

# Application Delivery Controllers The Software Advantage

The enterprise datacenter is evolving from a physical location housing a lot of server and network hardware to a geographically dispersed, software centric, highly mobile, public/private cloud. Whether it's server and storage virtualization, the hybrid cloud or the emerging software defined network (SDN), software running on virtual machines and standardized servers is taking over much of the functionality previously provided by proprietary hardware and ASICs. There are many reasons for this trend, but one of the primary drivers is the relentless progression of Moore's law, which has made increasingly powerful standardized multi-core servers capable of handling most of the heavy lifting that once required dedicated, proprietary hardware.

Aside from servers, network switches and routers, the move from hardware to software is also entering the realm of other network devices such as application delivery controllers, which are more commonly referred to as load balancers. As the datacenter is increasingly defined by software and the cloud rather than hardware and location, the physical, immobile, hardware-based ADC's that fronted banks of Web and other application servers in countless datacenters for years are starting to see their days numbered.

KEMP has been keenly aware of this trend for a long time. Many of our long established competitors still have a hardware-first ADC strategy, providing software versions of their hardware ADC solutions only as an add-on to provide some virtual and cloud flexibility. However, the software versions they offer rarely match either the feature set or the performance of the hardware from which most ADC vendors receive most of their revenue. For years, KEMP has embraced a software-first ADC paradigm. Whether it's running on hardware, bare metal, a virtual machine, or the cloud, KEMP's software ADC solutions provide the same strong, cost effective performance and feature set that our brand has always been known for.

There are many advantages to a software-first ADC paradigm for today's enterprises and service providers. They include not only up front costs, but total cost of ownership, agility, scalability and modularity.

## Up Front Cost

The most obvious advantage of software vs. network hardware ADC solutions is up front cost. It should come as no surprise that dedicated, proprietary network

hardware running on specialized ASICs costs several times as much as the average ADC software solution running on a standard server. When you consider that two hardware boxes are required for clustering and high availability, the difference is even more dramatic.

The extra expense for specialized ADC hardware made sense back in the day when standardized processors, operating systems and servers could not come close to providing the load balancing performance of a dedicated box designed with a highly specialized ASIC. The performance gap has narrowed considerably over the past few years, however. Today's standard multi-core datacenter servers boast enough processing power and memory to run tens or even hundreds of virtual machines and applications, coming very close in ADC performance to proprietary hardware running specialized ASICs. They can handle all but the most power hungry application delivery functions.

KEMP's software load balancers can be installed on the same servers as scores of virtual machines and handle thousands or tens of thousands of Web, application and SSL requests per second if necessary, with possibilities for even more performance with other configurations.

### Total Cost of Ownership

Aside from up-front cost, however, software solutions also have lower procurement and operational costs than their hardware alternatives, resulting in a much lower total cost of ownership.

Network appliances are network devices by nature, so they usually require the expertise, participation and approval of network administrators during the procurement process. However, software and even line-of-business owners can easily procure software and virtual ADC solutions quickly as just another item in an overall software/virtual/operating system package without the involvement of the network staff.

Network appliance solutions usually require network administrators to install and configure them on the network for best performance. Not so for software and virtual solutions, which can often be installed and configured by application owners quickly with only a few mouse clicks.

Service and support are expensive for hardware solutions, often amounting to 20 to 25 percent of the hardware ADC price with significant extra costs for modules that provide advanced capabilities such as firewalls, authentication/authorization, and other features.

Many of today's hardware solutions also come with scores of advanced features requiring knowledge of scripting languages to configure. KEMP's software solutions provide most or all of the features required of today's Web applications with configuration via an intuitive interface with just a few mouse clicks. No scripting knowledge is required.

### Agility

Maximum agility is essential in today's fast moving business environment, where organizations are looking to reduce time to market and adjust quickly to rapidly changing market conditions. In a software defined world, software is inherently more agile than hardware. Whether it's on premises or in the private, public or hybrid cloud, software based ADC's can be procured, installed and configured in minutes. Unlike their hardware counterparts, software ADC's can also be provisioned, de-provisioned, migrated and reassigned across the network and the cloud quickly to support rapidly changing workloads and performance requirements.

Virtualized software solutions are natural fits for the cloud, with KEMP solutions providing easy extensibility from a private cloud to Microsoft Azure, VMWare vCloud and AWS cloud providers. It's simple to shift virtual applications and their ADC solutions to the public cloud together, along with persistence, content switching and any ADC features that have been configured. ADC hardware vendors offer software and virtual options for the cloud, but they require sacrificing much of the features and power of their hardware counterparts. And moving hardware to the cloud is obviously not as practical as moving software.

In an environment moving towards software defined networking and network function virtualization, the obvious integration benefits of a software ADC vs. hardware ADC paradigm are obvious. It's a much simpler undertaking to manage ADC's across a hybrid deployment with a total software architecture than with a mix of hardware and software. This includes steering requests across the on/off premise cloud continuum based on rules about the location origin of the request, a failover scenario, cloud bursting, or the identity of the user.

### Pay as you Grow Scalability

Rapidly growing organizations will find software based load balancers a much more cost efficient way to scale performance and availability than hardware.

Hardware load balancers typically come in ascending price ranges corresponding to ascending levels of built in scalability, from boxes geared to the needs of small businesses and a single application to more expandable hardware configurations employing a highly scalable blade architecture. Organizations looking to get started with load balancing on a small scale will invariably choose lower cost boxes first. Unfortunately, when their requirements reach the limits of the first product's performance and scalability, they're often forced to scrap their first hardware purchase for completely new, considerably more expensive hardware offering the increased scalability they require. Once they graduate to the massively scalable blade architected solutions their up front costs can skyrocket.

With a software solution, scalability is achieved easily and quickly just by deploying additional software. No need to scrap one set of hardware for another. No need to upgrade training and network expertise requirements, or get involved in more complex installation and configuration.

### Modularity

Many hardware solutions offer optional add-ons such as SSL processing, authentication/authorization, and application level firewalls. Software based solutions offer many of the same modules. The difference however, is that as datacenter and application features and requirements change and evolve, it's much faster and easier to add, upgrade, and adjust ADC features via software development on standard server hardware and operating systems than it is to develop new features for a proprietary ASIC based platform. The more exotic the ASIC silicon, the longer the likely development process, not to mention that hardware centric vendors are forced to develop two versions, one for standardized software and one for proprietary hardware vs. a single version in a software first strategy.

## Conclusion

The writing is on the wall. The hardware centric ADC's of the past will become increasingly irrelevant as the cloud enabled, software-defined, next generation datacenter takes shape across more and more enterprises and service providers.

While competing ADC providers have done all they can to stall the move from hardware centric ADC solutions to a software-based ADC architecture, KEMP Technologies has chosen to stay ahead of the game, focusing our efforts on providing top notch ADC agility, flexibility, scalability and performance in a software first ADC paradigm.

The advantages are obvious and any organization looking to future proof its ADC deployment should take note. When it comes to next generation datacenters and ADC's, software is king.