5 REASONS TO SWITCH
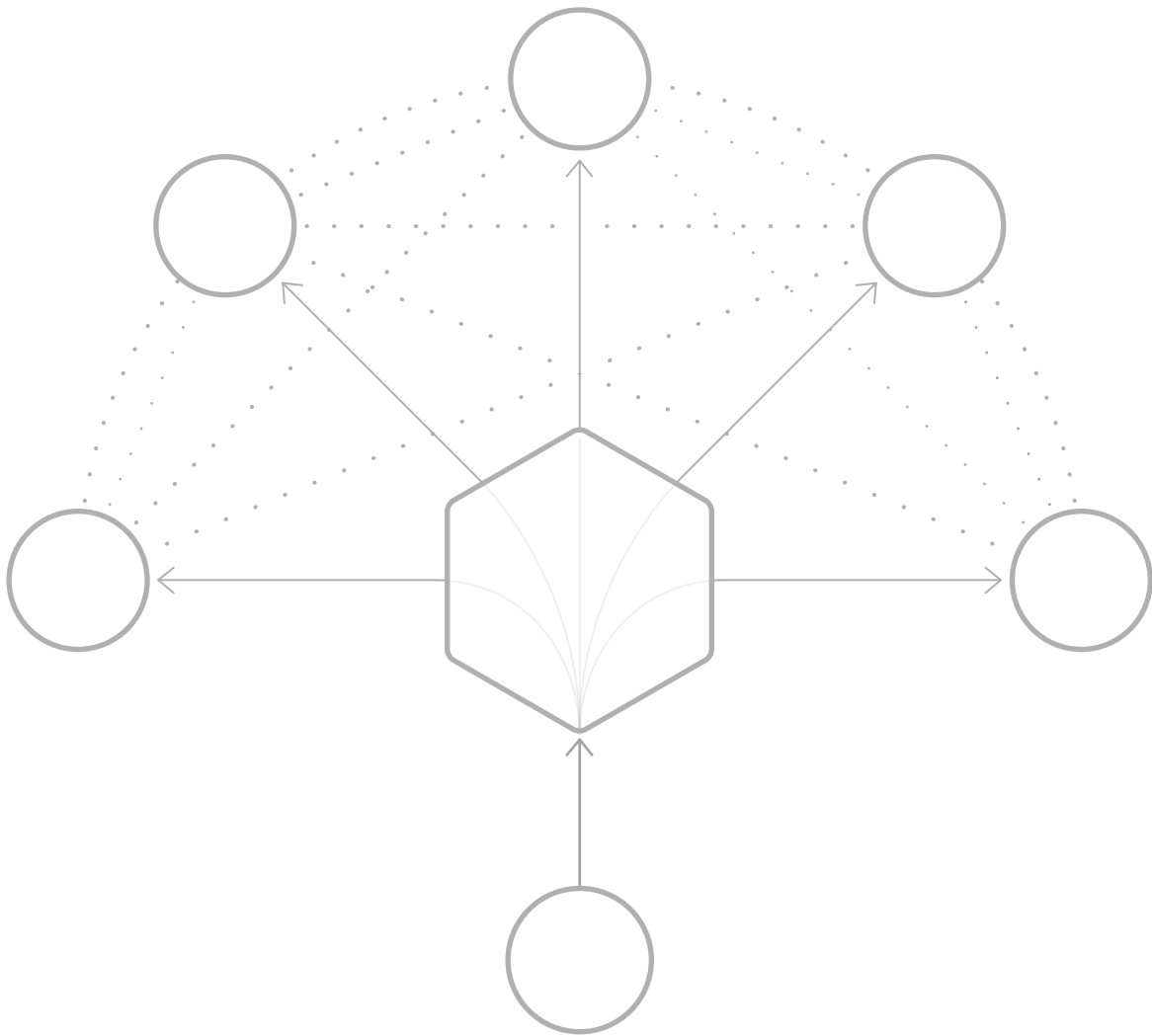
to Software for Load Balancing

NGINX

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by Floyd Smith

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Five Reasons to Switch to Software for Load Balancing

Hardware-based application delivery controllers (hardware ADCs) were developed twenty years ago as a solution to get the most out of high-cost, first-generation web servers. But the world has moved on dramatically from the days of racks of expensive servers needing specialized devices to optimize performance.

