

Improving Long Route T1 Service Deployment

HDSL vs. Traditional T-Carrier

Overview

Growth in rural wireless cell sites and deployment of rural DSLAMS is driving growth of T1 services in long rural outside plant routes. HDSL4, which is generally first choice for long route T1 deployment, is limited to about 45kft. Many carriers have continued to place traditional T1-Carrier for T1 service beyond 45kft. This has presented several growing operational challenges including:

- Lack of remote management due to non-manageable, dumb T1 special service circuits leading to multiple dispatches and protracted service outages
- Placing T1 repeaters and apparatus cases every 6kft on the route leading to high capital expenditures and long lead times for service turn-up

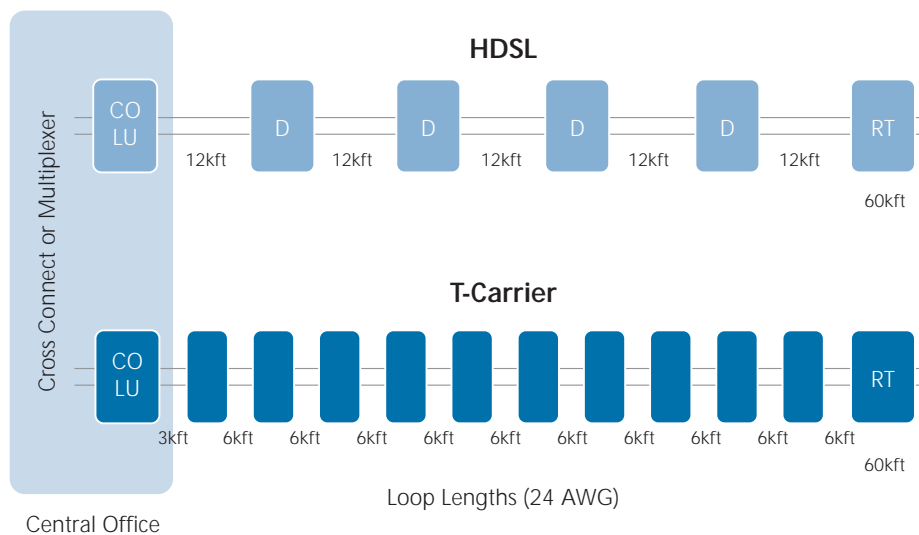
HDSL T1 service delivery technology addresses both of these problems. HDSL can be placed in intelligent manageable shelves thus providing immediate remote test access to isolate trouble and improve dispatch efficiency. In addition, HDSL repeaters spacing can be increased to 12kft thus decreasing the number of repeaters and apparatus cases required. In a 60kft route this can reduce apparatus case/repeater locations from 10 to 4.

This application note provides a comparison of the costs and operational advantages of deploying HDSL vs. traditional T1-Carrier for long rural route T1 service delivery.

Network Comparison

The figure below shows the network configuration for a traditional T1 circuit versus HDSL for a 60kft T1 service.

APPLICATION NOTE



As one can see from the previous diagram, the HDSL T1 circuit has fewer repeaters (4 vs. 10) and fewer Outside Plant (OSP) apparatus cases (4 vs. 10) than the traditional T-Carrier T1 circuit. A first cost comparison of HDSL T1 vs. traditional T-Carrier was completed for the above 60kft network configuration. This comparison included the following costs: line units, remote units, repeaters, allocated share of OSP apparatus cases and in the case of HDSL, the allocated share of costs for a CO bay and a remote network management card. This advantage of less outside plant repeaters and OSP apparatus cases yields an immediate first cost savings for HDSL T1 vs. traditional T1-Carrier of approximately 50%. A summary of this economic comparison is shown in the table below.

	per cct	100 ccts
HDSL	\$1,340	\$134,000
App. Cases	\$2,160	\$216,000
Total Cost		\$350,000
T1	\$1,544	\$154,400
App. Cases	\$5,400	\$540,000
Total Cost		\$694,400
HDSL Savings	50%	\$344,400

Network Management and Maintenance

Compared to HDSL T1, there are more active electronics that can go bad and there are more repeater/apparatus case locations to visit when shooting traditional T-Carrier trouble. Also, traditional T1-Carrier is a "dumb" circuit. This means there are no remote management or performance management capabilities on these circuits. HDSL on the other hand can be deployed as an intelligent system with remote access to network management and performance monitoring. This intelligent network management greatly facilitates trouble isolation and clearing efforts providing more accurate and efficient trouble clearing. Practical experience has shown that the deployment of "intelligent"

systems reduces dispatches, provides shorter clearing times, reduces operational costs and improves customer service. The chart below shows a comparison of the operational costs of HDSL vs. traditional T-Carrier for 100 circuits over a five year time frame. It is assumed that the traditional T-Carrier trouble rate is higher (3% vs. 2%) and the availability of HDSL network management provides fewer dispatches and shorter craft clearing times per T1 trouble.

	HDSL	T1	HDSL Savings
# circuits	100	100	
monthly trouble %	0.02	0.03	
troubles per 5 years	120	180	
% disp.	0.5	1	
\$ disp.	\$320	\$480	
Maintenance Cost (5 yr)	\$19,200	\$86,400	\$67,200 (78%)

This comparison shows that based on the deployment of fewer active electronics and apparatus cases and the availability of intelligent network management, HDSL can provide a \$67,200 opex savings versus traditional T-Carrier for maintaining 100 T1 circuits over a five year time frame.

Summary

Telco Service Providers are faced with the challenge of meeting the growth requirements for T1 service on long rural routes both reliably and cost effectively. Traditional T-Carrier does not meet this requirement. ADC's HDSL deployed in intelligent management shelves can provide this solution to Telco Service Providers. Compared to traditional T-Carrier, HDSL T1 provides a 50% first cost savings due to fewer repeaters and apparatus cases as well as on-going opex savings via more efficient craft dispatch and trouble clearing due to the availability of intelligent remote network management.



Web Site: www.adc.com

From North America, Call Toll Free: 1-800-366-3891 • Outside of North America: +1-952-938-8080

Fax: +1-952-917-3237 • For a listing of ADC's global sales office locations, please refer to our web site.

ADC Telecommunications, Inc., P.O. Box 1101, Minneapolis, Minnesota USA 55440-1101

Specifications published here are current as of the date of publication of this document. Because we are continuously improving our products, ADC reserves the right to change specifications without prior notice. At any time, you may verify product specifications by contacting our headquarters office in Minneapolis. ADC Telecommunications, Inc. views its patent portfolio as an important corporate asset and vigorously enforces its patents. Products or features contained herein may be covered by one or more U.S. or foreign patents. An Equal Opportunity Employer

104231AE 2/07 Original © 2007 ADC Telecommunications, Inc. All Rights Reserved