White Paper

WiMAX Commercial Launch: Are You Ready?

- Ensure a smooth commercial launch
- Get the right building blocks for a fully interoperable network
- Keep ahead of competition as you grow

bridgewater SYSTEMS

THE MOBILE PERSONALIZATION COMPANY

What Keeps Operators Up At Night?

No matter whether big or small, in a developed market or an emerging one, targeting fixed subscribers or mobile subscribers, all WiMAX™ operators face similar challenges. Subscribers have come to expect the same reliable wireless internet experience that WiMAX promises, regardless of the operator's size, previous experience, or segment focus. If subscribers are not satisfied with their WiMAX service, they will take their business somewhere else: to a wireline (DSL, cable, fiber) operator or to a wireless operator using 3G or, eventually, LTE (long-term evolution).

WiMAX operators need to be able to sign up subscribers smoothly and bring them a great experience from the beginning. They need to quickly address problems as they arise. Glitches at commercial launch have long-term repercussions because they damage the reputation and credibility of a new operator entering the market or a seasoned operator expanding service.

As operators plan the network rollout, they typically focus on the radio access infrastructure. In many cases, they leave subscriber management and network access control to a later stage, only to find that these factors have quickly become major issues that keep them up at night as they get ready to switch on the network.

WiMAX operators can avoid these worries by taking two steps. First, they need to identify their subscriber management and service control (i.e. AAA) requirements early on. Ideally, they should do so during the initial base station vendor selection to avoid delaying the commercial launch date. Secondly, they need to select a robust, scalable, future-proof solution that enables them to get subscribers onto the network quickly, deliver a consistent user experience, and add support for more advanced functionality as their WiMAX business grows.

This approach allows operators not only to confidently launch services but also to follow a solid growth strategy of developing a fully interoperable network that includes best-of-breed elements from the beginning that offer proven integration with a wide range of platforms — operation support systems (OSS), business support systems (BSS), access service network (ASN) gateways, home agents (HA), device management platforms — and vendor equipment types. At the same time, operators will be well placed to meet regulatory requirements such as Lawful Intercept (LI) and to sharpen their competitive edge by supporting sophisticated service models that may include casual users, prepaid subscriptions, roaming services, and more advanced functionality, such as over-the-air (OTA) service activation and device management or mobile access support.

Getting Ready For Commercial Launch

Providing a reliable internet pipe to the home or to a laptop is necessary, but no longer sufficient, for launching a new service. Even in emerging or underserved markets, subscribers are becoming increasingly sophisticated. They want to be able to activate service from home without the assistance of a technician and to manage their connection online. They expect to choose between prepaid and monthly subscription options, as well as on-demand services, with the freedom to add (or remove) services like VoIP (Voice over IP) with just a few keystrokes, whenever they desire. They want secure and reliable and seamless access to all their services throughout the area covered by the operator and, increasingly, when they roam outside the home network.

Subscriber expectations will grow even more as mobility is introduced, but even for fixed services the bar is set high, especially for operators that face competition from other wireline or wireless providers.

Operators are increasingly aware that they are entering a mature market with demanding subscribers and a tough race to acquire new subscribers against wireline and wireless competitors. To succeed in this environment, they need to deploy networks that have all the right building blocks in place so they can hit the ground running at launch and then grow in the following years without subscriber or business disruption or forklift upgrades.

Prepaid access is another feature that operators want to deploy at launch. Subscribers like prepaid access because the lack of long-term contract commitments gives them more flexibility in how they use the service, and they do not have to worry about termination fees. Operators have come to increasingly appreciate prepaid access as a way to attract a wider range of subscribers with lower acquisition costs and often without the need to subsidize devices. They are also finding that prepaid accounts are considerably cheaper to support, because they typically rely more on self-provisioning (e.g., customer support costs are lower, and no monthly statements have to be issued).

Similarly, operators need support for LI in markets subject to wiretapping requirements very early on. An LI solution allows them to comply with the requirements without disruption to their systems and in a cost-effective way because they can rely on existing network elements.

Keeping Ahead Of The Competition

As operators plan their networks and select vendors, the paramount concern is to be able to launch solid service on time. However, it is equally important to keep in mind the requirements and objectives for the medium to long term. Operators need to ensure from the beginning that their subscriber management solution has the flexibility, robustness, and scalability to support future growth in subscribership and traffic, as well as evolution in services and business models. This approach will enable operators to continue using the solution initially adopted, the one the operator is familiar with, beyond the initial deployment stage.

