



IMPLEMENTING A HYBRID SOLUTION

Optimizing Video Processing Infrastructure with the Cloud

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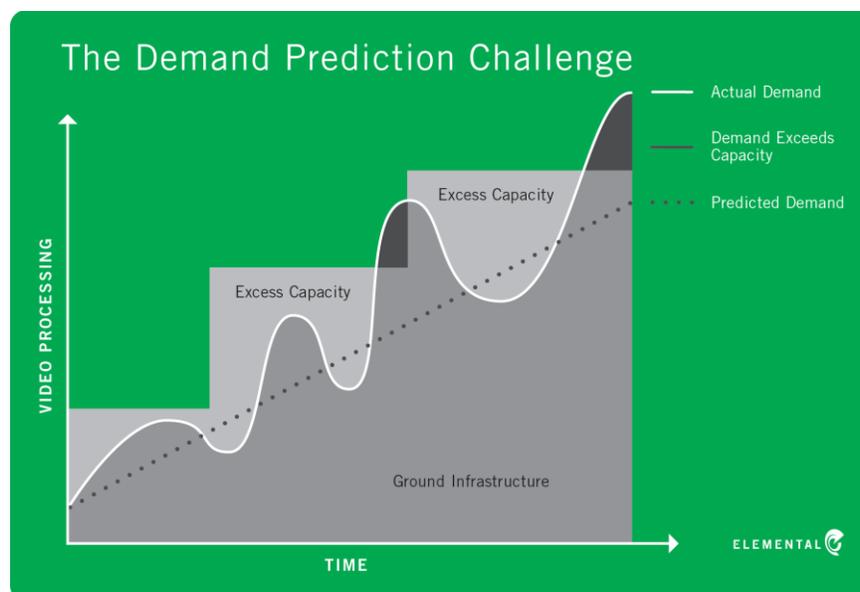
INTRODUCTION

The growth of multiscreen video for live and on-demand content is increasingly challenging media companies to provide a high quality viewing experience. As new consumer devices, technologies, and regulations flood the market, requirements are becoming more complex and the expanding number of file formats is driving a massive amount of video processing. For example, during the 2012 summer Olympics, data delivery reached 2.8 petabytes of content and peaked at a rate of 700Gb/s when Bradley Wiggins won the gold medal in men's cycling.

Traditionally, media companies would simply buy more processing capacity to support this level of demand. In the case of the Olympics however, this is a two-week event occurring bi-annually. Is that level of infrastructure required when the games aren't in session? At least the Olympics occur on a regular schedule determined well in advance. What happens when there is need for a sudden, unexpected surge in video production?

COPING WITH UNPREDICTABLE DEMAND

The balancing act media companies face is in buying enough capacity to satisfy demand for multiscreen content without over investing. Demand however, has become highly unpredictable. The figure below shows a hypothetical example of predicted demand for video processing capacity compared to actual demand, where the gray steps represent capacity purchases over time.



An obvious concern is where demand exceeds what fixed infrastructure can support. However, the opposite situation can prove even more costly over time, where demand runs lower than capacity resulting in investments that go unused. Media companies that don't have enough video processing infrastructure to meet variable demand may find it difficult to keep up with customer expectations for top-quality service. Alternatively, production houses that buy more infrastructure than they need will incur the unnecessary costs of maintaining resources that sit idle. Either way, they lose money.

The cloud can help organizations handle variable video processing demand with great flexibility and agility, while improving customer service. Cloud computing also presents exciting opportunities for media and entertainment companies that want to mitigate the risk of launching new initiatives. For example, a broadcaster can quickly introduce a new program or channel using cloud transcoding and evaluate its success without investing in additional infrastructure. Once the new initiative is proven successful, investments in on-premise infrastructure can be made confidently to balance long term economics.

Likewise, the cloud offers the opportunity to take on one-time projects without long-term investment. For example, many media companies have an extensive catalog of content, but supporting the infrastructure required to convert a video library into new distribution formats can be costly and inefficient. Using cloud resources, broadcasters can enhance offerings and extract unrealized revenue to make archived video footage available to customers on demand.

OVERCOMING THE CHALLENGES OF VIDEO PROCESSING IN THE CLOUD

While the cloud has been a hot topic for several years, until recently many obstacles have put cloud transcoding out of reach for most media companies, particularly those that process professional quality video in high volumes. The good news is that these hurdles are quickly disappearing.

Cost: Processing video in the cloud has historically been cost prohibitive for large-scale production houses. However, more infrastructure providers like Google, HP, Rackspace and Amazon Web Services (AWS) are entering the market and driving down the price of cloud resources. As these providers continue to grow, users will benefit from economies of scale, which will make large-scale video processing even more affordable in the cloud.

Data transfer: For organizations sending large, mezzanine-quality video files to the cloud, data transfer is a tremendous challenge. However, this issue is being addressed by accelerated delivery solutions that alleviate network bottlenecks. Aspera and Signiant are two providers of highly efficient transport technologies, which make it nearly as fast to move data into the cloud, as it is to move data across a high-speed local network.

