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Wi-Wi for wider broadband coverage



The digital divide is seen as a stumbling block on the path towards progress in the knowledge-based economy. Developing countries are looking to next-generation networks (NGNs) as the only way to meet their ICT development goals. Locally, research and development powerhouse Mimos Bhd is cooking what it calls Wi-Wi – a combination of WiMax and Wi-Fi technologies – said to allow affordable and wider coverage of broadband access. **IZWAN ISMAIL** has the story.

WE'VE seen a number of viable technologies and solutions being introduced over the past year to help the Government address the digital divide issue. These technologies include WiMax, orthogonal frequency division multiplexing (OFDM), broadband over wireline and high altitude platforms.

To add to the number of these technologies and give more options to the Government and service providers, Mimos Berhad has announced its wireless broadband initiative called Wi-Wi.

According to the company's head of wireless communications cluster Dr Mazlan Abbas, the solution that Mimos is developing uses both WiMax and Wi-Fi technologies, hence the name Wi-Wi. "What we are developing is a hybrid station between a base station, router, relay station, access point and gateway that provides a Wi-Fi access and WiMax backhaul," he says, adding that due to the relay and mesh capability, Wi-Wi can extend the coverage further.

This Wi-Wi initiative is also part of Mimos' agenda as a strategic agency under Science, Technology and Innovation Ministry (Mosti) to champion ICT advancements for the nation.

WIRELESS, THE WAY TO GO. Mazlan says wireless is the cheapest way to provide Internet access to most parts of the country. Traditionally, Internet access which utilise copper wires or fibre optics are expensive and difficult to implement due to the issues of last-mile connectivity such as the need to dig the trenches and the degradation of quality of the old copper wires. Also, there is

limitation of distance when using copper as the last mile.

Explaining further on the workings of Wi-Wi, Mazlan says the technology provides a Wi-Fi access or hotspot for users with Wi-Fi devices such as laptop or personal digital assistant (PDA).

"However, it will use WiMax technology due to its high capacity and the ability to transmit further distance to carry the user traffic over a backhaul network or the backbone," he says.

Wi-Wi is configured in a mesh network whereby all the Wi-Wi devices will connect to one another, thus provide the extended distance and better reliability.

Mazlan says the advantage of having a Wi-Wi network is its stability in proving the wireless connection.

"Whenever a Wi-Wi node or any of the backhaul is down, the traffic can be re-routed to a different backhaul links and thus maintained the continuous connectivity," he says.

"When many Wi-Wi are interconnected in a mesh, we termed this as 'Wireless Fabric', or seamless coverage," he adds.

WI-WI ADVANTAGES. Most of the current implementations of WiMax, Wi-Fi or third generation (3G) are stand-alone networks. Other implementations which are integrated, combining Wi-Fi and WiMax, are configured in a point-to-point or point-to-multipoint network.

Mazlan says Mimos' Wi-Wi enhances the current WiMax protocol to the next level by including mesh, which provides a higher throughput and can carry bigger bandwidth over the Wi-Wi

network. "It's not only running IPv4 but also IPv6, which is the next-generation protocol that provides IP (Internet protocol) mobility and multicasting," he says.

PROJECT'S PROGRESS. Currently, Mimos has developed the first generation Wi-Wi prototype, which is configured in "star" configuration.

"The mobile IPv6 and multicasting communications stacks, which is critical for the mobility and IPTV, has also been developed. We are still developing the core Wi-Wi protocol which is meant for the second-generation Wi-Wi," says Mazlan.

The first prototype of this second generation is expected to be ready by the end of 2008, with future enhancements by next year.

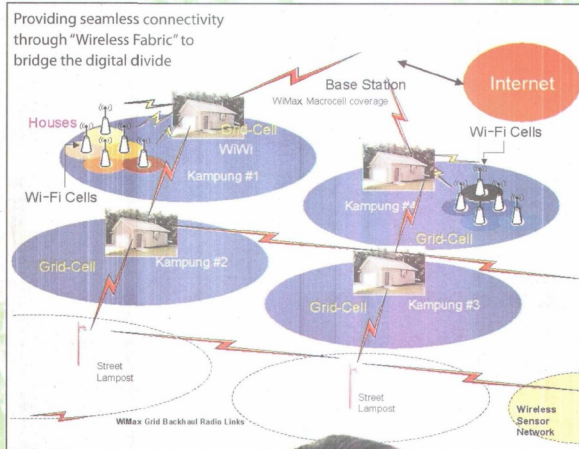
Currently, implementation of WiMax is expensive because of the need to build expensive towers.

"On the other hand, Wi-Wi installation can be simple, where service providers can install them on a street lamp or a house or building," says Mazlan.

Wi-Wi can also be implemented in a community-type of environment or rural areas. "With IPv6 as the main IP protocol, it can provide free or cheaper calls via voice over IP (VoIP) between the community or villages," he says.

With multicasting, Wi-Wi can also provide IPTV to the community without investing in bigger transmission links.

Mazlan says one of the key markets for Wi-Wi is for bridging the digital divide. "Any countries that face this problem will certainly require technology such as Wi-Wi," he said.



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