Going for the Edge: Why Hosting Providers Should Offer CDN Services

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If you are seeking a competitive edge in the hosting marketplace, consider expanding your service portfolio to include content delivery network (CDN) services. CDN service improves the experience quality for your customers' end users by serving content from the network edge, closer to each user. Viewed holistically, it is a distributed extension of the centralized hosting you do today. In fact, the two service types complement each other so well they lend themselves to bundling into a single offering. All major hosting providers already offer CDN services in combination with their hosting offerings.

Adding CDN to your service mix can benefit your business by:

- Satisfying your customers' need to improve their end users' experience region by region,
- Providing you with a new revenue stream, and
- Enabling you to compete on a more even footing with Amazon Web Services and other major competitors.

Should you decide that offering CDN services makes business sense, you have three delivery models to choose from. You can build your own in-house CDN offering; you can resell services from a dedicated CDN provider like Akamai; or you can join a CDN "federation". This report examines the pros and cons of each option, and evaluates a federated business model pioneered by UK-based OnApp.

Why Offer CDN Services?

A CDN is a distributed system of servers located in multiple Internet-connected data centers. Each content request is typically directed to the optimal location for serving content to a particular user. This optimization can entail minimizing the number of network hops or delivering the fastest network time. CDN customers can also balance cost and performance to deliver content from lower cost CDN server locations.

The user experience is important to hosting customers, and because CDN service improves the user experience, your customers will buy it—if not from you, from someone else. If they buy from you, it can strengthen your customer relationship by satisfying an important hosting-related need, increase your revenue, and improve your competitiveness.

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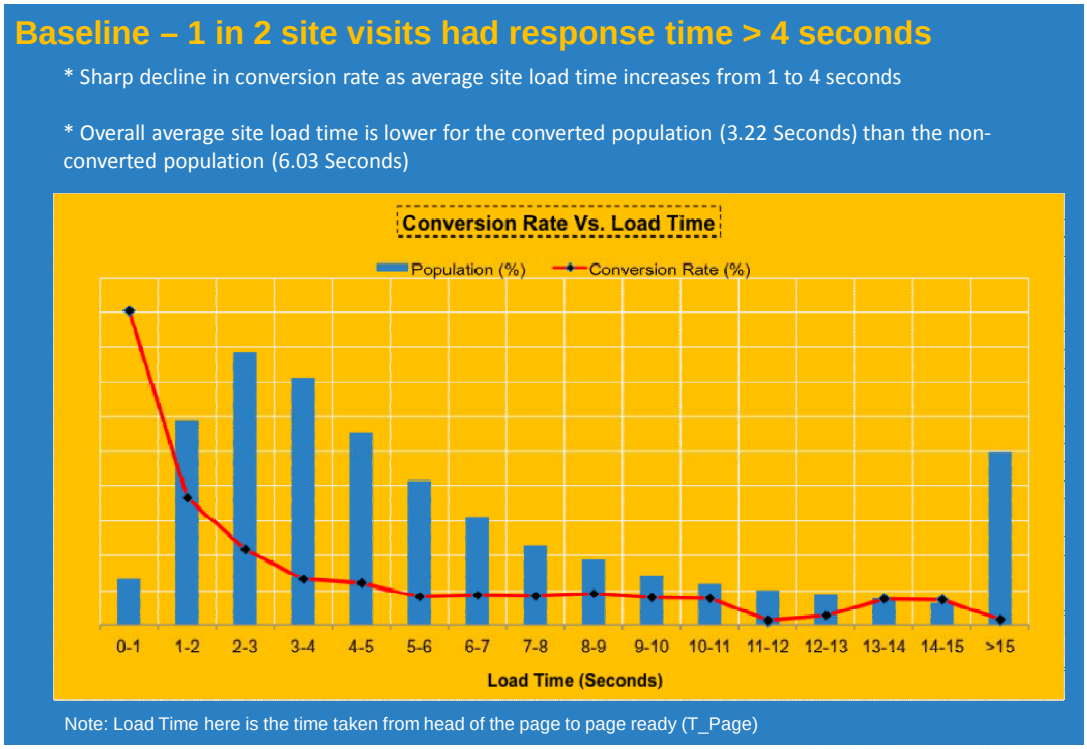
Speed matters – The faster content reaches users, the better the outcome for your hosting customers. Savvy retailers like Walmart know this and routinely measure outcomes associated with various application performance levels. In a recent report[1], Walmart disclosed that every one second improvement in page load times increased their conversion rates up to two percent—and every 100 millisecond page load time improvement increased their online revenue by up to one percent.

