HOW DO I MIGRATE FROM 4-WIRE LEASED LINES TO A LEASED T1 OR ETHERNET SERVICE?

THE SCENARIO

Telephone companies will no longer support 4-Wire audio leased lines starting as early as 2015. This presents an issue for utilities currently operating their line voltage protection or SCADA equipment via 4-Wire analog leased line communications. In some scenarios, full or fractional T1 leased digital data service lines are available for a nominal monthly fee. In other scenarios, leased Ethernet service lines are available at a lesser monthly fee than T1 leased lines. Utilities are looking for a path forward that minimizes operational impact, requires little engineering, and assures comparable security and dependability for their protection and SCADA signaling. *See figure 1.*

THE SOLUTION

For leased T1 lines, RFL® offers a T1 multiplexer with various interfaces including 4-Wire audio that will allow utilities to continue to operate their protection and SCADA equipment with the same security and dependability. Other options include the replacement of the 4-Wire analog interface with an RS-449, V.35 or C37.94 digital interface to work over the same T1 multiplexer. *See figure 2.*

For leased Ethernet lines, RFL® offers an IP Access Multiplexer with various interfaces including 4-Wire audio, RS-449, V.35 or C37.94 interfaces for the operation of legacy services over Packet-Switch Networks. The IP Access multiplexer will allow the operation of the protection and SCADA equipment with either 4-Wire analog interface or digital interface over the leased Ethernet service. The IP Access multiplexer solution offers a unique redundant communications path feature. This feature allows TDM data to go over two different Telco Internet Service Providers (ISP) for 100% data survivability. *See figure 3.*

THE RESULTS

Both the T1 multiplexer and the IP Access Multiplexers allow the migration of the protection and SCADA equipment to a digital communications link. This improves tolerance to analog noise that can disrupt operation, thereby improving the dependability of the protection and SCADA system.

These field-proven substation solutions ensure out-of-box performance without the need to replace the units or rewire peripheral devices connected to the protection or SCADA equipment.

Figure 1: Before Migration: 4-Wire Leased Lines Communications

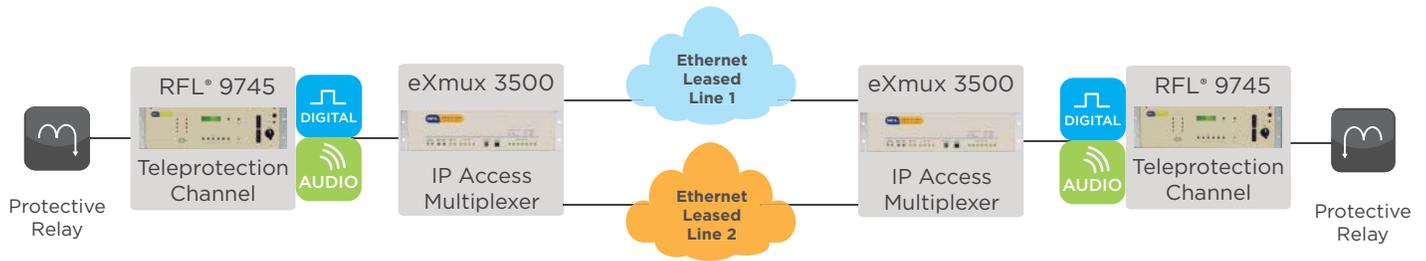**Figure 2: After Migration: T1 Leased Lines Communications**

Figure 3: After Migration: Ethernet Leased Lines Communications With Dual Path

RELATED PRODUCTS
EXMUX 3500

The RFL® eXmux 3500 is a substation-hardened IP Access Multiplexer engineered to modernize substation communications infrastructure. Using high-speed IP transport, the eXmux platform is designed to seamlessly converge legacy Time Division Multiplexing (TDM) devices with IP-based voice, video and data between substations and control centers, guaranteeing mission-critical traffic signals arrive on time, every time.

IMUX 2000 T1

The RFL® IMUX 2000 T1 Multiplexer is a communications platform designed to transport mission-critical signals reliably between substations and control centers. Designed for harsh environments and mission-critical infrastructures, the IMUX 2000 family of products enables power utilities to deliver power safely, reliably and cost effectively, guaranteeing mission-critical traffic signals arrive on time, every time.

ABOUT RFL®

RFL® Electronics Inc., a subsidiary of Hubbell Power Systems, Inc. designs and manufactures a comprehensive line of highly-reliable, mission-critical, cost-effective communications and protection solutions for a wide range of markets including electric utility, transportation, oil and gas in addition to government agencies and engineering consulting firms.

For more information on RFL® or our products, please visit www.rflelect.com or call 973.334.3100.

Because RFL and Hubbell® have a policy of continuous product improvement, we reserve the right to change designs and specifications without notice.