

# Deployment of Public Wireless Local Area Networks

The number of Public Wireless Local Area Networks is in a steep growth, and this opportunity can be addressed by network operators using cost-efficient solutions for Ethernet connectivity.

Wireless Local Area Network (WLAN) technology was standardized in the nineties to provide wireless access to Local Area Networks inside buildings or in local neighborhoods. This is useful for people with WLAN-enabled laptops or handhelds, as it enables network access without having to hook up to a wall outlet. The IEEE 802.11b standard for WLAN has been extremely successful in the market, and prices have decreased to a level that has made it rather popular in both the business and consumer markets. The market for WLAN devices is growing rapidly; Intel estimated that by 2006, there would be 30 million notebooks with 802.11 wireless access; JWire currently lists 143,129 Wi-Fi hotspots in 132 countries.

One application of WLAN technology that has received a lot of attention in recent years is Public Wireless Local Area Networks (PWLAN), also known as hotspots. These are WLANs placed in public areas such as hotels, airports, restaurants, cafés, etc. Hotspots are typically used by visitors who are already carrying their laptop or handheld device and become able to access the Internet while visiting these public areas. More and more public hotspots are being built; worldwide estimated range from 20,000 to 70,000 available hotspots, and significant growth is likely to happen.

Several types of market players are currently exploring the business opportunities with hotspots, including owners of suitable public places such as hotels and airports, network operators, Internet Service Providers (ISP), Wireless Internet Service Providers (WISP) and wholesale PWLAN providers. They all have different assets to work with, but they have one thing in common: They need hotspot backbone networks to be inexpensive. Users are not willing to pay high charges for Internet access, and therefore operating expenses (OpEx) must be kept to an absolute minimum.

An access point (base station) for WLANs is designed as an integral extension of the LAN, and within each hotspot, the access points are normally connected with the local head-end using standard LAN connections. These head-ends are connected to the Internet and/or to other hotspot head-ends of the same provider. However, the standard portfolio services for providing Wide Area Network (WAN) data services — e.g. leased lines, Frame Relay, ATM or IP managed bandwidth — tend to be too expensive for this application. Hotspot operators need inexpensive services with native Ethernet interfaces that can provide the necessary bandwidth.

The Tellabs Ethernet-over-SDH and Ethernet-over-SHDSL solutions provide network operators with the ability to offer Ethernet connectivity in seamless integration with their existing SDH and PDH infrastructure. This provides a good fit for hotspot provisioning, as illustrated below.

## Benefits

- Deliver profitable data services via Ethernet interfaces, using the existing network
- Avoid providing end customers with expensive WAN interfaces in standard routers
- Save OpEx on integrated Ethernet provisioning from the existing management system
- Establish cost-efficient PoPs that realize the statistical gain using common infrastructure

