

Prepared For Qualcomm

December 1, 2008

## **Enable Your Workforce With True Anytime, Anywhere Connectivity**

How Embedded Mobile Broadband Improves  
Customer Service, Creates Revenue Expansion,  
And Increases Employee Satisfaction

**A commissioned study conducted by Forrester Consulting on  
behalf of Qualcomm**



**Headquarters**

Forrester Research, Inc., 400 Technology Square, Cambridge, MA 02139 USA  
Tel: +1 617.613.6000 • Fax: +1 617.613.5000 • [www.forrester.com](http://www.forrester.com)

## Table Of Contents

Executive Summary .....	3
Key Findings .....	3
Notebooks Are Mission-Critical Investments For Workers Of All Levels Of Mobility .....	5
Businesses Are Facing Challenges With Today's Islands Of Connectivity.....	6
Firms Are Investing In Mobile Broadband To Finally Realize Ubiquitous Mobility.....	8
Businesses Favor Embedded Mobile Broadband Modules Over External Cards For Improved Costs, Technical Capabilities, And Inherent Security .....	11
Study Conclusions.....	14
Sidebar: Considering The Financial Benefits Of Notebooks With Embedded Mobile Broadband Modules .....	15
Appendix A: Supplemental Material.....	16
Methodology.....	16
Additional Figures .....	17
Related Forrester Research .....	19

© 2008, Forrester Research, Inc. All rights reserved. Forrester, Forrester Wave, RoleView, Technographics, TechRadar, and Total Economic Impact are trademarks of Forrester Research, Inc. All other trademarks are the property of their respective companies. Forrester clients may make one attributed copy or slide of each figure contained herein. Additional reproduction is strictly prohibited. For additional reproduction rights and usage information, go to [www.forrester.com](http://www.forrester.com). Information is based on best available resources. Opinions reflect judgment at the time and are subject to change.

## Executive Summary

In August 2008, Qualcomm commissioned Forrester Consulting to evaluate the benefits that North American businesses have experienced as a result of providing notebook users with mobile broadband connectivity.

In conducting in-depth surveys with 153 IT and telecom/network decision-makers at North American companies with 500 or more notebook-using employees, Forrester found that these companies achieved three key benefits as a result of extending wireless wide-area network (WWAN)/cellular cards to more of their organization's notebook users:

- Increased employee satisfaction and improved internal IT service.
- Revenue expansion through the ability to work with more customers.
- A competitive differentiation and improved customer service for external partners, like prospects, clients, and suppliers.

## Key Findings

Forrester's study yielded four key findings:

- **Businesses are increasingly dependent on notebooks for all types of workers.** The ratio of notebooks to desktops within North American businesses has been steadily increasing for years. At 22% just three years ago, notebooks now represent almost 40% of all corporate PCs. Driving this buyer's shift are: lower price points; new mobile form factors; more robust wireless capabilities; and the dynamics of a more flexible, mobile, and technology-savvy workforce.
- **Mobile workers have traditionally been chained to wired or wireless LAN (WLAN) hotspots, but with mobile broadband, these days are over.** For years, the increasingly decentralized and mobile workforce has been restricted to islands of connectivity through wired (e.g., dial-up, Ethernet, etc.) or wireless hotspots (e.g., in-house WLAN, public hotspots, etc.). Enter external mobile broadband cards, which have unchained workforces from these pockets of connectivity. But they've also brought new challenges to businesses concerned with high costs, poor hardware failure rates, carrier lock-in, increased buyer complexities, and weak coverage and performance.
- **Buyers are increasingly turning to embedded mobile broadband, ushering in the next generation of ubiquitous mobility.** Today, businesses are increasing their investments in notebooks with embedded mobile broadband chipsets to minimize these external card challenges. The survey found that IT operations professionals are turning to embedded mobile broadband chipsets because they offer:
  - Technical advantages over external cards (e.g., faster connection speeds, more energy efficiency, longer battery life, etc.).
  - Support for carrier flexibility.
  - 3G access.

