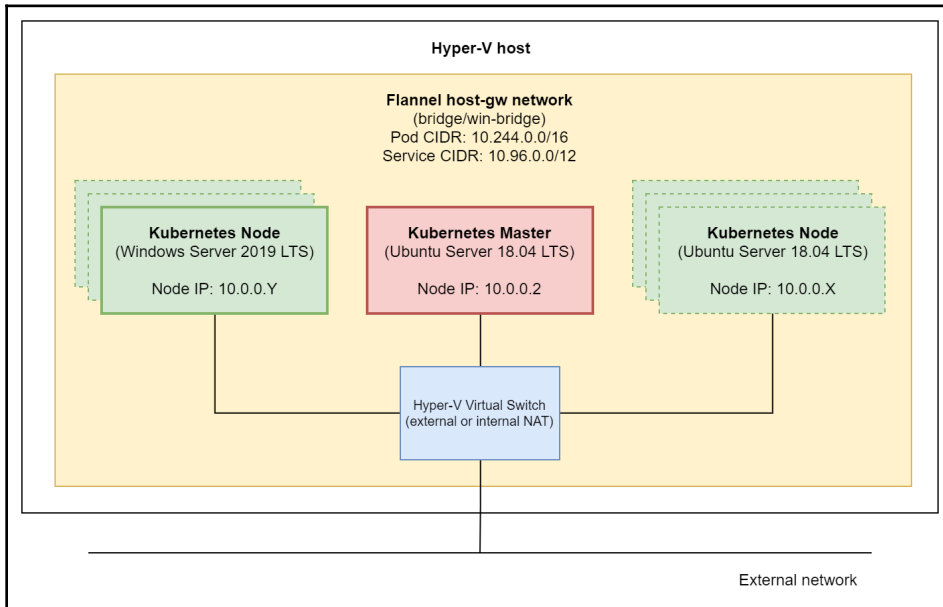


```
[LIVE-508420957] apps.v1.Deployment.default.nginx-deployment-example — [MERGED-259885336] apps.v1.Deployment.default.nginx-deployment-example
Meld File Edit Changes View
Save Undo
[LIVE-50842...ent-example]
apps.v1.Deployment.default.nginx-deployment-example
apps.v1.Deployment.default.nginx-deplo

apiVersion: apps/v1
kind: Deployment
metadata:
  annotations:
    deployment.kubernetes.io/revision: "1"
    kubectl.kubernetes.io/last-applied-configuration: |
      {"apiVersion":"apps/v1","kind":"Deployment","metadata":{"annotations":{},"name":"nginx-deplo
creationTimestamp: "2019-09-30T06:21:39Z"
generation: 3
name: nginx-deployment-example
namespace: default
resourceVersion: "225961"
selfLink: /apis/apps/v1/namespaces/default/deployments/nginx-deployment-example
uid: 902a0055-e34a-11e9-b4da-00155d009008
spec:
  progressDeadlineSeconds: 600
  replicas: 4
  revisionHistoryLimit: 10
  selector:

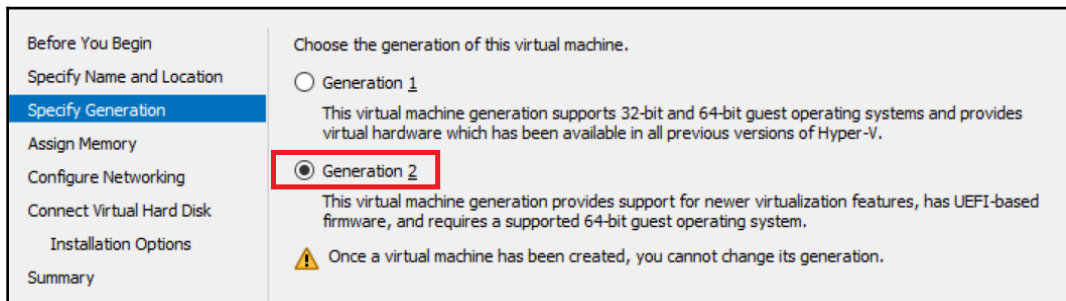
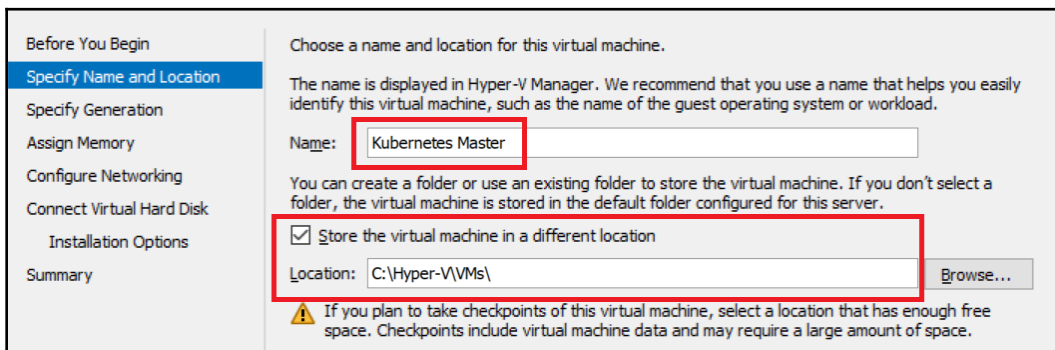
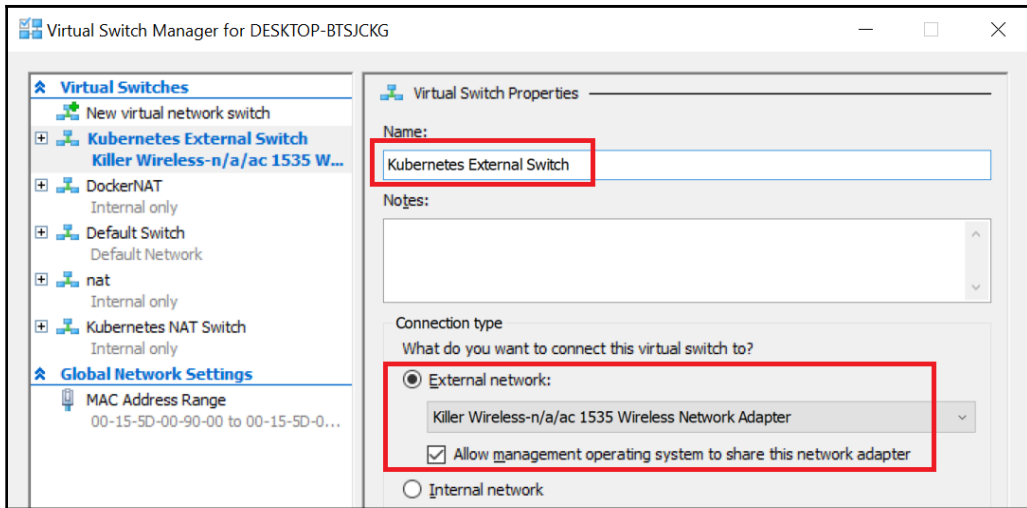
apiVersion: apps/v1
kind: Deployment
metadata:
  annotations:
    deployment.kubernetes.io/revision: "1"
    kubectl.kubernetes.io/last-applied-configuration: |
      {"apiVersion":"apps/v1","kind":"Deployment","metadata":{"annotations":{},"name":"nginx-deplo
creationTimestamp: "2019-09-30T06:21:39Z"
generation: 4
name: nginx-deployment-example
namespace: default
resourceVersion: "225961"
selfLink: /apis/apps/v1/namespaces/default/deployments/nginx-deployment-example
uid: 902a0055-e34a-11e9-b4da-00155d009008
spec:
  progressDeadlineSeconds: 600
  replicas: 5
  revisionHistoryLimit: 10
  selector:
```

Chapter 7: Deploying a Hybrid On-Premises Kubernetes Cluster



```
Administrator: Windows PowerShell
PS C:\src> Get-NetAdapter
Name                               InterfaceDescription              ifIndex Status      MacAddress          LinkSpeed
-----
Bluetooth Network Con...3 Bluetooth Device (Personal Area Ne...#3 28 Disconnected 9C-B6-D0-FF-91-AC   3 Mbps
Wi-Fi                               Killer Wireless-n/a/ac 1535 Wireless... 23 Up        9C-B6-D0-FF-91-AB   866.7 Mbps
vEthernet (Kubernetes ... Hyper-V Virtual Ethernet Adapter #5 20 Up        9C-B6-D0-FF-91-AB   866.7 Mbps
vEthernet (Kubernetes ... Hyper-V Virtual Ethernet Adapter #6 18 Up        00-15-5D-00-90-0B   10 Gbps
vEthernet (nat)                   Hyper-V Virtual Ethernet Adapter #2 49 Up        00-15-5D-92-17-CD   10 Gbps
vEthernet (DockerNAT)              Hyper-V Virtual Ethernet Adapter #3 12 Up        00-15-5D-00-90-10   10 Gbps
vEthernet (Default Swi... Hyper-V Virtual Ethernet Adapter    33 Up        00-15-5D-49-33-9E   10 Gbps
Network Bridge                     Microsoft Network Adapter Multiplexo... 10 Up        9C-B6-D0-FF-91-AB   866.7 Mbps
vEthernet (Ethernet)

```

Before You Begin
Specify Name and Location
Specify Generation
Assign Memory
Configure Networking
Connect Virtual Hard Disk
Installation Options
Summary

Specify the amount of memory to allocate to this virtual machine. You can specify an amount from 32 MB through 12582912 MB. To improve performance, specify more than the minimum amount recommended for the operating system.

Startup memory: MB

Use Dynamic Memory for this virtual machine.

i When you decide how much memory to assign to a virtual machine, consider how you intend to use the virtual machine and the operating system that it will run.

Before You Begin
Specify Name and Location
Specify Generation
Assign Memory
Configure Networking
Connect Virtual Hard Disk
Installation Options
Summary

Each new virtual machine includes a network adapter. You can configure the network adapter to use a virtual switch, or it can remain disconnected.

Connection:

Before You Begin
Specify Name and Location
Specify Generation
Assign Memory
Configure Networking
Connect Virtual Hard Disk
Installation Options
Summary

A virtual machine requires storage so that you can install an operating system. You can specify the storage now or configure it later by modifying the virtual machine's properties.

Create a virtual hard disk
Use this option to create a VHDX dynamically expanding virtual hard disk.

Name:

Location:

Size: GB (Maximum: 64 TB)

Before You Begin
Specify Name and Location
Specify Generation
Assign Memory
Configure Networking
Connect Virtual Hard Disk
Installation Options
Summary

You can install an operating system now if you have access to the setup media, or you can install it later.

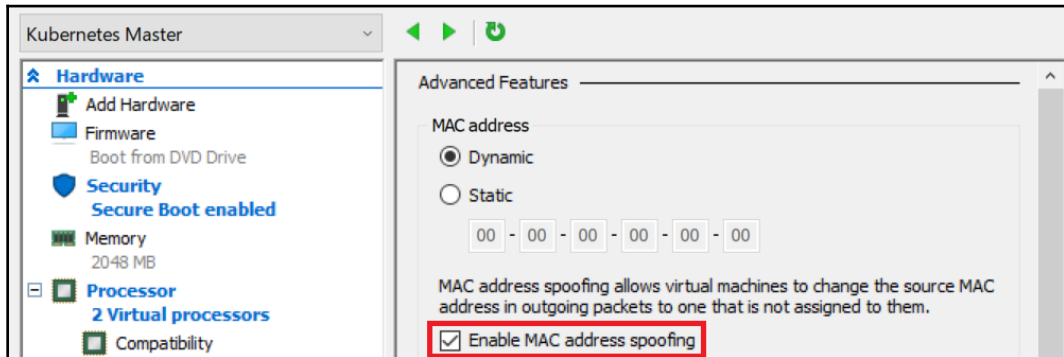
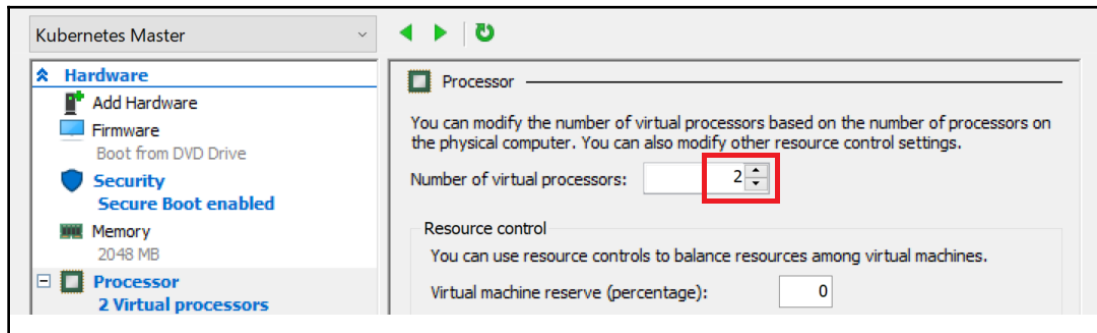
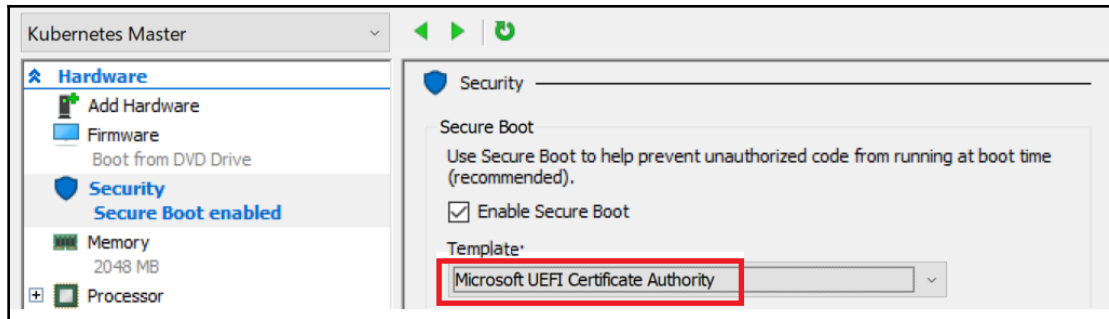
Install an operating system later