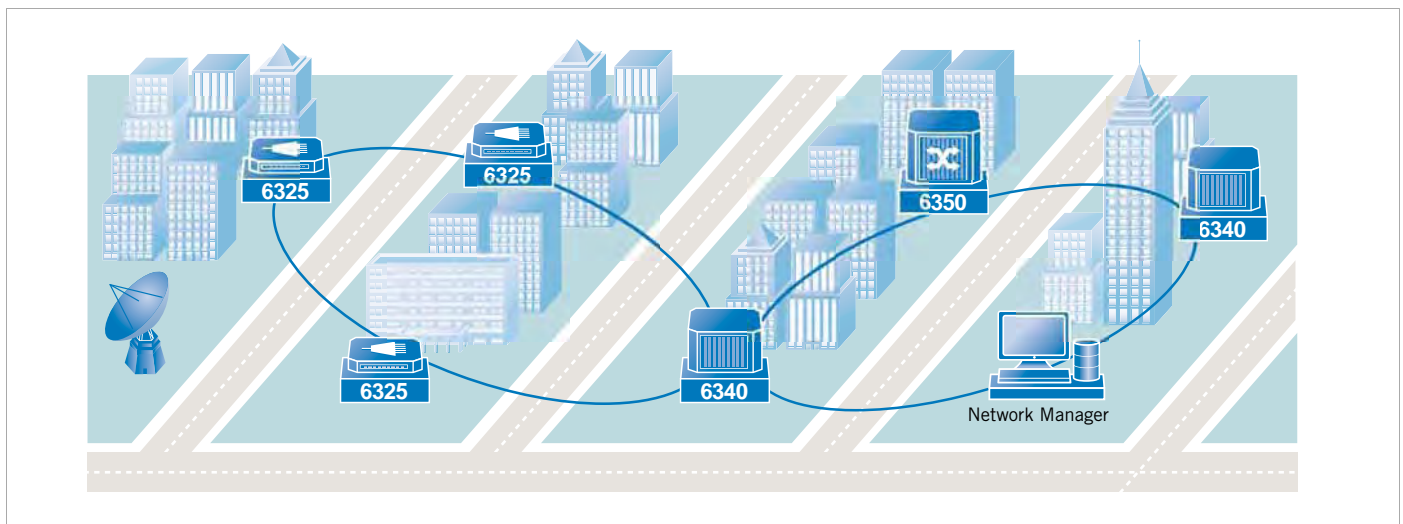


Figure 1: Cost-efficient city- and country-wide grooming of hotspot traffic

## Example Case: T-Com

A Network operator T-com wants to establish hotspots at various locations within several cities. An approach often used would be the following. The wireless access points in each hotspot are connected to local head-ends using standard Ethernet cabling. Each head-end is connected to the Internet using standard WAN connections. For accounting purposes T-com then co-operates with a PWLAN provider that has authentication and payment servers connected via the Internet.

T-com has a widely-deployed SDH backbone network. Using the Tellabs third-generation SDH solutions on this network, T-com has the opportunity to provide integrated long range Ethernet connectivity, carried within the SDH backbone network.

This makes it possible for T-com to connect a large number of hotspot head-ends directly to the SDH backbone, instead of handing over traffic to the Internet or a separate IP/MPLS network at each hotspot. Traffic from many hotspots is groomed together in single Virtual Concatenated Groups (VCG), thus minimizing the network load of hotspot traffic, and taking advantage of the statistical gain by combining packet traffic from many sources. This service may also be offered as a wholesale product to other hotspot providers or data service providers creating further statistical gains and economies of scale.

In cases where the SDH backbone network does not pass nearby, the Tellabs® 8100 Managed Access System provides long-range Ethernet-over-SHDSL, spanning up to 6 kilometres on a standard twisted pair telephony cable.

Compared to the standard approach previously described, the Ethernet-over-SDH approach saves T-com significant costs for ISP access charges, standard wide area leased lines and routers with expensive WAN interfaces. Furthermore, T-com also saves OpEx by using an integrated Ethernet and SDH management system, reducing the complexity of service provisioning.

The hotspot application of Ethernet-over-SDH may not stand alone. Long range Ethernet connectivity is a versatile building block that can be used for offering attractive services, ranging from simple managed capacity to various value-added services, e.g., corporate VPNs, business class Internet services, access services for service providers and more.

## Product Information

See detailed product data sheets on:

- Tellabs® 6300 Managed Transport System, including the ETEX series modules for Ethernet-over-SDH.
- Tellabs® 8100 system, including the ESU, CTE-R and CTU-R modules for Ethernet-over-SHDSL.

