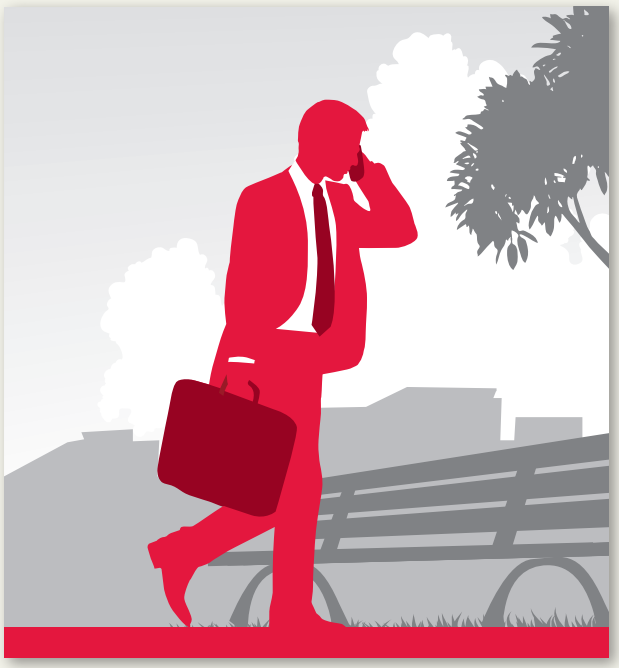
ROGERS WHITE PAPER

WI-FI CALLING FOR BUSINESS

An Executive Overview



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INTRODUCTION

As the information technology decision maker in your organization, you are no doubt deeply interested in the value of your information and communications technology (ICT) investments to your internal organization, external network and customers. When making strategic decisions about ICT, your specific goals likely include:

- Extending the value of your investments
- Realizing savings (or at least cost predictability) in your technology spend
- Enabling your company's workforce to be more connected and productive
- Minimizing the risk of new technology deployments

Converged communications technologies are helping companies achieve most or all of these goals. The increased resource sharing and interaction of previously distinct voice and data technologies are creating new possibilities and new efficiencies.

One example of convergence that can bring significant benefits for the organization and its employees involves carrying voice signals over wireless local area networks (WLANs), or Wi-Fi networks. This paper provides you with information that will help you evaluate whether this technology is right for your organization.

WHAT IS Wi-Fi CALLING?

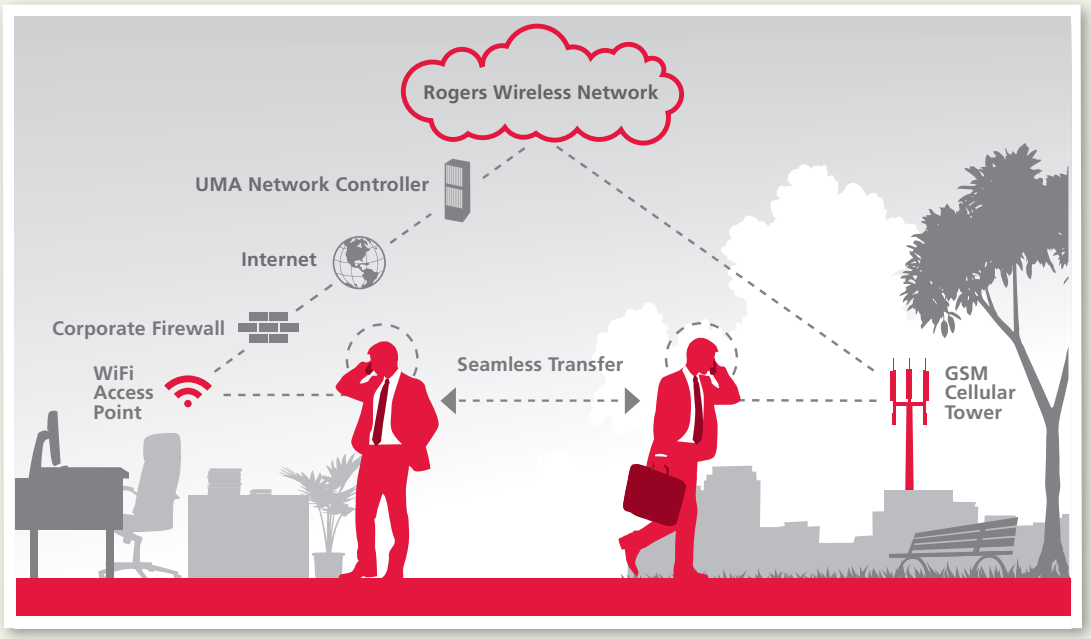
The trend toward communications convergence is continually accelerating, with multiple services leveraging common infrastructures. One example is fixed mobile convergence (FMC), which enables users to rely on a single device or handset for all their communications needs. FMC eliminates the requirement for both fixed and mobile phones and enables a single device to use both wireless local and wide area networks.

