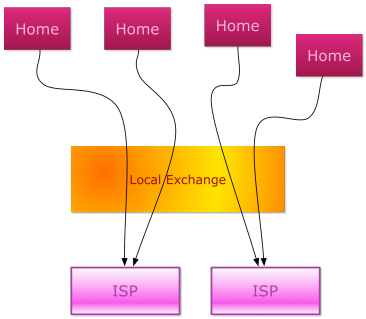
Edge Interconnect

"Maximising the efficiency, speed and quality of Europe's consumer Internet experience"

Current Problem



The current trend is that audiovisual media is moving to the Internet at an ever-increasing rate. The resulting bandwidth crisis threatens the viability of whole consumer ISP business.

Backhaul bandwidth is the single largest cost that consumer ISPs have. Popular video and P2P content accounts for a large amount of the overall ISP backhaul traffic and thus cost.

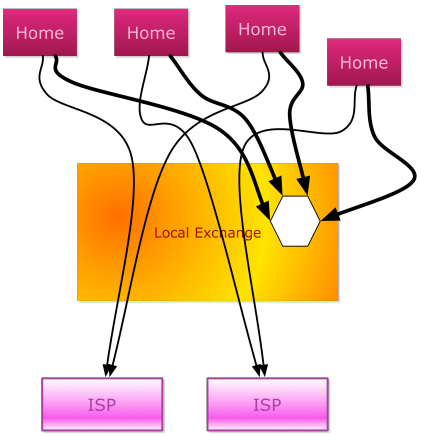
Current Approaches

ISPs have attempted to solve this problem by introducing bandwidth caps to get rid of excessive bandwidth customers. However, this approach is failing because heavy bandwidth users are becoming the majority and punitive bandwidth charges are unpopular with customers.

Content delivery networks can reduce ISP interconnect charges but do not reduce exchange backhaul costs. Putting large amounts of storage at the edge of the network is not only difficult to manage but also raises legal and other commercial issues for ISPs.

At the moment P2P offers advantages to consumers but not ISPs. In fact, P2P makes overall traffic consumption increase, and as a result some ISPs have attempted to actively discourage P2P traffic on their networks by a variety of means.

Proposed Solution



Edge Interconnect consists of providing shortcut interconnections at the local exchange (or exchange area) level. Exploiting the fact that a single fibre optic cable between two racks within the same exchange can provide gigabits per second of bandwidth at a tiny fraction of the cost of hauling that same bandwidth over tens or hundreds of kilometres over existing transmission networks.

Edge Interconnect will allow the most popular media traffic to move to P2P without incurring backhaul bandwidth costs. For popular on demand or live material this will bring massive savings for both ISPs and content providers whilst improving the consumer experience by allowing higher-bandwidth content to be exchanged.

In the past, this approach has been considered and rejected because the commercial benefits did not outweigh its costs, and the necessary level of cooperation between providers required to implement this approach did not exist. We believe that the current crisis has changed the landscape of the ISP business sufficiently to warrant that this approach be re-examined.

Although implementing Edge Interconnect requires the resolution of numerous technical issues, the real challenge is to summon the political and commercial will on a pan-European scale.

Similar initiatives have worked in the past at the ISP network core level, with the spontaneous creation of Internet exchanges. However, the regulatory situation at the network edge prevents this kind of spontaneous initiative by providing a set of perverse incentives that act to preserve the current high-cost low-profit environment.

Another advantage is that Edge Interconnect only requires network equipment at the exchange. Media content is not stored nor is there any need to allocate or manage storage resources.

Technical Approach

From the consumer viewpoint they would see both their normal connection to the public Internet and also a local cloud. This local cloud would typically be ten of thousands of potential peers in size, sufficient that most popular content would already be on at least one of those peers.

The local cloud would be shared across all users a particular exchange regardless of which ISP they use to connect to wider Internet. Use of the local cloud would require consumers to opt in via special software and settings in their ADSL router. Existing Internet users would not be affected in any way.

The entire system only requires changes to the home ADSL router and the local exchange equipment. Since the shortcut interconnect would not affect normal ISP routing or network architecture the costs to ISPs would be minimal. All other ISP operations would remain unchanged and the traffic would not touch the ISPs' networks.

The utility of this local cloud would be proportional to the square of the number of peers active on it at any given time. Obviously this system only makes economic sense in any given exchange area once it has achieved critical mass within that area. However, there is no requirement for critical mass on a national or international basis. This system can therefore be trialed and rolled out incrementally as desired reducing investment costs and risk. In particular allowing a pilot project to realistically evaluate the effectiveness of this solution without requiring a large scale rollout.

Consortium

The Edge Interconnect project needs participants from fixed line operators, Internet service providers, content owners and aggregators, academic and research institutes. The project needs a coordinator.

Company

Kendra Initiative (hosted and managed by Kendra Foundation) is an international media, technology, academic and industry alliance. The mission is to foster an open distributed marketplace for digital media (including films, music, images, games and text). The initiative researches, recommends and develops enhancements to the digital media marketplace that facilitate interoperability between and revenue generation for content owners and service providers; to enable consumers to use any device or application to browse, search and purchase content from any content catalogue, seamlessly. Its goals are to:

- Simplify and streamline buying and selling digital content by driving industry adoption of open protocols.
- Enable interoperability between service providers, media applications and devices - every link in the
- content value chain.
- Build a system where consumers can use any device or application to browse, search and purchase from the globally distributed collection of content catalogues.
- Create a more pleasurable buying experience for consumers and increase reach and revenue for content owners.

Kendra is currently working on the following funded EU and UK projects:

- **P2P-Next** (Next Generation Peer-to-Peer Content Delivery Platform) EC FP7 IP commenced early 2008
- **Saracen** (Socially Aware, collaboRative, scAlable Coding mEdia distribution) EC FP7 STREP commence early 2010

Relevant Research:

- The cross-industry stakeholder group is currently investigating content description, search, visibility, discovery, delivery and payment whilst developing and trialling prototypes.
- Previous research has included Kendra Base, investigating how complex, non-normalised and distributed media databases could be searched and harmonious results obtained using semantic web type technologies.

Kendra Members Includes:

- Content owners: Real World (Peter Gabriel) Records, Cherry Red Records, MOD Films, Whistling Mule Productions...
- Network providers: BT, Telefonica, Interoute, Sohonet...
- Hardware manufacturers: Pioneer, Narrowstep...

Contact

Daniel Harris
Managing Director, Kendra Foundation
Founder, Kendra Initiative
daniel@kendra.org.uk

phone: +44 20 7993 6339
mobile: +44 7853 627 355
http://www.kendra.org.uk