White Paper

Application delivery: why the third D matters

Applications rely on the three Ds: development, deployment and delivery.

CITRIX®

Typically, the need for high-quality development and deployment is well understood. But application delivery can become a distant specialism, delegated to the networking team. When this happens, your investments in development and deployment run the risk of being compromised.
All applications are deployed on servers and are supported by other elements such as database and authentication platforms before being delivered to users working on many different devices and network types. Any of these elements can become a weak link in application delivery, compromising either the security or user experience of the application.

From load balancers to Application Delivery Controllers

The appliances known as Application Delivery Controllers (ADCs) have evolved over the years from their origins as Load Balancers deployed in the data center.

Today, ADCs have become a strategic control point in the IT estate. They take the strain off servers and databases. They reduce TCO in the data center. They remain the best way of getting a real-time view of data flows and resource requirements. Above all, they guarantee that your applications will be delivered in a way that's fast, reliable and secure.

Citrix has been developing, deploying and delivering applications across complex networks for 26 years. NetScaler, our market-leading ADC, embodies our accumulated expertise. By securing and optimizing application delivery, it enables businesses to extract the maximum value from their applications and services.

NetScaler is a powerful platform for securing and delivering applications, data and services. In addition, when delivering Citrix virtualised apps and desktops, NetScaler offers additional unique benefits that enhance the management and experience of those services.

Full visibility and access control
NetScaler for virtual applications and desktops

Virtualizing apps and desktops allows organizations to cut the cost of IT operations, boost employee productivity and respond to change in a flexible way. But virtualization also brings with it the need to secure applications and deliver a consistently excellent user experience.

Granular access policies and advanced monitoring

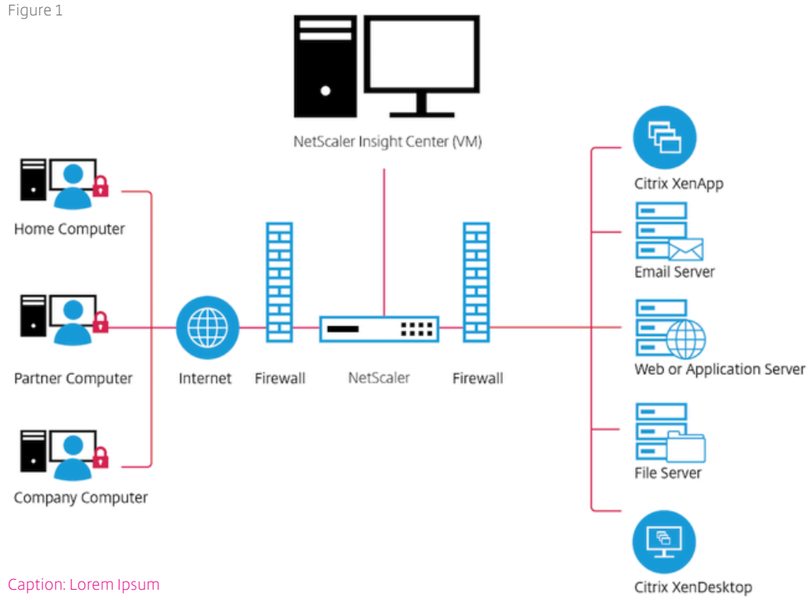
Deep integration between NetScaler and XenApp, XenDesktop and XenMobile delivers the following key benefits:

- SmartAccess policy management enables extremely granular control, allowing you to apply security policies that provide an unbeatable user experience.
- For monitoring usage and performance, HDX Insight is tightly integrated with the Citrix ICA protocol to deliver actionable insights for troubleshooting.

Benefits

- Maintain data compliance for mobile users.
- Extend the security perimeter to all enterprise users, regardless of their location or device.
- Reduce time to resolution for troubleshooting: improve user experience and productivity.
- Deliver application analytics to boost operational efficiency and avoid capacity constraints.

Figure 1



Caption: Lorem Ipsum

HDX Insight & Insight Center: Best-in-class visibility to maximize the user experience

NetScaler Insight Center avoids the need to add in and manage other monitoring tools. NetScaler's role as a full proxy between applications and users makes it perfectly positioned to monitor application traffic, usage and performance at a very granular level.

Benefit

- Proactive performance management: using real-time monitoring, administrators can react to performance issues before they hear about them from users.
- Reactive performance management: rich data allows administrators to rapidly troubleshoot reported user experience issues.
- Preventive performance management: detailed analysis of application usage patterns can shed light on where and how to invest in applications and services.
- HDX Insight provides additional detailed visibility into XenDesktop, XenApp and XenMobile. Its ability to parse the ICA protocol allows you to monitor specific latency-sensitive traffic such as mouse commands and video streams within a single application.

