Is YourTube too big for my pipe?

ANDREW EATWELL ASSESSES WHAT INFRASTRUCTURE IS REQUIRED TO COPE WITH THE INCREASE IN INTERNET TRAFFIC

Scott Alcott, Belgacom's executive vice president, service delivery engine, is unequivocal. "This is one of the largest wealth transfers from Europe to Silicon Valley that's possible," he argues. "It's tantamount to putting 300 million Europeans on a first class flight and delivering them to retail stores in California."

Alcott is talking about the impact that the explosive growth of internet traffic, driven by video content from mostly US-based content providers, is having on networks. In common many other executives across Europe, Alcott is not only talking about it – he is also worried about it.

While predictions such as Cisco's – that global internet traffic will near the zettabyte threshold within the next four years – look good for equipment manufacturers, content providers, online advertisers and internet users, they do not look so rosy for network operators. In a highly competitive environment, they are expected to continually upgrade their infrastructure with little certainty that they will see a return on investment.

"With video it's 90 percent of your users using 100 percent of your bandwidth – it's a massive problem for operators," says Allot Communications marketing director Jonathon Gordon.

In July, the chief executives of Alcatel-Lucent, Deutsche Telekom and Vivendi appealed to the European Commission for help in meeting the EU's ambitious goal of providing universal 30 Mbps broadband access to all EU citizens by 2020. They asked governments and regulators to enable operators to cut costs and tap new revenue sources.

They argued that the cost of building the high-speed fixed-line broadband networks needed to meet the EU's targets will run to €290 billion. On the mobile side, the rollout of 4G technology is further pushing up costs, with the 4G infrastructure market expected to hit €12 billion globally in 2015.

The Commission has started to respond to operators' concerns. In a speech in October, Neelie Kroes, vice president of the European Commission responsible for the Digital Agenda, accepted that new business models are needed, proposed incentives for infrastructure investment and countenanced the possibility of a two-tier internet.

"To think the consumer will pay for the long-term infrastructure upgrade out of their pocket is hard to imagine, to think that the operators are going to tell their shareholders 'we'll fund that' is going to be very difficult: it's their entire market cap with probably a 20-30 year payback," says Alcott.

"There clearly needs to be some oxygen for the good of the ecosystem from multiple players: the operators should pay some, consumers should pay some, but certainly those retail stores that are getting our first-class flights delivered to them should have some skin in the game as well."

That model is slowly coming into place. Operators are increasingly dropping the all-you-can-eat 'salad bar' model of flat-rate internet in favour of bandwidth caps, throttling and tier-pricing structures, and they are looking for ways to charge OTT players for distributing content over their networks. France Telecom-Orange CEO Stephane Richard visited Google earlier this year to discuss the issue, but everyone is still guessing what, if anything, was agreed.

The problem, however, is not just about money: it is also about technology. With video content so widespread and in so much demand, any increase in bandwidth on a network rapidly gets consumed.

"One operator in America went from 3G to 4G and thought they'd have some breathing space but found that in less than a week their network was being used just as much – subscribers simply downloaded more or better quality content," notes Jeff Sanderson, senior director of product marketing at Bytemobile. "With 4G we are reaching the boundaries of the laws of physics, there's only so much more capacity that can be created before interference and other technical hurdles kick in."

Increasingly, mobile traffic beyond what mobile networks can handle will have to be passed off onto fixed-line networks via WiFi, for example. Many devices already include mobile and fixed-wireless functionality, and the rollout of LTE, which enables seamless connection switching, will further assist the trend.

Consequently, converged operators with both fixed-line and mobile operations are likely to be in the best position to handle the increasing traffic load coming from OTT players while protecting their bottom line.

But operators, not content providers, will be the first to be blamed if consumers' expectations are not met – and ensuring QoS for video is arguably more important than for any other kind of content.

"Unlike email, video is real time and it comes with lots of expectations – people have been watching television for years and they have expectations about how video should work regardless of the device ... which are very hard for operators to meet," explains Gordon.

"People will put up with a poor picture quality so long as the video and audio keep going, the worst thing is freeze frame, black screen, audio cutting in and out," agrees Stuart Newton, general manager at IneoQuest Europe.

Technologies such as video optimisation, video caching, aggregation and adaptive streaming, which automatically adapts the stream depending on available bandwidth, coupled with network monitoring, traffic management solutions and emerging technologies such as optical switching to increase capacity on existing fibre networks, are all generating interest from operators.

> "Operators, not content providers, will be the first to be blamed if consumers' expectations are not met"

Some are also investing in their own CDN infrastructures for wholesale delivery, and will charge OTT players for using them as a premium service.

