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Build and Customize Container Image in wi

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Build and Customize Container Image in windows 2016

In this blog, we will show you how to Build and Customize Container Image in windows 2016 using docker co

OVERVIEW

When we planned to create our own customized image, there are two options available. Either manually or a manual process, launch a container, customize it and save it.

For automation, we need to use the **docker file**. It contains all the customize code that we need to build an image, a great way to store the container image as a code.

BUILDING CUSTOMIZE IMAGE MANUALLY

- ♦ Create a new container using below command.

Example: `docker run -it microsoft/nanoserver powershell`



([https://www.assistanz.com/wp-](https://www.assistanz.com/wp-content/uploads/2017/04/image-49.png)

[content/uploads/2017/04/image-49.png](https://www.assistanz.com/wp-content/uploads/2017/04/image-49.png))

- ♦ Once you get inside the container, we are creating a test file for testing purpose. To create a file and add a value below command.

Example: `New-Item -ItemType file -Name test.txt -Value assistanz`

```
PS C:\> New-Item -ItemType file -Name test.txt -Value assistanz

Directory: C:\

Mode                LastWriteTime         Length Name
----                -
-a-----         4/5/2017   2:44 AM             9 test.txt

PS C:\> type test.txt
assistanz
PS C:\> _
```

(<https://www.assistanz.com/wp-content/uploads/2017/04/image-50.png>)

- ◆ Now disconnect the container by pressing **CTRL+PQ** keys.
- ◆ To view running containers, type the below command.

docker ps

```
PS C:\> docker ps
CONTAINER ID   IMAGE                COMMAND              CREATED        STATUS        PORTS
aa1eb16f5c6b   microsoft/nanoserver "powershell"        2 minutes ago Up 2 minutes
```

(<https://www.assistanz.com/wp-content/uploads/2017/04/image-51.png>)

- ◆ To stop the container, execute the below command.

Example: docker stop 6d

```
PS C:\> docker stop aa
aa
PS C:\> _
```

(<https://www.assistanz.com/wp-content/uploads/2017/04/in>)

- ◆ To build a customize image, type the below command.

docker commit aa my-nano-image

([HTTPS://WWW.ASSISTANZ.COM/](https://www.assistanz.com/))

- ◆ Now you can launch the new container using this customize image.

```
PS C:\> docker images
REPOSITORY          TAG          IMAGE ID      CREATED        SIZE
my-nano-image       latest      8dae7e67ff95  4 minutes ago  1.04 GB
microsoft/windowsservercore latest      b4713e4d8bab  3 weeks ago   10.1 GB
microsoft/nanoserver 10.0.14393.953 18a0d32a4b98  3 weeks ago   1 GB
microsoft/nanoserver latest      18a0d32a4b98  3 weeks ago   1 GB
PS C:\>
```

(<https://www.assistanz.com/wp-content/uploads/2017/04/image-54.png>)

- ◆ To view the history of the images, execute the below command.

Example: docker history my-nano-image

```
PS C:\> docker history my-nano-image
IMAGE          CREATED          CREATED BY          SIZE          COMMENT
8dae7e67ff95   8 minutes ago   powershell         701 MB
PS C:\>
```

(<https://www.assistanz.com/wp-content/uploads/2017/04/image-55.png>)

In this, you can see one custom layer stacked on top of nano server base OS image.

PREPARING SCRIPTS FOR BUILDING CONTAINER IMAGE

- ◆ Create a new folder named **web** under C: drive.

```
Administrator: Windows PowerShell (2)
PS C:\> mkdir web

Directory: C:\

Mode                LastWriteTime         Length Name
----                -
d-----         4/5/2017   3:17 AM              web

PS C:\> _
```

([https://www.assistanz.com/wp-](https://www.assistanz.com/wp-content/uploads/2017/04/image-56.png)

[content/uploads/2017/04/image-56.png](https://www.assistanz.com/wp-content/uploads/2017/04/image-56.png))

- ◆ Go-to web folder and create a new **docker** file using below command.

