firewalld Zone-based firewall

CONCEPTS

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

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

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

Interfaces match a zone first by interface, and a source address matches before the interface does.

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

ZONES (cont.)

`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

SERVICES AND PORTS

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

`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

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

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

RICH RULES (cont.)

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