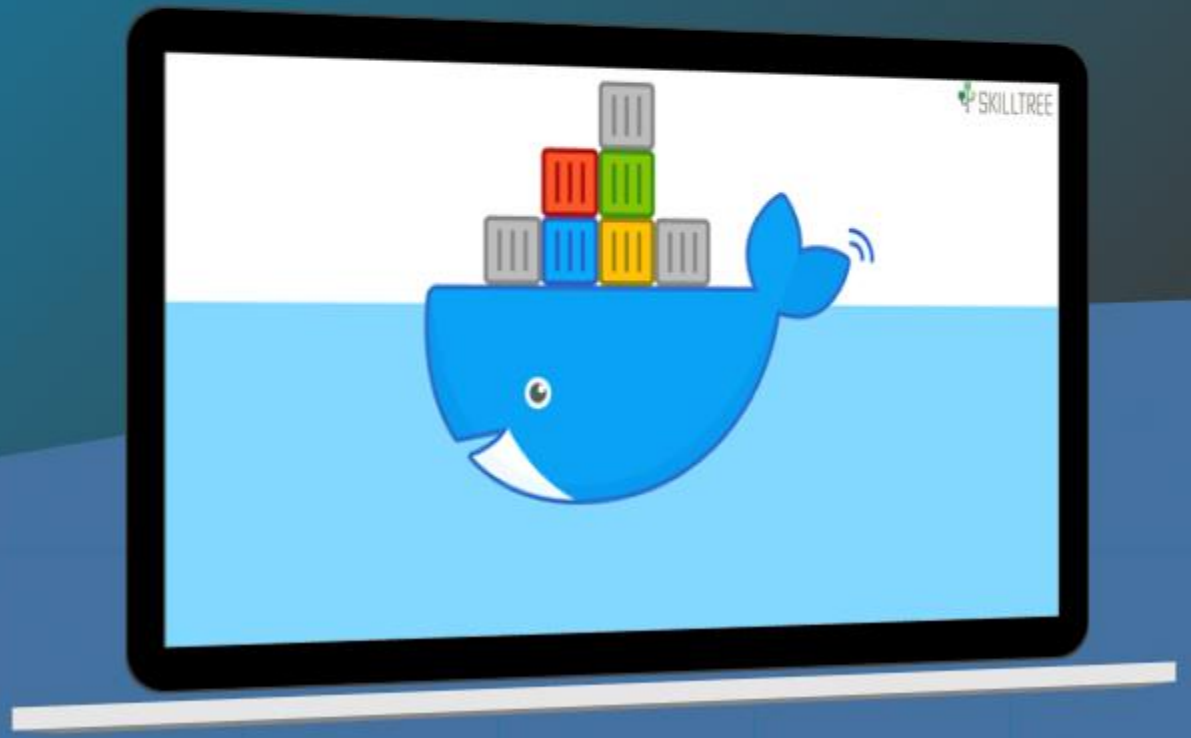
Windows
容器導入由 0 到 1

講者：陳傳興(Bruce)



twMVC
歡迎參加我們的每週四固定聚會

SKILLTREE

Windows 容器導入由 0 到 1

陳傳興(Bruce)

https://www.ghibli.jp 常識範圍使用。
https://thenounproject.com icon 付費使用。

@Bruce

- SkillTree 兼任講師
- 現任微軟MVP最有價值專家
- Kingston Senior Engineer
- twMVC & Study4 社群講師
- 台灣微軟 TechDay & MSDN 講師
- 《ASP.NET MVC 4/5網站開發美學》
- https://blog.kkbruce.net



部署的環境

- 如何讓程式在其他機器正常執行？









容器與虛擬化

容器化技術

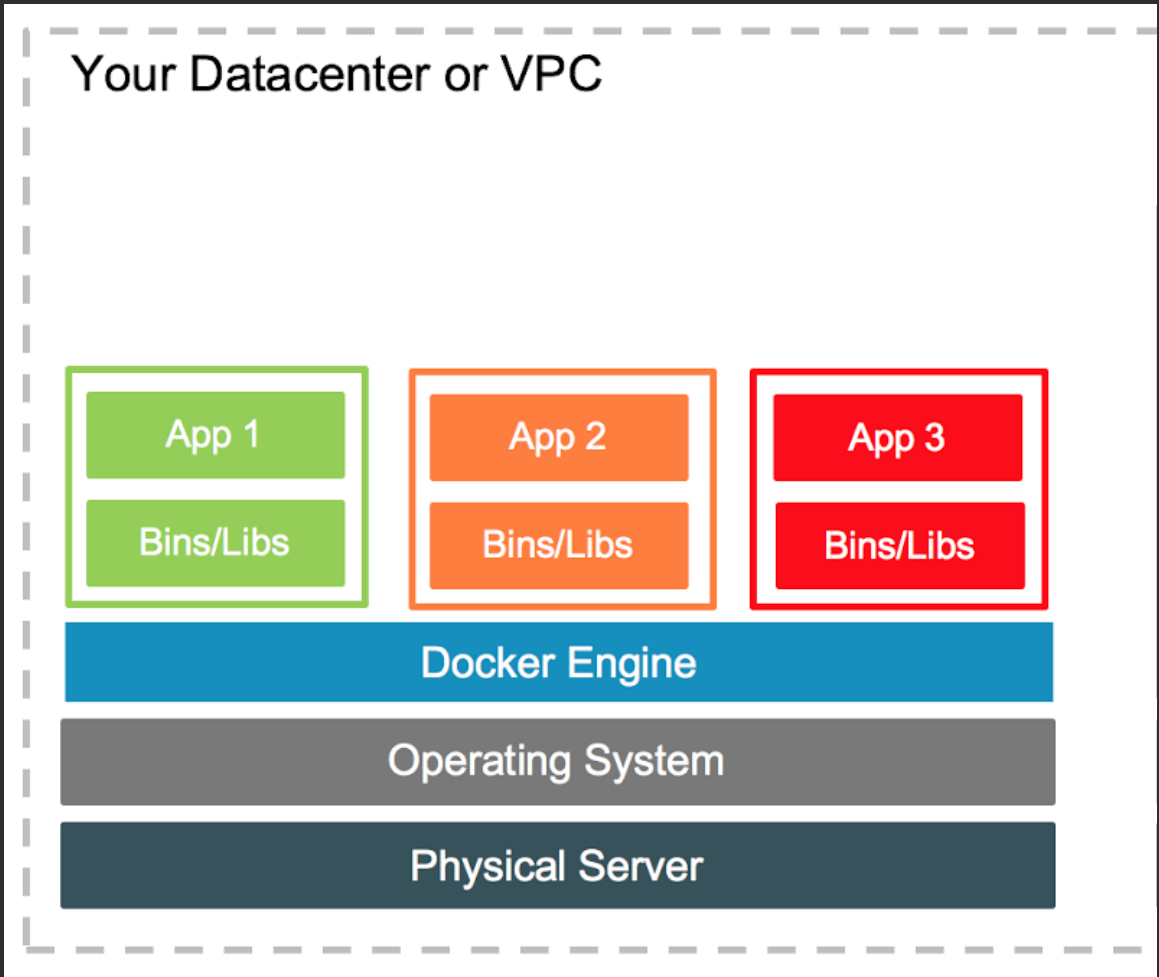
- 單一實體主機或單台 VM 主機中，同時運作更多應用程式與服務。
- 應用程式與服務之間保有隔離性、安全性、可靠性、可擴充性等。

虛擬化技術

- 在單一實體主機上運作多台虛擬主機(Virtual Machine, VM)
- 同時運作不同類型與版本的作業系統(Operating System, OS)

