



Zeus Elastic Application Delivery platform

Zeus. Why wait...

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Zeus Elastic Application Delivery platform

Introduction

The next 5 years promise a revolution the provision of internet applications. Organizations will progress by way of internal, private cloud technology, towards wide-scale distributed applications that take advantage of the cheap, mobile and ubiquitous nature of public cloud computing. The challenges of managing traffic and providing consistent levels of service will become significant, and organizations should look towards technology such as Zeus' Elastic Application Delivery platform to meet these needs.

The last 5 years have been the half-decade of the client device. The phenomenal uptake of smart phones and other mobile devices has been driven by a confluence of commercial and technological factors. No longer can an organization just consider fixed, static client devices with a known set of capabilities, but must tailor services for a wide variety of client types with varying capabilities and resources.

The next 5 years promise a similar revolution for the server-side of web based applications. The economies of scale, advances in hardware performance and technical advances in virtualization have created a new environment where server resources are cheap, mobile and ubiquitous. In the space of 5 months, the number of web services running on the Amazon EC2 public cloud grew 33%, to over 365,000¹.

Analysts predict that the growth of the public cloud will be dwarfed by organizations deploying private cloud infrastructure internally. Whereas IDC estimates \$0.7bn spend on servers for public cloud infrastructure by 2014, in the same period they predict \$11.8bn server spend for pure private clouds² - automated, converged and virtualized server, storage and network resources.

Public and private cloud hosting herald cost-efficient, scalable and automated infrastructure for applications, but bring concerns of reliability, availability, performance and security. Early adopters have found that although the benefits are well within reach, management and monitoring tools are lacking in the face of fluid and scalable infrastructures. Users of multi-tenant cloud services must be mindful of the challenges of maintaining the level of service their users are accustomed to receiving from prior dedicated infrastructures.

¹ http://news.netcraft.com/archives/2010/05/14/may_2010_web_server_survey.html

² <http://www.idc.com/getdoc.jsp?containerId=223118>

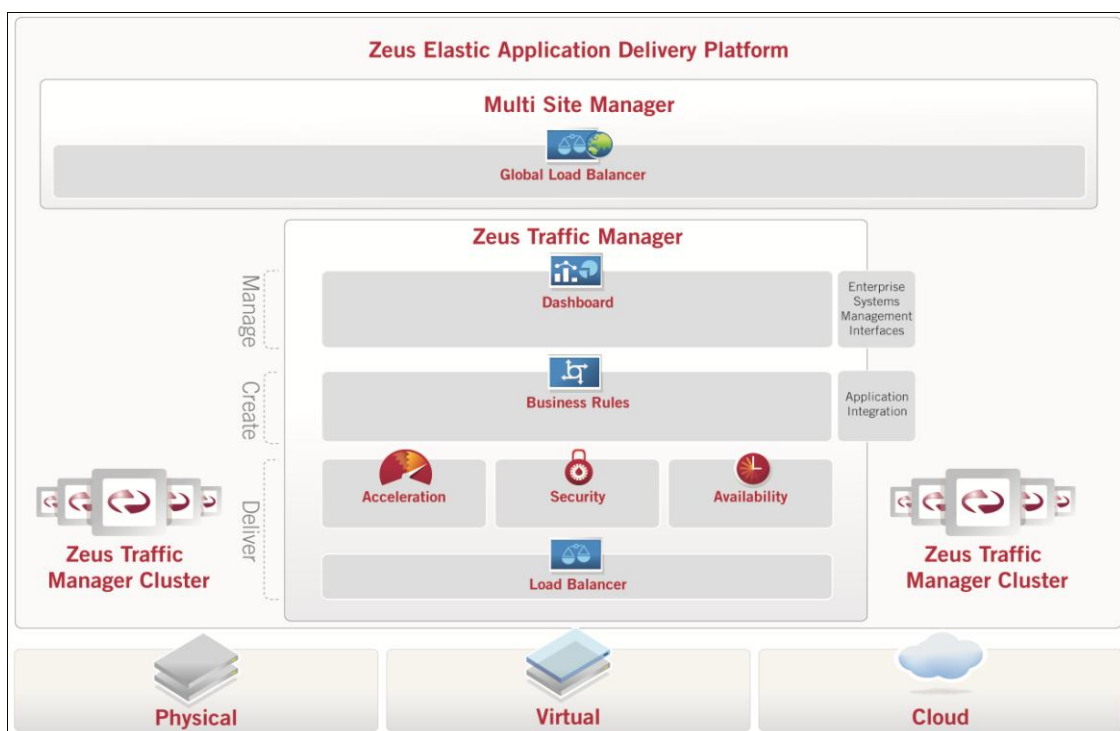
Components in Zeus Elastic Application Delivery platform