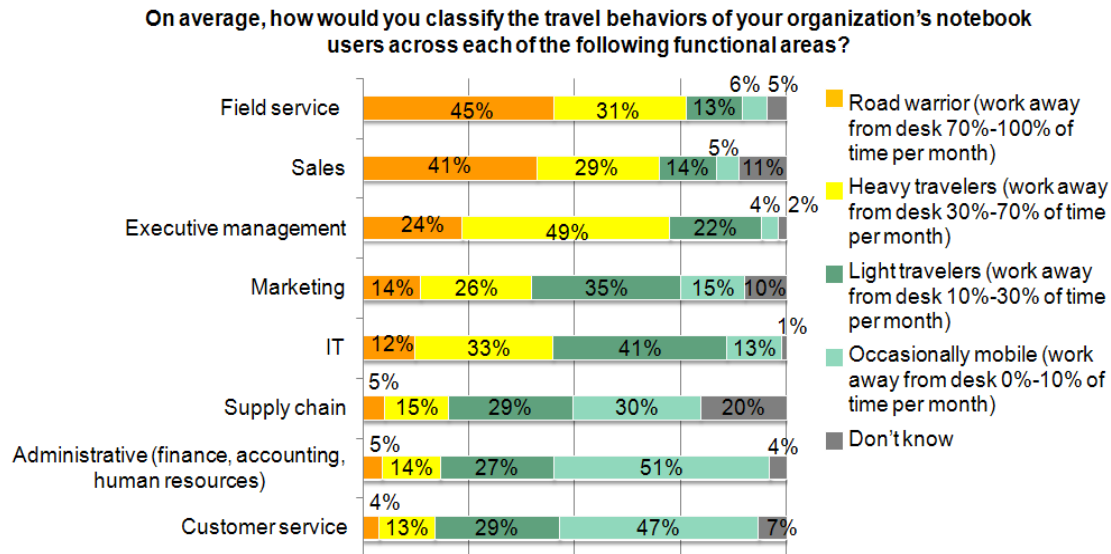
- Multimode global coverage (e.g., EVDO/HSPA).
- Buyer simplification (e.g., single SKU for multiple operators).
- Worldwide availability.
- Embedded GPS capabilities.
- Flexibility in payment plans.
- **Businesses anticipate lower costs, global high-speed coverage, and increased security with embedded mobile broadband solutions.** As the workforce becomes increasingly decentralized and businesses encourage employees to work from home for environmental and financial reasons, notebooks with embedded mobile broadband chipsets are the best way to combat unpredictable and rising costs. This will remain particularly relevant in a down economy as IT operations groups look to cut costs wherever possible; embedded mobile broadband cards will eliminate all unnecessary connection charges, replacement card costs, and home Internet access fees. And with the younger workforce's loftier mobility expectations, IT departments are strongly considering embedded mobile broadband as the standard solution for all types of workers, not just road warriors and heavy travelers.

## Notebooks Are Mission-Critical Investments For Workers Of All Levels Of Mobility

Corporate PC environments are becoming increasingly distributed and mobile. Thanks to new form factors that are smaller, lighter, and more energy efficient, enterprises are increasingly shifting their investments from desktops to notebooks. Next-generation wireless standards like EVDO and HSPA are delivering faster connection speeds, lower latency, broader coverage, and better interoperability. New built-in management and antitheft features are also ensuring that PC managers aren't losing sleep over keeping their company's data secure.

- Notebooks represent almost 40% of corporate PCs today.** Notebooks have been making inroads into North American businesses for years and now represent almost 40% of PCs in use today. But while notebooks were traditionally limited to executives and road warriors in years past, enterprise IT departments are today extending notebooks to an increasing percentage of employees across all spectrums of mobility and roles, including traditionally office-bound and desk-bound workers.
- All segments of workers benefit from using a notebook.** One of the challenges for businesses switching investment from desktops to notebooks has been in determining which jobs would benefit most from a mobile form factor. The survey found that while field service and sales professionals are most mobile within organizations, all workers within these lines of business benefit from notebook investments because they are all mobile to varying degrees (see Figure 1).

**Figure 1: Almost Half Of All Notebook Users Are Road Warriors Or Heavy Travelers**



Ba

se: 153 IT and telecom/network decision-makers at companies with 500-plus employees using notebooks

Source: A commissioned study conducted by Forrester Consulting on behalf of Qualcomm, October 2008

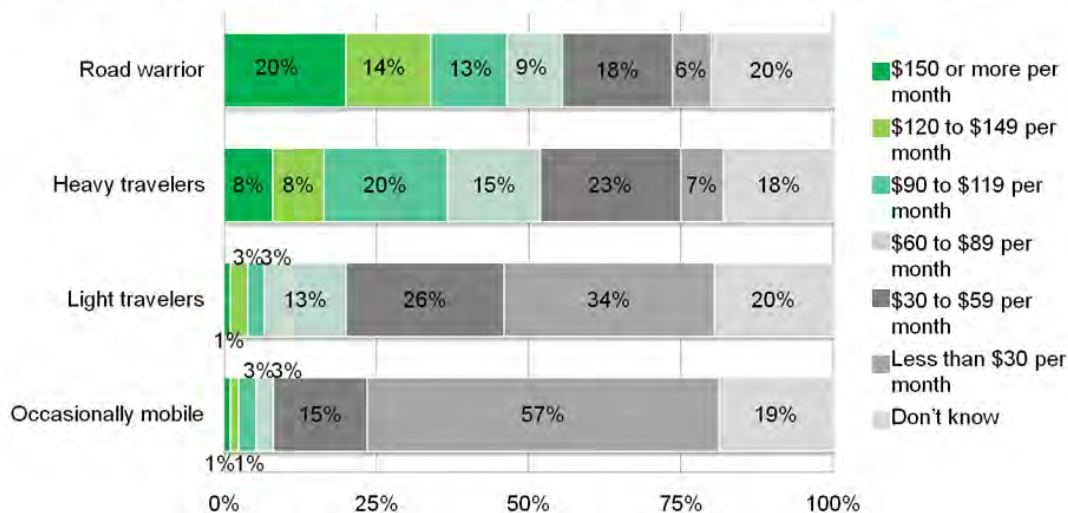
## Businesses Are Facing Challenges With Today's Islands Of Connectivity

