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## Philippine's Largest Media Company ABS-CBN teams with EdgeStream to Stream DVD Quality Movies and TV Programs

What do Perth Australia, Trondheim Norway, Reykjavik Iceland, Bangalore India, Sapporo Japan, Kuala Lumpur Malaysia, Guatemala City Guatemala, Toronto Canada, Capetown South Africa, Columbus Ohio and Ogden Utah have in common? EdgeStream's Video Delivery Network (VDN) has streamed full length movies in DVD and HD quality to these locations and many more around the globe from just two data centers located in Los Angeles and New York. Using its patented technologies called **Internet Congestion Tunnel Through (ICTT)** and **Continuous Route Optimization (CROS)**, EdgeStream can deliver perfect high quality video signal, without degradation, to every corner of the globe from just two or three data center locations.

So when it came to choosing a CDN to distribute long form high quality movies, ABS-CBN International, Philippines largest media company chose the EdgeStream Video Delivery Network as one of its CDN's for streaming to the Filipino Diaspora worldwide. "ABS chose to use the EdgeStream VDN for three specific reasons, a) we were looking for a platform that supported high bit rate (DVD quality) video streams to WM player using Microsoft DRM, b) we wanted a network that had the ability to reach the remotest regions of the globe and still provide a QoS similar to regular TV, and c) we wanted a network that would lower our costs" said Enrique Olives, Director of Business Development for ABS-CBNi. "We started testing the EdgeStream VDN back in June 2006", continued Enrique, "at first we were skeptical and unsure if EdgeStream would scale and provide a better QoS or lower our costs and there was also the issue of a client side software download, but once our audiences saw the quality of a 1mbps encoded video without any buffering or jitters or interruptions, they demanded more programming in high quality. Our traffic grew manifold within a month of introducing a high quality Movie Channel; we are now delivering more and more movies using the EdgeStream VDN and expect our traffic to significantly increase in 2008".

"Over the last 12 months, our video traffic has grown to more than 3 petabytes a month and we continue to experience explosive growth month over month", said Connie Lopez, Head of ABS-CBN Now. "The last year and a half has been an exceptional ride; we have grown a small online stake to a full scale profitable operation within the ABS Group by providing our regular TV programming and movies to nearly 8 million Filipinos living outside the Philippines via the Internet. If not for CDN's like EdgeStream, our audiences would have to resort to getting tapes and DVD's, many of them pirated, to watch their favorite movies. Using the EdgeStream VDN, we have been able to present our worldwide Diaspora with our Movies and TV programs in good quality as aired in the Philippines".

EdgeStream has deployed a Global Video Delivery Network that enables content owners, aggregators and broadcasters of any size to provide error free video on demand streaming applications in SD, DVD and HD quality to broadband audiences worldwide with a QoS that is similar, if not better than private operators like Cable, Satellite and Telco VOD, cost effectively. Founded in 2000 by industry veterans Vinod Sodhi/CEO, Randy Chung/CTO and Rajeev Sehgal/CMO, the company developed a technology platform that allowed it to take a radical new approach in building its Global Video Distribution Network.

While other CDN's deployed massively distributed edge delivery systems incurring huge expenditures, EdgeStream using its patented software is delivering an unmatched Quality of Service from a handful of data centers to every broadband user globally. While other CDN's struggle with streaming a 800kbps encoded video, EdgeStream is enabling content distributors to stream HD videos worldwide with fast forward, rewind, pause and stop functionalities in 720 and 1080 resolutions. "There has been a lot of hype in the market about HD videos over the Internet" said Rajeev Sehgal, co-founder and CMO of EdgeStream, "but none of these providers mention that to watch HD videos the end users need to download the video to their PC's before



they can watch them. Download wait and then watch has very limited scope in today's world of instant gratification; content distributors can use the EdgeStream Global VDN today and offer true video on demand in DVD and HD quality to their audiences worldwide at industry leading pricing".

