

# Behind the Curtain of a Successful Rich Media Project

## Part 1 of 3 - Technical Considerations For Success

There are many reasons to deploy "rich media" content. This three-part article is not about the why, but the how. As with all online projects business leaders have to decide what makes the most sense for their company from both a financial and technical perspective. How will you deliver this fancy new content?

Do you do this using your current infrastructure, or do you outsource? If the latter, there are a lot of questions you need to ask, starting with, how much will all of this cost? And what happens if delivery fails? After all, a broken media campaign can be far more damaging than no campaign at all. Delivery, availability and performance are three key factors to a successful online campaign of any kind.

### Delivery

When working with internal resources on your own corporate network it is easy to get used to 100Mbps or 1Gbps network delivery speeds. Everything runs fast at the office, right? However, once you bring external resources into a project your end-user experience now becomes dependent upon the weakest link between all participants, more often than not this weak link is your business Internet connection.

#### Consider the following:

- A 5MB file takes about 27 seconds to transfer across a T-1 line (a common Internet connection for small businesses)
- A 50MB file takes about four and a half minutes to transfer via T-1
- A 500MB file would take more than 45 minutes

If you upgrade your office connection to 10Mbps the transfer times drop to 0:04, 0:40 and 6:45 respectively. Be sure to do the math before signing any contracts. If you plan on adding 250GB of media content to your delivery network every week, the last thing you want to do is commit to a legally binding contract with a T-1 connection that takes more than 16 days to deliver that weekly 250GB update to your delivery partner. A web search for "bandwidth calculator" can help you determine your transfer needs.

### Availability

Once content has been created you want to be sure people can get to it. If you decide to keep content in-house and deliver it on your own, be sure that you have a fast enough Internet connection as well as a redundant connection. And, despite what your network sales representative might say, having two separate connections from the same provider is not good enough. A single outage upstream can cause both of your 'redundant' connections from that single provider to fail. It is always recommended that you purchase connectivity from separate network providers. Usually, outsourcing your content delivery removes this concern.

When choosing a provider, be sure to determine that it a) has multiple network partners, and b) connection to those partners enters their data center from different paths. What good is connectivity to ten networks if all of

the fiber enters the data center from a single conduit? One backhoe mistake and down go all ten networks.

In addition to eliminating single points of failure in your delivery network you also need to consider removing as many single points of failure from your delivery hardware. Do you have just one server handling everything? Do you have multiple web servers but only a single database or application server? Is your firewall redundant? While we all want 100% availability, the cost of doing so often exceeds project budgets. Knowing your cost of downtime, down to the hour, will help properly quantify and justify your final content delivery configuration.

## Performance

Nobody wants to suffer through a slow rich media experience. As home network and handheld wireless network performance improves, the attention span of the average Internet user is getting shorter and shorter. If you don't grab their attention in the first few seconds, you may lose your audience. Therefore, fast delivery of content is often vital to the success of any online rich media experience.

What controllable factors influence performance? It is often assumed that hardware is the most important part. "Get me a big server so I can deliver lots of content." But, this is just part of the equation. The best hardware can be brought to its knees by bad code, therefore performance testing is always recommended. Delivery of content may also depend on factors such as network throughput, hard drive speed, CPU performance, geographic location of the source content as well as the end user and much more. Does your company network run slow in at the beginning of the business day? This might be a sign that your employees are saturating your connection and it is time to upgrade. If outsourcing, does your provider offer not only connections to multiple providers, but are those connections over-subscribed, or is there plenty of room for unexpected network peaks? A good provider can walk you through these variables to help identify potential bottlenecks based on your specific requirements.

## Summary

Ask questions early and often. Never assume someone else has thought through all of your needs. The more answers you have, the more likely your project will be successful, technically and financially. In most cases a reputable hosting partner can answer your questions and bring up others that you may not even know to ask. In future articles we will discuss how to deal with and plan for potential surges in traffic.

## Part 2 of 3 - Understanding The Reach Of Your Project

Understanding the potential reach of your rich media campaign can help you properly frame budget and technical expectations. Online campaigns are like parties - knowing how many guests you expect makes budgeting and planning much easier. By knowing the potential size of your online audience you can maximize your campaign's ROI (return on investment) and plan for scalability by working with partners if necessary.

## Project Scope

Predicting site or project traffic is not an exact science. Marketing people will often quote industry take rates, while content creators or entrepreneurial visionaries will predict massive adoption of their ideas. It helps to understand your target audience as well as the general population of the Internet.