Figure 1. Impact of Walmart site performance on site conversion rate



In a related finding, a Compuware Gomez report[2] found that conversion rate increased 74 percent when page load time improved from eight to two seconds for a key non-commerce transaction on 33 major retail sites and over 3 million page views. Compuware Gomez also found that speeding page load times from six seconds to two seconds lowered abandonment by 25 percent for 500 million end-user interactions across more than 200 websites.

Since the purpose of a CDN service is to speed page load times, hosting customers doing serious business on the Web should benefit accordingly by purchasing CDN service.

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[1] http://minus.com/msM8y8nyh/1e

[2] http://webperformanceguru.files.wordpress.com/2011/03/best-of-web-2010.pdf

A host of other online businesses such as gaming and publishing also benefit greatly from a faster end-user experience. Take online game provider Valve Software. Valve's Steam online gaming platform makes more than 1,100 games available to purchase, download, and play from any computer—an online offering that would be impossible without CDN technology. If the Steam website relied on centralized hosting, the user experience would be so sluggish that players worldwide would click away never to return. As it is, cost-effective CDN-enabled distributed hosting services empower Valve and other online gaming businesses to flourish, and have changed the way millions of people play video games.

Since the purpose of a CDN service is to speed the end-user experience, hosting customers of all stripes who conduct serious business on the Web should benefit accordingly by purchasing CDN service.

Revenue implications – Content providers pay the CDN operator for delivering their content from a server located closer to the end-user audience than the origin server(s). When you offer CDN service, you will be on the receiving end of some, or perhaps all of that revenue, depending upon the business model you select to deliver the CDN service.

The CDN market is big and growing. Global Industry Analysts, Inc. predicts that it will reach $4.7B by 2015[3], up from a market size estimate of $2.6B in 2011[4].

Competitive advantage – If you are like most hosting providers, you see Amazon Web Services (AWS) as a threat. Competing with behemoths like AWS and Microsoft Azure with their expansive service portfolios and economies of scale is hard for hosting providers with modest resources. Offering CDN service can help you win and keep business from competitors both large and small.

All Web-based businesses can experience generic benefits from buying CDN service:

- faster page load times,
- improved user experience,
- global reach,
- increased revenue, and
- deeper brand loyalty.

In addition, some industries can also experience other benefits as Table 1 shows.

[3] *Content Delivery Network: A Global Strategic Business Report*, Global Industry Analysts, Inc. – August, 2010: http://www.prweb.com/releases/content_delivery_network/CDN/prweb4364954.htm

[4] *Evolution of the CDN Market*, IDATE, 2010: http://tinyurl.com/bllqga8

Table 1. CDN benefits for sample industries

Industry	CDN Benefits
E-commerce	• Reduces abandonment rates • Increases conversions • Increases repeat business
Online Gaming	• Reduces latency • Improves download concurrency and provisioning ("player onboarding") • Speeds delivery of large assets (e.g., installers/DLC/patches) • Lowers asset distribution costs
Media and Publishing	• Accelerates delivery of high resolution images and video • Lowers asset distribution costs • Automates format translation • Improves advertising prospects

What if You Don’t Offer a CDN Solution?