Notebooks offer a number of connectivity options to ensure your workforce is productive regardless of physical location. Today, 85% of businesses surveyed cited WLAN as a method by which their workforce connects to the Internet while away from their desk or local work environment, making it the most commonly used access option. Following WLAN connections are wired connections, cited by 73% of businesses. But these wireless and wired options are giving way to mobile broadband; 65% of businesses surveyed already cite it as a method — and that figure is rising. Three major challenges with wired and WLAN connectivity are driving new investments in mobile broadband for notebooks:

- The cost of wired or WLAN connections are unpredictable and expensive.** Businesses that support large populations of notebook users who connect through wired or Wi-Fi and pay-per-use plans are plagued by the unpredictable and expensive charges for these connectivity options. The survey found that more than one-third of road warriors and 16% of heavy travelers charge \$120 or more every month back to the business (see Figure 2).

**Figure 2: The Cost Of Per-Use Wired/WLAN Connections Are Unpredictable And Expensive**

For each class of traveler/notebook user, please estimate the aggregate monthly costs associated with connecting to the Internet while on the road via a wired or Wi-Fi connection.



Base: 143 IT and telecom/network decision-makers in companies with 500-plus employees using notebooks and who indicated use of wired or WLAN connectivity

Source: A commissioned study conducted by Forrester Consulting on behalf of Qualcomm, October 2008

- Even when hotspots exist, connection failures plague workers of all levels of mobility.** Another challenge that notebook users face is the lack of available hotspots. Most organizations have built out on-premise WLAN networks for employees, but outside of these four walls, it's often hit or miss. Even if there is a Wi-Fi hotspot at, say, a hotel or café to connect to, there's no guarantee that users will be able to connect. Connectivity failures can happen for any number of reasons, ranging from inadequate coverage, overloaded access points, a lack of Ethernet cord, or technical issues when connecting (e.g., lost PIN/access code, vague login instructions, etc.). The survey found that these connectivity

failures affect all levels of notebook users, even the most experienced road warriors (see Appendix B, Figure 8).

- **Home-based workers are an additional burden as most expense Internet access back to the business.** Adding to the monthly Internet access costs that businesses pay are the charges that home-based workers accrue and expense back to the organization (see Appendix B, Figure 9). As many organizations mandate or encourage some workers to be home-based, many allow employees to expense back all or some of these home Internet access fees (e.g., dial-up, DSL, cable, etc.). In fact, the survey found that 29% of businesses allow their home-based workers to expense back all costs associated with internet access, and an additional 35% expense back some of these costs.

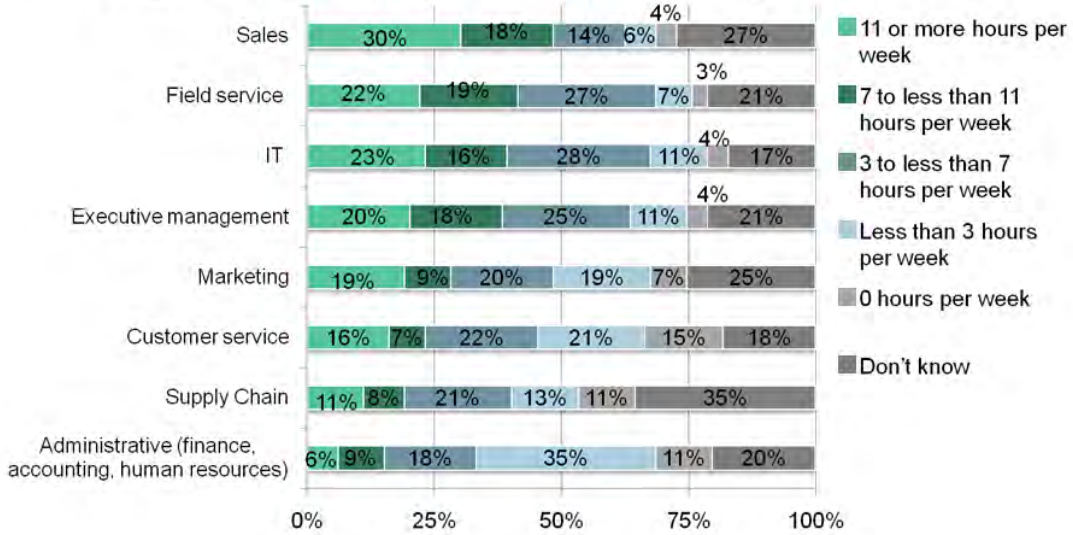
## Firms Are Investing In Mobile Broadband To Finally Realize Ubiquitous Mobility

Businesses have turned to mobile broadband cards for notebooks to fill the wide-area gaps in between these islands of connectivity. Notebooks armed with access to cellular networks from North American mobile operators give workers the flexibility to roam almost anywhere and remain connected. New products now being introduced to the market support both of the major technology families in wide deployment today (EVDO and HSPA), making carrier flexibility using a single embedded device a reality for the first time.