Install an operating system from a bootable image file

Media

Image file (.iso):

Install an operating system from a network-based installation server



Kubernetes Master

Adapter	Connection	IP Addresses	Status
Network Adapter (Dynamic MAC: 00:15:5D:00:90:09)	Kubernetes NAT Switch	10.0.0.2, fe80::215:5dff:fe00:9009	OK

Summary Memory Networking

```

Kubernetes Windows Node 01 on DESKTOP-BT5ICKG - Virtual Machine Connection
File Action Media View Help
Administrator: C:\Windows\System32\WindowsPowerShell\v1.0\powershell.exe
[DownloadFile] File C:\Users\Administrator\sig-windows-tools-kubeadm\hns.psml already exists.
WARNING: The names of some imported commands from the module 'hns' include unapproved verbs that might make them less
discoverable. To find the commands with unapproved verbs, run the Import-Module command again with the Verbose
parameter. For a list of approved verbs, type Get-Verb.
#####
User Input
Destination      : C:\ProgramData\Kubernetes
Master           : 10.0.0.2
InterfaceName    : Ethernet
Cni               : dockerd
Cni              : flannel
NetworkPlugin    : bridge
Release          : 1.16.1
MasterIp         : 10.0.0.2
ManagementIp     : 10.0.0.3
ManagementSubnet : 10.0.0.0/8
#####
lts2019: pulling from windows/servercore
65014b3c3121: downloading [=====] 1.128GB/1.533GB
12c8dbabfd62: download complete

```

```

The key's randomart image is:
+---[RSA 2048]-----+
  BX* =*+.
  =%% Eo.
  . B.O o . .
  + B + + +
  oo* + o S
  o..o o +
  . +
  o
+---[SHA256]-----+

Execute the below commands on the Linux control-plane node (10.0.0.2) to add this windows node's public key to its authorized keys
touch ~/.ssh/authorized_keys
echo ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQDUBXPJG32025jcl697ErixggD7ueTRXwpU2n4CH+doJcy2o1FWid/bhEweFkcdC2/kxBiYgjqYlhh
ez1ONNoPJSN+XYiLVtFzjXrsooJLgazjj/qu71i1j9qbEQayju1/dvC5tc1qWL//5qntBaxjewgVpwwy8LduEp4hZbhqc7cxauV4qo1Yvi/vv1vruH0823M
9d03WgpdXletgG7bn52RSQPZAfKCFjAqaEjG1RNOGTT0ScGAb5DR4fov5MBG03qkekkmuU6/4FmmIgxqFw48CV1m671eeYwFwTz3BHTWgJ1l4nY1nx79NIP
N4ooCNIcENNCa1kUX56oRNC/ administrator@WIN-GJD24MOP8DA >> ~/.ssh/authorized_keys
Please close this shell and open a new one to join this node to the Cluster.

```

```
Administrator: c:\windows\system32\windowspowershell\v1.0\powershell.exe
PS C:\Users\Administrator> ipconfig

Windows IP Configuration

Ethernet adapter vEthernet (Ethernet):

    Connection-specific DNS Suffix  . : 
    Link-local IPv6 Address . . . . . : fe80::6074:eaec:61ba:4e66%14
    IPv4 Address. . . . . : 10.0.0.3
    Subnet Mask . . . . . : 255.0.0.0
    Default Gateway . . . . . : 10.0.0.1

Ethernet adapter vEthernet (cbr0_ep):

    Connection-specific DNS Suffix  . : 
    Link-local IPv6 Address . . . . . : fe80::71be:b7ae:bbe2:da60%21
    IPv4 Address. . . . . : 10.244.1.2
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 10.244.1.1
```

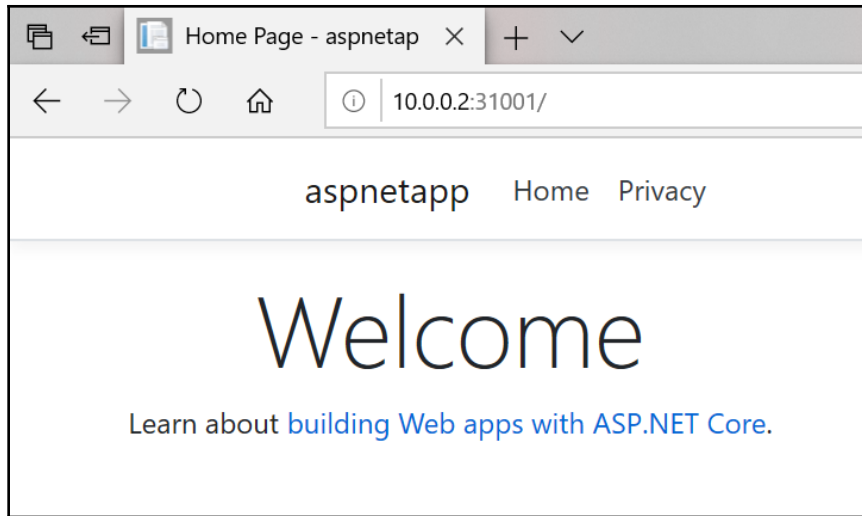
```
Administrator: Windows PowerShell
PowerShell 6.2.3
Copyright (c) Microsoft Corporation. All rights reserved.

https://aka.ms/pscore6-docs
Type 'help' to get help.

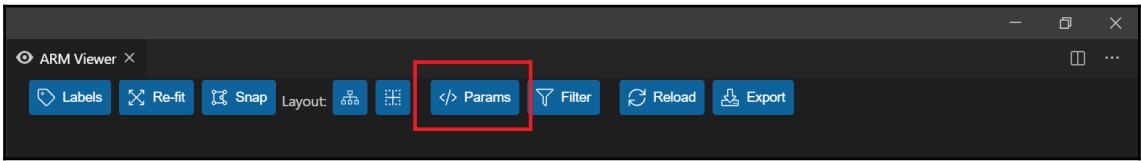
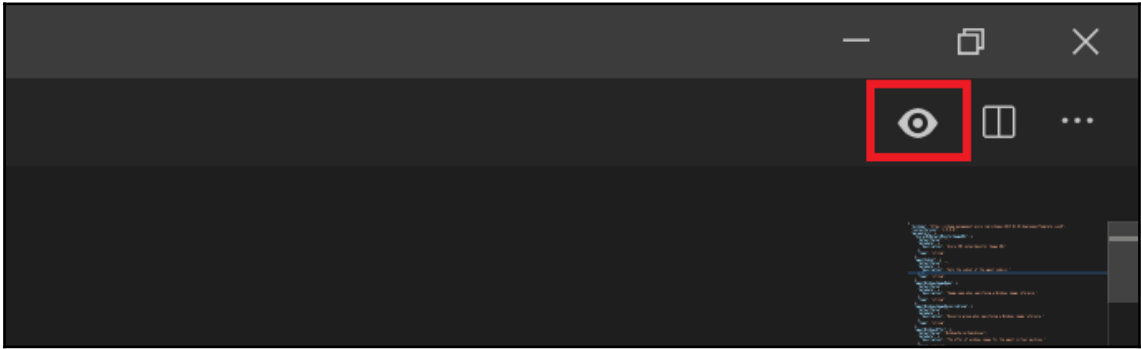
PS C:\> ping google.com

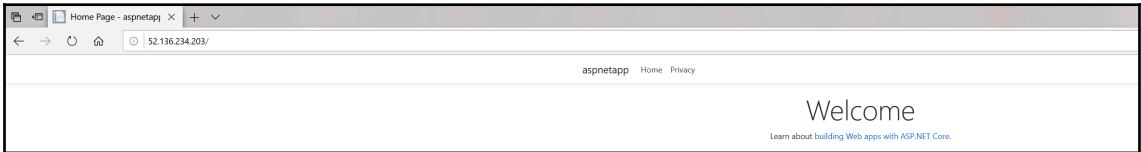
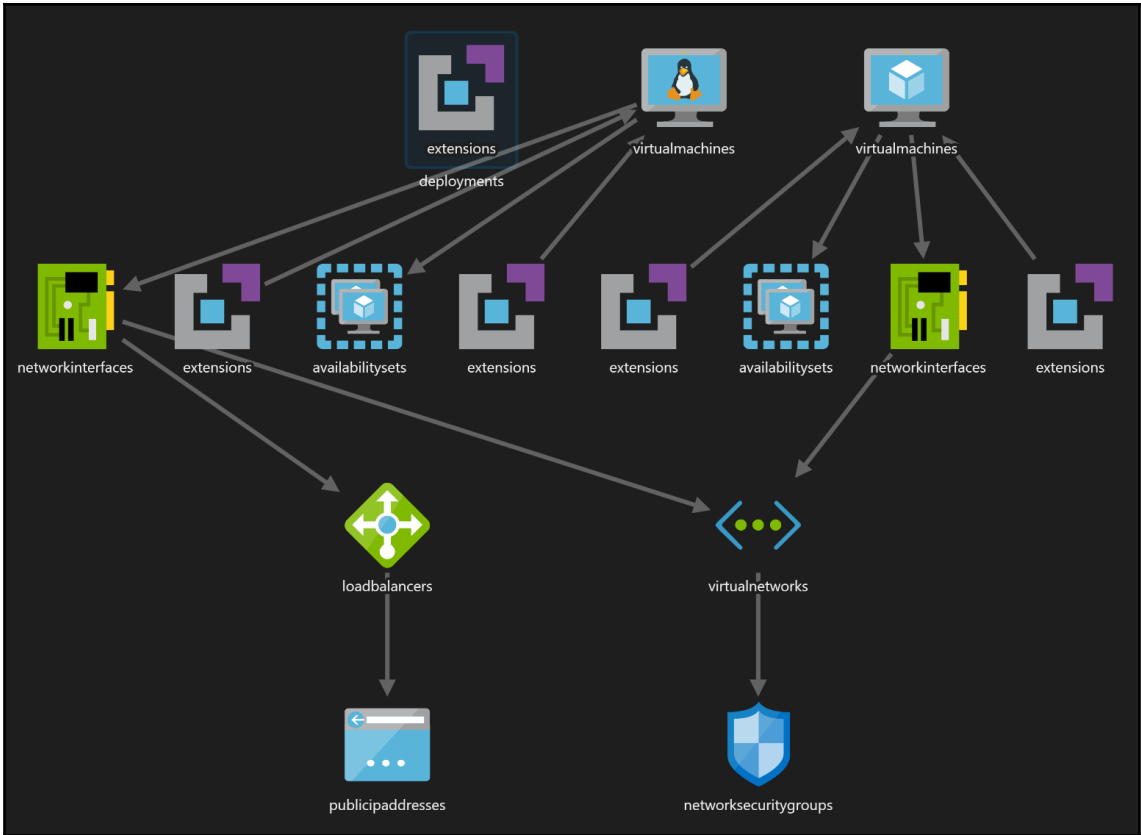
Pinging google.com [216.58.215.110] with 32 bytes of data:
Reply from 216.58.215.110: bytes=32 time=102ms TTL=54
Reply from 216.58.215.110: bytes=32 time=43ms TTL=54
Reply from 216.58.215.110: bytes=32 time=45ms TTL=54
Reply from 216.58.215.110: bytes=32 time=34ms TTL=54

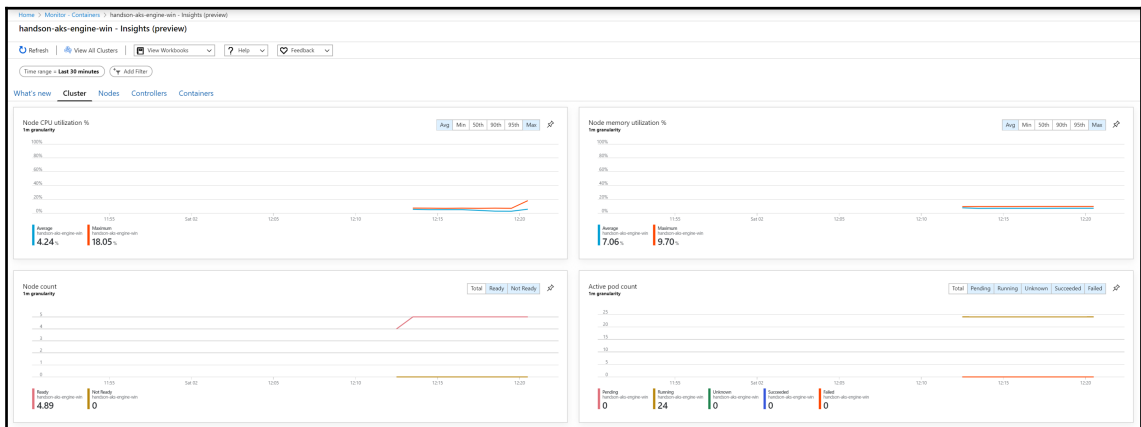
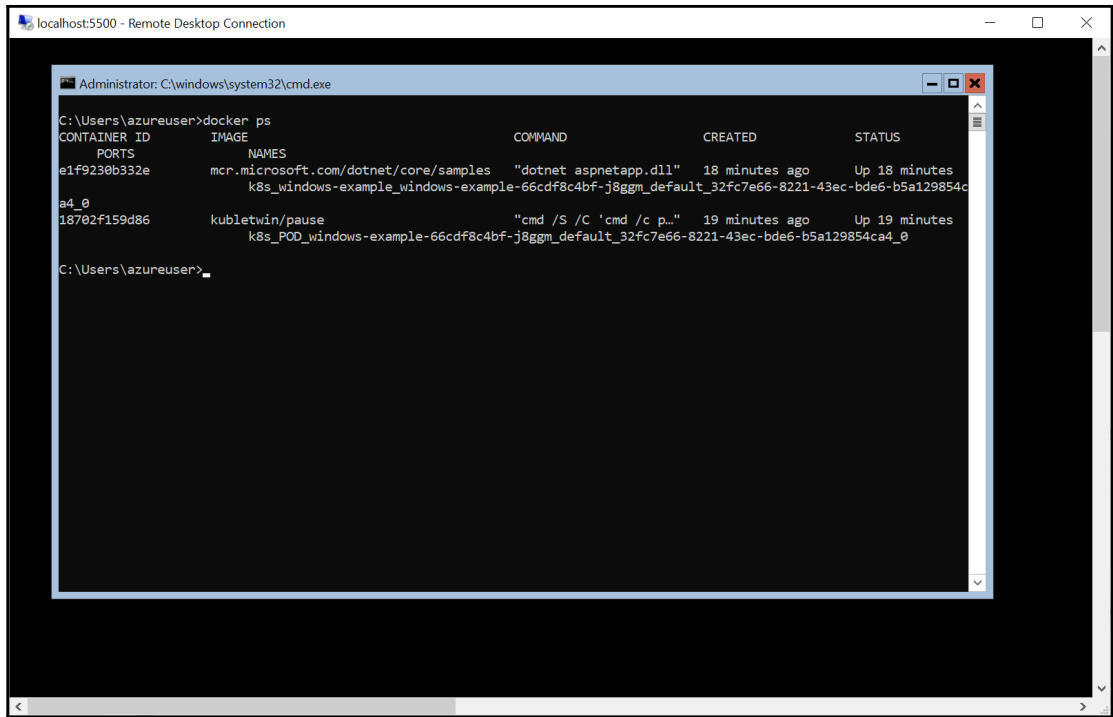
Ping statistics for 216.58.215.110:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 34ms, Maximum = 102ms, Average = 56ms
PS C:\> █
```