EdgeStream built its VDN to provide a TV like viewing experience in SD, DVD and HD quality to global audiences cost effectively. "While developing our platform and core competencies, we knew that to deliver a QoS over the public Internet we had to conquer network congestion and latency issues, which as we know can occur at any time and significantly impacts the Quality of Service. While other CDN's went the edge delivery route to circumvent these issues, we developed software that would allow us to mitigate its effects and build a quasi-centralized network using commodity servers and achieve high capacity utilization of the infrastructure. Early on in the product development cycle we concluded that best results are achieved when the quality of streaming video is measured as close to the display as possible" said Randy Chung, co-founder and CTO of EdgeStream. "Our continuing research over the years has allowed us to develop, perfect and patent two key technologies, 1) **ICTT (Internet Congestion Tunnel Through)** and, 2) **CROS (Continuous Route Optimization)**; both these form the core of our Video Delivery system and Network".

EdgeStream's **ICTT** is a proprietary technology for improving high-speed, error-free video delivery, based on familiar HTTP and TCP/IP protocols. EdgeStream decided to use these protocols as they support error-free streaming and are firewall friendly. **ICTT** makes delivery tolerant of high network latency by breaking up the original compressed files and using patented multi-source techniques to stream the video to a displaying device, even when it is 20 router hops away. "We are able to treat the video as simple data files which allows us to transport DVD and HD high bit rates without any problems", said Randy Chung.

In a White Paper on the [Effects of Latency](#) authored by Randy Chung, he gives an example of conventional and EdgeStream delivery on a congested path with 1 percent packet loss and 160 milliseconds of round trip latency; conventional TCP based delivery slows down to about 500 Kbps, while EdgeStream delivery can maintain delivery in excess of 3000 Kbps.

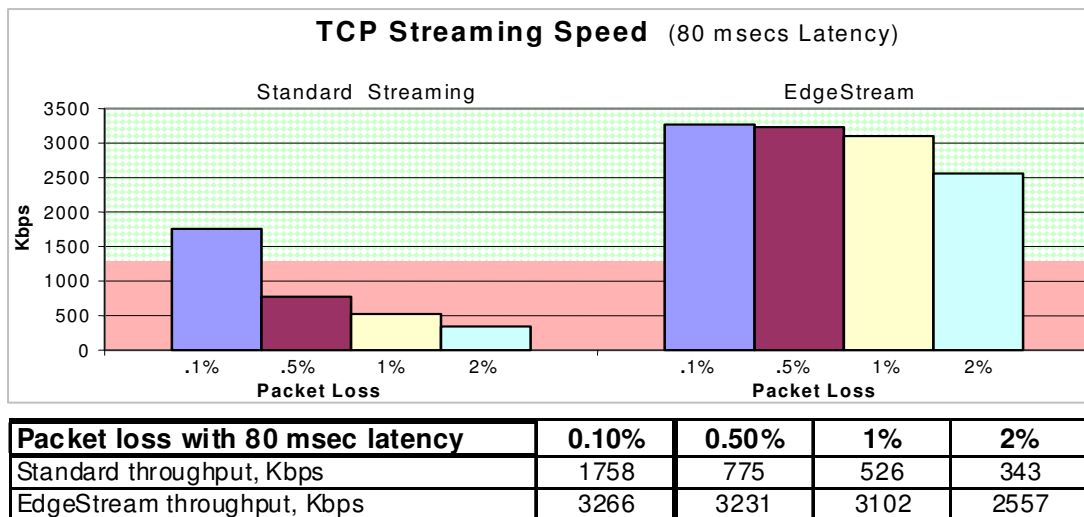


Figure 1 – The graph compares video streaming performance between standard TCP transfers and EdgeStream transfers. The video was a 1 Mbps average clip. Measurements were taken over a 60 second average. While the standard TCP streaming bandwidth drops sharply with increasing packet loss, EdgeStream bandwidth remains practically unchanged

The use of **CROS** (Continuous Route Optimization) technology along with **ICTT** provides even higher performance, along with load balancing, fault tolerance, and network optimization features. The EdgeStream client implements **CROS** by continuously monitoring the data delivery, and if necessary, adaptively switching the deficient data stream to alternate paths, servers or server locations in real time without interruptions. This delivery method improves overall network utilization while providing a "relief valve" for overloaded network



segments of the public Internet. The switching is done totally transparently, without interrupting the user's video, and can happen multiple times if necessary.