- **Mobile application usage is higher than ever before, and most benefit from always-on connections.** Mobile workers often multitask while on the go, and most run multiple applications at once (see Appendix B, Figure 10). While applications are written to function as workers seamlessly roam from hotspots to dead zones and back and forth, mobile broadband technology enables workers to: communicate with coworkers in remote areas; close deals on the fly; and connect to information databases to view, pull, or push voice or data without having to physically travel to and connect manually into a Wi-Fi hotspot or plug in at a hotel or café. And increasingly, these mobile applications are business-critical applications that demand always-on connections that only mobile broadband can provide.
- **Mobile broadband drives new efficiency for all types of workers.** A major benefit of mobile broadband usage is the new efficiency it enables. The survey found that all types of workers will experience more productivity as a result of having access to the anytime, anywhere Internet connectivity that only mobile broadband can provide (see Figure 3). But topping the list of workers that benefit the most are sales, field service professionals, IT operations professionals, and executive management. With the survey showing an average of 11 additional hours of productivity per week for all job functions, it is worth considering how many new customers your business might gain as a result of arming your sales force with mobile broadband cards — or how many repairs IT might make, how many systems they might fix, or how many new business relationships might be established.

**Figure 3: Mobile Broadband Users Gain Hours Every Week Through New Efficiencies**

Given your best estimate, how many hours per week would each individual remote notebook user across each of the following functional areas be more productive as a result of having access to anywhere, anytime Internet connectivity using WWAN/cellular cards?



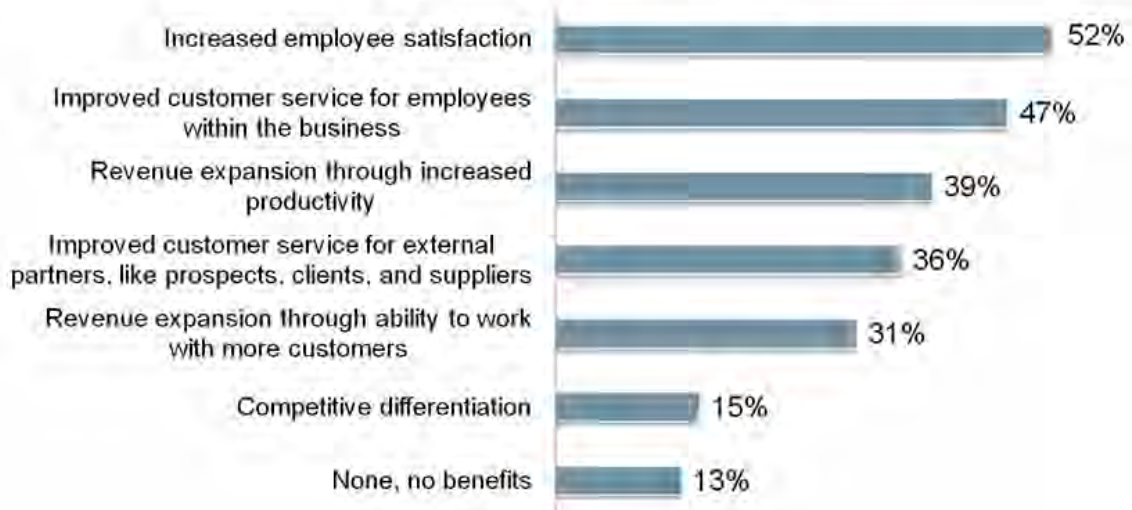
Base: 99 IT and telecom/network decision-makers at companies with 500-plus employees using notebooks and who reported use of WWAN connectivity

Source: A commissioned study conducted by Forrester Consulting on behalf of Qualcomm, October 2008

- Increased employee satisfaction, improved customer service, and new revenue expansion opportunities are the top benefits of broader mobile broadband use.** By enabling more workers with mobile broadband access, businesses are realizing numerous hard and soft benefits (see Figure 4). Employee and customer satisfaction improves through the ability to communicate with others and be productive almost anywhere and at any time. New business opportunities present themselves through interacting with more customers, partners, and prospects. Mobile broadband also serves as a competitive differentiator that is unique to organizations in traditionally nonmobile industries, such as government, healthcare, education, finance, insurance, and manufacturing.

**Figure 4: Mobile Broadband Use Increases Employee And Customer Satisfaction And Creates New Business Opportunities**

**What business benefits has your organization experienced or would it anticipate experiencing as a result of extending WWAN/cellular cards to more of your organization's notebook users? (select all that apply)**



