AINUX

TASTE OF LINUX

WELCOME TO THE WORLD OF LINUX

DAY - 7

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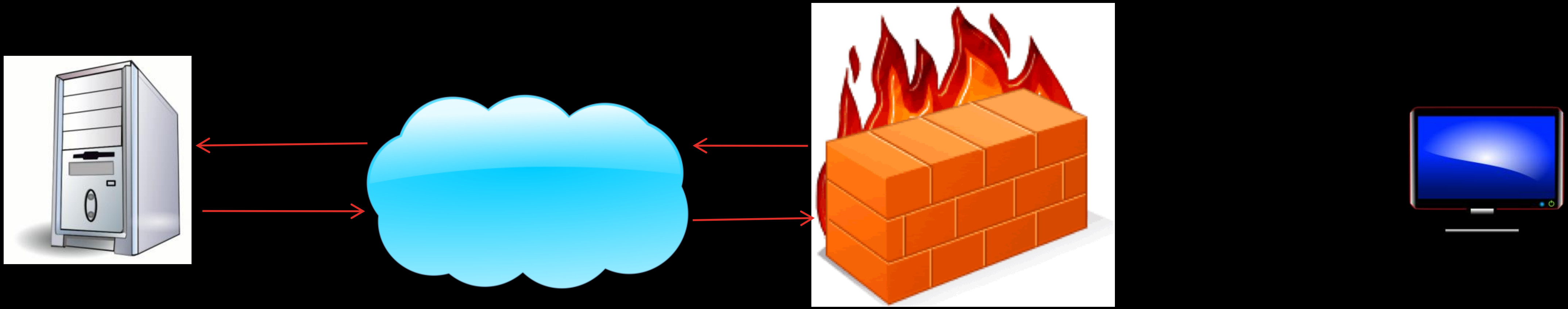
Limiting Network Communication with Firewalld

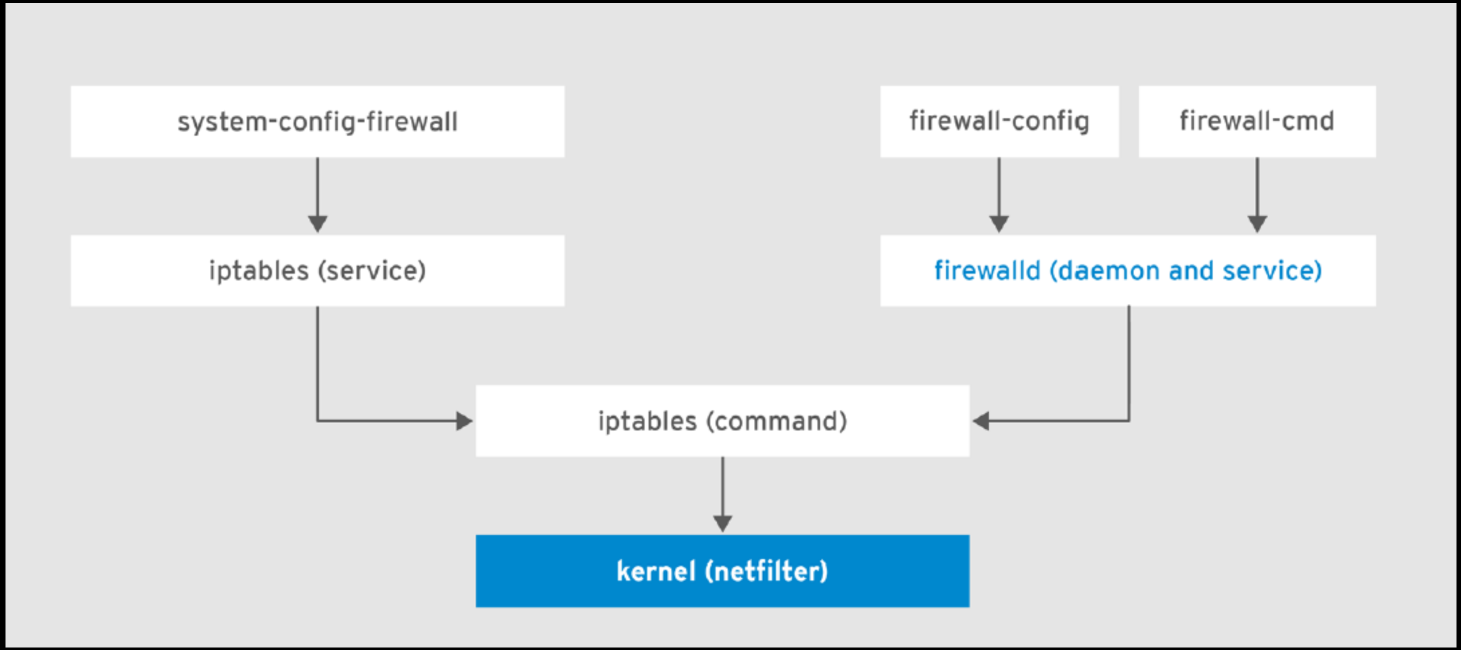
The Linux kernel includes a powerful network filtering subsystems, called ‘**netfilter**’**.** The netfilter subsystem allows kernel modules to inspect every incoming, outgoing or forwarded network packet. In previous Linux versions ‘**iptables**’ program was used to interact with ‘**netfilter**’. But in RHEL7 ‘**firewalld**’ is introduced to interact with ‘**netfilter**’

