Samsung leads march to mobile WiMAX

Wireless users are tired of having to make compromises when it comes to mobile data access. Today's solutions offer them two choices: high-speed broadband Internet or mobility–but none offer end users both capabilities. Until now, that is.

Realizing that end users want to be able to unleash high-speed data access and take it with them wherever they go, Samsung Electronics Co. Ltd., the world's leading mobile broadband equipment manufacturer, has stepped up to lead the industry toward this goal.

In December of 2004, ETRI (Electronics and Telecommunication Research Institute) and Samsung demonstrated 802.16e-compliant Wireless Broadband Access (WiBro) in Korea. And Samsung intends to be the first company to commercially launch a mobile high-speed data access system there next year. Samsung plans to roll out the WiBro system in 84 cities nationwide after the first half of 2006. It plans to offer sector data throughput speeds of up to 30 Mbps and to provide seamless coverage and mobility.

Demand for mobile high-speed data access is not limited to Korea. Mobile operators worldwide are working diligently toward offering mobile broadband access and the portable Internet to their customers. They are ready to deploy mobile broadband as soon as the technology and equipment needed to support their efforts becomes available.

In the U.S., high-bandwidth wireless data access technology is being developed according to the evolving IEEE 802.16 standard. Championing the standard and ensuring interoperability among equipment manufacturers is the Worldwide Interoperability for Microwave Access (WiMAX) Forum, of which Samsung is

continued on next page

an active and contributing member. Currently in development, amendment 802.16e will introduce mobility to WiBro's global counterpart, WiMAX, in the 2006 timeframe.

In the meantime, as mentioned above, mobile broadband is already available in Korea. Samsung has developed products compliant with 802.16e standards for the WiBro deployment. Set for commercial launch in 2006, WiBro is the world's first telco-grade, commercial, mobile wireless broadband service to use 802.16e's Orthogonal Frequency Division Multiple Access (OFDMA) – Time Division Duplex (TDD) technology.

Samsung will use the valuable experience it gains supporting WiBro in Korea in its ongoing development of WiMAX equipment for the global market. As an active participant in the WiMAX Forum, Samsung is committed to deliver WiMAX Certified products to the global market. Through WiMax Forum certification, Samsung's 802.16e products will provide the world's mobile operators with the economies of scale and interoperability they require for success.

Mobility is the future

Today, mobile operators provide widespread data access services to cell phone users. However, they charge high fees for this data access, which typically is provided only at very low data rates. High data rates can be achieved with Wi-Fi wireless local area networks (WLANs), but Wi-Fi networks offer limited coverage areas and fixed wireless access.

For these reasons, mobile operators and end users alike are looking toward the day when 802.16e will enable them to enjoy mobility and high-data rates simultaneously and cost effectively. The benefits 802.16e will bring to the marketplace include:

- true mobility
- high performance
- wide service areas
- global standardization

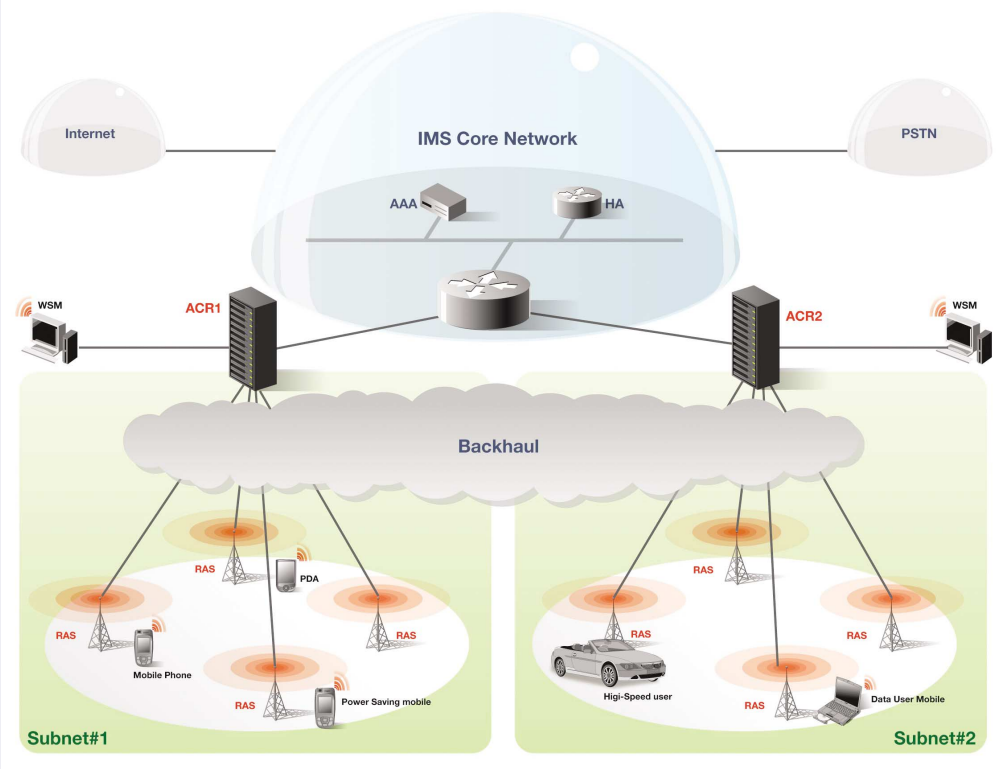
With the arrival of 802.16e networks, end users will be able to move their devices from one location to another and travel throughout large coverage areas. They also will be able to use their end devices seamlessly even when traveling at speeds of up to 75 mph (120km/h). The equipment also facilitates easy cell planning and roaming capability. And, because of its improved spectral efficiency, the Samsung system reduces the overall cost of infrastructure upgrades mobile operators need to implement to support mobile data.