The Zeus Elastic Application Delivery platform provides a mature, scalable traffic management fabric that underpins applications delivered from any combination of physical, virtual or cloud-based datacenters.

This platform allows you to:

- **Reduce risk and contain costs** by enabling the use of multiple datacenters, including cloud resources, and by routing and shaping traffic and dynamically scaling applications to provide the capacity required by the current load;
- **Gain a global perspective of application performance and reliability** across multiple locations, with detailed visualization and reporting to understand traffic trends and manage user interactions in real time;
- **Improve your service performance and availability** using both global and local load balancing techniques and application acceleration capabilities, and TrafficScript policies to route, prioritize and secure traffic.

Organizations depend on Zeus to deliver complex applications in large-scale environments, spanning multiple locations, using multiple protocols and services, in a reliable, high-performance, secure manner.



Zeus Elastic Application Delivery platform components, spanning physical, virtual and cloud environments

Components

The Zeus Elastic Application Delivery platform contains three key components:

- **Multi-Site Manager** for management of the entire traffic management fabric;
- **Global Load Balancer** for global traffic management;
- **Zeus Traffic Manager** for local traffic management.

Zeus Multi-Site Manager

The Zeus Multi-Site Manager component coordinates the activities of the Zeus Traffic Manager and Global Load Balancer components across multiple locations. It provides a global view of application configuration, activity and health.

Global Load Balancer

The Global Load Balancer component controls how users access services on a global basis.

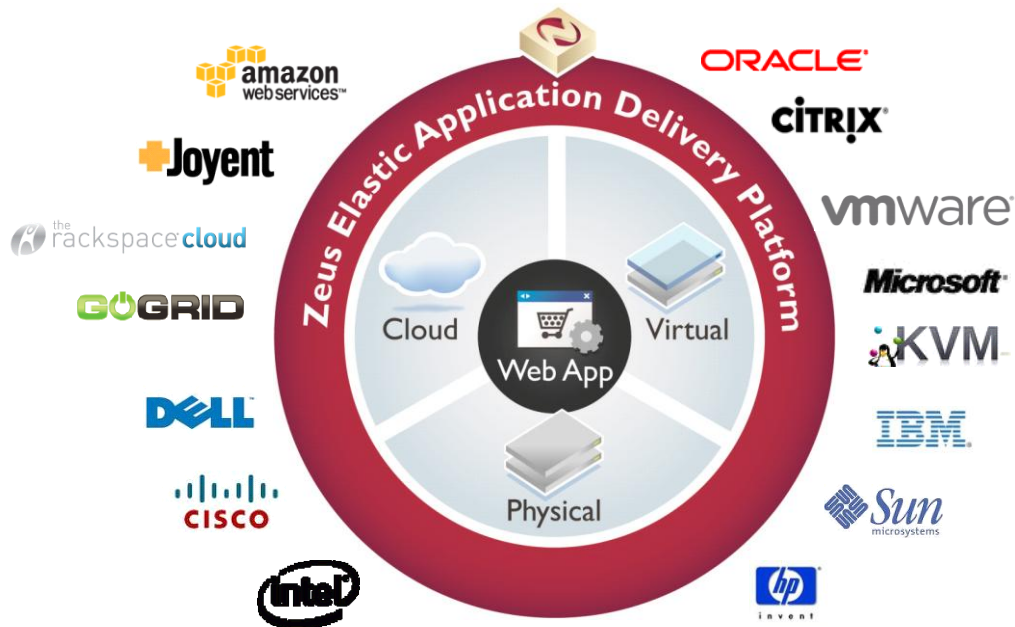
When a service is provided from multiple locations, Global Load Balancer controls which location each user is directed to. The routing decision can consider service availability, service performance, geographic proximity and custom business policies that may serve to minimize cost or enforce security policies.

