NetMotion® Wireless

STRATEGIES FOR MANAGING CELLULAR NETWORK PERFORMANCE

How Enterprises Can Manage and Optimize Their Critical Mobile Deployments

Executive Summary

The use of mobile devices and cellular data networks is growing phenomenally and business use constitutes a large part of this growth. Enterprises using these cellular networks are highly dependent on them for their field operations, and are investing heavily in devices and applications to support their work. Yet they lack the tools to truly understand how these networks are performing for them.

Three trends in particular underlie the need for the visibility new tools will provide:

- With the expansion of mobile deployments to new applications and types of workers, more critical business processes will be running over networks over which IT has no visibility.
- Especially with the need for multiple carriers and the emergence of 4G, device/modem and carrier selection and management will be vital to business operations.
- Cellular expenses will dramatically increase due to more devices and users, increased usage, and tiered-pricing plans.

As mobile deployments and cellular data use become more business critical than ever, enterprises face the need to monitor, manage and optimize their wireless investments. New tools are required that will deliver visibility into actual performance of cellular data networks in five key areas: carrier coverage, data consumption, cost control, user experience and asset management. Without these types of performance management tools, organizations will remain blind, and will be unable to optimize, or even understand, the performance of their mobile deployments.

Mobile Use on the Rise

The use of mobile devices and data networks is exploding and the growth is forecast to continue for the foreseeable future. It has been projected that the amount of data downloaded to mobile devices will grow to more than six million exabytes by 2015 – a 26-fold increase over a five-year span.[1] Enterprises will add 25 million mobile data users over the same timeframe.[2]

Nearly two-thirds of IT decision-makers have stated that greater use of mobile technologies is either a high or critical priority[3], and an IBM-conducted survey of more than 3,000 CIOs globally revealed that 75% plan to emphasize mobility initiatives.[4]

Why are mobile initiatives so critical to competitive businesses? According to a 2010 Forrester survey, the most-often-cited drivers are to increase worker productivity (75%), increase employee responsiveness and decision-making speed (66%), speed resolution of customer and internal IT issues (48%) and improve customer satisfaction (42%).[5]

A similar survey of Canadian executives found that the leading reason for giving workers mobile data access was to improve worker efficiency (97%); this was achieved by allowing workers to complete more tasks while outside the office (87%), make more timely decisions (85%), and reduce idle time (66%). The second-most-cited driver was to improve responsiveness to customers (73%).[6]

The Need: Visibility into Mobile Deployments and Devices

As workers use applications and move between locations, the availability and quality of connections is central to maintaining productivity and delivering on their expectations. So the pressure is on IT to deliver a consistent experience regardless of whether the device is wired or wireless, located directly on the corporate network, or on

the virtual corporate network connected via a Wi-Fi or cellular data service.[7]

However, enterprises have no direct control or visibility into those third-party cellular networks. They are concerned with the greater cost of providing technical support to workers who are outside the corporate premises, and also need to control expenses for mobile data service overall.[8] In fact, Yankee Group forecasts that spend on mobile data for North American enterprises will grow from $28 billion in 2011 to $40 billion in 2015.[9]

