

Edge/Origin Cloud Hosting: A New Paradigm

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While reliability, security, performance, and affordability remain the fundamental business objectives of all web hosting solutions, the best way of achieving these objectives continues to change with rapid shifts in web hosting technologies and services. The most recent and hyped change is the emergence of cloud hosting platforms. Unquestionably, the best examples of these cloud platforms have redefined the ratio of cost to quality for delivering web content and applications. However, in tandem with the rise of cloud hosting, there is a lesser known transformation happening: the mainstreaming of edge/origin cloud hosting solutions.

What is an edge/origin cloud hosting solution? The “edge” of an edge/origin cloud hosting solution is a global network of servers that proxy end-user http and https requests made to a website. An “origin” is where a website or application is hosted or, in other words, it is the target of an end user’s request after it is proxied by the edge network.

The “cloud” component of an edge/origin cloud hosting solution refers to the hosting of an “origin” on one or more commercial cloud computing infrastructures.

Multi-origin cloud hosting with global edge routing, caching, and security services is the new standard for business-critical websites.

The largest edge network is owned by Akamai which boasts over 100,000 proxy servers hosted with nearly every ISP world-wide. The largest cloud computing platform is Amazon which is estimated at 500,000 servers located in a number of different geographic regions.

The “edge/origin” hosting architecture is not new. By necessity almost all of the most popular websites use this architecture to reach their global audiences as quickly and reliably as possible. What has changed is: the emergence of commercial cloud hosting services; lower price points for edge routing, caching and security services; and the demand for greater levels of reliability, performance, and security as the Internet continues to grow as a business-critical medium of communication and commerce.

What’s so compelling about an edge/origin cloud hosting solution? In short ... a lot! Many quality of service enhancements are

possible by proxying all end-user requests through a robust edge network to origins hosted on a high quality cloud computing infrastructure. This includes critical performance, reliability, and security enhancements that cannot be replicated through other web delivery models.

Performance: Enhanced performance, particularly when there is a global audience for your website, is the most commonly understood advantage of leveraging an edge/origin cloud hosting architecture. This performance enhancement comes three ways. First, advanced routing techniques on the edge network accelerate the transit of end-user requests across the Internet to the target origin by up to 30% in the face of network congestion and/or poor peering relationships between ISPs.

Second, performance is improved by caching website content – even dynamically created content – on the edge platform. With typical request offload rates from the origin via edge caching greater than 80%, website delivery times are often reduced tenfold for end users geographically remote from the origin.

Third, the characteristic scalability of cloud computing platforms helps ensure websites have the necessary compute, storage, and network resources to respond quickly to changes in demand. When success on the web is measured in milliseconds, these kind of performance gains are invaluable and can't be replicated any other way.*

Reliability: Along with improved performance, an edge/origin cloud hosting solution delivers a higher level of reliability through a number of different mechanisms. First, quality cloud hosting infrastructures are highly available platforms. They are engineered with levels of network, storage, and compute redundancy and scalability impossible for even large organizations to replicate and yet are made available by cloud hosting providers at very affordable rates.



Second, reliability is improved because edge networks are capable of proxying a massive number of requests. For example, Akamai claims to deliver between 15-30% of all Web traffic, i.e. over two trillion daily web transactions. This kind of edge network capacity combined with highly efficient edge caching mechanisms translates into dramatically improved scalability for your website. Depending on the offload rates achieved by the edge caching service, the edge network can proportionally

reduce load on the origin servers and networks so that they remain responsive during large spikes in traffic. While scalability is ultimately dependent on the efficiency of the website, extensive performance testing by Carbon₆₀ has demonstrated a fifty-fold improvement in scalability for sites with optimized edge caching in place.

Third, reliability is improved through the logic of the edge routing configuration. For example, if an origin becomes unavailable then edge routing can automatically redirect all requests to an alternate origin or failover to a default maintenance page.

Requests can also be directed to multiple origins by using round robin, the quickest route, or even by the geographic origin of the request. By combining this type of edge routing configuration with the asynchronous data replication services available with many high quality cloud hosting infrastructures, you can create robust active/active or active/passive business continuity solutions that meet the most demanding “time to recovery” and “point of recovery” requirements.

Security: In addition to enhanced performance and reliability, an edge/origin cloud hosting solution provides the type of security that is increasingly necessary for business-critical websites. By proxying end-user requests at the edge of the network, malformed or undesirable requests are

filtered before reaching the origin. For example, edge security rules can be implemented to blacklist requests from high risk regions, stop common application exploitation techniques such as SQL Injection and Cross Site Scripting (XSS), or even set limits on the rate of requests from end users to thwart denial of service attacks.

Edge/origin hosting solutions deliver critical performance, reliability, and security enhancements that cannot be replicated through other methods.

Even without such rate limiting at the edge network, the enhanced scalability of the edge/origin cloud infrastructure provides security against denial of service attacks that attempt to overwhelm sites with legitimately formed requests. Moreover, the origin is protected because its IP address is obscured from public knowledge and can be configured to only accept trusted requests from the edge platform. This significantly reduces potential attack vectors and, when combined with the integrated security services built into enterprise-class cloud hosting infrastructures, delivers an excellent security posture for even the highest risk websites and applications.

Affordability: What is most transformational about edge/origin cloud hosting is how this solution is now much more affordable and price competitive with far less capable

solutions. Part of the reason for this is the rise of the “utility” billing model associated with cloud computing services which provides customers with very affordable access to reserve capacity at both the edge and the origin. Also, the cost of edge services is offset by the offloading of requests from the origin which translates into less resource usage at the origin.

Finally, prices are now within reach of most businesses because the competition between the different edge and cloud service providers has increased.

The edge/origin cloud hosting solution is rapidly becoming the paradigm for the delivery of business-critical websites. No alternative web hosting solution delivers the combination of enhanced performance, reliability, and security increasingly necessary to deliver information and services over the most demanding communications medium: the Internet. However, it is the reduced price point for this premium web delivery method that signals its adoption as the new web hosting standard.

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* See <http://www.carbon60.com/milliseconds-are-money-how-much-performance-matters-in-the-cloud/>

Carbon₆₀ is a safe haven for private and public sector organizations that need a trusted partner to manage their business-critical IT workloads. By embracing the hosting solution stack end-to-end, we deliver extraordinary value and assume full responsibility for the quality of service delivered from the datacenter to the end user’s doorstep.

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