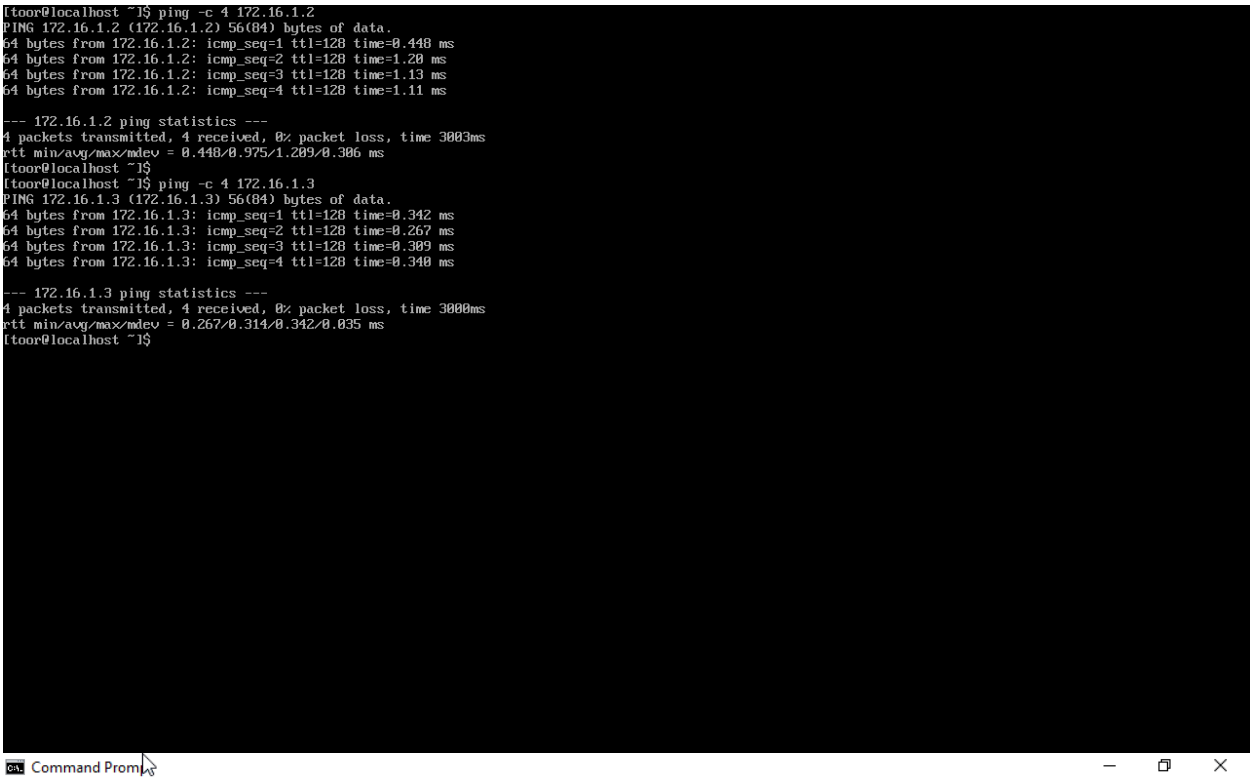
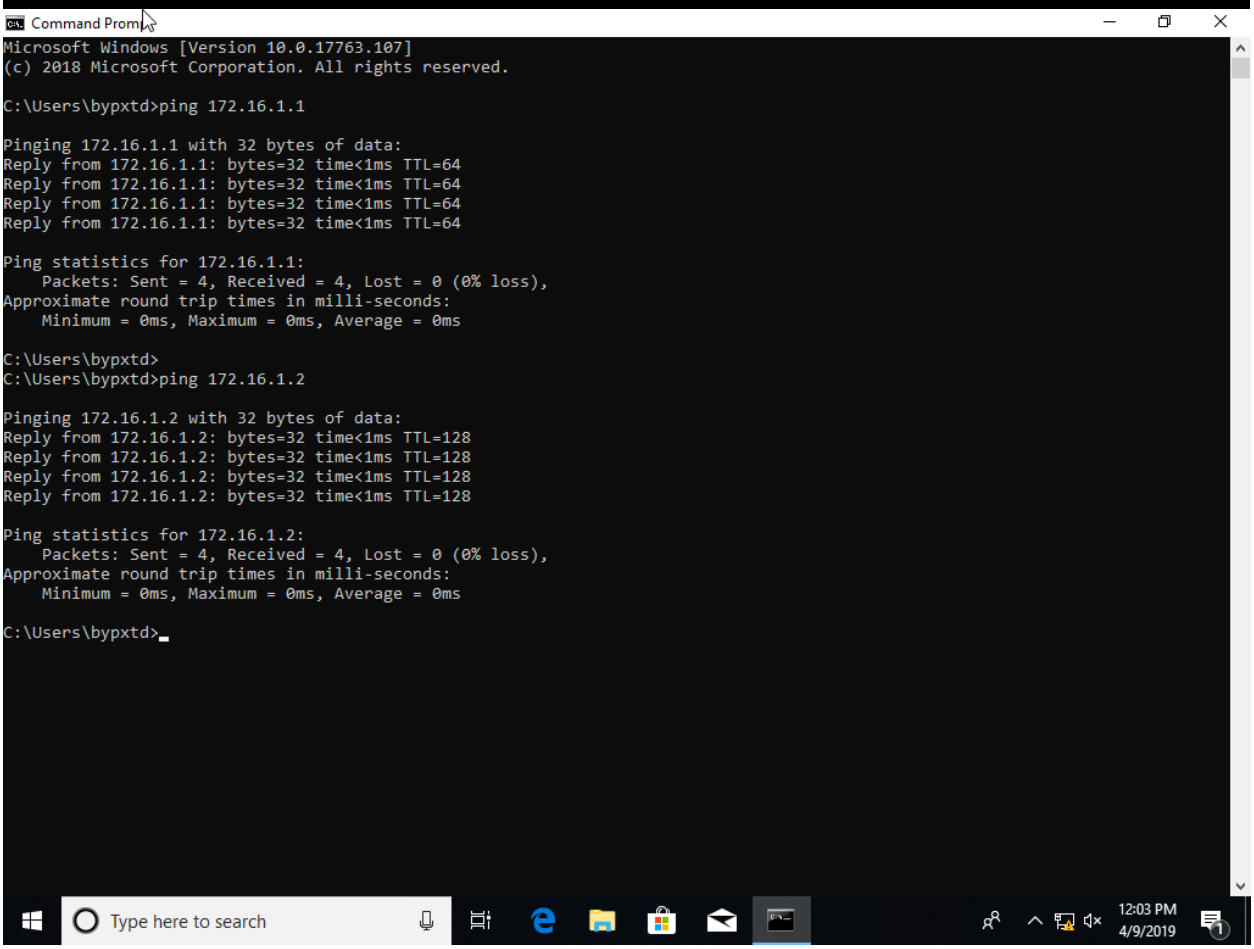
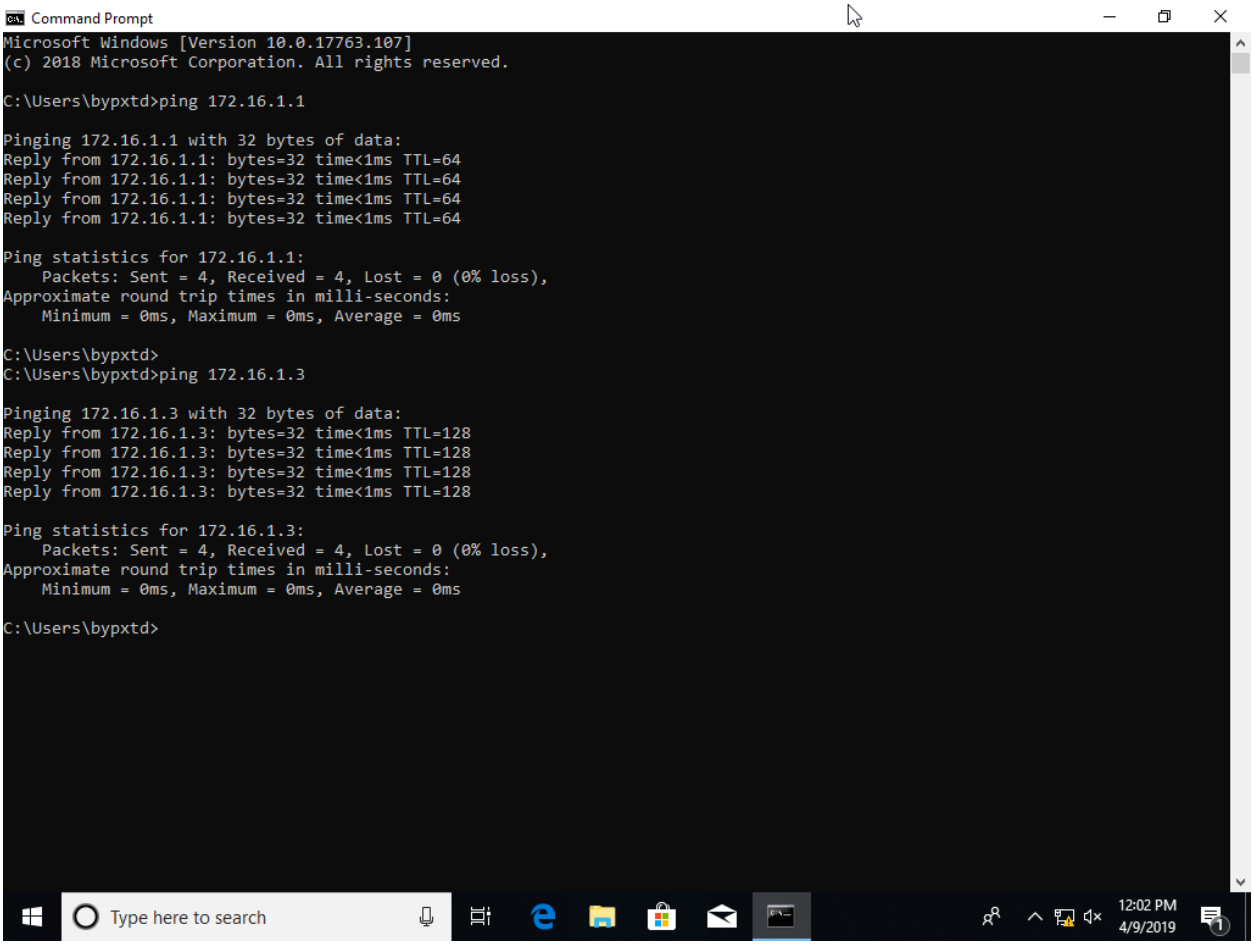