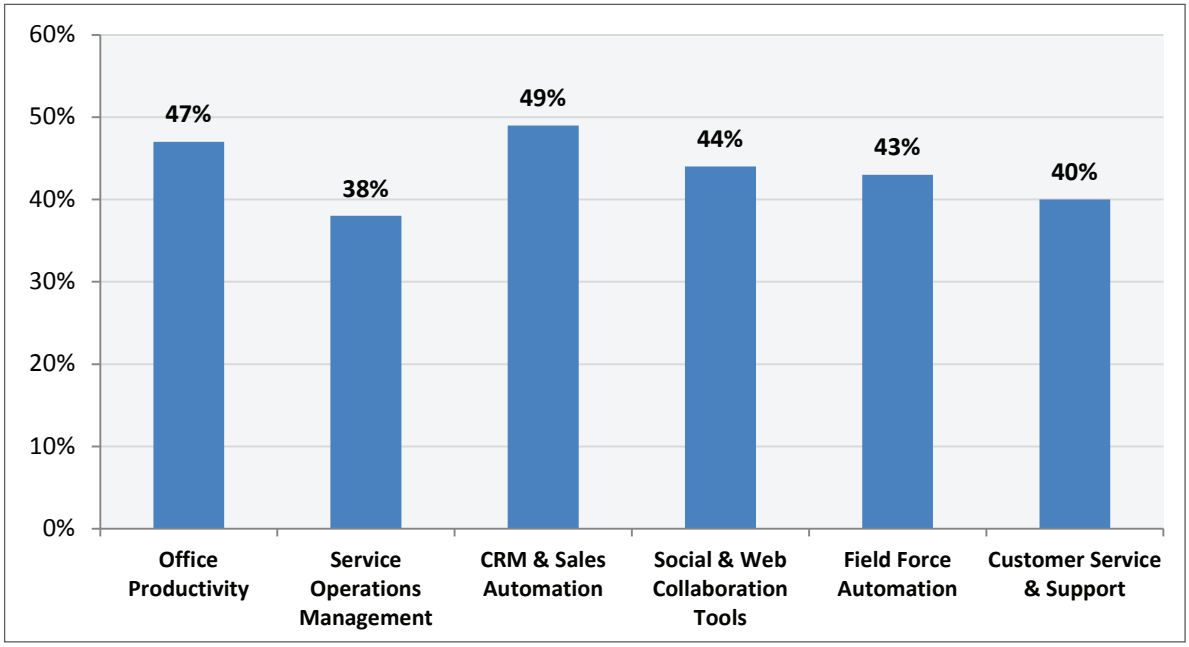
Three Emerging Trends and New Challenges

The following three trends have particular implications for enterprises who need to manage their increasingly mobile workforces.

TREND #1:
With the expansion of mobile deployments to new applications and types of workers, more critical business processes will be running over networks over which IT has no visibility.

Enterprises are emphasizing mobile deployment projects that are customer-facing and carry business processes into the field.[10] A survey of CIOs revealed that the applications which were either already mobilized or were planned for mobilization included office productivity (47%), service operations management (38%), CRM and sales automation (49%), social networking and web collaboration tools (44%), field force automation (43%), customer service and support (40%). A variety of other applications were also mentioned.[11]

More users and more applications put new pressures on IT departments who are tasked with supporting users working in far-flung locations, communicating over networks in which the IT department has no visibility or control. Connection quality and availability which were taken for granted on a campus network are no longer a "given." A worker who cannot connect to applications has to do workarounds, remember to enter data later, or may simply be unable to access information necessary to do the job.



A 2011 Enterprise Mobility survey of CIOs shows the applications that are either already mobilized or are planned for mobilization

TREND #2:
Especially with the need for multiple carriers and the emergence of 4G, device/modem and carrier selection and management will be vital to business operations.

Many enterprises need to work with multiple cellular carriers to deliver ubiquitous data access to their roaming workers. This is required not only for enterprises that cover broad geographies, as might be expected, but also within many metro areas. The more workers move throughout the workday, the more likely they are to encounter dead zones or marginal signal strength in a carrier's coverage. These can be caused by obstacles such as mountains or buildings, overloaded networks, or venturing into rural areas where there are fewer cell towers.

Combining carriers increases the likelihood of a connection and surveys of highly mobilized enterprises confirm the practice. Among utility companies surveyed, 46% use two or more cellular networks to get the coverage they need, while 10% use three or more. Among field-service organizations, 66% use two or more carriers, while 37% use three or more.[12]

New 4G capabilities are also coming into the mix. These offer performance that is nearly the same as wired access, and in one survey of IT decision makers, 70% said they strongly feel that 4G technologies will be important to enhancing worker productivity.[13] However, 4G coverage will not be ubiquitous. 4G technologies are expected to co-exist with older technologies, and older technologies will still exist as a backup.[14]

46% of utility companies use two or more cellular networks to get the coverage they need.

With wireless infrastructure representing such a major investment, matching devices to the carrier networks and technologies will be extremely important.

TREND #3:
Cellular expenses will dramatically increase due to more devices and users, increased usage, and tiered-pricing plans.

