CITRIX®

Pay-As-You-Grow: investment protection and elasticity for your network

Executive summary

Enterprise IT teams are being challenged to increase overall IT flexibility and business agility by incorporating emerging cloud technologies into their next generation datacenter architectures. Top of mind is how to embed a high degree of elasticity to properly handle increasingly unpredictable application traffic loads, while still meeting strict performance service level agreements (SLAs). Satisfying these often opposing goals requires that individual elements within the larger datacenter infrastructure provide a native capability to increase capacity and performance as conditions dictate.

Recognizing this emerging need, Citrix® created NetScaler® Pay-As-You-Grow —a simple licensing model that provides on-demand elasticity, avoids costly hardware purchases and upgrades, and ensures that IT managers can quickly respond to changing traffic conditions. And because it leverages a software-based architecture, NetScaler Pay-As-You-Grow enables datacenter managers to purchase an application delivery solution optimally sized to meet current needs, while preserving the ability to scale up to support future capacity requirements—all without purchasing additional hardware.

In contrast, network appliances with fixed levels of performance and capacity, as well as chassis-based solutions that require the purchase of costly new blades cannot deliver the on-demand elasticity required by next-generation datacenters. Hardware-centric Pay-As-You-Grow offerings force IT organizations to add new hardware each time they need to scale performance, resulting in substantial procurement and installation delays, unused capacity and unplanned network investments. In addition, these solutions are incapable of efficiently handling temporary traffic surges with burst licensing options, such as those offered by Citrix.

Application delivery controllers (ADCs) that rely on custom hardware were sufficient for legacy datacenter environments, but fail to meet the more demanding requirements of the cloud era. With a leading software-based architecture, Citrix NetScaler drives superior performance by leveraging Intel® processor advancements and providing a smaller datacenter footprint.

"Unlocking networking performance with a license upgrade takes a benefit once reserved for software products, and applies it to a strategic portion of the networking market."

Cindy Borovick
Research Vice President
IDC

Summary

- On-demand elasticity for cloud
- Software-based architectures
- NetScaler Pay-As-You-Grow

The dynamic datacenter dilemma

Today's enterprise datacenters are already highly dynamic. Current trends and common events that routinely lead to increases in application workloads include:

- **Introduction of new applications** – Deploying new e-commerce, rich media applications, and other services introduce a new and often substantial load to the network.
- **Introduction of new technologies** – Some technology solutions, such as application and desktop virtualization, have the potential to substantially increase a datacenter's network load. Others, such as VoIP and video, are more equitable in that they typically drive traffic volumes up across all corners of the network.

- **Introduction of new users** – Mergers and acquisitions, geographic expansion, product line/demographic expansion, and organic growth are realities for virtually any business, and can result in anything from a steady increase in traffic levels to a major, overnight change.
- **The dynamic datacenter** – Widespread adoption of cloud architectures and virtualization technology transform enterprise datacenters into private clouds. The impact is a computing environment that can rapidly, if not automatically, account for new and changing business needs as they arise—and a capability that can address dramatic shifts in the demand for network and application resources.

Traffic patterns and overall network load can also be unpredictable due to a variety of factors outside the immediate control of IT. New marketing campaigns, special offers, and all kinds of other business initiatives can spark an order of magnitude increase in demand for a given application. There's also no telling when a new technology, service, or piece of content will "go viral."

All of these are legitimate, business driven events. The challenge for IT is not one of being able to prevent them—as is the case with many other types of threats to today's computing environments. Rather it is one of being able to ensure the capacity of their network and application infrastructure is sufficient to account for these and other scenarios like them.

The reactive approach is too risky

One approach CIOs can take is to respond to increases in demand reactively, that is, after they have already materialized. Upfront costs are minimized in this case, but at what price? IT is faced with a recurring scenario that is not only costly but also disruptive to ongoing operations. For each occurrence, precious time must be taken to assess the situation, and then to design, plan, and implement hardware upgrades, forklift replacements, and/or additional systems. In the meanwhile, employees, customers, prospects, and constituents continue to suffer diminishing performance and an increasingly poor user experience. The net result is invariably damaging to the business and its reputation.