New-Item -ItemType file -Name dockerfile

```
PS C:\web> New-Item -ItemType file -Name dockerfile

Directory: C:\web

Mode                LastWriteTime         Length Name
----                -
-a-----         4/5/2017   3:32 AM              0 dockerfile

PS C:\web> _
```

([https://www.assistanz.com/wp-](https://www.assistanz.com/wp-content/uploads/2017/04/image-57.png)

[content/uploads/2017/04/image-57.png](https://www.assistanz.com/wp-content/uploads/2017/04/image-57.png))

Note: The filename should not contain any extension

- ◆ Open the file in the notepad and paste the below code.

Sample Dockerfile to build a Windows Web Server

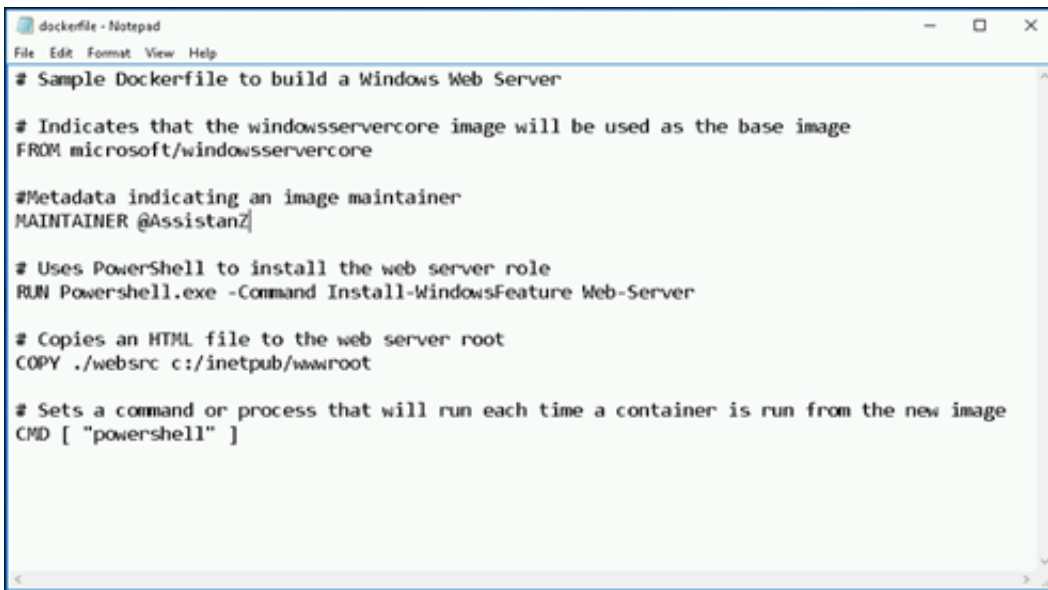
*# Indicates that the windowsservercore image will be used as the base image
FROM microsoft/windowsservercore*

*#Metadata indicating an image maintainer
MAINTAINER @AssistanZ*

*# Uses PowerShell to install the web server role
RUN Powershell.exe -Command Install-WindowsFeature Web-Server*

*# Copies an HTML file to the web server root
COPY ./websrc c:/inetpub/wwwroot*

*# Sets a command or process that will run each time a container is run from the new image
CMD ["powershell"]*

A screenshot of a Notepad window titled "dockerfile - Notepad". The window contains the following text:

```
# Sample Dockerfile to build a Windows Web Server

# Indicates that the windowsservercore image will be used as the base image
FROM microsoft/windowsservercore

#Metadata indicating an image maintainer
MAINTAINER @AssistanZ

# Uses PowerShell to install the web server role
RUN Powershell.exe -Command Install-WindowsFeature Web-Server

# Copies an HTML file to the web server root
COPY ./websrc c:/inetpub/wwwroot

# Sets a command or process that will run each time a container is run from the new image
CMD [ "powershell" ]
```

(<https://www.assistanz.com/wp>

content/uploads/2017/04/image-58.png)

In the docker file, # symbol used to describe the comment what this command does.

FROM microsoft/windowsservercore – It indicates which operating system image should be used.

MAINTAINER @AssistanZ – This is the optional command. It used to give metadata to indicate that who is m image.

RUN Powershell.exe -Command Install-WindowsFeature Web-Server – It will start a process called pow deploy the web server role.

COPY ./websrc c:/inetpub/wwwroot – Copy the files into the container image during the build process. It l folder named **websrc** and copies everything from that folder to

c:/inetpub/wwwroot inside the container. It's a great way to inject a data or file inside container image during process.

