

## Media Delivery Solution Brief

### Business Challenge – Sharing Gains, Enabling Triple/Quad Play Services and Lowering Costs

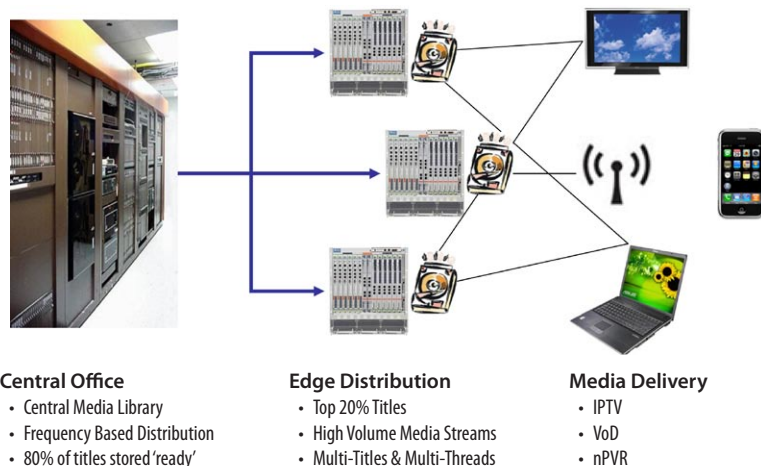
According to Steven Hawley of Multimedia Research Group, "Our research estimates that there will be 63.6 million IPTV subscribers by 2011, and they will demand the highest quality of experience (QoE) in order to remain loyal." Operators of cable, telecom, direct satellite, internet and the network equipment providers (NEPs) that supply these operators are looking at how to get their share of this growing and valuable market. The challenges facing these operators and NEPs include:

- ◇ **Reliable Delivery of Media Services** – The concurrent video performance of the Caspian Edge Storage product line provides viewers the quality of service (QoS) and quality of experience (QoE) they expect and demand. By integrating Caspian Edge Storage Blades on the edge of the network close to subscribers, content delivery networks can increase delivery performance to meet bandwidth and access demands.
- ◇ **Delivering Multi-play Services and Quality of Experience** – Multi-play services combine phone/VoIP, IPTV, broadband internet and/or mobile services. Delivery of multi-play services requires exceptional reliability and must provide the highest QoS with always-on delivery, interactivity services, transparent support for spike demands and access to a global library of content. The Astute Networks' Caspian family provides a highly reliable storage solution to meet the delivery requirements of this extremely competitive market.
- ◇ **Improving ROI on CapEx** – Our support of 10Gb iSCSI on ATCA servers enables more scalable delivery capabilities. Operators and the network equipment providers who supply them need solutions which maximize the ATCA server investment by accelerating deployment of new applications and simplifying field management.
- ◇ **Reliable Scalability with Lower Costs per Media Stream** – Content delivery networks must scale subscribers while simultaneously lowering the cost per stream for operators to win in the competitive global market. Next-generation media applications will require next-generation 10Gb architectures to keep operators competitive.
- ◇ **Monetize Share Gains by Growing Revenues with Advertising** – An important factor for operators is their ability to leverage their subscriber base in the area of in the delivery of customized advertising. Astute Networks' Caspian Edge Storage Blades can increase the percentage of revenue-producing servers needed to implement an ad Insertion solution in an ATCA rack by as much as 25%.

### The Requirements – Optimizing Media Delivery with Edge Storage

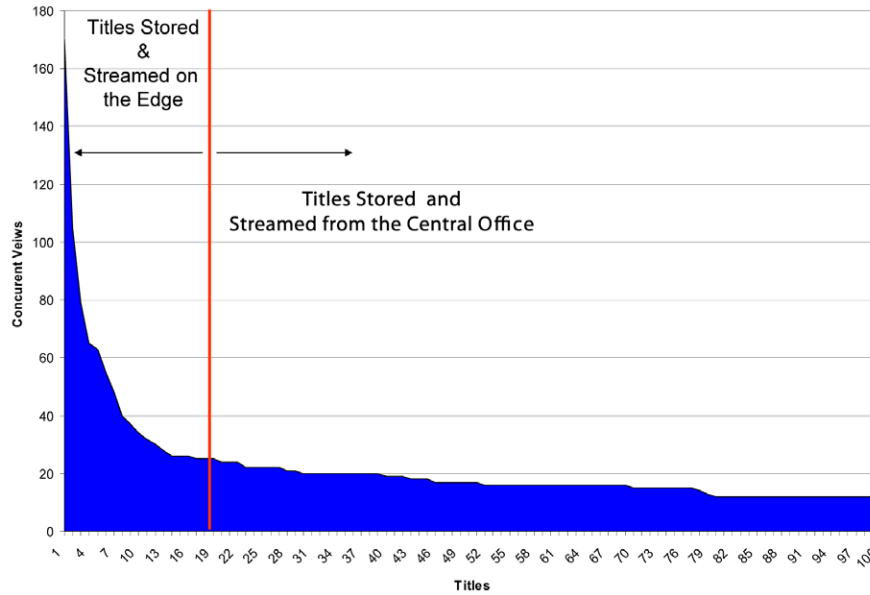
Simultaneously delivering thousands of streams, containing multiple titles, to multiple clients is a very challenging application for operator and NEP infrastructure. Generally speaking, applications fall into one of two categories: small transactions (databases, SMS/MMS) or streaming (backup, media streams). Media delivery systems combine the transaction requirements of databases with concurrent streaming file and the stringent QoS demands. This is particularly true for IPTV, VoD and nPVR applications. One of the key components to a reliable, high-availability content delivery network is an edge storage system designed to meet the bandwidth, scalability (capacity and media streams), interactivity transactions and delivery of QoS and QoE to subscribers.