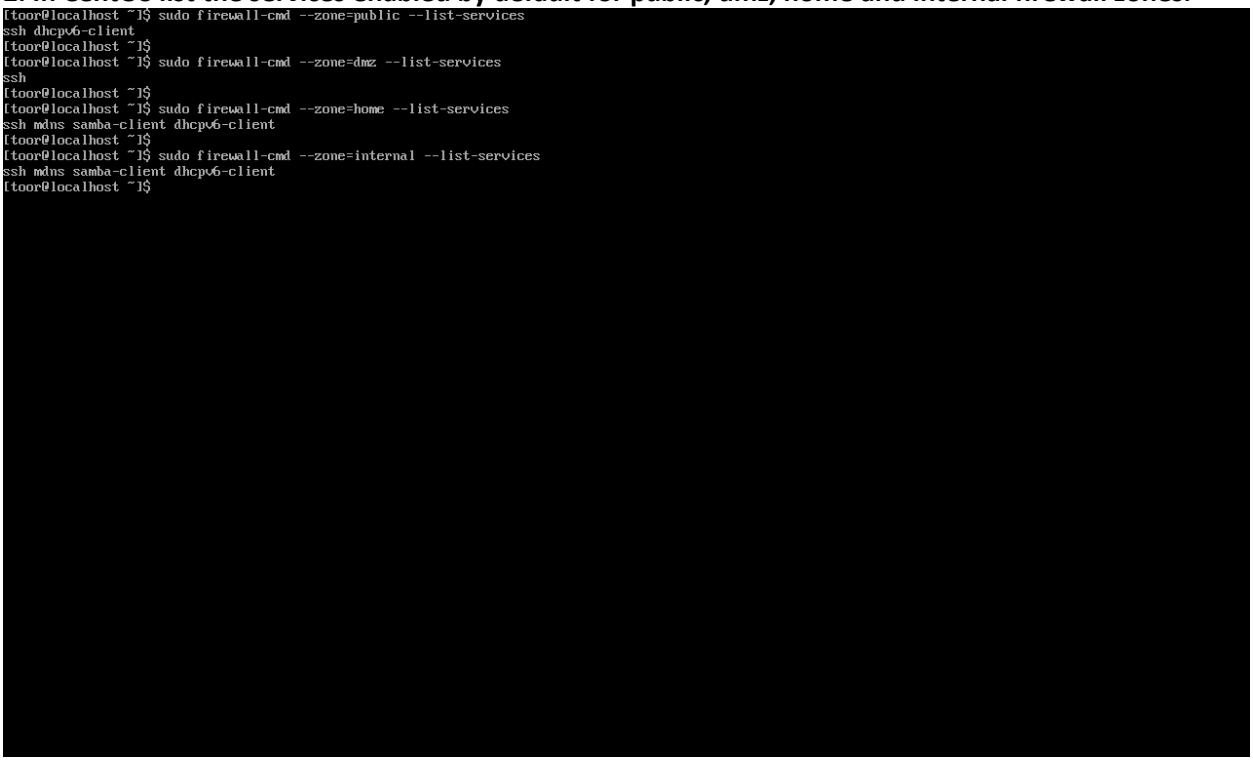
1. Use the ping command to successfully send 4 ICMP packets among all the three VMs in order to demonstrate that you completed steps in III. Activity