Whether content providers pay for distribution or consumers pay for guaranteed QoS, it is likely that in the future a tiered internet will emerge, net neutrality concerns not withstanding: guaranteed QoS for those willing to pay for it and best-effort for everyone else.

"Either you have a few customers paying a lot for a good experience or a lot of customers paying a little for an OK experience but you're not going to have a lot of customers paying a lot because there will be too many simultaneous users," notes Alcott.

"Operators have understood for some time that they could become bit pipes but now they're seeing that it's happening. The challenge for them is all about execution, they need to figure out how to introduce innovation faster into their networks," says Shubh Agarwal, vice president of marketing for Mavenir Systems. "They won't be able to preserve 100 percent of their revenues, but it's not going to be a doomsday scenario either."

Indeed, as Rupert Wood, Principal Analyst at Analysys Mason, concludes: "The amount of data that will go over networks is the amount that operators can afford to sell ... the threat from OTT players is real and there's not a lot operators can do about it, but at the same time they're not passive victims of overwhelming data waves: they have all kinds of pricing levers they can pull."

Culture shock: in-house OTT development

OPERATORS WANTING TO DEVELOP IN-HOUSE CONTENT HAVE A LONG HARD JOURNEY OF DISCOVERY, SAYS NICK BOOTH

Many operators are fed up with doing all the work and seeing someone else reap the rewards. They want to move up the intellectual property ladder and migrate to the land of opportunity.

To do so, the decisions they face are over the direction of that journey and if they actually have the wherewithal to make it at all.

"Telcos should certainly be developing OTT applications and services," says Dean Bubley, MD of research company Disruptive Analysis. "However, they should concentrate on core communication services as content can be more difficult and will depend on the specific circumstances."

But how? As operators rise to the challenge, various new forms of structure and corporate governance are emerging.

In some, operators have arms-length "skunkworks" divisions, where a project is typically developed by a small and loosely structured group of people who research and develop a project primarily for the sake of radical innovation.

When it established Orange Vallée four years ago, France Telecom Orange claimed it combined the best of two worlds: the power of a major group and the flexibility of a start-up. Its team is a group of 30 specialists, connected to the world ecosystem from a secluded compound south of Paris.

With license to create and tap into FTO's technology resources, their responsibility is to bring their products and services to the market. "They are directly answerable to customers' demands," says a spokesman. But what have they delivered in that time? Arguably nothing of any substance yet, which is a bit slow for a start up.

There are a dozen projects in progress, however.

The alternative is to acquire external companies, as happened with Telefonica and Jajah in the VoIP market. That particular merger was part of an accelerator programme put together by Telefónica, which, as Spain's biggest company, is in a unique position to dictate terms.

There is no simple model for creating a content division, says Gary Stewart, who runs Telefónica's Wayra programme, an eight-nation programme across Spain and Latin America to help build tech ecosystems. Under its scheme 10 projects will be chosen and incubated for six months with Telefonica taking an equity stake in each company it supports.

Spain's tech start-up scene, for example, is up and coming but lacks key elements. That means the operator can shape the direction of the start up. But do we want operators to create OTT players in their own image?

If operators want to become OTT providers they will have to change their culture and their business processes. They need to drastically re-think they way they react to changes in the market. Which means changing the way they deliver, change and update services, according to one expert who works with them.

"OTT service providers respond with lightening speed to the user response to their products and services," says Anil Malhotra, SVP of marketing and alliances at Bango, a service provider that quantifies all the complicated transactions that take place whenever a subscriber buys content over a network.

With 20 years experience of liaising between content providers and operators, Bango is well placed to compare their business cultures.

Operators excel at long-term, slowly

> "Being first to market is far more important than meeting engineering standards"

rolled out, highly capitalized projects, he says. All services need to be highly engineered and won't be rolled out without rounds of testing. Operators need to adapt to the rhythm of the content industry, which is different. Speed is of the essence. It's not about getting every detail right. "Good enough beats perfect," is the motto for the content industry, where being first to market is far more important than meeting engineering standards.

Operators that try to create their own content will have to recreate that culture. It's something they will have to tolerate if they merge with or acquire content providers. But history proves they are not adept at this (see box).

To become an OTT service provider, you need a mindset that delivers cheap products that do just enough to be usable. Get them out first. Early adopters will consume practically anything. The service can continuously evolve and improve over time. "Operators are used to long-term planning, detailed design, providing as complete a solution as feasible before going to market," says Malhotra. But by that time, the market will have gone.

Any operator that wishes to become an OTT provider must prepare itself for a difficult search as it chases the ultimate revenue model. Prepare for a journey of discovery, says Malhotra. This calls for a personality change within a telco, however, as it's hard to get support for service development in operators unless the business model is fully developed.

Forcing yourself into a job you are not suited for never works, no matter how good the money is.