When sizing a rich media project you should keep two factors in mind - how many unique visitors do you

expect, and how many concurrent users do you think you will reach? Knowing your expected number of unique visitors can help define your storage needs, revenue projections and other quantity based facets of your business. Knowing the maximum expected number of concurrent visitors (how many will hit your infrastructure at peak times) helps define the actual hardware/delivery requirements. The resources required for a steady stream of visitors (such as a banner ad delivery system or shipping company tracking system) are quite different from an event-based solution such as the online sale of a new music recording or exclusive online interview with a specific starting time.

According to Comscore.com, the total Internet audience for May 2009 was 193,825,000 unique users around the world. (source: <http://www.comscore.com/>) Use this number to help keep user projections in control. Assuming your marketing blast reaches every single user in the world, a 1% global take rate would generate 1.93 million potential unique visitors to your site.

It often helps to know how many visitors to the more popular Internet properties receive. These numbers often have the effect of a fire hose on the flame of marketing optimism. For example: Google is the current king, and received about 157 million unique visitors for the month of May 2009. Ebay.com, a top ten Internet property, received 72.4 million unique visits in June 2009. Facebook, an extremely popular social media site, received about 70 million visits. Do you think your project will reach more people than ESPN? They enjoyed 20 million visits in May.

Taking this concept further, let's divide that traffic by 30 days to get a monthly average, or 22 days if your site is primarily accessed only during the business week. Google traffic (157M visitors) breaks down to a daily average of 5.23 million unique visits per day. If we assume that ESPN gets most of its traffic from people at work on weekdays, ESPN gets less than one million unique visitors per day.

Of course, this simplification assumes a steady stream of traffic instead of spikes based on demand, but the point is to provide real world examples of how much traffic existing properties generate. If your marketing director projects that you will get one million visitors during the day, keep these numbers in mind. They are absolutely attainable! Ad campaigns can generate millions of visits over a day or two, just make sure you work with a provider or partner that can help plan for and react to such a situation.

## Part 3 of 3 - Delivering and Scaling Seamlessly

What happens when all of that market research and graphic design work pays off and you create a successful campaign that is driving lots of traffic to your site or business? There are two scenarios: 1) traffic spikes cripple your online infrastructure causing your campaign to fail and your business to suffer embarrassment. Or 2) the campaign seamlessly absorbs all traffic and you come out smelling like a rose. To improve your chances for success it is important to understand your potential audience, maintain perspective and plan for scalability by working with partners that enable growth instead of inhibiting it.

### Scalability

With the advent and promotion of virtualization and cloud technology many decision makers are asking for more information to determine if either of these options makes sense for their businesses. Sometimes they help, sometimes they don't. Cloud services tout instant scalability but may be limited with regard to the technology that can be deployed on them. Server virtualization can provide true server images with the complete functionality of a physical server, but they might not offer an instant increase in performance. Sometimes a hybrid approach makes sense. This would include dedicated servers running the main application infrastructure and a flexible cloud-based front end to handle massive traffic spikes. A completely physical infrastructure can

also meet your needs, but you have to do the math in advance to determine your expected peak performance requirements. Each business has its own technical, financial and industry requirements, so talk to an expert to help determine the best fit for your business.

Once you decide on a hardware layout, how do you know what to scale? Will the system handle that for you transparently, or is user intervention required? Proper monitoring tools need to be in place that can identify the specific component that is creating your bottleneck. Hardware monitoring, software monitoring, network monitoring - these are all vital components that help technicians quickly identify the specific areas to focus on. The last thing you want to do is throw the wrong solution at a problem and create a larger one.

## **Content Delivery Networks**

While worthy of an article of their own let's briefly address the content delivery network (CDN). A CDN is a business that handles the delivery of your content for you. They have multiple Points of Presence (PoPs) across the US and usually the rest of the world. By placing your content physically closer to your end-users they may experience performance benefits. But, in many cases this level of performance or delivery is not necessary. Depending on your needs you may be able to deliver content from your own location or a hosting partner single data center with no negative impact to your customers.

How each CDN actually delivers content is what sets them apart from one another. Some own their own network between the PoPs, while others rely on the public Internet for delivery. Some require code modification. Others rely on DNS changes. They each have their own billing methodologies (storage, bandwidth, file requests, DNS queries, etc.). Working with a partner is often the best way to leverage these technologies.

## **Summary**

Owners of rich media content need to consider many factors when launching a project or business. There are many technical and business considerations that need to be addressed before the first document is created or server is deployed. Can you do this yourself or do you need help? What capabilities do you require? What can you outsource? Do you know your cost of downtime? How do you get your content out there and how do you make sure it remains available even when experiencing fast growth? In most cases a reputable hosting partner can answer your questions and bring up others that you may not even know to ask. In any case, asking questions early can help your project be successful, technically and financially.

Visit [www.rackspace.com/limelight](http://www.rackspace.com/limelight) to learn more!