[toor@localhost ~]$ ping -c 4 172.16.1.2
PING 172.16.1.2 (172.16.1.2) 56(84) bytes of data.
64 bytes from 172.16.1.2: icmp_seq=1 ttl=128 time=0.448 ms
64 bytes from 172.16.1.2: icmp_seq=2 ttl=128 time=1.20 ms
64 bytes from 172.16.1.2: icmp_seq=3 ttl=128 time=1.13 ms
64 bytes from 172.16.1.2: icmp_seq=4 ttl=128 time=1.11 ms
--- 172.16.1.2 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3003ms
rtt min/avg/max/mdev = 0.448/0.975/1.209/0.306 ms
[toor@localhost ~]$
[toor@localhost ~]$ ping -c 4 172.16.1.3
PING 172.16.1.3 (172.16.1.3) 56(84) bytes of data.
64 bytes from 172.16.1.3: icmp_seq=1 ttl=128 time=0.342 ms
64 bytes from 172.16.1.3: icmp_seq=2 ttl=128 time=0.267 ms
64 bytes from 172.16.1.3: icmp_seq=3 ttl=128 time=0.309 ms
64 bytes from 172.16.1.3: icmp_seq=4 ttl=128 time=0.340 ms
--- 172.16.1.3 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3000ms
rtt min/avg/max/mdev = 0.267/0.314/0.342/0.035 ms
[toor@localhost ~]$

