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|----- MODULE Firewall -----|
EXTENDS Naturals
CONSTANT AcceptList,
          RejectList,
          Protocols,
          IPs,
          Ports

VARIABLE forwarded packets forwarded on through the firewall
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Address  $\triangleq$  [ip : IPs, port : Ports] address has port and ip

A Packet has a source and destination address, and a protocol
Packet  $\triangleq$  [source : Address,
              dest : Address,
              protocol : Protocols]

Rule  $\triangleq$  [Packet  $\rightarrow$  BOOLEAN ] A Rule maps from packets to boolean values
|-----|

Init  $\triangleq$  forwarded = {}

Reject(p)  $\triangleq$ 
   $\exists rule \in RejectList$  :
     $\wedge rule[p]$ 

Accept(p)  $\triangleq$ 
   $\exists rule \in AcceptList$  :
     $\wedge rule[p]$ 

Firewall(p)  $\triangleq$  Firewall acts on a packet
  IF Accept(p)  $\wedge \neg Reject$ (p)
  THEN forwarded' = forwarded  $\cup$  {p}
  ELSE UNCHANGED forwarded

Next  $\triangleq$ 
   $\exists packet \in Packet$  : Firewall(packet)
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\ * Modification History
\ * Last modified Wed Feb 17 10:17:27 GMT 2021 by alunm
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