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Transfer Trip Over DS1 Leased Services Using the SEL ICON

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INTRODUCTION

Many power utilities across North America rely on the predictable and guaranteed performance of analog leased phone lines to run power protection and SCADA circuits. Over the next few years, however, national carriers are planning to discontinue their support for DS0 low-speed, analog-based circuits while continuing to offer DS1 leased services. The SEL ICON® Integrated Communications Optical Network can provide a cost-effective conversion from analog devices to leased DS1 circuits that provide the same latency and reliability as DS0 circuits.

DESCRIPTION

The ICON can operate in a channel bank mode and provide interface conversion of legacy four-wire voice services to a DS1 interface. The ICON can also eliminate most of the legacy interface devices through use of direct EIA-232 interfaces and a Transfer Trip Module (TTM).

This application guide provides application examples for converting analog leased line interfaces to DS1 leased service.

APPLICATION EXAMPLES

The following are examples of existing legacy analog applications that can be converted to DS1 services through use of the ICON.

Remote SCADA RTU Application

Figure 1 Typical Leased Analog SCADA Application Using Modems

Older SCADA remote terminal units (RTUs) use Bell 212 four-wire modems to communicate over analog circuits, as shown in Figure 1. In some cases, the modems are embedded directly in the RTU hardware and there may not be an EIA-232 interface option available. As part of the conversion to leased DS1 service, you can use an ICON in place of the modems shown in Figure 1. The ICON can accept either EIA-232 or four-wire audio signals, as shown in Figure 2.

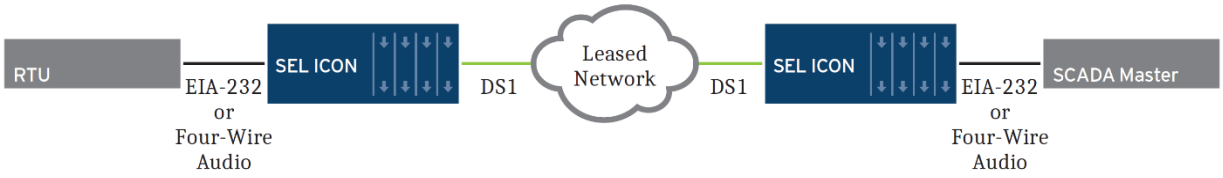

Figure 2 Typical Leased Analog SCADA Application Using ICONs

Teleprotection Application

Figure 3 Typical Leased Analog Teleprotection Application

Four-wire audio tone teleprotection systems, as shown in Figure 3, have historically been applied over leased analog lines. These legacy systems have been in service for many years. The discontinuance of these leased analog services means that many power utilities must find alternative solutions for these services.

One solution is to use the ICON to provide the four-wire interface required by the audio tone teleprotection devices while providing a DS1 interface. This new DS1 interface can be applied over a DS1 leased service, as shown in Figure 4.

Figure 4 Leased DS1 Circuit Teleprotection Application Using ICONs

Another option to replace an analog teleprotection system such as that shown in Figure 3 is to replace the audio teleprotection equipment with a TTM available in the ICON. This module accepts contact inputs directly from the relays and fully replaces the functionality provided by the audio teleprotection system, as shown in Figure 5.

Figure 5 Leased DS1 Circuit Teleprotection Application Using ICONs With TTMs

CONCLUSION

This application guide provides a solution for continuing the use of legacy teleprotection and remote SCADA systems currently in use on analog leased services that are in the process of being discontinued. The ICON allows for the conversion of these legacy systems to DS1 services that are still supported by third-party leased service providers.

TECHNICAL SUPPORT

We appreciate your interest in SEL products and services. If you have questions or comments, please contact us at:

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