Pizza box or big shelf OLT

Select the form factor that fits your business case

New OLT deployments can be triggered by a number of factors including expected subscriber growth, new technology introduction such as 10G PON, 25G PON, G.fast 212 or new use cases such as mobile xHaul. To make fiber deployments successful, it is important to choose the right OLT to fit your business case. Beyond support of the required capabilities, other factors that influence the business case include cost of equipment qualification and installation, power efficiency, real-estate costs related to OLT size, and evolution to software defined access.

Why size matters

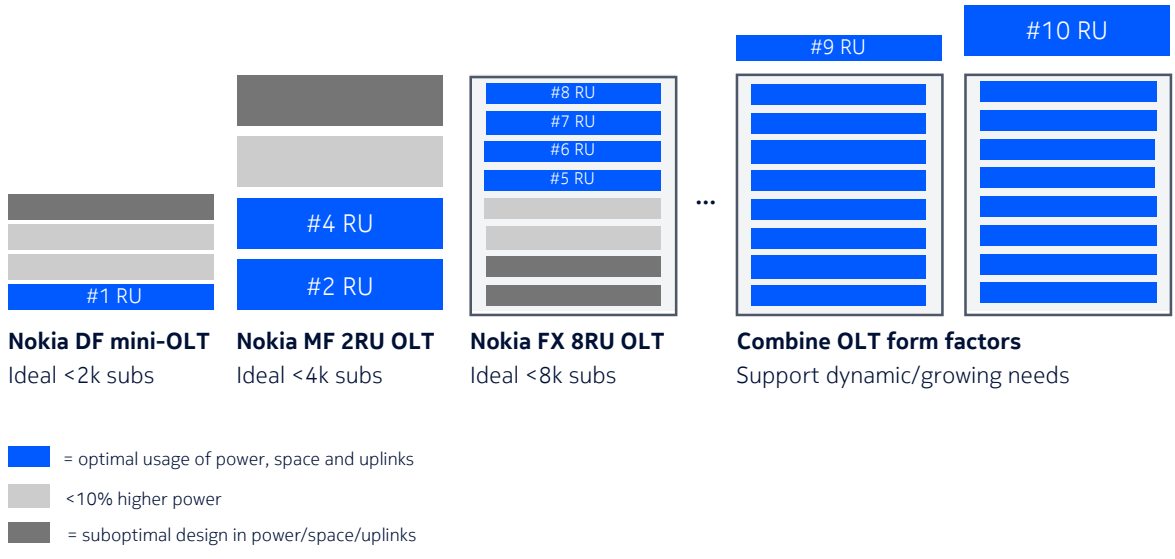
Does the OLT form factor and size impact these business case considerations? Absolutely, which is why there is no single answer. The rise of SDN has brought disaggregation of hardware and software to FTTH OLT solutions. These OLT solutions do not come only in disaggregated pizza boxes. There are several OLT form factors available such as shelf-based, modular, or 1RU stackable pizza box, and each are appropriate for certain deployments. Crucially, all these OLT form factors can be used in Software Defined Access Networks (SDAN) and can support advanced SDN use cases.

Carefully evaluate the power and capacity efficiency of an OLT and assess how the form factors will impact your deployment model. Choosing the wrong form factor for your situation can lead to higher installation and commissioning costs, higher operating expenses, and present barriers to future subscriber growth.

Selecting the optimal form factor for OLT deployments comes down to understanding your requirements for scale. How many subscribers will be supported at the initial launch and how fast do you expect the site to grow? For any given OLT deployment, the scale requirements have the biggest influence on the power and space requirements.

Example deployments

As an example, consider three different capacity scenarios. <2K subscribers, <4K subscribers and <8K subscribers. For small sites with <2K subscribers, the pizza box format may be most efficient in terms of power and space. For sites between 2K and 4K subscribers, a 2RU modular OLT is most efficient. For larger sites, the 8RU integrated OLT provides optimal efficiency.



