



Advisory Report

Offload: The Sleeper Theme of Mobile World Congress 2010



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■ Summary

Mobile World Congress will soon be upon us – giving mobile network operators the first opportunity of 2010 to get their wares in front of a broad set of potential customers and competitors.

As with any major trade show or conference, it's important to arrive with an expectation of the major topics and themes. Why? To help guide an investigation into the technologies that will drive operator thinking. To help identify the important content amidst all of the announcements and press releases that are bound to drop at the show. To help us direct our questions to vendors and operators in an attempt to assess competitive positioning.

The major network technology issues to take center stage in Barcelona this year are fairly evident. We identified these in our 2010 prediction piece from earlier in January (please see *Mobile Infrastructure Trends: Ten for 2010*, January 4, 2010). They will all be represented and addressed at Mobile World Congress this year. Absent from this list, however, is a theme that stretches across multiple technologies: offload.

Vendors and operators may not always refer to it by the same name. Some will refer to it simply as “offload.” Others will call it “traffic offload” or break it down into a technical enabler such as “local breakout.” Regardless, it's an important topic for operators and one that it already being targeted by vendors. And, to the extent that it may not always be highlighted or called the same thing, it's all the more important to explore.

■ Current Perspective

Mobile World Congress is often billed as the year's biggest trade show focused on wireless. As topics ranging from transport to applications to integration services have become an increasingly important part of wireless, Mobile World Congress has evolved into what many people now consider the biggest, most important telecom trade show of the year. Coming in February, it is also the first major opportunity for operators to highlight their strategic initiatives for the new year, and the first major opportunity for vendors to explain how they plan to

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solve operator pain points. This doesn't mean that news from the show will be revolutionary. Instead, most messages will follow from the network trends and demands telegraphed over the past year. To that end, it is certain that mobile broadband network congestion will be on the agenda. It is, after all, a message that operators and vendors have been selling for the past 12 to 18 months, making it very familiar by now. In short, the story goes, after a long period of slow uptake, mobile broadband growth has skyrocketed over the past few years. With usage figures exceeding the fabled 80-20 rule (e.g., AT&T's claim of 40% of traffic generated by 3% of users), "enthusiastic" or "abusive" users are being targeted as the bane of operators worldwide to the extent that they're responsible for stressing networks, limiting mobile broadband profitability, and forcing upgrades to new, more efficient technologies such as HSPA+ and LTE. Beyond new air interfaces, vendors have also been aggressively talking up other ways to keep network costs in check while meeting capacity challenges. Thinking of wireless access channels like highways, this is logical; added lanes only create added vehicle capacity in the near-term before they get quickly filled. Where traffic can be redirected, however, efficiencies result. In the mobile networks space, this equates to "offload." At its foundation, the concept of offload is incredibly simple to digest. Without jeopardizing service continuity or quality, removing (offloading) traffic from a high-cost network - or high-cost component of a network - results in CapEx savings and OpEx savings while freeing up resources to support additional users. Why do we think this will be such a major theme at Mobile World Congress this year? Because in addition to solving a problem operators have been so vocal about, it touches many different technologies and vendors from across the wireless networks ecosystem.

• **WiFi.** The relationship between smartphones and mobile broadband has its virtues. Mobile broadband services might be a prerequisite for getting the most out of an advanced smartphone (or featurephone for that matter), but the availability of inexpensive smartphones makes mobile broadband a more attractive service option. At the same time, the success of smartphone adoption has put WiFi into a broader set of end-user devices, opening up the opportunity for operators to take traffic off of their 3G, or even 2G, networks. In other words, where WiFi was once seen as competitive with 3G, the relationship has evolved into something complementary, particularly where operators require a data plan with any smartphone purchase. AT&T made this clear with recent highlights around its subscribers' WiFi usage though it's far from alone in its focus on WiFi; WiFi was bundled together with cellular access in 27% of all European mobile broadband plans (consumer and small business) assessed within our CurrentTRACK Mobile Broadband - Europe Q4 2009 survey. (The CurrentTRACK service monitors mobile broadband services across 17 European markets, representing a total of close to 1,000 mobile broadband plans from 60 operators) Leveraging hotspot access is clearly one model that works for taking data traffic off the high-cost mobile broadband network. Vendors, however, have been quick to sell new ways to leverage WiFi ranging from BelAir's positioning of metro-scale WiFi as a critical component of 3G and 4G network upgrades to Kineto's recent "Smart WiFi Offload" launch - comprising a smartphone client to support WiFi service continuity (based on Kineto's GAN solution) for voice and data services. Yet, whether it's rolling out metro-scale WiFi or supporting service handoff to WiFi access points (APs), the purpose is the same: to offload traffic onto less expensive networks and less expensive spectrum.