Zeus Traffic Manager

The Zeus Traffic Manager component performs local load balancing and traffic management within each datacenter location. It inspects, manages and routes all user interactions with the local services to ensure that services run at maximum efficiency, that users receive the best possible level of service, and that local security and business policies are applied.

Supported application deployment platforms

The Zeus Elastic Application Delivery platform is based purely on software technology. Zeus' unique application acceleration and offload functionality utilizes general-purpose compute resources and does not depend on assistance from hardware accelerators.



Zeus Elastic Application Delivery platform supports the widest range of deployment environments

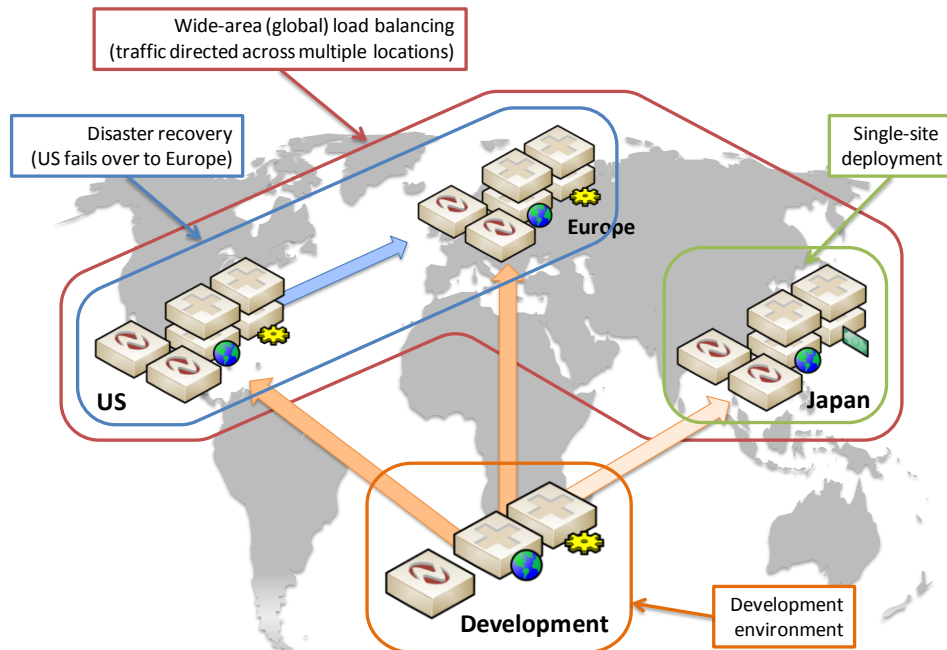
Consequently, Zeus platform components may be installed in any physical server environment, in any virtualization environment and on a very large majority of cloud Infrastructure-as-a-Service platforms.

This affords great flexibility in deployment choice. Software components may be scaled up and down rapidly, and the Zeus platform presents a consistent application delivery fabric for applications, no matter what environment they are installed in.

Using Zeus Elastic Application Delivery platform

Multi-site application deployment

When an application or service is deployed from multiple locations simultaneously, the Zeus platform manages traffic to and within each location based on business priorities and deployment strategies.



Traffic Management units are deployed in each location, with integrated management from Zeus Multi-Site Manager and global traffic direction using Global Load Balancer.

