# An Implementation in OMNeT++ of Linux Rules for IP Routing

Alfonso Ariza, Eduardo Casilari, J. Hurtado-López

UNIVERSITY OF MÁLAGA, SPAIN

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Departamento de Tecnología Electrónica. University of Málaga
ETSI de Telecomunicación, Campus de Teatinos, 29071 – Málaga- Spain
E-mail: mjmoron@uma.es, ecasilari@uma.es

- Typical IP routing merely based on the destination address
- Need for **complex filtering & forwarding mechanisms** at the IP layer. Examples:
  - o   Discard packets with specific characteristics
  - o   Forwarding criteria can be founded on other parameters (e.g.: TCP/UDP ports, source address, etc..)
- Linux: Alternative routing achieved with IP rules
- Goal: to **emulate IP rules** in OMNeT++
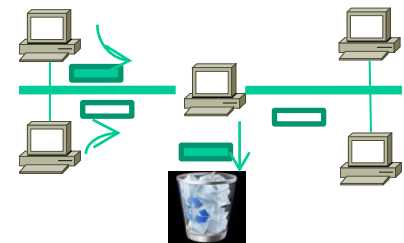
• Integrated within the Routing Tables of Inet

• Executed at the IP layer

• Rules applied upon the packet arrival or departure

• Rules allow packets to bypass the existing routing table

• Rules defined in the same configuration file of that used to characterize Linux IPTables

• New labels for rules: **<rules> </rules>**

• Rules specification imitates that of actual Linux rules
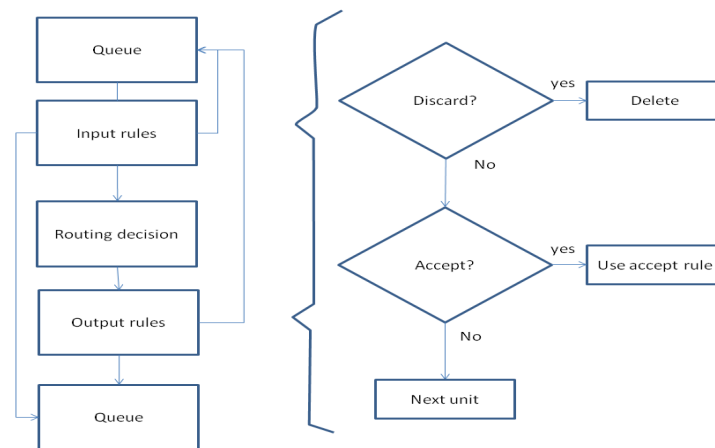
Example of an rule: delete all packets flowing from source address 192.168.1.1
```
<rules>
iptables -A INPUT -s 192.168.1.1 -j DROP
<rules>
```

-s	**Source address to filter**
-p	**Destination Address to filter**
-A (INPUT:OUTPUT)	**The filter is used at the input or at the output**
-p (tcp:udp)	**Protocol**
-sport	**Source port**
-dport	**Destination port**

- Rules for advanced forwarding.
- Rules to emulate selective random packet loss
- Rules to change the admission conditions dynamically
- Rules to duplicate packets (aiming at simulating multicast transmissions).
- Mechanisms to generate statistical results of the network performance