RFL UTILITIES SOLUTIONS

How do I migrate from a linear T1 network to an IP ring with minimal interruptions?

The Scenario:

A small size utility had an IMUX 2000 T1 Network in a linear configuration using a Single Mode Fiber Optic communications medium. The network carries revenue generating data as well as critical protective relaying data. The utility wanted to upgrade from a T1 to a TDM over IP network to adapt to the future technology of Ethernet products; however, each minute of network downtime decreases revenue. In addition, the critical transfer trip circuit does not provide protection during outages. The utility has a limited budget allowing only a gradual network transition over the course of a few years.

The Solution:

eXmux 3500 equipment was installed in each substation and the existing fiber optic cables, being used by the IMUX 2000, were connected to the GigE ports as the medium. The eXmux 3500 was equipped with T1/E1 interface and the Serial Server interface. The first step was to migrate the T1 IMUX 2000 to the eXmux 3500 and ensure that the IMUX 2000 T1 data was carried over the Ethernet backbone (Figure 1). The transition was smooth and resulted in minimal downtime. With the T1 in place, the utility converted individual circuits from the IMUX 2000 to the eXmux 3500. This exchange was also smooth and without long outages due to pre-mapping of all circuits at the RFL plant. The streamlined eXmux equipment required only a simple data cable transition from the T1 IMUX to the IP network. Afterwards, each IMUX 2000 was de-commissioned as the circuits were switched (Figure 2).

The Results:

The Customer was able to upgrade an existing T1 network to a TDM over IP Network while re-purpos-

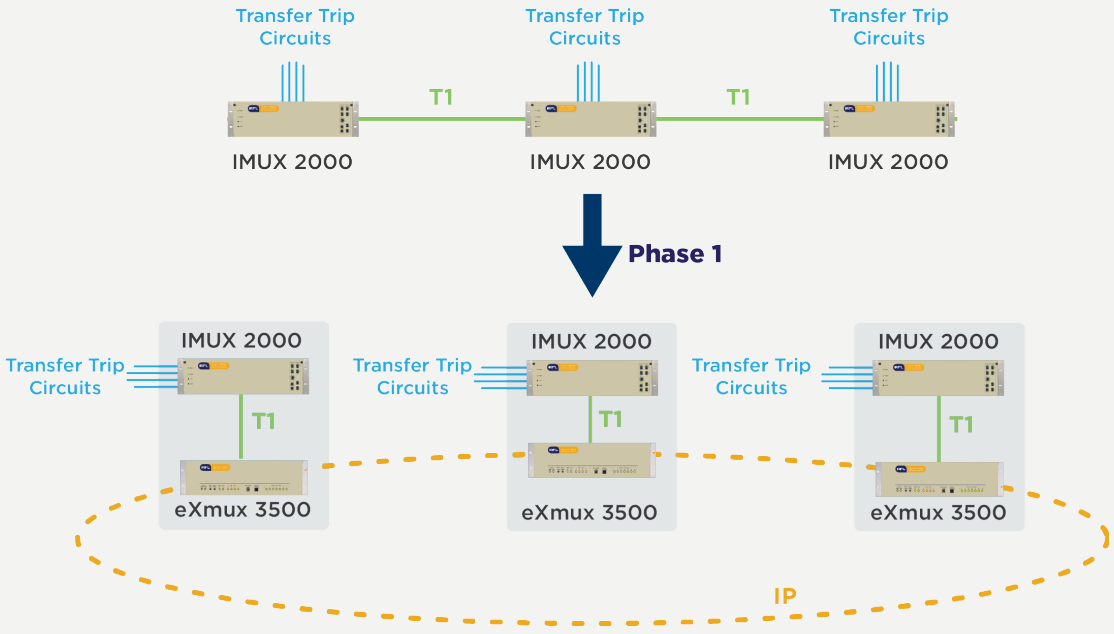

Figure 1: Phase 1 in a staged upgrade from a linear to a redundant ring network

ing the fiber optic cables. With the new IP Network up and running, the customer now has legacy data protection on an IP ring. The transition was completed with minimal network downtime. In addition, the utility now can expand their network to include IP Cameras and other IP devices all while having the backwards compatibility of connecting more legacy equipment to the eXmux 3500.

