About Blackwave

Simply, Blackwave is the industry's most manageable, scalable video storage and delivery system. The combination of Blackwave software along with industry-standard hardware enables providers to deliver video and media-rich content to the Internet with greater ease and impact than any of today's current delivery systems.

In the past, effective storage and content distribution consisted of a few premium titles and low-res user generated video. Today, IP-delivered video must meet the expectations of millions of titles delivered seamlessly to both home and mobile users.

Blackwave Chorus™ Software

is precisely matched with standard hardware allowing distributors to:

- layout and dynamically modify content delivery performance as usage patterns are established over time

- optimize performance without the need of administrator intervention

- achieve granular provisioning to service a large number of concurrent users

- maintain Quality of Service (QoS) levels as title demands and video types fluctuate

- reduce capital, operational and management costs

- drive up to ten times the performance of traditional hardware platforms at a fraction of the cost

- scale to accommodate all content types and auto-provision for data re-allocation to meet surges in demand

Flexible Delivery: Multi-Protocol HTTP, FMS, WMS

A Blackwave system can scale to accommodate all content, delivering video in multiple protocols from a single appliance:

- to meet consumer demand, and make large volumes of content available at the origin and edge of providers' networks
- to meet the demand of 5TB to 30TB of unusable storage at the Edge for delivering both hot and "long-tail" content
- to vary streams whether they are intended for a computer, set-top box, or for mobile storage

Guaranteed QOS across Simultaneous Streams

Content suddenly in high demand requires concurrent streams at a consistently high level of Quality of Service (QoS). A Blackwave-based infrastructure provides agile response capability to:

- intelligently change performance in response to shifts in user demands
- provisioning of increased resources as certain titles surge in popularity and demand
- effectively contracting performance as title popularity decays
- adaptively provision each title so that both hot new and cooler "long-tail" titles are served from a single system

Blackwave for Content Aggregators

As the global transition toward online video content consumption accelerates, content aggregators face challenges. Unpredictable workloads? Library growth issues? Storage and performance questions? Blackwave dynamically manages each of these at a lower operating cost than traditional storage systems as well as provides easy upgrade potential for delivery and capacity.

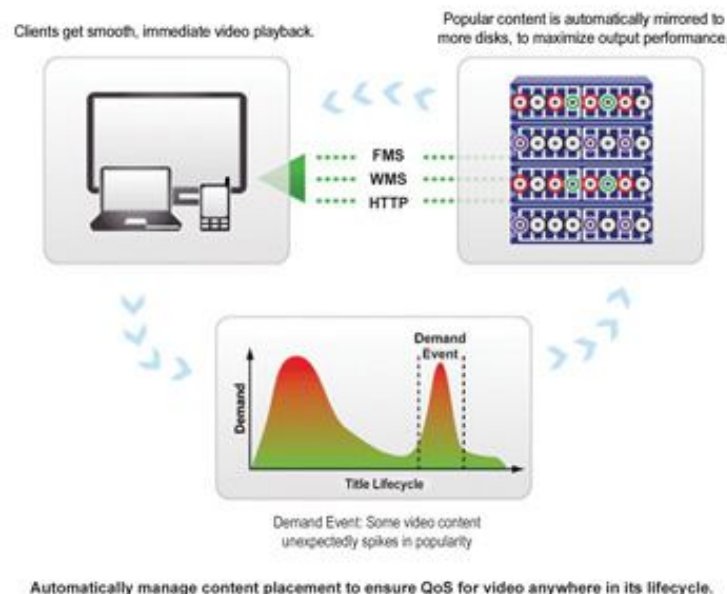**Automatically manage variable demand workloads:**
- As demand changes, Blackwave uses agile management to match resources to each video's delivery bandwidth requirements

Easily support very large title sets:
- Namespace organization is minimized—place all titles in 1 directory or put each title in its own directory. Blackwave flawlessly handles either option for millions of titles

Isolate namespaces of each content provider:
- Each tenant can have its own namespace that will not interfere with other tenants

Clients get smooth, immediate video playback.