容器與虛擬化

容器化「App」為單位

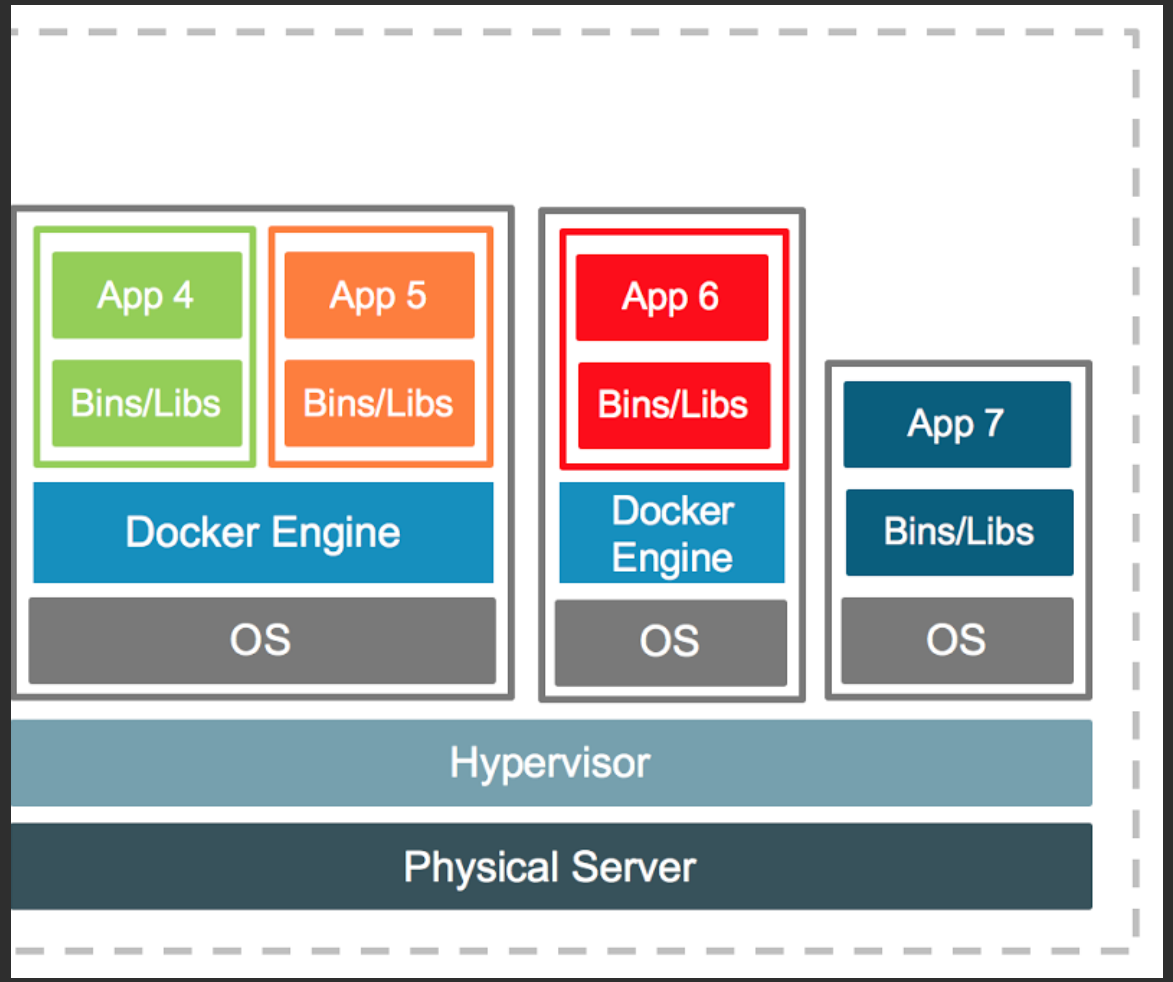


圖片：https://blog.docker.com/2016/04/containers-and-vms-together/

SKILLTREE
我的技能樹 – https://skilltree.my

容器與虛擬化

擬虛化「OS」為單位



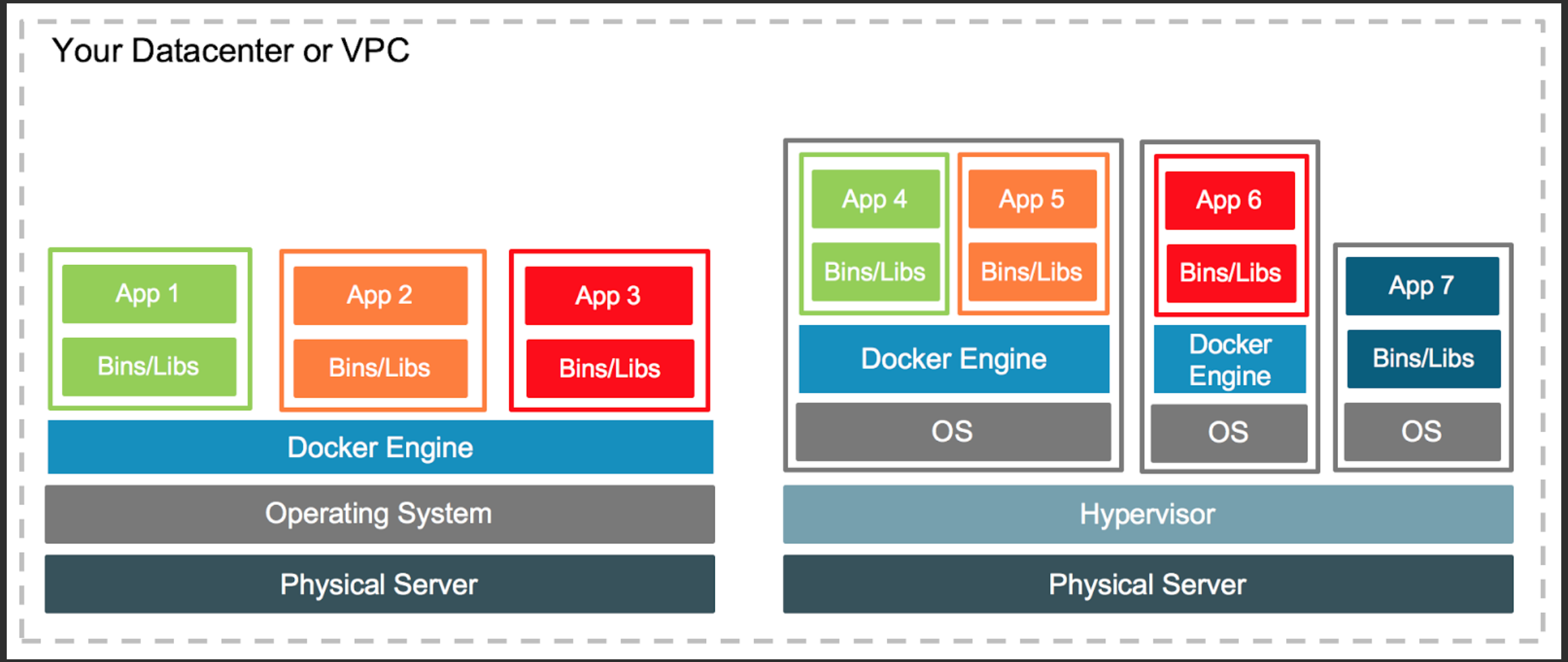
圖片：https://blog.docker.com/2016/04/containers-and-vms-together/

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容器與虛擬化

容器化「App」為單位

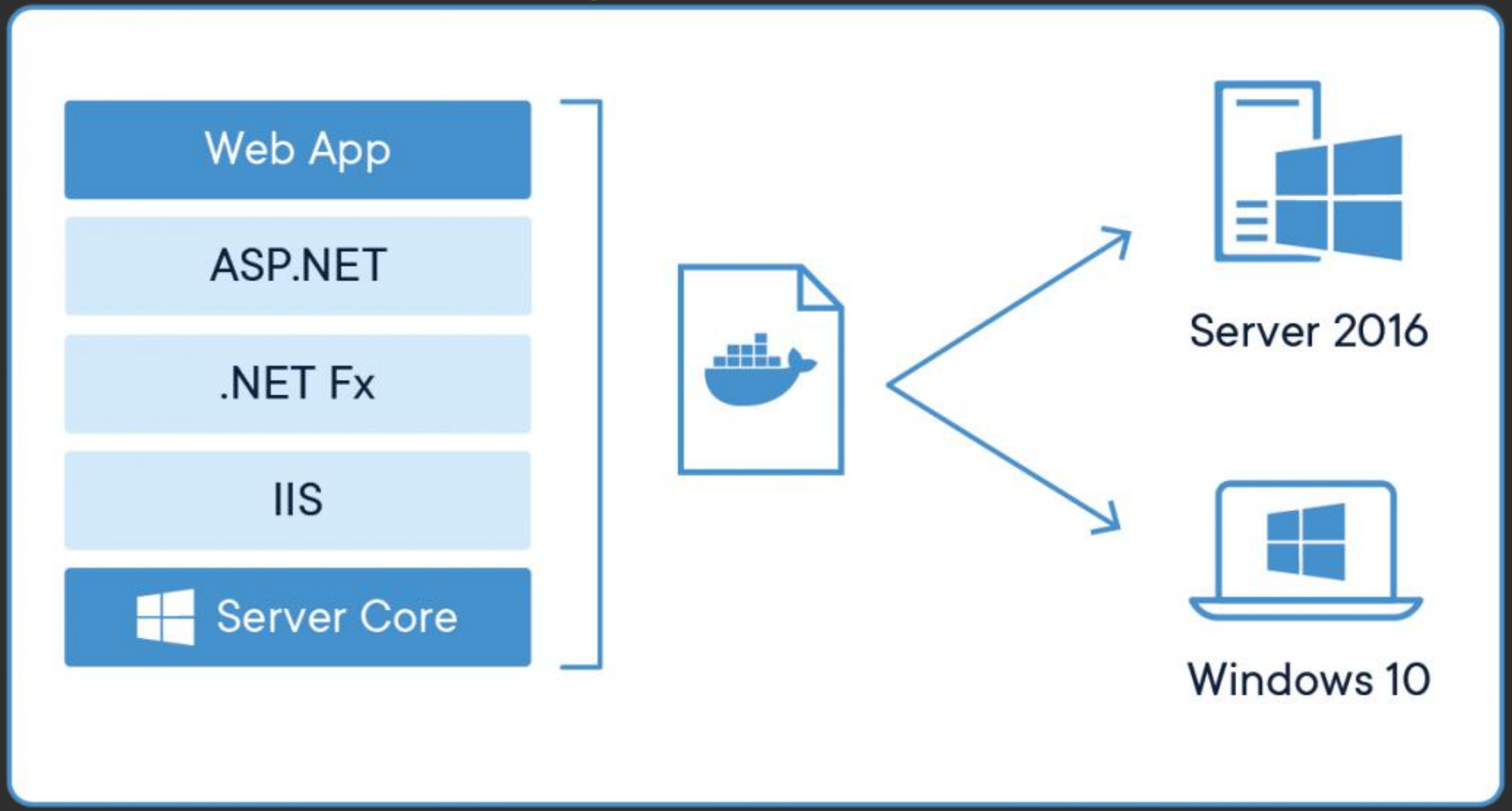
擬虛化「OS」為單位



圖片：https://blog.docker.com/2016/04/containers-and-vms-together/

SKILLTREE
我的技能樹 – https://skilltree.my

One Container to Any Windows



Why Windows?

- 相同體驗
  - 由 Docker 與 Microsoft 直接合作，不論 Windows Server 或 Windows 10 都能帶來與 Linux 一致的體驗：相同的 CLI、API、Image 格式，pull 與 push 的內容發佈服務。
- 消除衝突
  - 不同版本的 IIS / .NET 應用可以在隔離的容器共存。
- 延用技能
  - 可以把原始 Windows 技能延用

Legacy App



- 傳統 .NET Framework 應用程式，都能輕鬆轉移至容器運行。進而升級至 Windows Server 2016 之後平台或是轉換至雲端平台都不是問題。
  - .NET Fraemwork
    - Web-Based
  - WCF

Windows Server

Windows Server 2016

- Server Desktop Experience
- Windows Server Core
- Windows Server Nano

Windows Server 2019

- Version 1809~
  - Server Desktop Experience
  - Windows Server Core
  - Windows Server Nano

半年度計劃

- https://docs.microsoft.com/zh-tw/windows-server/get-started/windows-server-release-info
- Semi-Annual Channel，半年度計劃，半年度管道。
- 它是新發行管道中**一年兩次**伺服器版本，專門設計給追隨「雲端節奏」進展的客戶，例如：處於快速開發週期的客戶，或跟上最新 Hyper-V 投資的主機服務提供者 在此管道中發行的每個版本都會從初始版本開始**提供 18 個月的支援**。

Server Core

- Windows Server 特定版本僅支援在 Server Core 模式下支援執行。Server Core 是沒有圖形化使用者介面的版本。
- 優點：
  - 硬體需求更低、效能相對提高。
  - 體積更小，更新更少，攻擊面大幅縮小
- 缺點：
  - 你要開始熟 Command Line

Hyper-V與Windows Container授權

- Windows Server 是以底層主機做為授權依據，而非容器。
  - 一台 Windows Server 上執行 100 個 Windows 容器
- 伺服器上 Hyper-V 容器採個別授權。
  - Windows 10 上運作的容器不得正式部署。
  - Datacenter 授權不限制 Hyper-V 容器數量。
- Windows Server 2016/2019 內含 Docker 企業版授權費用。

資安

- 我們公司對於資安有高度的要求。
- 開發者電腦，可安裝 Docker on Windows，但無法成功執行 docker pull、docker push 等需與網路通訊的 Docker CLI。
- 正式區伺服器更不用說下載與安裝。

Install-Module

```
PS C:\Users\BruceChen_Adm> Install-Module DockerProvider

NuGet provider is required to continue
PowerShellGet requires NuGet provider version '2.8.5.201' or newer to interact with NuGet-based repositories. The NuGet
provider must be available in 'C:\Program Files\PackageManagement\ProviderAssemblies' or
'C:\Users\BruceChen_Adm\AppData\Local\PackageManagement\ProviderAssemblies'. You can also install the NuGet provider by
running 'Install-PackageProvider -Name NuGet -MinimumVersion 2.8.5.201 -Force'. Do you want PowerShellGet to install and
import the NuGet provider now?
[Y] Yes  [N] No  [S] Suspend  [?] Help (default is "Y"):
WARNING: Unable to download from URI 'https://go.microsoft.com/fwlink/?LinkID=627338&clcid=0x409' to ''.
WARNING: Unable to download the list of available providers. Check your internet connection.
PackageManagement\Install-PackageProvider : No match was found for the specified search criteria for the provider
'NuGet'. The package provider requires 'PackageManagement' and 'Provider' tags. Please check if the specified package
has the tags.
At C:\Program Files\WindowsPowerShell\Modules\PowerShellGet\1.0.0.1\PSModule.psm1:7468 char:21
+ ...     $null = PackageManagement\Install-PackageProvider -Name $script:N ...
+                 ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
    + CategoryInfo          : InvalidArgument: (Microsoft.Power...PackageProvider:InstallPackageProvider) [Install-Packa
   geProvider], Exception
    + FullyQualifiedErrorId : NoMatchFoundForProvider,Microsoft.PowerShell.PackageManagement.Cmdlets.InstallPackageProvi
   der

PackageManagement\Import-PackageProvider : No match was found for the specified search criteria and provider name
'NuGet'. Try 'Get-PackageProvider -ListAvailable' to see if the provider exists on the system.
At C:\Program Files\WindowsPowerShell\Modules\PowerShellGet\1.0.0.1\PSModule.psm1:7474 char:21
+ ...     $null = PackageManagement\Import-PackageProvider -Name $script:Nu ...
+                 ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
    + CategoryInfo          : InvalidData: (NuGet:String) [Import-PackageProvider], Exception
    + FullyQualifiedErrorId : NoMatchFoundForCriteria,Microsoft.PowerShell.PackageManagement.Cmdlets.ImportPackageProvid
   er
```

Install-Module -Proxy

```
PS C:\Users\BruceChen_Adm> netsh winhttp show proxy

Current WinHTTP proxy settings:

    Proxy Server(s) :  [redacted]8:80
    Bypass List     :  [redacted]on.corp

PS C:\Users\BruceChen_Adm> Install-Module DockerProvider -Proxy [redacted]

NuGet provider is required to continue
PowerShellGet requires NuGet provider version '2.8.5.201' or newer to interact with NuGet-based repositories. The NuGet
 provider must be available in 'C:\Program Files\PackageManagement\ProviderAssemblies' or
'C:\Users\BruceChen_Adm\AppData\Local\PackageManagement\ProviderAssemblies'. You can also install the NuGet provider by
 running 'Install-PackageProvider -Name NuGet -MinimumVersion 2.8.5.201 -Force'. Do you want PowerShellGet to install
and import the NuGet provider now?
[Y] Yes  [N] No  [S] Suspend  [?] Help (default is "Y"): y
WARNING: Unable to download from URI 'https://go.microsoft.com/fwlink/?LinkID=627338&clcid=0x409' to ''.
WARNING: Unable to download the list of available providers. Check your internet connection.
PackageManagement\Install-PackageProvider : No match was found for the specified search criteria for the provider
'NuGet'. The package provider requires 'PackageManagement' and 'Provider' tags. Please check if the specified package
has the tags.
At C:\Program Files\WindowsPowerShell\Modules\PowerShellGet\1.0.0.1\PSModule.psm1:7468 char:21
+ ...      $null = PackageManagement\Install-PackageProvider -Name $script:N ...
+                  ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
    + CategoryInfo          : InvalidArgument: (Microsoft.Power...PackageProvider:InstallPackageProvider) [Install-Pac
   kageProvider], Exception
    + FullyQualifiedErrorId : NoMatchFoundForProvider,Microsoft.PowerShell.PackageManagement.Cmdlets.InstallPackagePro
   vider

PackageManagement\Import-PackageProvider : No match was found for the specified search criteria and provider name
'NuGet'. Try 'Get-PackageProvider -ListAvailable' to see if the provider exists on the system.
At C:\Program Files\WindowsPowerShell\Modules\PowerShellGet\1.0.0.1\PSModule.psm1:7474 char:21
+ ...      $null = PackageManagement\Import-PackageProvider -Name $script:Nu ...
+                  ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
    + CategoryInfo          : InvalidData: (NuGet:String) [Import-PackageProvider], Exception
    + FullyQualifiedErrorId : NoMatchFoundForCriteria,Microsoft.PowerShell.PackageManagement.Cmdlets.ImportPackageProv
   ider
```

