

Thank you, Zihaad, for your post on packet filtering firewalls and web application firewalls. There are some excellent points highlighted regarding packet filtering firewalls. According to Romanofski (2002), packet filtering firewalls are considered the least secure firewall technology due to the networks application layer not being inspected and the lack of tracking the state of connections. Therefore there is limited scrutiny of packets. However, as you mentioned, the benefit is high speed, and this is due to less processing and fewer evaluations of packets. Rules can be implemented singularly and shield internal IP addresses from external users if used with network address translation (Romanofski, 2002). Yet despite this speed, the limitation of packet filtering firewalls is that the inspection of packets is limited. The payload is not inspected, which elevates risk as decisions are not made based on the packet's content, and harmful traffic could pass through the firewall.

Further research has attempted to improve this, such as two-level fuzzy filtering (Ali et al., 2015). Due to their stateless approach, information is not kept about sessions, and alert mechanisms are limited, so threat actors could potentially access services on firewall servers (Wool, 2006). Despite this, packet filtering firewalls are almost transparent, and users are only made aware they are in place when a packet is rejected. They are inexpensive, as you mentioned, with development costs low, and routers can have it built-in. As a starting point for network security, packet filtering firewalls have importance.

Ali, A., Darwish, S. & Guirguis, S. 2015. An Approach for Improving Performance of a Packet Filtering Firewall Based on Fuzzy Petri Net. *Journal of Advances in Computer Networks*, 3, 67-74.

Romanofski, E. 2002. *A Comparison of Packet Filtering Vs Application Level Firewall Technology*

[Online]. Available: <https://www.giac.org/paper/gsec/693/comparison-packet-filtering-vs-application-level-firewall-technology/101569> [Accessed 26 September 2021].

Wool, A. 2006. Packet filtering and stateful firewalls. *Handbook of Information Security*, 3, 526-536.