Customer loyalty is another area in which operators will have to rethink their priorities. They are used to signing up customers who largely stay with the network unless something terrible happens or something irresistible comes along.

Now, when they come into work every morning, there should be a new order of

Disastrous technology and content provider company mergers

eBay and Skype (2005)
Cost: $2.6 billion
What went wrong: Skype never delivered on its promise to accelerate auction sales, which were to be improved by integrating telecommunication into each transaction. EBay took a write down of $1.4 billion and Skype founders Niklas Zennström and Janus Friis departed.

Time Warner and America Online (2000)
Cost: $164 billion
What went wrong: the deal hinged largely on the dot-com bubble, which spectacularly burst just one year following the pairing of media giants. Time Warner, the old-school infrastructure provider, blindly followed AOL which stubbornly refused to change.

Terra Networks and Lycos (2000)
Cost: $12.5 billion
What went wrong: search engine Lycos was a power player when Spanish telecom giant Terra Networks took an expensive gamble by merging the website into its corporate family. The dot-com bubble burst and, as both companies stock fell, the deal value fell by $8 billion.

Vizzavi (2000)
Cost: £1-2 billion (estimated)
What went wrong: the joint venture between Vodafone and Vivendi Universal in 2000 to make Vizzavi to become an essential part of people's lives by becoming their diary, address book, mailbox and the place to find whatever information they need, was canned in 2002.

Sony and Columbia Pictures (1989)
Cost: $4.8 billion
What went wrong: Sony bought Columbia Pictures from the Coca-Cola Company to boost its presence in the movie business. Analysts felt the price was fair but costs skyrocketed as Sony spent $200 million on another company and $500 million to settle a lawsuit with Warner Bros.

the day in an operator's new OTT division: compete for every customer. "OTT providers have to fight hard to get noticed, and their hold on customers is weaker," advises Malhotra.

If operators want to become OTT providers, they will have to be clear how they manage their customers, because the relationships between content users and operator subscribers are very different – even if they are being bought from the same provider.

"OTT services have less impact on a customer's ultimate decision to stay with the network or not, so the day-to-day performance of the OTT service is less meaningful to the operator," says Malhotra. But in terms of margins and long-term strategy, it may well be the more meaningful.

A better alternative might be to use companies that specialize in creating OTT content for carriers. Kit Digital, for example, works with operators such as O2 and Vodafone to create ways of making money out of previously free content such as video. The key is to identify the new ways that people consume content, says Gannon Hall, Kit Digital's VP of global marketing.

"The emerging trend for dual screen access could be great for operators," says Hall. "People watch video on their TV screen while they've got an iPad or a handset with them."

The result is that TV is losing its strength to deliver advertising, because the advertisers don't have the precise information about who is watching that a mobile operator, for example, might have. "It's a great opportunity for the operators to create engagement advertising."

According to Hall, 80 percent of iPad owners use their tablet while they are watching TV. Kit Digital provides the end-to-end service, for example, to power the Sky OTT service for Vodafone Germany. According to Kit Digital, this form of OTT advertising could be a €15 billion global market.

Operators need to get two-sided business models (2SBM) to work, says analyst Bubley, and advertising is an open goal. The operator helps a brand by helping it market to the operator's users. Google does it, but only monetises the upstream – the ads – and not the downstream users searching.

Another example of an existing telco 2SBM is "bill on behalf of" – for example, collecting payment for apps through carrier billing, and taking a revenue share from the developer.

There are examples outside Europe of operators are paying OTT providers for their unique applications and capabilities. DoCoMo in Japan has a deal with Twitter to embed its apps into feature phones, and use its "firehose" feed for location-based services. Verizon partnered with Skype, as did H3G. Microsoft, as new owner of Skype, is effectively a telco now and may take this further.

Facebook is reportedly charging for bulk access to its own APIs which makes it impossible for operators to monetise the content they carry by injecting their own profile pictures and statuses into the content.

Openet's chief marketing officer Mike Manzo, says telcos won't be able to create content unless they do more research into customers.

"Business intelligence and analytics are in their infancy in telecom. How can you build a business case or work out the RoI for innovation and speed?" says Manzo.

Telcos should start by working out which top five OTT services they can launch with a next generation architecture. "You also have to think outside the box. If tethering is an issue, you have to think of a pricing plan around it," says Manzo. "Don't just give up, like one of our clients wanted to do."

Any operator OTT service will need an agile culture and agile infrastructure, ways to reduce churn and create new revenue streams. That may take some time, warns Manzo.

Jeff Sanderson, senior director at Bytemobile, suggests it may be impossible. "Trying to second guess the cultural zeitgeist smacks of mid-life crisis behaviour," says Sanderson. "I don't think operators can acquire development culture any more than a dad can become cool by buying a guitar and reforming a garage band."