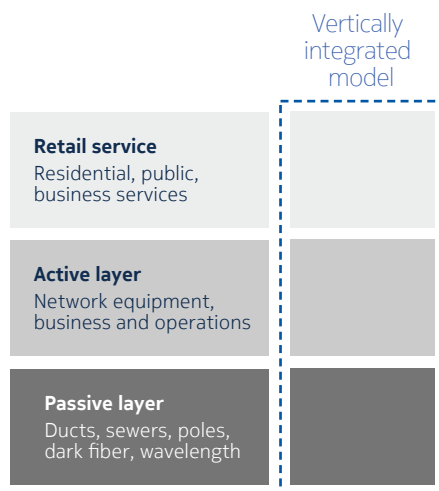# NOKIA

Wholesale models on the rise

Sharing infrastructure improves the business case

Use case

Introduction

In the early days of fiber-to-the-home deployments, filling in the 3-layered model of passive-active-retail with a nationwide scope was accepted as the winning business model. This "vertically integrated model" was extrapolated from widespread copper access networks, mostly deployed by incumbents installing and maintaining the copper access network, deploying DSL-type active equipment and then selling triple-play services (voice, data and video) to their customers.

Figure 1. Vertically integrated model

Vertically integrated model

Retail service
Residential, public, business services

Active layer
Network equipment, business and operations

Passive layer
Ducts, sewers, poles, dark fiber, wavelength

Quite soon, it became clear that deploying passive fiber infrastructure represented the bulk of the overall FTTH investment and, therefore, it was a huge task to cover an entire nation with fiber, both costly and time-consuming.

In order to accelerate FTTH deployments, it was clear that competition was needed. Now, how do you create a market with two or more competitive players without having to replicate the whole infrastructure two or more times? In the early days, regulators and governments promoted competition at the infrastructure level but very soon it appeared that infrastructure-based competition with building overlay networks was only valid for very dense and competitive areas. In less dense and rural areas, one infrastructure investment is already hard enough to support.

Step by step, the concept of sharing infrastructure gained ground. It started at the lowest layer by sharing ducts, sewers and poles because these physical assets are the hardest to replicate.

From the moment the ducts of Telefónica were opened in Spain, fiber deployments accelerated in the market with Vodafone and Orange competing by pulling their own fiber all the way to homes.

But what about sharing the physical fiber as well? In very dense areas of France, they defined a flexibility or concentration point at the basement of a building or in the street from where only one fiber reaches the household. Every competing operator only has to deploy fiber up to that flexibility point, and even then some alternative "backhaul" solutions were provided. Sharing fiber is understood by the market as "passive wholesale".

Figure 2. Passive wholesale
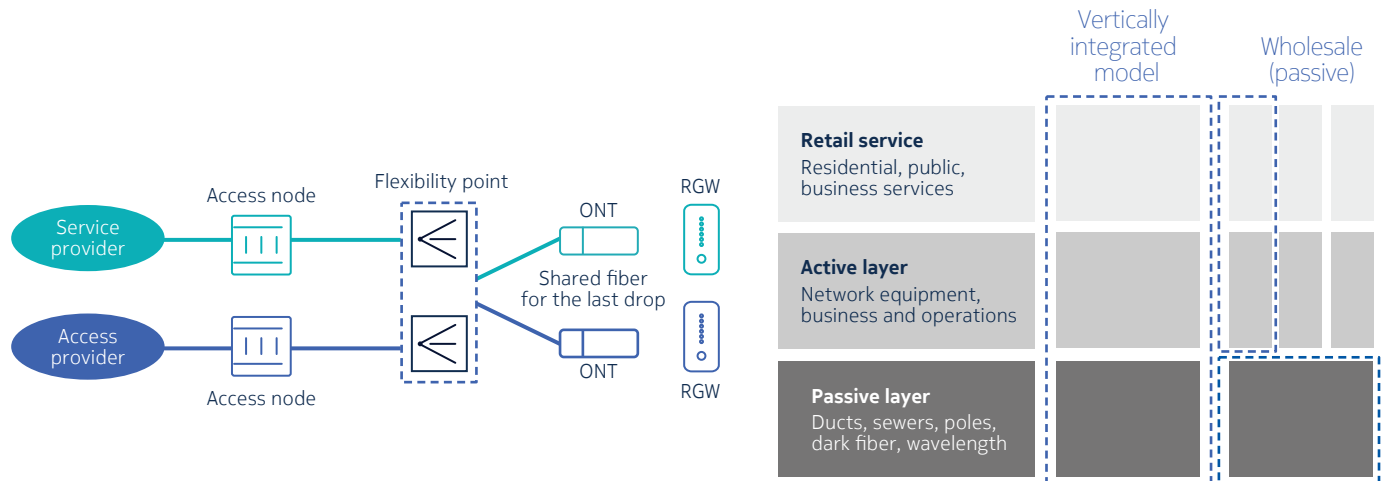
Passive wholesale has pros and cons: multiple operators can have control over the full physical path but significant multiple investment arises and manual switch-over is needed when customers churn and, by that, considerable OPEX is generated.