Striking the right balance between security and user experience

NetScaler for mobile performance optimization

When an organisation enables mobility, it needs to manage delivery of a wide range of services over a wide range of networks to a wide range of devices. Careful planning is required to achieve this in a way that doesn't expose the enterprise to security risks.

Simplify management and maximize the mobile user's experience

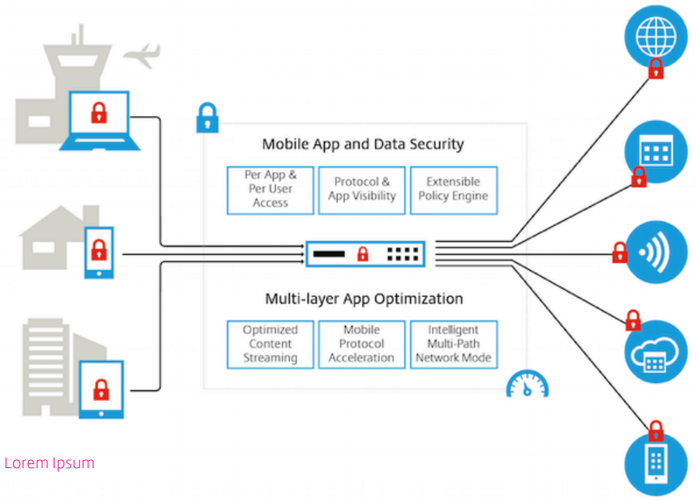
NetScaler, the industry's most advanced mobile gateway, allows you to address this dilemma. Combined with XenMobile, it provides end-to-end secure data access and sophisticated optimization of both applications and network delivery.

- NetScaler Unified Gateway with SmartControl centralises all secure gateways and policy management into a single point of control for all services.
- Simplify the user experience and reduce risk with single sign-on for users across on-premise and SaaS/Cloud applications (via SAML 2.0).
- NetScaler MobileStream optimizes delivery across lossy, high-latency mobile networks using intelligent multi-path optimization, content caching, compression and optimization for TCP and ICA.
- Micro-VPNs protect enterprise mobile applications on a per-application basis and leave personal data untouched on the mobile device.

Benefits

- Reduce operational complexity and increase security by consolidating remote access management into a single platform.
- Maximize your employees' on-the-go productivity with the best possible user experience, including single sign-on and powerful network optimization.
- Manage compliance risks by drawing a clear distinction between corporate and personal data on both employees' devices and your servers.

Figure 2



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Seamless productivity for administrators and users
How NetScaler optimizes Microsoft (and the rest)

Over time, application management becomes reliant on a mixture of delivery mechanisms and security measures. It is common for the Microsoft environment to be architected in a different way to the web environment and/or the virtual and mobile apps environment. To provide users with a seamless experience that improves productivity, it's necessary to move beyond this fragmented and inconsistent approach.

Manage identity and connectivity – efficiently

NetScaler creates seamless management and a consistent user experience for all applications by:

- Consolidating multiple access platforms into a single unified gateway, which greatly simplifies the application of security to all services.
- Centralising policy management for all applications, data and services, with full auditing and reporting.
- Optimising application server performance with SSL offload and TCP multiplexing.
- Utilising single sign-on through its full proxy architecture and support for on-premise and cloud-based authentication using services such as ActiveSync and protocols like SAML 2.0.
- Providing pre-defined templates that speed up deployment and remove the need for deep technical knowledge to configure and manage the application delivery platform.
- Providing visibility into all application performance with Insight Center.

Benefits

- Improve productivity and enhance user satisfaction with single sign-on, seamless failover and improved application performance.
- Reduce operational costs by consolidating secure gateways and monitoring applications and networks effectively.
- Speed up and simplify application deployment.
- Reduce costs by improving server efficiency: increase application performance while increasing the number of users per server with offloading and optimization.

For a truly agile, application-based data center
NetScaler and Cisco's Unified Fabric

Many organisations use Cisco in their network infrastructure and are considering the move to SDN. Like every significant technology shift, this one poses a challenge: how to choose the right ADC for the network as it is used today and as it will be used tomorrow?