Chapter 8: Deploying a Hybrid Azure Kubernetes Service Engine Cluster







Home > Monitor - Logs

Monitor - Logs

Search (Ctrl+F)

New Query 1* | New Query 2* | Run | Time range: Last 24 hours

DefaultWorkspace-cc9a816... Select Scope

Schema Filter | KubeEvents | limit 50

Filter by name or type...

Collapse all

Active

- DefaultWorkspace-cc9a8166...
 - ContainerInsights
 - ContainerImageInventory
 - ContainerInventory
 - ContainerLog
 - ContainerNodeInventory
 - ContainerServiceLog
 - InsightsMetrics
 - KubeEvents
 - KubeHealth
 - KubeMonAgentEvents
 - KubeNodeInventory
 - KubePodInventory
 - KubeServices
 - LogManagement
 - Custom Logs

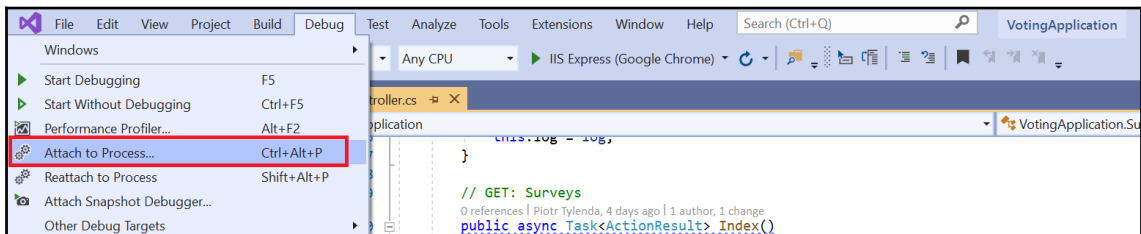
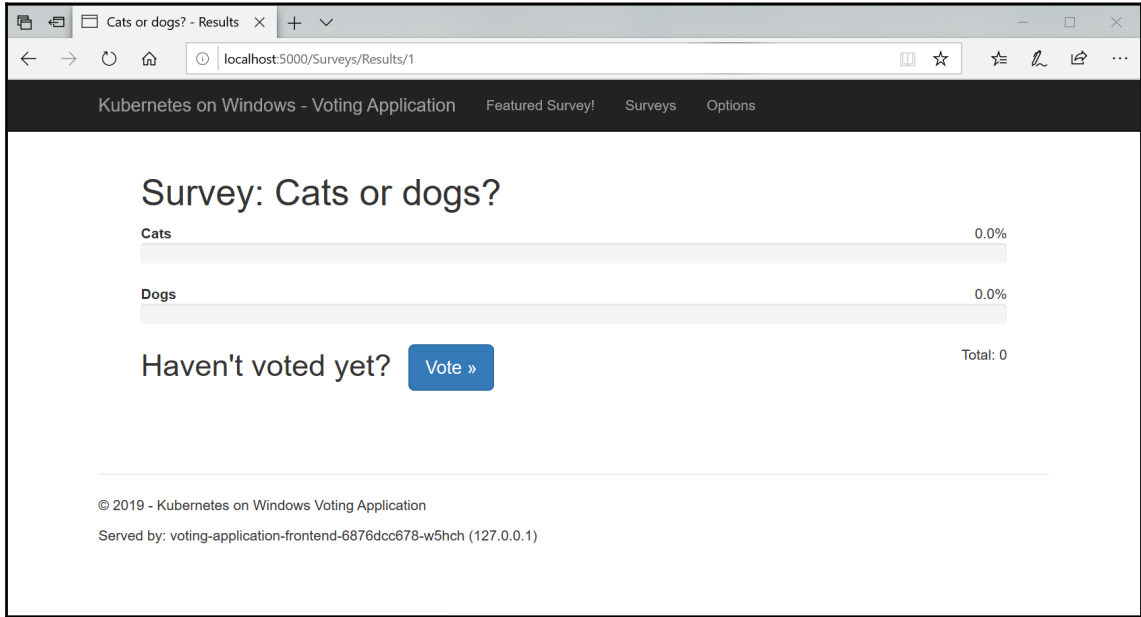
Completed. Showing results from the last 24 hours.

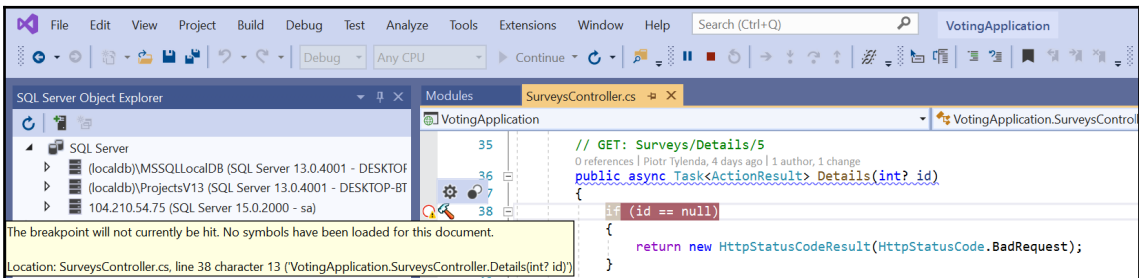
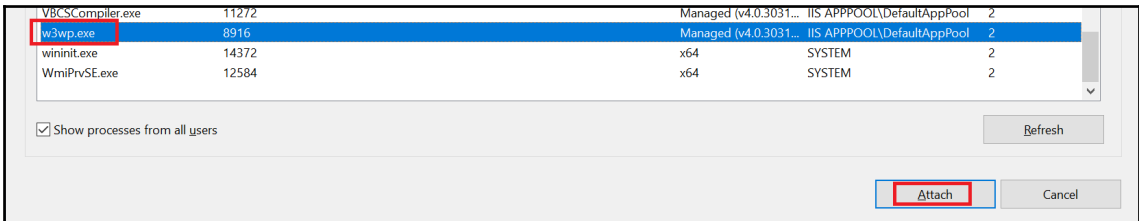
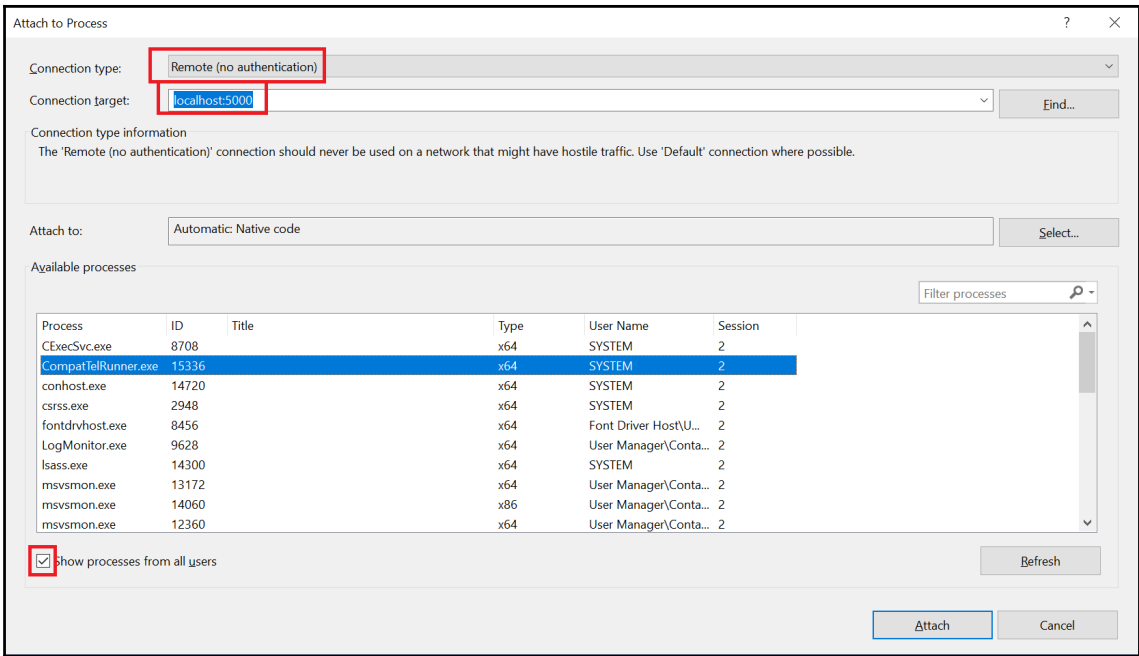
Table | Chart | Columns

Drag a column header and drop it here to group by that column

TimeGenerated [UTC]	Computer	ObjectKind	Namespace	Name	Reason
> 11/1/2019, 11:12:27.000 PM	k8s-linuxpool1-70017404-0	Pod	kube-system	blobfuse-flexvol-installer-tr4hp	Created
> 11/1/2019, 11:12:27.000 PM	k8s-linuxpool1-70017404-0	Pod	kube-system	blobfuse-flexvol-installer-tr4hp	Started
> 11/1/2019, 11:12:27.000 PM	k8s-linuxpool1-70017404-0	DaemonSet	kube-system	blobfuse-flexvol-installer	FailedCreate
> 11/1/2019, 11:12:27.000 PM	k8s-linuxpool1-70017404-0	DaemonSet	kube-system	blobfuse-flexvol-installer	SuccessfulCreate
> 11/1/2019, 11:12:27.000 PM	k8s-linuxpool1-70017404-0	DaemonSet	kube-system	blobfuse-flexvol-installer	SuccessfulCreate
> 11/1/2019, 11:12:27.000 PM	k8s-linuxpool1-70017404-0	Pod	kube-system	coredns-7f8646d79b-24jpv	Scheduled
> 11/1/2019, 11:12:27.000 PM	k8s-linuxpool1-70017404-0	Pod	kube-system	coredns-7f8646d79b-24jpv	Pulled

Chapter 10: Deploying Microsoft SQL Server 2019 and a ASP.NET MVC Application





Assembly Name	Path	Is System	Is Embedded	Is Skipped	Reason	Address	Size
System.Xml.Linq.dll	C:\Windows\Microsoft.NET\assem...	Yes	No	No	Skipped loading symbols.	38	4.8.3761.0...
VotingApplication.dll	C:\Windows\Microsoft.NET\assem...	No	No	No	Cannot find or open the P...	67	1.00.0.0...
WebActivatorEx.dll		No	No	No	Cannot find or open the P...	68	2.00.0.0...
WebGrease.dll		Yes	No	No	Skipped loading symbols.	69	1.06.5135.2...

