CONNECTING THE MOBILE ECOSYSTEM

GAME CHANGING STRATEGIES FOR THE DATA CENTRE

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# Executive Summary

The mobile ecosystem is characterized by a constant stream of challenges and opportunities. These challenges include network congestion, data security, and regulatory changes. Opportunities arise from the potential for innovation and growth in the sector.

## Introduction

The introduction will outline the importance of collaboration in the mobile ecosystem and the need for a comprehensive approach to tackling challenges.

## Challenges and opportunities facing the mobile ecosystem

This section will explore the various challenges and opportunities that the mobile ecosystem faces, including network congestion and the need for efficient data management.

## Building on a heritage of collaboration

Historically, the mobile ecosystem has been characterized by collaboration. This section will discuss how collaboration has been beneficial in the past and how it can continue to be advantageous in the future.

## Towards collaboration in the data centre

As the mobile ecosystem becomes more complex, the need for collaboration in the data centre becomes more apparent. This section will discuss the role of collaboration in the data centre.

## Identifying a data centre ecosystem partner

This section will discuss the criteria for identifying a data centre ecosystem partner and the benefits of doing so.

## The benefits of the ecosystem approach

This section will outline the benefits of the ecosystem approach, including reduced network traffic, improved network performance, and more efficient service procurement.

## Reducing Overall Network Traffic

Reducing overall network traffic is a key benefit of the ecosystem approach. This section will discuss how collaboration can lead to reduced network traffic.

## Efficiencies in Network Performance

Efficiencies in network performance are another key benefit of the ecosystem approach. This section will discuss how collaboration can lead to improved network performance.

## Backbone Service Procurement

Backbone service procurement is a critical aspect of network management. This section will discuss how collaboration can lead to more efficient backbone service procurement.

## Neutrality and Direct Connections

Neutrality and direct connections are important aspects of the ecosystem approach. This section will discuss how collaboration can lead to improved neutrality and direct connections.

## Mobile Backhaul Procurement

Mobile backhaul procurement is a key aspect of network management. This section will discuss how collaboration can lead to more efficient mobile backhaul procurement.

## Roaming and Interoperability

Roaming and interoperability are critical aspects of the ecosystem approach. This section will discuss how collaboration can lead to improved roaming and interoperability.

## Conclusions

In conclusion, the ecosystem approach is a powerful tool for addressing the challenges facing the mobile ecosystem. Collaboration is key to realizing the full benefits of the ecosystem approach.

## Collaboration in context: a growing trend

The trend towards collaboration in the mobile ecosystem is growing. This section will discuss the reasons for this trend and the potential for continued growth.
Introducing the Mobile Ecosystem

With the much-vaunted arrival of long-term evolution (LTE) networks the mobile industry faces familiar challenges and new opportunities.

The challenges include network congestion and falling average revenue per user (ARPU), constants which the industry has been living with for some time. The opportunities are around new markets such as machine-to-machine (M2M) communications and existing, growing markets, such as video and data services.

LTE offers the chance to overcome these challenges and benefit from these opportunities, but also gives network owners an imperative to recoup their infrastructure investments as quickly as possible.

For this, though, they need help from service enablers that can provide the kinds of applications that will drive up ARPU and reduce churn.

Service providers and service enablers already work symbiotically within the mobile ecosystem, but for success going forward this level of collaboration needs to go much deeper than the present network level—right into the data centre.

This paper discusses the value of mobile ecosystem data centre collaboration and highlights a number of ways in which the industry can benefit, including:

- New revenue potential.
- Reduced overall network traffic.
- More efficient network performance.
- Better backbone service procurement.
- Lower cost through direct connections.
- Improved mobile backhaul procurement.
- Enhanced roaming and interoperability.

Our conclusion is that this is a development that no player within the ecosystem can afford to miss.

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Could things get any better for companies in the mobile industry? By 2012 there were more than 6 billion wireless cellular subscribers, and the number was expected to grow to 50 billion connections by the year 2020.

Plus there has been a dramatic increase in mobile data traffic, primarily due to the popularity of smartphones, connected devices and innovative mobile applications.