Popular content is automatically mirrored to more disks, to maximize output performance.

FMS
WMS
HTTP

Demand Event

Demand

Title Lifecycle

Demand Event: Some video content unexpectedly spikes in popularity

Automatically manage content placement to ensure QoS for video anywhere in its lifecycle.

Cost-effective title management and pro-visioning are critical to the success of content aggregators. Today's exponential growth of titles requires a system that can provide economic scaling as content libraries grow.

Leveraging a grid architecture, Blackwave uses intelligent content placement to reduce the footprint and associated operating costs of traditional storage systems.

Blackwave's patent pending algorithms for disk allocation and performance management serve disk space and increase performance. Blackwave also easily integrates existing content management systems using protocols such as NFS, CIFS, and FTP.

Blackwave offers the perfect solution if:

- required delivery capacity exceeds 5 gigabits/second & video library exceeds 10 terabytes

- you require more than 3 gigabits/second and continue to grow

- delivery equals one Mb/s stream and higher to an audience of 5,000 or more

- must deliver multiple streaming pro-tocols from one common infrastructure

Blackwave Chorus™ Software

Blackwave Chorus software, precisely matched with industry-standard hardware, enables delivery across multiple protocols to large audiences at the lowest cost per stream. Ease of scalability, simple integration, and low-complexity deployment ensure minimal ownership expenditures and improved profitability.

Instead of the traditional content delivery method of combining storage capacity with performance capability, Blackwave enables independent scaling as business needs evolve:

- Blackwave's patent-pending algorithms leverage streaming media attributes to optimize both bandwidth & capacity
- accommodate scores of viewers with agile disk provisioning & scheduling

Video Delivery
Blackwave enables robust video delivery to a vast audience across multiple delivery protocols:

- deliver 10s of Gb/s streaming & up to several thousand sessions
- regulated progressive HTTP downloads
- WMS and Flash delivery
- elimination of single Points of Failure
- self-repairing content fixes media corruption and disk failures

Distributed Access
Multi-tiered, distributed access allows content access across multiple Blackwave systems for relay to the viewer:

- mid-tier Blackwave can access more than one origin system
- simultaneous content delivery/caching
- future references to mid-tier can deliver from cache for optimizing network utilization
- unused content evicted, resources automatically shifted to handle popular content

Blackwave expands utilization of hardware resources for high bandwidth counts and increased session counts:

- automatically avoid over-provisioning
- modulate download rates to ensure smooth video across vast audiences
- increase customer satisfaction
- reduce capital and operational costs

Multiprotocol Content Ingestion
Blackwave optimizes resource allocation at the title level versus the volume level.

- each title is individually provisioned to simultaneously maximize delivery performance and capacity efficiency
- enable daily uploads of multiple terabytes
- ingest does not impact delivery
- support HTTP, FTP, CIFS, NFS protocols

Easy Management
Blackwave enables simplified management and reporting across geographies:

- unified view of video deliver
- eliminate volume or filesystem management with simple content provisioning
- monitor system help with SNMP
- simple email alerts of System Health and System Events
- enable billing integration of Syslog/Web-log

Blackwave for Mobile Service Providers

The dramatic surge in mobile device usage guarantees new revenue stream options for mobile providers. Blackwave can ensure that your company is positioned to offer flawless delivery of on-demand video, all-form advertising, and rich media to reap the rewards.

- Unburden backhaul by rerouting video traffic from 3GP to IP networks
- Redirect requests directly to HTTP sources

- Store & relay large title libraries
- Access previously stored copies over IP

New triple-screen configurations, rich-media demands, and mega-bandwidth data requirements for smartphones all present unique challenges to mobile operators and service providers. The Blackwave system enables:

- agile management of large volumes of titles
- seamless control of fluctuating demand
- flawless handling of new bandwidth requirements

Because dynamic user experiences and subscriber brand loyalty represent the core of your business, the latest mobile and smartphone demands can represent the greatest hurdles. **Blackwave can help you** prepare for the explosion in professional advertising, user content generation, and rich media.
Blackwave can ensure that you deliver a Quality of Service that satisfies your subscriber base and attracts new users.