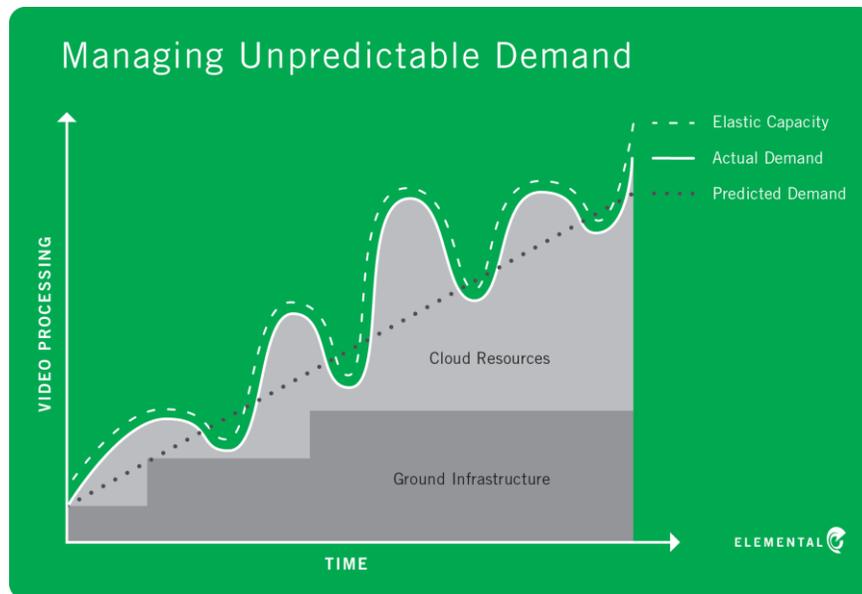
Reliability: Concerns about reliability have prevented many content providers from moving to the cloud, but outages and system failures are a reality for any data center. Maturing cloud-based vendors are tackling these issues head on by anticipating failure rather than avoiding it. These services offer enterprise-grade reliability with redundant systems that replicate data and resources across multiple geographies with transparent failover to withstand outages.

Security: Video assets fuel a multi-billion dollar business, so media executives are understandably leery about processing them offsite. However, large-scale data centers are capable of providing greater security than many individual media companies could afford on their own. Most established data centers support high levels of encryption and undergo industry-standard security audits. AWS, in particular, has received the highest possible maturity rating from the Motion Picture Association of America (MPAA) for securely storing, processing and delivering protected media and content.

A HYBRID SOLUTION

How can media, entertainment and broadcast companies best leverage video processing in the cloud? Low-volume broadcast companies may want to move all transcoding functionality to the cloud so they can scale resources up and down as requirements fluctuate. For companies that consistently process vast amounts of video, the economics of a cloud-only solution are still challenging. For those companies, a hybrid workflow makes the most economic sense.

A hybrid workflow is achieved by maintaining just enough on-premise infrastructure to fulfill day-to-day transcoding requirements, while leveraging cloud services for the elasticity to keep pace with variable demand.



The above figure illustrates the general trend over time, of an economically optimized video processing solution at the high end of the media industry. This ground-to-cloud approach has the potential to save organizations significant capital expenditures by instantly scaling up video processing capacity to accommodate high-traffic events, and scaling back down again as traffic wanes—while avoiding additional hardware investments that aren't consistently utilized. Just like paying for a utility such as water or electricity, media companies can replace additional capital investments with more predictable operating costs that rise and fall depending upon the amount of cloud resources they actually use. This rational and cost-effective solution allows companies to balance transcoding resources and optimize infrastructure already in place.

FOUNDATIONAL ELEMENTS OF A HYBRID VIDEO OPERATION

Managing a hybrid video processing solution adds time and complexity to any workflow. When designing and deploying a cloud-capable video operation, there are several key considerations that must be prioritized to assure an effective implementation:

Feature parity: Select a vendor with a cloud-based video platform that can exactly replicate the profiles, capabilities, and formats used on premise so that video outputs are identical regardless of where they are processed.

Unified management: Make sure cloud-based and on-premise video platforms can be administered from a single interface and API so both sets of resources are managed seamlessly.

Secure environment: Avoid multi-tenant services on publically exposed networks. Instead, choose a solution that maintains an autonomous deployment of dedicated resources for each individual customer within a virtual private cloud that's not externally accessible.

Reliable implementation: Make sure the cloud solution spans multiple regions and availability zones so deployments have built-in redundancy.

Data transfer: Select cloud-based data centers that are located near on-premise data centers and leverage accelerated data transfer services. This will make it significantly easier to move content in and out of the cloud.

Experience: Select an enterprise-class vendor for video processing in the cloud, just as you would an on-premise solution. Make sure the vendor is equipped to meet FCC regulations and other standards that apply to your business, with a proven record of quickly incorporating new standards as they're introduced..

CONCLUSION

As cloud computing vendors continue to resolve the issues of cost, data transfer, reliability and security; interest in cloud-based video processing is sure to grow among media and entertainment companies in the near future. By taking a hybrid approach, media companies can fully reap the benefits the cloud can offer, while optimizing capital investments already made. Having the flexibility to leverage both on-premise and cloud systems allows companies to economically balance video processing resources.

To learn more about cloud-based video processing for premium live and on demand content, visit: <http://www.elementaltechnologies.com/products/cloud/cloud-transcoding-services>