Related Products:

eXmux3500

The RFL eXmux 3500 is a substation-hardened IP Access Multiplexer engineered for mission critical infrastructures to transport voice, serial, relaying protection, SCADA, video and Ethernet data communications over Ethernet/IP or MPLS networks, providing the flexibility of backward compatibility with Ethernet devices on the same communications network.

About RFL

RFL designs and manufactures a comprehensive line of highly-reliable, mission-crit-ical, cost-effective communications and protection solutions for the electric utility and transportation markets, oil and gas markets, government agencies and engineering consulting firms. RFL is focused on guaranteeing mission-critical data will arrive on-time, every time.

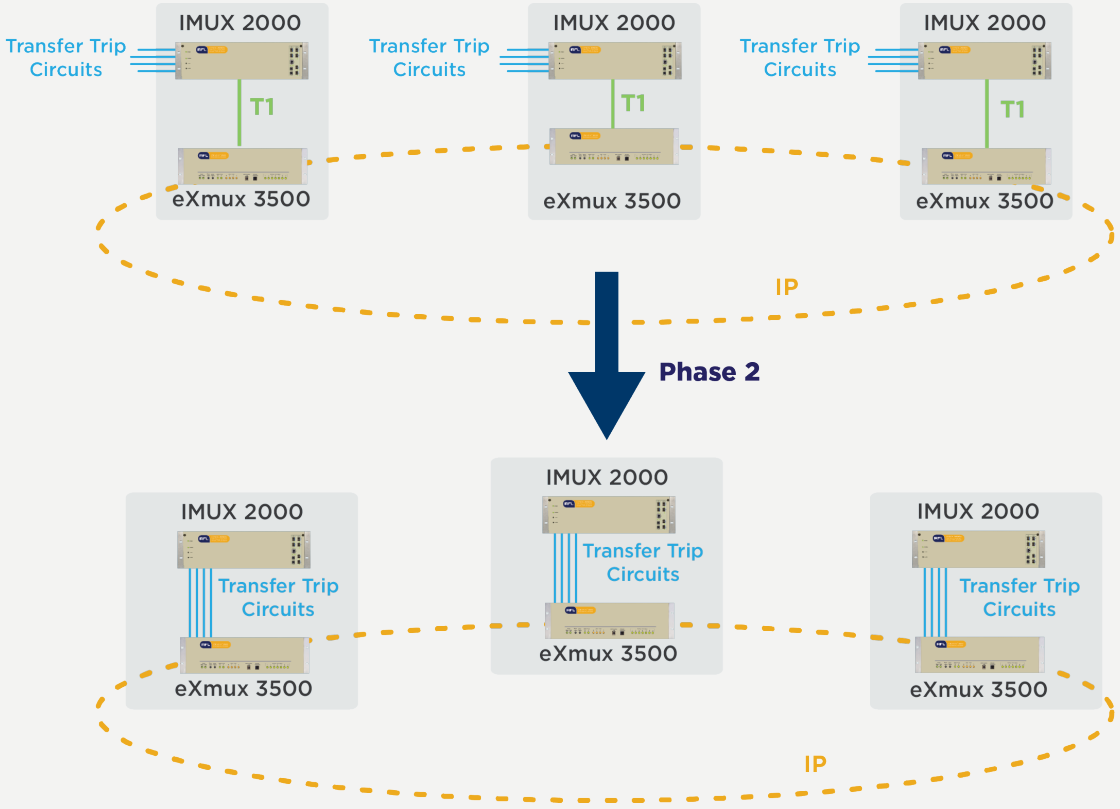

Figure 2: Plase 2 in a staged upgrade from a linear to a redundant ring network

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