Now it's the hardware ADCs themselves that are the high-cost, antiquated devices. The companies who achieve web scale best today use webservers, load balancers, and caching servers powered by low cost, flexible, and easily configured software, running on either commodity hardware or virtualized instances.

IT buyers in enterprises are following the example of the web scale pioneers, and architectures are changing. Hardware ADC product sales are flat or down, and the device makers now face management and staff turnover and uncertainty about their future. Every contract renewal date, every increase in costs, and every innovation in alternative software and cloud solutions sees more customers migrating from legacy hardware solutions to the latest generation of software application delivery controllers.

Now, the industry is at a crossroads. Hardware ADC makers are introducing a new generation of more complex, more expensive hardware ADCs, while trying to hedge their bets with bloated adaptations of their firmware to

"software deployable" instances. Customers have a choice: either continue to be locked into antiquated technology and one-sided business relationships; or move to software-based application delivery controllers, such as NGINX Plus, and immediately reduce costs, increase performance, and unlock greater flexibility and control.

This ebook presents five reasons IT executives, network professionals, and application developers should make the move from traditional hardware ADCs to software solutions:

1. **Dramatically reduce costs without sacrificing features or performance.** You can save more than 70% for the same price/performance with NGINX Plus vs. a low-end F5 BIG-IP system, a Citrix NetScaler system, or similar hardware ADCs.

2. **Moving to DevOps requires software app delivery.** As applications move to continuous integration/continuous delivery (CI/CD), and as teams restructure to make rapid deployments possible, waiting days or weeks for changes in a hardware ADC is unimaginable. Only software delivers the rapid configuration, ease of flexibility, and application-level control that DevOps requires.

3. **Deploy everywhere with one ADC solution; on bare metal, cloud, containers, and more.** As a software solution designed to run on hardware and on virtualized instances, NGINX Plus works the same way on all platforms – container-friendly, on premise, and on public, private, or hybrid cloud – making deployment flexible and easy.

4. **Adapt quickly to changing demands on your applications.** No waiting for special hardware, installation, and configuration when traffic is rising. Software allows you to quickly install, configure, and scale up or scale out, responding to the demands on your applications in real time.

5. **No artificial or contract-driven constraints on performance.** Hardware ADCs cap throughput based on your contracted costs, then hit you with hefty upgrade fees when traffic breaks through that cap. Software-based solutions have no artificial limits – simply upgrade the underlying hardware or virtualized compute power to unlock greater performance. Say goodbye to hefty fees for traffic increases.

In the following pages, we dive more deeply into the reasons for making the move from hardware to software. Every reason provides both immediate and long-term benefits for IT and for the businesses IT serves. Together, they make a compelling case for making the move to software today.

1 Dramatically reduce costs without sacrificing features or performance

Hardware-based application delivery tools are prohibitively expensive. As IT professionals, we are used to Moore's second law coming into play, and the costs of our infrastructure and solutions dramatically dropping over time.

The market for ADCs did not see this reduction until open source and commercial software ADC and load balancing solutions hit maturity. Now, we see that software application delivery solutions can meet or exceed the features and performance of hardware solutions, at a discount of 70% or more compared to F5, Citrix, and other providers.

High costs drain budgets, limit investment in other key areas of the business, and prevent new IT projects from being approved. Both business and IT teams owe it to themselves to constantly seek out opportunities to decrease the cost of operating existing applications in order to invest in the key initiatives that can drive their organizations forward.

Despite this, hardware ADC users often wait to reconsider their options until they're facing contract renewal deadlines for their existing devices. Or, an increase in site traffic takes a hardware ADC implementation over a throughput "cliff" in the contract, causing a sharp and sudden increase in costs.

These shocks often lead to fast implementation of a "rip and replace" project. But the point shouldn't be to avoid shocks; it should be to cut costs dramatically now, with more features, lower costs, and greater flexibility.

You need better control of your ability to deploy more power so you can adequately ramp up performance. Only software load balancers like NGINX Plus can easily meet these demands.

Software-based solutions are easy to scale up – by upgrading the commodity hardware they run on – and to scale out, by adding and removing servers and cloud instances as needed.

The much lower costs found with software make new projects and added capabilities, such as high availability deployments, far more practical.

