

Wireless Local Loop

Fact & Fiction

- by Tooraj Forughian, Executive Director

Like all other technologies, WLL has gone through its various phases of development. During its hype phase, several products were introduced in the market by various vendors. However, early installations did not meet the requirements as a viable alternative access solution and these early trials in fact delayed the universal acceptance of WLL by the operators. In the early days, the main hindering factors were the high price of WLL systems and high expectations, which made them unattractive. Today while the technology has reached its maturity stage and despite some successful implementation, clouds of confusion still overhang the WLL market. These factors include mixing mobile & fixed wireless applications; confusion over the cost structure; the prolonged battle between different technologies; frequency spectrum requirements; the requirement for Internet access; confusion over actual data rate; and poor performance due to a lack of network planning.

Mobile vs fixed wireless

Mix or segregate?

An area of hot debate (and controversy) in WLL circles is the possible use of mobile cellular systems to provide fixed wireless access. Advocates of this strategy argue that a common platform for mobile and fixed services, would extend the coverage of the mobile service while bringing basic telephony to remote areas. They are also pointing to the ability to offer so called "Limited Mobility" as an additional advantage.

However, the limited mobility feature has become a source of controversy with mobile operators arguing that the feature infringes on their core business (which is providing mobility) and is merely a backdoor for the new entrants to the mobile market. While the mobile operators usually pay large sums to secure their operational licenses, the fixed-line operators pay little or no fees, thereby having lower capital expenditure.

In addition, one can argue that a WLL system offering limited mobility (especially if offered in large geographical areas) does not necessarily lead to an increase in teledensity. If the limited mobility service is offered at a reasonably cheap rate, then it is likely that current mobile users would opt for subscri-

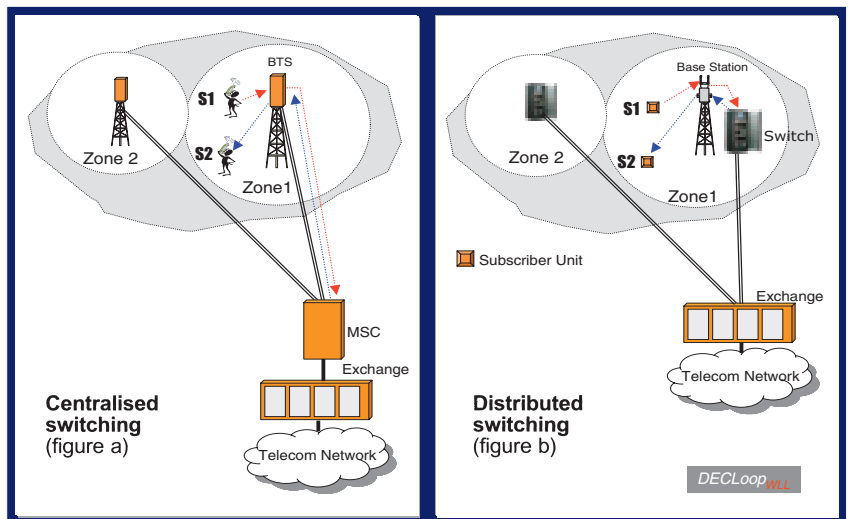
ing to one, two or more zones (in addition to their nationwide mobile subscription) to take advantage of cheaper rates.

As the demand and the need for Internet connectivity grows, the WLL systems that do not offer basic data rates will be made obsolete. This basic requirement alone the use of some mobile-based WLL system.

As far as rural installations are concerned, any WLL system which cannot be

implemented in a Distributed Switching manner, will have a disadvantage of requiring more links to handle inter-zone calls as well as calls made in and out of a zone (figure a).