If you don’t offer a CDN solution, your customers have two alternatives. They can buy directly from a standalone CDN service provider like those on the list below, or they can give their hosting and CDN business to a service provider that offers both hosting and CDN services. In the first case you keep your customer and lose out on a potential new revenue stream, and in the second case you lose a customer completely.

Standalone CDN providers – A number of companies specialize in CDN service—and for some, like Akamai Technologies and Limelight Networks, it is their primary raison d'être. Among the most widely recognized of these service providers are:

- Akamai Technologies (Public company – CDN is a primary business)
    - Estimated 60 percent market share
    - 2011 annual revenue of $1.16B
    - 2,300+ employees
    - More than105K servers in 78 countries within over 1K networks
- Limelight Networks (Public company – CDN is a primary business)
    - Estimated 10 to 15 percent market share
    - 2011 annual revenue $171.3M
    - More than 15K servers in over 700 networks
- CacheNetworks (Not a public company)
    - Service delivered under the CacheFly brand
- CDNetworks (Not a public company)
- CloudFlare (Not a public company)
- EdgeCast Networks(Not a public company)
- Internap Network Services (Public company - CDN is an ancillary business)
    - 2011 annual revenue $244.6M
    - CDN infrastructure details are not made available
- Level 3 Communications (Public company – CDN is an ancillary business
    - 2011 annual revenue of $1.58B
    - 11,000 employees
    - CDN delivery points in more than 60 cities
- NetDNA (Not a public company)
    - Service delivered under the MaxCDN brand

Hosting providers offering CDN services – A growing number of hosting providers offer CDN service. If you are considering joining their ranks, it is useful to identify who they are, and how they deliver CDN service. Here's a thumbnail sketch of which major hosting companies offer CDN service and how they deliver them.

Table 2. Hosting provider CDN offerings

Hosting Provider	CDN Model	CDN Delivery Details
Amazon Web Services (AWS)	Self-provision	o AWS offers a proprietary CDN service, CloudFront o CloudFront is delivered from 12 locations in the US, 7 in Europe, 5 in Asia, and 1 in South America o http://aws.amazon.com/cloudfront/
Microsoft Azure	Self-provision	o Microsoft offers a proprietary CDN service, Windows Azure CDN. o The service is delivered from 8 locations in the US, 8 in Europe, 6 in Asia, 1 in South America, and 1 in the Middle East. o http://msdn.microsoft.com/en-us/library/windowsazure/ee795176
GoGrid	Resell	o GoGrid resells EdgeCast service o http://www.gogrid.com/cloud-hosting/content-delivery-network.php
Joyent	Resell	o Joyent resells Level 3 CDN service at a "significant" discount" o http://www.joyentcloud.com/products/smartmachines/options/
Rackspace	Resell	o Rackspace resells Akamai service primarily, but also resells Limelight service to those who prefer it. o http://www.rackspace.com/information/mediacenter/announcements/akamai/
SoftLayer	Resell	o SoftLayer resells Internap service under the name CloudLayer CDN. o http://www.softlayer.com/cloudlayer/cdn/
Terremark Cloud (Verizon)	Resell	o Terremark resells Akamai service as its Terremark Application Acceleration service. o http://www.terremark.com/services/infrastructure-cloud-services/application-services/application-acceleration.aspx
Cloudee (DataCamp)	CDN Federation Member	o Cloudee/DataCamp is a member of the OnApp CDN Federation and delivers CDN service under the CDN77.com brand o Deliver service from 66+ locations: 18 in Western Europe, 10 in Eastern Europe, 24 in North America, 1 in South America, 10 in Asia, 2 in Australia, and 1 in Africa o http://www.cdn77.com/

What Are Your CDN Service Delivery Options?

If you decide that adding distributed hosting in the form of a CDN offering to your centralized hosting services makes sense for your business, you have three delivery models to choose from. You can build your own in-house CDN offering; you can resell services from a dedicated CDN provider like those listed in the previous section; or you can take advantage of a newly minted alternative—to join a CDN "federation".