For a more concrete comparison of traditional hardware ADCs versus software solutions, we've developed price-performance comparisons of NGINX Plus for load balancing vs. F5's BIG-IP line or Citrix NetScaler products. Our findings show that software-based solutions cost roughly 70% less than hardware ADCs for the same performance on HTTP and SSL transactions, with even greater savings when measuring throughput.

2 Moving to DevOps requires software app delivery

Hardware ADCs were once an operations-friendly solution, allowing IT to get greater performance and reliability out of expensive webservers. This worked well in a world where an organization only had a handful of web applications with infrequent release cycles. But today's application landscape and release cycles have fundamentally changed. Infrastructure and operations professionals now support dozens or even hundreds of developers, each working to release and deploy changes to applications at a high frequency.

The move to DevOps methods, key to achieving continuous integration and continuous delivery (CI/CD), means that changes to the ADC or load balancer need to be done at the same pace as the release cycle. Ideally, changes are managed directly by the application development teams, in line with policies set by security and network teams. In that context, hardware ADCs become a dramatically limiting factor for developers and operations professionals who need flexibility and automated controls.

The traditional, typically slow, ticket-based approach to making changes to hardware ADCs can create conflict between development, networking, and infrastructure teams. Replacing hardware solutions with a software load balancer can eliminate that conflict by putting application performance management where it belongs: in the hands of the people who develop and deliver the applications.

When you take ADC functionality away from hardware and use a software-based approach, you give control to the people closest to the requirements of the application, and unlock the ability to use automation tools (such as Ansible, Chef, or Puppet) to script and control deployments. This has significant implications on the pace of deployment, on the health of applications, and more.

DevOps leaders choose NGINX and other software tools almost exclusively for application delivery. DevOps and NGINX go hand-in-glove; NGINX Plus is a "go to" tool for making development, deployment, and delivery faster, more efficient, and easier.

3 Deploy everywhere with one ADC solution

Legacy ADCs have big problems in today's world of flexible deployment options. Hardware ADCs only work on-premise. When you join the increasing number of companies choosing cloud deployment, your hardware load balancer cannot be shipped to your cloud provider to be plugged in.

To address this, some hardware ADC vendors have stripped the software out of their devices and "ported" it for use in cloud or containers. However, the complaint from many users is that these software tools were not designed for the virtualized infrastructure they run on, and can't match the performance of their hardware counterparts. This concern seems to be echoed by the vendors themselves: many of them recommend using their software tools in development environments only.

Software load balancers, on the other hand, were designed from the beginning to run on today's dynamic, virtualized architectures. In fact, NGINX Plus was built to be deployed into any environment – whether on bare metal, in public or private cloud, or hybrid infrastructures – offering load balancing that's portable and not tethered to one location or form factor. Your apps, in turn, gain the front end they need to achieve incredible performance, no matter where they are being hosted.

The best software ADC solutions work the same way for on-premise hardware and for every form of public, private, and hybrid cloud. You can even implement load balancing across flexible deployments that process routine traffic on your paid-for on-premise hardware, then expand into the cloud as needed to handle traffic surges.

Unlike legacy hardware ADCs, NGINX and NGINX Plus are software application delivery platforms that can be deployed anywhere. Whether your application is deployed in the public cloud, private cloud, or on-premise, NGINX and NGINX Plus accelerate them all the same way. Wherever you host, NGINX Plus offers fast deployment without compromise.

We offer many resources describing how to move to the cloud with NGINX Plus and get the most out of running your applications there, including technical setup information and case study comparisons. With this information at hand, you can assess the benefits of moving applications to the cloud, then begin implementation.

4 Adapt quickly to changing demands on your applications

Every business today is a digital business. The uptime and responsiveness of every application is held to the same standard as the world's most successful web scale companies. If your app responds slowly, or suffers downtime, partners raise concerns; customers go elsewhere; and employees consider their options. You need tools that make your life easier as you seek to achieve fast, flawless application delivery.

Your applications exist in real-time. Users are accessing them from an increasing variety of devices, and from all over the world. This is why so many companies are moving to the cloud or virtual platforms – to be able to serve content quickly and dynamically to users on the go.