All this growth should be exciting news for service providers, including mobile and virtual network operators, and for the wireless service enablers such as Syniverse that rely on their networks for the delivery of value-added services (see below).

Alas, that is not the case. When it comes to service providers, Ovum and other industry analysts predict that global ARPU for mobile subscribers will drop steadily through to 2015, as it has been since 2010. The fall is happening across developed and developing regions.

These trends suggest that as subscriber growth levels off, service provider revenues will come under tremendous pressure. And they are not the only ones likely to feel the pinch.

Although mobile networks were initially dimensioned for voice, there has been a substantial change in their role with the rapid adoption of data-oriented devices and a greater diversity of services, applications and device usage.

However, voice has a predictable usage and resource consumption profile, while data applications are generally unpredictable and unbounded in their usage.

These new applications also make different use of signalling and user plane resources, imposing demands that are growing at a much faster rate than network capacity.

From the end-user’s perspective, this is liable to affect the user experience, creating delays and disconnects due to the inherent variability in arrival times of individual packets in packet networks.

A degraded user experience will naturally impact on a wireless service enabler’s ability to monetise its services devaluing its business and compromising its chances of survival in the mobile ecosystem.

What can be done to remedy this situation? This paper looks at a potential solution that is only just beginning to be recognised by the industry.
First the bad news. The pressure is not going to let up for players in the mobile ecosystem.

As Gartner states, the consumerisation trend that has hit IT is an unstoppable force, with forecasts of 821 million smart devices (smartphones and tablets) to be purchased worldwide in 2012, passing the billion-mark in 2013.

Smart devices will account for 70 percent of the total devices sold in 2012.

Meanwhile mobile traffic is growing exponentially. Some of the more alarming forecasts mobile ecosystem players might want to consider include:

- A 40.8 percent compound annual growth rate (CAGR) for mobile backhaul applications by 2014.1
- A 55 percent year-over-year growth of the worldwide smartphone market in 2011, doubling again by 2015.2
- A total of 44 billion cumulative mobile app downloads by 2016.3
- A global mobile data traffic increase of 26-fold between 2010 and 2015, growing at a CAGR of 92 percent and reaching 6.3 exabytes per month by 2015 (see below).4
- An average smartphone traffic of 1.3 GB per month in 2015, a 16-fold increase over the 2010 average of 79 MB per month.4
- A rise in video traffic to account for two-thirds of the world’s mobile data by 2015.4

2. “Worldwide Quarterly Mobile Phone Tracker” http://www.idc.com/research/viewfactsheet.jsp?containerId=IDC_P8397#USNFDOILhIA
At the same time, mobile users’ expectations are increasing. According to Harris Interactive, 43 percent of mobile consumers who experience a problem will abandon their transactions and take their business elsewhere.

Similarly, 71 percent of global mobile web users now expect websites to load as quickly, almost as quickly or faster on their mobile phone compared to the computer they use at home (the level was 58 percent in 2009).

And more than 80% of mobile web users would access websites more often from their phone if the experience were as fast and reliable. With these challenges, however, come new opportunities such as:

- M2M connections, whereby machines communicate with one another via built-in mobile SIM cards; the global M2M wireless services market is expected to boast a 27.2 percent CAGR up to 2014.5
- Mobile commerce, which is expected to reach €23 billion by 2016.6
- Smart metering, automotive and logistics (for example car tracking), currently with a potential market increasing to €6 billion by 2015.7
- Operator billing, a simple solution that allows customers to pay for apps and games directly and simply on monthly phone bills.
- M-health, where the projected growth in the number of people over 55 years old will lead to an increase in public expenditure on healthcare especially for the treatment of chronic illness.
- User-generated content, which has an impact on network capacity but gives a potential for targeted advertising.
- Mobile advertising, where worldwide mobile-ad spending will reach more than €17 billion by 2016, according to researcher EMarketer.

The task for service providers and service enablers is how to tap into these new opportunities in a sustainable and profitable manner, without upsetting the end user and without breaking the bank in terms of infrastructure build-outs.