‘firewalld’ is a system daemon that can configure and monitor the system firewall rules**.**



Limiting Network Communication with Firewalld

The problem in ***iptables*** was, if there is and rule has applied and again you are going to apply new rules, then it flush the old rules and apply the new rule along with old rules. Means think that you have 7 preconfigured rules in ***iptables*** and again you are going to apply 1 rule, then it flush all old rules and implement 8 rules. That is the main disadvantage of ***iptables***. Where as ***firewalld*** just add the new rule without interrupting old rules. In RHEL 7 we con use both commands but ***firewalld*** is default. And it's batter than ***iptables***. We can't use both command at a time.



Limiting Network Communication with Firewalld

To check the firewall rpm is installed

```
#rpm –qa firewalld
```

To configure the firewall graphically, then you need to install below

```
#rpm –ivh firewall-config-0.4.3.2-8.el7.noarch
```

To check the status of firewall service

```
#systemctl  status firewalld.service
```

To start firewall service

```
#systemctl  start  firewalld.service
```

To start firewall service permanently

```
#systemctl  enable firewalld.service
```

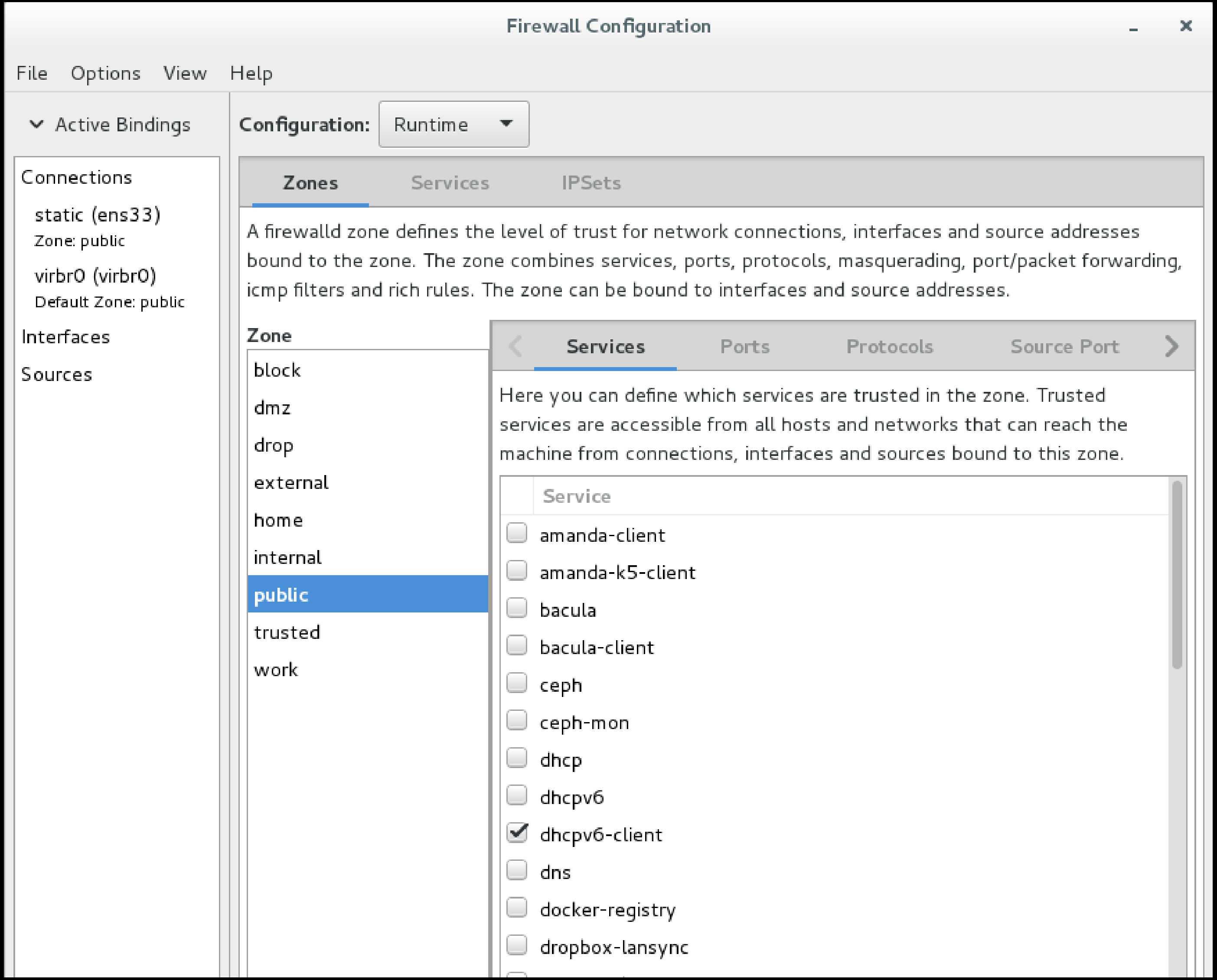
To open the firewall graphically

```
#firewall-config
```

