

8 Conclusions

With the large-scale deployment of EPON and 10G-EPON and the increasing demand for larger bandwidth, there is a market demand for the next generation EPON standard. This report describes the need for NGEPON from many dimensions, including bandwidth consumption trends, market drivers and standard development trends. The conclusions of this report are that an NGEPON system needs to provide higher bandwidth, remain cost-effective, realize ODN reuse, coexist with deployed systems and support a simple evolution from one generation to the next.

According to the above requirements, this report assesses the technical feasibility of an NGEPON by exploring the possible system architectures, modulation techniques, wavelength plan, optical transmitters / receivers. These provide a valuable reference for further standard development.

On the basis of current 10G EPON, a reasonable approach to enhance system capacity is to mix WDM with TDM in a MSD-WDM-PON structure. This will focus the advantages of both PON types and is very scalable. Bandwidth at 40Gbps or more for NGEPON is a relatively strong demand, so aggregation of several 10G channels to meet this requirement is a good choice. In order to mitigate inventory issues and achieve more flexibility, tunable technology should also be considered. Coexistence with EPON, 10G EPON and RFoG is expected, so the wavelength plan for a NGEPON system must be selected to accommodate this coexistence requirement.

As PON deployments rapidly expand, its role is growing more and more important. Therefore the standard requires a multifaceted consideration, not only to protect existing investments and enhancing the bandwidth access speed, but also to promote long-term development and reduce the risk of future network evolution.