With more devices, more users, and more applications, enterprises will be consuming more data-carrying capacity. But with bandwidth a finite resource, market forces are coming into play. To build out its infrastructure and accommodate the expanded traffic, the U.S. wireless industry is spending heavily – an investment of $30 - $50 billion by one estimate. They are purchasing additional spectrum, modernizing cell towers, and rolling out new 4G technologies to meet the increasing demand for mobile data.[15] It is inevitable that these costs will be passed on to customers, and that wireless providers will need to move away from unlimited-use plans to rates that are more closely tied to consumption.[16] That is coming to pass with announcements first by AT&T and then by Verizon Wireless about the adoption of tiered rate structures.[17]

> **Only 10% of organizations have adequate visibility into spend on wireless services. Greater visibility can save companies from 10 to 35% of their wireless costs.**
>
> – Gartner, 2010

The stakes are high. It has been estimated that wireless service costs $1,800 per employee per year, and within three years will account for 30% of the total telecom budget for American corporations. However, only 10% of organizations have adequate visibility into this spend on wireless services.[18] Greater visibility and closer management can save companies from 10 to 35% of their wireless costs.[19]

Solutions for the "New Mobility"

Visibility over use of third-party cellular networks is the key to aligning mobile deployments with the needs of the business. A new type of software — Locality, cellular network performance management software from NetMotion Wireless — delivers this visibility and management. A thin client on each mobile device reports on the availability and use of connections, combines it with GPS location data, and transmits the information to a central database that stores it over time. Tied to a reporting engine, this solution then provides a comprehensive view of wireless network use over time, by user, by geography, by network and more. It can also make the once-invisible visible: it creates a solid inventory of all deployed devices, who they're assigned to and how often they're used.

This type of information allows IT personnel responsible for the mobile infrastructure to manage within the needs of the business, and allows business owners to make informed decisions about their investments in mobile data deployments. It accomplishes this by supporting five essential practices.

Five Strategies Required for Cellular Network Management Tools

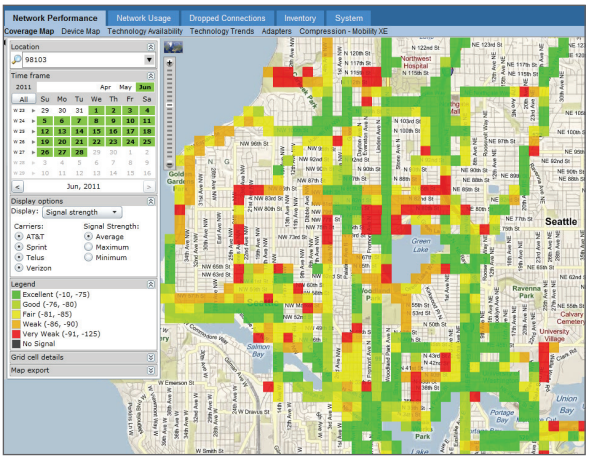
1. User Productivity

Bring in tools to identify problems and optimize connectivity.

Users expect their devices to simply work, and few are able to tell if a problem is with their device or with their connection. And in todays world, no connectivity means lost productivity. A tool that constantly monitors the state of the connection that is accessible by helpdesk employees is a godsend for identifying and resolving connection challenges so workers are more productive.

If a user complains about a problem that happened a week ago, all of the data is stored in a central reporting database, making it possible to call up a map that traces the user's whereabouts on that day. The support tech can follow the user's route and see where and when the user had a connection, the quality of that connection and where the connection was lost. This provides immediate insight into whether the problem is a coverage issue or device problem, and guides further troubleshooting.

If a device is systemically failing, reports on the frequency of dropped connections by device can detect that device, allowing the help desk to act proactively with a replacement or an upgrade.



Businesses and agencies can troubleshoot connectivity issues and compare carriers using detailed coverage maps like this one from NetMotion Wireless Locality

2. Carrier Coverage

Compare carriers, understand where coverage is lacking, and work with carriers to improve coverage.

With this new solution, mobile devices in the field constantly report back on the availability and quality of connections encountered in the field. IT is able to base decisions on connection data gathered by workers,

rather than relying on general coverage maps. They can see what each carrier offers in actual performance with various types of devices, and where signal strength is marginal.

