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Taking stock of sharing



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Chris Gibson, Omnix Software product manager, discusses the factors holding back mobile network pooling.

With the current economic climate taking its toll around the world, mobile network operators are considering new tactics to improve customer service and reduce churn while also lowering costs. One idea that has struck a chord with operators worldwide is network sharing, which sees competing operators partnering to lower their expenditure on network infrastructure.

Network sharing is well established as a concept but has only recently been seriously considered in practice. Network sharing can take many forms and may involve the sharing of either active or passive network assets. Active infrastructure sharing includes all the electronic components deployed by operators, such as microwave radio equipment, switches, antennas and transceivers for signal processing and transmission. Meanwhile, passive infrastructure sharing refers to 'dumb' network assets like towers, air-conditioning equipment, generators, technical premises and pylons.

Unfortunately, active infrastructure sharing has proven notoriously difficult to implement. In early 2008, Vodafone and Orange abandoned plans to share their 3G network, since the benefits simply did not justify the complexity involved.(i) European governments have tended to reject most network sharing propositions due to concern over fair trade, citing European Commission Treaty Article 81, which prohibits agreements that have the object or effect of preventing, restricting, or distorting competition.(ii) Additionally, operators themselves have traditionally competed for customers over many years on the quality of their networks and many still regard their Radio Access Network (RAN) as a core source of advantage.

Official: winds of change

However, governments have now begun to recognise the difficulties operators face as they try to independently expand existing networks, or deploy next generation networks, and governments are starting to change their stance.

European operators have wasted little time taking advantage of this governmental shift in attitudes. Telefónica and Vodafone recently announced a partnership to share 2G and 3G network infrastructure across several large European markets. In Britain, O2 (owned by Telefónica) and Vodafone expect to be able to reduce the number of the sites that make up their networks by about 25% and reduce expenditure by 10%. Similarly, T-Mobile and 3 announced plans to share their infrastructure, which would allow them to almost entirely fill the coverage gaps in both of their networks instantly.(iii) In Asia, China Mobile, China Telecom and China Unicom have even been ordered by the government to share parts of their networks to curb duplication in investments.(iv)

Passive network sharing has the potential to deliver huge cost savings to mobile operators by reducing both their operational expenditure (OpEx) and capital expenditure (CapEx). Effective passive network sharing can reduce the number of new masts that operators need to deploy, while also spreading the cost of any new sites that do need to be created between multiple companies. This consolidation of network infrastructure between operators lowers OpEx, by reducing the total number of masts in operation. New restrictions on tower construction in urban areas (on the grounds that they are a potential health hazard and congest the skyline) are also posing problems for operators that network sharing could help solve. Better yet, network sharing has the potential to improve overall coverage in terms of quality and extent.

Share croppers...

Yet, if there were no difficulties associated with network sharing, operators worldwide would already have instituted it. The business case for network sharing remains to be proved and it is difficult to accurately predict when operators are not legally permitted to know the exact details of each other's OpEx. Merging networks is also made more complex because operators will want to decommission a roughly even number of towers, so that one of them does not risk severely compromising their network capacity. For example, if two operators have 200 towers in a region, they may want to merge to a network of 110 towers with both of them decommissioning roughly 45 sites. Even the sharing of passive infrastructure generates a lot of additional problems for operators, such as:

- who pays for leases, electricity and maintenance? Whether the division of costs is handled by a framework site share model, a cost sharing programme or a wider regional breakdown, operators will still need greatly improved OpEx forecasting to ensure value for money across their network
- who bears responsibility for site access and responding to site faults, maintenance or upgrades?
- how should costs be allocated when the two operators' sites are not providing identical capacity?

The greater complexity of a shared network will also result in higher infrastructure management costs. All the systems that manage considerations such as lease payments, network compliance and maintenance have to become both transparent and cross-organisational when two or more operators are involved. This raises another complexity of network sharing: it is illegal for operators to share any information that might provide a competitive advantage, such as lease costs? Operators will therefore require bespoke asset management software that can process confidential information from both parties and provide the necessary answers based on undisclosed figures. This software needs to understand who is allowed to know what information, while also comparing the old OpEx costs with the new OpEx costs and the increased CapEx – thus allowing both operators to monitor the value of network sharing. This type of system necessitates that operators already possess some form of estates management software that can provide an accurate register of what their assets are. Asset management software can also be indispensable in advising the automatic planning tools that are used to calculate the optimum configuration for the new network structure and the order in which it should be reconfigured.

The size and geography of individual countries can even come into play in determining how quickly network sharing will become common. Countries such as Malta or isolated subsections of larger nations, for example Hong Kong, will see a rapid increase in network sharing simply because land is scarce and size of the country limits the number of sites that need to be managed. On the other hand, countries like Russia and China are still moving towards providing complete mobile coverage. Additionally, once LTE reaches the market, operators may be forced to consider network sharing, simply because implementing this technology will require more mast sites.

...but heat is on

Network sharing may be a key in which operators can cope cost-effectively with the increasing demand on their networks. A recent report from the GSM Association (GSMA) has shown that Europe has taken to 3G faster than any other region in the world, with usage growing extremely quickly. The EU's mobile data market grew by 40% last year, with 3G users doubling to 112mn by April 2008.^(v) A single high-end phone (such as an iPhone or Blackberry) generates more data traffic than thirty standard mobile phones^(vi) and worldwide smartphone sales have increase by 29.3% from the first quarter of 2007.^(vii) Video services are also predicted to cause mobile data traffic volumes to increase 66-fold between 2008 and 2013, by which time two million Terabytes of data will be running over mobile networks each month.^(viii)

Therefore, despite the obstacles to network sharing, the current economic climate and slowing revenue growth is likely to increase the incidence of operators participating in network sharing. It is an attractive proposition: with passive infrastructure sharing, operators are expected to save close to 30% on CapEx and OpEx. Currently passive infrastructure accounts for about 60% of an operator's cost of doing business (ix) and, while the falling price of electronic components is lowering the cost of active infrastructure, rising property and material prices is increasing the capital cost of passive infrastructure.

As network sharing and outsourcing increases, operators will be able to focus more on branding and customer service to differentiate from the competition. By reducing the financial burden on operators, network sharing can also accelerate the introduction of new services and facilitate the deployment of new networks, while lowering barriers to market entry and reducing call tariffs. This is then, by any measure, a very positive step forward for subscribers.

- (i) Source: <http://www.theinquirer.net/inquirer/news/1015948/vodafone-orange-abandon-jv>
- (ii) Source: http://ec.europa.eu/competition/legislation/treaties/ec/art81_en.html
- (iii) Source: <http://www.telegraph.co.uk/finance/markets/2821370/T-Mobile-and-3-agree-network-share-deal.html>
- (iv) Source: http://www.chinadaily.com.cn/china/2008-10/07/content_7081260.htm
- (v) Statistics from the GSMA, June 2008: <http://networks.silicon.com/mobile/0,39024665,39244960,00.htm>
- (vi) Statistics from Cisco's Visual Networking Index forecast, February 2009:
http://www.unstrung.com/document.asp?doc_id=171909
- (vii) Statistics from Gartner, June 2008: <http://www.gartner.com/it/page.jsp?id=688116>
- (viii) Statistics from Cisco, February 2009: http://www.unstrung.com/document.asp?doc_id=171909
- (ix) Statistics from Express Computer, March 2007:
<http://www.expresscomputeronline.com/20070305/market02.shtml>