• **Femtocell.** The end-user femtocell value proposition has been well documented: better 3G coverage at home, better 3G bandwidth at home; potentially less expensive service tariffs. And, where do these cheaper tariffs come from? They are a direct result of offload-based cost efficiencies for the operator, including: macro network spectrum offload - keeping RAN-related CapEx and OpEx in check; macro network backhaul offload - keeping

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transport-related CapEx and OpEx in check; the potential for local breakout to keep Internet-bound traffic off the packet core. Despite lofty goals around using femtocells to drive 3G usage or build subscriber stickiness, offload remains the foundation of femtocell rationale in the long-term, particularly as operators find their macro networks strained to keep up with today's mobile broadband traffic demands.

• **Packet Core.** When Tellabs announced its planned acquisition of WiChorus, Internet offload was identified as the initial application for the start-up's SmartCore platform; deployed alongside Tellabs' gear in the transport network, the WiChorus products would divert low-value Internet traffic away from the gateway layer while promising an upgrade path to distributed gateway functionality. Announced at the end of January, Stoke's "Smart Mobile Data Offload" solution made similar promises, with the exception of an upgrade to gateway (GGSN, EPC) functionality. After struggling for years to generate traffic running across the mobile packet core, why are vendors scrambling to (and, presumably operators interested in) keep Web surfing and the link off of wireless data gateways? Traditionally, the packet core may not have garnered the attention dedicated to the RAN, based on its lighter impact on network CapEx and OpEx. As mobile broadband traffic ramps, however, its importance is set to grow thanks to more users, more devices, more bandwidth per user and operator aspirations around traffic monetization. As these sessions and bandwidth expectations materialize and operators discover how to monetize them thanks to network based applications and traffic insights, keeping low-value data traffic off the packet core will be critical for keeping CapEx in check and allowing the packet core to operate without being overly burdened. It's not surprising, then, that vendors beyond Stoke and Tellabs have telegraphed their own plans for packet core offload solutions – plans which should come to light at or around the big show in Barcelona. Beyond the fact that this is a trend for this year's MWC, what's the implication? As with so many big themes, there is more than one key implication. In the RAN, a reliance on small cells or WiFi for offload will need to be balanced against a need for reasonably simple network management and service continuity – making SON something that needs to quickly evolve from "self organizing" to "self optimizing." In the core, diverting traffic from the gateway layer could limit the predicted importance of the Evolved Packet Core (EPC) – or, at least, predicted EPC revenues. Of course, expanding the concept of offload could also make the wireless data gateway more important than ever, if it is used to support content caching or to drive offload at the edge of the network (requiring more gateways and more packet core CapEx).

Competitor Response and Recommendations

- Mobile device silicon players need to engage TI on the discrete architecture versus integrated architecture debate proactively. While TI is putting marketing muscle behind the latest iteration of the debate on the discrete architecture side, it remains important for rivals to put a stake in the ground in order to counter TI's ongoing efforts to capture early mind share on the matter.
- 2010 will reflect the beginning of shifts in the overall market share positions of the major mobile device silicon players. TI's decision to exit the baseband modem segment of the market and put increased emphasis on its higher-margin OMAP 4 platform will steadily lessen its modem market share while rivals such as Qualcomm, Broadcom, Infineon, ST-Ericsson and MediaTek will gain market share and attempt to use such share gains as proof of an overall positive market direction.
- Mobile device silicon players in general need to communicate how their support of specific

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application range options (e.g., WLAN, FM radio, GPS, Bluetooth, mobile TV, NFC and Ultra-Wideband) optimizes value for mobile device OEMs/manufacturers in order to avoid having rivals position them as “me too” checklist items that generate scant competitive differentiation.