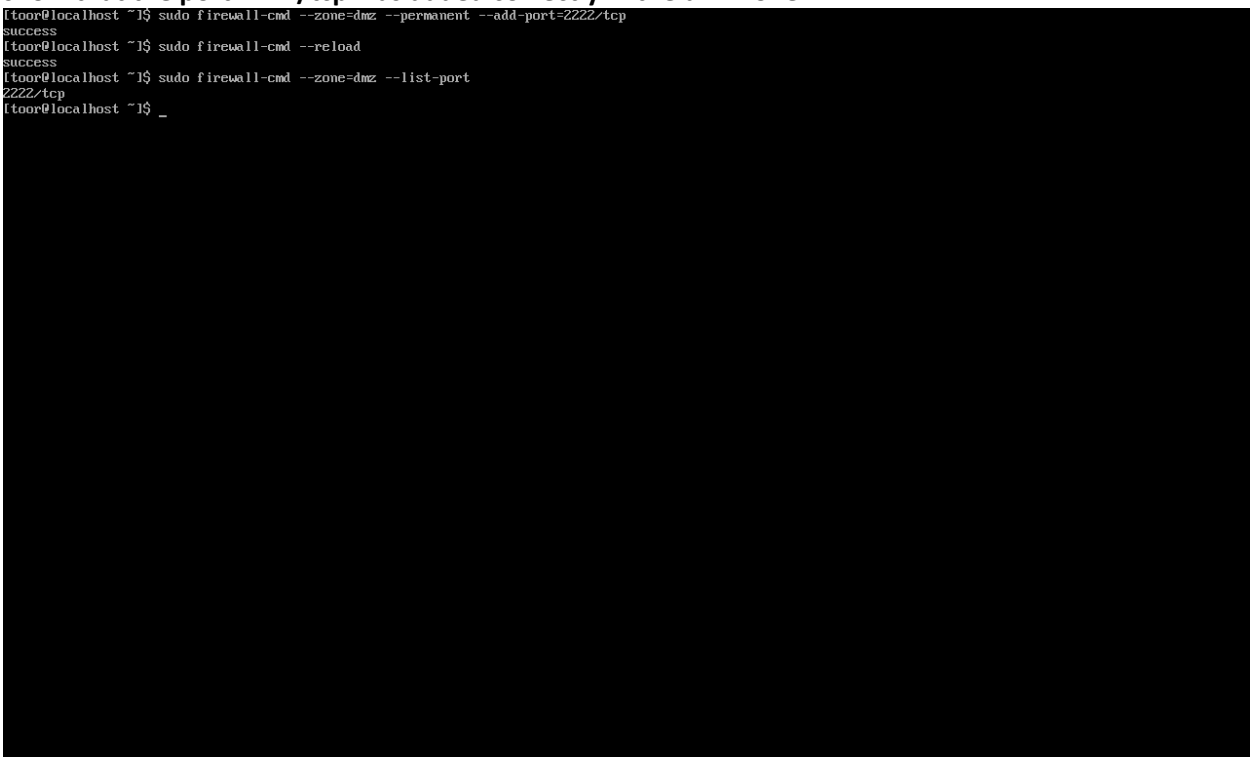

Command Prom
Microsoft Windows [Version 10.0.17763.107]
(c) 2018 Microsoft Corporation. All rights reserved.
C:\Users\bypxtd>ping 172.16.1.1
Pinging 172.16.1.1 with 32 bytes of data:
Reply from 172.16.1.1: bytes=32 time<1ms TTL=64
Reply from 172.16.1.1: bytes=32 time<1ms TTL=64
Reply from 172.16.1.1: bytes=32 time<1ms TTL=64
Reply from 172.16.1.1: bytes=32 time<1ms TTL=64
Ping statistics for 172.16.1.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\Users\bypxtd>
C:\Users\bypxtd>ping 172.16.1.2
Pinging 172.16.1.2 with 32 bytes of data:
Reply from 172.16.1.2: bytes=32 time<1ms TTL=128
Reply from 172.16.1.2: bytes=32 time<1ms TTL=128
Reply from 172.16.1.2: bytes=32 time<1ms TTL=128
Reply from 172.16.1.2: bytes=32 time<1ms TTL=128
Ping statistics for 172.16.1.2:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\Users\bypxtd>
Type here to search
12:03 PM
4/9/2019


Command Prompt
Microsoft Windows [Version 10.0.17763.107]
(c) 2018 Microsoft Corporation. All rights reserved.
C:\Users\bypxtd>ping 172.16.1.1
Pinging 172.16.1.1 with 32 bytes of data:
Reply from 172.16.1.1: bytes=32 time<1ms TTL=64
Reply from 172.16.1.1: bytes=32 time<1ms TTL=64
Reply from 172.16.1.1: bytes=32 time<1ms TTL=64
Reply from 172.16.1.1: bytes=32 time<1ms TTL=64
Ping statistics for 172.16.1.1:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\Users\bypxtd>
C:\Users\bypxtd>ping 172.16.1.3
Pinging 172.16.1.3 with 32 bytes of data:
Reply from 172.16.1.3: bytes=32 time<1ms TTL=128
Reply from 172.16.1.3: bytes=32 time<1ms TTL=128
Reply from 172.16.1.3: bytes=32 time<1ms TTL=128
Reply from 172.16.1.3: bytes=32 time<1ms TTL=128
Ping statistics for 172.16.1.3:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\Users\bypxtd>
Type here to search
12:02 PM
4/9/2019

2. In CentOS list the services enabled by default for public, dmz, home and internal firewall zones.



3. In CentOS add a firewall rule to open the 2222/tcp port for the dmz zone permanently. After that show that the port 2222/tcp was added correctly in the dmz zone.



4. In CentOS assign the public zone to the network adapter connected to the internet, and the home zone to the network adapter connected to VMnet o Private to my Network. Do not forget to restart the network service to apply configuration.

