

MiniMSAN – Inconceivable Made Feasible

The Most Economical Triple Play Solution Even In Suburban and Rural Areas

The challenge of so called “Digital Divide” has been around for almost a decade now. It discloses the conflict of stock market driven investment policy of telecom operators, seeking for high ROIs in urban areas, on one hand and more (or less) declarative effort of national Administrations for rural and suburban development on the other. While private investors are willing to invest into state of the art information infrastructure (FTTH) in highly populated areas, not even each household even in the Western Europe is connected with its own copper line to the telephone exchange office already a couple of miles out of big cities. And it goes without saying: unless you are on the NET today, you do not have many chances for success. Therefore European Union is subsidizing heavily information infrastructure projects throughout low populated areas in last years and strives for broadband as universal service.

Typical problems which occur, when broadband has to be delivered to each and every household are (i) no copper connection at all, (ii) party-line copper connection, (iii) narrow band pair gain or PCM copper connection or (iv) last mile copper lines are too long for any broadband connection. Challenges on such networks for triple play services seem even inconceivable. Nowadays Telcos usually overcome such problems in low populated areas with so called shortening of the local loop scenario, where DSLAM/MSAN would be moved from Central Office and installed in street cabinet. Fibre optical cable is deployed to provide high speed uplink to Central Office where aggregation equipment still resides. The main problems of this scenario are:

- Building up street cabinet usually involves complicated legal procedures to get all permissions from local authorities and involves extensive civil works.
- Active equipment in street cabinets needs local powering with UPS which in turn means additional legal procedures, Electricity Company services, more

equipment (AC/DC, UPS, batteries) and more civil works.

- Active air-conditioning of street cabinet is needed.
- A street cabinet with air-conditioning and UPS needs regular maintenance (OPEX!)
- Essential initial fixed investment is required (CAPEX!), ROI is acceptable only for at least 50-100 users.

The company IPS Ltd., which has specialized in remotely powered, small sized telecommunications active equipment over last 21 years, was first and currently only on the market with its remotely powered, passively cooled, small Multi Service Access Node product line called MiniMSAN. MiniMSAN does away with all above mentioned problems and enable Telco to shorten the local loop in an easy and economical way without building up street cabinets. With MiniMSAN Telco gets a solution to provide Triple-Play in "Pay As You Grow" way even for customers located far from Central Office by using combined fibre optics/twisted copper pair (i.e. FTTN/ADSL2+) concept.

MiniMSAN is a very compact, remotely powered Multi Service Access Node (MSAN) with full IP-DSLAM functionality and optical



uplink. Due to extremely small dimensions and power autonomy it may be installed in existing distribution cabinets or even on poles or walls, which are always less than 1 km away from the household. It provides 4 ADSL2+ ports

together with 4 POTS TDM ports, 1 SHDSL uplink port and one FE/GE optical uplink port. SHDSL line is used for providing POTS TDM connections, remote power feeding and it may also be used as uplink (2,3 Mbps) until the time that fibre optic cable is deployed to the unit. In the first step it can be thus deployed as an upgrade of party-lines or pair gain (PCM) connections, assuring broadband connection without infrastructure investments. When FE/GE optical link is connected, all customers' services can be immediately upgraded to full Triple-Play (24 Mbps per subscriber). SHDSL may be still used for TDM POTS and for IP backup. With this functionality MiniMSAN is the ideal solution for a smooth transition from TDM to NGN technology. It allows gradual deployment of FTTN concept and provides an easy step towards Fibre To The Home (FTTH) final solution.

The full advantage of this system becomes visible especially in the suburban and rural areas, where the network is very branched out and usually only few households are terminated in the distribution cabinets, making street cabinets extremely expensive solution. Not to mention the difference to the FTTH solution. The Faculty for Electrical Engineering,

University of Ljubljana, Slovenia has made a Technical – Economic Analysis, comparing FTTH concept with MiniMSAN solution in urban and rural network. The comparison was based on the real network data and topology taken from the Telekom Slovenia's network and mathematical model for network optimization developed by the University. Triple play for every subscriber was starting point of the calculation. The result was much in favour to MiniMSAN solution: 1,63 times less CAPEX needed in urban areas and even 2,38 times less in the rural areas. Of course FTTH offers more bandwidth than ADSL 2+ and is future proof, whereas not really many services today require more than 24 Mbps. With deployment of MiniMSAN with FTTN concept also first step of FTTH is already finished, allowing pay as you grow investment strategy to be fully applied.

To conclude, MiniMSAN is a unique product, each Telco should have in its toolbox for massive deployment not only in rural and suburban areas, but also on congested networks. It allows quick, economical and gradual development from TDM voice services over broadband services to full HD Triple Play services.

Application Examples:

Figure 1: Pair Gain System Replacement for going Broadband

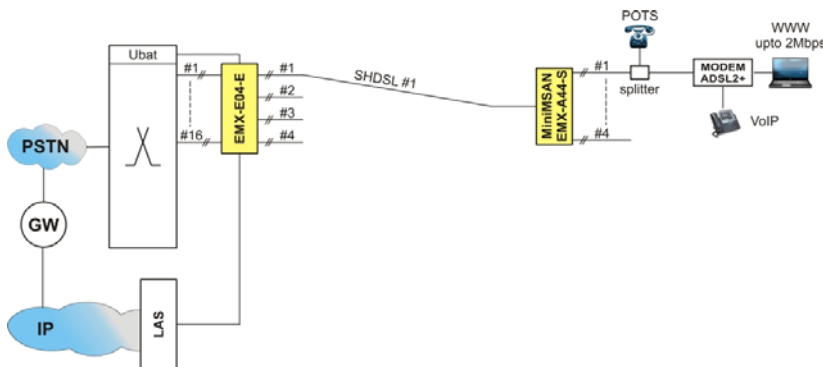


Figure 2: Shortening of the local loop for providing Triple Play