Zeus Elastic Application Delivery platform manages traffic across all locations depending on business policy, availability and service performance

- **Disaster recovery:** One location can be nominated 'master', with the remaining locations configured as failover slaves. All traffic is directed to the master unless it fails completely, in which case traffic is directed to the nominated failover. In the event of compound failures, a failover chain defines which location is used.

Failback when the master recovers may be automatic, but most commonly an organization uses the Zeus platform either to orchestrate the failback once the master has synced with the active slave, or simply nominates the active slave as the new master and reconfigured the failover chain.

Zeus' Autoscaling capability may be used to ensure that the minimum resources are running in each warm slave location. This way, correct operation of the slave location can be verified by Zeus' monitors, and additional capacity can be brought online on demand if live traffic is transferred to the slave.

- **Multiple Active Sites:** The Zeus platform can load-balance traffic between multiple active sites simultaneously, typically in order to optimize user service levels by routing each user to the location that is geographically closest. Health monitors ensure that this technique is resilient to location failure.

Advanced routing rules may be deployed to implement custom global load balancing policies. For example, as a first line of defence, you may wish to route all traffic from an embargoed country to an alternative location, or in the case of a development and production environment, route internal traffic to the test site, and external traffic to the production one.

Where an application or service consists of multiple components, the Zeus platform can route each component individually. For example, a retail application may be distributed globally for performance reasons, but the payment gateway located in a central location for compliance and security reasons. Routing may be based on global redirection using multiple service names (DNS names), or may use internal forwarding with full SSL encryption if based on request parameters.

Resource bursting and scaling

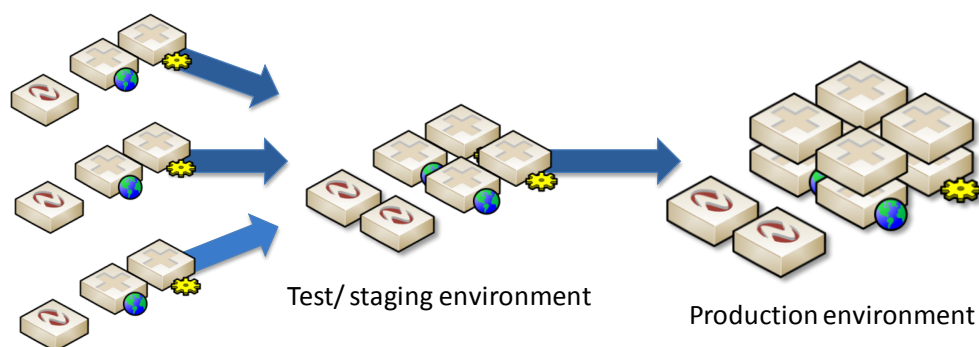
The Zeus platform supports cloud bursting by dynamically routing traffic between locations; traffic can be migrated on a global and local basis from one point of presence (such as a fixed-size internal resource) to a second (such as an external cloud).

Zeus' application auto-scaling capability scales applications on cloud or virtual platforms 'on demand'; for example, in response to service degradation due to traffic spikes.

Cloud bursting can be used to good effect with auto scaling. An idle instance of an application may run continually on a cloud platform with minimal resource, continually tested to verify correct operation and ready to scale on demand if traffic is migrated.

Development, Test and Production locations

Multi-Site Manager controls and reconciles traffic management policies across multiple locations, and is an ideal platform for integrated dev, test and production environments.



Multiple small, independent development environments

Configuration for the development location may be imported and exported from a source control system, so traffic management policies and load balancing rules can be developed in parallel with application code.

Multi-Site Manager makes it straightforward to import updated configuration from the dev to test environments for final acceptance testing. Zeus' rich suite of APIs can automate this process to eliminate the chance of manual error if required.

Similarly, accepted configuration can be deployed on the 'production' location, and full auditing gives a change log so that updates can be tracked.

Infrastructure management

Multi-site Manager's rich UI presents diagnostic information, activity graphs and logs and full application delivery configuration in a single, global view.