Unlicensed Mobile Access (UMA), also referred to as Generic Access Network (GAN), is a variety of FMC that enables the convergence of fixed, mobile and Internet-based telephony. Essentially, UMA enables a mobile phone to connect over a Wi-Fi network and hand off seamlessly to a GSM cellular network if the caller moves beyond the Wi-Fi range.[1] Known familiarly as Wi-Fi calling, this technology provides enhanced coverage and seamless delivery of voice, data and messaging. It can also lower your telephony costs.

[1] UMA-enabled BlackBerry® devices support a seamless hand offs between a Wi-Fi and a GSM cellular network without user intervention. For solutions involving other handsets and other mobile operating systems, the handover experience may vary. Speak with your Rogers representative for more information.

HOW DOES IT WORK?

FIGURE 1: How Wi-Fi Calling Works



Unlike other kinds of FMC, Wi-Fi calling does not interact with the organization's private branch exchange (PBX). This makes deployment relatively quick and easy. The key requirements for Wi-Fi calling are:

- **UMA-enabled dual mode handsets** (with GSM and Wi-Fi radios). A broad array of handsets from the major device manufacturers, including most current BlackBerry® device models, are dual mode and support UMA.
- **A broadband Wi-Fi network** capable of handling voice service (most can). Some configuration of your existing network may be required to optimally support Wi-Fi calling.

- **A Wi-Fi Calling plan.** Providers can offer different plan options to meet the varying needs of organizations and individual employees, including an access-only plan, a plan for unlimited calling to your local area code, and one for unlimited national calling.

To understand how Wi-Fi calling works, think of it as creating an IP extension of the carrier's wireless network. Essentially, the Internet becomes a transport medium for voice calls. When a dual mode handset encounters a Wi-Fi access point that it recognizes, it establishes an IP connection with the access point. The handset then establishes a session with the UMA Network Controller (UNC), which serves as the gateway between the Internet and the wireless network. After authentication and security protocols have been exchanged, the handset is connected to the wireless network. Once the connection is established, the call is transferred seamlessly to the Wi-Fi network. The handover process is completely transparent to the user, just as when a user passes from one wireless network cell to another.

Depending on the subscriber's plan, Wi-Fi calling can zero rate calls to the local area code or calls anywhere in the country. Data streams, including email, SMS, MMS and WAP browsing, are also passed between the handset and the UNC. As well as decreasing wireless data usage, this can result in superior performance. But there is more to be said about the benefits of Wi-Fi calling.

WHAT ARE THE BUSINESS BENEFITS?

Whether you are concerned about your telephony spend or coverage issues within your workplace, Wi-Fi calling will deliver a number of key benefits.

Enhanced Coverage and Inherent Redundancy. If you have "trouble spots" in your building or facility where the wireless signal is weak or inconsistent, Wi-Fi calling can reduce dropped calls and interruptions. This benefit obviously hinges on a well-designed Wi-Fi network with appropriately placed routers to provide good coverage. If your business is located at the edge of your carrier's network and does not normally receive a cellular signal, you can extend the wireless network within your workplace and, if adjacent to the outdoor network, roam seamlessly.

Cost Predictability. Most businesses and organizations subscribe to individual or group wireless plans with capped air time minutes. When users exceed the cap, they are charged "overage" fees. With Wi-Fi calling, calls on the Wi-Fi network do not count toward the total monthly allotment.[2] Employees' home Wi-Fi access points can also be added to their profiles, reducing out-of-office voice and data costs. This means fewer overage fees to pay, and it also means that employees can be right-sized to less expensive plans with lower air time caps. Some companies could even cut the cord, using Wi-Fi calling plans to replace desk phones.