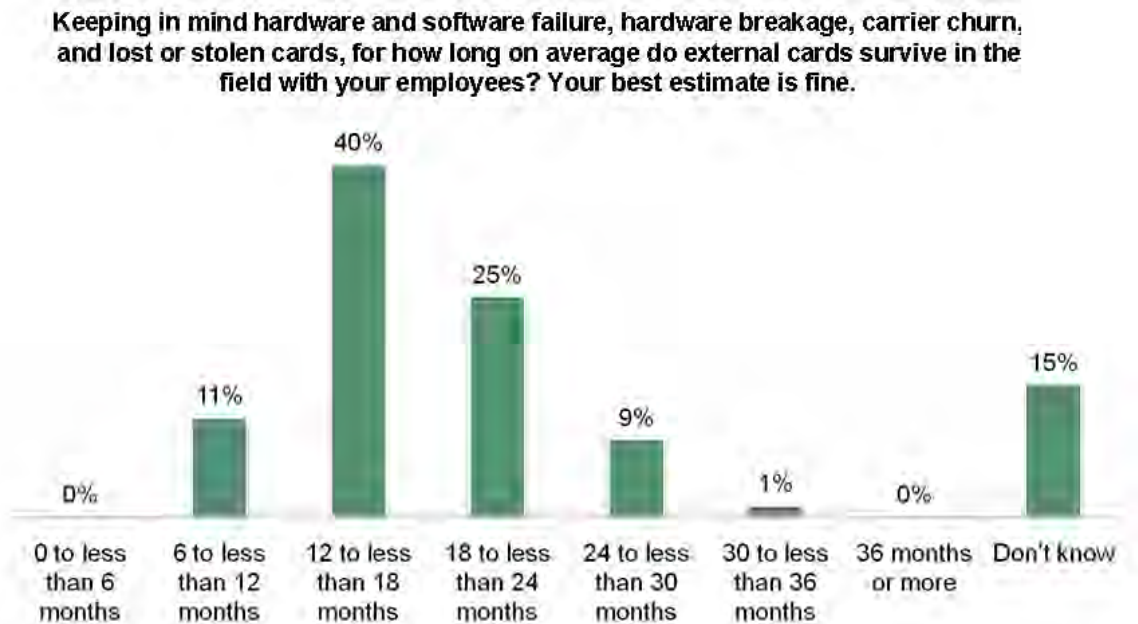
Base: 153 IT and telecom/network decision-makers at companies with 500-plus employees using notebooks  
Source: A commissioned study conducted by Forrester Consulting on behalf of Qualcomm, October 2008

## Businesses Favor Embedded Mobile Broadband Modules Over External Cards For Improved Costs, Technical Capabilities, And Inherent Security

As impressive as the returns on investment (ROI) are with external cards, businesses cite the technical advantages of embedded mobile broadband modules as the No. 1 most valuable capability.

- **External broadband cards suffer from hardware and software failure, breakage, loss, theft, and carrier lock-in.** Tempering investments in mobile broadband has been the concern that external cards suffer from hardware and software failure, breakage, loss, theft, and carrier lock-in, and the study confirmed this (see Figure 5). In fact, more than half of the businesses surveyed report that the average external mobile broadband card only survives in the field for less than 18 months, and less than one-quarter survive for more than two years. For most organizations with notebook refresh cycles of two to three years, figures like these are less than ideal considering the costs associated with replacing external cards.

**Figure 5: More Than Half Of External Mobile Broadband Cards Have A Life Span Of Less Than 18 Months**



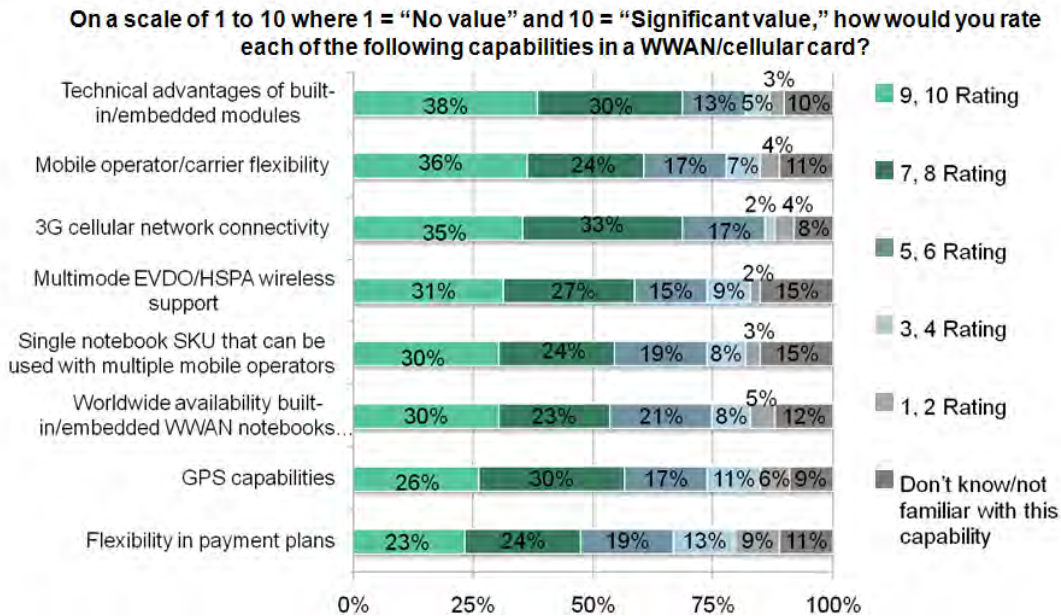
Base: 153 IT and telecom/network decision-makers at companies with 500-plus employees using notebooks and who indicated use of external WWAN cards

Source: A commissioned study conducted by Forrester Consulting on behalf of Qualcomm, October 2008

- **Businesses find that the technical advantages of embedded mobile broadband modules offer the most inherent value, followed by operator flexibility, 3G connection speeds, and multimode support.** Mobile broadband cards offer a number of capabilities, and businesses will find varying levels of value in each. But the firms surveyed rated the technical advantages of embedded modules as the No. 1 most valuable capability

(see Figure 6). Embedded modules offer, among other things, higher connection speeds, better battery life, and simplified asset management and come with support from major OEMs and mobile operators worldwide. Businesses benefitting from global carrier flexibility and multi-carrier options can now also employ new products that provide multi-mode (EVDO and HSPA) capabilities within a single embedded module.

