Announcing Vita: a high-performance IPsec VPN endpoint that runs on commodity hardware

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Monday, 26 March 2018

Last year, I began prototyping a fast, IPsec-based VPN endpoint based on the *Snabb* (https://github.com/snabbco/snabb) user-space networking toolkit. The result was named *Vita* (https://github.com/inters/vita#-), and the *NLnet* (https://nlnet.nl) foundation has agreed to support further development on Vita in 2018/2019.

What is the project about?

Vita exploits the fabulous comforts of the Snabb toolkit together with modern *AES-NI* (https://en.wikipedia.org/wiki/AES_instruction_set) capable commodity hardware to provide >10 Gbps *IMIX* (https://en.wikipedia.org/wiki/Internet_Mix) IPsec tunneling. Being mainly written in Lua, Vita sports a compact code base that should be easy to understand, maintain, extend, and audit. This is important, as the ultimate goal is to put high-quality, low-cost traffic confidentiality in the hands of the many.

The original use-case I had in mind was simple, but common: you have two (or more) private networks in different geographic locations, like many universities and research campuses do, and wish to bridge them via the public Internet. To do that, you need to ensure your traffic is protected on its way through wires and pipes that, ultimately, you do not own. You might end up purchasing a box from a vendor to do that (and, possibly, many other things). Chances are it is going to cost you, and maybe it will be proprietary, meaning you do not have access to source code or hardware specifications, and are stuck with whatever management interface the vendor provides.
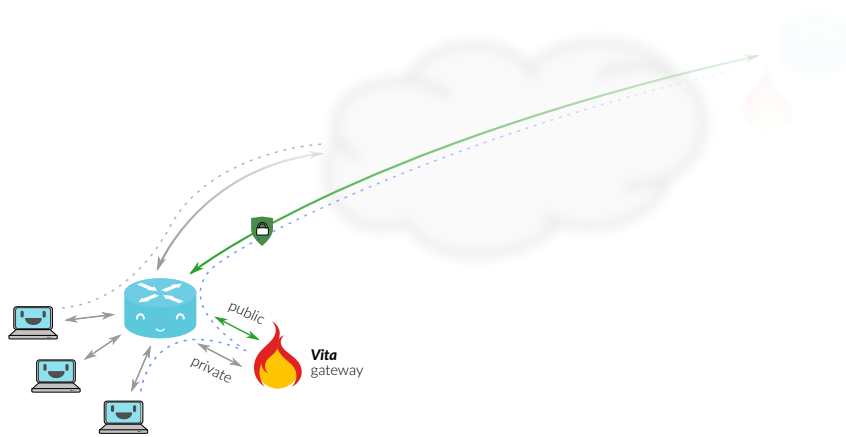
Vita is on its way to become an affordable, open, stand-alone solution to that problem. It is designed to play well with your existing routers, and can be deployed in a bump-in-the-wire or on-a-stick configuration. You can probably throw together a Vita box that handles 1-Gigabit Ethernet line rate at 64-byte packets for well under 500 Euro in parts (efficient software implementations go both ways!)

Further steps

I have established a basic *road map* (`https://github.com/inters/vita/projects/1`) that I will chip away at until mid-2019. Though, if all goes well that will only be the start of things.

Thanks to the Snabb framework, Vita is inherently modular, and waiting to be embedded by service providers as part of their offerings, say in an NFV setting. It already uses a YANG configuration model internally, and being able to drive the Vita data plane via YANG is on the road map. A related, low-hanging fruit, that seems nice to have, is to

let Vita consume a tunnel configuration negotiated by the Linux IKEv2 stack.

All things considered, my first and foremost priority is to connect with as many potential Vita users and contributors as possible. I want further development to be driven by would-be user requirements. So, if you have any questions, or Vita sounds in any way useful or interesting to you, please engage in a dialogue with me via *Email* (mailto:max@mr.gy), on *GitHub* (https://github.com/inters/vita) or on *Twitter* (https://twitter.com/eugeneia_).

Thanks