Or

Go to Sundry → Firewall

Limiting Network Communication with Firewalld



Connections

static (ens33)
Zone: public

virbr0 (virbr0)
Default Zone: public

Interfaces

Sources

Configuration: Runtime

A firewalld zone defines the level of trust for network connections, interfaces and source addresses bound to the zone. The zone combines services, ports, protocols, masquerading, port/packet forwarding, icmp filters and rich rules. The zone can be bound to interfaces and source addresses.

Zone

- block
- dmz
- drop
- external
- home
- internal
- **public**
- trusted
- work

Here you can define which services are trusted in the zone. Trusted services are accessible from all hosts and networks that can reach the machine from connections, interfaces and sources bound to this zone.

Service

- □ amanda-client
- □ amanda-k5-client
- □ bacula
- □ bacula-client
- □ ceph
- □ ceph-mon
- □ dhcp
- □ dhcpv6
- ☑ dhcpv6-client
- □ dns
- □ docker-registry
- □ dropbox-lansync

Limiting Network Communication with Firewalld

Understanding Network Zones

firewalld can be used the zones based on the trust level . You can say that zones are like profiles. Every zones has different trust level. By default network card is used '***public***' zone.

drop

Any incoming network packets are dropped; there is no reply. Only outgoing network connections are possible.

block

Any incoming network connections are rejected with an icmp-host-prohibited message for **IPv4 and icmp6-adm-prohibited for IPv6. Only network connections initiated from** within the system are possible.

public

For use in public areas. You do not trust the other computers on the network to not harm your computer. Only selected incoming connections are accepted.

external

For use on external networks with masquerading enabled, especially for routers. You do not trust the other computers on the network to not harm your computer. Only selected incoming connections are accepted.

Limiting Network Communication with Firewalld

dmz
For computers in your demilitarized zone that are publicly-accessible with limited access to your internal network. Only selected incoming connections are accepted.

work
For use in work areas. You mostly trust the other computers on networks to not harm your computer. Only selected incoming connections are accepted.

home
For use in home areas. You mostly trust the other computers on networks to not harm your computer. Only selected incoming connections are accepted.

internal
For use on internal networks. You mostly trust the other computers on the networks to not harm your computer. Only selected incoming connections are accepted.

trusted
All network connections are accepted.

Limiting Network Communication with Firewalld

To Display the zones in commandline

```
#filewall-cmd  --get-zones
```

To display the firewall services list

```
#firewall-cmd  --get-services
```

To display the default zone

```
#firewall-cmd  --get-default-zone
```

To set a default zone

```
#firewall-cmd  --set-default-zone=<zone-name>
i.e, #firewall-cmd  --set-default-zone=home
```

To display the active zone with interface name

```
#firewall-cmd  --get-active-zone
```

To display all details in active interface

```
#firewall-cmd  --list-all
```

To allow a port permanently into filrewall

```
#firewall-cmd  --permanent  --add-port=8080/tcp
```

Limiting Network Communication with Firewalld

To allow a service permanently into filrewall

```
#firewall-cmd --permanent --add-service=http
```

Note:- All the predefined firewall services files are stored into "***/usr/lib/firewalld/services/***".

To create custom service for firewall

Create a '***.xml***' file under "***/usr/lib/firewalld/services/***". Here I've create '***subha.xml***'
Type the following

```
<?xml version="1.0" encoding="utf-8"?>
<service>
  <short>subha</short>
  <description>This is my own Custome software</description>
  <port protocol="tcp" port="8082"/>
</service>
```

Then save and exit

To add newly created service rule in to firewall list

```
#firewall-cmd --permanent --new-service=subha
```

To add service rule in to firewall list

```
#firewall-cmd --permanent --add-service=subha
```

Limiting Network Communication with Firewalld

To remove a service permanently from firewall list

```
#firewall-cmd --permanent --remove-service=<Service-name>
i.e, #firewall-cmd --permanent --remove-service=http
```

To remove a port permanently from firewall list

```
#firewall-cmd --permanent --remove-port=<port-number/protocol>
i.e, #firewall-cmd --permanent --remove-port=8081/tcp
```

To allow a service permanently for different zone into firewall list

```
#firewall-cmd --permanent --zone=home --add-service=<service-name>
i.e, #firewall-cmd --permanent --zone=home --add-service=http
```

To Reload firewall

```
#firewall-cmd  --reload
```

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THANK YOU

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