**Figure 6: Businesses Find Significant Value In Mobile Broadband Solutions, But Technical Advantages, Carrier Flexibility, And 3G Speeds Top The List**

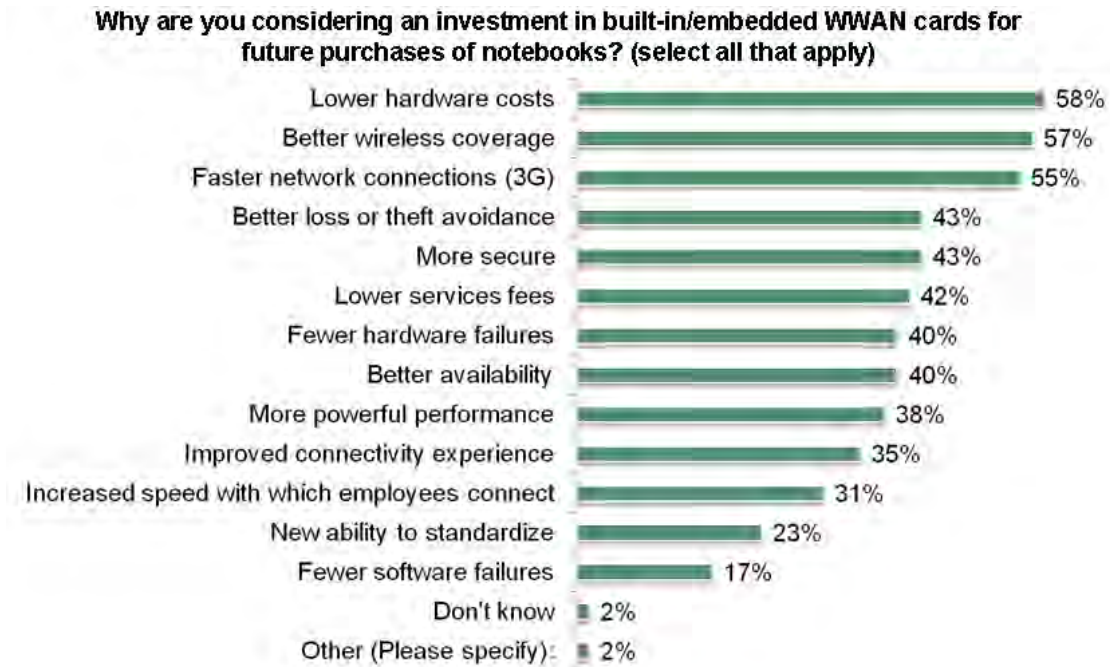


Base: 99 IT and telecom/network decision-makers at companies with 500-plus employees using notebooks and who reported use of WWAN connectivity

Source: A commissioned study conducted by Forrester Consulting on behalf of Qualcomm, October 2008

- Spending on embedded mobile broadband modules is on the rise, thanks to lower costs, broader coverage, faster connection speeds, and better antitheft capabilities.** For businesses that want to avoid the unnecessary costs associated with replacing broken or lost external cards, connect to 3G wireless networks around the globe, and streamline loss or theft avoidance, investing in embedded mobile broadband modules for your workforce makes sound business sense. In fact, the survey found that these three drivers are the top reasons why businesses are considering investments for future purchases of notebooks (see Figure 7).

**Figure 7: Lower Costs, Broader Coverage, Faster Connection Speeds, And Better Antitheft Capabilities Are Driving New Investments In Embedded Mobile Broadband Modules**



Base: 65 IT and telecom/network decision-makers at companies with 500-plus employees using notebooks who indicated interest in the future purchase of embedded WWAN cards

Source: A commissioned study conducted by Forrester Consulting on behalf of Qualcomm, October 2008

## Study Conclusions

Forrester's in-depth survey study with 153 IT and telecom/network decision-makers at North American companies with 500 or more notebook-using employees revealed that firms can increase employee satisfaction, improve customer service, and create revenue expansion through new investments in notebooks with embedded mobile broadband modules. To continue on this extended mobile enterprise trajectory and realize true ubiquitous mobility, businesses need to execute on three imperatives:

- **Make mobility a strategic asset to better align IT initiatives with business objectives.** Companies of all sizes and industries are accomplishing this through continued investments in notebooks. But it's critical that businesses move beyond a one-size-fits-all model to better serve the needs of their diverse, ever-changing, and increasingly demanding workforce.
- **Get more out of existing notebook investments with mobile broadband.** Mobile broadband enables true ubiquitous mobility and anytime, anywhere productivity. But external mobile broadband cards also entail unpredictable and expensive Internet access costs and poor life spans that are ill-suited for companies looking to centralize purchases and decrease operating costs.
- **Turn to next-generation embedded mobile broadband modules for future notebook purchases.** To better serve your employees, customers, and partners, drive costs down, and streamline asset management, consider turning to embedded mobile broadband modules for all future notebook purchases. Only with embedded mobile broadband modules will businesses realize the full potential that anytime, anywhere Internet access can enable. Additionally, businesses favoring embedded mobile broadband should also consider the benefits of multi-carrier and multi-mode capabilities.