Install-Module -Proxy

```
PS C:\Users\BruceChen_Adm>  Get-PSRepository
WARNING: Unable to find module repositories.
PS C:\Users\BruceChen_Adm> Install-Module DockerProvider -Proxy h
PackageManagement\Install-Package : No match was found for the specified search criteria and module name
'DockerProvider'. Try Get-PSRepository to see all available registered module repositories.
At C:\Program Files\WindowsPowerShell\Modules\PowerShellGet\1.0.0.1\PSModule.psm1:1809 char:21
+ ...          $null = PackageManagement\Install-Package @PSBoundParameters
+                      ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
    + CategoryInfo          : ObjectNotFound: (Microsoft.Power....InstallPackage:InstallPackage) [Install-Package], Ex
   ception
    + FullyQualifiedErrorId : NoMatchFoundForCriteria,Microsoft.PowerShell.PackageManagement.Cmdlets.InstallPackage

PS C:\Users\BruceChen_Adm> Install-Module -Name PowerShellGet -Force -Proxy http:  80
PackageManagement\Install-Package : No match was found for the specified search criteria and module name
'PowerShellGet'. Try Get-PSRepository to see all available registered module repositories.
At C:\Program Files\WindowsPowerShell\Modules\PowerShellGet\1.0.0.1\PSModule.psm1:1809 char:21
+ ...          $null = PackageManagement\Install-Package @PSBoundParameters
+                      ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
    + CategoryInfo          : ObjectNotFound: (Microsoft.Power....InstallPackage:InstallPackage) [Install-Package], Ex
   ception
    + FullyQualifiedErrorId : NoMatchFoundForCriteria,Microsoft.PowerShell.PackageManagement.Cmdlets.InstallPackage
```

Proxy 無效

- 這個 `Install-Module` 指令就算加了 -Proxy 結果還是往 Firewall 走。
- 也有試著用 netsh 改更底層 Proxy 設定，但依然無用。

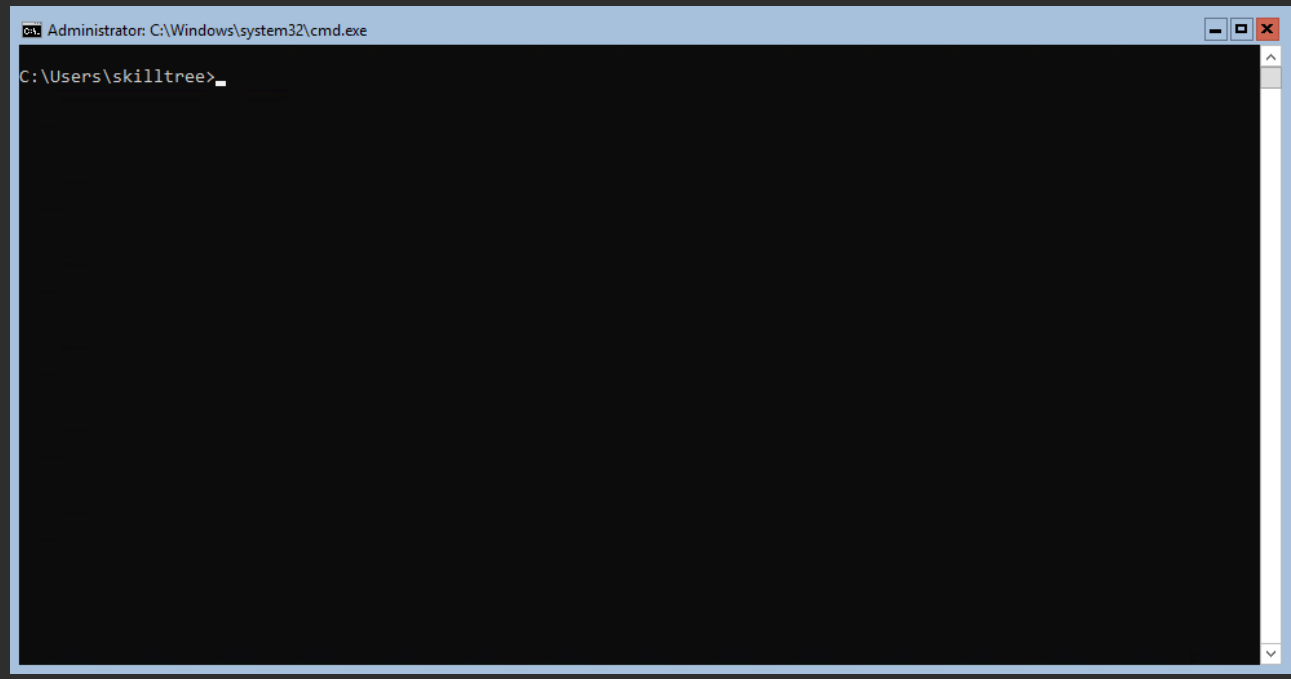
Install Offline

```
Administrator: C:\Windows\system32\cmd.exe - powershell
PS C:\Users\Administrator> Invoke-WebRequest -Uri https://get.mirantis.com/install.ps1 -o install.ps1
PS C:\Users\Administrator> Set-ExecutionPolicy -ExecutionPolicy RemoteSigned -Force -Scope Process;
PS C:\Users\Administrator> .\install.ps1 -DownloadOnly
Downloading Docker zip into C:\Users\Administrator\Docker.zip from: https://repos.mirantis.com/win/static/stable/x86_64/docker-latest.zip - this may take some time
Download of package Docker finished
Downloading Containerd zip into C:\Users\Administrator\Containerd.zip from: https://repos.mirantis.com/win/static/stable/x86_64/containerd-latest.zip - this may take some time
Download of package Containerd finished
PS C:\Users\Administrator> .\install.ps1 -Offline
```

```
PS C:\Users\Administrator> .\install.ps1 -Offline
Installing the containers feature. It is a prerequisite for containers on Windows and requires a reboot.
Using preloaded zip File C:\Users\Administrator\Docker.zip for installing package Docker
Using preloaded zip File C:\Users\Administrator\Containerd.zip for installing package Containerd
Installed Docker 20.10.0, build 6ee42dc
Installed Containerd 1.4.3
Install/upgrade completed
WARNING: Your machine needs to be rebooted now. Installed packages will not work without reboot.
```

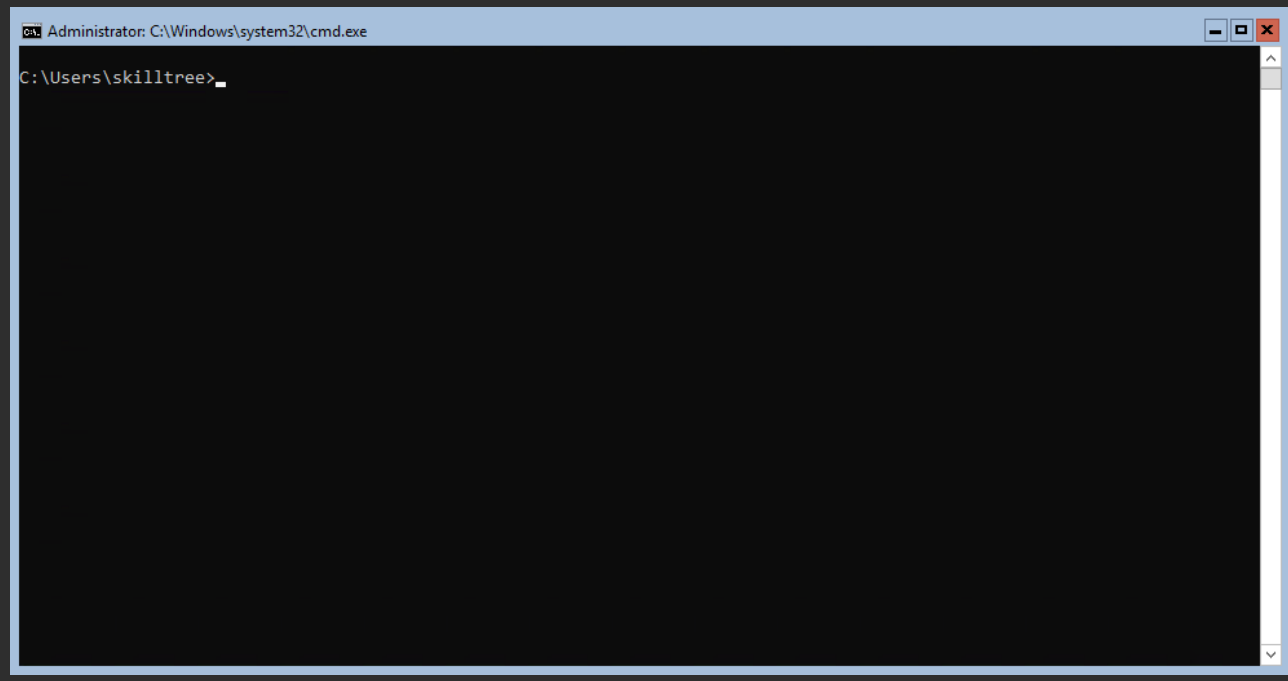
Server Core 好可怕

- 就這樣，什麼都沒了！



????

- 如何進行系統組態設定？
- 如何重開機？
- `exit` 之後怎麼辦？
- 不小心按到 `[x]` 怎麼辦？



要如何設定 Proxy

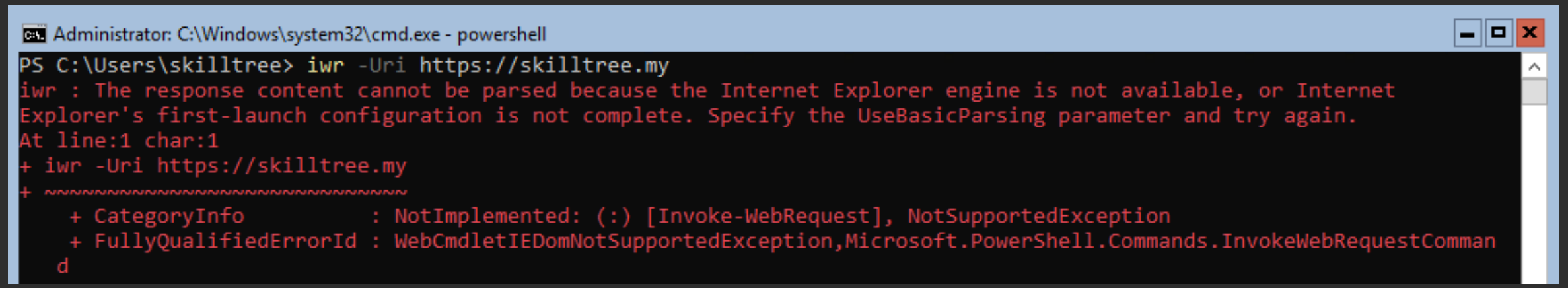
- 沒有介面讓你設定。



iwr (PowerShell)

- Test From Your Computer
  - iwr -Uri https://skilltree.my
- Test From Server Core
  - iwr -Uri https://skilltree.my