Increased User Productivity. Wi-Fi calling ensures that employees remain connected via their mobile handsets, which can make them more productive. If your employees regularly experience dropped calls or "no signal zones" at the workplace and have to return to a desk phone to resume a discussion, they are not working as efficiently as possible. Similarly, if your employees have to return to a PC to access the internet or send an email, they are less productive. Equipping employees with UMA-enabled smartphones allows them to communicate via voice, email or SMS throughout the facility in real-time.

[2] As previously mentioned, Wi-Fi calling plans are available for access only, local and nation-wide calling. Where the latter is selected, your company can realize substantial savings on national long distance calls.

Ease of Deployment. For an organization with a Wi-Fi network and mobile workers equipped with smartphones, deploying Wi-Fi calling can be fast and easy. The functionality is already embedded in UMA-enabled smartphones and requires no installation. Configuring a smartphone to connect with and remember access points is a quick process using a connections manager on the device. Beyond the initial set up, Wi-Fi calling requires no learning or changes in behaviour for an employee already using a smartphone.

Who Can Benefit from Wi-Fi Calling?

HOME-BASED OR MOBILE AGENTS	CAMPUS-BASED EMPLOYEES	REMOTE LOCATION WORKERS
▪ Includes real estate agents, financial service and insurance brokers ▪ May have a central office that they use for specific resources but spend most of their time working from home or on the go ▪ Key Benefits: save on minutes by connecting to Wi-Fi at home; enhance coverage in basement home offices	▪ Includes healthcare professionals, post-secondary educators and staff, manufacturing and warehouse employees ▪ May have offices in basements or out of wireless coverage. Building construction may inhibit signal penetration ▪ Key Benefits: don't drop calls when mobile on campus; roam seamlessly to the wireless network when out of Wi-Fi range; remain connected and productive wherever you are	▪ Includes mining, oil and gas and forestry employees ▪ Face unique coverage issues working at locations with no wireless network coverage ▪ Key Benefits: Solve fundamental connectivity challenges; save substantially on voice calls leveraging Wi-Fi calling and satellite service

WHAT ARE THE CONCERNS OR CHALLENGES?

No ICT deployment is without its challenges or risks. This section outlines some common concerns of new telephony solution deployments and provides information about Wi-Fi calling to help you understand if it's right for your organization.

Dropped calls. While a Wi-Fi calling solution should provide improved wireless coverage at your workplace, much depends on the quality of your Wi-Fi network. We recommend that you work with a wireless networking specialist to ensure that your internal network is optimized for voice. You should also conduct a site survey to identify current coverage holes and make simple adjustments to access points. Most smartphone manufacturers make it easy to configure devices for inter-access point handover. The bottom line is that if your Wi-Fi network is properly installed with overlapping coverage between access points, Your risk of dropping calls when handing over from point to point should be minimal.

Added Cost. The main costs associated with a Wi-Fi calling solution are the network, the handsets and the Wi-Fi calling plan. You'll need to understand how the benefits of the solution offset those costs. Of course, the investment in a wireless infrastructure and in productivity-enabling smartphones brings cost benefits well beyond those provided by UMA, and this should be factored into your evaluation.

In situations where a Wi-Fi network has been deployed, incremental costs for Wi-Fi calling should be minimal. Plan costs, investments in new devices and other administrative expenses associated with rolling out the solution should be offset by fewer overage charges and the ability to migrate users to voice plans with lower minute caps. Long distance charges should also be substantially lower when you select a nation-wide plan. Since dual mode mobile handsets can even replace desk phones, you could see a reduction in your landline telephony costs.

Security. There is an understandable concern that Wi-Fi calling could introduce new vulnerabilities to the Wi-Fi network, as voice service travels over Wi-Fi and the public internet to the core wireless network. Security is obviously a paramount concern. What follows is a short summary of UMA security features to help you better understand the level of risk.

The UMA subscribers' authentication does not replace normal GSM authentication and security between the phone and the GSM network. The UNC includes a security gateway, which plays a number of key roles, including authenticating the mobile user based upon hard-coded information on the device. Once the handset/Wi-Fi access point connection is established, the device will be assigned an IP address, which is used to establish an IPSec tunnel to the UNC. From that point all UMA traffic is encrypted. Only subscribers to the Wi-Fi calling service can connect to the UNC.

When properly deployed, dual-mode phones on UMA network should have the same level of security on the network as laptop computers and do not represent a significant new point of vulnerability. Measures such as over-the-air encryption of the Wi-Fi signal and using the highest levels of encryption and authentication on devices can mitigate security concerns.

