

Virtual Wireless LAN Controllers: *A Case Study*

A Farpoint Group Application Note

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In our recent White Paper “Rethinking Wireless LAN Infrastructure: *Virtualization is the Key*” (document FPG 2010-341.1), we discussed an interesting new development in enterprise-class wireless-LAN architecture – *the virtualization of the controller*. The idea here is to take the functionality of a controller and reduce the implementation to software running in a virtual machine. We identified a number of key advantages to this approach, including improved reliability, enhanced flexibility, lower costs, and the overall simplification of function enabled by the elimination of a now-superfluous hardware component. As long as such is part of a direct-forwarding wireless LAN architecture, which is characterized by the lack of a requirement for data traffic to flow through the controller, we expressed the belief that this strategy, pioneered by wireless-LAN leader Bluesocket Inc., would become broadly influential across the wireless-LAN landscape. Indeed, it was hard to conceive of any downside with respect to this approach.

Just to be sure, though, we recently spoke with Doug Tamasanis, Senior Director, Networks and Security, and Chief IT Architect at Kronos Inc., who is now using Bluesocket’s virtual controllers on part of his wireless LAN facility. Kronos is a leading manufacturer of global workforce management solutions, and Doug’s organization is supporting more than 3200 people, including more than 800 engineers, using over 1500 wireless devices today – with that number, of course, only expected to grow, and rapidly, over the next few years. Doug mentioned that he is seeing rapid uptake of smartphones, iPads, and Android-based devices, with devices of this type expected to become the majority of the company’s installed client base in the near future – and note here that these devices are *intrinsically* wireless, with no wired-networking capabilities at all. Kronos at present has 146 Bluesocket access points worldwide, covering four buildings on the corporate campus and at 40 sites worldwide. Kronos is also a major user of VMware, with roughly 800 virtualized servers in use today.

It thus made perfect sense for Kronos to evaluate the virtual controller concept, which is now installed at Kronos serving about 100 users. Doug is pleased enough with the results that he has decided to upgrade his entire network to virtual controllers, citing the following benefits:

- *Ease of deployment and growth* – Planning, configuring, installing and growing a base of virtual controllers is easy – it’s just software, after all. There’s no need for the usual considerations regarding rack space, power, cooling, hardware installation, and maintenance.
- *Low overhead and low resource utilization* – Controller software consumes very little in the way of virtual (or real) machine resources, and controller function thus coexists well with other VM-based applications.
- *Hands-off hardware and centralized management* – Managing a virtual controller is no more complicated than managing any other VM-based application, and Bluesocket’s centralized management makes it easy to operate controller instances spread over large geographic areas.

- *Less hardware to manage* – Having fewer hardware elements is always a desirable goal, provided there is no compromise in functionality or performance – and Doug reports no such compromise in his facility.
- *Simplified stability, redundancy, and fault tolerance* – Creating the required level of redundancy is easy with controllers running in virtual machines. Automatic failover functionality is identical to its hardware-based equivalent.
- *Cost savings* – Software is cheaper than hardware in every dimension, and adding additional virtual controllers, as required, is similarly inexpensive and cost-effective.

Kronos already has an extensive gigabit-Ethernet infrastructure, so performance bottlenecks are not really a concern, but he did mention that a direct-forwarding architecture is key to getting the most performance out of a virtualized-controller environment, along with a stable VMware installation. But he's noted no issues with his Bluesocket infrastructure and plans for all future controllers to be virtual.

Farpoint Group is continuing to monitor what we believe will become a major trend towards controller virtualization. The benefits are undeniable, and with solutions based on virtualization now in operation, we expect these benefits to become widely known and appreciated across essentially all enterprise-class WLAN installations.



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