Build your own CDN – In this option, you build and operate your own CDN service. This is the approach of choice for large cloud hosting providers like Amazon and Microsoft, but it is untenable for small-to-medium-sized hosting providers.

The pros of this approach are that you do not need to share any CDN service revenue—all CDN-generated revenue is yours. You also control the service infrastructure.

The cons are that it is very expensive to deploy and operate dedicated CDN infrastructure—and even after you do, it is difficult to establish extensive enough geographic coverage to serve content from distributed locations close to users around the world. As large and powerful as AWS is, it is noteworthy that its CloudFront CDN service only delivers content from 25 locations around the world. This compares to Akamai, which boasts delivery capabilities from within more than one thousand networks in 78 countries.

Become a CDN reseller – To date, reselling CDN services from a standalone CDN service provider like Akamai or Limelight is the most commonly chosen CDN delivery path for hosting service providers. This option is simple to deploy and requires only a reseller agreement and sales and support training.

The pros of this delivery option are that it is easy to implement—you don't need to deploy or manage it, nor do you have to do anything to your infrastructure. Reselling an established CDN provider's service requires no capital and very little operational expenditure on your part, and your hosting customers get world-wide reach from the outset.

The cons are that as a channel partner, your share of the CDN provider's revenue will be relatively small, and your bargaining power is likely to be limited.

Join a CDN federation – This recently launched option enables you to join forces with your hosting provider peers to create a content delivery network from infrastructure owned by your fellow CDN federation members rather than a standalone CDN service provider. In this model, you can take advantage of other hosting providers' excess capacity to serve content closer to your customers' users—and if you so choose—you can rent your server resources to other hosting providers to place content close in the geographies you serve. A third party deploys and operates the service, and serves as a transaction broker.

The pros of this business model are that federation members do not incur capital or operational costs or headaches associated with building their own CDN, yet

have instant access to a shared CDN with worldwide reach. Not only do you receive revenue from selling the CDN service to your customers which is generally a higher portion of the service selling price than what you would receive if you were a reseller, when you put your infrastructure into the pool, you receive revenue when other hosting companies use your excess server capacity to deliver CDN services to their customers.

Potential cons of this approach are that all federation members must use a common management platform, and that may not be the platform you choose to use. Also, you do not have direct control over service quality.

Factors to consider – If you choose to add CDN service to your solution set, you will need to determine your customers' CDN service delivery requirements and determine which of the above solutions will satisfy those requirements. Among the factors to consider are: how many PoPs are necessary to meet your customers' needs; where should the PoPs be located, and what protocol support is required?

OnApp's Federated CDN Service

In August of 2011, cloud software platform vendor OnApp launched its Federated CDN service to compete against Amazon's CloudFront CDN offering. With more than 400 service providers globally running its cloud platform, OnApp realized it could leverage spare capacity in those clouds to create a CDN. According to OnApp an average of 20 percent of its hosting customers' cloud infrastructure is purposely idle at any time to provide headroom for failover and cloud services scaling.

The company sought a way for cloud providers to monetize those idle resources, and CDN was a natural fit because the spare capacity spanned multiple geographies. The resulting OnApp CDN platform federates cloud resources from providers around the world, and provides a marketplace that allows federation members to buy capacity on demand, and to offer their own spare capacity for purchase by other providers.

OnApp enables and operates the service, and serves as an intermediary and broker to track usage and manage financial settlements between resource buyers and sellers. Each federation member names its selling price and can buy service from others based on price, location, capacity, or other factors such as data center security and reliability. OnApp handles all payments and payouts, and receives a fee for every transaction.

To join the CDN federation, hosting providers deposit money into an OnApp CDN account which is used to purchase CDN capacity from other federation members. Revenue from sales of capacity is also stored in the account, and each month OnApp issues payments for any positive balance above the initial deposit.

You can structure your relationship with the OnApp CDN federation in several ways.