The proactive approach is too costly

The approach at the other end of the spectrum is not much better. Being proactive with regard to the capacity of networking and application infrastructure has historically involved over provisioning those systems that would otherwise require costly and disruptive hardware upgrades. In this case, the business pays for more than it really needs in order to have additional capacity when required. However, this too is an expensive approach.

- Many organizations can't afford the substantial, up-front expense and additional support costs involved
- It consumes scarce resources that could be used for investments that more directly contribute to revenue generation or otherwise improve the organization's competitive standing in the market

The product cost savings alone can be considerable with NetScaler Pay-As-You-Grow. Consider an IT department with an initial throughput requirement of 500 Mbps and an expected traffic growth rate of 15 percent annually. They initially purchase a pair of application delivery controllers with 1 Gbps capacity. Assuming a soft limit of approximately 75 percent of max capacity utilization, this organization will need to upgrade its solution within 3 to 4 years. With NetScaler Pay-As-You-Grow licensing the total product investment required is approximately $64,000 for the initial purchase and $25,000 for the upgrade to 3 Gbps capacity.

An equivalent F5 BIG-IP solution, in contrast, costs $61,000 initially and $106,000 for replacement units capable of meeting the 3 Gbps requirement. The net result: Compared with F5, NetScaler Pay-As-You-Grow saves this organization nearly $78,000 in product costs alone, delivers greater overall throughput, and completely avoids the need for a disruptive hardware upgrade.

Summary

- Increasingly dynamic traffic
- IT cannot respond
- Over provisioning is costly

- It depends on complex and time-consuming forecasting exercises that, in the best case, lead to over over-provisioning and, in the worst, revert to the reactive scenario described earlier

Beware of hardware-based Pay-As-You-Grow offerings

Vendors of chassis-based systems who purport to offer Pay-As-You-Grow flexibility fall woefully short in meeting real-world requirements. Instead of a single solution that scales to provide multiple levels of capacity, chassis systems require the purchase of new hardware, thus violating the fundamental premise of any Pay-As-You-Grow model: scale performance on demand. In contrast, chassis systems mandate that enterprise IT teams complete a full hardware procurement and installation cycle, which often takes multiple weeks.

Further, the advanced purchase and inventorying of hardware blades to meet future requirements is also not viable. IT organizations end up making expensive investments in capacity that may go unused. Very simply, any requirement to add new hardware—even to an existing device—is essentially a 'forklift' solution, and does not align with cloud-based datacenter designs.

Making matters worse, some popular chassis systems, including F5® VIPRION® chassis systems, require expensive licenses to unlock the full performance of the system and to enable advanced features. These licenses are sold per chassis, significantly increasing initial acquisition costs and substantially diminishing potential financial benefits.

Lastly, pure hardware-based approaches preclude the ability to temporarily increase capacity to accommodate temporary traffic bursts. For example, F5 BIG-IP® and VIPRION devices force organizations to permanently add capacity, even when traffic loads may quickly subside and return to normal levels. The obvious mismatch between hardware-centric solutions and real-world enterprise requirements underscores the inability to build genuine elasticity with chassis-based systems.

"With Citrix NetScaler Pay-As-You-Grow, our customers can take advantage of Citrix investment protection as we offer elastic scaling of our complex application and network managed services with an on-demand, simple license upgrade. It is one of the key reasons why we chose Citrix NetScaler over other vendors."

Jon Greaves
Chief Technology Officer
Carpathia Hosting

NetScaler Pay-As-You-Grow licensing is just right

Citrix NetScaler is an advanced load balancer and application delivery controller. Available on a purpose-built networking appliance or as a virtualized appliance, NetScaler helps today's organizations quickly deploy web applications, while reducing TCO, optimizing the user experience, providing security, and ensuring application availability.

