

Distributing Streaming Media — What's In It For Backbone & Broadband Service Providers?

Everyone wants to own beachfront property. The views are great, the beach is just a step away, and if you're in business you can build a resort and make a lot of money. If you are a cable, DSL, or leased-line service provider you are sitting on Internet "beachfront property" — **the broadband connection to the end user** — and you should use it to build your business.

Your property is "beachfront" because it's at the edge of the network, with an unobstructed view to the ocean of users. It's valuable because it's close to users, and the only way to assure a quality streaming media experience is to deliver streaming content from close by. If you are a terrestrial or satellite backbone provider, you have other coveted assets as well: express routes to beachfront property, which are valuable because they assure that content gets to the edge when needed and intact. These two elements — the network edge near broadband users, and broadband connections to the edge — are essential to making real the long-heralded, but slow-to-materialize streaming media broadcast revolution.

But to take advantage of your beachfront property, you need to overcome the problems that currently plague streaming media content delivery. Streaming media hasn't realized its potential because streams delivered over the Internet backbone look terrible, and are slow and undependable. You have probably experienced unsatisfying, jerky, postage stamp-sized video, unsynchronized audio and video, and lost connections.

Enable Top-quality Streaming Media

InfoLibria provides the missing component to TV-quality video and CD-quality audio over the Internet: the ability to move content to the network edge with the highest possible quality, and deliver a satisfying viewing and listening experience to users with broadband connections. InfoLibria's technology launches you into the business of distributing streaming media content as it's meant to be seen and heard.

At this point you may be wondering - why would I want to be in the streaming media delivery business? I have my hands full concentrating on the services I deliver today.

Consider this: the old railroad companies went into decline because they mistakenly thought they were in the business of running trains, and focused their sights on competing against each other. What they didn't see was that they were actually in the business of delivering goods, competing against other forms of transportation like trucks and airplanes. If you pigeon-hole yourself in the connectivity business rather than seeing that you are in the content delivery business, you may suffer a similar fate.

For that reason, you should at least pause to consider adding streaming media to your service portfolio because it can be the source of additional revenue, and because it's where the Internet is going and you don't want to be left out.

What's in it for you?

- Streaming Media Content Delivery Services play to your strengths as a network service provider and owner of beachfront assets and/or express routes to the network edge.
- By inserting yourself into the content delivery revenue stream, you move beyond offering mere commodity bandwidth into value-added services.
- Offering superb streaming attracts new connectivity customers to your network, be they consumers, corporations and/or downstream service providers.
- You deliver a service for which content providers and ultimately consumers are willing to pay.
- If you don't do it, someone else will.
- There's money to be made (read on).

Content providers know that they need high-quality multimedia. And they're willing to pay for it. As one content provider puts it: "(High-quality streaming media) is everything to us. Anyone who can do it is looking at big money. It's the Holy Grail right now. The fewer the hops, the less the packet loss, and the better the video. Higher quality is what everyone is waiting for in the video world." (Jim Rooney, VP of Development at Live Online)

Keep control of your asset

You control a key ingredient to quality streaming, property at the edge of the network. Why would you willingly hand over that key ingredient to someone else — for free? That's what many broadband service providers are doing today. They are allowing streaming media and static content service providers (CSPs) to co-locate servers in their network without charging them a penny. This is the equivalent of letting a developer build a resort on your beachfront property and exact handsome rents from tenants, while telling you how lucky you are.

Why let others profit from using your network edge property, leaving you out of the content delivery loop?

Reap the Rewards of an Exploding Market

The market for content services, including both static and streaming content, is forecast by Jupiter/IRG at \$6 billion in 2004. JP Morgan is even more bullish, estimating that the content distribution market will grow to \$6.5 billion by 2002. Streaming media services will be a multi-billion dollar market in the next two years.

Streaming media in the corporate realm will rival entertainment applications in importance. According to Forrester Research, there is “a huge market for streaming and on-demand video for corporations” (Telephony, Jan. 3, 2000). Exactly how huge the market will be is too early to tell, but suffice it to say that opportunities for streaming content are

limited only by the imaginations of customers and their service providers. With edge streaming, they are no longer limited by technology, and the vagaries of the network. (See Figure 1.)