7. Consensus of leading M2M market analysts for global M2M connectivity (excludes hardware, software, applications and system integration services).
Clearly part of the problem here is that the network is being treated as a limitless resource when it is not.

For users, help is at hand in the form of LTE, a new network standard that will deliver the kind of high-speed mobile data access consumers and businesses are clamouring for.

For service providers, meanwhile, LTE represents a heavy investment that needs to be recouped as quickly as possible; not an easy job given the ARPU trends highlighted above.

Wireless services enablers can improve the situation with applications that add value to a service provider’s offering, helping to improve ARPU and enhance customer loyalty.

Wireless services enablers, meanwhile, could well do with the improvements LTE can bring, and can benefit greatly from the captive audience that a service provider can offer.

Would it not make sense for there to be closer collaboration between these two distinct groups within the ecosystem? There is, after all, a rich heritage of collaboration in the industry.

Mobile networks, originally architected for voice, started out as isolated islands of circuits. Initially callers on one network could not even reach callers on another network. So service providers started to establish interoperability.

These solutions were still focused solely on voice communications, without any provisioning for Internet connectivity.

“The right type of collaboration is very important in the mobile value chain. It is relatively easy today to get apps to users because the market is flooded with services...the application boom has seen to that. However, the challenge is profitability.”

The strategic head of a global mobile operator
But the picture changed with the rise of narrowband 2G data connections, when it was possible to get email on a smartphone. This capability quickly increased demand for data.

Today mobile services, more than any other, exemplify the importance of the mash-up phenomenon. Put another way, it is rare that an application does not rely on some type of value-add service or partner to create a holistic offering.

Within such offerings, location data, contact databases, cloud-enabled storage, social networking, search and advertising all come into play. So as the mobile ecosystem has grown, so have its interconnections.

However, to date those connections remain at a superficial level, within the network.

For service providers and service enablers to fully overcome the challenges and fully reap the rewards of the next stage of mobile market maturity, it may be necessary for them to come together much more intimately than before.

“Greater integration will open up completely new opportunities that have yet to be discovered. That said there are examples of banks using deep integration with network operators to prevent fraud”

A mobile sector consultant
The one place where the mobile ecosystem is not yet collaborating is in the data centre; and there are grave consequences. The architecture employed by most mobile ecosystems in the data centre can be best described as remote service islands tied together via thin pipes that must find indirect paths to content and applications.

Service providers often house their own applications, such as voicemail, messaging and storage, with application programming interfaces for third-party platform providers. These in-house applications reside in multiple data centres located far from population densities.

The impact of applications and content residing so far from where mobile users are trying to access them has created extraordinary inefficiencies. It invariably results in high latency, which can lead to poor customer experience. This ultimately impacts an application or content source’s ability to deliver value.

In addition, it is extremely expensive to manage multiple data centres in multiple remote locations and the procurement process for bringing new services online is long, complex and costly.

Ultimately, the transport of these applications across long backbone links puts additional strain on available capacity.

“Not many operators wake up in the morning and think the answer to everything is a data centre partner, or strategy. But the rapid growth in data needs from wireless and mobile providers creates a scalability headache. Most operators wake up with that headache”

Strategic head, global mobile operator

So it requires mobile operators to continue to upgrade capacity over longer paths, which become congested as a result of inefficient routing. The result is a need to pay more to scale a service that continues to decline in performance.

In a nutshell, all players in the mobile value chain are looking for new ways to monetise end users through new services, and legacy architecture hinders this by degrading the performance of handsets accessing these services.

On reflection, perhaps this is not surprising. Mobile service providers, in particular, have a long and distinguished history of data handling, developing significant data centre capabilities in-house.
It is only in recent years, perhaps as a result of the economies and flexibility that could be achieved through developments such as cloud computing, that service providers have begun to look more closely at third-party data centre providers.

And such providers are definitely worth a look. Because when it comes to deep collaboration with service enablers, that is where the magic happens. According to a data centre analyst consulted by Equinix:

“The challenges are really about how one defines a shared interest. Data centres are becoming more modular and hosted service provision is, at the SME level, all about sharing infrastructure.