Future-proof your investment with NetScaler

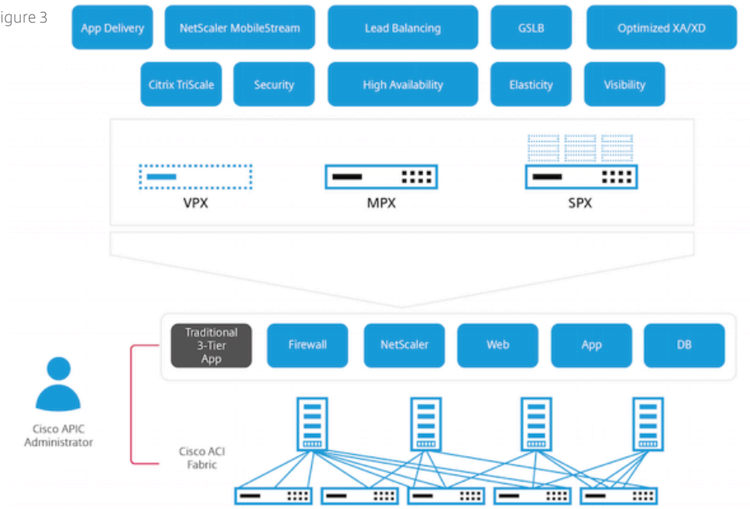
NetScaler is the only ADC that fully integrates into Cisco's Unified Fabric Cloud Network Services portfolio.

- Cisco sell the NetScaler 1000V as a fully integrated element of the Nexus 1100 Cloud Services Platform using vPath service insertion architecture. Cisco also recommends NetScaler 1000V as a direct replacement for its discontinued Cisco ACE server load balancer.
- NetScaler offers deep integration with Cisco in today's datacenters. For example, Cisco Remote Integrated Services Engine (RISE) allows NetScaler to appear as a remote services blade on the Cisco Nexus 5000, 6000 and 7000 Series switches. Deep integration offers simplified deployment, automated control and built-in multi-tenancy.
- Cisco ACI is a scalable, elastic SDN architecture for physical and virtual appliances. Within ACI, APIC is deeply integrated with NetScaler for automation and configuration management. By deploying Cisco ACI with NetScaler in the future, you can preserve your existing Layer 4-7 operational models and gain the option of scaling applications and service delivery infrastructure in the Cloud or in on-premise next-generation data centers.

Benefits

- Preserve existing operational models and gain future investment protection with the option of scaling applications and service delivery infrastructure in the Cloud.
- Build your long-term application-centric strategy around a partnership that Cisco describes as "unique", in which NetScaler is positioned as a "key component" of future ACI deployments.

Figure 3



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TriScale: flexibility and agility for next generation datacenters

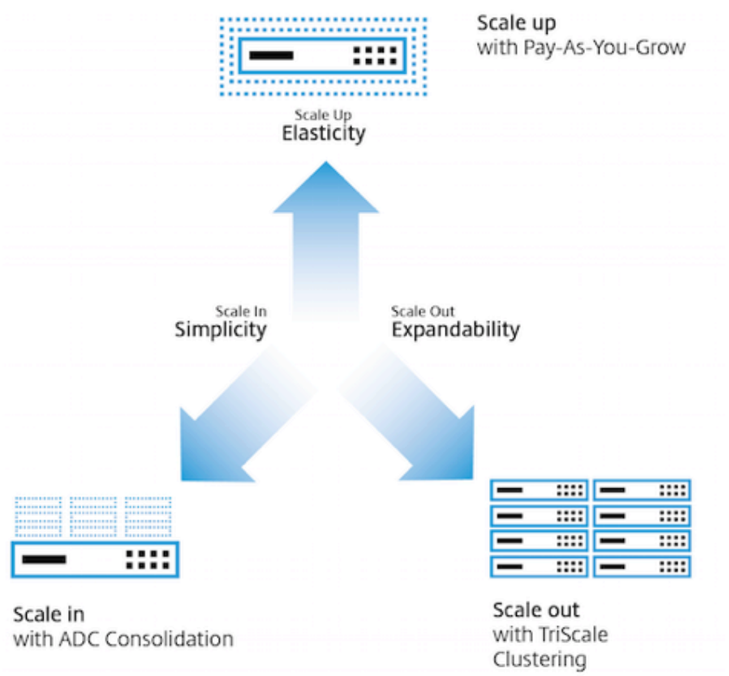
Within NetScaler, TriScale allows IT organizations to avoid the twin extremes of fixed-capacity network appliances and expensive chassis-based solutions that require new blades every time additional capacity becomes necessary.

- Scale Up: increase network elasticity with up to 6x Pay-As-You-Grow licensing points. Only pay for the capacity you need and expand on demand.
- Scale Out: expand capacity up to 32x further with zero downtime and no idle network resources by leveraging Tri-Scale Clustering.
- Scale In: simplify application delivery support to more applications and business units and put an end to device sprawl by consolidating up to 80 NetScaler instances on a single hardware platform.