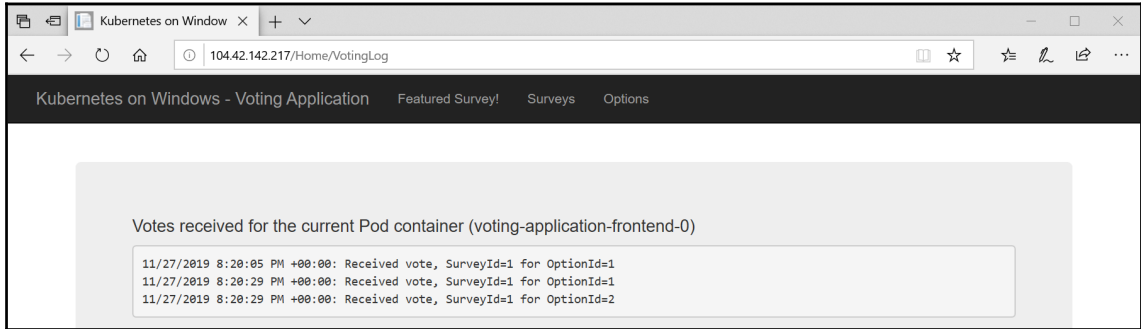
Locals	Call Stack
Search	Name

```

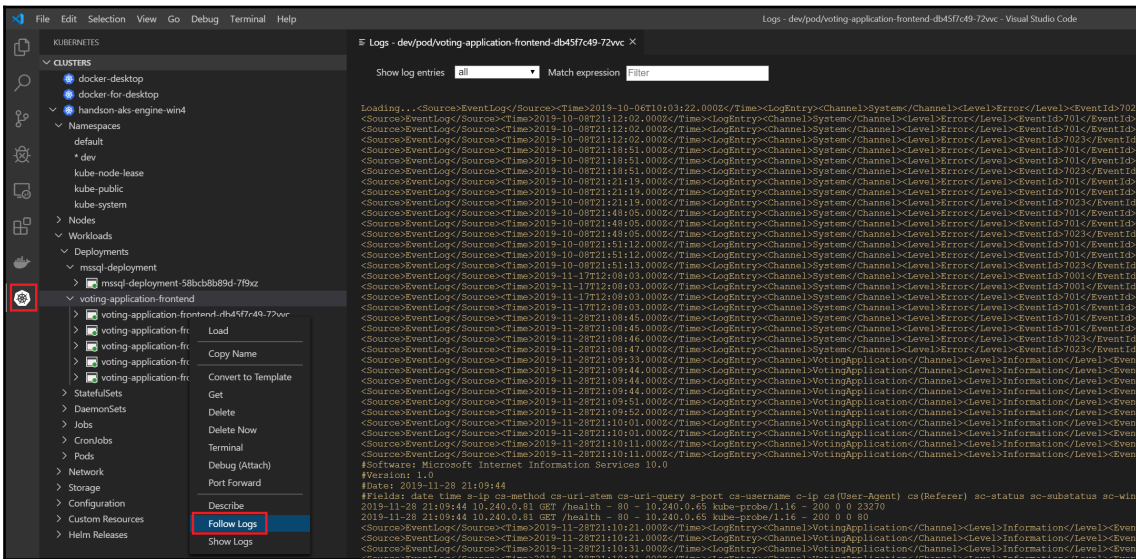
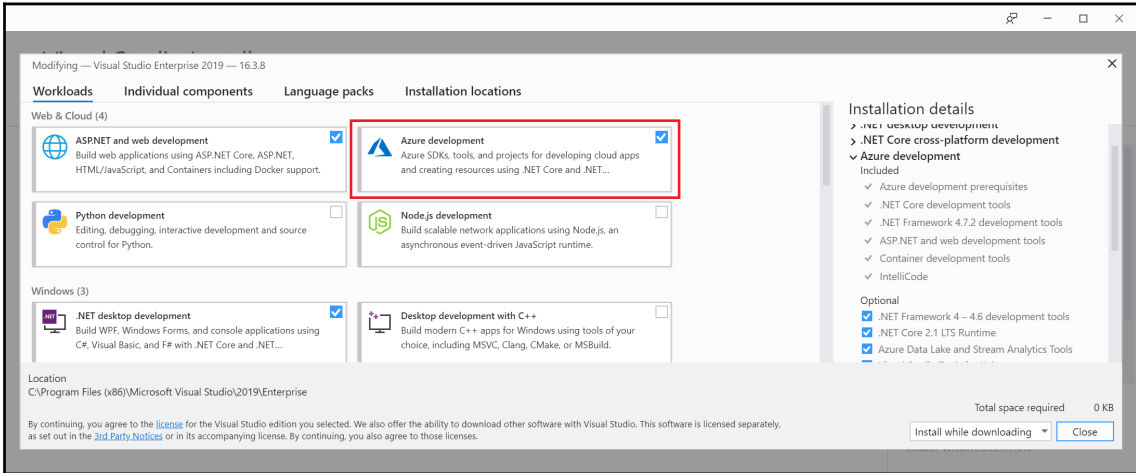
36 public async Task<ActionResult> Details(int? id)
37 {
38     if (id == null)
39     {
40         return new HttpStatusCodeResult(HttpStatusCode.BadRequest);
41     }
42
43     Survey survey = await this.db.Surveys.FindAsync(id);
44     if (survey == null)
45     {
46         // survey (System.Data.Entity.DynamicProxies.Survey_279650A809209A48701A1C7FF0B8C96A5E4837069F964A1602D5A148263A41D1)
47         // CreateDate {11/20/2019 6:40:19 PM +00:00}
48         // IsDefault true
49         // Name "Cats or dogs?"
50         // Options The function evaluation requires all threads to run.
51         // Votes The function evaluation requires all threads to run.
52         // GET: 5 // _entityWrapper (System.Data.Entity.Core.Objects.Internal.EntityWrapperWithoutRelationships<System.Data.Entity.DynamicProxies.Survey_279650A809209A48701A1C7FF0B8C96A5E4837069F964A1602D5A148263A41D1)

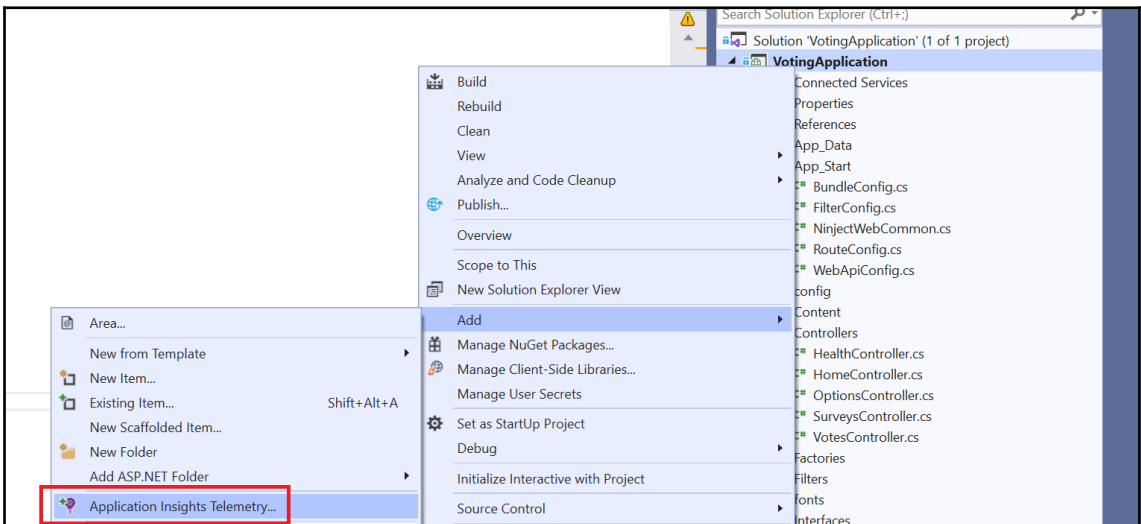
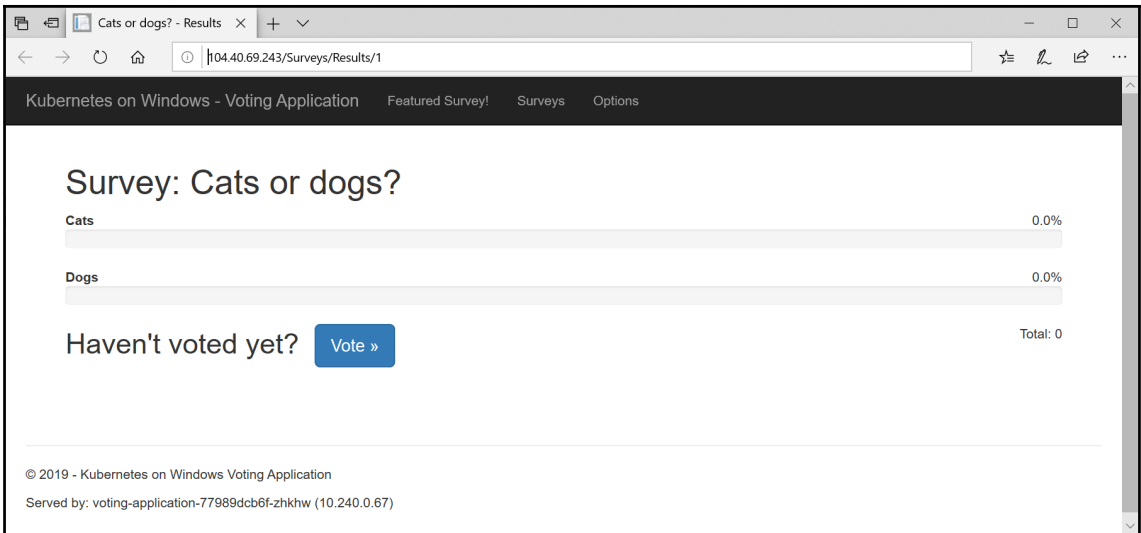
```

Chapter 11: Configuring Applications to Use Kubernetes Features



Chapter 12: Development Workflow with Kubernetes





Codelens and Diagnostic Tools are reading telemetry from

The account you're signed in to does not have access to the resource Codelens is reading from. Please change the resource to read Telemetry.

Account
Microsoft account
tylenda.piotr@gmail.com

Subscription
Visual Studio Enterprise

Resource
VotingApplication

Update resource

Configured 75%

- SDK added
- App registered with Application Insights
- Exception collection enabled
- Enable trace collection

Search and analyze System.Diagnostics traces. This will add Microsoft.ApplicationInsights.TraceListener NuGet package.

Collect traces from System.Diagnostics

Solution 'VotingApplication' (1 of 1 project)

VotingApplication

- Connected Services
- Application Insights
 - Properties
 - References
 - o_Data
 - o_Start
 - BundleConfig.cs
 - FilterConfig.cs
 - NinjectWebCommon.cs

Open Application Insights Portal

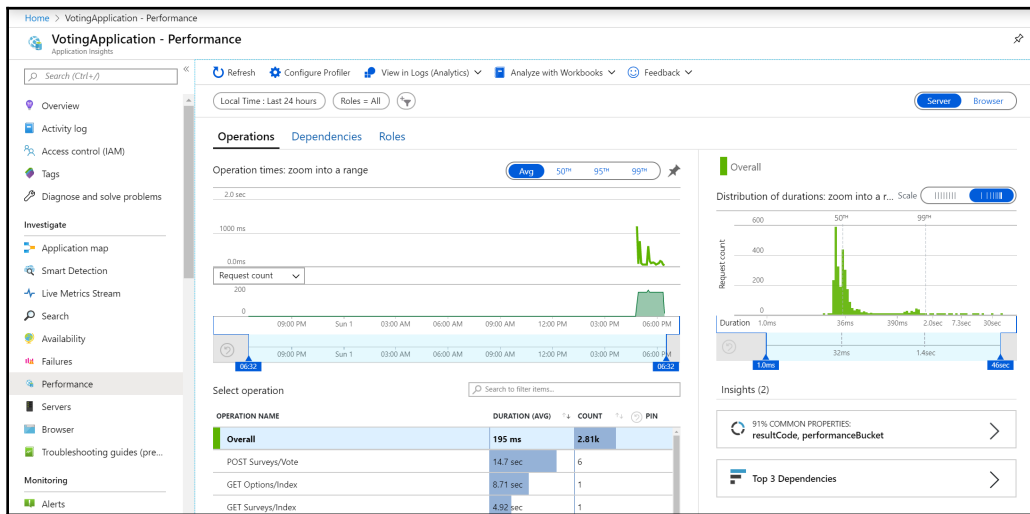
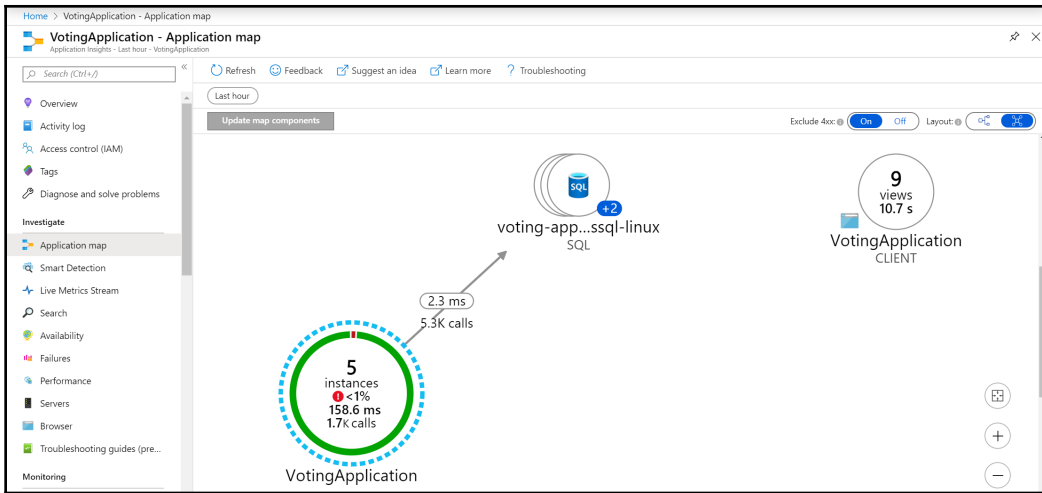
Application Analytics

Application Map

Configure Application Insights...

