

# PeerApp

## UltraBand™ 1000

### Media Caching, Content Acceleration and Bandwidth Management

#### Transparent and Scalable P2P and HTTP Caching for Service Provider Networks

#### UltraBand System Overview

Internet Video and other forms of online media already consume over two thirds of consumer Internet traffic, and are by far the faster growing categories of traffic. This represents a major disruption to Internet Service Provider (ISP) technology, infrastructure and business models. The Video Internet is creating new challenges to ISPs: rising costs, competitive pressures, need to support unprecedented increases of traffic and need to improve the user experience.

The UltraBand 1000 is a carrier class caching and content acceleration platform that allows ISPs to meet these growing challenges. PeerApp's patented technology reduces bandwidth and network infrastructure costs by caching popular content within the ISP network. It also improves the user Quality of Experience (QoE) by delivering the content to the subscriber at the fastest possible rates. Delivering a high QoE for video has become a key differentiator for ISPs in an increasingly competitive market.

The UltraBand 1000 supports popular services and applications based on common P2P and HTTP protocols. The P2P support includes BitTorrent, Ares, e-Donkey, Gnutella, FastTrack and Pando. HTTP support includes many video services such as YouTube, along with large file downloads such as operating system and gaming updates. P2P and HTTP represent most of today's Internet traffic; efficiently caching this traffic reduces bandwidth demands and infrastructure costs.

#### Key UltraBand 1000 Benefits

- ▶ **Lower Bandwidth & Infrastructure Costs**  
Reduce the amount of overall Internet transit and peering bandwidth. Reduce network upgrade costs for upstream and downstream.
- ▶ **Accelerate Content Delivery**  
Cached content within ISP network enables fast delivery of video and content up to access line rates.
- ▶ **Improve Subscriber QoE**  
Alleviate network congestion & improve quality for all applications and subscribers: Reduce subscriber churn & support costs.
- ▶ **Cost Effectively Scale for Growth**  
Modular caching and storage elements enable incremental system growth to align with growing traffic requirements
- ▶ **New Revenue Opportunities**  
Improved service quality and greater network efficiency promotes premium broadband packages and enables ISPs to create specialized Internet video service packages

#### Key UltraBand 1000 Features

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|---------------------------------|--|
| ▶ Network Optimization          | The only solution that guarantees savings on transit and upstream links.   |
| ▶ Concurrent P2P & HTTP Caching | Only architecture that can simultaneously support all of the HTTP and P2P traffic with a single caching solution.  |
| ▶ IP Transparency               | System does not operate as a "Super Peer" or Proxy and has no public IP address. Transparency ensures ISP anonymity and preserves peer ratings for P2P clients and click-throughs for popular web sites.             |
| ▶ Configurable Caching          | Configurable bi-directional (downstream and upstream) caching provides both transit and last mile upstream savings; Integrates with existing QoS and bandwidth management systems.                                   |
| ▶ Wirespeed Content Delivery    | Accelerates delivery of streaming and download content at up to the wirespeed of the access network. Enables new revenue generating services for ISPs.   |
| ▶ High Availability             | Clustered system architecture with no single point of failure. Hitless software upgrades minimizes operating downtime for maintenance. Hot-swappable power supplies and disks.                                       |
| ▶ DMCA Compliance               | Operates as a network cache and not a host or "Super Peer." Is in full compliance with United States and European Union legislation providing a "safe harbor" for caching technology deployed within an ISP network. |

## Key Functionality

### Intelligent Media Caching

Unlike traditional Web caches, Intelligent Media Caching focuses on large objects, like video, that consume the greatest amount of bandwidth. These files are typically delivered using common P2P and HTTP protocols. In addition, the UltraBand 1000 determines the value of caching based on content popularity, frequency of use, cost of bandwidth and infrastructure efficiency.

### Simultaneous HTTP and P2P Support

The UltraBand 1000 is a modular platform that simultaneously caches and accelerates P2P downloads, HTTP streaming video and HTTP large-file downloads such as Microsoft Windows® and Linux software updates. P2P protocols supported include BitTorrent, E-Donkey, Gnutella, Ares, FastTrack and Pando. The UltraBand 1000 architecture provides for the non-disruptive addition and integration of new protocols, applications, and protocol updates.