Business Model A: You can combine your own data centers with those in the marketplace that is created from infrastructure owned by other federation members (see Figure 2). This is the option chosen by Cloudee (DataCamp) as described in Table 2.

Business Model B: You can create a CDN entirely from the marketplace and not use your infrastructure at all (see Figure 3). In this option you do not need to sell capacity in order to buy it. So if you are not able to, or do not want to make your own excess capacity available to the federation, you can still be a federation member, and sell the federation's collective CDN capacity to your customers.

Business Model C: You can create a CDN offering entirely from your own data centers and not use other's data centers at all (see Figure 4).

Figure 2. OnApp Business Model A – Uses your PoPs combined with other members' PoPs

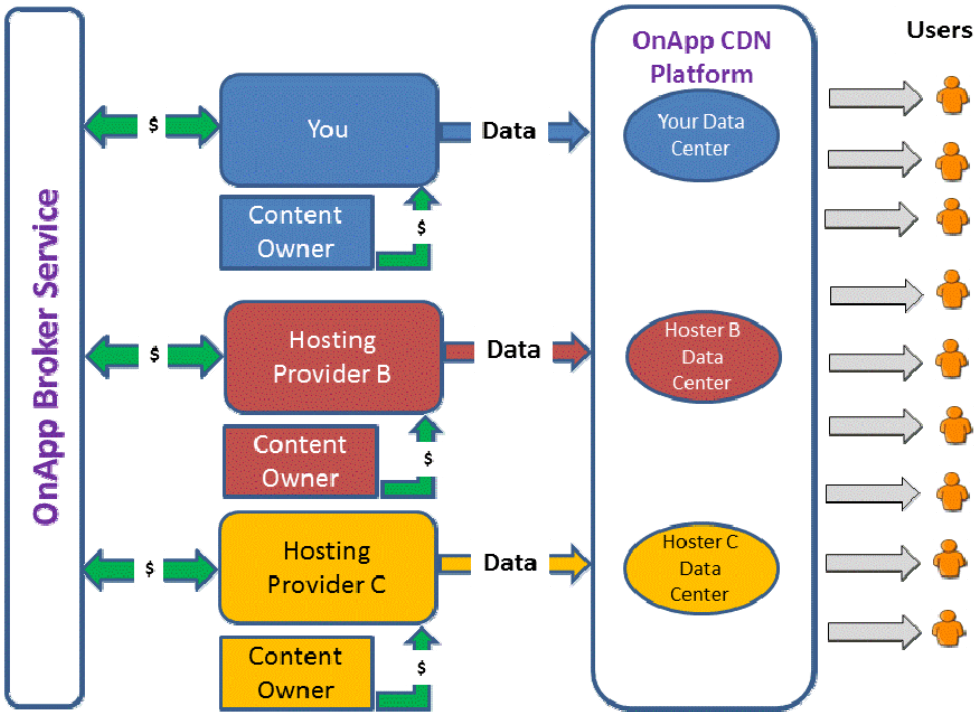


Figure 3. OnApp Business Model B – Uses only other members' PoPs

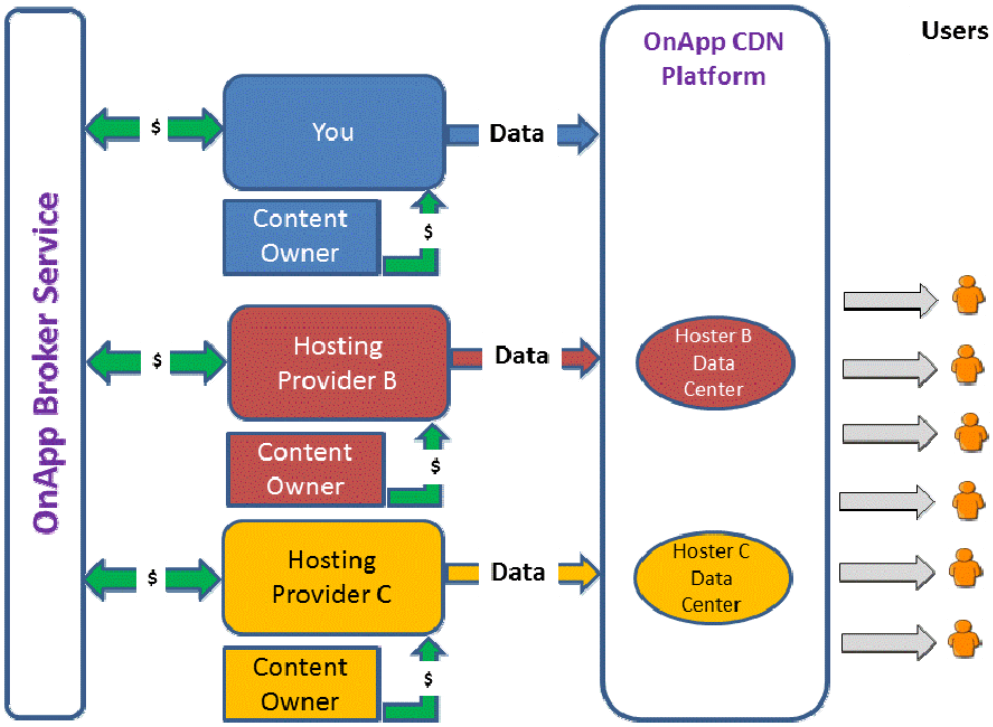
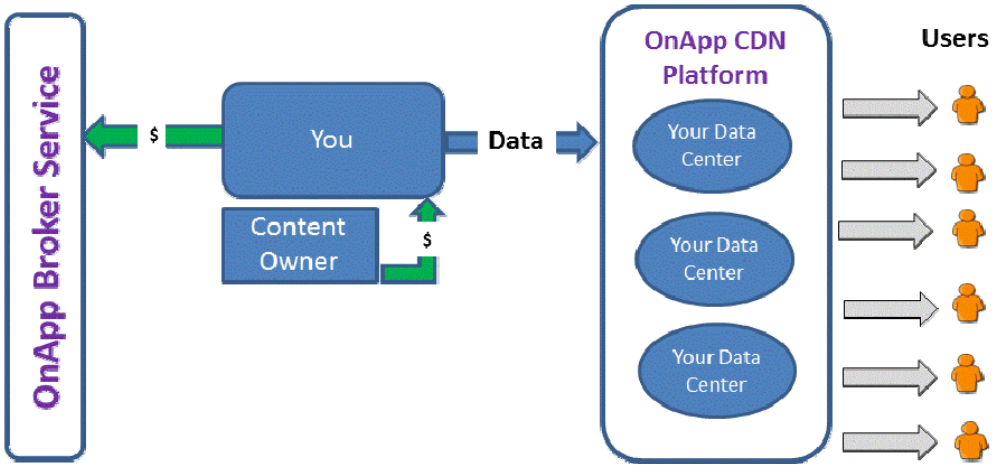


Figure 4. OnApp Business Model C – Uses only only your PoPs



OnApp predicts that cloud hosting and CDN services will naturally converge to become a single, rich offering. The two are so complementary that they logically fit into a bundled package of website hosting with a distributed "edge hosting" component to accelerate the web-based application experience.

Conclusions

NetForecast believes that with OnApp's help, the ants in the Internet ant hill are beginning to pull together to compete on a more even footing against Goliaths like Amazon Web Services. We see an innovative business model—one that federates cloud service providers to offer CDN service over federation members' infrastructure . . . anywhere.

In our view, the ability for hosting providers to rent unused computing capacity to and from each other to deliver CDN service is a harbinger of true cloud federation, in which cloud service providers can share resources with peers to realize tremendous economic opportunity beyond just offering CDN service.

About the Author

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