## Sidebar: Considering The Financial Benefits Of Notebooks With Embedded Mobile Broadband Modules

The financial benefits of investing in notebooks with embedded mobile broadband modules are both business-related and technically driven. Although a full ROI should take into account the associated risks, costs, and benefits of such an investment, the benefits of standardizing on notebooks with embedded mobile broadband modules were clear to most of the companies surveyed. The three top business benefits that respondents reported concerning their use of mobile broadband were: increased employee satisfaction (52%); improved customer service for employees within the business (47%); and revenue expansion through increased productivity (39%). Each of these rolls up into quantifiable financial benefits. For example, one large US-based oil and gas enterprise with 14,000 notebooks worldwide was looking to standardize on embedded modules for its upcoming notebook refresh. It made this decision so that it could enable its large sales force, which needed anytime, anywhere connectivity with 3G speeds. The decision was made simpler by the unsatisfactory failure rates of its existing external mobile broadband cards and by the firm's desire to minimize the costs of supporting a large population of home-based workers. Forrester recommends that all organizations considering mobile broadband investments take the time to dig into their likely ROI using key risks, costs, and potential benefits specific to their situation.

## Appendix A: Supplemental Material

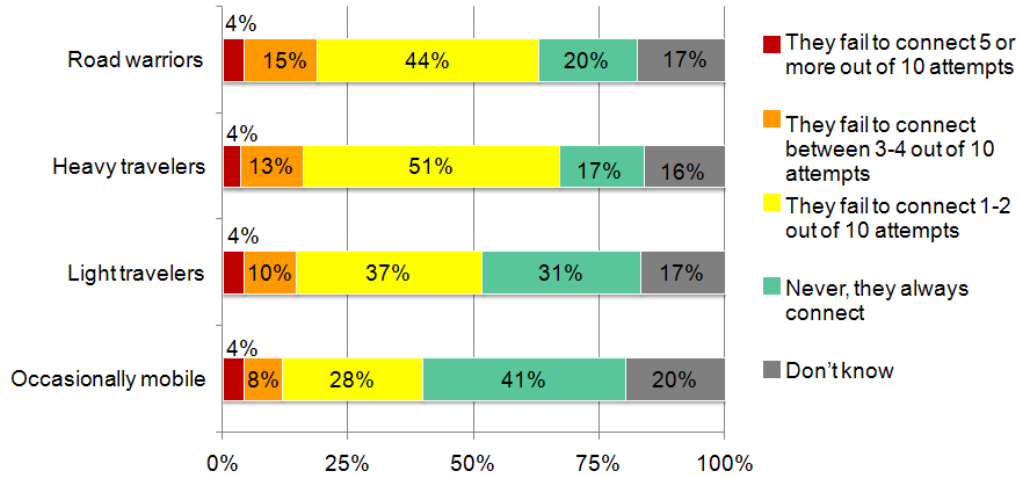
### Methodology

Forrester conducted an online survey of 153 IT and telecom/network decision-makers at North American companies with 500 or more notebook-using employees across multiple industries in the US and Canada. The focus of the study was to develop an independent and objective thought leadership paper that educated the market on the value of embedded WWAN versus both Wi-Fi and external WWAN. The survey respondents were screened by geographic region, company size, and the specific functions that respondents had authority over in IT. The online survey was administered in September 2008 and completed in October 2008.

## Additional Figures

**Figure 8: The Failure To Connect Hampers Productivity And Frustrates Notebook Users**

Given your best monthly estimate, how often are your organization's average notebook users in each of the following classes of travelers unable to connect to the Internet due to any combination of lack of Ethernet port, Ethernet cord, or Wi-Fi hotspot at the visiting location or technical issues when connecting (e.g., lost PIN/access code, vague login instructions, etc.)?

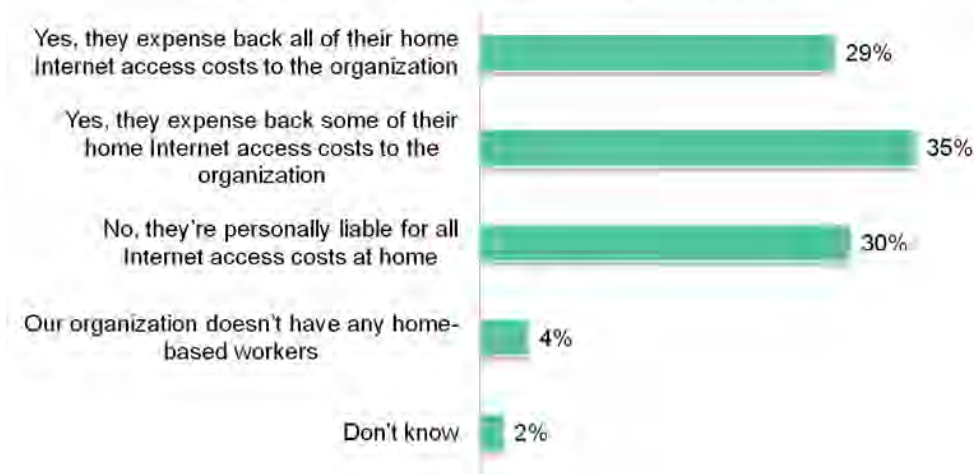


Base: 143 IT and telecom/network decision-makers in companies with 500-plus employees using notebooks and who indicated use of wired or WLAN connectivity