Quality of signal. An ICT initiative that does not deliver a high quality user experience is unlikely to succeed. Quality of signal is the key determinant of user experience, so you need to be concerned about how it is maintained. Best practices in this area include prioritizing voice traffic over data traffic; disallowing low speed sessions; disabling time outs; and pushing UMA to a lower frequency on the band.

Insufficient bandwidth. Network management is another important ICT concern, and you must understand the impact of a Wi-Fi calling solution on your network. It is important to conduct an assessment of bandwidth requirements for voice and data and anticipated call traffic. Then you must ensure that your network sizing supports those requirements. There are a number of things you can do proactively, such as ensuring that voice traffic has priority on the network, and separating UMA traffic from other voice and data traffic.

WHAT ARE THE NEXT STEPS?

Clearly Wi-Fi calling can offer some compelling business benefits to organizations looking to control costs, improve coverage and promote productivity enhancing mobile technology adoption in the workplace. However, you should do your due diligence and ensure that your concerns are adequately addressed. If after reading this you are interested better understanding the requirements for a successful deployment, here are some next steps:

- Contact your Rogers representative and speak with them about your organization's wireless needs.
- If you have deployed a Wi-Fi network in your facility, speak with your internal network team or your third-party Wi-Fi provider about your readiness for a UMA deployment. Ensure that your network is optimized to minimize dropped calls.

ABOUT ROGERS Wi-Fi CALLING FOR BUSINESS

Rogers is the only wireless service provider in Canada to offer UMA-based Wi-Fi calling, It's one of the many advantages of a network founded on GSM—the global standard. Wireless networks built on other technologies, such as CDMA, cannot deliver this experience.

While other service providers can enable voice calling on a Wi-Fi network, there are important differences:

ROGERS WI-FI CALLING FOR BUSINESS	OTHER WI-FI CALLING PRODUCTS
Calls initiated on Wi-Fi automatically hand off to the Rogers wireless network—and vice versa	No network hand off. Calls initiated on Wi-Fi drop off when the caller moves beyond Wi-Fi range
Calls initiated on Wi-Fi are zero rated even after the call transitions to the wireless network	This feature is not supported
Supports SMS and MMS as well as voice and data	SMS and MMS are not supported
No third-party software is required	Third-party software must be installed on handsets
Retain one phone number	Multiple numbers or special IDs are required to make Wi-Fi calls

Plans for Business

Rogers offers three Wi-Fi Calling plans to meet the varying needs of organizations and individual employees:

ROGERS PLAN	PERFECT FOR
Access Only	Organizations seeking enhanced voice coverage and redundancy
Unlimited Local Calling	Organizations with local customers and suppliers seeking cost certainty in their voice communications
Unlimited Canada-Wide Calling	Organizations with national customers and suppliers seeking cost certainty in their voice communications

Key Business Benefits

Rogers Wi-Fi Calling for Business offers compelling benefits, whether your primary concern is signal coverage or your bottom line.

- Extended Coverage and Redundancy. Extend coverage to trouble areas in your workplace and move seamlessly from Wi-Fi to GSM network.
- Cost Predictability. Reduce overage charges and right-size your voice plans while providing your employees with more flexibility and freedom.
- Increased User Productivity. Untethered from their desk phones and free to remain connected throughout the workplace and beyond, your employees can be more productive.
- Ease of Deployment. UMA functionality is embedded in devices by several manufacturers, including BlackBerry® devices. No third-party software required.

For more information about Rogers Wi-Fi Calling for Business, please contact your Rogers representative.

ABOUT ROGERS

Rogers Communications connects 1.5 million subscribers in small, medium and large businesses and the public sector to their customers, suppliers, partners and employees with reliable wireless voice and data services. As well, more than 130,000 subscribers rely on Rogers for affordable and reliable small business Internet, telephone, and TV services that help improve their customer service and bottom line. Rogers Communications wireless voice and data services are built on Rogers proven HSPA+ network, the first in Canada and the only one based on GSM, the global standard. Rogers phones and devices are world ready, allowing employees to stay connected wherever their business takes them. Rocket™ internet services enable businesses to get easy internet access where and when they need it and to remain productive and responsive. Rogers also provides custom wireless solutions for mobile workers, fleet and asset management, business continuity and machine-to-machine communication. All Rogers business services are backed by 24/7 technical support.

For more information, please visit www.rogers.com/business.