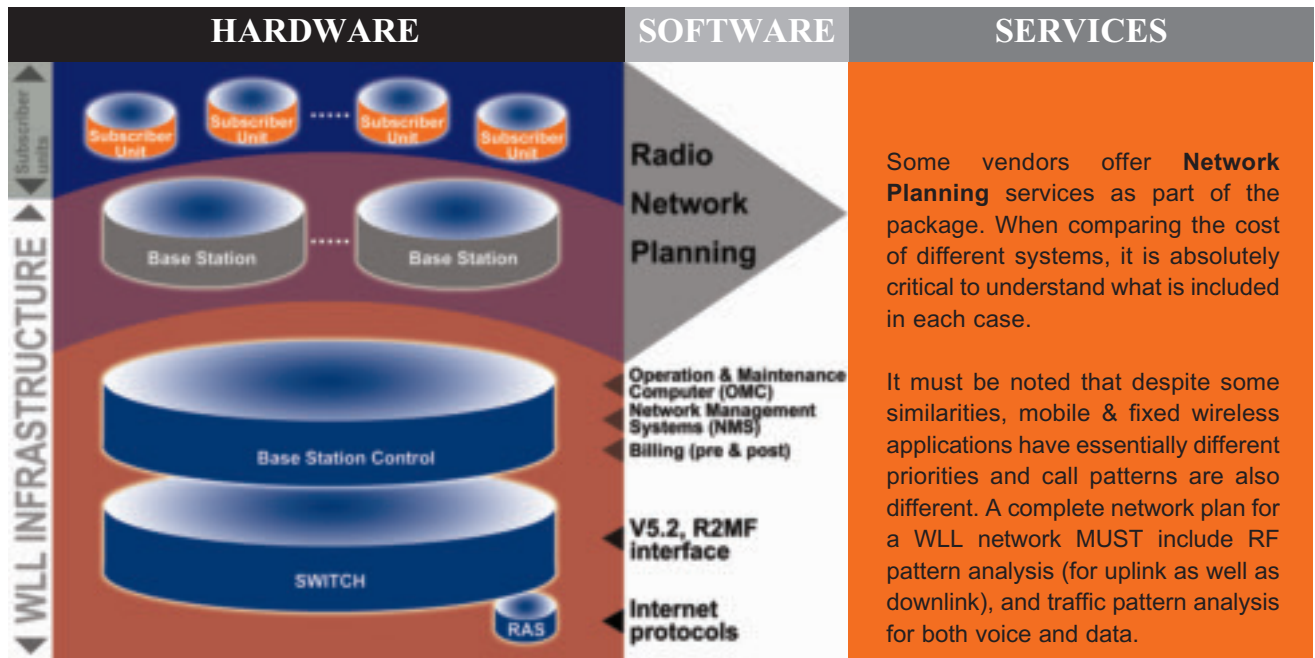
In a Distributed Switching implementation, however, lower capacity switches may be stationed in each zone to locally divert inter-zone calls and thereby reduce the local traffic burden on the link (figure b).



Cost of a WLL system

Any hidden cost?

WLL systems come in different configuration using a variety of terms to describe different components of the system. However, almost all systems will have to include the following hardware and software components:



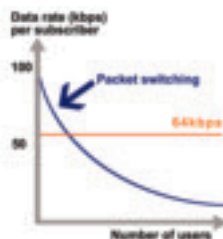
Internet access

Nice to have or MUST have?

Unfortunately, even in the 21st century, some people are still under the illusion that access to the Internet is only required by those selected few living in urban societies and that people in rural areas will be satisfied with lower grade, limited service, voice-only connectivity. For countries that regard their population as a valuable resource and those who are contemplating the use of e-government, e-education and e-business, providing mass Internet access with country-wide coverage is a must. Walking the path of e-government without planning for adequate means of a countrywide data connectivity does not make economic sense as the return on the huge investment will be poor.

Although one might argue that in places with no connectivity at all providing any low traffic voice-only solution sounds better than nothing, the fact is that sooner rather than

Higher kbps number does not always mean higher data rate for all!



Care must be taken when data rates of different systems are compared. For example, the actual data rate per subscriber for a 128kbps packet switching service is dependent on the total number of users at any time whereas a 64kbps circuit switched service will offer sustained data rate.

later, better services would be demanded by the end-users. If this demand is met and more capable systems are implemented, the investment for the original system would be wasted. On the other hand, if users' demand for Internet connectivity are ignored for a prolonged time, adverse economic and social effects could be substantial.

The WLL concept is simple - bringing the same services at the same QoS to fixed-

location subscribers using an air-interface in place of wire. Nevertheless, the WLL market remains unnecessarily complicated. The confusion created by the vendors and technology backers have delayed the take-off of WLL as a viable alternative to copper. It is now up to the policy makers to clearly define requirements and boundaries expected of WLL solutions and let the required applications spearhead the product selection process.

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