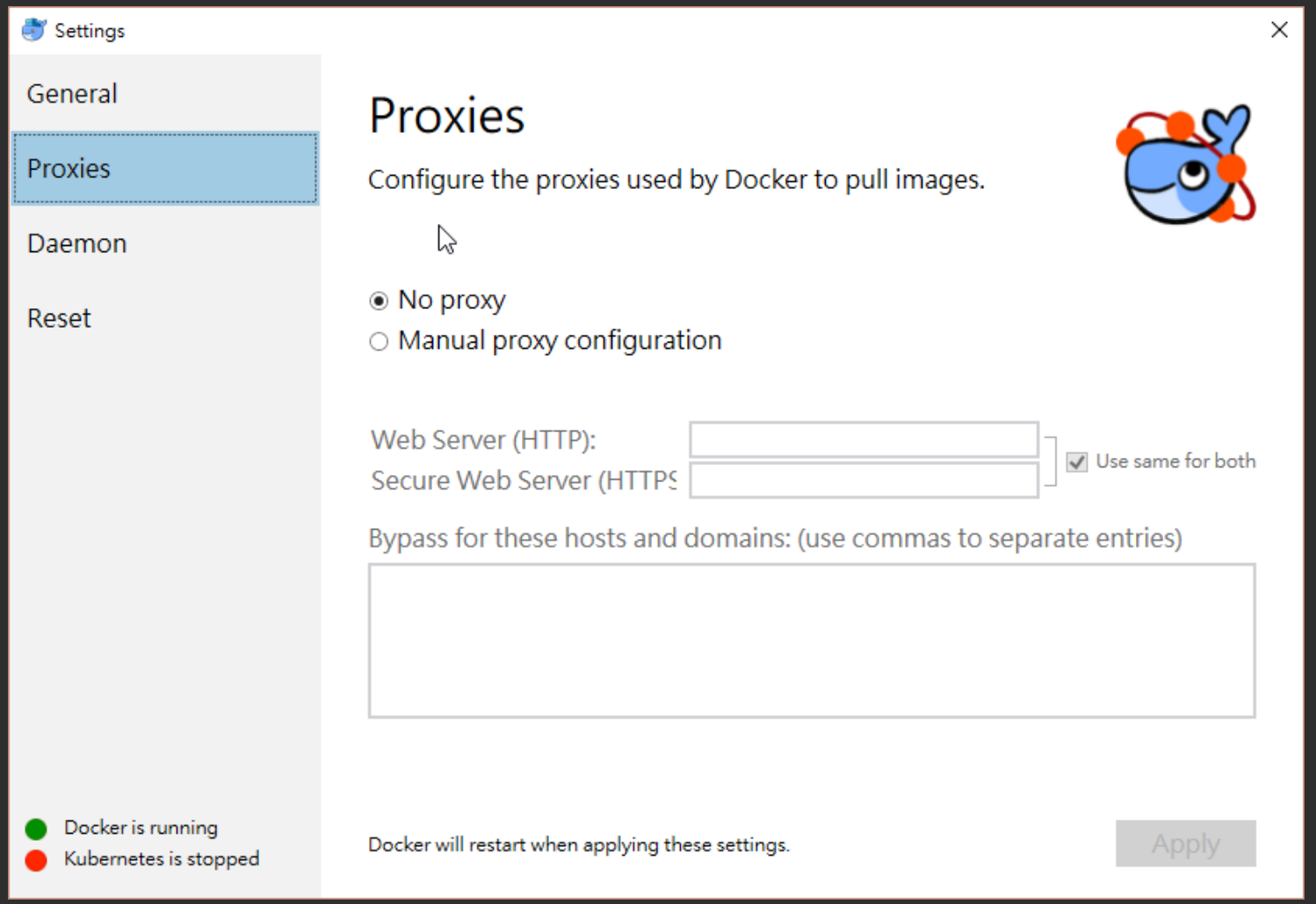
開發人員終極夢想



它連IE都沒有了！

要如何設定 Proxy

- 沒有介面讓你設定。

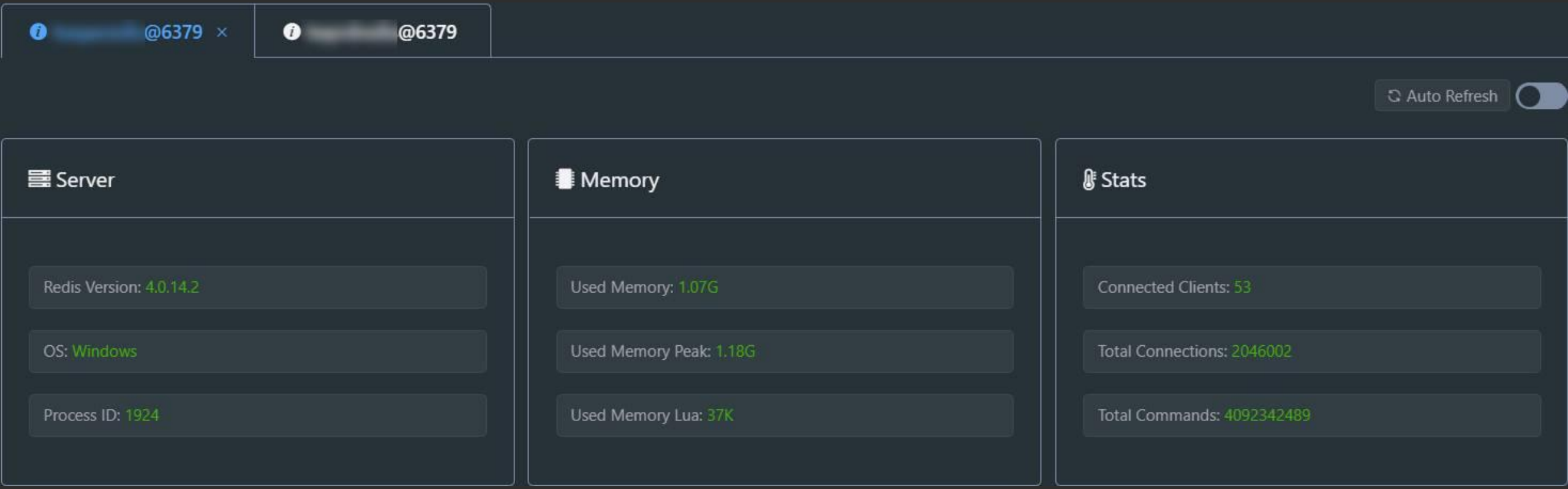


Reids for Windows

- 說明
  - https://blog.kkbruce.net/2020/02/redis-master-slave-sentinel-for-windows.html
- Image
  - https://hub.docker.com/r/kkbruce/redis
- Source
  - https://github.com/kkbruce/RedisSentinelHA

Redis for Windows

- 四天三夜的壓測，共存取40億次，穩穩的。



LCOW

- Linux Containers on Windows
  - https://github.com/linuxkit/lcow
- 使用 Hyper-V Isolation 技術來執行 Linux kernel。
- 建置於 Moby project
  - 進度：https://github.com/moby/moby/issues/33850
- https://youtu.be/85nCF5S8Qok

小心，防毒軟體就在你身邊

- 防毒軟體對於Docker非常不友善。
- 也就是說，如果你的 Docker 是安裝在含防毒軟體的Host上，那麼偵錯時(有任何奇怪現像)，真心不騙，先將防毒軟體停用試試看。



慘: process mode無法啟動

- https://blog.kkbruce.net/2020/01/docker-process-isolation-for-carbon.html

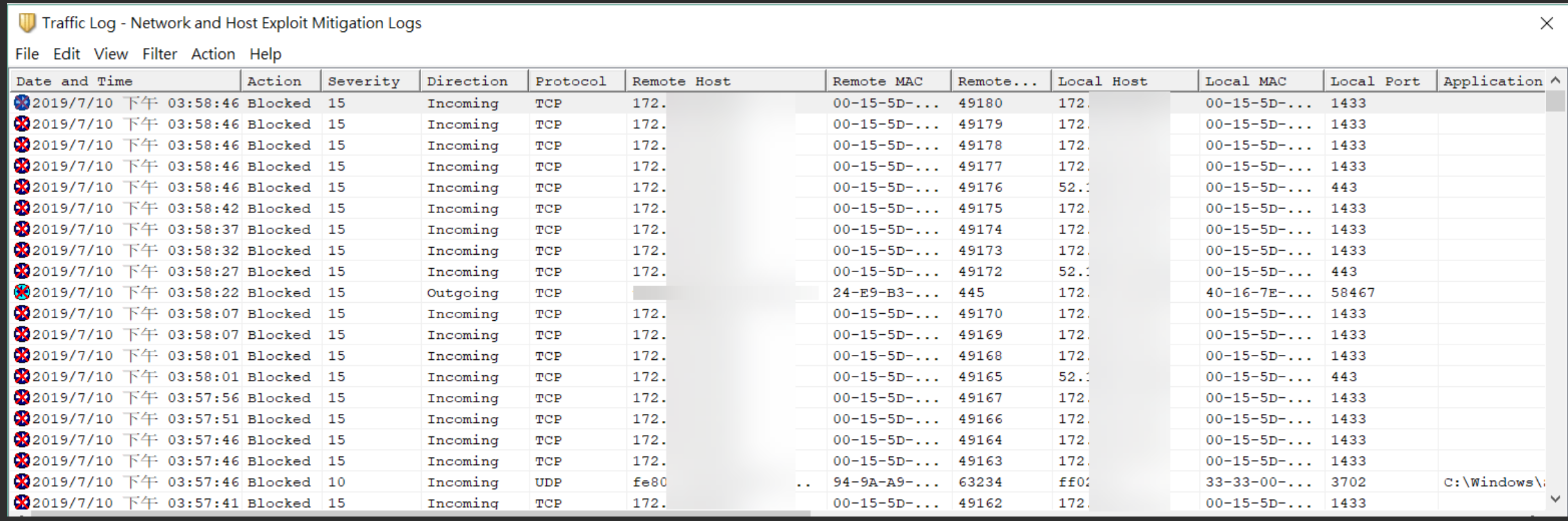
```
PS D:\> docker run --rm mcr.microsoft.com/windows:1903 ping localhost

Pinging c3255612c540 [::1] with 32 bytes of data:
Reply from ::1: time<1ms
Reply from ::1: time<1ms
Reply from ::1: time<1ms
Reply from ::1: time<1ms

Ping statistics for ::1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
PS D:\>
PS D:\> docker run --rm --isolation=process mcr.microsoft.com/windows:1903 ping localhost
```

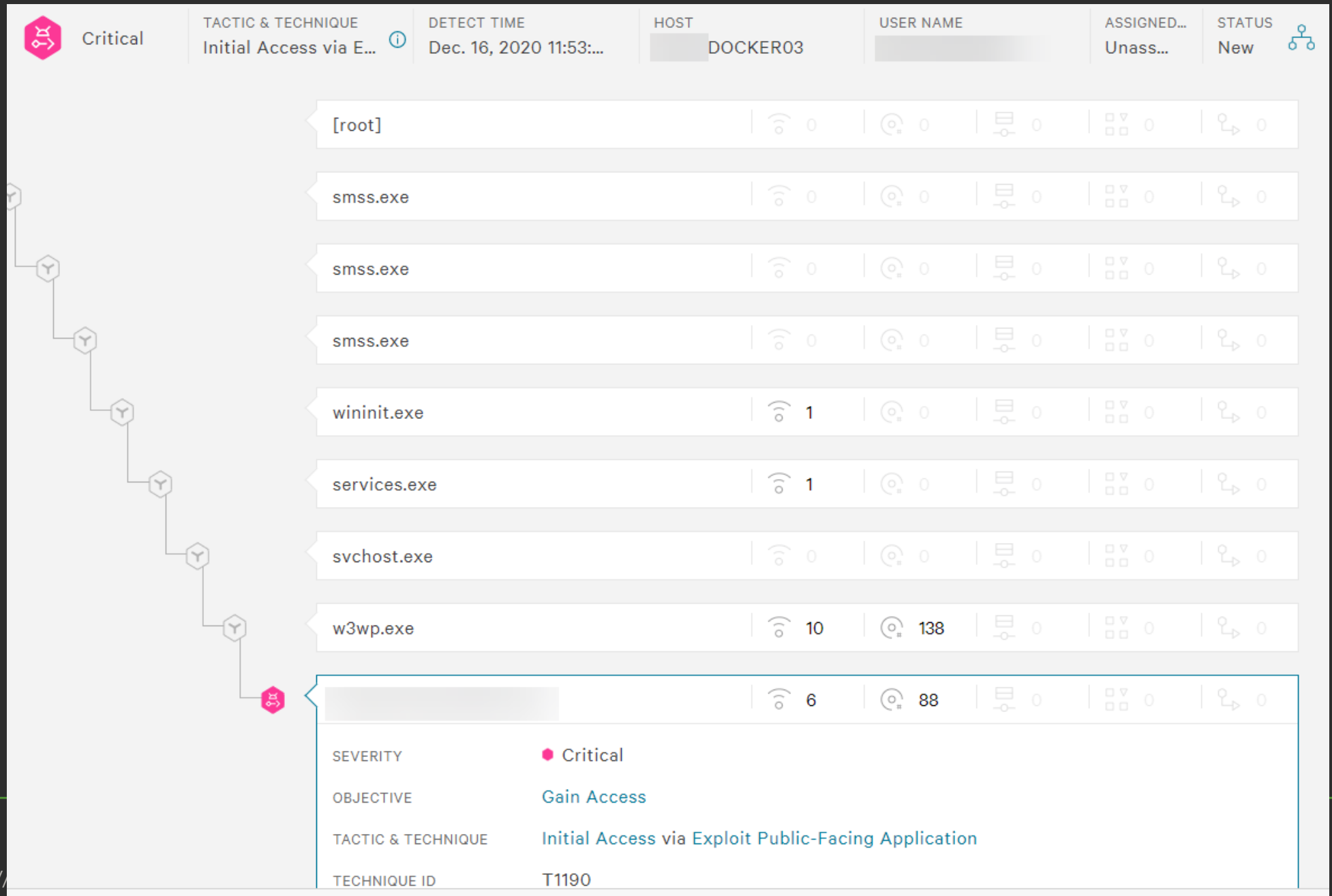
慘：無法存取容器本身之外的服務

- https://blog.kkbruce.net/2019/07/symantec-endpoint-protection-docker-solution.html