Recommended Vendor Actions

- Stoke, Tellabs and other vendors selling packet core offload solutions need to explain their competitive differentiators. Beyond the offload capabilities that may get sold as part of an EPC solution, the packet core offload space is already looking crowded. Whether it’s thanks to an integration into the transport layer or a reliance on proven routing gear, vendors need to find a way to stand out – or get overlooked quickly.
- Packet core vendors choosing to ignore offload as a product offer (or feature) need to explain why it isn’t particularly important – why it won’t be a major cost saving for operators. In a model where all traffic is run through the operators GGSN or EPC gear, vendors must have an explanation for why this strategy makes sense and why it’s necessary. Building on the concept that even dumb Internet traffic can be monetized may be a place to start this discussion.
- Whether or not they hope to deliver offload functionality, all packet core vendors need a plan for pushing data gateway capabilities out to the network edge. To keep transport costs in check, offload should be delivered as close to the end-user as possible. The same holds for data gateways that are focused on more than offload. To make this happen, of course, requires gateway and offload solutions that scale down to low-end capacity and form factor requirements.
- Wireless vendors need to revisit the concept of caching data traffic in the network. Beyond the long-tail of the Internet, a subset of content tends to capture the most “eyes.” Storage is becoming cheaper and cheaper by the day. Leveraging these economics to serve content from the network itself should save on transport costs, keep latency low and allow better insights into network usage.
- Beyond caching content in the network, vendors need to revisit the concept of caching content in the end-user device. Pushing popular content (applications, media, maps, etc.) to the mobile device during network quiet times has been proposed in the past as a way to deliver content out to users and drive usage. Inexpensive storage makes it more possible, with subscriber data management tools simplifying the process of determining what content to send to what users.
- Femtocell vendors need to make local breakout at the home base station a priority. To be sure, femtocells are a good solution for spectrum offload purposes. From a network perspective, they’d be even more attractive (more cost effective) if all Internet traffic generated from them doesn’t need to be routed through the femtocell gateway and mobile packet core.

Recommended User Actions

- Mobile broadband operators need to leverage core network offload solutions in order to drive responses from a broader set of network vendors. Not all mobile core vendors are proposing offload solutions. All, however, should be able to tell an offload story of some

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sort, or suffer from the lack of one.

- Content caching at the device level will not take place unless operators show a real interest in the technology. Operators, however, may have little luck in working with their traditional roster of wireless network vendors to the extent that these players don't have deep experience with handset applications – making it critical for operators to engage early with specialist service players such as Aricent, HP or IBM.
- Mobile network operators need to push SON beyond organization. For the initial rollout of LTE services, the “O” in SON will mostly likely revolve around “organization” – helping to get networks deployed quickly and efficiently. Going forward, operators must see SON as focused on “self optimizing networks” in order to make offload something that is automated and that doesn't impact service continuity.
- Beyond femtocells and WiFi, operators need to think of spectrum and traffic offload in terms of small cells – including picocell and microcells. The deployment of small cells to address traffic hotspots outside the home (and avoid the need for macro cell capacity upgrades, in the process) is a natural evolution of the femtocell business model. Before moving in this direction, however, operators must be sure that they're ready to deal with the added network complexity in terms of backhaul and network management.
- Offload aside, operators cannot ignore capacity when building out network coverage. Yes, offload tools can help to postpone base station or core network capacity upgrades. They are not, however, an excuse for ignoring basic capacity demands, particularly as new technologies like LTE and HSPA+ drive most usage and more users.