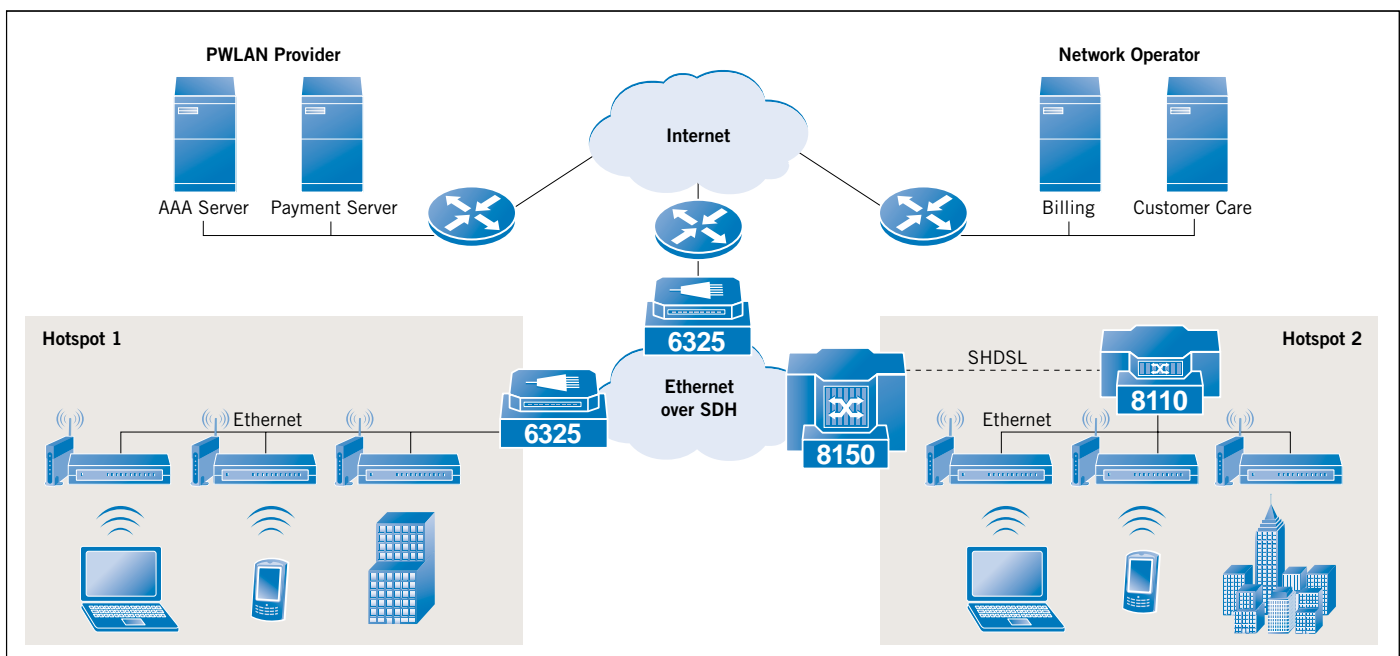


Figure 2: Collect and groom hotspot traffic within the SDH network and save expensive router port count

### North America

Tellabs  
One Tellabs Center  
1415 West Diehl Road  
Naperville, IL 60563  
U.S.A.  
+1 630 798 8800  
Fax: +1 630 798 2000

### Asia Pacific

Tellabs  
3 Anson Road  
#14-01 Springleaf Tower  
Singapore 079909  
Republic of Singapore  
+65 6215 6411  
Fax: +65 6215 6422

### Europe, Middle East & Africa

Tellabs  
Abbey Place  
24-28 Easton Street  
High Wycombe, Bucks  
HP11 1NT  
United Kingdom  
+44 870 238 4700  
Fax: +44 870 238 4851

### Latin America & Caribbean

Tellabs  
1401 N.W. 136th Avenue  
Suite 202  
Sunrise, FL 33323  
U.S.A.  
+1 954 839 2800  
Fax: +1 954 839 2828

Statements herein may contain projections or other forward-looking statements regarding future events, products, features, technology and resulting commercial or technological benefits and advantages. These statements are for discussion purposes only, are subject to change and are not to be construed as instructions, product specifications, guarantees or warranties. Actual results may differ materially.

The following trademarks and service marks are owned by Tellabs Operations, Inc., or its affiliates in the United States and/or other countries: TELLABS®, TELLABS and T symbol®, and T symbol®.

Any other company or product names may be trademarks of their respective companies.

© 2007 Tellabs. All rights reserved.  
74.1401E Rev. D 3/07