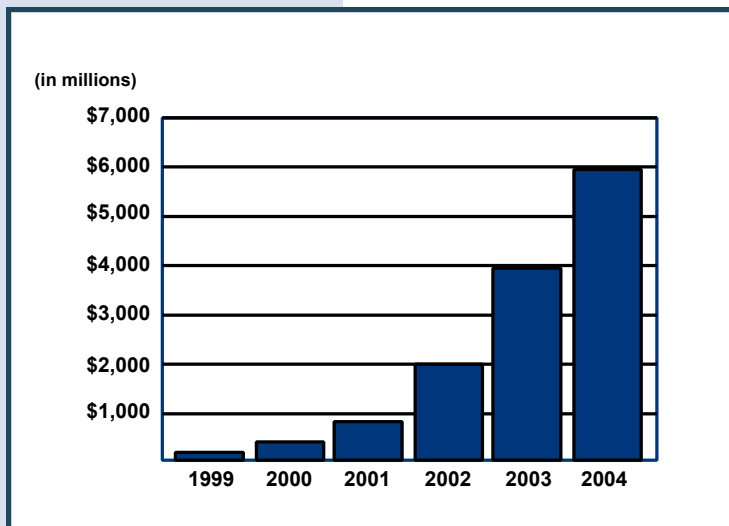
Based on business analyses done by InfoLibria, implementing a streaming content distribution service can result in a breakeven period of less than one year, with gross margins exceeding 80 percent after one year. (See InfoLibria white paper *Enabling Next Generation Internet Content Services and Applications*).

No one owns the market for streaming media delivery services yet, and there is room for many players. The fact that the market is nascent means that there is ample opportunity for you to participate, and no reason for you to concede this opportunity to others without serious thought.

This viewpoint is reinforced by a recent report by Current Analysis, “Streaming services are becoming increasingly visible business class services as major players deploy services, although no competitor or solution has yet to develop a leadership position. All players (RBOC, CLEC, ISP, IXC, etc.) need to evaluate their client needs and implementation cost for these services.” (Competitive Analysis Report “Akamai’s \$200 Million Network24 Streaming Media Gamble,” January 20, 2000)

There is time to become an established player, and as an edge owner, you are well positioned to win in the streaming content delivery game.

Figure 1: *Worldwide Content Distribution and Delivery Market Forecast*



Source: Jupiter/IRG 2/2000

Quality — The Key to Streaming Media Revenues

Streaming media as delivered today is fraught with problems. Backbone and peering point congestion is an ever present and growing plague, causing streams to slow to a trickle, or dry up entirely. Even everyday backbone congestion can slow streaming media delivery to a crawl. But if many users access streams on the same server, that server, its network connection, and the backbone itself can become swamped in a flash (a la the Victoria's Secret fashion "no show," or the recent traffic jam resulting from Stephen King's electronic novel). The resulting network brownouts, or even blackouts are literal and figurative turnoffs to users.

Poor quality is hobbling rich media from living up to its full potential, both in terms of how it's used, and in terms of generating revenue. Overcoming quality problems will open incredible streaming media service opportunities in which content providers and users will pay for streaming content rivaling the quality of today's TVs and CD players. Making quality streams available will draw customers to your network, accelerating customer acquisition.

Some suggest dredging out a bigger Internet to solve the streaming quality problem. But adding bandwidth will take time, and the more bandwidth that becomes available, the more traffic will materialize to sop it up. Pent up demand for high bandwidth applications, including streaming media, will expand to match available bandwidth

The only way to overcome the quality challenge is to deliver streaming content from the edge of the network.

A Glance at the Future

Streaming media is free today because few are willing to pay for the shoddy streams that constitute today's fare. This means that today's streaming media content is limited to a ragtag mix of the latest Star Wars trailer, music for the college set, experimental content, PR promotions, and titillating X-rated clips. If quality were excellent, some content owners would pay to broadcast streaming content, and some users would pay to view content.

Picture a future where movies-on-demand finally morph from fantasy to reality. It's already starting to happen. San Jose startup Me TV.com already offers full-length, full-screen movies over 375Kbps DSL connections for three to four dollars per viewing.

Soon we'll see streaming content "wrap around" TV shows and movies. Wrap-around programming will consist of companion content such as outtakes, and clips expanding upon or explaining aspects of a TV program. Streaming is a natural medium for news and infomercials, as well as "cyber" seminars, customer support, sales training, and public relations. Ad insertion is another streaming application on the horizon, as are local content customization, and distance learning.

Ride the Multimedia Wave

You may find yourself dreading the onslaught of streaming media because of the demands it puts on your network. Accept the fact that within two to three years streaming media content will be commonplace, and streaming media content will traverse your network in growing volume regardless of what you do. Given that you own a vital asset needed to deliver quality streaming, you can either seize the opportunity to play a role in streaming content delivery, or you can hunker down and slowly become obsolete.