### Caching Transparency

The UltraBand 1000 operates at Layer 2 and does not have a public IP address visible to subscribers or services. Caching transparency ensures anonymity of the UltraBand 1000 within the service provider network.

Because the UltraBand 1000 operates as a network cache and not a Proxy or "Super Peer," the system never interferes with the functionality of any application or service. Caching transparency ensures that all cached content is served only after the originating peers or servers agree to provide the requested content. Sessions between all peers are established and maintained until completion of the transfer. It also ensures that the requested content is up-to-date, and that business models are preserved such as "pay per click", peer and site ratings. This ensures compliance with applicable legislation for copyright protection.

### Clustered Processing and Storage

The UltraBand 1000 is designed to support large scale and rapidly growing multi-gigabit carrier networks. This cluster computing technology enables scaling from a single caching server (engine) up to sixteen cache servers, all connected as a single distributed computing platform.

Up to six very high capacity storage array enclosures operate as a single storage area network (SAN) providing a total capacity of 36TB of available caching storage.

The platform uses SCSI over IP (iSCSI) protocol; all cache and storage servers are interconnected via a high speed Ethernet network.

### Cluster File System

The PeerApp cluster file system implemented in the UltraBand 1000 platform provides complete virtualization of stored content, enabling each cache server to read and write any file to any storage device. The large content pool that is available to each cache server yields higher caching efficiency.

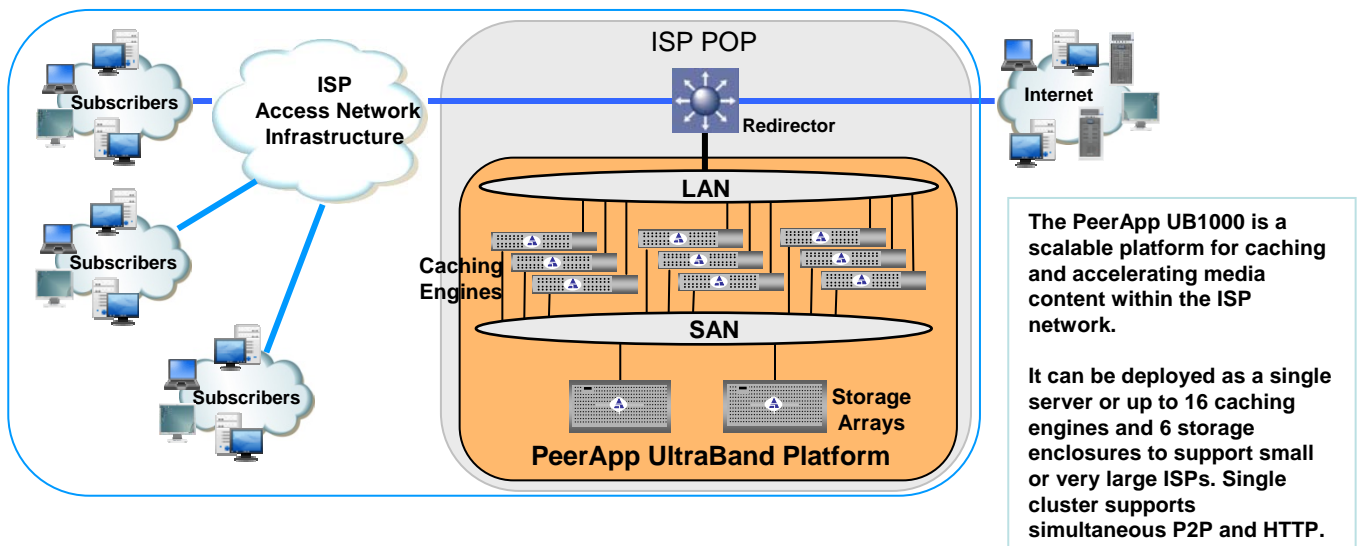
Separate scalable storage and network processing elements interconnected via affordable iSCSI SAN technology produces lower system costs, lowering total cost of ownership.