Competition can also be created at the service level. Having only one physical infrastructure, one operator lighting up the fiber and installing the actives like GPON or P2P Ethernet, then sharing Ethernet or IP pipes with the retail providers, is known as bitstream or VULA (virtual unbundling). This is especially useful in medium to low density areas such as suburban and rural regions where the FTTH business case is more challenging.

This is active wholesale, the model that is gaining ground because of its flexibility and revenue opportunities: building one fiber infrastructure that can be monetized over and over again by connecting customers from different retail providers. The more users you connect to your network, the more you can reduce CAPEX per subscriber and, by that, optimize your total cost of ownership. We see more and more private investors convinced of the success of this model and choosing to invest.

Figure 3. Active wholesale

Use case
It's all about customer experience
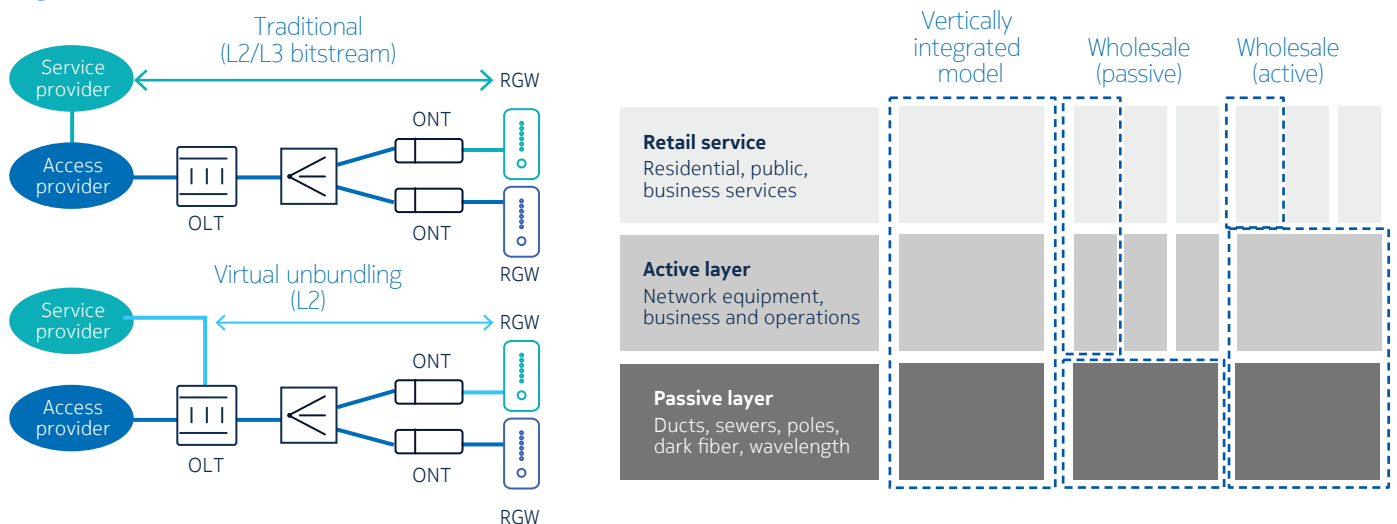
In addition, active wholesale will benefit in the future from the evolution to virtualization and network slicing. Instead of a static one-to-one bitstream pipe, the infrastructure provider can offer a virtual instance of the physical network (a slice) in which the retail provider can connect all of their customers, and dynamically managing the individual SLAs and QoS parameters for their connectivity. The level of control is far higher and end-user management can be more dynamic.

