

Docker non-root, starting and client address setting

The presentation uses the class Linux image with Docker pre-installed. The presentation configures Docker to run as non-root. The presentation starts Docker and configures auto start. The presentation sets the client vm IP addresses.

Preuss
3/7/2020

```
router01 - VMware Workstation 15 Player (Non-commercial use only)
Player | [Icons]
The IPv6 OPT1 address has been set to 2001:db8:abba:200::60/64
Press <ENTER> to continue.
VMware Virtual Machine - Netgate Device ID: 7039027b1f5f0489dd7a
*** Welcome to pfSense 2.4.4-RELEASE-p3 (amd64) on pfSense ***

WAN (wan)      -> em0      -> v4/DHCP4: 192.168.117.163/24
LAN (lan)      -> em1      -> v4: 192.168.100.50/24
               v6: 2001:db8:abba:100::50/64
OPT1 (opt1)    -> em2      -> v4: 172.16.200.60/24
               v6: 2001:db8:abba:200::60/64

0) Logout (SSH only)          9) pfTop
1) Assign Interfaces         10) Filter Logs
2) Set interface(s) IP address 11) Restart webConfigurator
3) Reset webConfigurator password 12) PHP shell + pfSense tools
4) Reset to factory defaults  13) Update from console
5) Reboot system             14) Enable Secure Shell (sshd)
6) Halt system               15) Restore recent configuration
7) Ping host                 16) Restart PHP-FPM
8) Shell

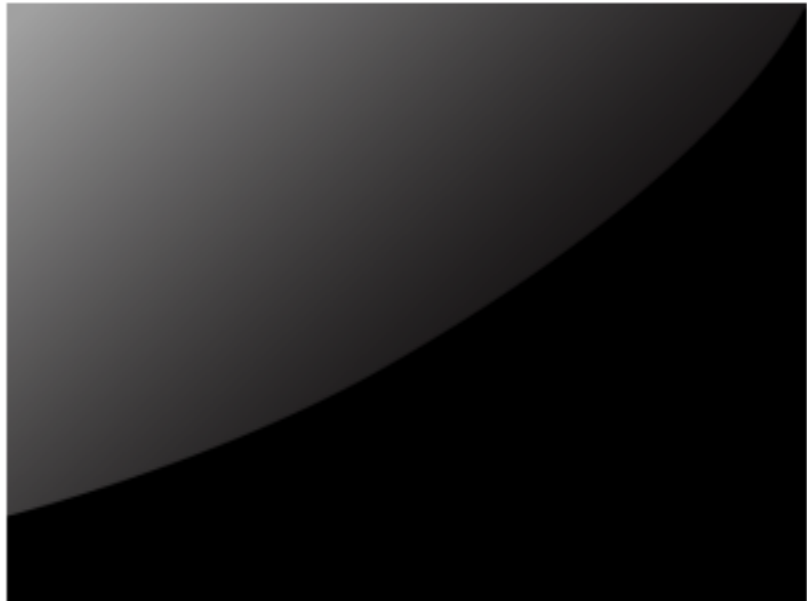
Enter an option: █
```

This is the router configuration for this presentation. The directions for setup is found in "router01_build.pdf".

VMware Workstation 15 Player (Non-commercial use only)

Player | ▶ | 🖨️ | 🖥️ | 🗑️

- Home
- linux_demo
- router01



linux_demo

State: Powered Off
OS: OpenSUSE 64-bit
Version: Workstation 11.x virtual machine
RAM: 4 GB

▶ Play virtual machine
🔧 Edit virtual machine settings

The presentation selects the class Linux image "Edit virtual machine settings".

Device	Summary
Memory	4 GB
Processors	2
Hard Disk (SCSI)	40 GB
CD/DVD (SCSI)	
Floppy	
Network Adapter	
USB Controller	
Sound Card	
Display	

Connections

USB compatibility: USB 3.0

Show all USB input devices

...hine requires Linux

Add Hardware Wizard

Hardware Type

What type of hardware do you want to install?

Hardware types:	Explanation
<input type="checkbox"/> Hard Disk	
<input type="checkbox"/> CD/DVD Drive	
<input type="checkbox"/> Floppy Drive	
<input checked="" type="checkbox"/> Network Adapter	Add a network adapter.
<input type="checkbox"/> USB Controller	
<input type="checkbox"/> Sound Card	
<input type="checkbox"/> Parallel Port	
<input type="checkbox"/> Serial Port	
<input type="checkbox"/> Printer	
<input type="checkbox"/> Generic SCSI Device	

Add... Remove

The presentation adds another "Network Adapter".

