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There’s value in connectivity

In the new broadband-enabled, cloud-based world, the speed and quality of the user connection will be at least as important a differentiator as the desirability of devices, the ‘coolness’ of the apps, and the cost of subscription. Users who are becoming accustomed to similar levels of performance from mobile and fixed broadband are sure to notice if mobile broadband coverage is unavailable or if data rates are sub-par.

This represents both a challenge and an opportunity for mobile operators: those who can deliver the best user experience in terms of the availability, speed and quality of connection will earn the loyalty of their customers.

How can operators ensure that they become the provider of choice in the mobile broadband world?

Why connectivity counts

Two major trends are making network performance more important than ever before in ensuring high-quality user experience.

The first is the dramatic growth in mobile broadband subscriptions. The next five years will see subscriber numbers increase more than five-fold, to around 3.4 billion in 2015. While fiber deployment is an important enabler for high-speed fixed broadband services in homes and offices, it is not the driver of growth in subscribers and services that mobile broadband is proving to be. Ericsson predicts there will be 50 billion devices connected by mobile broadband by 2020.

The second is the trend towards ‘over-the-top’ service and applications. The massive growth of Apple’s App Store is the leading example of a whole new ecosystem, in which many thousands of new applications are being launched at a totally different pace than we have seen with traditional operator-controlled services.

These two trends are driving several changes in parallel that are reshaping the way broadband services are priced, delivered and consumed:

- Devices are shifting from being shared (mainly home or office PCs) to personal (laptops, smartphones and tablets)
- Network resources are moving away from being dedicated (such as cable, for example) to being shared (mobile cellular and public WiFi, for example)
- Applications that were once defined and tested in a controlled environment are now published at a rate of hundreds per day by many thousands of third-party developers
- Content and applications are moving from being stored and accessed locally on the device to being stored and accessed from data centers in the cloud
- Power consumption, which was not an issue for fixed equipment plugged into a wall socket, is now a key factor for devices that are carried around for many hours at a time
- The business model for broadband is shifting from flat-rate to more differentiated offerings to meet the needs of greater numbers of different users, devices and market segments.

In this new cloud-based mobile broadband world, connectivity has the potential to be the performance bottleneck or the differentiator. Delivering high-quality, rich and differentiated services from server to screen are the name of the game.

Three revenue waves

Standing back a little, we can see that the mobile broadband market is going through three waves of revenue growth for mobile operators.

The first wave, which is what has been happening so far, is characterized by flat-rate, ‘all-you-can-eat’ subscription plans that enable people to connect their laptops and other devices as fast as possible at the lowest possible price.

The second wave, which we are about to enter, moves this ‘one size fits all’ approach along, so that the needs of different subscribers and devices can be met with differentiated services – driving revenue growth through smart targeting. Operators are recognizing the need to offer tailored mobile broadband package that are differentiated based on quality of service or price. There will be low-cost packages that target people who want a ‘no-frills’ service with no guarantees at one end, and high-end services with guaranteed speeds and availability that target enterprise users at the other – with many other tailored packages in between.

The immediate technical challenge is to enable the required granularity of control over services to help operators deliver this type of smart targeting.

The third wave will be characterized by the need to ‘connect everything’, where revenue will be driven by scaling to meet the needs of the predicted 50 billion connections. Here the challenges will be not just to do with radio network capacity, but also in areas such as provisioning and SIM card handling for everything from vending machines to smart meters – efficiency and scale will be key to profitability.

The general implications of these three revenue waves on business models, applications, devices and connectivity are illustrated in Figure 1.

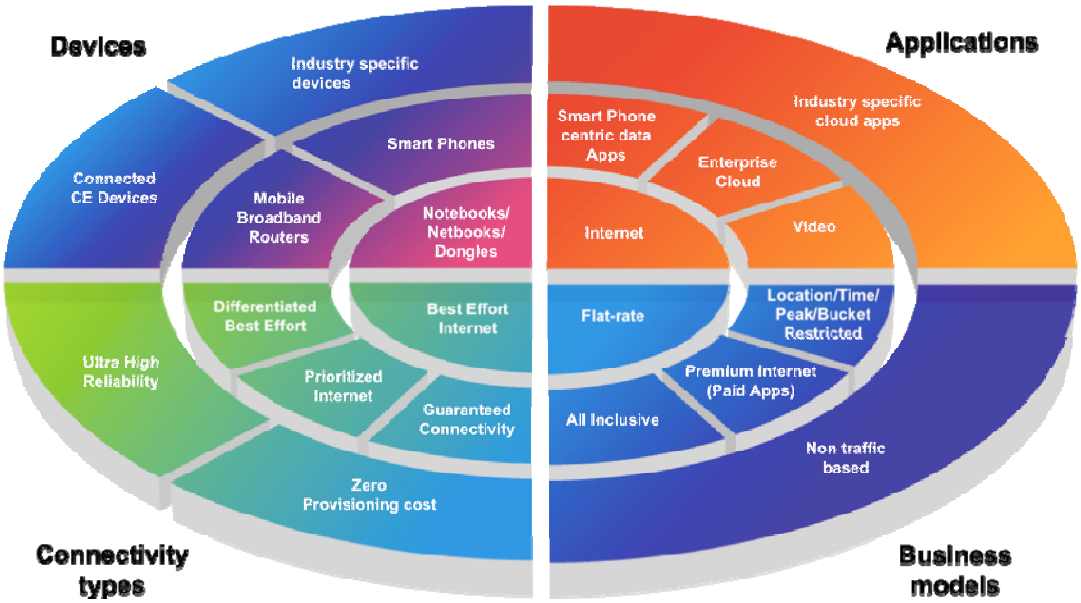

Figure 1. The influence of the three mobile broadband waves on business models, applications, devices and connectivity.