Date and Time	Action	Severity	Direction	Protocol	Remote Host	Remote MAC	Remote...	Local Host	Local MAC	Local Port	Application
2019/7/10 下午 03:58:46	Blocked	15	Incoming	TCP	172.	00-15-5D-...	49180	172.	00-15-5D-...	1433	
2019/7/10 下午 03:58:46	Blocked	15	Incoming	TCP	172.	00-15-5D-...	49179	172.	00-15-5D-...	1433	
2019/7/10 下午 03:58:46	Blocked	15	Incoming	TCP	172.	00-15-5D-...	49178	172.	00-15-5D-...	1433	
2019/7/10 下午 03:58:46	Blocked	15	Incoming	TCP	172.	00-15-5D-...	49177	172.	00-15-5D-...	1433	
2019/7/10 下午 03:58:46	Blocked	15	Incoming	TCP	172.	00-15-5D-...	49176	52.1	00-15-5D-...	443	
2019/7/10 下午 03:58:42	Blocked	15	Incoming	TCP	172.	00-15-5D-...	49175	172.	00-15-5D-...	1433	
2019/7/10 下午 03:58:37	Blocked	15	Incoming	TCP	172.	00-15-5D-...	49174	172.	00-15-5D-...	1433	
2019/7/10 下午 03:58:32	Blocked	15	Incoming	TCP	172.	00-15-5D-...	49173	172.	00-15-5D-...	1433	
2019/7/10 下午 03:58:27	Blocked	15	Incoming	TCP	172.	00-15-5D-...	49172	52.1	00-15-5D-...	443	
2019/7/10 下午 03:58:22	Blocked	15	Outgoing	TCP		24-E9-B3-...	445	172.	40-16-7E-...	58467	
2019/7/10 下午 03:58:07	Blocked	15	Incoming	TCP	172.	00-15-5D-...	49170	172.	00-15-5D-...	1433	
2019/7/10 下午 03:58:07	Blocked	15	Incoming	TCP	172.	00-15-5D-...	49169	172.	00-15-5D-...	1433	
2019/7/10 下午 03:58:01	Blocked	15	Incoming	TCP	172.	00-15-5D-...	49168	172.	00-15-5D-...	1433	
2019/7/10 下午 03:58:01	Blocked	15	Incoming	TCP	172.	00-15-5D-...	49165	52.1	00-15-5D-...	443	
2019/7/10 下午 03:57:56	Blocked	15	Incoming	TCP	172.	00-15-5D-...	49167	172.	00-15-5D-...	1433	
2019/7/10 下午 03:57:51	Blocked	15	Incoming	TCP	172.	00-15-5D-...	49166	172.	00-15-5D-...	1433	
2019/7/10 下午 03:57:46	Blocked	15	Incoming	TCP	172.	00-15-5D-...	49164	172.	00-15-5D-...	1433	
2019/7/10 下午 03:57:46	Blocked	15	Incoming	TCP	172.	00-15-5D-...	49163	172.	00-15-5D-...	1433	
2019/7/10 下午 03:57:46	Blocked	10	Incoming	UDP	fe80 ..	94-9A-A9-...	63234	ff02	33-33-00-...	3702	C:\Windows\
2019/7/10 下午 03:57:41	Blocked	15	Incoming	TCP	172.	00-15-5D-...	49162	172.	00-15-5D-...	1433	

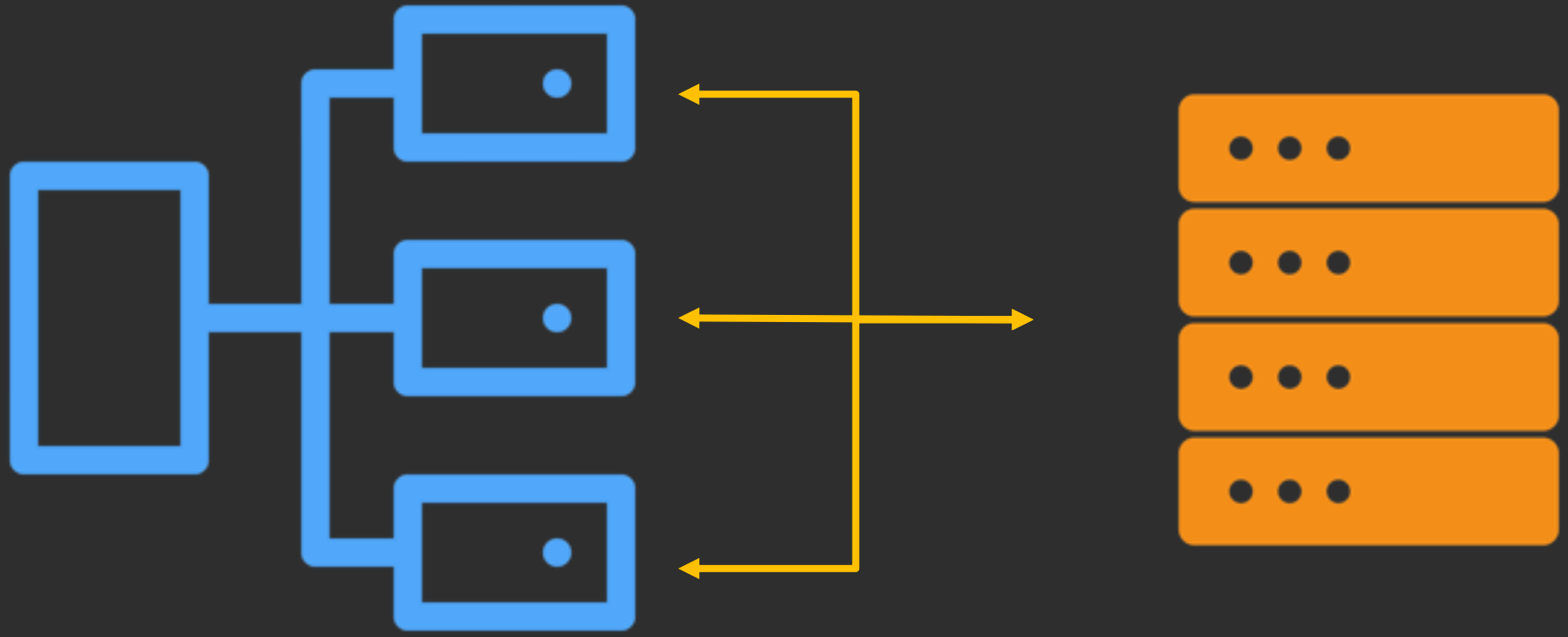
慘：應用程式被封鎖


Critical
TACTIC & TECHNIQUE
Initial Access via E...
DETECT TIME
Dec. 16, 2020 11:53:...
HOST
DOCKER03
USER NAME
ASSIGNED...
Unass...
STATUS
New
[root]
smss.exe
smss.exe
smss.exe
wininit.exe 1
services.exe 1
svchost.exe
w3wp.exe 10 138
6 88
SEVERITY Critical
OBJECTIVE Gain Access
TACTIC & TECHNIQUE Initial Access via Exploit Public-Facing Application
TECHNIQUE ID T1190

Windows 內建防毒要調整，不然...

- # 關"自動排除"
  Set-MpPreference -DisableAutoExclusions $true
- # 排除資料夾
  Set-MpPreference -ExclusionPath "C:\ProgramData\docker", "D:\docker"
- # 排除執行檔
  Set-MpPreference -ExclusionProcess "MicrosoftDependencyAgent.exe", "agentwrap.exe", "HealthService.exe", "MonitoringHost.exe", "Agent.Listener.exe", "AgentService.exe", "docker.exe", "dockerd.exe", "docker-compose.exe", "containerd.exe" , "Vmms.exe", "Vmwp.exe", "Vmsp.exe", "Vmcompute.exe"

內網File CDN架構



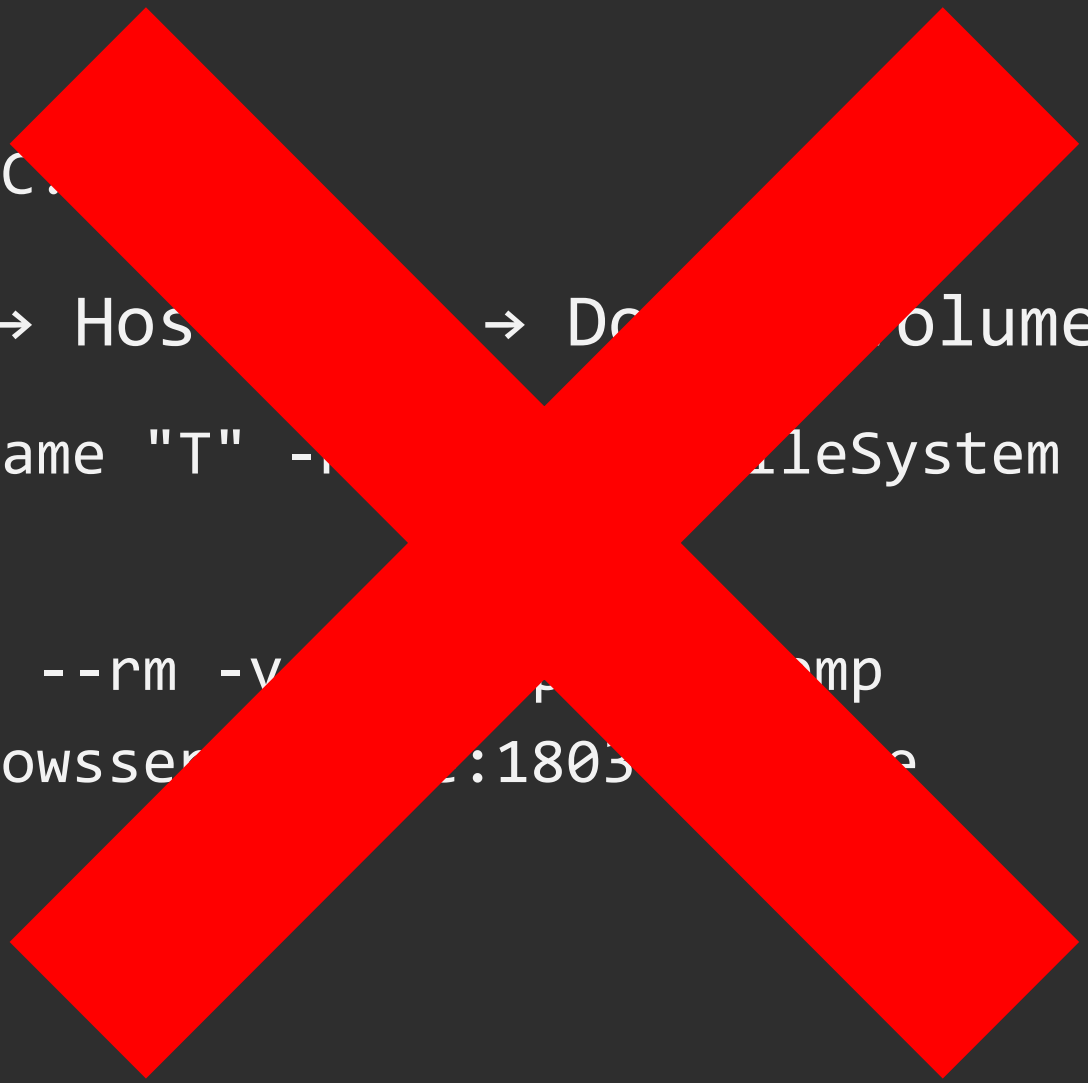
Mount

- 如果有網路共享空間，可以將掛載到 Server Core 中，以方便做資料共享的使用。
- 注意：此種掛載進來分享資料夾或磁碟，目前 Docker Volume 無法使用。

- DOS
  - net use /?
- PowerShell
  - Get-PSDrive
  - New-PSDrive
  - Remove-PSDrive

Mount Share folder?

