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A Review of Ethernet passive optical network

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ABSTRACT: -
This article describes Ethernet p: networks, an emerging local subscriber access architecture that combines low-cost point-to-multipoint fibre infrastructure with Ethernet. EPONs are designed to carry Ethernet frames at standard Ethernet rates. An EPON uses a single trunk fibre that extends from a central office to a passive optical splitter, which then fans out to multiple optical drop fibres connected to subscriber nodes, Other than the end terminating equipment, no component in the network requires electrical power, hence the term passive. Local carriers have long been interested in passive optical networks for the benefits they offer: minimal fibre infrastructure and no powering requirement in the outside plant. With Ethernet now emerging as the protocol of choice for carrying IP traffic in metro and access networks, EPON has emerged as a potential optimized architecture for fibre to the building and fibre to the home.

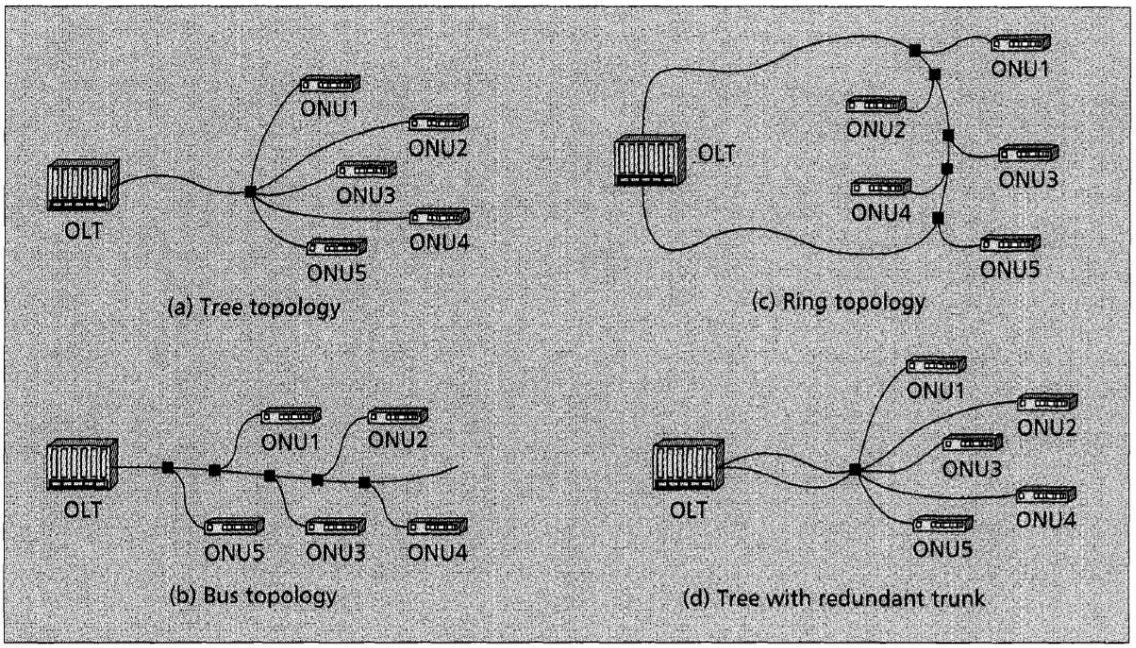
I. INTRODUCTION:-

While in recent years the telecommunications backbone has experienced substantial growth, little has changed in the access network. The tremendous growth of Internet traffic has accentuated the aggravating lag of access network capacity. The " last mile" still remains the bottle- neck between high-capacity local area networks (LANs) and the backbone network. The most widely deployed broadband solutions today are digital subscriber line (DSL) and cable modem (CM) networks. Although they are an improvement over 56 kb/s modems, they are unable to provide enough bandwidth for emerging services such as IP telephony, video on demand (VoD), interactive gaming, or two-way videoconferencing. A new technology is required; one that is inexpensive, simple, scalable, and capable of delivering bundled voice, data, and video services to an end-user subscriber over a single network.

II. THE Next-GENERATION Access NETWORK :-

Optical fibre is capable of delivering bandwidth-intensive integrated, voice, data, and video services at distances beyond 20 km in the subscriber access network. A logical way to deploy optical fibre in the local access network is using a point-to-point (P2P) topology, with dedicated fibre runs from the local exchange to each end-user subscriber. While this is a simple architecture, in most cases it is cost prohibitive due to the fact that it requires significant outside plant fibre deployment as well as connector termination space in the local exchange. Considering N subscribers at an average distance L km from the central office, a P2P design requires 2N transceivers and N * L total fibre length (assuming single fibre is used for bidirectional transmission).

To reduce fibre deployment, it is possible to deploy a remote switch (concentrator) close to the neighborhoodlike. This reduces fibre consumption to only L km (assuming negligible distance between the switch and customers), but actually increases the number of transceivers to 2N + 2, since there is one more link added to the network in addition, a curb-switched architecture requires electrical power as well as backup power at the curb unit. Currently, one of the highest costs for local exchange carriers is providing and maintaining electrical power in the local loop.



III. CONCLUSION:

The subscriber access network is constrained by equipment and infrastructure not originally designed for high-bandwidth IP data, whether riding on shorter copper drops or optical fibre, Ethernet is emerging as the future broadband protocol of choice, offering plug and play sim=Placate, IP efficiency, and low cost. OF particular Interest are Ethernet PONs, which combine low-cost point-to-multipoint optical infrastructure with too-cost high-bandwidth Ethernet.

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