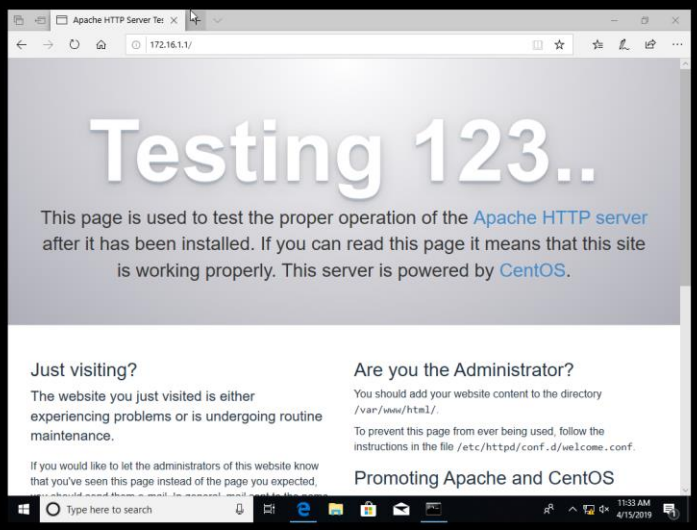
```
[toor@localhost ~]$ sudo firewall-cmd --permanent --zone=public --add-interface=ens33
success
[toor@localhost ~]$ sudo firewall-cmd --permanent --zone=internal --add-interface=ens37
success
[toor@localhost ~]$ sudo firewall-cmd --reload
success
[toor@localhost ~]$ sudo firewall-cmd --list-all
public (active)
  target: default
  icmp-block-inversion: no
  interfaces: ens33
  sources:
  services: ssh dhcpv6-client
  ports:
  protocols:
  masquerade: no
  forward-ports:
  source-ports:
  icmp-blocks:
  rich rules:

[toor@localhost ~]$ sudo firewall-cmd --zone=internal --list-all
internal (active)
  target: default
  icmp-block-inversion: no
  interfaces: ens37
  sources:
  services: ssh mdns samba-client dhcpv6-client
  ports:
  protocols:
  masquerade: no
  forward-ports:
  source-ports:
  icmp-blocks:
  rich rules:

[toor@localhost ~]$
```

5. Install and start a web server in CentOS and open the corresponding port in the homezone.

```
Total download size: 3.0 M
Installed size: 10 M
Downloading packages:
Delta RPMs disabled because /usr/bin/applydeltarpm not installed.
(1/5): apr-1.4.8-3.el7_4.1.x86_64.rpm                      | 103 kB  00:00:00
(2/5): apr-util-1.5.2-6.el7.x86_64.rpm                     |  92 kB  00:00:00
(3/5): httpd-tools-2.4.6-88.el7.centos.x86_64.rpm          |  90 kB  00:00:00
(4/5): mailcap-2.1.41-2.el7.noarch.rpm                     |  31 kB  00:00:00
(5/5): httpd-2.4.6-88.el7.centos.x86_64.rpm                | 2.7 MB  00:00:01
--------------------------------------------------------------------------------
Total                                              2.2 MB/s | 3.0 MB  00:00:01
Running transaction check
Running transaction test
Transaction test succeeded
Running transaction
  Installing : apr-1.4.8-3.el7_4.1.x86_64                                   1/5
  Installing : apr-util-1.5.2-6.el7.x86_64                                  2/5
  Installing : httpd-tools-2.4.6-88.el7.centos.x86_64                       3/5
  Installing : mailcap-2.1.41-2.el7.noarch                                  4/5
  Installing : httpd-2.4.6-88.el7.centos.x86_64                             5/5
  Verifying  : httpd-tools-2.4.6-88.el7.centos.x86_64                       1/5
  Verifying  : apr-1.4.8-3.el7_4.1.x86_64                                   2/5
  Verifying  : mailcap-2.1.41-2.el7.noarch                                  3/5
  Verifying  : httpd-2.4.6-88.el7.centos.x86_64                             4/5
  Verifying  : apr-util-1.5.2-6.el7.x86_64                                  5/5

Installed:
  httpd.x86_64 0:2.4.6-88.el7.centos

Dependency Installed:
  apr.x86_64 0:1.4.8-3.el7_4.1                 apr-util.x86_64 0:1.5.2-6.el7
  httpd-tools.x86_64 0:2.4.6-88.el7.centos     mailcap.noarch 0:2.1.41-2.el7

Complete!
[toor@localhost ~]$ sudo systemctl start httpd
[toor@localhost ~]$ _
```

6. In Windows 10 and Windows 10 clone open a web browser and access to the web site located in Centos.

Home | CentOS 7 64-bit | **Windows 10** | Clone of Windows 10



Home | CentOS 7 64-bit | Windows 10 | **Clone of Windows 10**