When your business model as a data centre customer is also based on service provision, the stakes go up considerably and with that the levels of perceived risk also increase. Operators still place a lot of importance on the decision whether to outsource at all.

Sharing platforms and solutions on top of that is a further consideration. The cost and performance advantages are there though.”
Having said that, not all data centre providers are able to provide the magic. In fact, the requirements for mobile ecosystem collaboration at the data centre level mean only a small number of hosting providers can deliver what is needed.

The first and most obvious requirement is to have data centres that are close to a mobile operator’s target market.

While for service providers it may be sufficient to have facilities in-country, service enablers will increasingly be looking for global reach and coverage. The second requirement is, if anything, even more difficult to come by though.

This is the concept of co-dependent ecosystems of customers who do business with each other and need to do it faster, with broader reach and more efficiently than ever before (see below).

By participating in the ecosystem, players gain competitive advantage in shortening time to market, improving operational efficiency and reaching a global audience with a single service contract.

A good example of this is SEVEN Networks, which helps carriers and handset manufacturers deliver an enhanced mobile experience through push-based software and applications that deliver data to devices in a network-efficient way.

To date, more than eight million accounts are actively synchronized on mobile devices using SEVEN, and the network supports more than six billion transactions per month.

The ability to establish new peering relationships with global content providers was a major reason behind SEVEN’s decision to select Equinix’s data centre campus to house its core infrastructure services.
SEVEN uses Equinix Internet Business Exchanges to sit in the network, transcoding Hotmail, Gmail and other apps and delivering that data to feature phones.

“The power of Equinix’s global platform paired with its growing ecosystem of mobile customers ensures SEVEN can run a profitable business while pursuing new market opportunities.”

David Ratner, SEVEN networks, chief operating officer.

A data centre analyst summarises the benefits of carefully choosing your data centre partner thus:

“Smart operators will be looking for an advantage as well as a cost saving. Any sophisticated level of outsourcing needs both to make the proposition work. Shifting capex to opex is an established principle in the outsourcing market.

With the right strategy, the hope is that you can add value beyond that model alone. It’s very forward looking because, once you’ve moved an operation to third party service and, for example, reduced costs, you need that value to be sustainable over time.

You can’t outsource twice, so you have to look at benefits beyond that initial shift.”
SEVEN’s experience demonstrates the value of a service enabler co-locating with other ecosystem partners. But the ‘mobility ecosystem data centre’ model also offers significant benefits to service providers.

The most obvious benefit, as already described, is the ability to collaborate more closely with service enablers. To put that opportunity in context, Amazon’s sales via mobile devices topped €737 million in 2010.

And Facebook’s 250 million active mobile users are twice as active as non-mobile users, encouraging more than 200 mobile operators in 60 countries to deploy and promote Facebook mobile products.

Instead of hosting applications and services in expensive, remote data centres, service providers can cut costs and improve performance by consolidating and centralising their applications, content and services in fewer mobility centres.

“Our focus is shifting from emphasising adoption, or uptake of a service, to the commercial value generated. That spans the cost of delivery, the revenue share and the price sensitivity of the user. Data centres certainly play a big role in the first part of that equation.”

Strategic head, global mobile operator

When the hubs are located in major metropolitan areas, service providers can also reduce their operational costs for managing their data centres while increasing application performance.

In addition, this model offers a number of other significant efficiencies in cost and operations, as detailed overleaf.
Reducing Overall Network Traffic

Mobility centres enable service providers to reduce overall network traffic on the backbone by locating applications near high customer densities and connecting directly to the top mobile traffic destinations.

Similarly, with direct connections to sites like Facebook and Twitter within the hub, mobile customers in high-density areas can access a local instance of these sites faster and further reduce the backbone load (see below).

**BEFORE:**
- Multiple thin-based leased lines across globe
- Expensive one-off circuits
- Long lead-time for new capacity
- Major failure points

**AFTER:**
- Redundant backbone-geo diversity
- Broadband circuits to critical hubs
- Fast crossconnect and IX capacity
- Lower cost through aggregation

Efficiencies in Network Performance

In addition to driving down network and operational costs, mobility centres offer service providers a significant performance advantage over an inefficient architecture built using a single provider.