Reasons to consider adapting the Blackwave system:

- User-generated content has yet to define a highly successful revenue model, but the audience exists globally, in massive numbers
- Short- and long-form advertising represents significant investment potential
- Reformatted and original mobile content titles offer additional revenue streams

Companies who manage these requirements effectively and deliver the best user experience will achieve success and gain these new revenue streams.
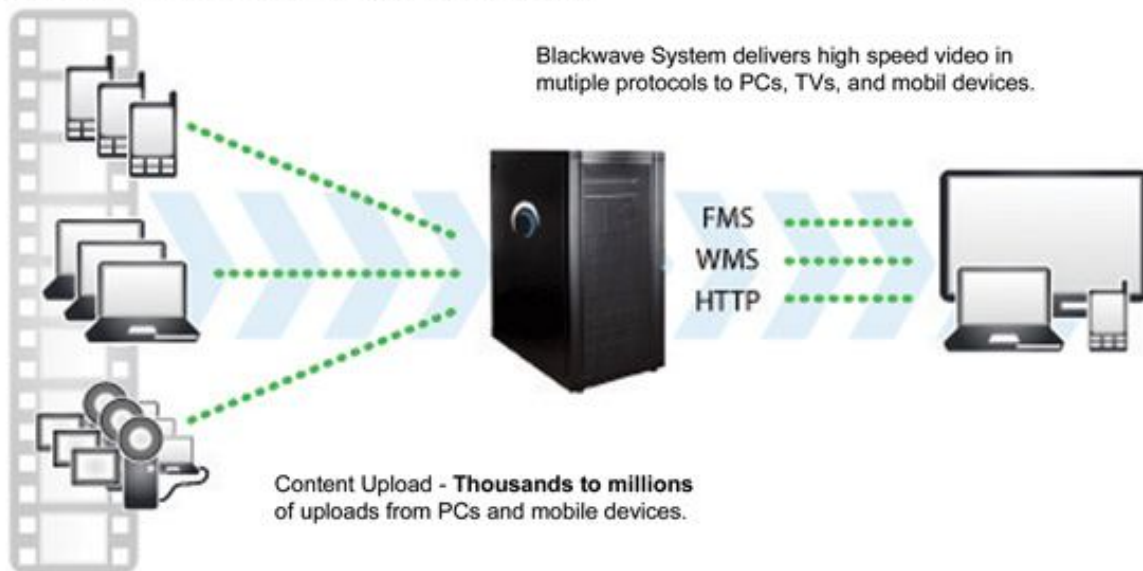
Blackwave for Web 2.0

Optimized for today's video and digital content delivery, Blackwave outperforms conventional file systems and traditional hardware platforms with a Quality of Service never before possible at a lower cost. We offer a high-performance, cost-effective alternative that provides the granularity and response times necessary to efficiently handle the complex performance needs of individual titles.

2.0 sites.

Employing a unique grid architecture and intelligent software, Blackwave:

- enables delivery of professional rich-media advertising for sites once dominated by simple user-generated video and photos
- handles complex social networking content, such as premium, long-form commercial film and episodic content
- provisions titles to meet unexpected spikes in demand and drop-offs in activity
- effectively meets today's new storage requirements

Blackwave System delivers high speed video in mutiple protocols to PCs, TVs, and mobil devices.

FMS
WMS
HTTP

Content Upload - **Thousands to millions** of uploads from PCs and mobile devices.

Traditional caching systems are inefficient for handling today's "tail-to-head" churn and varying performance needs. As a result, Web 2.0 sites are forced to choose between having cost-efficient storage minus optimum performance. Or else they must employ high-performance distribution servers that entail overpriced delivery costs for less monetized content titles.