Figure 4. Network slicing
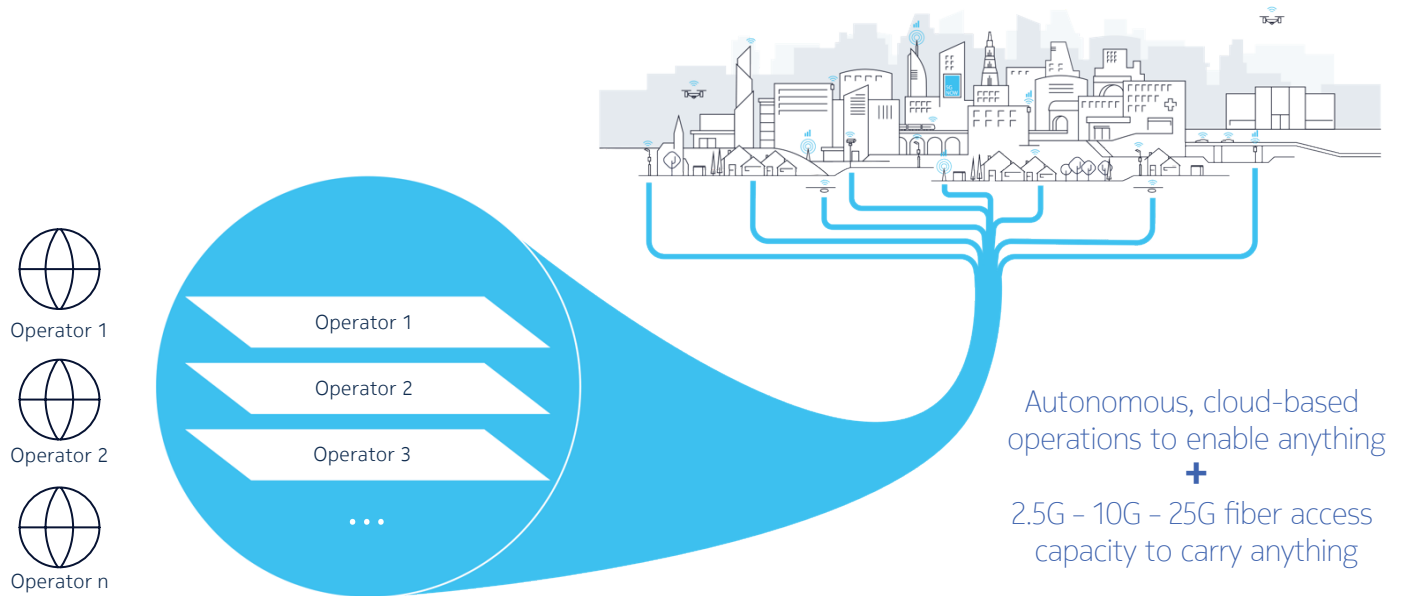
The appearance and success of the wholesale models described above are certainly boosting fiber deployment and adoption in most European countries and it is probable that active wholesale will prevail in the future.

To find out more about Nokia's SDAN services click here.