CMD ["powershell"] – It asks the container to run a process anytime you run a container from this image. PowerShell command window.

- ♦ Create a folder named **websrc** under c:\web folder using below command.

mkdir websrc

```
PS C:\web> mkdir websrc

Directory: C:\web

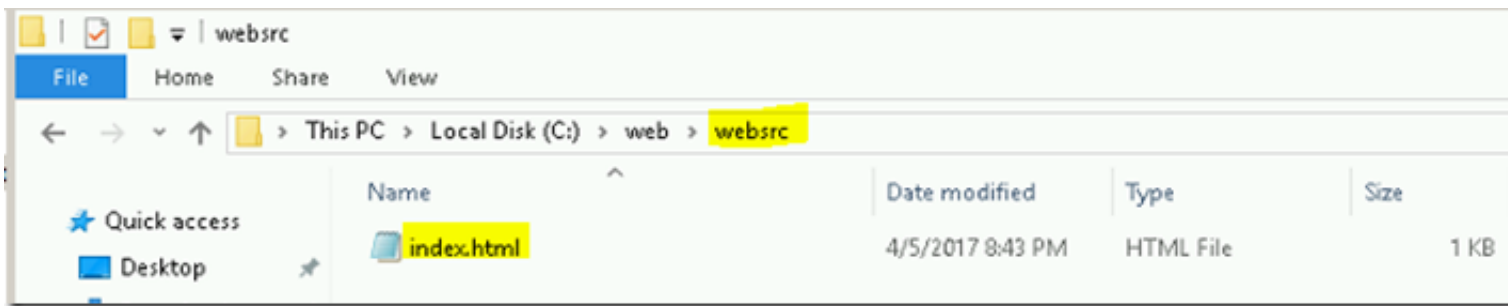
Mode                LastWriteTime         Length Name
----                -
d-----         4/5/2017   8:40 PM              websrc

PS C:\web> _
```

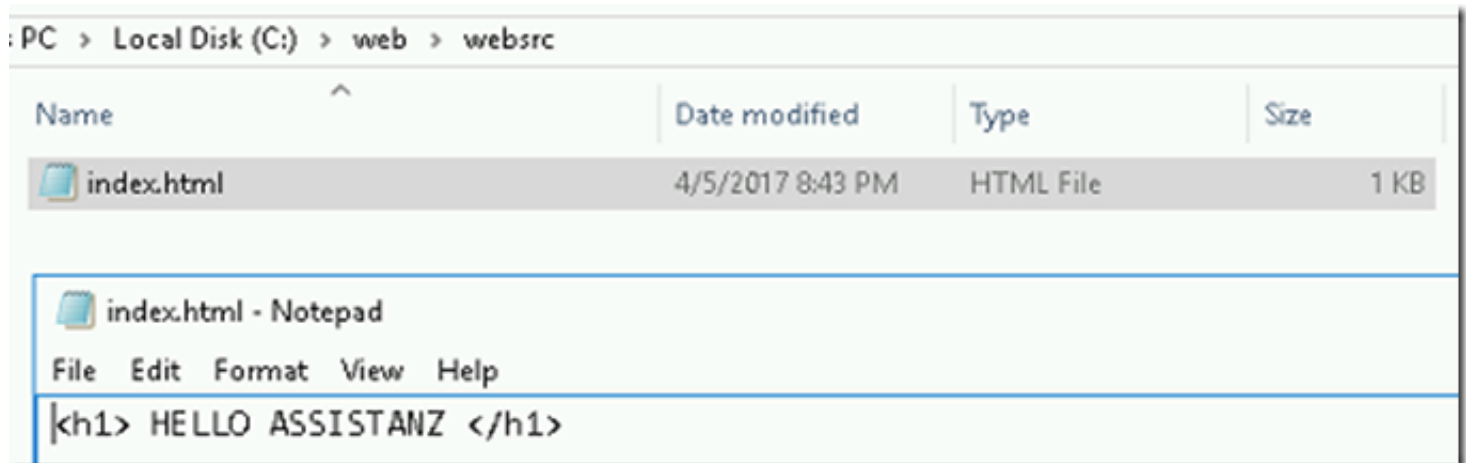
(<https://www.assistanz.com>

content/uploads/2017/04/image-59.png)

- ♦ Create an index.html file and few contents in it.