### Carrier Class Availability

The UltraBand 1000 features satisfy ISP requirements for high availability and manageability. The cluster layer provides M+N Cache server load balancing and redundancy. The storage arrays optionally support RAID mirroring to ensure increased content availability. In case of disk failure, the caching service is not affected.

Software and hardware watchdog functions are implemented for fast recovery and non-disruptive remote software upgrades resulting in very high system uptimes. In the event of a system failure, the fallback mechanism will cease redirecting traffic to the UltraBand 1000 preventing a service interruption.

## Scale For Growth



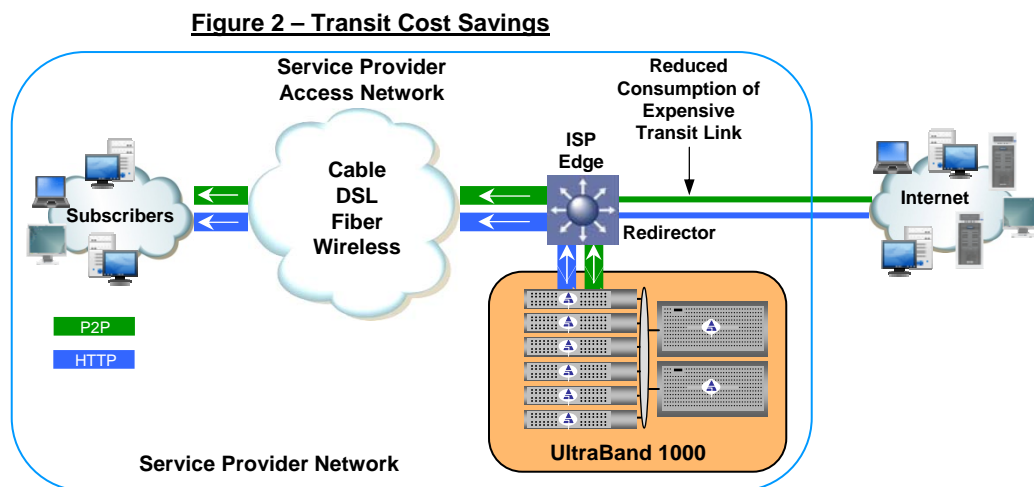
## UltraBand 1000 Deployment Applications

Peer-to-Peer and HTTP video applications today consume over two thirds of consumer Internet traffic. In addition, Video Internet traffic is growing at unprecedented rates and exhausting the planned growth capacity of ISP networks. Expensive transit, peering links and upstream access network links are being taxed with repeatedly transporting identical files unnecessarily.

### Transit Cost Savings

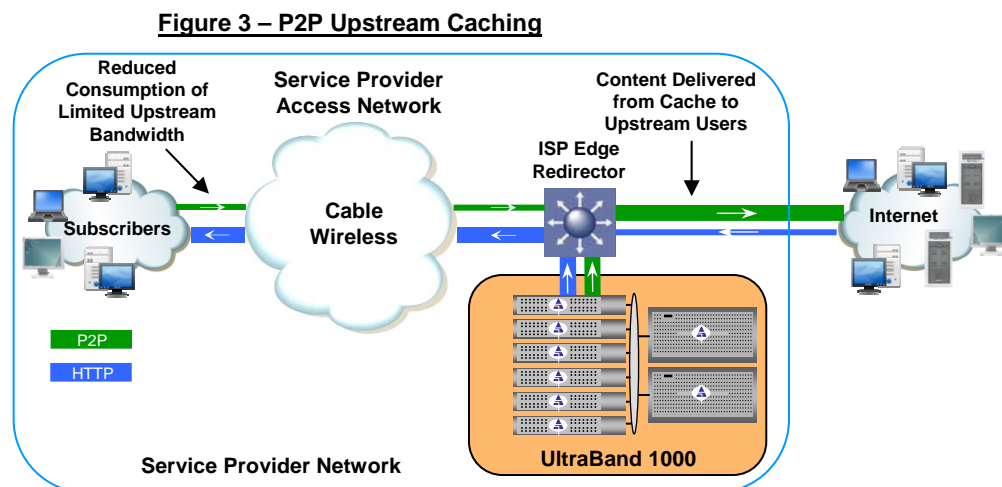
In **Figure 2**, the UltraBand 1000 eliminates repetitive transmissions of content - P2P and HTTP files - over expensive transit or peering links producing substantial cost savings. This reduces bandwidth and network infrastructure costs while increasing the bandwidth available for P2P, HTTP and other applications. The PeerApp solution effectively increases Internet capacity and accelerates content delivery without incurring additional Transit bandwidth fees.

