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Fortinet's SoC3 and the FortiGate 60E

January 31, 2019 / in Announcements / by Kevin Romo

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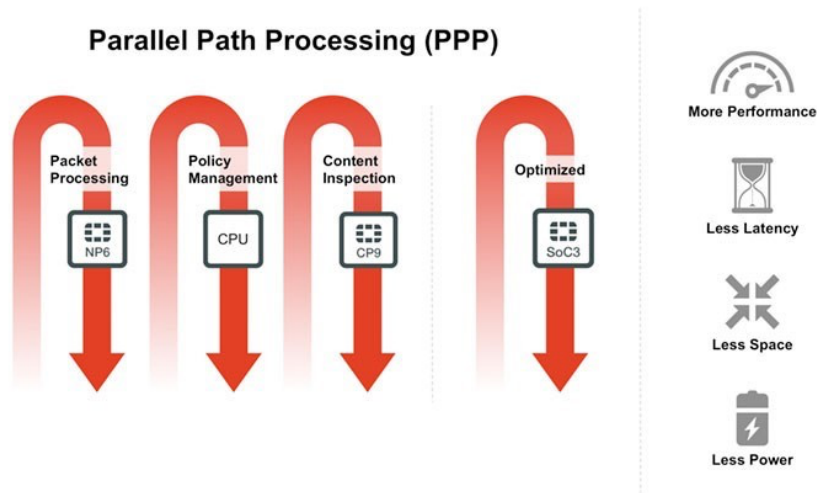
Fortinet's SoC3 and the FortiGate 60E

The SoC3 is Fortinet's 3rd generation System-on-a-Chip, custom

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designed by Fortinet (unlike other vendors) to accelerate the processing of security and networking functions in their firewalls. The SoC3 houses all inside a single chip, a CPU, a Content Processor (CP), and a Network Processor (NP).



The point of this specialized hardware is to accelerate traffic and offload resource intensive processing (such as virus scanning, attack detection, or encryption/decryption) from the main processing resources of the CPU. You can find the SoC3 in smaller FortiGate models that are best suited for SMBs or enterprise branch offices, as models 200E and above will have dedicated (and often multiple) CPs and NPs.

SoC3 Performance

Many of VPLS Solutions' customers are in the market for a FortiGate of this size. However, when comparing models, we like to point out that the lowest model sporting the SoC3 is the FortiGate 60E. Comparing the stats for the 30E, 50E, and 60E below, you will notice a drastic improvement in some of the numbers starting with the 60E, such as firewall latency and throughput. All of these improvements are due to the use of this SoC3 instead of just a CPU alone.

| | FortiGate 30E | FortiGate 50E | FortiGate 60E |
|---|---------------|---------------|----------------|
| System Performance - Enterprise Traffic Mix | | | |
| IPS Throughput | 300 Mbps | 350 Mbps | 400 Mbps |
| NGFW Throughput | 200 Mbps | 220 Mbps | 250 Mbps |
| Threat Protection Throughput | 150 Mbps | 160 Mbps | 200 Mbps |
| System Performance | | | |
| Firewall Throughput (1518 / 512 / 64 byte UDP packets) | 950 Mbps**** | 2.5 Gbps**** | 3 / 3 / 3 Gbps |
| Firewall Latency (64 byte UDP packets) | 130 μ s | 180 μ s | 3 μ s |
| Firewall Throughput | 180 Kpps | 375 Kpps | 4.5 Mpps |
| Concurrent Sessions (TCP) | 900,000 | 1.8 Million | 1.3 Million |
| New Sessions/Second (TCP) | 15,000 | 21,000 | 30,000 |
| Firewall Policies | 5,000 | 5,000 | 5,000 |
| IPSec VPN Throughput (512 byte) | 75 Mbps | 90 Mbps | 2 Gbps |
| Gateway-to-Gateway IPSec VPN Tunnels | 200 | 200 | 200 |
| Client-to-Gateway IPSec VPN Tunnels | 250 | 250 | 500 |
| SSL-VPN Throughput | 35 Mbps | 100 Mbps | 150 Mbps |
| Concurrent SSL-VPN Users (Recommended Max, Tunnel Mode) | 80 | 80 | 100 |
| SSL Inspection Throughput (IPS, avg. HTTPS) | 125 Mbps | 150 Mbps | 135 Mbps |
| SSL Inspection CPS (IPS, avg. HTTPS) | 120 | 140 | 135 |
| SSL Inspection Concurrent Session (IPS, avg. HTTPS) | 45,000 | 75,000 | 75,000 |
| Application Control Throughput (HTTP 64K) | 400 Mbps | 450 Mbps | 650 Mbps |
| CAPWAP Throughput (HTTP 64K) | 850 Mbps | 1.2 Gbps | 890 Mbps |
| Virtual Domains (Default / Maximum) | 5 / 5 | 5 / 5 | 10 / 10 |
| Max Number of Switches Supported | 8 | 8 | 8 |
| Max Number of FortiAPs (Total / Tunnel Mode) | 2 / 2 | 10 / 5 | 30 / 10 |
| Max Number of FortiTokens | 20 | 100 | 100 |
| Maximum Number of Registered FortiClients | 200 | 200 | 200 |

Performance data taken from the FortiGate Product Matrix

With the price difference being marginal between these units, especially the 50E vs the 60E, our recommendation is to take advantage of the performance of the SoC3 and invest in the FortiGate 60E.

Further reading on the SoC3, as well as how the FortiGates perform hardware acceleration, can be found at the links below:

[Fortinet Security Processors Overview](https://www.fortinet.com/products/fortigate/fortiasic.html)

[<https://www.fortinet.com/products/fortigate/fortiasic.html>]

[Fortinet SoC3 Press Release](https://www.fortinet.com/corporate/about-us/newsroom/press-releases/2016/fortinet-s-next-generation-system-on-a-chip.html)

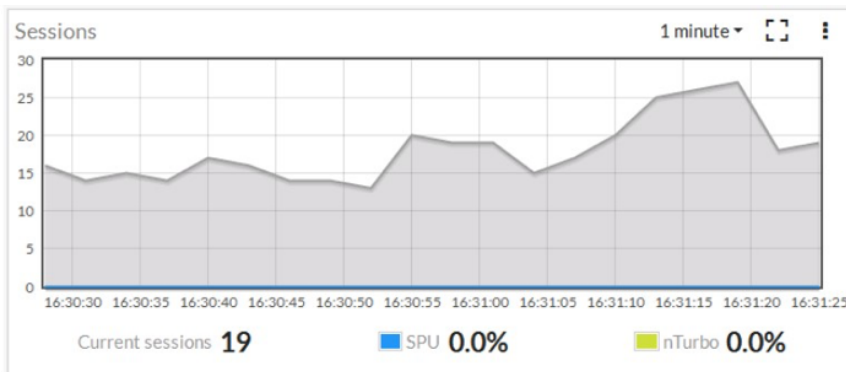
[<https://www.fortinet.com/corporate/about-us/newsroom/press-releases/2016/fortinet-s-next-generation-system-on-a-chip.html>]

[Fortinet Hardware Acceleration Overview](http://help.fortinet.com/fos60hlp/60/Content/FortiOS/fortigate-hardware-acceleration/acceleration-overview.htm)

[<http://help.fortinet.com/fos60hlp/60/Content/FortiOS/fortigate-hardware-acceleration/acceleration-overview.htm>]

Already own a FortiGate?

Starting with FortiOS 5.6, all acceleration hardware has been renamed Security Processing Units (SPUs), and SPU usage is visible in a number of places in the GUI. For example, the Sessions dashboard widget shown below.



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