Choose Telemetry Source...

Search Live Telemetry



Home > VotingApplication - Logs (Analytics)

VotingApplication - Logs (Analytics)

Application Insights

Search (Ctrl+F)

New Query 1*

Help Settings Sample queries Query explorer

VotingApplication Select Scope Run Time range: Last 24 hours Save Copy Export New alert rule Pin to dashboard

Schema Filter

Filter by name or type...

traces
 where message contains "Vote(s) for Survey"
 limit 50

Active

- VotingApplication
 - APPLICATION INSIGHTS
 - traces
 - customEvents
 - pageViews
 - requests
 - dependencies
 - exceptions
 - availabilityResults
 - customMetrics
 - performanceCounters
 - browserTimings
 - Functions

Completed. Showing results from the last 24 hours. 00:00:02.496 5 records Display time (UTC+00:00)

Table Chart Columns

Drag a column header and drop it here to group by that column

timestamp [UTC]	message	severityLevel	item1
> 12/1/2019, 4:09:36.270 PM	2019-12-01 16:09:36.264 +00:00 [Information] Vote(s) for Survey with ID=1 have been added	1	trace
> 12/1/2019, 4:09:41.163 PM	2019-12-01 16:09:41.151 +00:00 [Information] Vote(s) for Survey with ID=1 have been added	1	trace
> 12/1/2019, 4:37:59.731 PM	2019-12-01 16:37:59.733 +00:00 [Information] Vote(s) for Survey with ID=1 have been added	1	trace
> 12/1/2019, 4:38:07.407 PM	2019-12-01 16:38:07.406 +00:00 [Information] Vote(s) for Survey with ID=1 have been added	1	trace
> 12/1/2019, 4:39:03.186 PM	2019-12-01 16:39:03.191 +00:00 [Information] Vote(s) for Survey with ID=1 have been added	1	trace

Home > VotingApplication - Failures

VotingApplication - Failures

Application Insights

Search (Ctrl+F)

Refresh View in Logs (Analytics) Analyze with Workbooks Feedback

Local Time: Last 30 minutes Roles = All Server Browser

Operations Dependencies Exceptions Roles

Failed request count

Request count

Select operation

Search to filter items...

OPERATION NAME	USERS	COUNT (FAILED)	COUNT	PIN
Overall	1	1	858	
GET Home/TestException	1	1	1	

GET Home/TestException

Top 3 response codes

COUNT	FILTERING
500	1

Top 3 exception types

COUNT	FILTERING
InvalidOperationEx...	2

Top 3 failed dependencies

COUNT	FILTERING
-------	-----------

Drill into...

1 Operations

Home > VotingApplication - Failures > End-to-end transaction details

End-to-end transaction details

VotingApplication

Search results

Filtered on timestamp > 11/30/2019, 8:...

timestamp < 12/1/2019, 8:0...

Operation name == GET Home/Test...

client_Type != ... Success == false

Suggested

12/1/2019, 7:59:51 PM
GET Home/TestException
Duration: 101.7 ms Response code: 500

All

Sort by @
Relevance

12/1/2019, 7:59:51 PM
GET Home/TestException
Duration: 101.7 ms Response code: 500

End-to-end transaction
Operation ID: 5e1db77ba028c4eb8486c90032742ee

Request (incoming) Dependency (outgoing) Exception Profiler trace Debug snapshot

EVENT	RES.	DURATION
104.40.69.243 GET Home/TestException	500	101.7 ms
EXCEPTION System.InvalidOperationException		
EXCEPTION System.InvalidOperationException		

6 All 3 Traces 0 Events

View all telemetry

104.40.69.243
GET Home/TestException

Request Properties

Event time 12/1/2019, 7:59:51 PM (Local time) ...

Request name GET Home/TestException ...

Response code 500 ...

Successful request false ...

Response time 101.7 ms ...

Request URL http://104.40.69.243/Home/TestException ...

Call Stack

Just my code Copy Expand

```
System.InvalidOperationException:
at VotingApplication.Controllers.HomeController.TestException (Votir
at lambda_method (Anonymously Hosted DynamicMethods Assembly, Versio
at System.Web.Mvc.Async.AsyncControllerActionInvoker.InvokeActionMethod (System
at System.Web.Mvc.Async.AsyncControllerActionInvoker+<cc__0>.BeginInvoke
at System.Web.Mvc.Async.AsyncResultWrapper.WrapAsyncResult<T>.Call
at System.Web.Mvc.Async.AsyncControllerActionInvoker.EndInvokeAction
at System.Web.Mvc.Async.AsyncControllerActionInvoker+AsyncInvocation
at System.Web.Mvc.Async.AsyncControllerActionInvoker+AsyncInvocation
at System.Web.Mvc.Async.AsyncControllerActionInvoker+<cc__0>.DisplayClis
at System.Web.Mvc.Async.AsyncControllerActionInvoker+<cc__DisplayClis
```

Don't see snapshot? Troubleshoot

Home > VotingApplication - Failures > End-to-end transaction details > Debug Snapshot

Debug Snapshot

Help Send the team an email

You don't have access

Click the 'Add Application Insights Snapshot Debugger Role' button below.

[Add Application Insights Snapshot Debugger Role](#)

If the problem persists, please create a support ticket or send us an email directly. snapshothelp@microsoft.com

[Troubleshooting documentation](#)

Home > VotingApplication - Failures > End-to-end transaction details

End-to-end transaction details

VotingApplication

Search results

Filtered on timestamp > 11/30/2019, 8:...

timestamp < 12/1/2019, 8:1...

Operation name == GET Home/Test...

client_Type != ... Success == false

Suggested

12/1/2019, 8:07:48 PM
GET Home/TestException
Duration: 255.4 ms Response code: 500

End-to-end transaction
Operation ID: bb4691a48e465941ad376851ed95cf6b

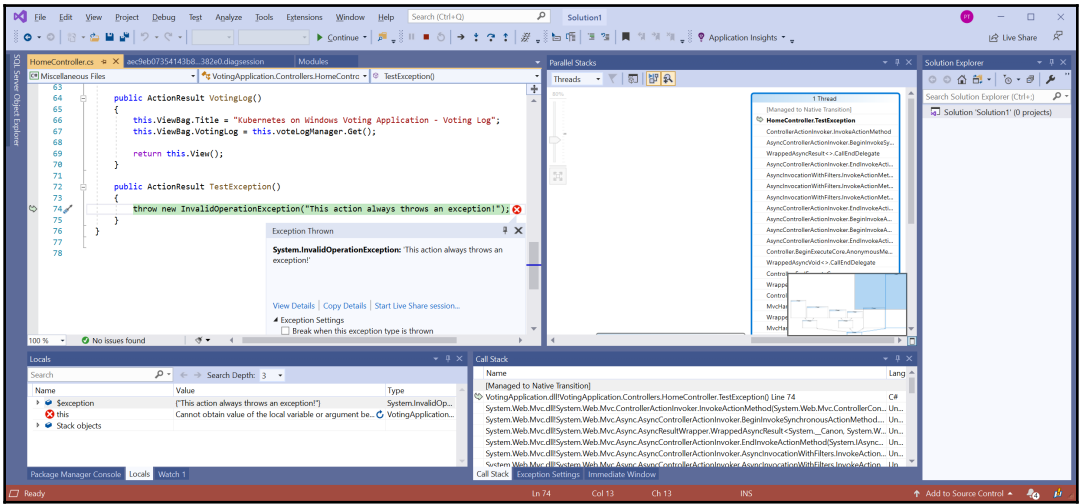
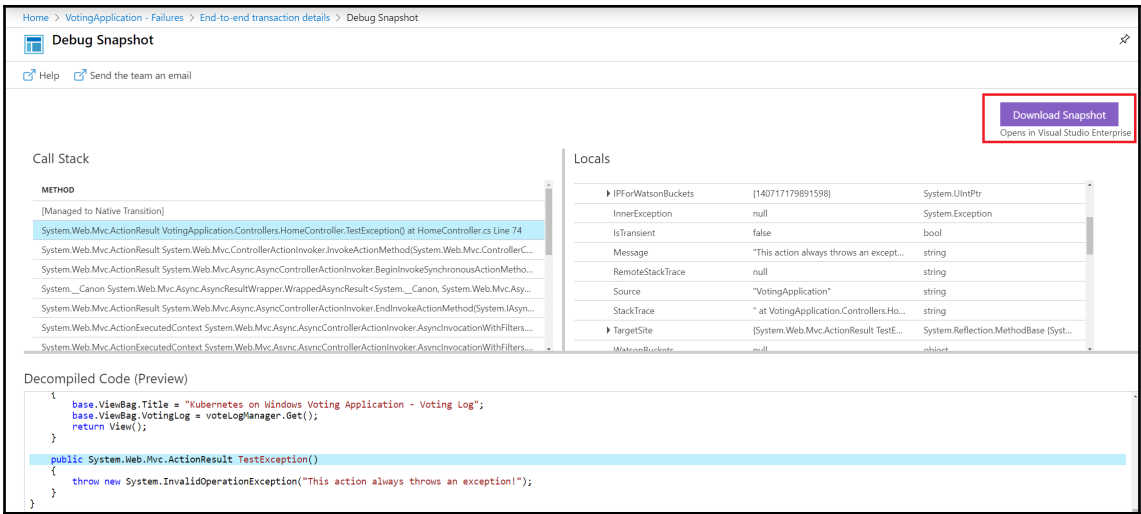
Request (incoming) Dependency (outgoing) Exception Profiler trace Debug snapshot

EVENT	RES.	DURATION
104.40.69.243 GET Home/TestException	500	255.4 ms
EXCEPTION System.InvalidOperationException		
EXCEPTION System.InvalidOperationException		

104.40.69.243
GET Home/TestException

Request Properties

Event time 12/1/2019, 8:07:48 PM (Local time) ...



kubernetes Overview

Cluster Roles, Namespaces, Nodes, Persistent Volumes, Storage Classes

Namespace: dev-helm

Workloads

CPU Usage

Memory Usage

Deployments

Name	Labels	Pods	Age	Images
voting-application	app.kubernetes.io/instance: voting-application app.kubernetes.io/managed-by: Helm	5 / 5	9 hours	packtpubkubernetesonwindows/voting-applicatio v1.1.5.0
voting-application-mssql-linux	app: mssql-linux chart: mssql-linux-0.10.1	1 / 1	9 hours	microsoft/mssql-server-linux-2017-CU5

1 - 2 of 2

kubernetes Workloads > Pods > voting-application-5d9f8786c8-9hg6k > Logs

Cluster Roles, Namespaces, Nodes, Persistent Volumes, Storage Classes

Namespace: dev-helm

Logs from voting-application-frontend - in voting-application-5d9f8786c8-9hg6k

```

2019-12-01 21:42:13 10.240.0.43 GET /health - 80 - 10.240.0.34 kube-probe/1.16 - 200 0 27
2019-12-01 21:42:23 10.240.0.43 GET /health - 80 - 10.240.0.34 kube-probe/1.16 - 200 0 34
2019-12-01 21:42:33 10.240.0.43 GET /health - 80 - 10.240.0.34 kube-probe/1.16 - 200 0 23
2019-12-01 21:42:43 10.240.0.43 GET /health - 80 - 10.240.0.34 kube-probe/1.16 - 200 0 35
2019-12-01 21:42:53 10.240.0.43 GET /health - 80 - 10.240.0.34 kube-probe/1.16 - 200 0 25
2019-12-01 21:43:03 10.240.0.43 GET /health - 80 - 10.240.0.34 kube-probe/1.16 - 200 0 25
2019-12-01 21:43:13 10.240.0.43 GET /health - 80 - 10.240.0.34 kube-probe/1.16 - 200 0 25
2019-12-01 21:43:23 10.240.0.43 GET /health - 80 - 10.240.0.34 kube-probe/1.16 - 200 0 24
2019-12-01 21:43:33 10.240.0.43 GET /health - 80 - 10.240.0.34 kube-probe/1.16 - 200 0 23