Additionally, cached traffic is served to the subscriber at the fastest speed of the service provider access network producing high user satisfaction, translating in turn to lower churn, more rapid subscriber growth and migration to Top-Tier broadband packages.



### Relieving Congestion in Last Mile Shared Access Networks

In **Figure 3**, the UltraBand 1000 eliminates the redundant transmission of P2P files over more limited upstream access network facilities. Requests from Internet users are redirected to the UltraBand 1000 which delivers the files to Internet users from storage. This reduces consumption of limited upstream bandwidth, increases upstream network throughput and availability for all applications, and improves customer satisfaction/QoE for all users in the shared last mile segment.



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## Management and Reporting

The UltraBand 1000 management interface is a Web interface and provides a comprehensive view of the system and components, caching engines and storage arrays.

Detailed reports delineate incoming and outgoing (cache served) traffic for each protocol: BitTorrent, eDonkey, Kazaa, Gnutella, Ares and HTTP. Upstream and downstream data can be displayed for a day, week, month or year periods. The average traffic for selected periods as well as minimum, maximum and current (snapshot) traffic is displayed. Traffic into the cache, traffic cached-out (served) byte hit ratios and numbers of (P2P) session can be displayed by day, week, month or year.

System key health indicators such as CPU, memory, system and disk utilization are presented. In addition Cache Detail Reports (CDRs) can be exported and used by 3rd party management and accounting systems.

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## Specifications

Supported Protocols	<ul style="list-style-type: none"><li>• HTTP video streaming and downloads files including Progressive downloads, YouTube, RapidShare, Dailymotion</li><li>• Open P2P: BitTorrent, E-Donkey, Gnutella, Ares, FastTrack and Kazaa</li><li>• Commercial P2P: Pando</li></ul>
Unparalleled scalability	<ul style="list-style-type: none"><li>• Up to 16 Caching engine in a cluster</li><li>• Up to 6 storage enclosures with up to 36TB storage</li><li>• Up to 8 million simultaneous sessions</li></ul>
Configurable cache	<ul style="list-style-type: none"><li>• Configurable upstream and downstream caching</li><li>• Complete control over applied links</li><li>• Control over Cache output rate</li><li>• Integration with DPI and other efficiency solutions</li></ul>
Availability	<ul style="list-style-type: none"><li>• M+N redundancy of cache engines</li><li>• Hot-pluggable hard disks drives</li><li>• Software and Hardware Watchdogs</li><li>• Hitless in-service software upgrades</li></ul>
Management	<ul style="list-style-type: none"><li>• Web based reporting and element management</li><li>• SNMP v.2 monitoring</li><li>• CLI-based XML configuration</li><li>• Serial over IP</li></ul>
Security	<ul style="list-style-type: none"><li>• SSL remote secure access</li><li>• IP-based ACL for CLI and Web management</li><li>• Web manager Access list</li><li>• Two level CLI authentication</li></ul>

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### About PeerApp

PeerApp ([www.peerapp.com](http://www.peerapp.com)) is the technology innovator and leading provider of P2P and HTTP caching and content delivery infrastructure that helps ISPs worldwide support Internet video traffic. Based on patented caching and acceleration technology, PeerApp solutions help ISPs create unique competitive advantage, sustain network growth, and build new revenue streams based on Internet video and Content Delivery. Millions of broadband subscribers around the world receive high-quality video and other digital media through PeerApp systems. PeerApp supports many of the most popular video delivery solutions including Flash Video, Move Networks, Pando Networks and Bittorrent.

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