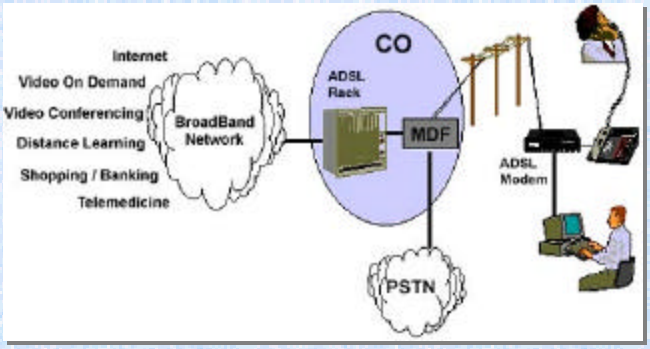
Nanyang Technological University

Network Technology Research Centre

Digital Subscriber Loop (Broadband Access Technology)

Driven by Internet access, electronic commerce, video-on-demand and video conferencing, the demand for high-speed data transmission or increased bandwidth is rapidly increasing. The three principal means by which increased bandwidth can be delivered to end users (customers) are through telephone, cable, and wireless networks.

The challenge for each network is to provide reliable, high-speed data transmission between a central network location and end user. This stretch of network is also known as the "last mile."



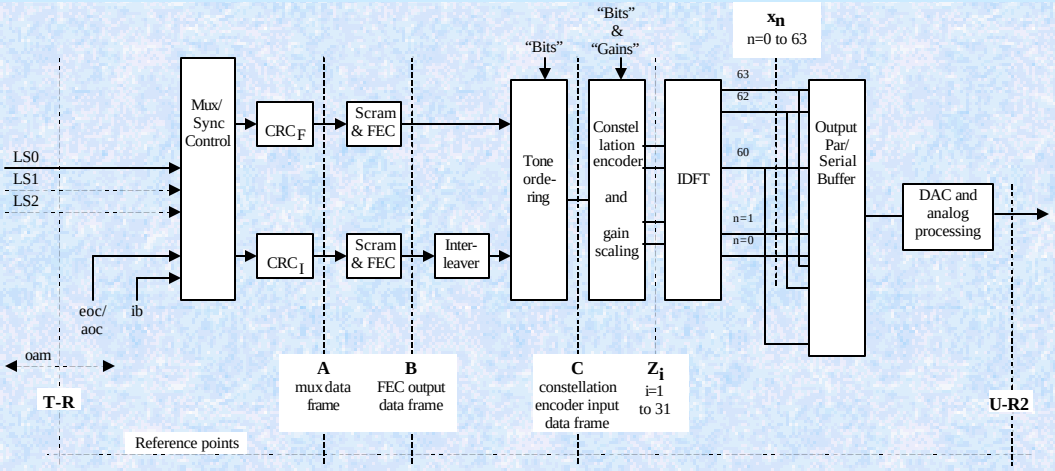
DSL technology, the solution for telephone networks, takes advantage of an existing infrastructure of 750 million worldwide copper telephone lines. Use of ubiquitous telephone networks to deliver increased bandwidth represents the most reliable, well-established, and cost effective solution for customers.

ADSL (Asymmetric Digital Subscriber Line) is one of the DSL high speed transmission technologies. It is asymmetric in that the information transfer speed is higher coming at you (up to 8 Mbps), than it is leaving you (up to 768 Kbps).

ADSL can supply, for example, simultaneous high speed data transmission, video transmission, and fax transmission, all without interrupting the regular telephone service on the same line. There is a frequency range reserved for Plain Old Telephone Services (POTS) so that you can still make a phone call along with a high speed data transmission, and in fact, you can still make a phone call even in the event of an electrical power breakdown.

Our research work is broadbased with the design, development and performance analysis of ADSL modems; furthermore, it is intended to propose some new design algorithms to improve the system performance.

The performance analysis using an ADSL testbed has been carried out. An ANSI T1.413 1998 issue-2 based simulation software is completed; various coding schemes are examined and some new coding algorithms are proposed for implementation.



ADSL transmitter reference model

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