```

kubernetes Workloads > Pods > voting-application-5d9f8786c8-9hg6k > Shell

Cluster Roles, Namespaces, Nodes, Persistent Volumes, Storage Classes

Namespace: dev-helm

Shell in voting-applicatio... in voting-application-5d9f8786c8-9hg6k

```

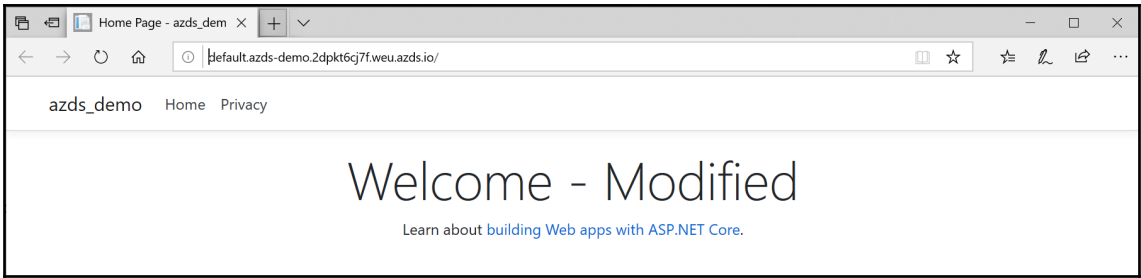
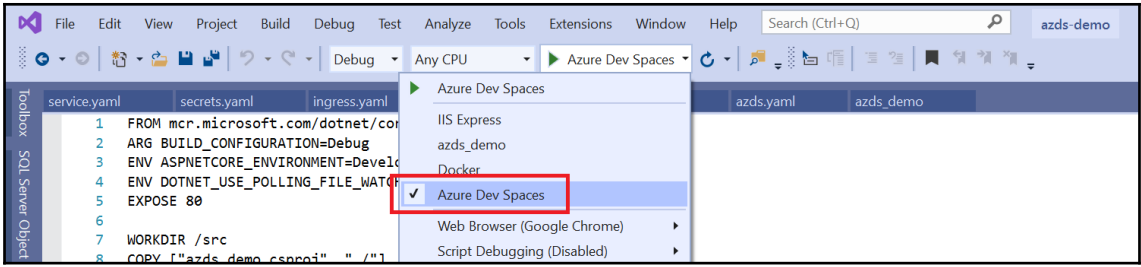
Windows PowerShell
Copyright (c) Microsoft Corporation. All rights reserved.

PS C:\inetpub\wwwroot> ls bin

Directory: C:\inetpub\wwwroot\bin

Mode                LastWriteTime         Length Name
----                -
d-----          11/20/2019 10:04 PM             Posix
-a-----          9/18/2013  3:29 PM        183424 Antlr3.Runtime.dll
-a-----          9/18/2013  3:29 PM         435732 Antlr3.Runtime.pdb
-a-----          9/14/2019  3:01 PM         4988288 EntityFramework.dll
-a-----          9/14/2019  3:01 PM         591736 EntityFramework.SqlServer.dll

```



Chapter 13: Securing Kubernetes Clusters and Applications

```
Windows PowerShell

]
  }
  "properties": null,
  "resourceType": "deployments"
}
}
}
},
"provisioningState": "succeeded",
"template": null,
"templateHash": "9941709504038362246",
"templateLink": null,
"timestamp": "2019-12-03T00:12:53.529961+00:00"
},
"resourceGroup": "aks-engine-aad-windows-resource-group",
"type": "Microsoft.Resources/deployments"
}
}

Switched to context "handson-aks-engine-win-aad".
To sign in, use a web browser to open the page https://microsoft.com/device/login and enter the code DM8HN9DZH to authenticate.
```

```
localhost:5500 - Remote Desktop Connection

Administrator: C:\windows\system32\cmd.exe

C:\Users\azureuser>docker ps

CONTAINER ID        IMAGE                COMMAND                  CREATED             STATUS              PORTS
274a854a63a9       374884b8c9f0        "dotnet aspnetapp.dll"  8 minutes ago      Up 8 minutes       8080->8080
k8s_windows-example-windows-example-55bf9f7c5-g9t1n_dev_9f12f5b4-6c71-46b1-ba23-5c9c88207ec7_0
9e5956e08bf9       kubletwin/pause
k8s_POD_windows-example-b5bf9f7c5-g9t1n_dev_9f12f5b4-6c71-46b1-ba23-5c9c88207ec7_0
79a5978eb6cb       packtpubkubernetesonwindows/voting-application  "C:\\LogMonitor\\LogMo..."  2 days ago         Up 2 days           4444->4444
k8s_voting-application-frontend_voting-application-5d9f8786c8-p7r51_dev-helm_38d84a5a-cba4-4a77-9547-e1199fe55609_0
a-cba4-4a77-9547-e1199fe55609_0
packtpubkubernetesonwindows/voting-application  "C:\\LogMonitor\\LogMo..."  2 days ago         Up 2 days           4444->4444
k8s_voting-application-frontend_voting-application-5d9f8786c8-kzr4z_dev-helm_529fd034-7f3e-442a-b4b0-29b3912e8804_0
d23aaa965c9f       kubletwin/pause
k8s_POD_voting-application-5d9f8786c8-kzr4z_dev-helm_529fd034-7f3e-442a-b4b0-29b3912e8804_0
e8804_0
9eab4d843377       kubletwin/pause
k8s_POD_voting-application-5d9f8786c8-p7r51_dev-helm_38d84a5a-cba4-4a77-9547-e1199fe55609_0

C:\Users\azureuser>docker inspect -f {{.Mounts}} 274a854a63a9
[[{"bind": "c:\\var\\lib\\kublet\\pods\\9f12f5b4-6c71-46b1-ba23-5c9c88207ec7\\volumes\\kubernetes.io-secret\\secret-example-volume", "secretexample": false}, {"bind": "c:\\var\\lib\\kublet\\pods\\9f12f5b4-6c71-46b1-ba23-5c9c88207ec7\\volumes\\kubernetes.io-secret\\default-token-fk9pf", "c:\\var\\run\\secrets\\kubernetes.io\\serviceaccount": false}]]

C:\Users\azureuser>_
```



```
localhost:5500 - Remote Desktop Connection
Administrator: C:\windows\system32\cmd.exe
96ab4d843377 kubletwin/pause "cmd /S /C 'cmd /c p..." 2 days ago Up 2
days k8s_POD_voting-application-5d9f8786c8-p7r5l_dev-helm_38d84a5a-cba4-4a77-9547-e1199fe
55609_0

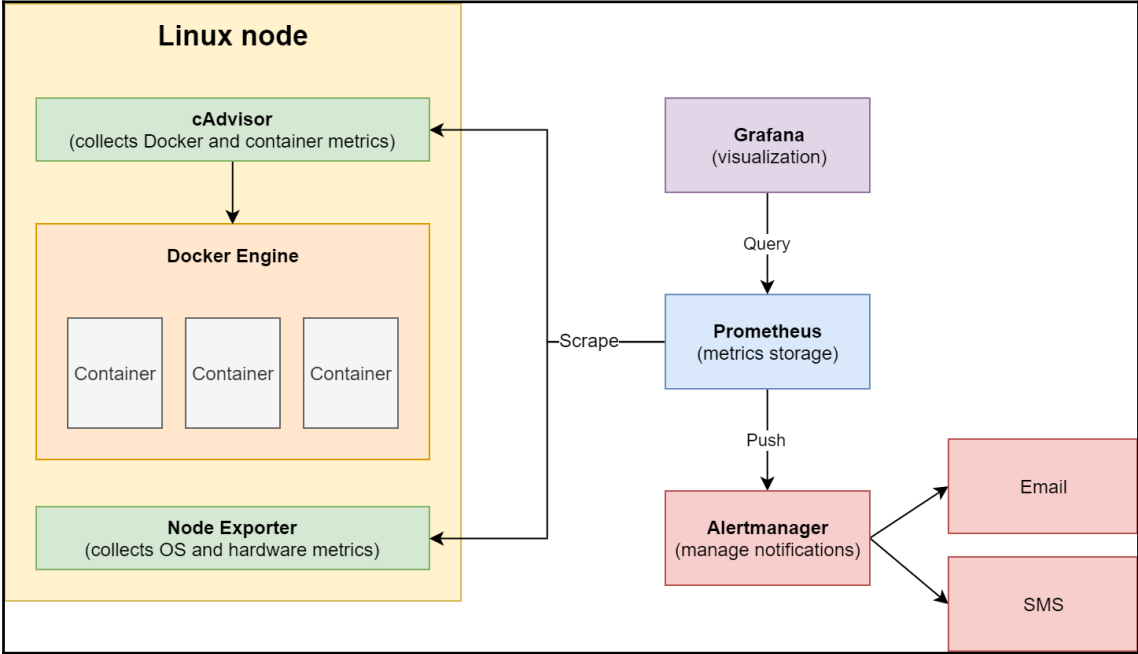
C:\Users\azureuser>docker inspect -f {{.Mounts}} 274a054a63a9
[{"bind c:\var\lib\kubelet\pods\9f12f5b4-6c71-46b1-ba23-5c9c88207ec7\volumes\kubernetes.io~secret\secret-example-volume
c:\secretexample false } {"bind c:\var\lib\kubelet\pods\9f12f5b4-6c71-46b1-ba23-5c9c88207ec7\volumes\kubernetes.io~sec
ret/default-token-fk9pf c:\var\run\secrets\kubernetes.io\serviceaccount false }]

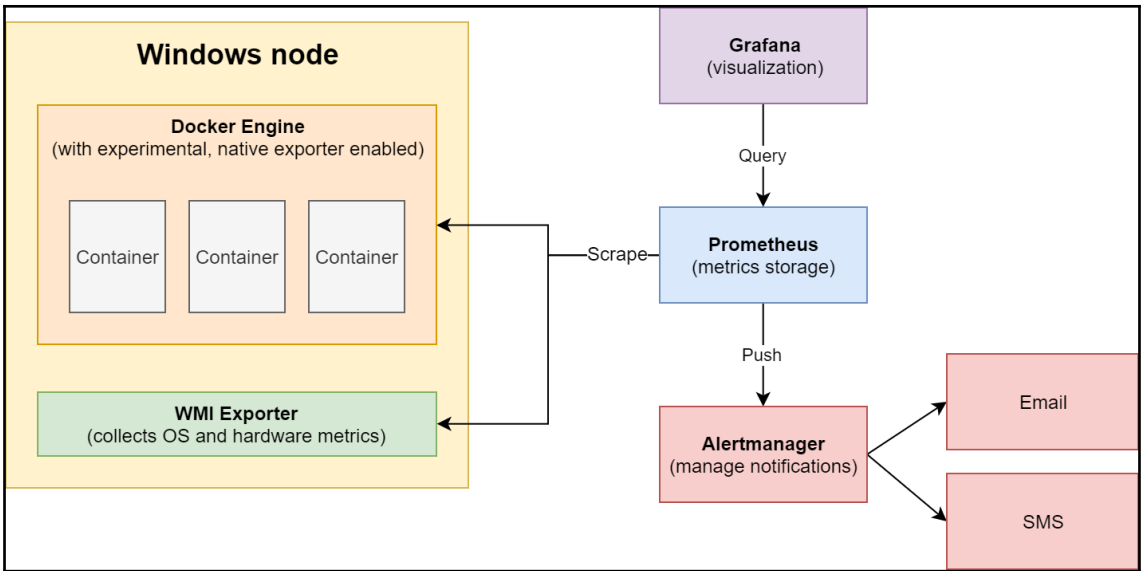
C:\Users\azureuser>dir c:\var\lib\kubelet\pods\9f12f5b4-6c71-46b1-ba23-5c9c88207ec7\volumes\kubernetes.io~secret\secret-
example-volume
Volume in drive C is Windows
Volume Serial Number is 981D-784D

Directory of c:\var\lib\kubelet\pods\9f12f5b4-6c71-46b1-ba23-5c9c88207ec7\volumes\kubernetes.io~secret\secret-example-v
olume
12/03/2019 11:17 PM <DIR> .
12/03/2019 11:17 PM <DIR> ..
12/03/2019 11:17 PM <DIR> ..2019_12_03_23_17_15.643459361
12/03/2019 11:17 PM <SYMLINK> ..data [..2019_12_03_23_17_15.643459361]
12/03/2019 11:17 PM <SYMLINK> password [..data\password]
12/03/2019 11:17 PM <SYMLINK> username [..data\username]
2 File(s) 0 bytes
4 Dir(s) 111,078,576,128 bytes free

C:\Users\azureuser>type c:\var\lib\kubelet\pods\9f12f5b4-6c71-46b1-ba23-5c9c88207ec7\volumes\kubernetes.io~secret\secret-
example-volume\password
Password123
C:\Users\azureuser>
```