As they grow, WiMAX operators need to continue to innovate and to differentiate their services from those of competitors. Within six to eight months of commercial launch, operators typically find they are ready to introduce OTA service activation and device management and new subscription models for casual users to complement existing pre-paid and post-paid charging models.

OTA service activation and device management is an example of a feature that operators may not need at commercial launch, but that they increasingly want to deploy early to be ahead of the competition. With OTA service activation, operators can provide immediate service to subscribers who have bought their device through the retail channels of their choice. They can sign up for service without visiting the operator's store and within minutes of opening the box. OTA device management makes it possible to provision devices, and push firmware upgrades to devices without requiring any active intervention by the subscriber, or by a customer service representative. On-demand subscriptions for casual users are a way to entice new subscribers, or to capture incremental revenues from

Subscriber Management and Service Control Requirements in WiMAX

- Deploy a pre-integrated subscriber management database that works out of the box as part of the Authentication, Authorization, and Accounting (AAA) network access control platform. It keeps track of which services each subscriber has access to and allows the operator to easily and efficiently make changes, such as adding new subscribers and services.
- Be able to authenticate and authorize subscribers and devices on the network with appropriate authentication methods such as EAP-TLS (Extensible Authentication Protocol Transport Layer Security) or EAP-TTLS (EAP Tunneled Transport Layer Security).
- Support prepaid and postpaid charging models.
- Collect, store, correlate, and format session-based accounting records, with tight integration to pre-paid and post-paid billing systems to allow the operator to accurately bill for services and avoid revenue leakage.
- Satisfy wiretapping LI requirements, which add an unavoidable complexity to IP networks like WiMAX; in many markets, LI provisions must be in place to launch service.

For Growing Revenues, Differentiating Services, and Accelerating Subscriber Acquisition

- Support OTA service activation and device management.
- Enable new, flexible service and charging models — such as on-demand, casual user access — to accelerate subscriber acquisition.
- Use quality of service (QoS) to set appropriate priority levels for subscriber sessions and applications.
- Add support for wireless Mobile IP (MIP) for mobile access and roaming.
- Support retail and wholesale business models.
- Offer flexible service packages and avoid revenue leakage using active session controls.

visitors and business travelers. On-demand subscriptions may provide a means of providing access to subscribers outside their operators' coverage areas before roaming services or agreements are available.

QoS and roaming are features that operators expect to introduce later on. QoS support allows operators to target different consumer segments by offering varying levels of service based, for instance, on bandwidth. Session-based accounting, flow-based accounting, and deep packet inspection can also be used in concert with intelligent real-time policy control to manage traffic, bandwidth consumption on a per-subscriber basis, thereby increasing the end-to-end efficiency of the use of bandwidth resources, and ensuring a positive user experience.

Support for mobility and roaming will eventually require operators to adopt MIP across their networks. Some operators may not require MIP at launch, but the adoption of a solution that supports a migration to MIP gives them the confidence that they will not need to change any core network element when they decide to add support for mobile devices and roaming subscribers.

A key consideration for many WiMAX operators is how to reduce the potential for fraudulent use of the network. By deploying solutions that control the number of active simultaneous sessions by subscriber ID or account, operators can reduce revenue leakage, avoid overloading the network with non-paying customers, and ensure a positive network experience for paying customers. In addition, active session controls can also support the creation of new types of service packages–for example, a family plan may support up to five devices, but only three simultaneous sessions; or an enterprise packages may support 1000 users but only 300 concurrent sessions during non-peak hours.

An Integrated, Fully Featured Solution

The sense of urgency operators feel when they get ready for commercial launch of WiMAX services may lead to the adoption of lightweight subscriber management and service control solutions that appear to meet all the minimum requirements on paper. This can set the operators on a dangerous — and expensive — track. Solutions that have not been developed specifically to work within WiMAX networks — which often do not benefit from WiMAX advanced functionality — will require extensive custom integration and may not scale as traffic levels grow. In the short term, operators may face unexpected additional costs, delays, and limited functionality. In the long term, it often becomes necessary to replace these network elements at additional cost — both monetary and in disruption of service.

An integrated subscriber management product allows operators to manage all subscribers and create comprehensive profiles that define access entitlements across all available services and to avoid the need to re-provision subscribers into multiple databases as new services and applications are introduced. A unified subscriber view also enables fast, flexible service creation that leads to more revenue opportunities and accelerates time to market for new services.