In the first wave – shown in the inner circle – devices are typically laptops, netbooks and dongles that consume content over the Internet in much the same way as over a fixed wire connection. The business model is predominantly flat-rate, while the connection is best-effort Internet at a variety of speeds.

In the second wave, smartphones and mobile broadband routers are much more common. There are many more smartphone-centric applications, and video and enterprise-oriented applications become much more important. On top of the flat-rate, business model there are also premium Internet (paid applications) and a range of applications charged on the basis of a range of factors, including time of day, peak data rate, location and other restrictions. Differentiation is key here.

In the third wave, the proliferation of connected consumer electronics and industry-specific devices drives the need for a range of industry-specific cloud applications and non-traffic-based charging models. For these types of applications, ultra-high reliability connections with very low, or zero, provisioning costs are key.

Connectivity become a priority

Some industry commentators have virtually written off the ability of operators to create and deliver value in the new cloud ecosystem – seeing their role mainly as providers of dumb bit-pipes for other high-value players. The reality is that the ‘pipe’ that delivers services to people and client devices is more important than ever before.

The smart pipe is fundamental to providing screen-to-server differentiation in a cloud-based ecosystem, as shown in Figure 2. This pipe includes different layers of connectivity that contribute to the overall user experience.

The central blue layer is the basic high-quality connection needed to provide best-effort connection of laptops and other devices, although with little differentiation.

The second, yellow layer adds service differentiation, based on the factors described earlier: prioritization, peak rate, location, time of day, etc.

The third, pink layer represents communication services that operators can provide over the differentiated connection. These would be today's voice services and MMTel (Multimedia Telephony) type services.

The fourth, green layer is where some operators might choose to enrich applications with things like payment or brokering services for app stores.

Whichever level operators choose to play at, the first two layers – high quality connections with service differentiation – will be key to ensuring profitable mobile broadband growth. While the applications that people consume will be produced and delivered from data centers (shown to the right of the picture), and viewed and interacted with on a range of devices (shown on the left), it is the quality of the connections in between that will have a major influence on how people perceive the service.

This is where the ability to maximize performance of the smart pipe from screen to server comes in.

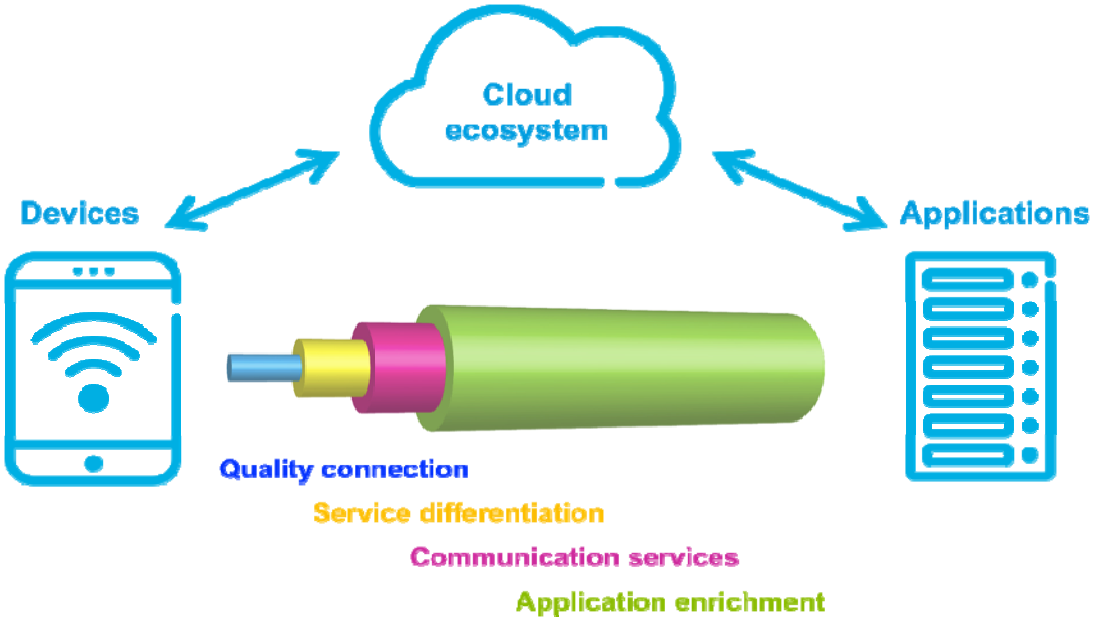

Figure 2. Smart pipes enable screen-to-server differentiation.

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Screen-to-server capability

Getting services and applications to perform well on a variety of devices, over what can still be a fairly limited radio interface is a complex technical challenge – especially for applications that have been designed for fixed networks. It's not just a matter of data rates or user-perceived speeds: other factors, such as battery life, come into play.

Ericsson is one of the very few, perhaps only, vendor that has screen-to-server systems, expertise and experience across every aspect of mobile broadband connectivity – in everything from devices, through the radio access, packet core and optical networks, all the way to the data center.

Delivering the required granularity of control, that operators need to create differentiated mobile broadband offerings, demands much more than excellent device and network equipment. It also requires a range of tools and services in everything from the network policy controller, through the operations and business support systems (OSS and BSS), to network planning & design, integration and optimization.

As tempting as it might be to characterize cloud-based ecosystems as smart devices connected to smart servers over dumb bit-pipes, the reality is that differentiated mobile broadband services require pipes that are smart, however fat they might be. Only with smart pipes can operators create and deliver the value their customers need – and build the profitability they need to replace flattening voice revenues.