- \\IP\Share
  - -v \\IP\Share:C:
- Network Disk → Hos → Do olume
  - New-PSDrive -Name "T" - leSystem -Root "\\IP\\Share" -Persist
  - docker run -it --rm -v mp microsoft/windowsser :1803 e



SKILLTREE

Server Core

1709之前

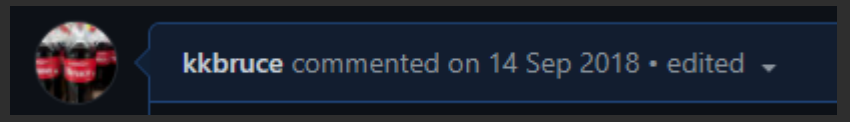


SMB Mounts

- Server Core 1709 提供新功能稱 SMB Global Mapping
- 用以掛載 SMB 分享至 Host，然後 Host 可掛載至容器中使用。

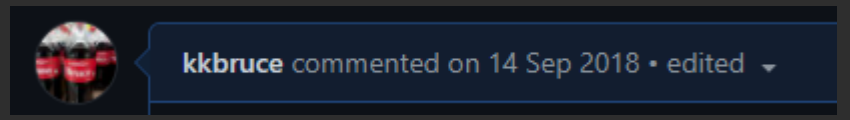
只用個幾分鐘

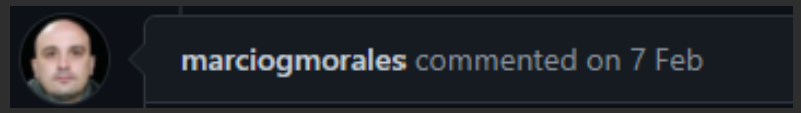
- https://github.com/moby/moby/issues/37863
- 2018-9-14 提問



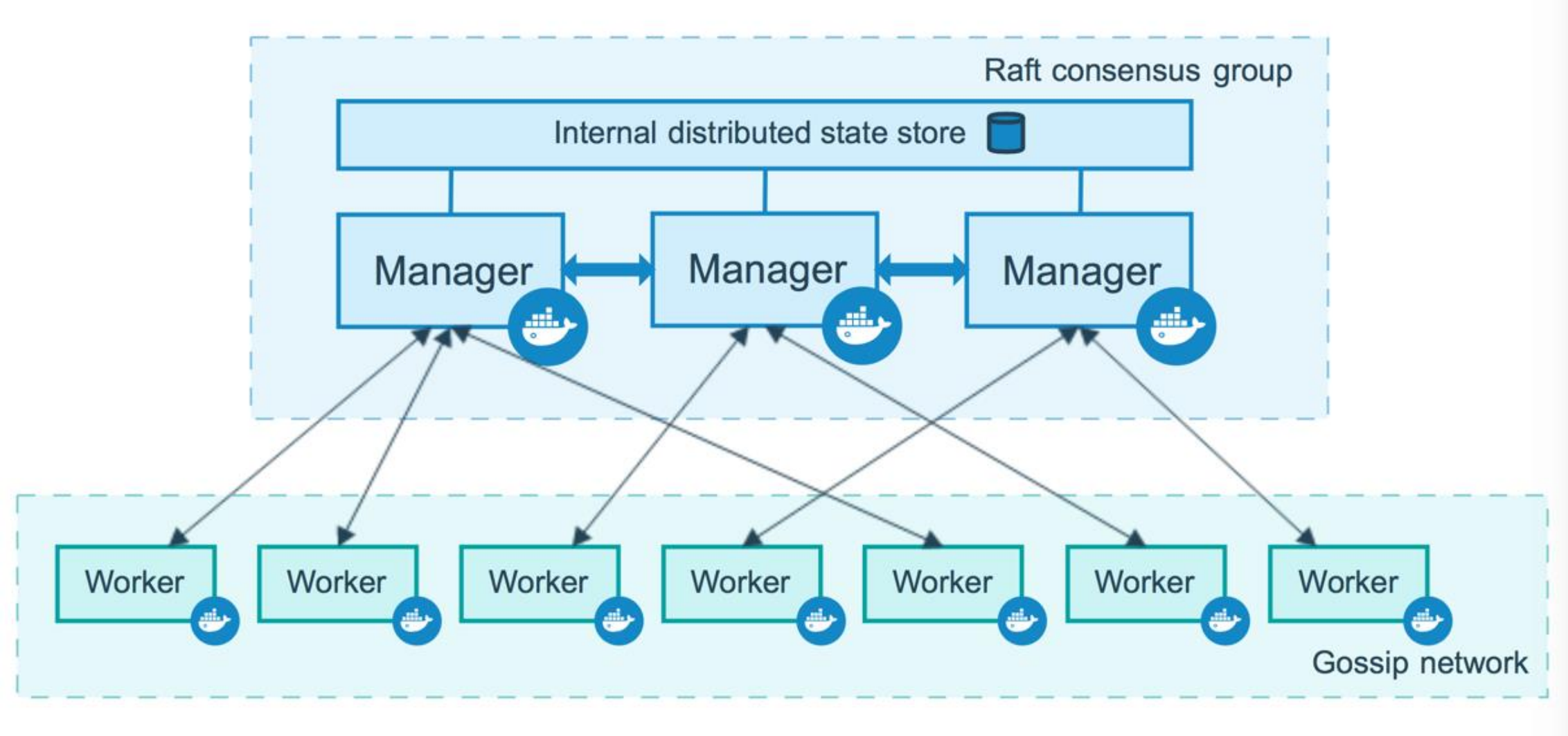
只用個幾分鐘

- https://github.com/moby/moby/issues/37863
- 2018-9-14 提問
- 2020-2-7 才得到解答





Docker Swarm … Next Page



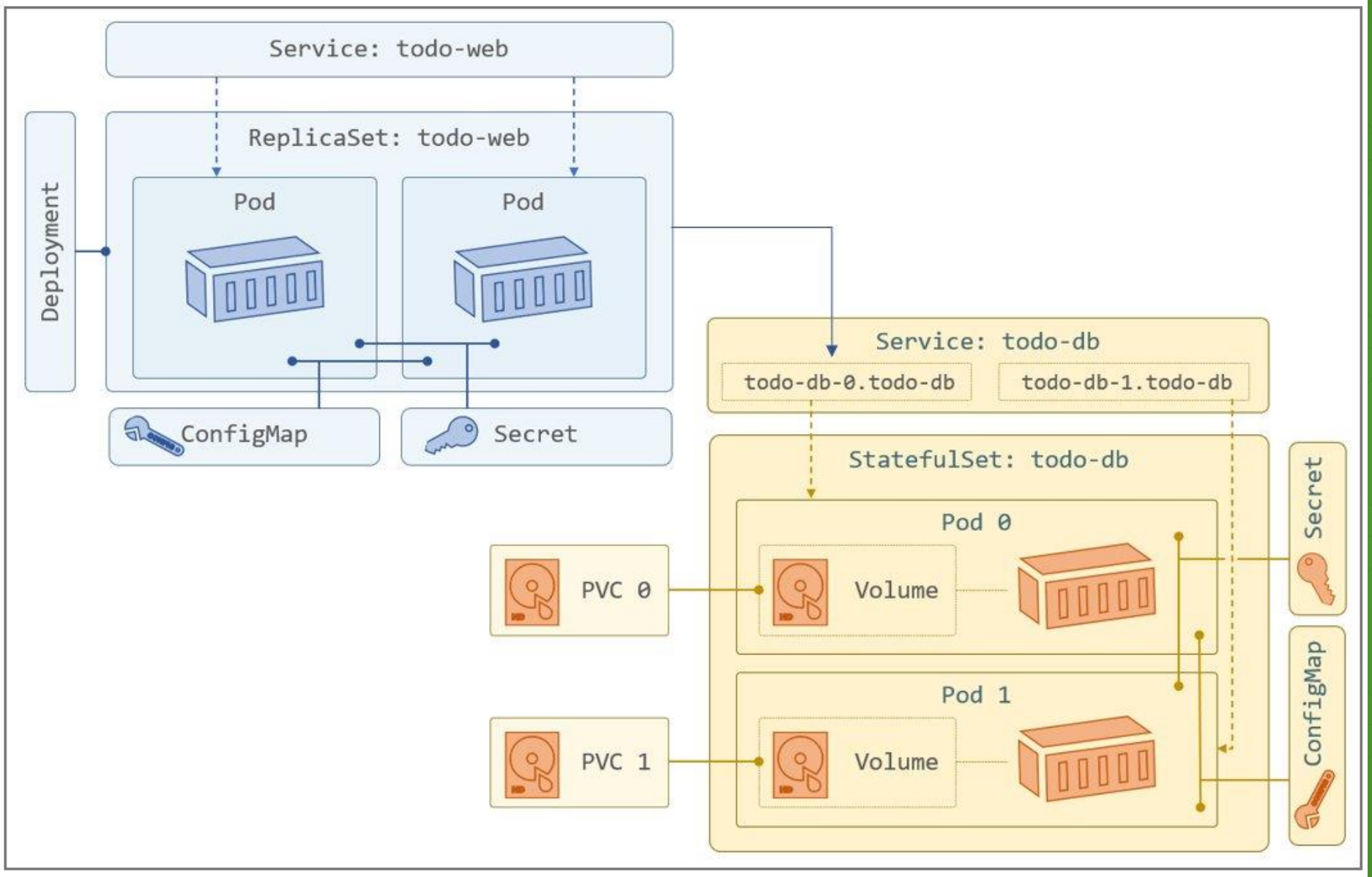
圖：https://docs.docker.com/engine/swarm/how-swarm-mode-works/nodes/

SKILLTREE
我的技能樹 – https://skilltree.my

@sahrizv

- 2014 - We must adopt #microservices to solve all problems with monoliths
- 2016 - We must adopt #docker to solve all problems with microservices
- 2018 - We must adopt #kubernetes to solve all problems with docker
- What is next?

https://twitter.com/sahrizv/status/1018184792611827712



k8s==複雜度

TodoList Project

https://twitter.com/EltonStoneman/status/1258689915707174913

SKILLTREE 我的技能樹 – https://skilltree.my

Service CDN架構



Proxy Server

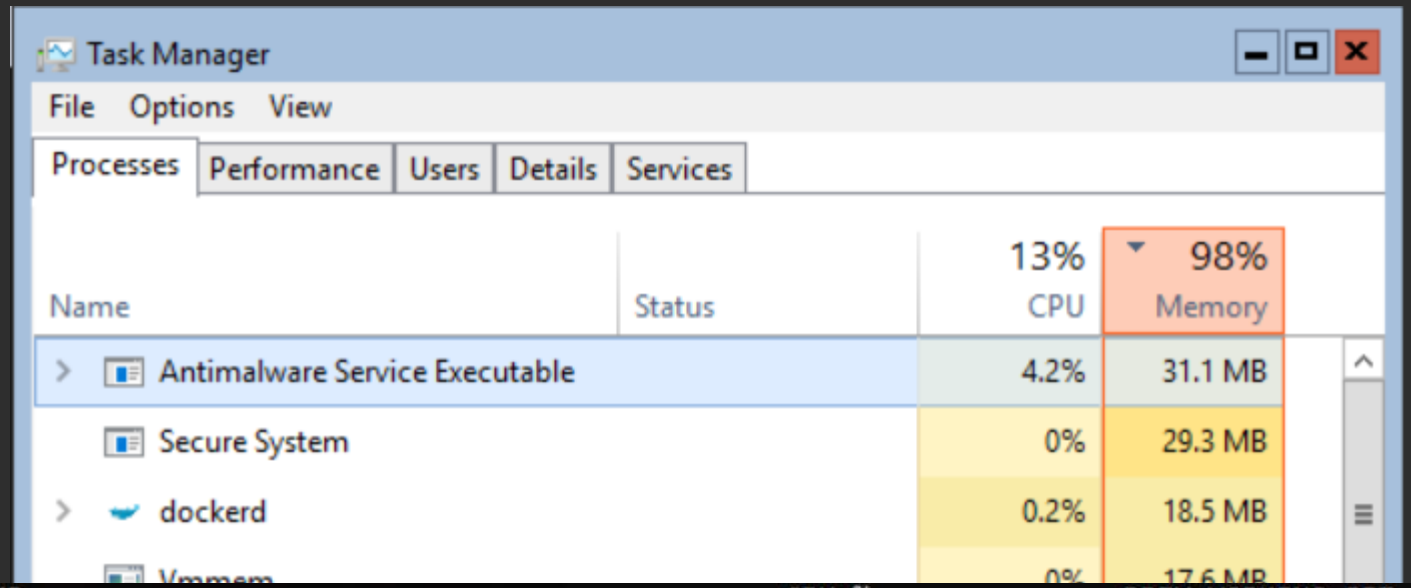
- 在 Windows 環境，NGINX 不能取代 IIS 的位置，所以通常 NGINX 很大一部分是拿來當 Proxy Server。