Broadband is waiting for a "killer" content application that will attract users to broadband in droves. High quality streaming is that application. Depending on your business model, you can take advantage of the situation in two different ways. You can generate revenue from content providers or users for delivering streaming media to your users. Or, you can use the promise of a high quality streaming experience to lure connectivity customers to your service and gain market share quickly.

Trojan Horse Alert

You own the beachfront property at edge of the network, a critical element to quality streaming. Why would you willingly give that asset to someone else — for free? The argument for giving beachfront property to CSPs goes something like this. If you let the CSPs' servers sit at the edge of your network, so much content will be delivered close to users rather than from the origin server that traffic on your network will decline, thus improving your network's performance and deferring bandwidth upgrades. Also, because CSPs are able to deliver the content they host more quickly than the origin server, your customers will thank you because they will think your service has improved. The improved network performance and improved streaming experience will attract additional connectivity customers to your network.

Are you being used?

These benefits certainly are alluring. But think about it — the benefits exist whether a CSP provides the service or you do it. So why should they deliver the service and take home all the revenue instead of you?

If you allow CSPs onto your property under these conditions, you are letting a Trojan horse onto your network. The CSPs are self-proclaimed "carrier-agnostics," which means that to them you are nothing more than a dispensable pipe. They own the relationship with the con-

tent owner and/or user. You have no role in or control over the content delivery, and you have no relationship with the content provider - you are quite simply out of the loop.

The CSPs are taking business that is rightfully yours - if you want it. If you are a cable or a satellite service provider with pre-existing relationships with broadcasters, when your broadcast customers bring video and audio assets to the Internet, those assets will migrate into the domain of CSPs, relegating you to the realm of plumbing.

With many CSP servers over which you have no control on your network, problems will arise, and there will be little, if anything you can do to remedy the situation. If you deliver the same service, however, you can control it and its interaction with your network and users. You can ensure quality in a way CSPs cannot because they do not own network infrastructure.

The CSPs of the world need you to survive. With few exceptions, they own neither the network edge, nor routes to the edge, and without your collusion, they are barred from to the edge your network.

By giving them free and easy access to your real estate, you enhance their valuations and revenue by streaming for free to your customers from within your network. Remember, it is YOU who owns the property. Think about this — if you owned property on Waikiki, would you let others build for free on your land?

Take Charge

If you decide to use your beachfront property yourself, you can sell your own branded streaming media solution, and form relationships directly with content providers. In this scenario you will compete with CSPs, but assuming you don't let CSPs deliver service from your network, only you can give a quality streaming experience to your users.

One of the many advantages you have in developing your own streaming media service is that you can hone your service to the unique needs of your users and content providers eager to reach your users.

Since the market for streaming media content delivery services is embryonic, now is the time to identify market segments for your offering, and tailor your service to meet the needs of your customers. You have a competitive advantage here. CSPs are busy developing services that are all things to all people, but honed to none, while you can develop a service that is just right for your customers.

If you are a cable service provider, your users are probably mostly consumers, with some small businesses in the mix. DSL service providers are more likely to serve small businesses and teleworkers, with a few consumers mixed in. If leased line and frame relay services are your

mainstay, medium to large businesses are your likely clientele. Consumers, small businesses, teleworkers, and medium to large businesses are attracted to different types of content, allowing you to design unique streaming content delivery service to meet their needs. Let's look at potential applications to understand how streaming media content delivery services might be used by content providers and users.

Consumer Applications

Consumer streaming media opportunities revolve primarily around entertainment, news, and online shopping. Streaming entertainment can take many forms. Movie trailers and Web site promotions aimed at propelling consumers into movie theater seats are becoming common. This approach, which worked well in the case of *The Phantom Menace* and *The Blair Witch Project*, is being widely emulated.

Streaming music files help drive, and may someday partially replace CD sales, while audio and video clips, outtakes, interviews and other material are beginning to "wrap around" and enhance TV programming. At long last, the promise of full-length pay-per-view movies streamed to the home is within reach.

Streaming video enables advertising-sponsored, TV like programming targeted to narrow markets of a mere few thousand viewers. This specialized programming will cater to carefully targeted niche markets — a feat impossible in today's mass audience TV environment. This

opportunity to stream targeted programming is being seized today by ZoomTown.com, an interactive streaming content provider. ZoomTown.com streams local radio and TV programming and customized local content to Broadwing (formerly Cincinnati Bell) DSL subscribers.

For online sellers, infomercials are assuming a new luster. Travel agents can provide virtual tours of destinations, real estate agents can offer online house tours, and clothing retailers can hold online fashion shows (with better results than last year's famous Victoria's Secret fashion no-show and this year's low quality show). Vendors of everything from cars to hardware can provide troves of streamed information and propaganda to remote shoppers.