Benefit

- Proactive performance management: using real-time monitoring, administrators can react to performance issues before they hear about them from users.
- Reactive performance management: rich data allows administrators to rapidly shed light on where and how to invest application.

Figure 4



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Scalable, available and secure
NetScaler for database optimization

The rise of big data has led to the proliferation of increasingly large databases to support applications. This has resulted in challenges: how can administrators scale these databases without increasing the risk of creating a single point of failure? Taking into account the increased costs associated with the management of large SQL databases, it's clear that a new approach to managing them is required.

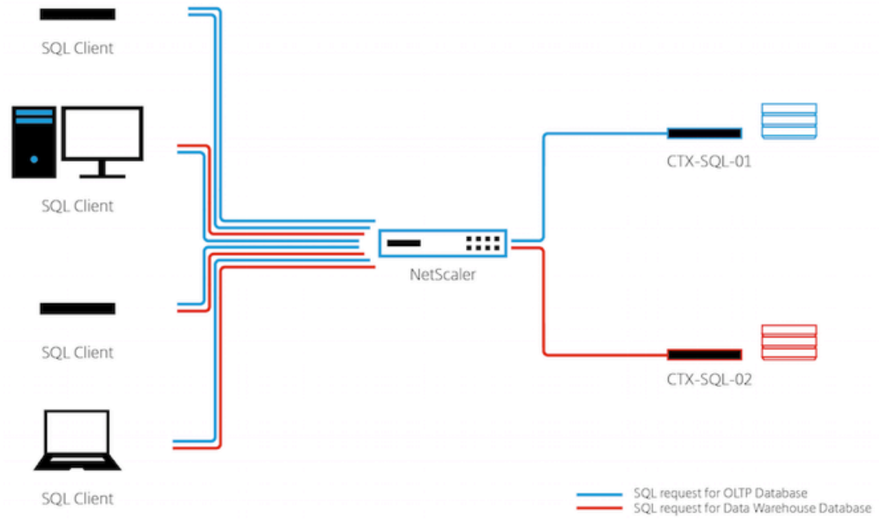
Optimized scale-out performance for Oracle MySQL and Microsoft SQL

- NetScaler consolidates requests and drastically reduces the number of client-server connections. Load balancing provides high availability and content switching offloads traffic from the databases. NetScaler's health monitoring selects the database server that will return up-to-date data in the fastest time.
- By intelligently distributing database queries across multiple servers, NetScaler enables scaling out with commodity hardware, preserving the viability and improving the performance of Oracle MySQL and Microsoft SQL at high volumes.

Benefits

- Cut the cost of managing SQL databases as the volume of queries grows.
- Improve productivity and maximize performance through the intelligent consolidation of thousands of client-server connections into a much-reduced workload for servers and databases.
- Prolong the lifespan of existing solutions and avoid the need to opt for costly, monolithic alternatives.

Figure 5



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Consolidation without compromise
NetScaler in the data center

Over time, as IT brings new applications and services online, different decisions are made regarding the application delivery requirements. Changes in vendor preference and infrastructure inherited from mergers and acquisitions can result in appliance sprawl. The result: many different appliances – and a lot of unused capacity. Managing this kind of environment can be expensive and complex.

Multi-tenant appliance, purpose-built for consolidation

As organisations look to virtualise and consolidate their IT environments, the need to reduce appliance sprawl and over-capacity becomes critical. Designed specifically to facilitate this shift, NetScaler SDX offers:

- A fully isolated multi-tenant platform that can consolidate up to 80 instances of NetScaler with no impact on throughput. Unlike other multi-tenant solutions, each NetScaler SDX instance:
  - Is completely isolated in terms of memory and CPU and traffic flows for clients
  - Provides full config independence so that different instances can run different versions of software
  - Allows separate instance IP addressing for easy deployment.
- NetScaler SDX is also available within public and private cloud architectures, allowing businesses to expand into the cloud while maintaining centralized control and network visibility.

Benefits

- Drive business value by delivering applications at lower operational cost and increased reliability.
- Simplify deployment and guarantee your ability to meet Service Level Agreements.
- Create outstanding IT flexibility and cost reduction by enabling expansion with hybrid Cloud architectures.
- Integrated with Amazon Web Services, Microsoft Azure and IBM SoftLayer

White Paper NetScaler summary asset

Corporate Headquarters
Fort Lauderdale, FL, USA

Silicon Valley Headquarters
Santa Clara, CA, USA

EMEA Headquarters
Schaffhausen, Switzerland

India Development Center
Bangalore, India

Online Division Headquarters
Santa Barbara, CA, USA

Pacific Headquarters
Hong Kong, China

Latin America Headquarters
Coral Gables, FL, USA

UK Development Center
Chalfont, United Kingdom

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