NetScaler Pay-As-You-Grow is an innovative, software-based licensing model created by Citrix to help organizations ensure they always have the capacity they need for the essential application delivery capabilities provided by NetScaler without having to absorb too much risk or incur too great of an up-front expense.

Summary

- Hardware solutions are inflexible
- Adding blades is expensive
- Avoid 'forklift' approaches

Application delivery capacity available on-demand

NetScaler Pay-As-You-Grow is a simple, on-demand licensing model that provides investment protection, avoids costly hardware upgrades, and reduces TCO. With Pay-As-You-Grow licensing, customers can purchase a NetScaler solution that meets their near-term performance and capacity requirements, with the confidence that they can easily and quickly scale their implementation in the future without costly hardware replacements. When the need for more capacity arises, all it takes is a simple software license upgrade to increase performance. Available for all NetScaler solutions, including high-performance NetScaler MPX hardware appliances, multi-tenant NetScaler SDX service consolidation platforms, and software-based NetScaler VPX virtual appliances, Pay-As-You-Grow licensing puts the full range of NetScaler performance levels—from 10 Mbps to 50 Gbps per unit—in the hands of today's IT managers.

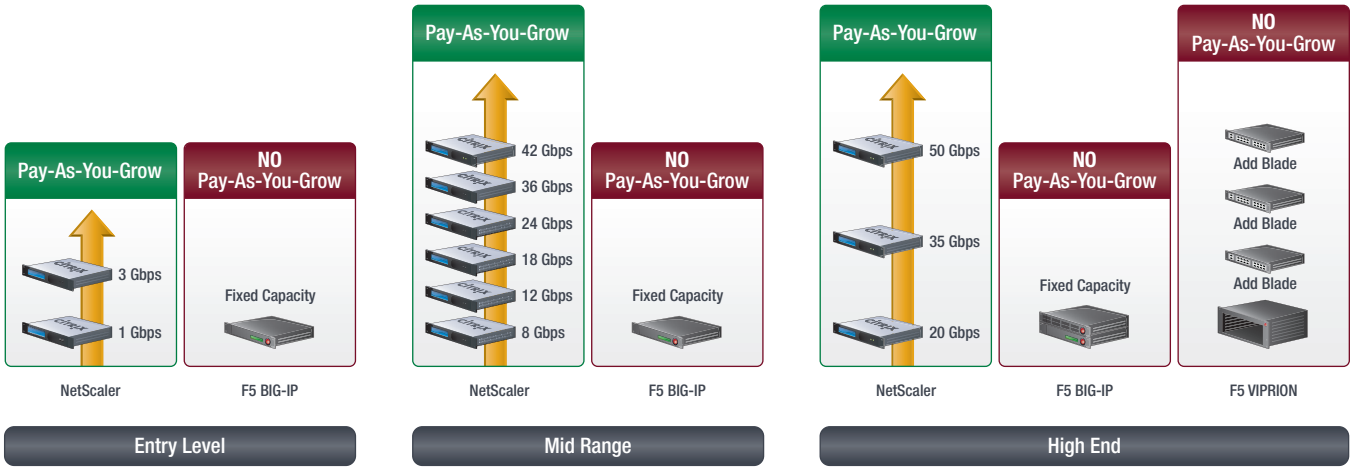


Figure 1: Citrix NetScaler delivers true Pay-As-You-Grow elasticity with no additional hardware

NetScaler Pay-As-You-Grow licensing delivers several cost advantages and other significant benefits to NetScaler customers that hardware-based approaches can't match. These include:

- **Support Cloud Architectures** – Flexible licensing is a boon for providers of public cloud services and IT departments that take advantage of private and hybrid cloud solutions as well. It enables them to quickly and affordably expand their infrastructure as performance and capacity requirements dictate, without incurring the heavy fixed costs and service interruptions of hardware upgrades. Because Pay-As-You-Grow licensing applies to both NetScaler MPX/SDX hardware appliances and NetScaler VPX virtual appliances, it also supports customization and optimization at the lowest possible cost and with the greatest degree of flexibility and scalability.
- **Simplification of initial hardware provisioning processes** – When initially designing their application delivery infrastructure, IT managers can avoid complex traffic forecasting and sizing exercises. Neither do they need to over-provision in advance.