Device	Summary
Memory	4 GB
Processors	2
Hard Disk (SCSI)	40 GB
CD/DVD (SCSI)	Auto detect
Floppy	Using drive A:
Network Adapter	NAT
Network Adapter 2	NAT
USB Controller	Present
Sound Card	Auto detect
Display	Auto detect

Device status

Connected

Connect at power on

Network connection

Bridged: Connected directly to the physical network

Replicate physical network connection state

NAT: Used to share the host's IP address

Host-only: A private network shared with the host

Custom: Specific virtual network

VMnet0

LAN segment:

internal01

LAN Segments... Advanced...

Add... Remove

OK Cancel Help

The presentation connects "Network Adapter 2" to "LAN segment", "internal01".

Device	Summary
Memory	4 GB
Processors	2
Hard Disk (SCSI)	40 GB
CD/DVD (SCSI)	
Floppy	
Network Adapter	
Network Adapter 2	
USB Controller	
Sound Card	
Display	

Connections

USB compatibility: USB 3.0

Show all USB input devices

...hine requires Linux

Add Hardware Wizard

Hardware Type

What type of hardware do you want to install?

Hardware types:	Explanation
<input type="checkbox"/> Hard Disk	
<input type="checkbox"/> CD/DVD Drive	
<input type="checkbox"/> Floppy Drive	
<input checked="" type="checkbox"/> Network Adapter	Add a network adapter.
<input type="checkbox"/> USB Controller	
<input type="checkbox"/> Sound Card	
<input type="checkbox"/> Parallel Port	
<input type="checkbox"/> Serial Port	
<input type="checkbox"/> Printer	
<input type="checkbox"/> Generic SCSI Device	

Add... Remove

The presentation adds another "Network Adapter".

Device	Summary
Memory	4 GB
Processors	2
Hard Disk (SCSI)	40 GB
CD/DVD (SCSI)	Auto detect
Floppy	Using drive A:
Network Adapter	NAT
Network Adapter 3	NAT
Network Adapter 2	LAN Segment
USB Controller	Present
Sound Card	Auto detect
Display	Auto detect

Device status

Connected

Connect at power on

Network connection

Bridged: Connected directly to the physical network

Replicate physical network connection state

NAT: Used to share the host's IP address

Host-only: A private network shared with the host

Custom: Specific virtual network

VMnet0

LAN segment:

internal02

LAN Segments... Advanced...

Add... Remove

OK Cancel Help

The presentation connects "Network Adapter 3" to "LAN segment", "internal02".



Home



Trash

```
albatross01 : bash — Konsole
File Edit View Bookmarks Settings Help
albatross01@linux-s2020:~> su
Password:
linux-s2020:/home/albatross01 # groupadd docker
groupadd: group 'docker' already exists
linux-s2020:/home/albatross01 # usermod -aG docker albatross01
```

As root, the presentation creates a group named "docker", then adds the "albatross01" account to the group.



Home



Trash

```
albatross01 : bash — Konsole
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linux-s2020:/home/albatross01 # id albatross01
uid=1002(albatross01) gid=1001(albatross01) groups=454(docker),100(users),1001(albatross01)
linux-s2020:/home/albatross01 #
```

The albatross01 account is a member of "docker".



Home



Trash

albatross01 : systemctl — Konsole

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```
linux-s2020:/home/albatross01 # systemctl enable docker
Created symlink /etc/systemd/system/multi-user.target.wants/docker.service → /usr/lib/systemd/system/docker.service.
linux-s2020:/home/albatross01 # systemctl start docker
linux-s2020:/home/albatross01 # systemctl status docker
● docker.service - Docker Application Container Engine
   Loaded: loaded (/usr/lib/systemd/system/docker.service; enabled; vendor preset: disabled)
   Active: active (running) since Sat 2020-03-07 11:16:16 CST; 6s ago
     Docs: http://docs.docker.com
   Main PID: 5032 (dockerd)
     Tasks: 21
    CGroup: /system.slice/docker.service
            └─5032 /usr/bin/dockerd --add-runtime oci=/usr/sbin/docker-runc
              └─5039 docker-containerd --config /var/run/docker/containerd/containerd.toml --l
```