### Media Delivery with Edge Storage



The performance test for any media delivery systems is delivery of high-volume streams across multiple titles to multiple clients simultaneously. This requires the support of hundreds or thousands of media streams. The following table shows the distribution titles and concurrent streams typically seen in IPTV and VoD applications.

### Media Delivery Load Distribution



As you would expect, the distribution shows a few high-volume titles that need to be stored and streamed at the edge of the content delivery network and lower volume titles that can be stored centrally. The following table outlines the key edge storage requirements to support QoS and QoE, media stream scaling, interactivity response and content storage:

Application	Storage Requirement
IPTV	<ul style="list-style-type: none"> <li>• HA Edge Storage</li> <li>• Thousands of Media Streams</li> <li>• Scalable Storage</li> <li>• Interactivity Response</li> </ul>
VoD	<ul style="list-style-type: none"> <li>• Individual Stream QoS</li> <li>• HA Edge Storage</li> <li>• Thousands of Media Streams</li> <li>• High IOPS</li> <li>• Interactivity Response</li> </ul>
nPVR	<ul style="list-style-type: none"> <li>• Individual Stream QoS</li> <li>• HA Edge Storage</li> <li>• Thousands of Media Streams</li> <li>• High IOPS</li> <li>• Scalable Storage Capacity</li> <li>• Interactivity Response</li> </ul>

### The Solution - Astute Networks Edge Storage Architecture

Astute Networks' Edge Storage Architecture (ESA) provides the storage solutions required to help telcos and NEPs meet the myriad of business, application and technical demands to compete on the global stage. The Caspian family of edge storage blades is based on Astute Networks' high-performance, low-power, green-friendly 10Gb ASIC technology. The Caspian meets the rigorous design criteria demanded by telecom operators and NEPs that includes: support for NEBS Level 3, advance cooling solutions that keep high-performance disk drives operational under extreme conditions and a 100% high availability (HA) design to create a solution with the right built-in capabilities:

- ◇ Built-in Reliability
- ◇ Built-in High Performance
- ◇ Built-in Rack Density
- ◇ Built-in Deployment Simplicity
- ◇ Built-in Power Savings
- ◇ Built on Open Standards

Application	Storage Requirement	Caspian Storage Solution Proof Points
IPTV	<ul style="list-style-type: none"> <li>• HA Edge Storage</li> <li>• Thousands of Media Streams</li> <li>• Scalable Storage</li> <li>• Interactivity Response</li> </ul>	<ul style="list-style-type: none"> <li>• 140K IOPS Blade Pair</li> <li>• 120 SAS or SSD Drives for Media Stream Seating/Blade Pair</li> <li>• NEBS Reliability</li> <li>• Spanned RAID Striping</li> <li>• 10Gb Bandwidth</li> </ul>
VoD	<ul style="list-style-type: none"> <li>• Individual Stream QoS</li> <li>• HA Edge Storage</li> <li>• Thousands of Media Streams</li> <li>• High IOPS</li> <li>• Interactivity Response</li> </ul>	<ul style="list-style-type: none"> <li>• 140K IOPS Blade Pair</li> <li>• 120 SAS or SSD Drives for Media Stream Seating/Blade Pair</li> <li>• NEBS Reliability</li> <li>• Spanned RAID Striping</li> <li>• 10Gb Bandwidth</li> </ul>
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## The Benefits – More Revenue Streams, Scalable Media Delivery, Lower Capital & Costs

The key benefits of deploying the Astute Networks, Caspian R1100 Edge Storage Blade family is that they provide the right storage solution to meet the business, operational and applications needs of operators in media delivery markets. The Caspian R1100 does this in four ways :

- ◇ **Reliable Application Operations, Deployment and Delivery** – The Astute Networks ESA has the built-in reliability ( NEBS, low power, easy cooling) and simplicity of management (single SMNP console) required to make deploying and supporting applications easy and predictable. Since the Caspian family of edge storage is ATCA based, it can be pre-configured and shipped to edge installations without the additional complexity of external FC storage (HBAs, cables storage chassis), which can significantly less the time and personnel required for system configuration.
- ◇ **Lowers CapEx and Operational Costs** – Astute Networks’ ESA based solutions reduce storage CapEx costs by 33% versus external Fibre Channel storage. This improves ROI and reduces the CapEx and cost per subscriber. The Caspian Edge Storage Blade family lowers operational cost vs. external FC storage by leveraging existing ATCA infrastructure, lowering FRU counts, and reducing power consumption by 60% over external storage or dedicated media systems.
- ◇ **Optimal Media Stream Performance** – The Caspian is based on Astute Networks’ advanced 10Gb ASIC that offloads iSCSI overhead for scalable, high-performance transfers and supports thousands of media streams with up to 96 SAS or SSD drives to meet transactional, streaming and capacity requirements.
- ◇ **Increased Market Share, Subscribers and Media Streams** – The key advantage to using Caspian Edge Storage Blades is a 25% increase in the number of revenue-producing media servers per ATCA rack. But that is not all, when you combine the trifecta of performance improvements from 10Gb ATCA, multi-core/multi-chip CPU blades and the Caspian, it is easy to see how telcos and NEPs can increase the number of subscriber streams by 50% over external storage systems in the same computing footprint.

## To Learn More

To learn more about the Astute Networks Edge Storage Architecture and the Caspian family of Edge Storage Blades please visit [www.astutenetworks.com](http://www.astutenetworks.com).

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