(<https://www.assistanz.com/wp-content/uploads/2017/04/image-60.png>)



(<https://www.assistanz.com/wp-content/uploads/2017/04/image-61.png>)

BUILDING CONTAINER IMAGE

- ♦ Go to PowerShell command window and execute the below command.

docker build -t web c:\web

docker – command for containers.

build – It's a sub-option to build container images.

-t - To name and tag the container image.

c:\web - Path for the **docker** file.

Once you hit the command it will take few minutes to complete the build.

- ◆ After completion, it will show the below result.

```
PS C:\> docker build -t web c:\web
Sending build context to Docker daemon 4.096 kB
Step 1/5 : FROM microsoft/windowsservercore
--> b4713e4d8bab
Step 2/5 : MAINTAINER @AssistanZ
--> Running in ff26ecf41b8d
--> cd25b557235a
Removing intermediate container ff26ecf41b8d
Step 3/5 : RUN Powershell.exe -Command Install-WindowsFeature Web-Server
--> Running in 9f67ec786dde

Success Restart Needed Exit Code      Feature Result
-----
True      No                Success          {Common HTTP Features, Default Documen...

--> 666219e86f8f
Removing intermediate container 9f67ec786dde
Step 4/5 : COPY ./websrc c:/inetpub/wwwroot
--> 910967fd4fb5
Removing intermediate container 422c2bfcafa3
Step 5/5 : CMD powershell
--> Running in a39677cbe79b
--> 271e1112c100
Removing intermediate container a39677cbe79b
Successfully built 271e1112c100
PS C:\> _
```

(<https://www.assistanz.com/wp-content/uploads/2017/04/image-62.png>)

- ◆ You can able to view our new container images in the image list.

```
PS C:\> docker images
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE
web                 latest             271e1112c100       27 minutes ago     10.4 GB
my-nano-image       latest            8dae7e67ff95       18 hours ago       1.04 GB
microsoft/windowsservercore latest           b4713e4d8bab       4 weeks ago        10.1 GB
microsoft/nanoserver 10.0.14393.953    18a0d32a4b98       4 weeks ago        1 GB
microsoft/nanoserver latest           18a0d32a4b98       4 weeks ago        1 GB
PS C:\> _
```

(<https://www.assistanz.com/wp-content/uploads/2017/04/image-63.png>)

- ◆ If we run **docker history web** command, we will see four layers on top of container OS image.

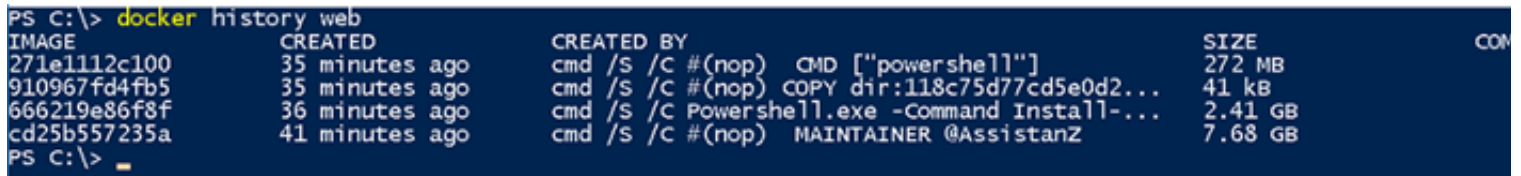


IMAGE	CREATED	CREATED BY	SIZE	COM
271e1112c100	35 minutes ago	cmd /S /C #(nop) CMD ["powershell"]	272 MB	
910967fd4fb5	35 minutes ago	cmd /S /C #(nop) COPY dir:118c75d77cd5e0d2...	41 kB	
666219e86f8f	36 minutes ago	cmd /S /C Powershell.exe -Command Install-...	2.41 GB	
cd25b557235a	41 minutes ago	cmd /S /C #(nop) MAINTAINER @AssistanZ	7.68 GB	

(<https://www.assistanz.com/wp-content/uploads/2017/04/image-64.png>)

- ◆ Basically, we are having every layer for each command and it's important concept to understand it. Every command in a Dockerfile is going to create a new layer inside the image.
- ◆ For complex Dockerfiles, we need to optimize the process to make more efficient during image building process.

VIDEO