Source: A commissioned study conducted by Forrester Consulting on behalf of Qualcomm, October 2008

**Figure 9: Home Internet Expenses Are An Additional Burden That Firms Are Looking To Cut**

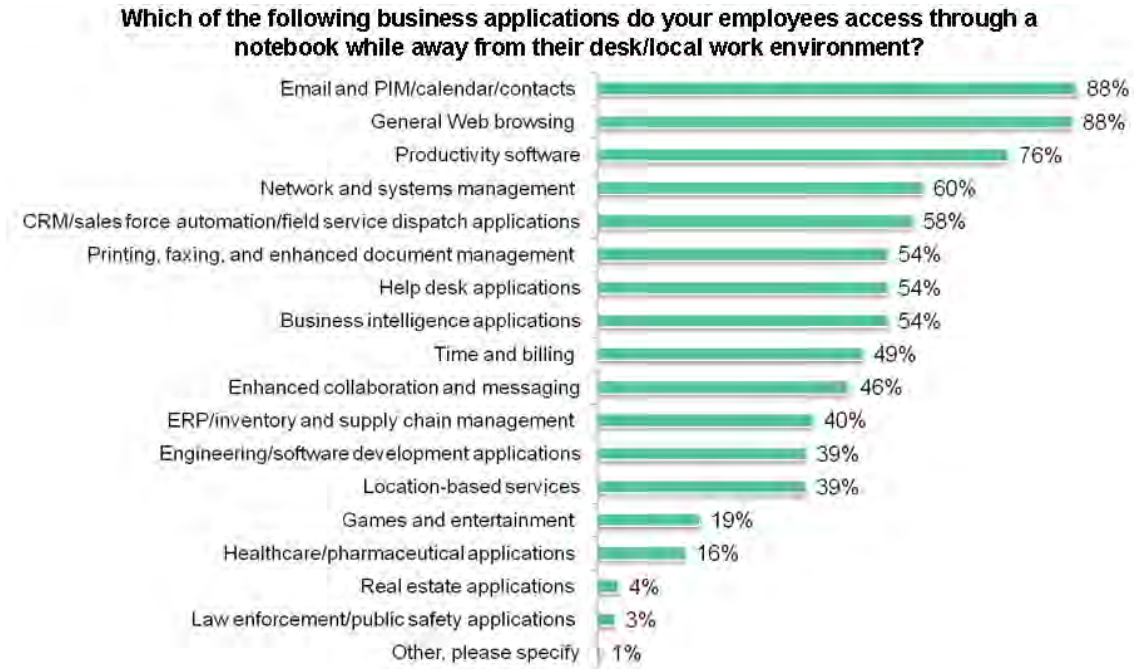
Does your organization allow home-based workers to expense back some or all of the costs associated with Internet access at home?



Base: 153 IT and telecom/network decision-makers at companies with 500-plus employees using notebooks

Source: A commissioned study conducted by Forrester Consulting on behalf of Qualcomm, October 2008

Figure 10: Mobile Application Usage Is As Diverse And Widespread As Ever



Base: 153 IT and telecom/network decision-makers at companies with 500-plus employees using notebooks  
Source: A commissioned study conducted by Forrester Consulting on behalf of Qualcomm, October 2008

## Related Forrester Research

[“Enterprise Mobile User Forecast: Mobile “Wannabes” Are The Fastest-Growing Segment”](#) by Michele Pelino, October 9, 2008

[“Inquiry Spotlight: Enterprise Mobility, Q4 2008”](#) by Benjamin Gray, Chris Silva, October 7, 2008

[“The State of Mobile Infrastructure: 2008”](#) by Chris Silva, August 1, 2008.

[“The Business Mobility Imperative”](#) by Chris Silva, Benjamin Gray, June 9, 2008.

[“Forrester TechRadar™: Enterprise Mobility Infrastructure, Q3 2008”](#) by Chris Silva, July 14, 2008.

[“The PC Purchase Process For SMBs”](#) by Benjamin Gray, April 25, 2008.

[“Forrester TechRadar™: Enterprise-Class Mobile Devices And Management Solutions, Q1 2008”](#) by Benjamin Gray, January 31, 2008.

[“The Rise Of Ubiquitous Mobility Solutions”](#) by Chris Silva, September 14, 2007.

[“How Enterprise Buyers Rate Their PC Suppliers And What It Means For Future Purchases”](#) by Benjamin Gray, November 12, 2007.

[“Answering 10 Of The Most Frequently Asked Corporate PC Configuration Questions”](#) by Benjamin Gray, August 6, 2007.