Chapter 14: Monitoring Kubernetes Applications Using Prometheus





Prometheus Time Series

40.78.42.14/targets

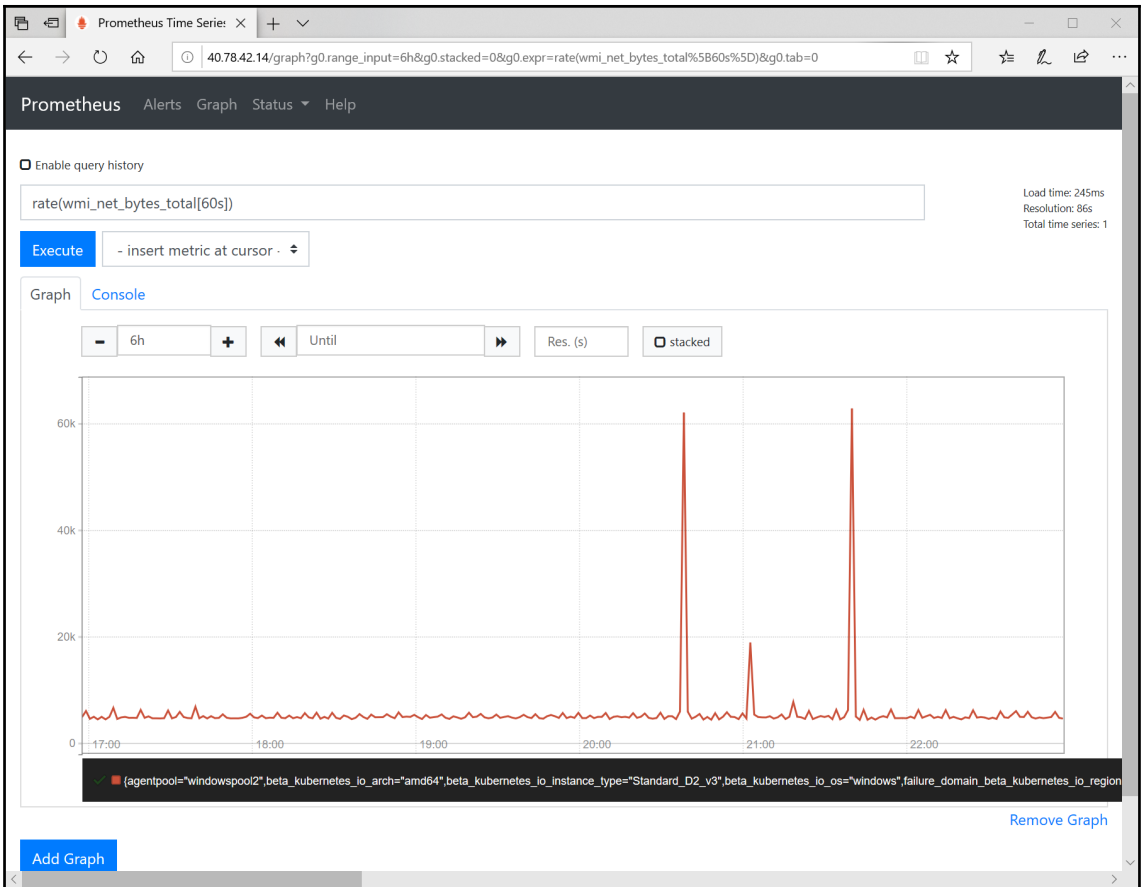
Prometheus Alerts Graph Status Help

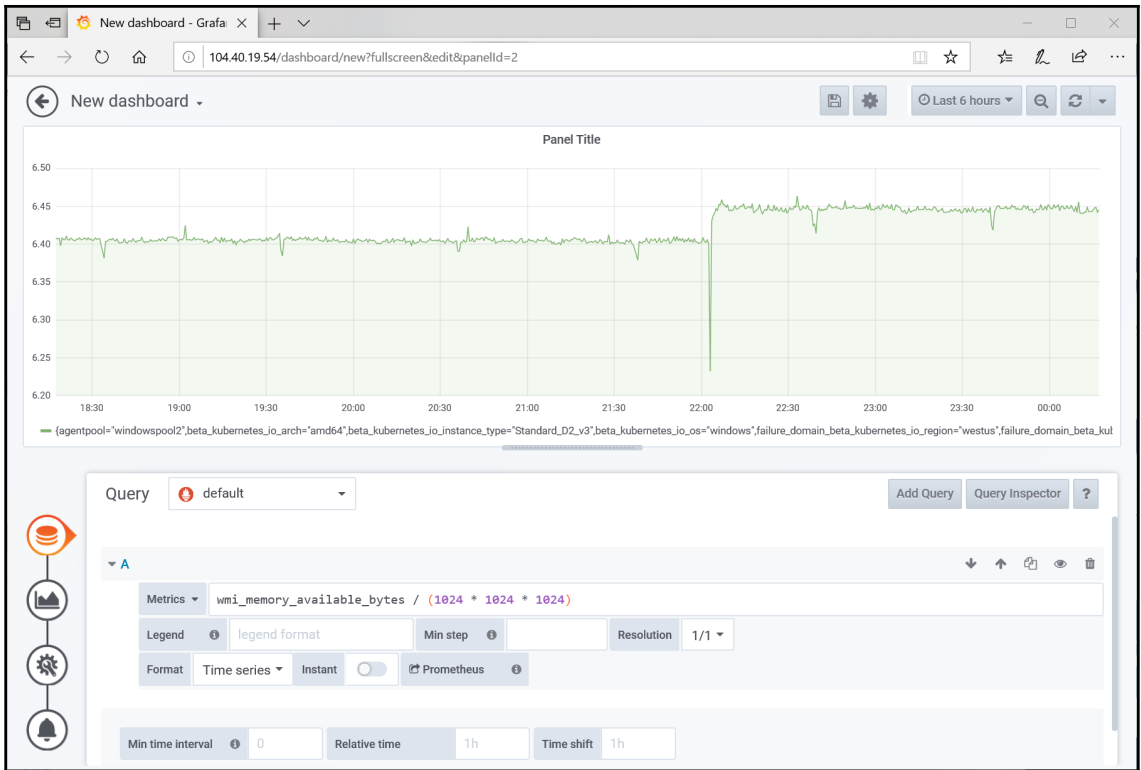
windows-nodes-docker-metrics-server (1/1 up) [show less](#)

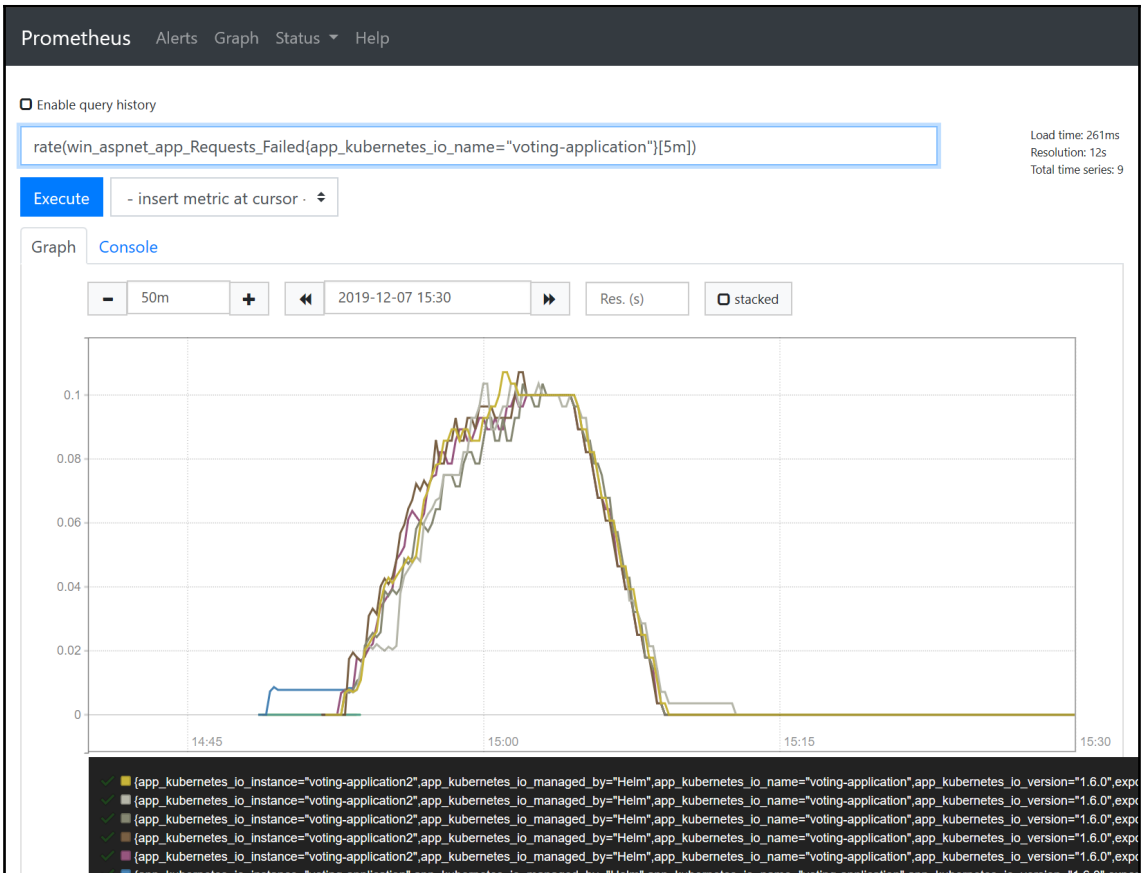
Endpoint	State	Labels	Last Scrape	Scrape Duration	Error
http://10.240.0.65:9323/metrics	UP	agentpool="windowspool2" beta_kubernetes_io_arch="amd64" beta_kubernetes_io_instance_type="Standard D2 v3" beta_kubernetes_io_os="windows" failure_domain_beta_kubernetes_io_region="westus" failure_domain_beta_kubernetes_io_zone="0" instance="3601k8s010" job="windows-nodes-docker-metrics-server" kubernetes_azure_com_cluster="aks-engine-windows-resource-group5" kubernetes_azure_com_role="agent" kubernetes_io_arch="amd64" kubernetes_io_hostname="3601k8s010" kubernetes_io_os="windows" kubernetes_io_role="agent" node="3601k8s010" storageprofile="managed" storagetier="Standard_LRS"	354ms ago	5.502ms	

windows-nodes-wmi-exporter (1/1 up) [show less](#)

Endpoint	State	Labels	Last Scrape	Scrape Duration	Error
http://10.240.0.65:9182/metrics	UP	agentpool="windowspool2" beta_kubernetes_io_arch="amd64" beta_kubernetes_io_instance_type="Standard D2 v3" beta_kubernetes_io_os="windows" failure_domain_beta_kubernetes_io_region="westus" failure_domain_beta_kubernetes_io_zone="0" instance="3601k8s010" job="windows-nodes-wmi-exporter"	3.173s ago	1.442s	







Prometheus Alerts Graph Status Help

kubernetes-service-endpoints-secondary-ports (5/5 up) [show less](#)

Endpoint	State	Labels	Last Scrape	Scrape Duration	Error
http://10.240.0.55:9274/metrics	UP	<ul style="list-style-type: none"> app_kubernetes_io_instance="voting-application2" app_kubernetes_io_managed_by="Helm" app_kubernetes_io_name="voting-application" app_kubernetes_io_version="1.7.0" helm_sh_chart="voting-application-0.4.0" instance="10.240.0.55:9274" job="kubernetes-service-endpoints-secondary-ports" kubernetes_name="voting-application2" kubernetes_namespace="dev-helm" kubernetes_node="4189k8s010" 	41.024s ago	40.73ms	
http://10.240.0.59:9274/metrics	UP	<ul style="list-style-type: none"> app_kubernetes_io_instance="voting-application2" 	41.648s ago	114ms	

