Towards a new internet ecosystem

TeliaSonera International Carrier takes a look at how the new internet ecosystem can increase ARPU by combining the core strengths of the content provider, broadband provider and IP carrier

The development of the internet has always been shaped more by the demands and habits of its users, than by the plans and strategies of its service providers, carriers, and content providers. End-users decide what they want; it is then up to the industry to find the best possible ways of delivering it.

The "classic" internet services, web browsing and email, now account for only about one-sixth of all internet traffic. The fastest-growing form of traffic is video – delivered either to PCs or, increasingly, to TV screens. This accounts for more than one-third of traffic at the moment, and is expected to rise to almost half by 2012.

But the real capacity hog – accounting for fully 40 percent of all internet traffic today – is peer-to-peer (P2P). To say that P2P traffic has a poor reputation in the industry is a polite way of putting it. As is well known, a large proportion of P2P traffic is generated by file-sharing services that distribute content illegally, breaching copyright and depriving content owners of income. Given the chance, most ISPs would demote P2P traffic to the lowest possible priority.

The fast growth of video and P2P traffic – as well as other demanding services such as online gaming – is putting severe pressure on the internet ecosystem. End-users demand more bandwidth and better performance from their internet connections; but the ISPs who provide these connections see nothing of the revenues that these services generate. When content is bought, it tends to be bought either from the content owner or its agent – not from the ISP.

IN SEARCH OF A RATIONAL BUSINESS MODEL

Content owners, though they often have global ambitions, are not in themselves global – and nor does it make economic sense for them to try to become global. The best model for content owners is to centralise their content, and find the best possible means of distributing it to local markets around the world.

Almost all ISPs operate at a local or national level – the few that are active in several countries still tend to operate each national business more or less autonomously. This is their strength: strong local brands, and direct billing relationships with their customers.

In this environment, it would seem to make sense for the ISP to act as "publisher" of the content owner's material within its territory. This would entail the ISPs creating a web front-end, and enabling and controlling the distribution. The ISP would then be able to collect and share revenues with content owners, giving both parties an interest in providing the right services at the right quality levels.

This is the rational model that would be followed if the internet were being built from scratch today. But unfortunately it isn't. The position we are in today complicates matters in a number of ways.

Firstly, the vast majority of ISPs sell only one commodity – internet access – to their customers. Customers buy bandwidth, not services or content. The cost of bandwidth decreases over time; and although this is mitigated by user demands for higher-bandwidth connections (to cope with their demands for more and more content), the end result is that ARPU remains static at best, and usually declines gradually.

ISPs find it very difficult to add value to the bandwidth they sell. Their best hope of maximising profitability is to keep bandwidth usage as low as possible, in order to maximise their return on capital employed (ie, delaying network upgrades as long as possible). P2P traffic makes this strategy impossible. But there are other ways of distributing content that place less of a burden on the ISPs' networks.

Both fixed and mobile broadband providers have tried various means to increase ARPU, with very little success. Consumers have not been especially captivated by ISPs' "walled-garden" offerings; new services tend to be introduced free of charge or deeply discounted. Highly competitive markets maximise the customer base, but consumers get into the hard-to-break habit of expecting more for less.

