



Six Steps for Hosting Providers to Sell CDN Services

By Rebecca Wetzel

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Introduction

CDN services are a promising way for many hosting providers to grow their businesses. But do they make sense for you? This guide will help you answer that question—and if the answer is yes—to plot a course forward.

Before reading this guide, we recommend that you read NetForecast's previous report, [*Going for the Edge: Why Hosting Providers Should Offer CDN Services*](#). That report explains why you should consider offering CDN services, and introduces several CDN service delivery business models available to you: building your own CDN, reselling a legacy CDN product, or using the kind of federated CDN model offered by OnApp.

This guide assumes that you want to explore the federated approach to CDN that OnApp enables. Given that, how do you start selling CDN services?

First, it is vital to understand the types of problems that a CDN solves, and to identify the enterprise types most likely to experience those problems. Next, you should identify offerings that best solve the problems. After that, you will need to set your pricing, create a business plan reflecting anticipated costs and revenues—and if the numbers work—put the wheels in motion to launch the service.

In OnApp's federated business model, you can choose to deliver CDN services by combining your own infrastructure with CDN locations from OnApp's federated marketplace. You can also choose to use only your own infrastructure; or you can rely solely on locations from the marketplace to become what OnApp calls a Virtual Service Provider.

Whichever delivery model you choose, the following guidance applies.

Step 1: Understand the Performance Challenges Customers Face

The growing role of the Internet (or 'the cloud') in business and consumer applications from video streaming websites and social media apps, to e-commerce sites and corporate applications like CRM, has created new expectations for the way those applications should perform. End users expect applications to be fast on all devices, anywhere.

However, a variety of forces conspire to slow application performance. Chief among these are:

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- long distances
- high application turn counts
- big payloads
- insufficient bandwidth
- network congestion
- server bottlenecks

For video streaming and large file transfers, long distances stack the cards against users to prevent efficient use of available bandwidth. The higher the effective throughput relative to available bandwidth, the more efficiently WAN capacity is used, and the better the user experience.

As broadband consumers increase the bandwidth they purchase, they expect to see higher-quality and higher-definition video. TCP functionality gets in the way of effectively using that additional bandwidth, and the only way to overcome this problem and maintain highly-effective bandwidth transfers is to serve content close to users. A detailed explanation of this phenomenon is available in the NetForecast report, [Improving Effective WAN Throughput for Large Data Flows](#).

Latency, the round trip time between the user and the application server, is the prime contributor to poor application response time. Limits imposed by the speed of light cause latency to grow as distance between the user and server grows—and when you multiply latency by the number of client-server turns, application response time quickly skyrockets.

Figure 1. Performance Response Time Equation

$$R \approx \frac{\text{Payload}}{\text{Bandwidth}} + \text{AppTurns}(\text{RTT}) + C_s + C_c$$

R is the task response time, which is the elapsed time (in seconds) between a user action (e.g., mouse click, enter, return) and the system response (client, network, server), so the user can proceed with the process.

Payload is information content (in bytes) that must be delivered to/from the user's device.

Bandwidth is the minimum bandwidth (in bits per second) across all network links between the user and the application server. The slowest link is typically the user's access line to the network. Useable link bandwidth may be reduced by traffic conflicts (congestion) and protocol inefficiency (e.g., small TCP window size).

AppTurns are the application client-server software interactions (turn count) needed to generate a user-level system response or task. Turns do not include two-way TCP interactions (e.g., ACKs).

RTT is the round-trip-time (in seconds) between the user and the application server.

C_s (Compute Server) is the total processing time (seconds) required by the server(s).

C_c (Compute Client) is the total processing time (seconds) required by the client device.

It falls to hosting companies (and service providers in general) to overcome these forces for their customers, and improve application performance for their customers' end users.

CDN Services and Latency: A CDN service improves performance by delivering content from locations nearer to the user. This reduces round-trip times by shortening the distance that bits must travel. Hosting content near users also improves performance by taking the load away from the 'origin' server, i.e., the server on which a website or application resides. This is useful because if content is highly popular, demand can swamp the origin server and act like a distributed denial of service (DDoS) attack, hurting the user experience.

The first row in the Figure 2 matrix below shows the range of activity types most helped by a CDN service. Among the activities that benefit most from serving content close to users are downloading files, browsing, streaming media files, and watching live broadcasts. Among the activities that benefit least are tasks that require traffic to traverse back to the origin server. This includes such tasks as filling out web forms, and online trading. Applications such as chatting and blogging can benefit somewhat but not dramatically from CDN services.

In particular, the experience of playing stored media files or watching live broadcasts improves greatly when content is served near users. This is because decreasing latency increases effective throughput, which reduces jitter and loss, and lowers the probability that an image will become pixilated and/or freeze up. This is why Google operates its own private CDN to deliver YouTube video content. Serving stored or live broadcast content from the edge of the network greatly extends audience reach for these types of activities.

Step Two: Identify Promising Target Markets

Once you clearly understand the challenges you can help your hosting customers solve, the next step is to identify which customer types you already have, and which new types of customers are likely to benefit most from the service. This identification will allow you to effectively target your sales and marketing efforts.

Any hosting customer with an audience in multiple locations can benefit, but those whose users are likely to download material, play media files, and/or watch or listen to live broadcasts are likely to benefit most. The headline content types for CDN services are:

- Live video broadcasts (e.g., sports, concerts, events, etc.)
- Video files (e.g., movie trailers, ads, promos, instructional material, training, sport highlights, etc.)
- File downloads (e.g., software downloads, patches, or critical updates)
- Multimedia content (e.g., games or music)

However, it is important to remember that CDN capabilities can greatly benefit any business that depends heavily on its website’s performance for brand equity, customer satisfaction, and sales conversions—and even applications like blogs that pay for themselves with ad clicks can benefit.