Summary

- NetScaler Pay-As-You-Grow
- Software-based flexibility
- Full platform support

Simple, straightforward estimating techniques and models sized to meet current requirements are all that's needed given the ability to increase capacity whenever the need arises. In addition, scarce resources remain available for other investments and initiatives.

- **Elimination of poor performance and disruptive upgrades –** Diminishing performance and less-than-ideal user experiences can rapidly be remedied without having to design, schedule, and implement a major overhaul of existing application delivery infrastructure—only to be faced with doing the same thing again the next time a strategic business initiative results in a step-function change in demand.
- **Alignment with server virtualization –** Server virtualization and related orchestration solutions are two keys to increased datacenter agility and dynamic scalability of essential IT services. NetScaler Pay-As-You-Grow licensing is highly complementary to server virtualization initiatives in that it also allows datacenter capacity to be scaled in the most efficient way possible.

NetScaler Pay-As-You-Grow changes how IT departments plan for network capacity and how they purchase corresponding application networking solutions, allowing them to reduce upfront effort and expenditures yet still be highly responsive to changing conditions and requirements.

Burst licensing delivers elasticity, even greater savings

The core Pay-As-You-Grow licensing option is an ideal solution for permanent increases in network load. However, it is sub-optimal for scenarios where temporary spikes in demand later subside. Examples of this type of situation can be found in just about every organization across every industry. They include e-commerce sites over the holiday shopping season, the launch of a hot new product, or the kickoff of a new marketing program, advertising campaign or special offer.

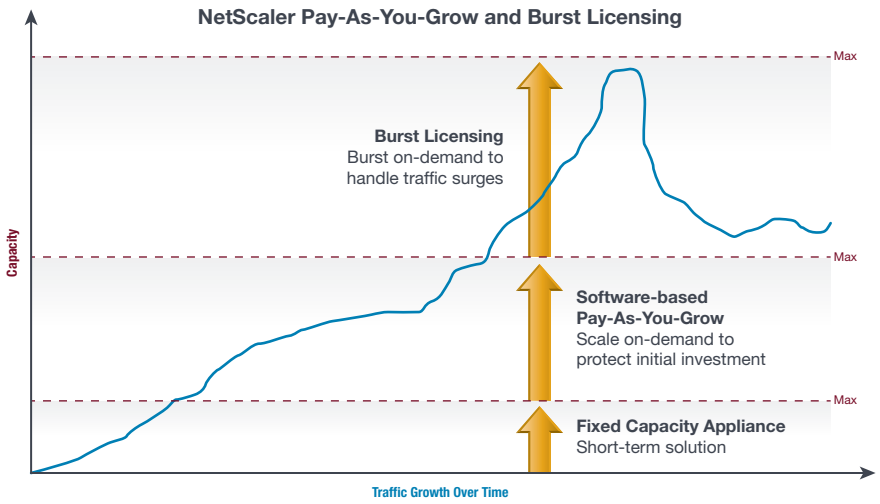
What organizations need in these scenarios is elasticity—not just the ability to scale up on-demand, but to later scale down as well so they can avoid paying for capacity that isn't needed under normal conditions. This is where an extension of the NetScaler Pay-As-You-Grow model, burst licensing, comes into play.

Burst Pack licenses allow datacenter managers to easily expand the capacity of an existing NetScaler system for a 90-day period to allow for seasonal peaks or any other event that causes an unexpected traffic surge. As with the core Pay-As-You-Grow offering, burst capacity can be applied to both MPX and SDX hardware appliances and software-based VPX virtual appliances. In addition, a convenient, self-service capability facilitates license generation, enabling rapid "deployment" of additional, temporary capacity on-demand.