Ubiquitous access will be possible because service will be deployed using existing mobile cell sites located in urban cities: macro cells spanning up to a mile, micro cells spanning a quarter of a mile, or pico cells spanning up to 100 yards.

In addition, Samsung's QoS guarantee enables operators to deploy a variety of revenue generating IP-based services as well as IP-based broadcasting services for voice,data and video applications. Samsung's 802.16e solution will be predominant in IP-based Multimedia Subsystems (IMS).

Samsung's AAS- and MIMO-ready systems improve the range and capacity of 802.16e by:

- reducing fade margin requirements
- improving the link budget using beamforming
- improving frequency reuse by using directional transmission
- improving capacity using spatial multiplexing and multiple access



Samsung 802.16e Network Architecture

The proof is in our products

Samsung's product portfolio consists of two main elements – the Radio Access Station (RAS) and the Access Control Router (ARC).

The RAS features advanced radio frequency technology including Smart Antenna, MIMO RF path ready system for the standard RAS. Its high capacity and throughput 802.16e OFDMA air interface protocol provides broadband data rates of up to 30 Mbps per sector and supports three or six sectors. Scalable base station configurations support high-density RAS for large scale deployments in dense urban and suburban areas. Both the high-density RAS and the Mini-RAS support up to 20W power output. The Mini RAS can be mounted on a ceiling, wall, or pole.

The ACR (Access Control Router) enables efficient mobility management. It features centralized control structure and maximizes micro-mobility capability. The ARC minimizes the handover latency on Layer 2 over the air, and minimizes bearer path switching delay on the network. Its future-proof architecture offers an all IP-based radio access network architecture based on the IMS core network. Other features include Ipv4/Ipv6 dual stack ready high capacity and throughput, various backhaul interfaces, and Fast Ethernet/Gigabit Ethernet.

RAS (Radio Access Station)

Benefits

Advanced RF Technology
- Smart Antenna, MIMO RF path ready for Standard RAS

High Capacity and throughput
- 802.16e OFDMA air protocol provides high broadband rates of up to 30 Mbps per sector

Scalable Configurations
- High Density RAS for large-scale deployments from dense urban to suburban areas
- Mini-RAS is ceiling, pole or wall mountable

Standard RAS

Mini-RAS

ACR (Access Control Router)

Benefits

Efficient Mobility Management
- Centralized Control Structure
- Maximize Micro-Mobility capability
- Minimize handover latency on L2 over the air
- Minimize bearer path switching delay

Future Proof Architecture
- All IP based radio access network architecture based upon IMS core network
- IPv4/IPv6 dual stack ready for high capacity and throughput
- Fast Ethernet/Gigabit Ethernet, STM-1 (optional)

ACR

Description	Standard RAS	Mini-RAS
# of Carriers per Rack	1 ~ 3 FA, 3/6 Sector	1 ~3 FA, Omni
Dimensions: (H x W x D)	71" x 28" x 24" (1,800 x 700 x 600mm)	28" x 18" x 8" (700 x 450 x 195mm)
AMP Type	HPA, LPA	HPA, LPA
Radio Access	TDD OFDMA	
Air Interface	IEEE 802.16e	
Modulation	DL: QPSK, 16QAM, 64QAM UL: QPSK, 16QAM	

Description	ACR
Number of RAS	50 ~ 250 (depends upon traffic model)
Dimensions: (H x W x D)	79" x 24" x 24" (2,000 x 600 x 600mm)
Operating temperature:	32°F ~ 122°F (0° ~ 50°C)
Weight:	590 lbs.
Input Voltage:	-48 VDC

Specifications subject to change

Committed to mobility

Samsung will devote its efforts in 2005 to leading the industry ever closer to mobile WiMAX. The company will optimize its 802.16e systems and collaborate with dominant operators in North America to prepare to launch the technology in the near future.

Samsung also will take positive action to improve its global leadership in mobile WiMAX. The company will do whatever it can to facilitate cooperation between operators, system manufacturers, and chip makers that are working to make the promise of mobile WiMAX a reality.

Moving into 2006, Samsung will take a leadership role in global deployment of 802.16e-based technology by providing equipment for the world's first commercial deployment of WiBro equipment in the world's hotbed of wireless innovation – Korea. Also planned for 2006, Samsung will verify 802.16e WiMAX equipment in a beta trial with leading North American wireless operators. This will be done in preparation for a commercial trial set for launch in 2007.

Finally, Samsung will continue to contribute to the 802.16e standard, and focus on an IMS-based mobile broadband solution that will evolve the technology from 3G to 4G core technology. Samsung also will work to continue to enable high-speed multimedia mobile service with seamless handover.

Thanks to Samsung, the days in which end users have to make compromises with their mobile data service are growing shorter. Very soon they will be free to move about in large coverage areas and enjoy all the benefits of affordable high-speed data access.

For more information on Samsung's Next Generation Wireless System, call: (800) 349-7864, email: ws.info@samsung.com or visit: www.samsungusa.com/tc/wss.

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