In short, a modular, but fully integrated solution specifically developed to operate within a WiMAX network — one that supports all the functionality needed at launch and beyond — offers the best value proposition for operators and fits right into the operators' networks. Such a solution supports all the required functionality out of the box, giving operators the flexibility to fine-tune the solution to their needs without custom integration. Hidden costs and unexpected delays can be avoided during both the crucial phase of service launch and the subsequent growth phase. In the longer term, new functionality can also be added as a module designed to fit seamlessly with the other network elements, or it can be turned on if it is already included in the initial solution. This gives operators the freedom to purchase initially only the components needed to meet initial commercial launch requirements, the flexibility to evolve their networks when they need to, and the option to add support for new services that the market will demand in the future and that are not yet supported.

Seamless Interoperability

Many parts need to work together in a WiMAX network: subscriber devices, base stations, ASN gateways, and AAA, HA, and other core network elements. Operators want to get the best-of-breed solutions that provide the best value for their network and want to have the option to choose freely among vendors. Multivendor deployments — where different network elements from multiple vendors operate simultaneously — provide a future-proof approach that frees operators from vendor lock-in and gives them the flexibility to select the equipment that best meets their needs.

Lack of interoperability is an expensive proposition. Network elements that do not interoperate may have to be replaced. This might cause service disruption, time-to-market delays, and expensive, time-consuming integration.

As a technology based on open standards and supported by a certification program, WiMAX gives operators the freedom to pick the best network elements from different vendors and have them seamlessly coexist within their network. However, operators need to ensure that their subscriber management and network access solution works within their existing networks — i.e., it complies with the specifications and has proven to be interoperable with equipment from multiple vendors.

Through extensive interoperability testing with a wide range of vendors, Bridgewater Systems has demonstrated its commitment to developing interoperable solutions that conform to the WiMAX Forum® and IEEE specifications, as well as a range of security, subscriber and access management, billing, and provisioning interfaces. This vendor-neutral approach assures operators that Bridgewater Systems solutions will work seamlessly in their networks — in their current configuration and throughout future expansion.

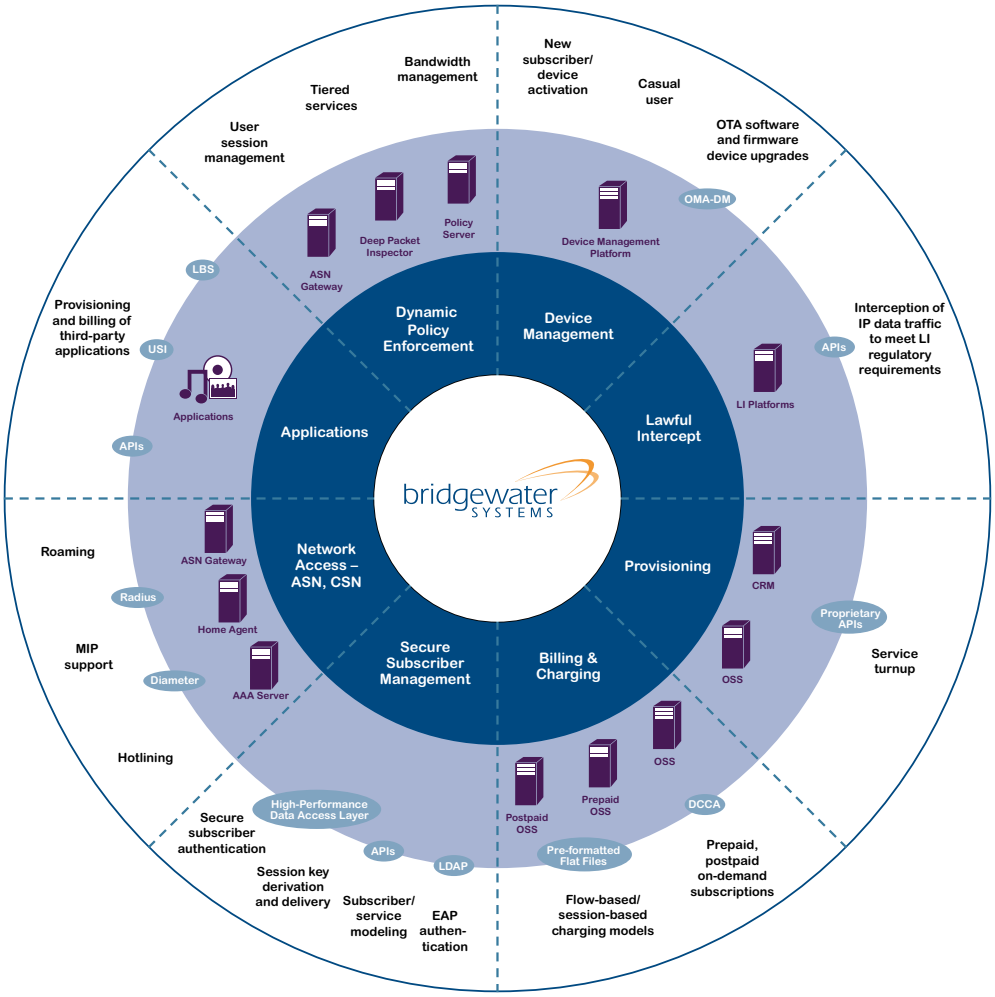

Figure 1: The Bridgewater Systems WiMAX ecosystem. Operators need to ensure that their subscriber management and service control infrastructure offers proven interoperability with a broad range of platforms to ensure best-of-breed deployments.