```
Mar 07 11:16:15 linux-s2020 systemd[1]: Starting Docker Application Container Engine...
Mar 07 11:16:15 linux-s2020 dockerd[5032]: time="2020-03-07T11:16:15.635117614-06:00" level=
Mar 07 11:16:15 linux-s2020 dockerd[5032]: time="2020-03-07T11:16:15.635457460-06:00" level=
Mar 07 11:16:15 linux-s2020 dockerd[5032]: time="2020-03-07T11:16:15.635512117-06:00" level=
Mar 07 11:16:15 linux-s2020 dockerd[5032]: time="2020-03-07T11:16:15.678722750-06:00" level=warning msg="Your kernel does not support >
Mar 07 11:16:15 linux-s2020 dockerd[5032]: time="2020-03-07T11:16:15.678765659-06:00" level=warning msg="Your kernel does not support >
Mar 07 11:16:15 linux-s2020 dockerd[5032]: time="2020-03-07T11:16:15.678772084-06:00" level=warning msg="Your kernel does not support >
Mar 07 11:16:16 linux-s2020 systemd[1]: Started Docker Application Container Engine.
```

lines 1-18/18 (END)

The presentation sets Docker to auto start.
The presentation starts Docker.
The presentation verifies Docker is running.



Home



Trash

```
albatross01 : bash — Konsole
```

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```
linux-s2020:/home/albatross01 # /sbin/ip addr add 192.168.100.25/24 dev eth1
```

The presentation sets the IPv4 address on eth1.



Home



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albatross01 : bash — Konsole

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```
linux-s2020:/home/albatross01 # /sbin/ip link set eth1 up
```

The presentation enables interface eth1. Sometimes it may be better to enable the link, then set the IPv4 address.



Home



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```
linux-s2020:/home/albatross01 # /sbin/ip link set eth2 up
```

The presentation enables interface eth2. Sometimes it may be better to enable the link, then set the IPv4 address.



Home



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```
albatross01 : bash — Konsole
```

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```
linux-s2020:/home/albatross01 # /sbin/ip addr add 172.16.200.30/24 dev eth2
```

The presentation sets the IPv4 address on eth2.



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```
linux-s2020:/home/albatross01 # /sbin/ip addr add 172.16.200.30/24 dev eth2
linux-s2020:/home/albatross01 # /sbin/ip a sh
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default
    link/ether 00:0c:29:2c:05:ca brd ff:ff:ff:ff:ff:ff
    inet 192.168.117.168/24 brd 192.168.117.255 scope global noprefixroute dynamic eth0
        valid_lft 1283sec preferred_lft 1283sec
    inet6 fe80::961b:d807:fffc:3529/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
3: eth1: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default
    link/ether 00:0c:29:2c:05:d4 brd ff:ff:ff:ff:ff:ff
    inet 192.168.100.25/24 scope global eth1
        valid_lft forever preferred_lft forever
4: eth2: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000
    link/ether 00:0c:29:2c:05:de brd ff:ff:ff:ff:ff:ff
    inet 172.16.200.30/24 scope global eth2
        valid_lft forever preferred_lft forever
5: docker0: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc noqueue state DOWN group default
    link/ether 02:42:d2:56:f5:c2 brd ff:ff:ff:ff:ff:ff
    inet 172.17.0.1/16 brd 172.17.255.255 scope global docker0
        valid_lft forever preferred_lft forever
linux-s2020:/home/albatross01 #
```

The IPv4 addresses are correctly set.

```
router01 - VMware Workstation 15 Player (Non-commercial use only)
Player | [Icons]
1) Assign Interfaces          10) Filter Logs
2) Set interface(s) IP address 11) Restart webConfigurator
3) Reset webConfigurator password 12) PHP shell + pfSense tools
4) Reset to factory defaults 13) Update from console
5) Reboot system            14) Enable Secure Shell (sshd)
6) Halt system              15) Restore recent configuration
7) Ping host                16) Restart PHP-FPM
8) Shell

Enter an option: 7

Enter a host name or IP address: 192.168.100.25

PING 192.168.100.25 (192.168.100.25): 56 data bytes
64 bytes from 192.168.100.25: icmp_seq=0 ttl=64 time=0.545 ms
64 bytes from 192.168.100.25: icmp_seq=1 ttl=64 time=0.932 ms
64 bytes from 192.168.100.25: icmp_seq=2 ttl=64 time=0.413 ms

--- 192.168.100.25 ping statistics ---
3 packets transmitted, 3 packets received, 0.0% packet loss
round-trip min/avg/max/stddev = 0.413/0.630/0.932/0.220 ms

Press ENTER to continue.
```

The router successfully pings the client system eth1 IP address.


