



# COMPUTER NETWORKS

## Assignment

### Topic :- Firewall



TEAM

Mohammed Anas (RVCE22MCA089)

Amit Dattatreya Hegde (RVCE22MCA039)

## Network Firewall

- A firewall can be hardware, software, or a combination of both.
- In computer networks, a firewall is a software application that sits between a private network and the public Internet. It examines all network traffic that passes through it and blocks or allows traffic based on a set of predefined rules. Firewalls can be configured to block certain types of traffic, such as certain ports or protocols, or to allow access only to authorized users or systems.

# Firewalld

- Firewalld is a dynamic firewall manager that is built into modern Linux distributions, including Fedora, CentOS, and Red Hat.
- Firewalld is a front-end to the iptables infrastructure that provides a more user-friendly interface and simplifies firewall management. Firewalld uses iptables to configure netfilter rules to block or allow network traffic. The iptables rules are still there, but the user interacts with firewalld instead of iptables directly. iptables is built on top of the Netfilter framework in the Linux kernel. Firewalld also uses the Netfilter framework under the hood, but it abstracts the complexity of iptables and provides a simplified interface for managing firewall rules.
- Firewalld uses a concept of zones to define the level of trust that a network has. Zones are predefined sets of rules that allow traffic to flow in or out of the network.
- Firewalld can be configured using a variety of commands, including commands related to services, rich rules, zones, etc. For example, to allow traffic for a specific service,
  - you can use the `--add-service` option, such as `firewall-cmd --zone=public --add-service=http`.
  - To create a new rich rule, you can use the `--add-rich-rule` option, such as `firewall-cmd --zone=public --add-rich-rule='rule family=ipv4 source address=192.168.1.0/24 accept'`.
  - To add a new zone, you can use the `--new-zone` option, such as `firewall-cmd --permanent --new-zone=internal`.
  - These commands can be used to configure the firewall based on the specific requirements of your network.

## Objective

Through Firewall and firewalld tool we expect to learn and achieve the following goals:

- Learn Firewall concept , its important and how it works
- How Netfilter, iptables and firewalld differs
- Learn terms like ports, interface, zones, etc distinctively for better understanding the networks
- Create and view the various zone and also its rules
- Manipulate the services,ports and interfaces offered for each zones
- Learning few rich rules , which helps in dropping or rejecting the incoming/outgoing packets in a network

## Conclusion

In conclusion, firewalls play a critical role in network security by protecting networks and devices from unauthorized access and cyber threats. Firewalld is a powerful and flexible firewall manager that provides a range of options for configuring and managing firewall rules and policies. Understanding the basics of firewalls and firewalld commands is essential for any network administrator or security professional who wants to secure their networks against cyberattacks.