for Windows

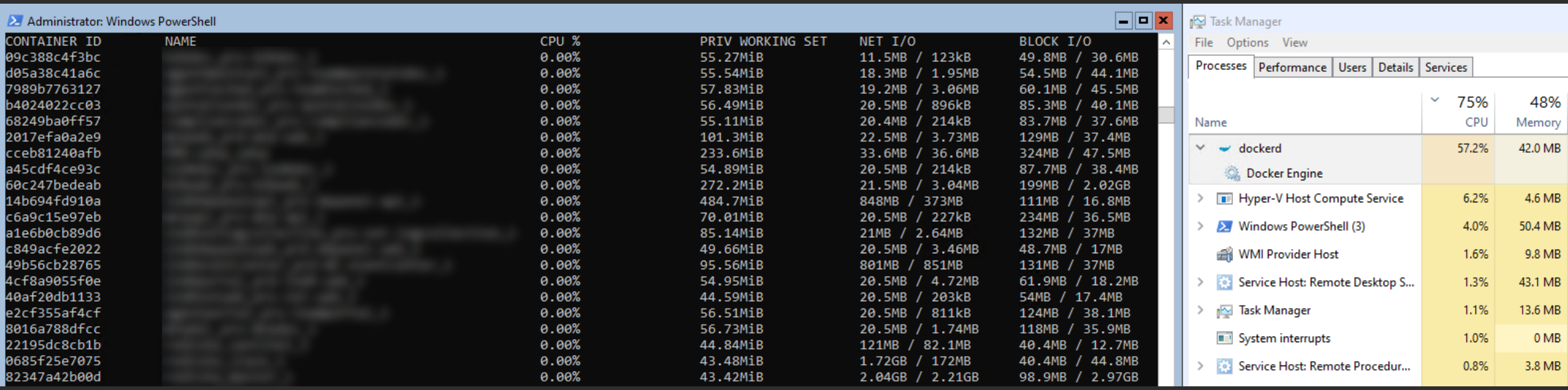
- https://hub.docker.com/u/kkbruce
  - NGINX
  - Redis
  - Redis Sentinel
  - …
- 這些都用在我們正式區。
- 使用一定有風險，導入前請自行測試與評估。

MOMERY 99%



CONTAINER ID	NAME	CPU %	PRIV WORKING SET	NET I/O	BLOCK I/O
612f3fbba66d		0.00%	47.23MiB	108kB / 3.11MB	159MB / 17.8MB
7902afd59abf		0.00%	44.7MiB	1.58MB / 486kB	29.2MB / 7.88MB
28967d28c160		0.37%	59.99MiB	28.2MB / 112MB	35.8MB / 50.8GB
d6027ae981cf		0.00%	44.42MiB	1.59MB / 489kB	29.3MB / 8.03MB
e0509640ff8e		0.19%	58.95MiB	27.8MB / 114MB	36.4MB / 50GB
96920a74e018		0.00%	44.48MiB	1.59MB / 485kB	29.2MB / 7.93MB
10b0a4792c39		0.19%	60.94MiB	28.2MB / 112MB	35.9MB / 51.7GB
cf45e3c6793c		0.00%	59.46MiB	28.1MB / 113MB	35.4MB / 51.4GB
0fe19ce5ff90		0.00%	44.57MiB	1.59MB / 484kB	29.3MB / 7.94MB
4abda8371af8		0.00%	44.54MiB	1.6MB / 491kB	29.3MB / 8.12MB
e17e02afc38d		0.00%	59.36MiB	28.3MB / 112MB	35.5MB / 51.4GB
b39de495223a		0.00%	44.45MiB	1.61MB / 490kB	29.3MB / 8.12MB
bbd55c6f132a		0.18%	59.5MiB	27.9MB / 110MB	34.6MB / 46.7GB
f8ce4d24dcfe		0.00%	43.87MiB	1.61MB / 485kB	29.3MB / 8.1MB
86c86cf1e4f2		0.18%	64.7MiB	28.4MB / 112MB	35.6MB / 49.7GB
7efb21345f63		0.37%	60.5MiB	28.3MB / 108MB	35.8MB / 50.7GB
dde63f16fb11		0.00%	44.43MiB	1.62MB / 491kB	29.4MB / 8.27MB
4cac1b203659		0.18%	59.47MiB	28.4MB / 108MB	41.7MB / 51.2GB
ba3fe596c38e		0.00%	45MiB	1.63MB / 490kB	75.5MB / 7.18MB
48fe4f339932		0.07%	225.9MiB	23.2MB / 23.3MB	13.9MB / 28.7kB

CPU 99%


Administrator: Windows PowerShell
CONTAINER ID NAME CPU % PRIV WORKING SET NET I/O BLOCK I/O
09c388c4f3bc 0.00% 55.27MiB 11.5MB / 123kB 49.8MB / 30.6MB
d05a38c41a6c 0.00% 55.54MiB 18.3MB / 1.95MB 54.5MB / 44.1MB
7989b7763127 0.00% 57.83MiB 19.2MB / 3.06MB 60.1MB / 45.5MB
b4024022cc03 0.00% 56.49MiB 20.5MB / 896kB 85.3MB / 40.1MB
68249ba0ff57 0.00% 55.11MiB 20.4MB / 214kB 83.7MB / 37.6MB
2017efa0a2e9 0.00% 101.3MiB 22.5MB / 3.73MB 129MB / 37.4MB
cceb81240afb 0.00% 233.6MiB 33.6MB / 36.6MB 324MB / 47.5MB
a45cdf4ce93c 0.00% 54.89MiB 20.5MB / 214kB 87.7MB / 38.4MB
60c247bedeab 0.00% 272.2MiB 21.5MB / 3.04MB 199MB / 2.02GB
14b694fd910a 0.00% 484.7MiB 848MB / 373MB 111MB / 16.8MB
c6a9c15e97eb 0.00% 70.01MiB 20.5MB / 227kB 234MB / 36.5MB
a1e6b0cb89d6 0.00% 85.14MiB 21MB / 2.64MB 132MB / 37MB
c849acfe2022 0.00% 49.66MiB 20.5MB / 3.46MB 48.7MB / 17MB
49b56cb28765 0.00% 95.56MiB 801MB / 851MB 131MB / 37MB
4cf8a9055f0e 0.00% 54.95MiB 20.5MB / 4.72MB 61.9MB / 18.2MB
40af20db1133 0.00% 44.59MiB 20.5MB / 203kB 54MB / 17.4MB
e2cf355af4cf 0.00% 56.51MiB 20.5MB / 811kB 124MB / 38.1MB
8016a788dfcc 0.00% 56.73MiB 20.5MB / 1.74MB 118MB / 35.9MB
22195dc8cb1b 0.00% 44.84MiB 121MB / 82.1MB 40.4MB / 12.7MB
0685f25e7075 0.00% 43.48MiB 1.72GB / 172MB 40.4MB / 44.8MB
82347a42b00d 0.00% 43.42MiB 2.04GB / 2.21GB 98.9MB / 2.97GB
Task Manager
File Options View
Processes Performance Users Details Services
Name 75% CPU 48% Memory
dockerd 57.2% 42.0 MB
Docker Engine
Hyper-V Host Compute Service 6.2% 4.6 MB
Windows PowerShell (3) 4.0% 50.4 MB
WMI Provider Host 1.6% 9.8 MB
Service Host: Remote Desktop S... 1.3% 43.1 MB
Task Manager 1.1% 13.6 MB
System interrupts 1.0% 0 MB
Service Host: Remote Procedur... 0.8% 3.8 MB

神奇 hcsshim 錯誤

問一下你在使用docker for windows有沒有遇到

hcsshim::ActivateLayer - failed failed in Win32: The process cannot access the file because it is being used by another process. (0x20)
[error=hcsshim::ActivateLayer - failed failed in Win32: The process cannot access the file because it is being used by another process. (0x20)
path=C:\ProgramData\docker\windowsfilter\7741ebfe9fcbcde2dd4b906ea21e21f52698358217bd67c708de81b91a3821f9]

最近我老是遇到這個情況...然後就非得砍了image才能重新run起來

Edward Kuo 8/11 上午11:21

Bruce Chen

2020-08-11T03:17:31.7953706Z ERROR: for qas-wf-web failed to register layer: re-exec error: exit status 1: output: time="2020-08-10T20:17:31-07:00" level=error msg="hcsshim::ImportLayer - failed failed in Win32: An attempt was made to create more links on a file than the file system supports. (0x476)" error="hcsshim::ImportLayer - failed failed in Win32: An attempt was made to create more links on a file than the file system supports. (0x476)" importFolderPath="D:\\docker\\tmp\\hcs81437 1075" path="\\\\?\\D:\\docker\\windowsfilter\\4ab227aebd09fc037909caa017b49f6ca8ccdc1b45ed23ceb8565f15b70c0e2b"
2020-08-11T03:17:31.7955203Z hcsshim::ImportLayer - failed failed in Win32: An attempt was made to create more links on a file than the file system supports. (0x476)
2020-08-11T03:17:31.7956534Z failed to register layer: re-exec error: exit status 1: output: time="2020-08-10T20:17:31-07:00" level=error msg="hcsshim::ImportLayer - failed failed in Win32: An attempt was made to create more links on a file than the file system supports. (0x476)" error="hcsshim::ImportLayer - failed failed in Win32: An attempt was made to create more links on a file than the file system supports. (0x476)" importFolderPath="D:\\docker\\tmp\\hcs81437 1075" path="\\\\?\\D:\\docker\\windowsfilter\\4ab227aebd09fc037909caa017b49f6ca8ccdc1b45ed23ceb8565f15b70c0e2b"
2020-08-11T03:17:31.7957878Z hcsshim::ImportLayer - failed failed in Win32: An attempt was made to create more links on a file

Bruce Chen 2004

2020-10-19T02:05:55.5041771Z Docker Host :twqasdocker03.tw.kingston.corp

2020-10-19T02:05:55.5043461Z Docker File [redacted]r17\a\IaC\MRPAPI\docker-compose-debug2004.yml

2020-10-19T02:05:55.5067115Z Docker-compose pull [redacted]

2020-10-19T02:05:57.6405356Z Creating [redacted]

2020-10-19T02:05:57.6406200Z

2020-10-19T02:06:28.6851689Z [1A[2K

2020-10-19T02:06:28.6854949Z [redacted]

2020-10-19T02:06:28.6856357Z [1B

2020-10-19T02:06:28.6857563Z ERROR: for [redacted]Cannot start service dev-mrp-api: container 5014fa39c34b758e718de76d6b7014a2ebcc93ee13879839e22f9e15183a25c6 encountered an error during hcsshim::System::Start: failure in a Windows system call: The virtual machine or container exited unexpectedly. (0xc0370106)

2020-10-19T02:06:28.6858907Z

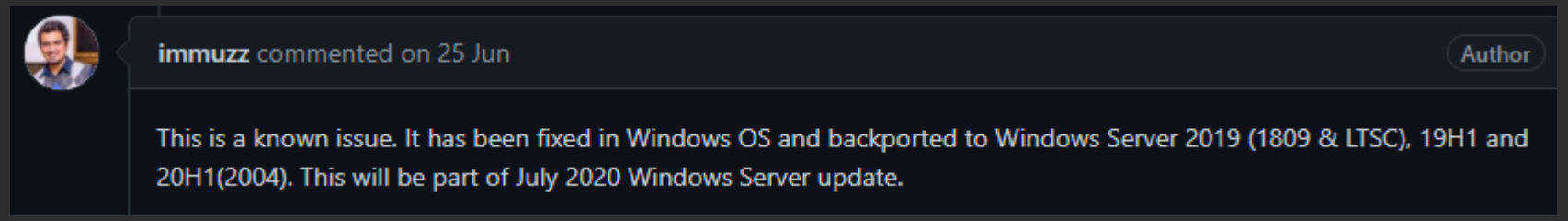
2020-10-19T02:06:28.6859975Z ERROR: for dev-mrp-api Cannot start service dev-mrp-api: container 5014fa39c34b758e718de76d6b7014a2ebcc93ee13879839e22f9e15183a25c6 encountered an error during hcsshim::System::Start: failure in a Windows system call: The virtual machine or container exited unexpectedly. (0xc0370106)

2020-10-19T02:06:28.6861122Z Encountered errors while bringing up the project.

