firewalld Zone-based firewall

Packet arrives on an interface or from a source → matched to → **Zone** trust level → checked against → **Services, ports, rich rules** allowed traffic → otherwise → **Zone target** default: reject

CONCEPTS

Without --zone, commands act on the default zone. Without --permanent, they change only the running firewall and are lost on reload or reboot.

Runtime and permanent are two separate configs. Test with a runtime change, then keep it with --runtime-to-permanent.

STATE AND RELOAD

`firewall-cmd --state`
Check the daemon is running

`firewall-cmd --reload`
Reload permanent config, drop runtime changes

`firewall-cmd --runtime-to-permanent`
Save runtime config as permanent

`systemctl enable --now firewalld`
Start the daemon now and at boot

ZONES

`firewall-cmd --get-zones`
List all zone names

`firewall-cmd --get-active-zones`
Zones with interfaces or sources

`firewall-cmd --get-default-zone`
Show the default zone

`firewall-cmd --set-default-zone=<zone>`
Change the default zone

`firewall-cmd --list-all`
Show a zone's full config

`firewall-cmd --get-zone-of-interface=<iface>`
Zone an interface is in

`firewall-cmd --zone=<zone> --list-all`
Inspect a specific zone

`firewall-cmd --permanent --zone=<zone> --set-target=DROP`
Drop unmatched traffic

SERVICES AND PORTS

`firewall-cmd --add-service=<service>`
Allow a named service

SERVICES AND PORTS (cont.)

`firewall-cmd --remove-service=<service>`
Stop allowing a service

`firewall-cmd --list-services`
Services allowed in a zone

`firewall-cmd --get-services`
All defined service names

`firewall-cmd --add-port=<port>/tcp`
Open a TCP port

`firewall-cmd --add-port=<from>-<to>/udp`
Open a UDP port range

`firewall-cmd --remove-port=<port>/tcp`
Close a port

`firewall-cmd --list-ports`
Ports open in a zone

`firewall-cmd --add-service=<service> --timeout=10m`
Allow temporarily, auto-revert

RICH RULES

`firewall-cmd --add-rich-rule='<rule>'`
Add a rule with conditions

RICH RULES (cont.)

`firewall-cmd --list-rich-rules`
Show rich rules in a zone

`firewall-cmd --remove-rich-rule='<rule>'`
Remove a rule, exact text

Rich rule shapes

Goal	Rule
Block a host	`rule family="ipv4" source address="<ip>" reject`
Port from subnet	`rule family="ipv4" source address="<cidr>" port port="<port>" protocol="tcp" accept`
Service with rate	`rule service name="<service>" accept limit value="1/m"`
Log then drop	`rule family="ipv4" source address="<cidr>" log prefix="fw " level="warning" drop`

A rich rule is a single string: quote it in the shell and use double quotes inside single quotes.

INTERFACES AND SOURCES

`firewall-cmd --zone=<zone> --add-interface=<iface>`
Put an interface in a zone

`firewall-cmd --zone=<zone> --change-interface=<iface>`
Move an interface to a zone

`firewall-cmd --zone=<zone> --add-source=<cidr>`
Assign a network to a zone

NAT AND FORWARDING

`firewall-cmd --zone=<zone> --add-masquerade`
Enable NAT on outbound traffic

`firewall-cmd --add-forward-port=<spec>`
Forward a port, locally or to a host

PANIC AND LOGGING

`firewall-cmd --panic-on`
Drop all traffic immediately

`firewall-cmd --panic-off`
Leave panic mode