CONTENT DELIVERY NETWORKS, AND THEIR LIMITATIONS

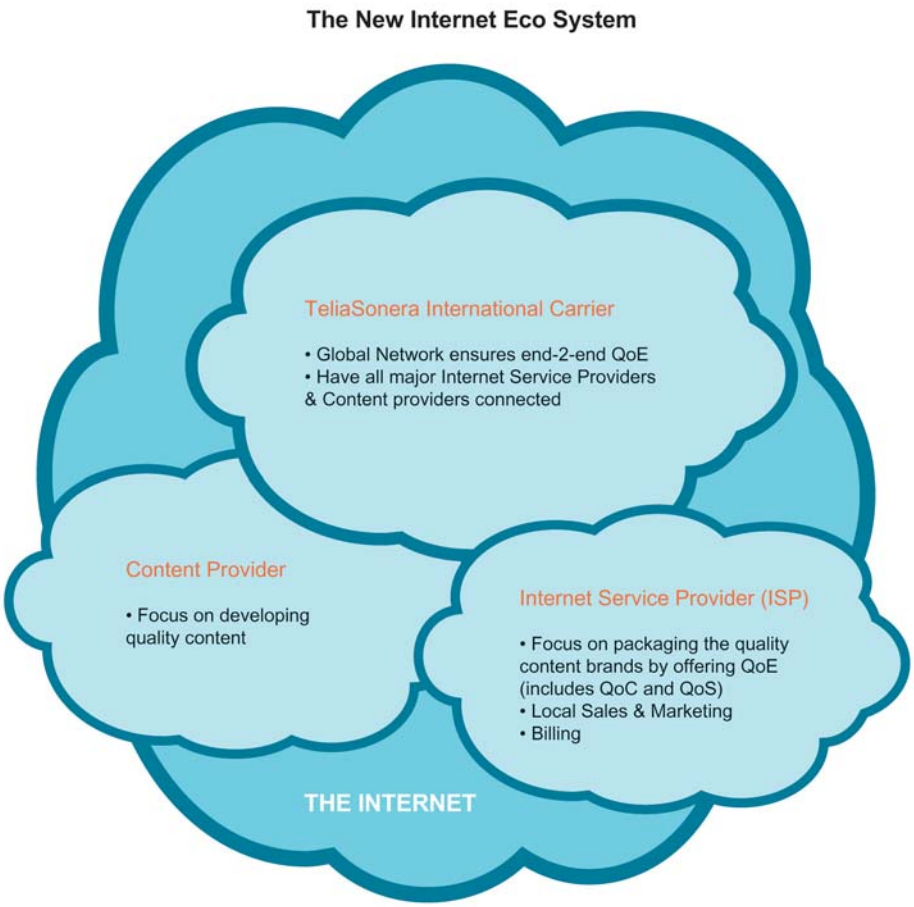
Content providers also face a challenge in accessing global audiences. The architecture of the internet makes it very difficult for content providers to secure direct connections – whose quality can be monitored and assured – to their customers. Instead, content must typically traverse several different networks on its journey from source to destination; and just as a chain is only as strong as its weakest link, overall quality of service can be compromised by congestion or other problems at any stage. Without guarantees of delivery quality, it is impossible to charge users for content.

The usual solution to this problem is for the content provider to use a dedicated content delivery network (CDN). There are two basic types of CDN: overlay network and active network. Many CDNs use a mixture of both: overlay in some parts, active in others.

The overlay method involves replicating content in servers that are directly connected to ISP networks. This means that when content is served to a user, it is served from the local server, which should guarantee good quality. The server caches themselves are updated from central servers using ordinary "best-effort" transmission through the internet, which inevitably means that new content propagates relatively slowly through the network.

Overlay CDNs have been around for many years, but they are expensive to set up and run. Truly global reach requires many thousands of servers distributed around the world; but only a few CDNs – Akamai being one of the first, and still among the most prominent – have come close to this, the rest running out of money before the task was complete.

The second type of CDN, the active network, involves building a global private network, completely bypassing the global internet, and connecting it to local ISP networks. Content is delivered to end-users via the private network as far as possible, using ISP



Source: TeliaSonera International Carrier

networks only for the final hop.

This approach is also expensive – especially if you want to be rigorous about service quality, which requires owning, and therefore being in complete control of, all your network resources down to the physical fibres. It has proven to be viable only for the very largest and most globalised content providers, including Google and Microsoft.

AN ALTERNATIVE SOLUTION?

If CDNs are too expensive, and have insufficient reach for most content providers' needs, then what is the solution?

One important thing to realise is that different content requires different solutions. CDNs, evolving along with the market, had to be capable of handling many different forms of content; as a result, they were fairly good for all applications, but not optimal for any of them. Nowadays, economies of scale and advances in technology make it possible to build CDNs that are optimised for vertical applications.

The other important realisation is that the universal connectivity that the CDNs have spent so long pursuing, with limited success, already in fact exists – thanks to the world's Tier 1 internet carriers. They already have huge pipelines into local ISPs, and are especially good at providing strength and depth of coverage in continent-sized regions. In our own home market of Europe, for instance, TeliaSonera International Carrier is directly connected to 85% of the continent's broadband ISPs.

THE NEW INTERNET ECOSYSTEM

The new internet ecosystem would allow each group of players to concentrate on their strengths. Content providers can focus on developing content of the highest quality. ISPs can exploit their most valuable resource – their customer base – by packaging and marketing content, ensuring quality of experience over their local networks, and billing their customers for the content they buy.

The global Tier 1 carriers also get to concentrate on their core skill: transporting bits, in large quantities, around the world. To the content providers, they can become a global distribution partner; to the ISPs, they will be the content pipeline: the source of increased ARPU, and an internet business model that finally works. ■

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