Nokia DF mini-OLT
Ideal <2k subs

Nokia MF 2RU OLT
Ideal <4k subs

Nokia FX 8RU OLT
Ideal <8k subs

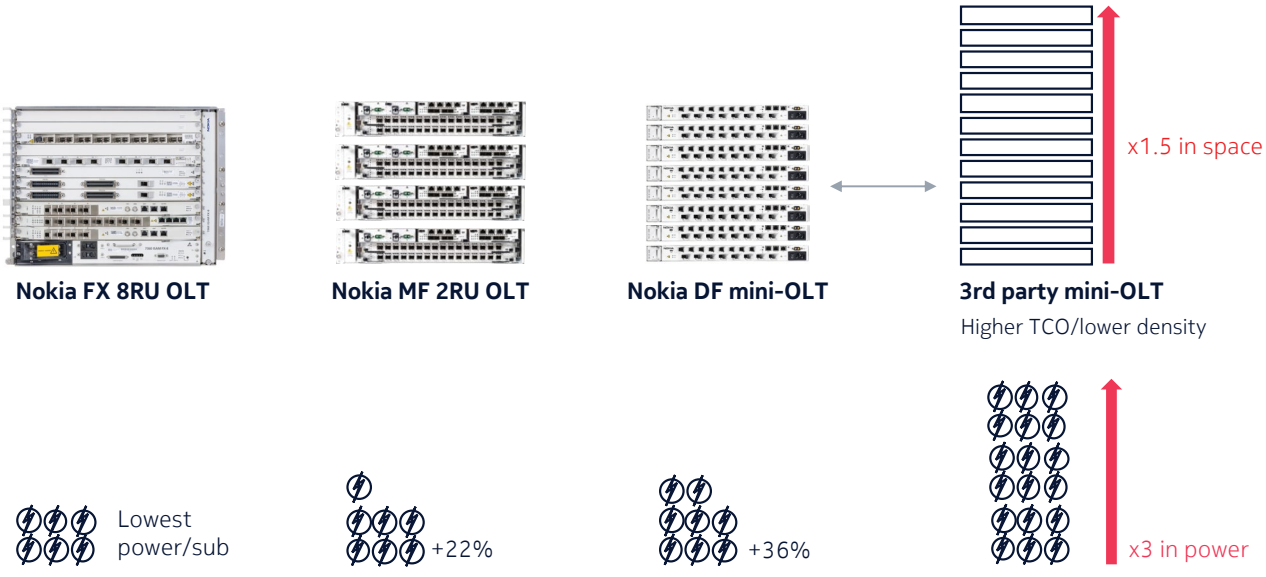
Combine OLT form factors
Support dynamic/growing needs

The efficiency of the 8RU OLT in larger sites comes from the ability to optimally share equipment functions such as power and cooling infrastructure within the OLT. With smaller form factors these components are duplicated every time a new box is added to the site.

Furthermore, as subscribers are added to an OLT site, it is easier to add a line card to an existing shelf than it is to cable in a new pizza box. If a site starts small but is expected to grow quickly, it will save overall installation and commissioning costs to start with the larger OLT. Furthermore, it is important to consider if the stack of OLT will require a Top of Rack switch which will add cost and power compared to an integrated OLT which does not acquire a top of rack switch.

Continuing with the example above for a site where 8000 subscribers must be supported, any of the OLT form factors previously discussed could be used. 8000 subscribers can be supported in a single 8RU OLT. Assuming there are free ports to do aggregation, a stack of four 2RU OLT shelves is similar in rack space but requires 20% more power per subscriber compared to the 8RU OLT. For 1RU OLTs, the stack of eight OLTs is again similar in size to an 8RU OLT but the power per subscriber increases by 35%.

If we extend the comparison to include a pizza box OLT that uses merchant silicone instead of power-efficient chip sets optimized for performance, the pizza box OLTs take 1.5x more space and consume up to 3x more power than the 8RU OLT.



Conclusion

The above example shows that when selecting the type of OLT to use for a particular installation, it is key to select the right form factor to fit your unique situation. The disaggregated pizza box solutions are not a perfect fit everywhere. The decision really comes down to which is most efficient for a particular OLT site taking into consideration scale requirements of today and future growth expectations. Software defined networks can support shelf based, modular and pizza box OLTs with the same management interface so a network can include a mix of OLT types, from more than one vendor, managed by one single-pane-of-glass SDN controller. The cloud software, management models and virtual network functions can be common for all the deployment variants, regardless of the form factor.

Considering these factors will ensure you have the right business case to make your fiber deployment project a success.

Nokia OYJ
Karakaari 7
02610 Espoo
Finland
Tel. +358 (0) 10 44 88 000

Document code: (February) CID212599