Hardware ADCs suffer from two big deployment hurdles. The first is the need to order, receive, install, and configure a new hardware load balancer – or two, for high availability deployments – when scaling your site. This means weeks of waiting.

The second hurdle is the need to constantly ask network operations for hard-to-implement configuration changes, which often take days. The network operations team is stuck between the need for instant configuration changes from developers and the ever-growing stack of change requests from across a company.

Software application delivery solutions (such as NGINX Plus) avoid both of these kinds of problems. There's no waiting to order and receive specialized hardware; there's no need to ask another team for configuration changes. With NGINX Plus, you can install and configure new servers and instances immediately. And you can scale up or out in real time, even automatically.

NGINX Plus enables developers and operations personnel to evaluate and deploy apps much faster, with lower cost and less risk. And NGINX Plus lets both developers and operations personnel make needed changes without relying on other teams.

Application teams can focus on delivering optimal performance without distractions. Because NGINX Plus is software and can be rapidly configured by the application team, or by advanced configuration APIs, NGINX Plus allows resources to be deployed as needed, not as a single, fixed load balancer per application.

5 No artificial or contract-driven constraints on performance

Hardware-based ADCs limit you to expensive licenses for specific transaction and throughput levels. When you breach these limits, pricing steps up to a new level. Welcome increases in customer traffic to your site are offset by sudden, sharp, and hard to predict increases in costs.

The underlying problem is that hardware does not scale. To manage this problem, at customer expense, many hardware ADCs impose sharp limitations on throughput.

Site developers find themselves slimming pages down and consolidating user options – not to meet user needs more effectively, but to avoid throughput cliffs written into hardware ADC contracts. Having developers and operations people spend time cutting the richness of the user experience so as to avoid a contract cliff is not a sensible approach to application delivery.

Software load balancers and ADCs have no artificial performance or throughput limitations. And, with software being far cheaper, the incremental costs associated with growth are much lower and highly predictable. Growth is once again a benefit, not a problem.

With software offering more flexibility in licensing options, you never have to make rash predictions or pay for more capacity than you need. You simply right-size your load balancing and server footprint smoothly, as operational requirements dictate.

An entry-level NGINX Plus system offers four times the throughput of an F5 BIG-IP entry-level system, at less than one-sixth the price. Similarly, an entry-level NGINX Plus system offers 40 times the throughput of a Citrix NetScaler entry-level system, at roughly one-fourth the price. That's a difference of more than 20 times in price-performance for throughput, before even considering the effectiveness and flexibility of software-based solutions.

How is NGINX Changing Application Delivery?

As user demands increase, and business goals become more complex, the way in which we deliver applications must keep pace. While the need for load balancing grows rapidly, new sales of hardware ADCs are declining.

At the same time, NGINX is steadily increasing its market share, both as a widely used webserver and for load balancing. NGINX is now used by more than half of the top 10,000 busiest websites. NGINX Plus adds features that make high-performance load balancing easier, more reliable, and more manageable.

To help companies seeking to make a change, we've developed price-performance comparisons for NGINX Plus for load balancing vs. F5's BIG-IP line and Citrix NetScaler products.

Over the long run, choosing a software-based application delivery platform saves tremendous time, money, and effort, while resulting in applications designed for optimal performance. The business as a whole benefits from this approach; the better applications perform, the more successful they become.

Case studies demonstrate the advantages of NGINX and NGINX Plus for software-based load balancing:

- 3BetGaming uses NGINX Plus for its load balancing needs, for both capability and affordability.
- IgnitionOne scales to half a million requests per second, with low latency, using NGINX Plus as a software load balancer on commodity hardware.
- Buydig.com delivers e-commerce through a .NET app using NGINX Plus-powered load balancing on Amazon Web Services.

By replacing your hardware load balancer with software ADCs, you can cast off the limitations imposed by hardware to achieve newfound freedom and flexibility that extends throughout the business. From lower costs and less restrictive licensing to more scalability and improved development practices, software load balancers help drive the enterprise-class performance levels that today's businesses – and users – expect.

NGINX Plus has created a new standard for application delivery and load balancing that offers maximum performance, scalability, security, monitoring, and management.

For more information on how NGINX Plus can help your company transition to software load balancing, contact us at https://www.nginx.com/.
Or request your free trial today: https://www.nginx.com/free-trial-request/.