A Good Night's Sleep

As commercial launch approaches, operators are anxious to prove to the market that they are ready to sign up subscribers and start building revenues. And they do not want to lose sleep over this.

At this stage, they should feel ready to address a few key questions:

- Can they deliver the user experience initially promised?
- Are they ready to offer fast, out-of-the box service activation?
- Does their subscriber management and service control system work seamlessly within their WiMAX network?
- Do they know who their subscribers are, which devices they use, what services they have access to?
- Can they support the charging models the market demands today and those that will be required in the future?

Subscriber management and service control are key areas where operators can show leadership and where their ability to serve the market can translate into measurably higher revenues. But getting ready for commercial launch can be a daunting proposition, particularly with new 4G access technologies such as WiMAX.

Working with an experienced vendor helps WiMAX operators prepare for a smooth launch and keep ahead of the competition as the network evolves and subscribership grows.

Bridgewater Systems offers solutions developed specifically to address the requirements of the wide range of WiMAX operators that are active in the market planning for commercial launch and beyond.

We understand this market well. As a principal member of the WiMAX Forum, we have helped drive the development of the core network specifications and have worked closely with leading equipment vendors to ensure interoperability with a broad set of platforms, including OSS and BSS, LI, device management, network enforcement and access. From the early WiMAX launches, Bridgewater Systems has been actively involved with leading operators and has supported them throughout successive rollout phases, responding to their needs with a broad set of modular service control solutions.

Bridgewater Systems is the ideal partner for WiMAX operators from the beginning. We know what it takes to support WiMAX operators. We offer solutions that work in WiMAX networks today and will enable growth and revenue generation in the future.

Bridgewater Systems' Proposition to Operators
Accelerated path to business success. Generate revenues and acquire new subscribers with a transparent, fast, simple subscriber sign-up process from commercial launch.
Peace of mind. Adopt a proven solution already chosen by more than 25 operators around the globe.
Proven best-of-breed products. From the leading provider of WiMAX service control solutions and widely deployed by WiMAX operators around the globe.
Full subscriber management integration. Bridgewater Systems WiMAX solutions feature a pre-integrated subscriber management product that avoids the cost of expensive customization to fit into an operator's network and allows operators to manage subscribers and services easily and flexibly.
Interoperability through a rich ecosystem. Bridgewater Systems solutions are proven to support mixed vendor network environments to ensure best-of-breed, future-proof deployments that avoid the cost of vendor lock-in.
Scalability and performance. Bridgewater Systems' modular approach adapts equally well to both small and large operators and smoothly expands with subscriber growth.
Full mobility support. The Bridgewater Systems AAA Service Controller supports both fixed and mobile deployments and allows operators to add on the advanced functionality needed for mobile access and roaming.
Broad set of service control solutions. Bridgewater Systems' modular solutions support increasing levels of service sophistication as the operator's business grows. They extend to both fixed and mobile WiMAX services and include subscriber management, network access control, prepaid and postpaid charging, casual user access, open access service model support for OTA, and support for on-demand services.

Figure 2: Bridgewater Systems solutions for WiMAX operators

Bridgewater Systems, the mobile personalization company, enables service providers to efficiently manage and profit from mobile data services, content and commerce. The company's market leading mobile personalization suite provides a real-time, unified view of subscribers including entitlements, devices, networks, billing profiles, preferences and context. Anchored by Bridgewater's Subscriber Data Broker™, the portfolio of carrier-grade and standards-based products includes the Bridgewater® Service Controller (AAA), the Bridgewater® Policy Controller (PCRF) and the Bridgewater® Home Subscriber Server (HSS). More than 100 leading service providers including America Movil, Bell Canada, Clearwire, Hutchison Telecom, Iusacell, Scartel, SmarTone-Vodafone, Sprint, Tata Teleservices, Tatung, Telmex, Telstra, and Verizon Wireless use Bridgewater's solutions to rapidly deliver innovative mobile services to over 150 million subscribers. For more information, visit us at **www.bridgewatersystems.com.**

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