For social media sites that scale to expanding needs with "whitebox" solutions, this performance tradeoff is both prevalent and problematic. Blackwave uses a distributed architecture optimized with unique storage and delivery protocols to eliminate whitebox issues.

It automatically manages and provisions title-level content based on real-time popularity and integrity requirements.

With a Blackwave system, you can engage a vast social community and its advertising apparatus with a Quality of Service never before possible. Blackwave is the best choice if you're:

- increasing delivery capacity
- augmenting content repository to support market expansion reducing expenditures
- driving more margins by serving increased ad video/content
- reducing the complexity of video delivery

Blackwave for CDN, Cable & IPTV

Blackwave provides simplified video distribution management and the lowest cost per stream of any delivery solution. CDNs, cable companies and IPTV require the capability to expand operations without jeopardizing cost models. Blackwave provides a comprehensive solution that will enable you to achieve this.

Blackwave offers the alternative.

Traditional enterprise systems are not designed or configured to maximize video delivery per-formance. Blackwave provides:

Improved Performance

- 500Mb/s streaming download performance (10x industry average)
- eliminates wasteful storage
- real-time provisioning at title level
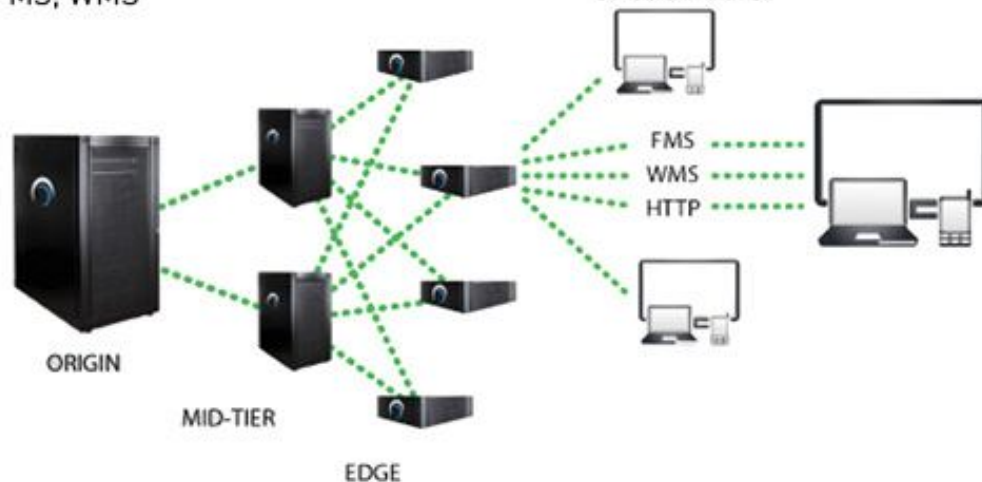
Multi-protocol support

- HTTP, RTSP, FMS, WMS

Leverage Form Factor

- lower power needs per stream
- 32 whitebox racks = one Blackwave
- increase productivity while downsizing footprint
- limits infrastructure investment

Unsurpassed Scalability

- store more data in one location or across many locations & protocols
- scale storage/streaming capacity independently of each other

ORIGIN

MID-TIER

EDGE

FMS

WMS

HTTP

Blackwave for CDNs simplifies management, lowers costs, and delivers positive user events. We offer 20 Gb/s of base aggregate delivery performance and over 96TB base storage capacity.

- real-time content delivery & caching for future delivery
- delivery of 10,000s of streams with Quality of Service & less power

Blackwave for Cable Companies and IPTV Providers prevents asset revenue from migrating away from your network to other sites.

- Blackwave supports wider delivery of VOD assets
- relay content on terrestrial lines across protocols: HTTP & RTSP

Blackwave Chorus software: the key to whitebox superiority. While responsive to title requirements, our system lowers costs while simplifying delivery management and scaling.

- title-level content always mirrored/always available
- no single point of failure
- differentiation of all content types ensures QoS for each title