When you add sports, news, distance learning and other applications to the list, the possibilities for streamed content to consumers are endless — and this is but the beginning . . .

Business Applications

Businesses are looking to Web-based streaming video and audio to train sales and customer support staff, provide corporate and market updates, disseminate product information, support customers and partners, and provide continuing education for employees. Today these needs are satisfied through face-to-face meetings or classes, CD ROMs, videotapes, and hard copy documents. Streaming media makes it easier to deliver, access, update and control content, and it simplifies monitoring and managing content access and usage.

To stay competitive, businesses such as financial service firms must keep abreast of late-breaking news of all kinds, as well as in-depth information on publicly traded companies. Access to streaming news and information from the desktop will become an essential tool for financial analysts and traders to predict stock performance.

Advertising agencies and video production houses must send work in progress to customers and others for timely review. By pre-positioning files at the edge of the network, reviewers can view them long before a videotape can be physically delivered. Reviewing content online dramatically shortens production time — a big plus for a business in which fast turnaround is a competitive weapon.

We are just at the beginning of an explosion of services, which not only bring quality streaming content into the enterprise, but also disseminate it from headquarters to remote offices, teleworkers, customers, and partners. The examples here give you just a taste of the types of services that you can provide your enterprise customers.

Sample Service Descriptions

To help you create your own services, here are two fictional sample service descriptions: one directed to the consumer, and the second to the business market.

Consumer Service — HomeStream

Service Description: HomeStream enables content providers to reach online consumers with TV-quality video and CD-quality audio. The service stores designated streaming content near residential users, and streams it locally as users request it. HomeStream customers are content providers, and residential broadband service users are the intended recipients of the streaming media content.

Your content provider customer pays to pre-position content in streaming media servers located in DSL PoPs, cable head ends, or other edge locations throughout your network. You program the nodes to accept only content specified by your content provider customers. You then configure the network to distribute the content over high-speed links to the edge, thus ensuring that files reach edge nodes

intact and as quickly as possible. Your content provider customer selects the content to be pre-positioned in the edge servers, and the tagged content is automatically distributed to the edge servers throughout your network. When selected content is updated, content changes are automatically distributed throughout the network to ensure content freshness.

Accounting and Billing: Payment is based on a fixed monthly fee plus a variable monthly fee reflecting the amount of information served. Information regarding the number of megabytes served per month is stored in log files within each node, and these files are sent daily to the network management host, where the information is aggregated. At the end of each month, an accounting report is generated containing aggregated information regarding total megabytes served for each content providing customer. This infor-

mation is then ported to your billing system for monthly bill generation.

Service Level Guarantees: HomeStream guarantees that content will be delivered faster than the content can be delivered from the origin server, and that content will be served with ninety-nine percent reliability. Failure to perform results in service credits. (Note that service level guarantees are much easier for you to offer than a non-facilities based CSP because you control all aspects of your network, allowing you to rectify network problems and fully control service quality.)

Security: HomeStream provides secure servers, with encrypted communications between designated customer points of contact, the streaming media servers, and your network operations center. (See Figure 2.)

Figure 2: HomeStream Service Benefits

<i>Benefits to Content Provider Customer</i>	<i>Benefits to You</i>	<i>End User Benefits</i>
<ul style="list-style-type: none"> • Dramatically improves performance of streaming media • Enables more engaging and richer content than ever before • Customers/viewers more likely to return to Web site • More repeat visits contribute to a more successful Web site and more revenue • Savings on server equipment • Better control of content freshness • Protection from flash crowd surges • Serves any size Web audience • Easy to use 	<ul style="list-style-type: none"> • New source of revenue • Closer/new relationship with owners of streaming content • Superb streaming experience attracts new end user customers, increasing traditional connectivity revenues • Improved gross margins • Lower backbone bandwidth costs • Improved network performance • Easy to implement 	<ul style="list-style-type: none"> • Streaming content is satisfying for the first time • Saves time waiting for streaming media files to play • Makes more compelling content available

Corporate Service — OfficeStream

Service Description: OfficeStream allows corporations to use streaming audio and video technology for intra-corporate communication, as well as to communicate with strategic partners and customers. OfficeStream stores selected streaming content near corporate offices, teleworkers, partners and customers, and streams the content locally as designated users request it, delivering TV-quality video and CD-quality audio.