```
router01 - VMware Workstation 15 Player (Non-commercial use only)
Player | [Icons]
1) Assign Interfaces          10) Filter Logs
2) Set interface(s) IP address 11) Restart webConfigurator
3) Reset webConfigurator password 12) PHP shell + pfSense tools
4) Reset to factory defaults    13) Update from console
5) Reboot system              14) Enable Secure Shell (sshd)
6) Halt system                15) Restore recent configuration
7) Ping host                  16) Restart PHP-FPM
8) Shell

Enter an option: 7

Enter a host name or IP address: 172.16.200.30

PING 172.16.200.30 (172.16.200.30): 56 data bytes
64 bytes from 172.16.200.30: icmp_seq=0 ttl=64 time=0.527 ms
64 bytes from 172.16.200.30: icmp_seq=1 ttl=64 time=0.473 ms
64 bytes from 172.16.200.30: icmp_seq=2 ttl=64 time=0.301 ms

--- 172.16.200.30 ping statistics ---
3 packets transmitted, 3 packets received, 0.0% packet loss
round-trip min/avg/max/stddev = 0.301/0.434/0.527/0.096 ms

Press ENTER to continue.
```

The router successfully pings the client system eth2 IP address.



Home



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albatross01 : bash — Konsole



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```
linux-s2020:/home/albatross01 # /sbin/ip route
default via 192.168.117.2 dev eth0 proto dhcp metric 102
172.16.200.0/24 dev eth2 proto kernel scope link src 172.16.200.30
172.17.0.0/16 dev docker0 proto kernel scope link src 172.17.0.1 linkdown
192.168.100.0/24 dev eth1 proto kernel scope link src 192.168.100.25
192.168.117.0/24 dev eth0 proto kernel scope link src 192.168.117.168 metric 102
linux-s2020:/home/albatross01 #
```

The presentation verifies the routing table.



Home



Trash

```
albatross01 : bash — Konsole
```

File Edit View Bookmarks Settings Help

```
linux-s2020:/home/albatross01 # /sbin/ip addr add 2001:db8:abba:100::25/64 dev eth1
linux-s2020:/home/albatross01 # /sbin/ip addr add 2001:db8:abba:200::30/64 dev eth2
linux-s2020:/home/albatross01 #
```

The presentation sets the IPv6 addresses.



Home



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albatross01 : bash — Konsole

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```
inet6 ::1/128 scope host
    valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000
    link/ether 00:0c:29:2c:05:ca brd ff:ff:ff:ff:ff:ff
    inet 192.168.117.168/24 brd 192.168.117.255 scope global noprefixroute dynamic eth0
        valid_lft 1783sec preferred_lft 1783sec
    inet6 fe80::961b:d807:fffc:3529/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
3: eth1: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default
    link/ether 00:0c:29:2c:05:d4 brd ff:ff:ff:ff:ff:ff
    inet 192.168.100.25/24 scope global eth1
        valid_lft forever preferred_lft forever
    inet6 2001:db8:abba:100::25/64 scope global
        valid_lft forever preferred_lft forever
    inet6 fe80::c32c:7441:f3d4:73bc/64 scope link
        valid_lft forever preferred_lft forever
4: eth2: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default
    link/ether 00:0c:29:2c:05:de brd ff:ff:ff:ff:ff:ff
    inet 172.16.200.30/24 scope global eth2
        valid_lft forever preferred_lft forever
    inet6 2001:db8:abba:200::30/64 scope global
        valid_lft forever preferred_lft forever
    inet6 fe80::c09f:37b1:1bad:9599/64 scope link
        valid_lft forever preferred_lft forever
5: docker0: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc noqueue state DOWN group default
    link/ether 02:42:d2:56:f5:c2 brd ff:ff:ff:ff:ff:ff
    inet 172.17.0.1/16 brd 172.17.255.255 scope global docker0
        valid_lft forever preferred_lft forever
```

linux-s2020:/home/albatross01 #

The presentation verifies the address settings.



Home



Trash

```
albatross01 : bash — Konsole
```

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```
linux-s2020:/home/albatross01 # reboot
```

The presentation reboots the system.
Remeber to reapply the IP addressing after reboot.