



GoLong ADSL Loop Extender

ADSL Loop Extension – Reaching Customers Served from Legacy DLCs

Problem

ADSL high-speed internet access is not universally available. Customers living beyond the typical three-mile service area cannot get DSL. In addition, many rural customers are served plain old telephone service (POTS) from digital loop carriers (DLCs) which concentrate POTS customers in a service area onto T1 backhaul. DSL cannot be provided to customers who are served by legacy DLCs. Solutions are needed to quickly and cost effectively reach customers on long loops and behind DLCs.

Solution

Two solutions exist. The first is to upgrade to a next generation DLC with remote DSLAM equipment. This capital and time intensive undertaking is cost effective in areas with relatively high projected uptake rates for ADSL service. Another approach is to implement Symmetricom's GoLong™ ADSL Loop Extender. The GoLong solution can be used to deliver long reach ADSL to the legacy DLC location where it can be combined with the existing POTS pair to the CPE with a commonly available POTS/ADSL splitter. In this way, long reach customers who are behind a DLC can be served DSL today without the heavy capital outlay of upgrading to NGDLCs with remote DSLAMs. Telephone companies can utilize loop extenders to obtain and hold customers in areas where projected uptake rates do not justify immediate deployment of NGDLCs. Figure 1 is a network diagram of a typical installation.

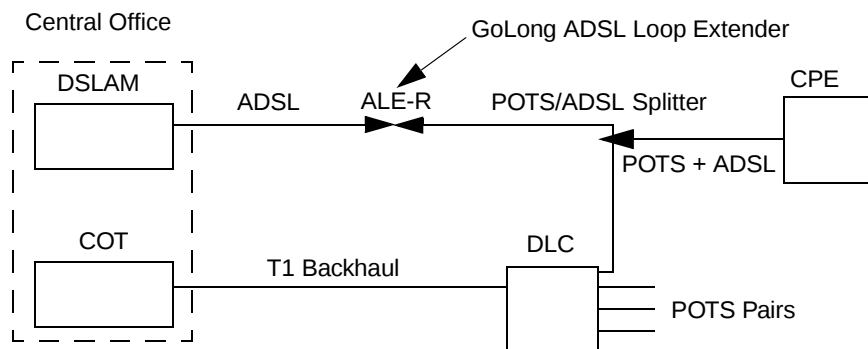


Figure 1. Symmetricom's GoLong ADSL Loop Extender Solution

ADSL Service

The GoLong ADSL Loop Extender is designed to double the reach of standard ADSL. GoLong provides premium 1.5Mbps/256kbps service to customers at distances out to 30 kft. The GoLong solution is comprised of a CO card (ALE-C) installed in standard 3192 office repeater bay mechanics and a mid-span repeater (ALE-R) installed in a standard 439 outside apparatus case. The ALE-R unit is span powered from the CO ALE-C card on the same pair carrying the ADSL traffic. Span powering prevents the ALE-R from passing POTS. The repeated line is digital only (no POTS) so it bypasses the CO POTS/ADSL splitter and terminates directly into the CO DSLAM.

Combining ADSL with POTS at the DLC

POTS service is provided from the DLC and provisioning of ADSL to customers served from the DLC is accomplished by installing a POTS/ADSL splitter at the DLC site. The splitter allows the ADSL signal to be combined with the POTS signal in exactly the same fashion as is done at the CO. The splitter function is simply moved to the DLC location to allow long loop customers to be served ADSL and POTS on a single pair from the DLC to the customer premises.

Distance Considerations

Bellcore's loop survey of 1990 indicates the median distance from the CO to the DLC is 22,324 feet, and the median loop length from the DLC to the customer premises is 3,263 feet. This would confirm that the majority of customers served from a DLC are beyond the typical 15,000 foot serving range for ADSL. Golong ADSL Loop Extenders can be used to reach those customers out to 30,000 feet. These long reach customers can be served one of two ways: either by provisioning a second pair from the CO DSLAM directly to the customer premises or by bringing the second pair to the DLC location and adding the ADSL traffic to the POTS line already installed at the house. Installation can be done on a single circuit basis, or by pre-provisioning 12 - 24 long reach ADSL lines out to the DLC.

Conclusion

Consumer demand for broadband internet access continues to explode. Cost effective methods exist *today* for telephone companies to reach customers previously out of range or behind DLCs. ADSL Loop Extenders are the most effective solution when:

- Customers served by the DLC are within 30 kft from the CO DSLAM.
- Projected uptake rates do not justify upgrading to a NGDLC with a remote DSLAM.
- Construction, cost, zoning, backhaul or schedule constraints prevent installation of a NGDLC.
- Pressure from competing broadband offerings dictates fast response.



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