Burst Pack licensing is inherently a software-based capability that brings greater flexibility and sustainability to the network infrastructure. Any datacenter equipment vendor with a Pay-As-You-Grow capability predicated on adding new hardware cannot provide a cost-effective solution to handle temporary traffic surges. Instead, all investment in additional hardware-based capacity is permanent, and potentially unnecessary.

Summary

- No additional hardware
- No over provisioning
- No forklift upgrades



Datacenter managers can take advantage of a burst period to further assess the needs of the organization and to plan for longer-term capacity upgrades if necessary. Otherwise, capacity will revert to pre-burst levels once the associated traffic surge has subsided. The net result with Pay-As-You-Grow burst licensing is an elastic response capability that further optimizes an organization's networking spend by allowing IT to safely navigate spikes in network demand without getting locked into needless, long-term and expensive extra capacity. Once again, there is no need to conduct complex forecasting exercises, over-provision and under-utilize essential resources, or execute expensive, time-consuming, and potentially disruptive hardware upgrades.

Conclusion

Software-based Pay-As-You-Grow is a requirement to build cloud-based and next-generation datacenters. The ability to scale performance on-demand—without the purchase of new hardware—enhances the flexibility, elasticity, and overall agility of the business.

Hardware-based Pay-As-You-Grow approaches, on the other hand, cannot provide the on-demand capacity required by new datacenter architectures. Many of these solutions depend upon custom-built hardware, making them inflexible when compared to software-based designs. Further, fixed capacity appliances and expensive chassis systems cannot respond to dynamic traffic conditions, often result in unused capacity and can be prohibitively expensive to implement. And because they always require the purchase of additional hardware to scale performance, they offer no effective means of supporting temporary traffic increases.

Summary

- NetScaler Pay-As-You-Grow
- True software-based solution
- Meets real-world requirements

NetScaler Pay-As-You-Grow licensing provides both peace of mind and powerful investment protection. Citrix NetScaler incorporates a powerful software-based architecture that directly leverages advancements in Intel® processor technology to elastically scale on demand without additional hardware. Datacenter managers can purchase an application delivery solution that meets their needs now without having to worry about scaling to meet the demands of tomorrow. On-demand capacity increases and Burst Pack licensing change how companies plan for network capacity and how they purchase cloud networking solutions. With software-based Pay-As-You-Grow, IT can optimize the cost and utilization of its application delivery infrastructure while avoiding the need for disruptive hardware upgrades and inefficient over-provisioning tactics.

Additional resources

For additional technical information, please visit us at **www.citrix.com/netscaler**.

Worldwide Headquarters
Citrix Systems, Inc.
851 West Cypress Creek Road
Fort Lauderdale, FL 33309, USA
T +1 800 393 1888
T +1 954 267 3000

Americas
Citrix Silicon Valley
4988 Great America Parkway
Santa Clara, CA 95054, USA
T +1 408 790 8000

Europe
Citrix Systems International GmbH
Rheinweg 9
8200 Schaffhausen, Switzerland
T +41 52 635 7700

Asia Pacific
Citrix Systems Hong Kong Ltd.
Suite 6301-10, 63rd Floor
One Island East
18 Westland Road
Island East, Hong Kong, China
T +852 2100 5000

Citrix Online Division
6500 Hollister Avenue
Goleta, CA 93117, USA
T +1 805 690 6400

www.citrix.com

About Citrix
Citrix Systems, Inc. (NASDAQ:CTXS) is a leading provider of virtual computing solutions that help companies deliver IT as an on-demand service. Founded in 1989, Citrix combines virtualization, networking, and cloud computing technologies into a full portfolio of products that enable virtual workstyles for users and virtual datacenters for IT. More than 230,000 organizations worldwide rely on Citrix to help them build simpler and more cost-effective IT environments. Citrix partners with over 10,000 companies in more than 100 countries. Annual revenue in 2010 was $1.87 billion.

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