Traffic distribution changes can be orchestrated or conducted manually, and typical infrastructure changes can be made in a controlled, reproducible manner with no loss of end user traffic and no loss of sessions.

For example, if one location should be taken offline because it is no longer required, Global Load Balancer can drain that location and route new users to alternative service endpoints. Traffic received at that location can be routed internally to the new endpoint. Multi-Site Manager's UI will report on usage across the application estate so that the administrator can track when all user sessions have expired and it is safe to decommission the location.

Within a location, Zeus Traffic Manager's 'connection draining' capability can be used to drain traffic away from an individual server, yet ensure that essential user sessions remain until the session expires. This way, a server can be safely taken out of service, for example, for a routine upgrade, without interrupting any user transactions.

Finally, Zeus Traffic Manager's powerful connection tracking capabilities can be used to upgrade applications on-the-fly, running old and new generations of an application concurrently and migrating users from the old to the new as their sessions complete.

Benefit: Create exceptional online services

Zeus Elastic Application Delivery platform controls how your customers use your online services. It is the ideal location to orchestrate interactions with complex applications, to implement access, prioritization and routing logic, and to quickly and securely resolve application problems.

Zeus' free **Development License** and **IDE integration** makes Zeus Traffic Manager available to any developer, for any non-production purpose, at no cost. Whenever you create a new application, you can easily take advantage of Zeus' traffic management functionality within that app.

Zeus Elastic Application Delivery platform is **the ideal platform to control how customers use your applications**. For example, you can create business rules that define how user interactions should be prioritized and deploy these on the traffic manager. Zeus Traffic Manager can also host application logic to route users to the correct version of an application, to perform security checking and to transform and optimize requests and responses.

Because it manages and controls user interactions before they reach your applications, Zeus Elastic Application Delivery platform enables a much more agile, dynamic and responsive architecture, resulting in significant operational efficiencies.

Business Traffic Management policies may be written using RuleBuilder, TrafficScript or Java:

- **RuleBuilder** is a simple, easy-to-use graphical interface to create simple business rules to manage traffic;
- **TrafficScript** gives complete control, allowing you to create sophisticated policies that manipulate traffic and fully control how each request is managed and prioritized;
- **Java:** For the ultimate flexibility, traffic management rules may be written in Java, a powerful and familiar programming environment. Traffic Management rules may also be written in Ruby, Python or any other language that can target the Java Virtual Machine.

Benefit: Manage exceptional online services

Zeus Elastic Application Delivery platform provides key metrics to monitor the service levels, availability and use of your services, even across multiple, distributed locations. Detailed diagnostics and visualization tools allow you to rapidly diagnose and resolve application problems. It facilitates routine management tasks and eliminates downtime by intelligently routing and draining traffic between locations, servers and applications.

Zeus improves your operational efficiencies. It provides a single dashboard to visualize and report on service levels, availability and traffic levels. Full traffic visualization and logging, along with a detailed on-demand diagnostics report gives you the management information you require to rapidly resolve application problems and forecast future infrastructure needs.

Real-Time Analytics allows you to drill down, in real time, to inspect your traffic and isolate problem cases. For example, in the case of a denial of service attack, you can quickly identify the properties of the attack traffic and deploy a TrafficScript policy to control that traffic.

Service Level Monitoring checks that your services comply with your desired service levels. If the performance falls outside your desired Service Level, Zeus Traffic Manager can automatically invoke new traffic management policies to deal with the slowdown.

Application Auto-Scaling manages your infrastructure requirements for you, automatically adding or removing servers of the appropriate type on supported virtual and cloud infrastructures.

Zeus provides **a range of management interfaces** for complete integration with external systems. The Zeus platform observes service health and all user interactions, and can inform datacenter monitoring services when key events occur. Open APIs (a standards-based SOAP API and a CLI interface) can be used to push infrastructure changes to the platform in order to participate in enterprise-scale management services.