The flat, distributed architecture, based on peering and direct interconnections, is similar to the way the Internet works today.

This enables service providers to localise traffic, creating the shortest distance between users and destinations, and offloading traffic from the service provider’s network as quickly as possible.

Backbone Service Procurement

Mobility centres give service providers a competitive marketplace where they can aggregate their purchasing to drive down costs and reduce provisioning time, reducing operational and lost opportunity costs.

They can also select between multiple providers to optimise cost and performance. Various network architectures lead to different topologies with varying impacts on redundancy, latency and cost.
Having more options enables service providers to pick the network that works best for their specific requirements.

**Neutrality and Direct Connections**
As a neutral host to multiple IP service providers, a data centre hub can enable service providers to peer with major traffic sources instead of purchasing IP transit.

Access to multiple service providers also translates into a highly competitive IP transit marketplace, where service providers have the opportunity to negotiate better rates.

**Mobile Backhaul Procurement**
Mobile backhaul is often an Ethernet service, and mobility centres offer the possibility of creating an Ethernet exchange.

This is a competitive marketplace where service providers can aggregate purchasing, purchase and provision capacity in near real-time, and reduce operational and lost opportunity costs.

**Roaming and Interoperability**
The hub can provide direct access to an array of roaming, interoperability and messaging service enablers and providers. Direct access ensures greater uptime and availability of these core service provider revenue generators.

All these performance advantages deliver two critical benefits.

First, because they enable service providers to scale more cost-effectively, it means a service provider can scale to keep pace with demand, dramatically accelerating and increasing return on investment.

Second, better performance translates directly into a better customer experience, and customers reward a positive experience with increased loyalty. It goes without saying that this second benefit also helps service enablers.

“I see this as commercial necessity in order to survive, rather than commercial advantage.”

Andrew Wyatt, a mobile industry consultant
As LTE is rolled out, clearly there is going to be a need for interoperability to happen between any number of legacy networks, from 2G and 3G to non-3rd Generation Partnership Project networks.

This provides an ideal setting for the mobile industry to review interoperability at the data centre level, and progress towards greater collaboration between service providers and service enablers.

As we have seen, the proximity of an entire mobile ecosystem in the mobility centre creates new revenue opportunities by facilitating partnerships among the world’s most innovative mobile players.

These can range from music, video and advertising companies to white-label enablers for messaging and location-based services.

And once these partnerships are established, the hub makes it easy to implement new services with simple cross-connects, and to scale these services while maintaining high performance and availability.

Another important way that the hub architecture helps service providers generate additional revenue is through new, differentiated services.

With direct connectivity to other members of the mobile ecosystem, service providers have the ability to control their traffic in ways that were previously impossible.

They can now prioritise some traffic types over other traffic types and offer differentiated service access models, including business-class services for specific applications such as video-conferencing.

In conclusion, farsighted mobile players will soon begin to look at the data centre less as a simple repository of information, and more as a one-stop shop of enabling partners to work with.

**Collaboration in context: a growing trend**

A final thought: by encouraging greater collaboration between ecosystem partners, the mobile industry will be doing no more than mirroring a trend which is already apparent across the rest of the IT landscape.

Much of the value of major technology brands today lies in their openness to collaboration with developers and other third parties that can add value through a deep understanding of consumer needs.

When considering the value of ecosystem collaboration at the data centre level, mobile players should ask themselves: where would companies such as Apple, Facebook or Google be today if they had not opened up their platforms to ecosystem partners?

And is this an opportunity the mobile industry can afford to miss?
Equinix, Inc. (Nasdaq: EQIX), connects more than 4,000 companies directly to their customers and partners inside the world’s most networked data centers.

Today, enterprise, cloud, networking, digital media and financial services companies leverage the Equinix interconnection platform in 31 strategic markets across the Americas, EMEA and Asia-Pacific.

By connecting directly to their strategic partners and end users, customers are forming dynamic ecosystems inside Equinix. These interconnected ecosystems enable companies to optimize the performance of their content and applications and protect their vital digital assets.