Figure 2 shows typical user activities for sites associated with a variety of industries, and it rates the expected business value the activities are likely to have within those industries. Industries such as entertainment and gaming are likely to experience bigger overall business benefits than insurance and financial services, because their users are doing things like downloading files, and/or consuming streaming media. These users will experience a more immediate and visible benefit when an application takes advantage of a CDN, than users participating in more mundane activities like filling out forms on a website.

You can use this matrix as a starting point to predict what types of hosting customers are likely reap the greatest business benefit from CDN services, allowing you to concentrate your sales efforts where they are most likely to bear fruit.

Figure 2. CDN Service Value Predictor

	Characteristic End-user Activity						
	Download Files	Browse	Stream Files	Watch Live Broadcasts	Chat	Complete Forms	Trade
<i>CDN-enabled Performance Benefit*</i>	★★★★★	★★★★★	★★★★★	★★★★★	★★★	★	★
Site Type	<i>Estimated Business Importance of the End-user Activity</i>						
Retail/E-commerce							
Gaming/Game Development							
Hobby/Shared Interest/Personal							
Media/Publishing/Advertising							
News/Social Media/ Aggregation							
Software/Software Dev/SaaS/PaaS							
Travel							
Financial Services							
Insurance							
Entertainment							
Legend		* Note: The number of stars indicates the magnitude improvement that OnApp's CDN service brings to the end-user experience.					
Not Important							
Slightly Important							
Somewhat Important							
Important							
Very Important							

Gaming and game development businesses can benefit from faster initial downloads of game clients, installers, patches, in-game content (a.k.a., downloadable content or DLC), and demos. These files are often large, and can take much longer to receive from the origin server than from a server close to end users. Also, since game content is subject to popular whims, flash crowds can overwhelm origin servers and slow the user experience to a crawl. CDN services protect users from both of these outcomes.

Like gaming and game development businesses, software-related businesses can also benefit from faster file exchange—as can entertainment and media sites that want to deliver a satisfying multimedia experience to their users.

For general web use there is proven positive correlation between better web performance and improvements in session time, repeat visits, conversions, and abandonment rates.

Business Benefits: The key business benefits that your customers can achieve through buying OnApp-enabled CDN services include: improving the end-user experience, improving sales and revenue growth, and meeting capacity and infrastructure demands.

Improving the user experience improves such key metrics as “time to first paint”, “time to interactive page”, and “time to full screen”. Improvements in these metrics shorten the interval between a user’s content request, and the time that content is received and the user can move on. The mobile user experience can be particularly slow, so improving the mobile access user experience of is especially important to businesses.

A better user experience can move sites up the search engine optimization rankings, increase website sales conversions, and help drive page views and the number of visitors.

CDN services also protect infrastructure from flash crowds and thus improve reliability and uptime. In addition, they enable your customers to offload larger content such as videos, photos, and large files to distributed servers, making it easier and less expensive to scale, reach distant users, and continuously keep up with demand.

Step 3: Create the Right Service Package(s)

With the OnApp CDN delivery platform (what OnApp describes as its federated CDN), you can offer different service package types to suit your hosting customers’ needs. For example, you can offer a pay-as-you-go package, a prepaid package, and/or a customized package that allows your customers to choose the CDN locations and prices that match their needs.

A pay-as-you-go option can serve the needs of your customers who anticipate low usage, or don’t yet know what their end-user demand patterns will be. By paying as they go, your customers need not make commitments to usage, and will be able to learn about their usage and upgrade to prepaid or customized service if needed.

A prepaid option is best for those who anticipate high usage and wish to minimize their cost per byte served. In this option, customers pay a fixed price per terabyte of data served. The per-byte unit price for the prepaid option will be less than the pay-as-you-go option, but the prepaid option requires a higher commitment, so if a customer is expecting low usage, the prepaid option may not be appropriate. A benefit to your customers is that they can accurately budget for the service cost, and they will pay less overall if their usage is high.

A customized package is suited to customers who have a good understanding of their geographic, cost, and end-user experience quality and reliability requirements. With this option, your customers can select the locations (or Points of Presence) from which they wish to have their content delivered. The flexibility of this option allows your customers to essentially configure their own CDN by choosing the locations they wish to use based on geography, service quality, and/or the cost to deliver content from that location to their end users.

Step 4: Determine Your Pricing

After you define your CDN package(s), you will need to set prices. Based on OnApp's experience, as a rule of thumb we suggest that you consider an average uplift of 20 percent over your monthly centralized hosting service fee for the pay-as-you-go and prepaid services—and a 25 percent uplift for the customized service. We suggest that you keep your pricing structure as simple as possible to make it easy for your customers to understand.

Step 5: Create an Internal Business Case

Next, you will need to create an internal business case to ensure that offering CDN capabilities will give you the desired business return. Start by using the Service Value Predictor in Figure 2 to help identify enterprises within your customer base that are most likely to experience significant business benefits from your CDN offering(s). Assess your sales capabilities, and forecast approximately how many customers are likely to buy the service(s) per year over the next three years.

Step 6: Test, Tweak, and Launch

It is now time to test your new service ordering(s), deployment and billing processes. We suggest that you roll out your service(s) on a test basis with two or three customers. This will allow you to work out any issues and launch your new CDN offering(s) as smoothly as possible.

About the Author

Rebecca Wetzel is a NetForecast Principal and a veteran of the data networking industry with unparalleled inside knowledge of the network service and product markets. She works with network product vendors and service providers to develop and implement product strategies. She can be reached at rebecca@netforecast.com.

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