In contrast, other CDN's route optimization solutions are typically implemented on network equipment located where the servers are, and can take many minutes to adapt to changes in routing tables, particularly when attempting to track thousands of connections over hundreds of thousands of routes. This means conventional route optimization cannot react efficiently and end users will see video interruptions, buffering or frozen images during periods of even modest congestion. EdgeStream's **CROS** is the only route optimization specifically designed for video delivery.

The combination of **CROS** and **ICTT** provides the highest quality video delivery over the public Internet while simultaneously lowering Cap-Ex and Op-Ex, which allows EdgeStream to offer a disruptive price structure to its customers.

The EdgeStream VDN is format/codec agnostic and can support most formats, DRM systems and the client software can be embedded in Set Top Boxes and other display devices.

"ABS has started an IPTV service and currently has about 20,000 subscribers", said Enrique Olives, Director of Business Development for ABS-CBNi. "Right now we are using a STB with h.264 using another provider. Although that service is good, we are interested in lowering our costs and are looking to test an EdgeStream enabled STB with Windows Media so that our encoding people do not have to duplicate the encoding effort in h.264 and WMV. EdgeStream's innovative delivery methodology and past performance in scalability gives us a lot of confidence in growing the business relationship between the two companies".

Dennis Lim, Head of Video Transcoding Operations said that "EdgeStream technical staff has been very supportive of our demands and looking at ways to improve the Quality of Service for our viewers. They suggested we start using VBR encoding instead of CBR as it provides a much better quality and will lower our bandwidth consumption by 15%; we are now encoding all our WM videos in VBR, the quality is definitely better and our viewers have commended this initiative. Not only are we streaming better quality videos, we are also saving money using the EdgeStream VDN".

Summarizing the advantages of using the EdgeStream VDN, Vinod Sodhi, co-founder and CEO said "**EdgeStream's VDN provides much more reliable delivery**, with automatic and transparent switching around network impairments, so that the end users never see any degradation in video quality, buffering or interruptions".

"**EdgeStream's VDN provides much higher system utilization** through global load balancing. Capital costs are directly influenced by average server utilization. Because of latency tolerance, servers at any site can help deliver video to any user any where globally. EdgeStream's core innovations are able to monitor server and site load and dynamically assign new users to the least utilized resource and because of the ability to deliver over long distances, traffic peaks are averaged out over multiple time zones, further reducing costs".

"Conventional competitive systems will have low system utilization, because the servers are limited to localized delivery by network latency or network path impairments. In addition, servers utilizing public or private peering will often be limited in reach to one router hop into the peered network. These limitations mean that idle servers at a distance cannot help in delivery, reducing effective system capacity. This also results in higher costs".

"**EdgeStream's VDN enables much higher availability of high quality video.** Latency mitigation and fault tolerance allows the delivery of DVD and HD streams to all broadband users around the world without the need to build a large massively distributed infrastructure".

"**EdgeStream's VDN offers much lower pricing.** Since our capital and operational costs are much lower we are able to pass on these savings to our customers and still maintain a healthy profit margin. Heavily dispersed and infrastructure intensive edge delivery solutions will not be able to match our price points and remain profitable".



“Online content providers and their subscribers have become very demanding and will not pay for a service that does not provide a quality viewing experience” said Rajeev Sehgal. “Our innovations will allow our customers to cost effectively meet the growing end user demand for the new wave of high quality Web TV and IPTV applications over the open Internet”.

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EdgeStream Platform may not be able to deliver uninterrupted broadcast quality streaming while brown out conditions prevail over the backbones. Additionally, the quality of each user’s experience shall be limited by available bandwidth in the last mile.

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