Benefit: Deliver exceptional online services

Zeus Elastic Application Delivery platform ensures the successful delivery of your services. It intelligently load-balances traffic across your infrastructure, accelerating and optimizing each request to deliver the best possible performance and maximize efficiency. Advanced health monitoring and failover protects services from a wide range of failures, and application firewalling and traffic shaping secures your services from malicious requests and floods of traffic.

To ensure maximum availability, Load Balancing, Health Monitoring and Session Persistence track the activity of each user accessing your service. Load Balancing selects the optimal location for each user, and the optimal server node for each request, informed by user session information and server health. TrafficCluster failover provides multiple levels of resilience for the traffic manager itself.

To deliver maximum performance and efficiency, Zeus employs a combination of optimization techniques. **Content Caching** responds rapidly to common requests and reduces the volume of transactions; **HTTP and TCP optimization** ensures that transactions are presented in the most efficient manner to your servers; **SSL, Compression and XML offload** frees your servers from compute-intensive tasks to allow them to process more transactions.

To protect your services, Zeus' Application Firewall Module inspects all traffic and eliminates requests that match likely attack signatures or indicate inappropriate access to your services, meeting the security requirements of the PCI DSS standard. Bandwidth and Rate Shaping and Connection Overload Protection effectively limit the damage that flash floods and malicious traffic volumes can have on your level of service.

TrafficScript rules can control all aspects of the service's delivery, allowing you to specify precise business policies to control the level of service and content that each user receives.

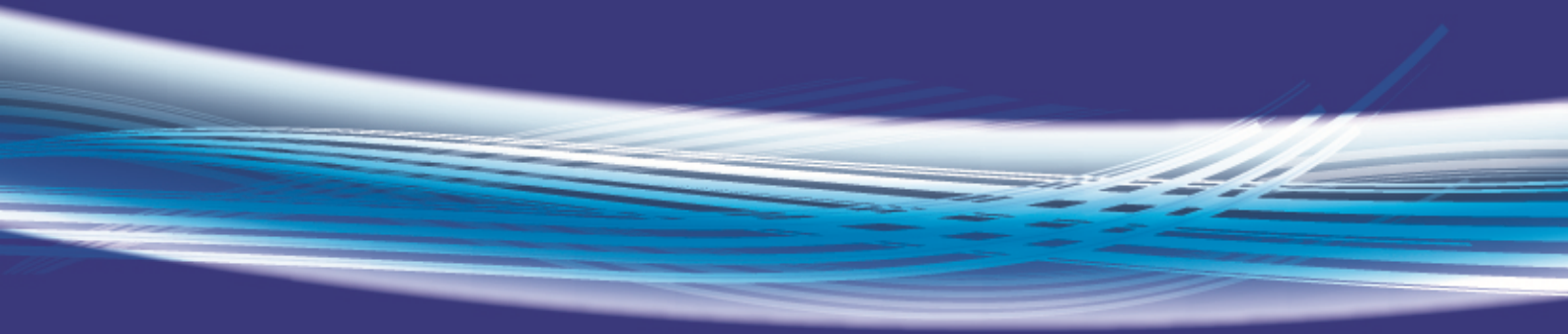
Conclusion

Forward-thinking organizations who are adopting private, hybrid and cloud platforms must consider the management layers required to deploy, control and deliver their business applications from these platforms. The increased mobility and scalability of these platforms introduce challenges that current solutions may not adequately cater for.

Zeus provides key, proven traffic management technology to control and monitor how users interact with the applications. Zeus' platform spans physical, virtual and cloud platforms with a consistent, high-performance set of technology components. You can deploy and manage your applications anywhere, moving between environments, and depend on Zeus with confidence to deliver the applications successfully no matter what deployment choices you make.

For more information

For more information on Zeus traffic management solutions, please visit www.zeus.com and our technical knowledge center, knowledgehub.zeus.com.



For further information, please email: info@zeus.com or visit www.zeus.com
Stay in touch with Zeus by following: blog.zeus.com or twitter.com/ZeusTechnology

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