Enable query history

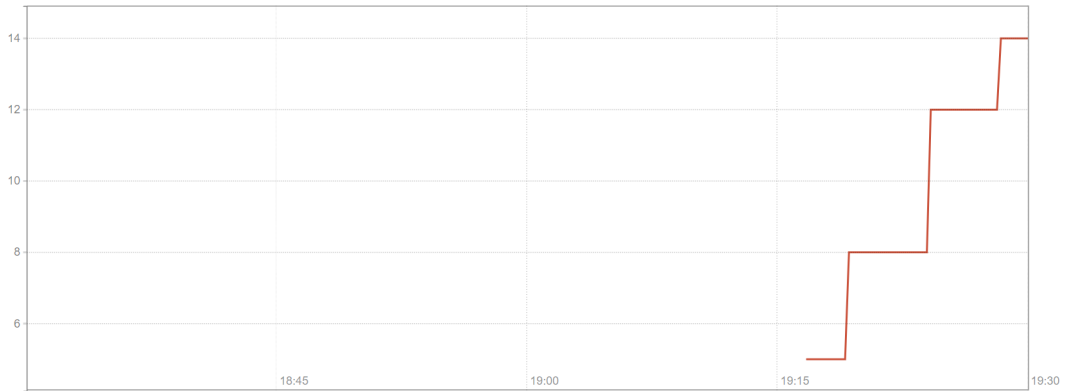
`sum(votingapplication_db_added_votes)`

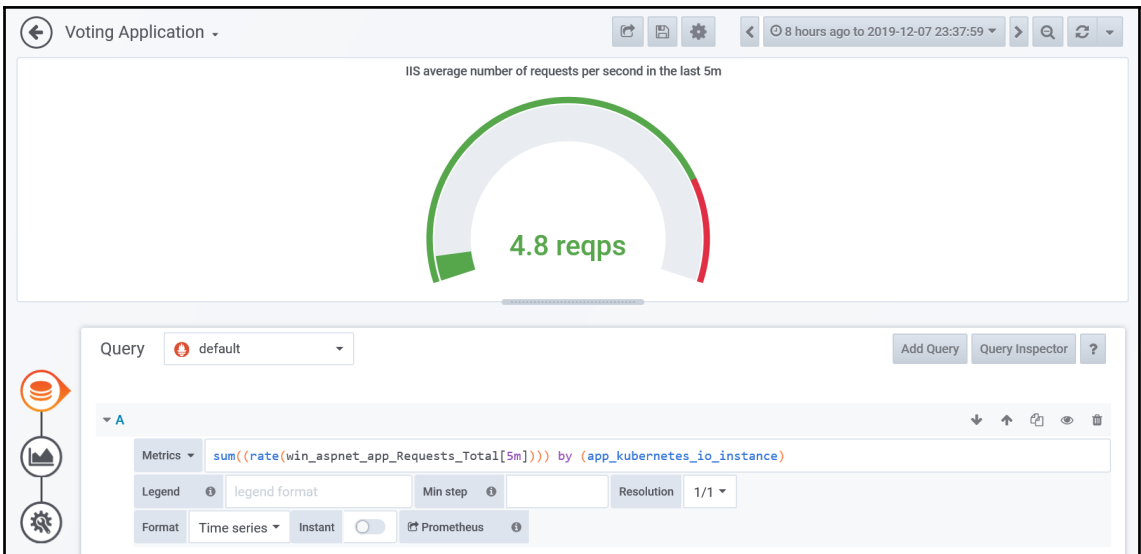
Load time: 451ms
Resolution: 14s
Total time series: 1

Execute - insert metric at cursor

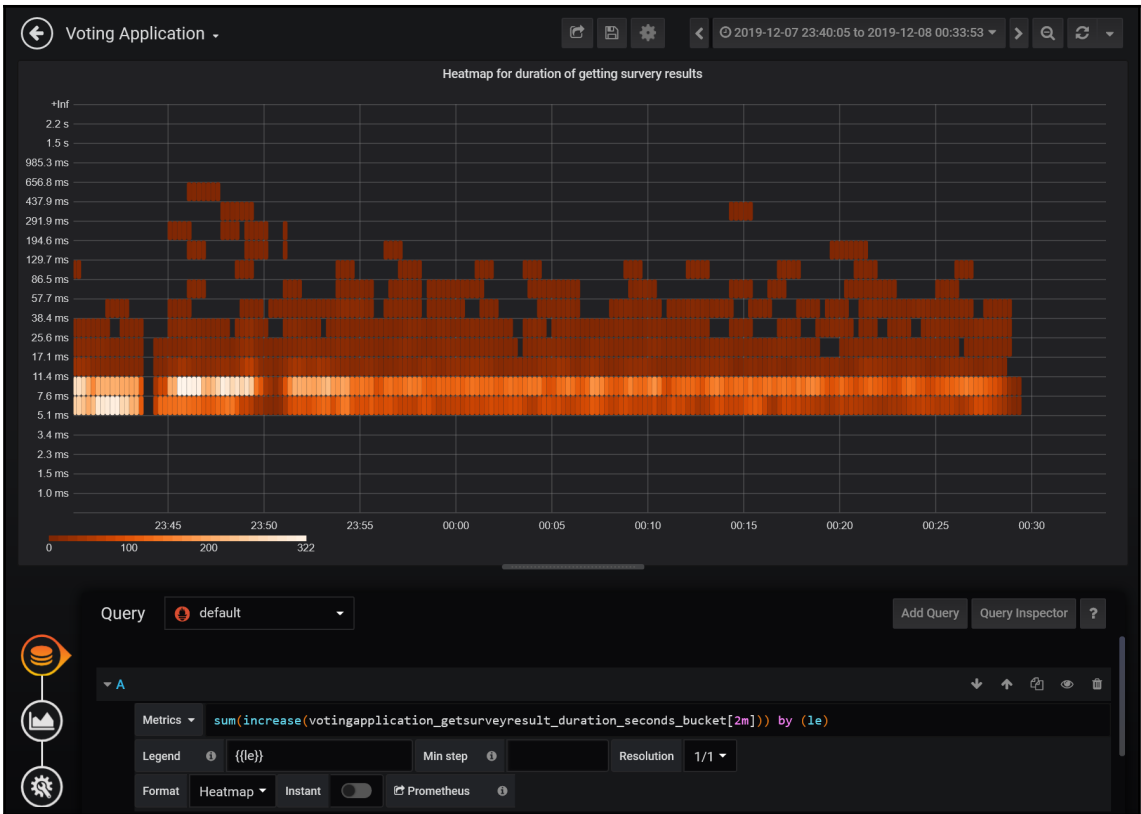
Graph Console

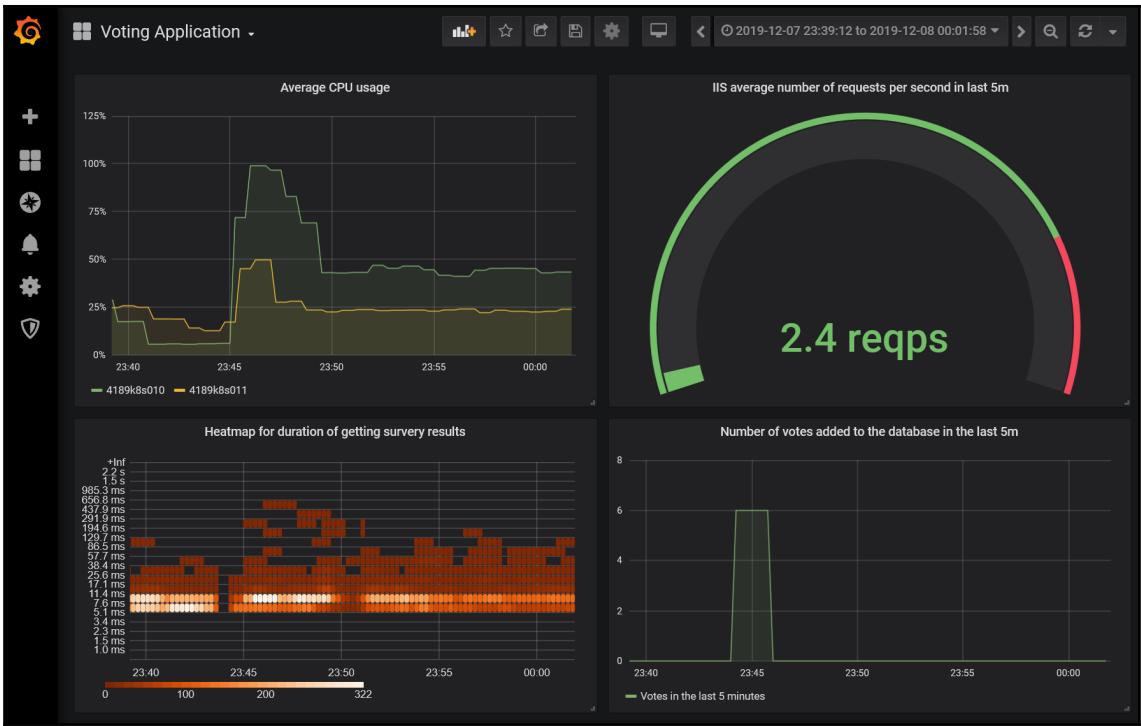
- 1h + << Until >> Res. (s) stacked











Alert State history Test Rule Delete

Rule

Name: High CPU usage on Kubernetes node Evaluate every: 1m For: 5m

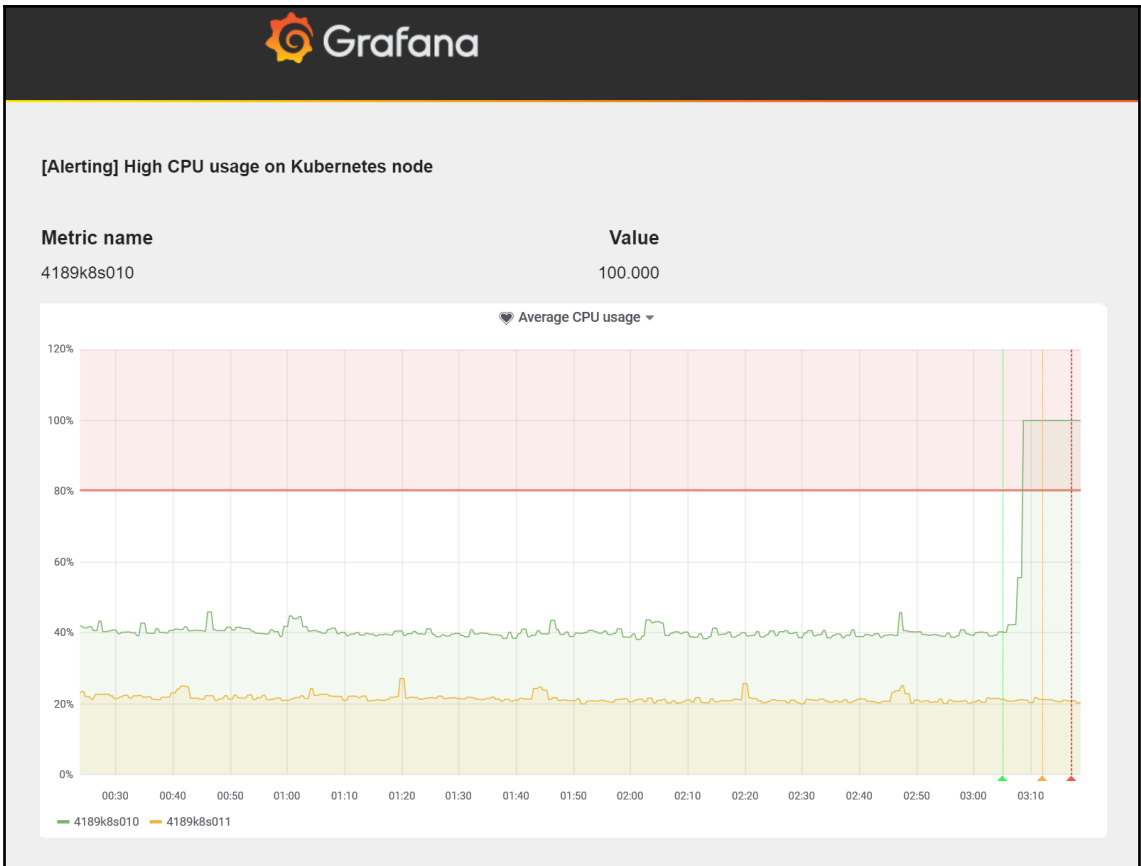
Conditions

WHEN avg () OF query (A, 5m, now) IS ABOVE 80

No Data & Error Handling

If no data or all values are null SET STATE TO No Data

If execution error or timeout SET STATE TO Alerting



Chapter 15: Disaster Recovery

The screenshot shows the Azure Storage Explorer interface for a container named 'handson-aks-engine-win3'. The interface includes a navigation pane on the left with options like Overview, Access Control (IAM), Settings, Access policy, Properties, and Metadata. The main area displays the container's details, including the authentication method (Access key) and location. Below this, there is a search bar and a table of blobs. The table lists several 'kubernetes-etcd-snapshot' blobs with their respective names, modification dates, access tiers, blob types, sizes, and lease states.

Name	Modified	Access tier	Blob type	Size	Lease state	
<input type="checkbox"/> kubernetes-etcd-snapshot_20191208_182555.db	12/8/2019, 9:19:49 PM		Block blob	3.09 MiB	Available	...
<input type="checkbox"/> kubernetes-etcd-snapshot_20191209_010941.db	12/9/2019, 2:09:48 AM		Block blob	3.72 MiB	Available	...
<input type="checkbox"/> kubernetes-etcd-snapshot_20191209_011010.db	12/9/2019, 2:10:17 AM		Block blob	3.74 MiB	Available	...
<input type="checkbox"/> kubernetes-etcd-snapshot_20191209_011251.db	12/9/2019, 2:12:59 AM		Block blob	3.74 MiB	Available	...
<input type="checkbox"/> kubernetes-etcd-snapshot_20191209_014021.db	12/9/2019, 2:40:28 AM		Block blob	3.72 MiB	Available	...
<input type="checkbox"/> kubernetes-etcd-snapshot_20191209_020605.db	12/9/2019, 3:06:12 AM		Block blob	3.74 MiB	Available	...
<input type="checkbox"/> kubernetes-etcd-snapshot_20191209_020705.db	12/9/2019, 3:07:12 AM		Block blob	3.72 MiB	Available	...

Chapter 16: Production Considerations for Running Kubernetes

