

## NGN – Fast Growth with Hybrid Access Technologies

How to connect new customers where no universal NGN structure is available? This question is crucial for network operators in rapidly growing markets because their later migration will be costly. But there is an alternative available, using a careful combination of access and transmission technologies.

### Mixing Old and New

For many Western European network operators, next generation telecommunications networks – NGNs – offer an opportunity to reduce operational costs, to stay or even become competitive. A quite different situation occurs in many parts of Asia and Africa with a fast growing installation of mobile communications instead of fixed network connections. In such environments the penetration of fixed network broadband connections is underdeveloped, although new services such as Triple Play will play a significant role in the future.

One good reason for operators to invest in hybrid access technologies is the wish not to fall behind developments in the rest of the world. Another is to make use of a communications network based on the Internet protocol (IP) to harmonize their network operation. While the migration of customers from non-NGN to NGN networks is inevitable in the long term, the old networks which are not IP-based are still in operation and will remain so for some time to come. Experience with NGN migration on saturated markets shows that the preparation of the migration is complex: In terms of time, strategy, network architecture, design, planning, tendering, and vendor selection as well as the implementation of the new network.

Network operators face some serious questions concerning their growth strategy, which seem to display a dilemma. But if they carefully

combine old and new technologies, the advantages of the “new network” with “old services” can be achieved and provide fast growth – while also facilitating a later migration to NGN. So called “multi-service access nodes” (MSAN) offer a way of simulating the traditional telephony service, including feeding current to the customer. Using this equipment, both telephony (analog and digital) and broadband services, including all common DSL variations, can be supplied using a twisted pair copper wire.

### MSAN – a multitalent in telecommunications

MSANs are an alternative to the “remote concentrator units” RCU or other technologies such as the optical network units (ONU), for example, and offer all sorts of other types of broadband connection. A typical usage scenario is the connection of a customer using the IP enabled MSAN while network access is enabled via a traditional TDM protocol (i.e. V5.2) at the traditional switch. Switches in fast-growing markets are generally dimensioned and purchased for a specific target capacity, whereby the systems have not yet reached maximum capacity with the existing RCUs. As long as capacity to terminate voice services is available in the existing switches, MSANs could be purchased and installed instead of new RCUs whenever the network is extended. The network operator’s processes can also continue to be used. This means that there are no barriers preventing fast growth using old switching methods and new access technology.

Parallel to this, the operator can set up an IP-based core network and install new centralized (soft) switching technology. New processes and an appropriate IT infrastructure based, for

example, on new generation operation support systems (NGOSS) must also be implemented. As soon as the IP network is stable, the MSAN customers can be phased off the old technology by cutting the V5.2 connection and connected to the IP network using Ethernet interfaces and the soft switch for call control. The addition of new MSANs can then take place directly into the IP network.

MSANs can also be used for the “silent migration” of existing customers, as network operators migrate their customers either individually or in RCU groups to an MSAN with an NGN uplink without talking about it. Some customer groups – particularly the older generation – may even be satisfied in the long term by MSANs in the all-IP network as long as these provide them with pure telephony at the security and quality levels that they are used to, including feeding voltage and emergency services. Flexibility and the range of both user and network protocols provided by MSANs open up plenty of opportunities for network operators to develop their core and access networks towards Internet protocol.



Dr. Kai Grunert is the head of the group Fixed Access and Transport Technologies at Detecon International.

[Kai.Grunert@detecon.com](mailto:Kai.Grunert@detecon.com)



Stephan Schäfer is the Team head for access technologies in the group Fixed Access and Transport Technologies at Detecon International.

[Stephan.Schaefer@detecon.com](mailto:Stephan.Schaefer@detecon.com)