查看較少

已知問題

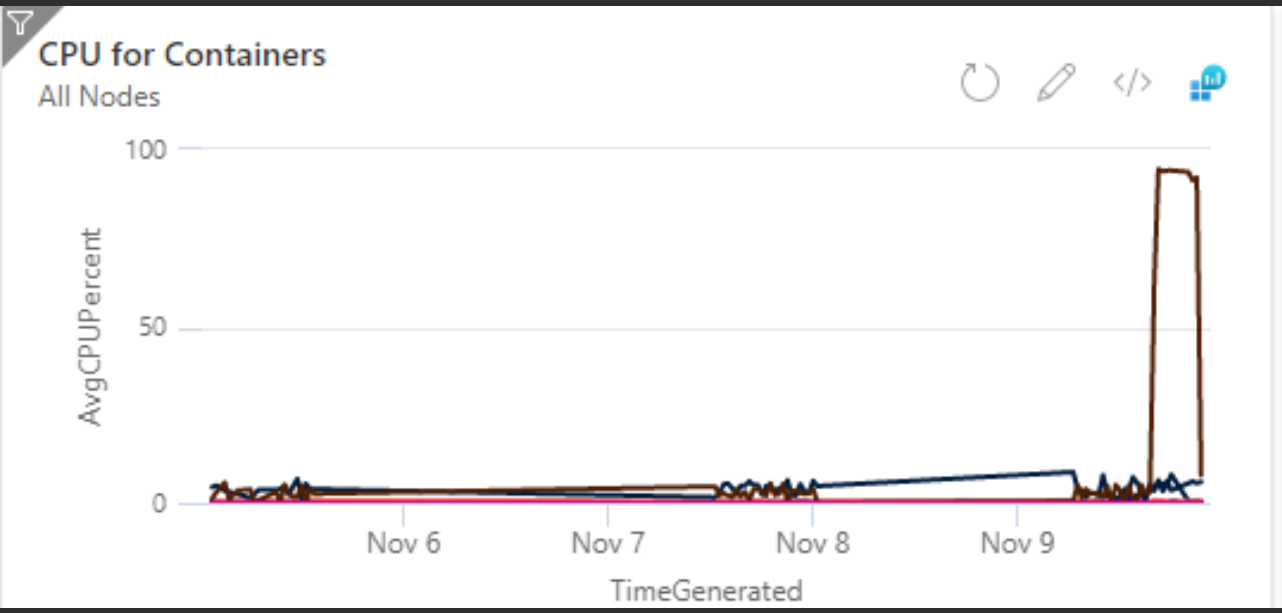
- https://github.com/microsoft/Windows-Containers/issues/38

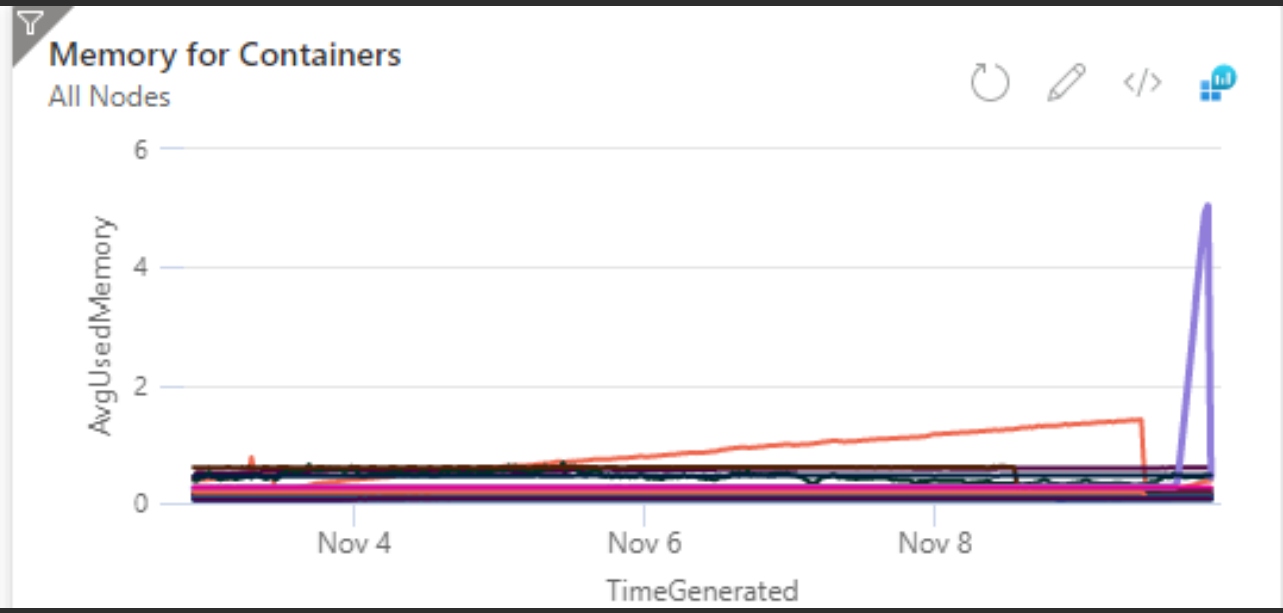


- 另一種解法：定時清理
  - https://blog.kkbruce.net/2020/05/importlayer-failed-in-win32-system.html



Containers Monitor

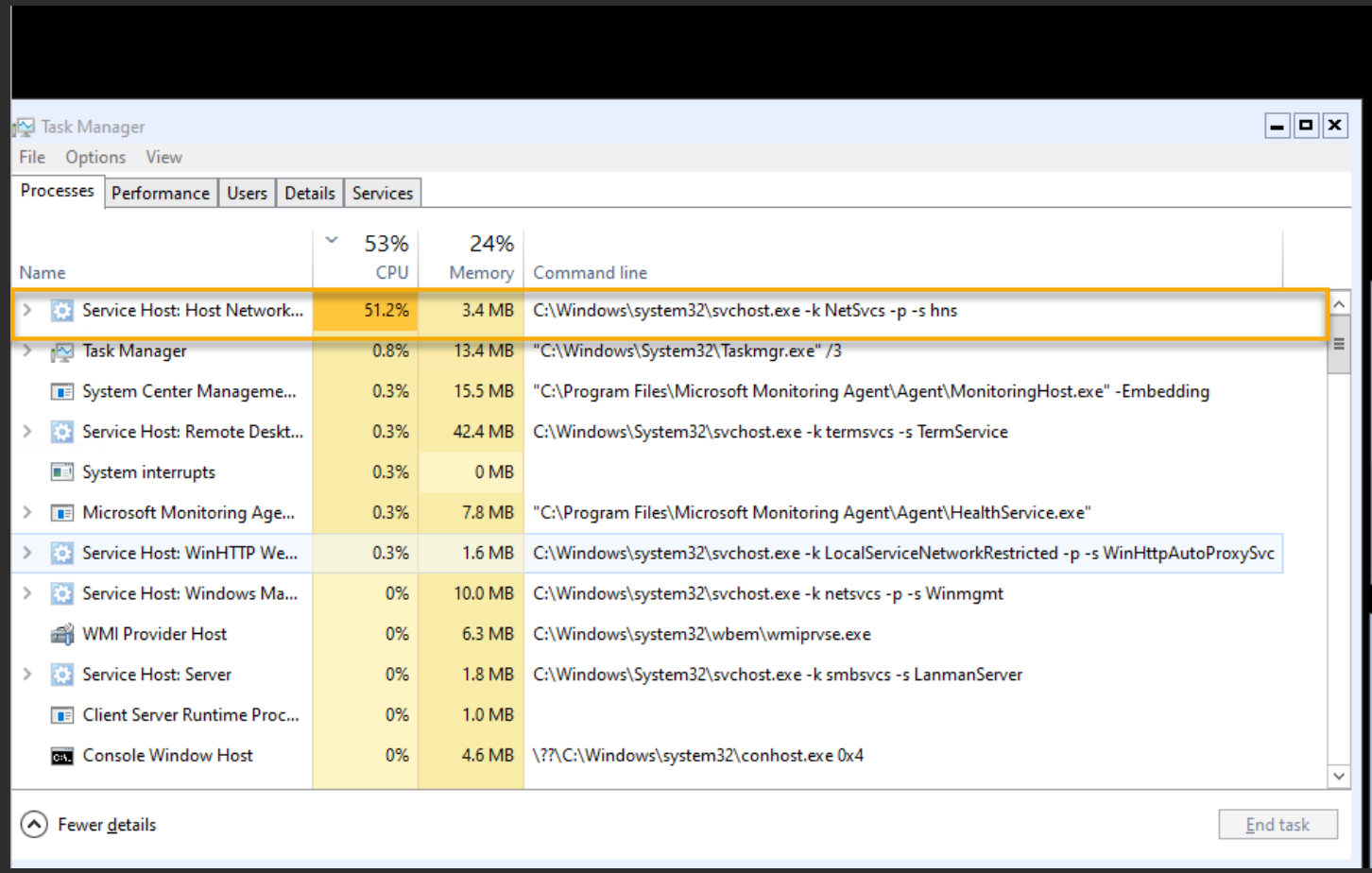


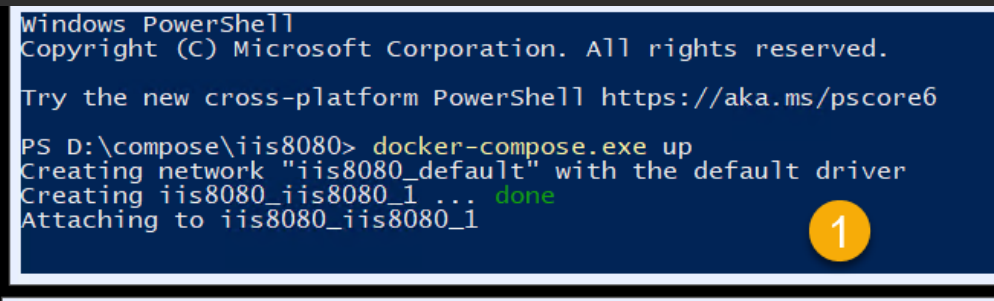


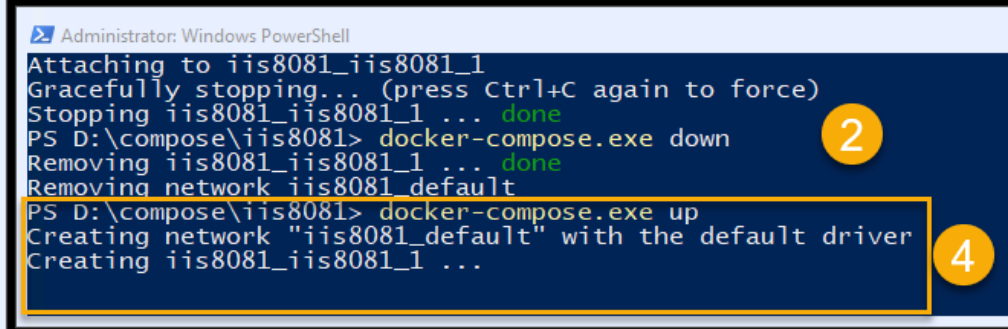
注意

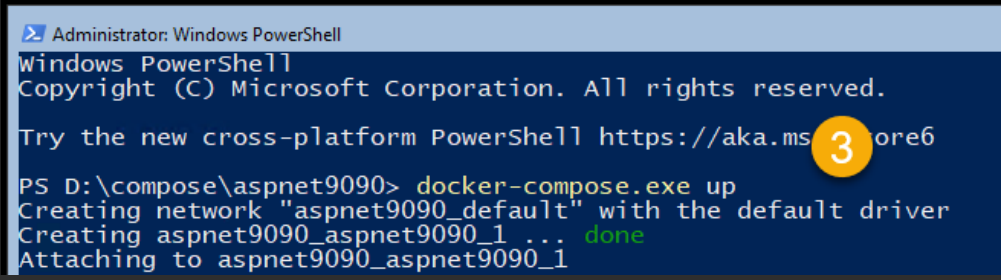
- 應用程式記憶體的使用。
- 應用程式多執行緒的使用。
  - 盡量採用非同步。
- 小心，大量的Disk I/O行為。

Server 2004 專屬 HNS – CPU High Bug









Server 2004

- https://github.com/microsoft/Windows-Containers/issues/53
- https://blog.kkbruce.net/2020/09/server2004-docker-multi-nat-hns-cpu-high.html

