

Procedures

1. Create a user-defined nat driver network

```
C:\>docker network create -d nat csnetwork
3e2ec4389d53e02883da97134f9229b859a528d74d26a71a6b69717a8d6d30e4
```

2. Build the server image using: `docker build -t myserverimage`.
3. Create a server container and link it with the csnetwork.

```
>docker run --name serverContainer --network csnetwork -it myserverimage
```

4. Check the subnet of serverContainer using: `docker network inspect csnetwork`
5. Copy the IPv4 address and paste it on your client program.

```
"Name": "serverContainer",
"EndpointID": "aeccea19815908c344eae006753cb62c9f8ba7117cf1f80915acee17405c37b8",
"MacAddress": "00:15:5d:df:b1:a6",
"IPv4Address": "172.25.62.201/16",
"IPv6Address": ""
```

6. Rebuild the client program and replace the client exe file in your dockerfile directory
7. Build the client image using: `docker build -t myclientimage`.
8. Create and run your client container: `docker run --name clientContainer --network csnetwork -it myclientimage`

```
C:\MyClient>docker run --name clientContainer --network csnetwork -it myclientimage
```

9. In your server container, execute `MyServer.exe`

```
C:\> Administrator: Command Prompt - docker run --name serverContainer --network csnetwork -it myserverimage
```

```
Microsoft Windows [Version 10.0.14393]
(c) 2016 Microsoft Corporation. All rights reserved.

C:\serverApp>dir
Volume in drive C has no label.
Volume Serial Number is 824A-9F6B

Directory of C:\serverApp

03/13/2019  09:10 AM    <DIR>          .
03/13/2019  09:10 AM    <DIR>          ..
03/13/2019  09:09 AM                15,872 MyServer.exe
               1 File(s)                15,872 bytes
               2 Dir(s)  21,197,709,312 bytes free

C:\serverApp>MyServer.exe
Welcome to server!
```

10. In your client container, execute MyClient.exe

CA% Administrator: Command Prompt - docker run --name clientContainer --network csnetwork -it myclientimage

```
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C:\clientApp>dir
Volume in drive C has no label.
Volume Serial Number is 824A-9F6B

Directory of C:\clientApp

03/13/2019  11:36 AM    <DIR>          .
03/13/2019  11:36 AM    <DIR>          ..
03/13/2019  11:34 AM                16,384 MyClient.exe
               1 File(s)                16,384 bytes
               2 Dir(s)  21,142,925,312 bytes free

C:\clientApp>MyClient.exe
```

11. Both containers can now communicate

CA% Administrator: Command Prompt - docker run --name clientContainer --network csnetwork -it myclientimage

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               1 File(s)                16,384 bytes
               2 Dir(s)  21,142,925,312 bytes free

C:\clientApp>MyClient.exe
> hello
SERVER: hello
>
```

Administrator: Command Prompt - docker run --name clientContainer --network csnetwork -it myclientimage

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C:\clientApp>dir

Volume in drive C has no label.

Volume Serial Number is 824A-9F6B

Directory of C:\clientApp

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03/13/2019  11:36 AM    <DIR>          .
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03/13/2019  11:34 AM                16,384 MyClient.exe
               1 File(s)                16,384 bytes
               2 Dir(s)  21,142,925,312 bytes free
```

C:\clientApp>MyClient.exe

> hello

SERVER: hello

>

Administrator: Command Prompt - docker run --name serverContainer --network csnetwork -it myserverimage

Microsoft Windows [Version 10.0.14393]

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C:\serverApp>dir

Volume in drive C has no label.

Volume Serial Number is 824A-9F6B

Directory of C:\serverApp

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03/13/2019  09:10 AM    <DIR>          .
03/13/2019  09:10 AM    <DIR>          ..
03/13/2019  09:09 AM                15,872 MyServer.exe
               1 File(s)                15,872 bytes
               2 Dir(s)  21,197,709,312 bytes free
```

C:\serverApp>MyServer.exe

Welcome to server!

clientContainer.csnetwork connected on port 49158

hello

DockerFiles

Client:

FROM mcr.microsoft.com/windows/servercore

WORKDIR /clientApp

COPY MyClient.exe /clientApp

RUN Powershell.exe -Command \

\$ErrorActionPreference = 'Stop'; \

\$ProgressPreference = 'SilentlyContinue'; \

Invoke-WebRequest https://download.microsoft.com/download/9/3/F/93FCF1E7-E6A4-478B-96E7-D4B285925B00/vc_redist.x86.exe \

-OutFile 'c:\vc_redist.x86.exe' ; \

Start-Process c:\vc_redist.x86.exe -ArgumentList '/quiet' -

```
RedirectStandardOutput 'c:\Windows\System32' -Wait ; \  
Remove-Item c:\vc_redist.x86.exe -Force  
EXPOSE 3456  
ENTRYPOINT [ "cmd" ]
```

Server:

```
#Import base image ms windows server core  
FROM mcr.microsoft.com/windows/servercore  
#Create a working dir to run server.exe  
WORKDIR /serverApp  
#Copy MyServer.exe to curre  
COPY MyServer.exe /serverApp  
RUN Powershell.exe -Command \  
$ErrorActionPreference = 'Stop'; \  
$ProgressPreference = 'SilentlyContinue'; \  
Invoke-WebRequest https://download.microsoft.com/download/9/3/F/93FCF1E7-E6A4-478B-96E7-D4B285925B00/vc_redist.x86.exe \  
-OutFile 'c:\vc_redist.x86.exe' ; \  
Start-Process c:\vc_redist.x86.exe -ArgumentList '/passive' \  
-RedirectStandardOutput 'c:\Windows\System32' -Wait ; \  
Remove-Item c:\vc_redist.x86.exe -Force  
#expose port for communication  
EXPOSE 3456  
#RUN Command prompt  
ENTRYPOINT [ "cmd" ]
```