Your corporate customer pays to pre-position content in streaming media servers located in DSL PoPs, cable head ends, at a leased line PoP, or at other edge locations throughout your network. You program the nodes to accept only content specified by your corporate customer. You then configure the network to distribute the content over high-speed links to the

edge, thus ensuring that files reach edge nodes intact and as quickly as possible. Your corporate customer selects the content to be pre-positioned in the edge servers, and the selected content is automatically distributed to designated edge servers. When selected content is updated, the changed content is automatically distributed throughout the network of designated nodes to ensure content freshness.

Accounting and Billing: Payment is based on a fixed monthly fee plus a variable monthly fee reflecting the amount of information served. Information regarding the number of megabytes served per month is stored in log files within each node, and these files are sent daily to the network management host where the information is aggregated. At the end of each month, an accounting report is generated containing aggregated information regarding total megabytes served for each

corporate customer. This information is then ported to your billing system for monthly bill generation.

Service Level Guarantees:

OfficeStream guarantees that content will be delivered faster than the content can be delivered from the origin server, and that content will be served with ninety-nine percent reliability. Failure to perform results in service credits. (Note that service level guarantees are much easier for you to offer than a non-facilities based CSP because you control all aspects of your network, allowing you to rectify network problems and fully control service quality.)

Security: OfficeStream provides secure servers, with encrypted communications between designated customer points of contact, the streaming media servers, and your network operations center. (See Figure 3.)

Figure 3: *OfficeStream Service Benefits*

Benefits to Your Corporate Customer

- Dramatically improved streaming media performance
- Allows corporate training and other video and audio applications via the Web that were previously not possible due to quality problems
- Better trained and better informed employees and partners
- Better customer support
- Savings on server equipment
- Protects your Web site from flash crowd surges
- Allows you to serve any size Web audience
- Easy to use

Benefits to You

- New source of revenue
- Closer/new relationship with corporate customers
- Improved gross margins
- Lower backbone bandwidth costs
- Improved network performance
- Easy to implement

InfoLibria — Your Partner for Streaming

If you decide to dive into the streaming media content distribution business, InfoLibria is the ideal partner to get you up and running easily and quickly. One comprehensive package, consisting of InfoLibria's MediaMall™ streaming media nodes and Content Commander™ software, supplies you with all of the elements needed to build your streaming media content delivery service. Plus, you can add InfoLibria's DynaCache™ module to the package and enhance your streaming service to include network caching.

There are many reasons why InfoLibria is the right partner to help implement your streaming media service.

- InfoLibria's streaming media service package supports all streaming formats. Unlike other solutions on the market today, InfoLibria supports all of the streaming formats available today. This alleviates the limitations and many of the complexities of alternative solutions, and will make your service more attractive to content providers and end users alike.

- The package is easy to install. All you need to do to deploy MediaMall streaming media nodes is plug them in and give them an IP address. Nothing could be easier, especially given your alternatives.
- Scales like no other solution. Content Commander spans any network topology or geographic reach to control your MediaMall nodes. MediaMall nodes can be distributed throughout your network to all of your edge sites, and additional media servers can be added transparently to MediaMall nodes to increase capacity.
- Includes the support services you need to get started. InfoLibria has an array of professional services that help you assess streaming media service alternatives and choose the right service(s) for your business. InfoLibria then helps you develop the business strategy for your entry into the streaming media market, and will help you develop and deploy the best network architecture.
- Includes the operational support you need to keep up and running. The story doesn't stop once your new service is launched. InfoLibria provides 7x24 operational support to keep your service running like a top.

Conclusions

As owner of the network equivalent to beachfront property at the network edge and/or routes to the edge, now is the time to seriously consider offering streaming media delivery services. The network edge is where the action is for quality streaming, and as edge infrastructure owner, you control a component critical to CD-quality audio and TV-quality video. By launching yourself into the streaming media delivery business, you will make exciting, useful streaming content available for your users, form lucrative and strategic relationships with the content providers, and attract new users to your network.

Should you choose to ignore this opportunity, be prepared to face the fact that others will not. You must decide if you want to place yourself in the streaming content loop, or remove yourself from the loop and relegate your business to the role of commodity bandwidth purveyor. The decision must be made soon.

Don't let this opportunity slip away! Let InfoLibria show you how to make the most of your beachfront property.



United States, Asia-Pacific

InfoLibria, Inc.

411 Waverley Oaks Road, Suite 323

Waltham, Massachusetts 02452

PH: 781 398-0288

FX: 781 891-4893

Europe, Middle East, Africa

InfoLibria Ltd.

1210 Parkview

Arlington Business Park

Theale, Berkshire RG7 4TY

United Kingdom

PH: +44 (0) 118 965 7967

FX: +44 (0) 118 965 7968

www.infolibria.com

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