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Assuring Revenue Generating IP-based Services in 3G Networks

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It is hard to find anyone with a cell phone who uses it exclusively for phone calls today. Even the most basic phones are capable of sending text messages, taking photographs, or checking sports scores, stock prices, and news headlines. Unless you've been a site coordinator for *Survivor* since it started in 2000, you know that device manufacturers such as Blackberry, Nokia, Apple, LG, and others, as well as operating system providers such as Microsoft, are revolutionizing what we do with that "wireless phone." According to M:Metrics, 85% of iPhone users surf the web, 50% access social networking sites, and 30% watch mobile TV. Blackberry, a pioneer in sending e-mails wirelessly, is developing the "Thunder," and other handset manufacturers are introducing 3G smartphones to compete in the iPhone market.

There is little question that subscribers are drawn to these devices for their ease of use, but also because of the availability of advanced features. Some of these devices double as GPS systems, delivering maps and directions. In fact, the development of "mash-ups" is further expanding the use of these devices by enabling subscribers to overlay businesses of interest on top of that local map – e.g. real-estate open houses in a 5 mile radius, or Italian restaurants within a mile.

All these additional IP-services represent a significant opportunity for increased average revenue per user (ARPU). After Barack Obama's campaign chose to notify supporters of his Vice Presidential running mate selection via text messages to their mobile phones, one can easily envision the product managers for many of the global mobile operators working overtime to quickly brain storm other uses that campaigns, enterprises, and e-businesses can incorporate in their marketing strategies. After all, imagine the additional revenue this could represent.

But users are impatient and subscribers are unforgiving – the very characteristics of a market defined by a well-founded fear of subscriber churn. The antidote operators strive to ensure a reliable and high-performance experience to maintain customer satisfaction that, in turn, retains subscribers. It seems that 3G networks are in broad development and rollout at just the right time to support these advanced services, but they are not free of troubles. Blackberry has suffered multi-hour disruptions in service in 2008 and trouble activating tens of thousands of the more than one million new iPhone subscribers the first weekend they were released in July are but two recent examples of subscriber-affecting problems.

The complexity of these networks, the volume of traffic, the types of services in use, the interaction of multiple operators combine to make performance management a daunting challenge for many operators to overcome. Thus, the basic question becomes: What does it take to ensure reliable and high-performance experiences for subscribers of mobile networks?

You Can't Manage What You Can't See

Whether the subscriber is making a phone call, sending a text message, downloading music or a new ring-tone, subscribers have high expectations for the network's performance. Legacy management tools were designed to work at the physical network level, e.g. servers, routers, switches, circuits, or in some cases on signaling, and hence fail to detect problems presented by the modern IP-based services offered across complex 3G networks. More and more of the complicated problems affecting mobile operator networks will be associated with the health of the ***relationships*** between the networked elements throughout their global data centers.

Deep packet collection and inspection technology, with sub-second operation and analysis, is capable of distinguishing discrete services found in mobile operator networks, identifying micro-events as they emerge, and diagnosing their associated root causes. Only packet-flow technology, with its unique network vantage point, is capable of monitoring these complex interactions and resource contentions - being able to see all of the network loads and flows simultaneously in real-time. By inherently listening to all the conversations between the networked infrastructure elements, solutions employing packet-flow-based technology can detect and expose performance and relationship problems. A solution that leverages the packets in the network will provide the knowledge to identify, diagnose, and monitor service performance.

Another element of visibility that can't be ignored is the effect of volume on 3G networks. Because of the massive numbers of users and applications supported over these networks, the data transmission requirements, and hence, bandwidth

utilization demands they put on performance management solutions, are immense. As a result, the ability to not only capture and inspect packets and flows is important, but the ability to do so at volume is imperative. Only a solution that provides the ability to capture at high rates of utilization and store multiple terabytes of packets will provide operators with the visibility they require.

Unified solutions that raise the bar in service assurance and performance management are a necessity. By combining extensive early-warning capabilities, real-time and historical application flow analysis, deep-packet forensics, scalability, and an understanding of IP services and content, operators have the tools essential to enable visibility into all the services transported in today's IP-based mobile operator network. This means ability to see revenue impacting services including enabling services like Radius, Diameter, LDAP, and DNS as well as subscriber-facing services like WAP, MMS, and SMS. Visibility is that essential element to employ performance management as the solution to monitor its activity and troubleshoot degradations as they occur to avoid subscriber-affecting and revenue-impacting problems.

Value-added Benefits

In partnership with Ashton, Metzler and Associates, NetScout asked 138 network professionals how long it took to diagnose major network issues prior to deploying packet flow based solutions for performance, problem, and incident management and how long it took after deploying such solutions. The results definitively illustrated a 69% time savings improvement. They also revealed that the number of times problems were solved within the first 3-hours of detection went from about 30% before the solutions were introduced to over 70% after the solutions were in use!

One of the largest mobile operators in the Middle East faced a significant business challenge - a new competitor in a previously uncontested market was threatening to steal their subscribers with superior service claims. The operator realized that they had to improve service quality levels for subscribers, as well as accelerate their ability to identify, diagnose, and correct service-affecting performance issues. By implementing a packet-flow-based monitoring and analysis solution, the operator reduced troubleshooting time in their production network by 50%, improving customer experience. And it had the added benefit of improving employee productivity as well.

From ensuring a smooth transmission of a CNN newscast to simply making sure voicemail notifications are delivered quickly and web browsers connect reliably, the ability to see all subscriber services in real-time is an imperative in order to manage overall performance and customer experience. Major mobile operators worldwide are evolving the tools they will need to deploy to provide the real-time visibility, analysis, and management tools to ensure their mobile networks are living up to customers' "unlimited" 3G expectations.

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