If workers complain about slow or dropped connections, IT can see each carrier's coverage separately or in a combined view, and know if switching to a carrier with better coverage or combining carriers would make workers more productive in the field.

If the enterprise is overpaying for dual coverage, the coverage maps reveal when workers who focus on particular geographic areas might be more cost-effectively connected with a single carrier who offers better coverage in that area.

If workers are systemically plagued with suboptimal connectivity, reporting on the connection technology each device has (2.5G, 3G, 4G) lets IT know if users are getting the coverage being represented, or if and where devices are falling back.

If coverage is lacking in a service area, IT can print out coverage maps and present them to carriers as empirical evidence of dead zones where buildings, local terrain or other conditions impact connectivity, or where large areas are lacking in coverage and therefore a new tower might be needed.

3. Data Consumption

Ensure that only essential business applications use the metered networks.

The solution reports on which applications are using the networks and how much bandwidth those applications consume on each device. This allows the business to gauge demand and if necessary, set policies to curtail application use.

If excessive bandwidth consumption is driving up costs, businesses can ensure the use is for business purposes only and set policies to limit use of streaming media and video files.

If traffic surges are overwhelming devices and sapping productivity, workers can be directed to perform system updates and large file transfers over available Wi-Fi rather than metered cellular connections.

4. Troubleshooting and Cost Control

Better manage telecom spend, find underutilized or unnecessary plans, and right-size the investment in cellular data services.

There are TEM (Telecom Expense Management) tools and services available, but these mostly have to do with invoice analysis after-the-fact. The new cellular performance management solution measures bandwidth consumption for each number, so IT departments can be proactive and match the profile of device use with the monthly bill.

If usage is at or near the borders of pricing tier, there might be an opportunity to limit the use of non-essential applications in order to drop or stay within a pricing tier, or to shift to a different contract.

When enterprises are needlessly paying for unused plans, specific reports can be run to find plans that are little-used or unused, uncovering opportunities to pool plans or cancel them.

If devices are consistently connecting through older-generation technologies, the solution detects it and reveals if the device is due for an upgrade in order to take advantage of the 3G and 4G technologies that the business is paying for.

When data plans are up for renewal and re-negotiation, empirical data about carrier performance and technology availability brings leverage to the bargaining table.

When IT wants to demonstrate business alignment, the views of bandwidth consumption and application use show how IT is intelligently matching the overall spend in carrier networks and individual plans to the needs of the business for data access.

5. Asset Management

Use automation to gain better control of device inventory.

The client on each device gathers information on the type of device and network adapter, including hardware and firmware configuration, phone number and ESN/MEI/IMEI, and reports it back.

Instead of support staff manually tracking assets in a spreadsheet, the system automatically detects when users switch devices or IT swaps in a new network adapter, so there is no manual entry and inventory is automatically and always up-to-date.

If devices are unused and forgotten, tracking the last used date of each device spots it so the device may be pressed back into service, repurposed or written off.

To make upgrades budgetable and predictable, keeping inventory of the adapter model and firmware assists in planning smooth and timely rollouts.

Conclusion

Mobile deployments offer great promise — provided workers in the field are able to access the applications they need, on-demand, wherever and whenever they need them. IT departments face the challenge of supporting a deployment that runs over third-party networks over which they have no visibility or control. Locality, cellular network performance management software provides that visibility and control. Without these types of performance management tools, organizations will remain blind, and will be unable to optimize, or even understand, the performance of their mobile deployments.

About NetMotion Wireless

NetMotion Wireless develops software to manage and secure wireless data deployments for organizations with mobile field workers. Our products address the unique challenges introduced by the use of wireless, enabling our customers to maximize their return on investment in workforce automation.

Locality is cellular network performance management software that gives organizations the insight and visibility needed to optimize their mobile data deployments. Using coverage maps and detailed reports, Locality identifies the causes of poor connectivity, creates an inventory of deployed devices and monitors data usage, resulting in more productive field workers and reduced expenses. To learn more about products from NetMotion Wireless, visit **www.netmotionwireless.com**.

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