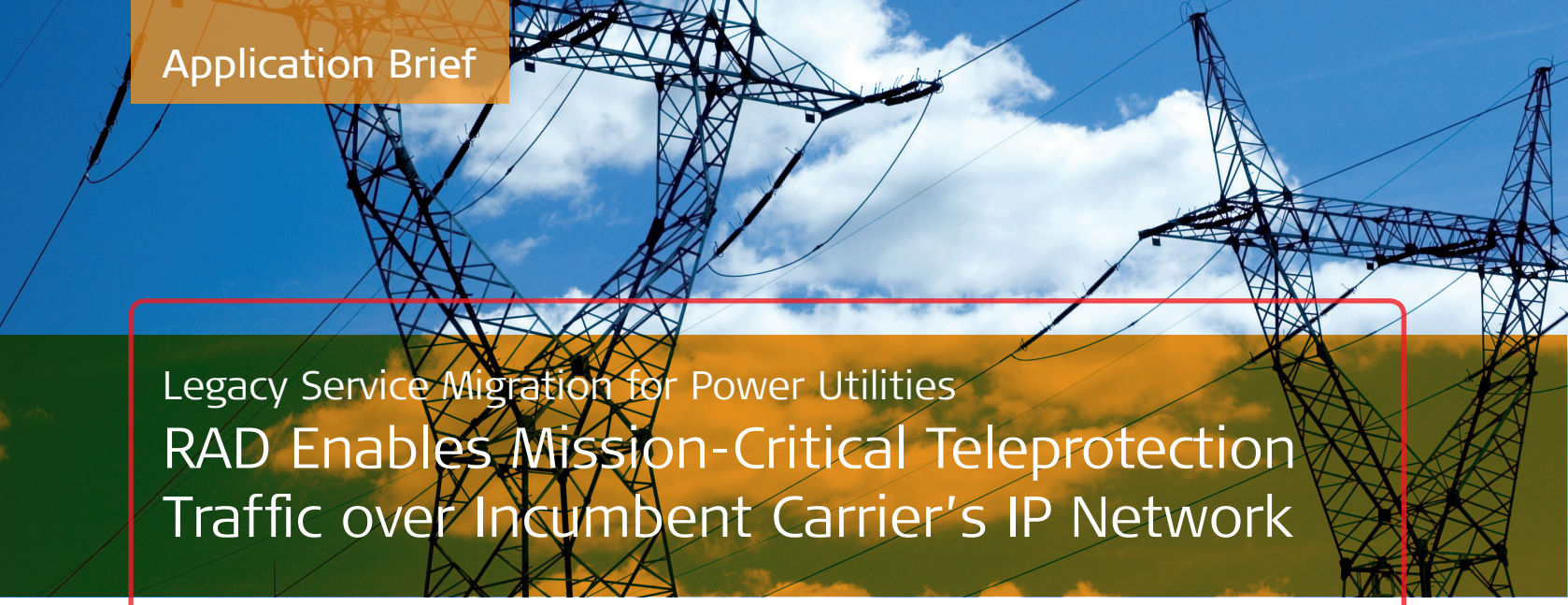
Application Brief



Legacy Service Migration for Power Utilities

RAD Enables Mission-Critical Teleprotection Traffic over Incumbent Carrier's IP Network

While many network operators have replaced their traditional circuit-switched networks with new packet-switched alternatives, the delivery of mission-critical data, such as power utilities' Teleprotection, demands the precise timing and reliability of the TDM transport mechanism. That is why many of them are reticent to transport their critical traffic over new networks.

So when a major incumbent Western European carrier announced that it was phasing out its existing TDM network and replacing it with IP, a regional electric power company that had been using the carrier's leased line services demanded to continue to transport its analog and serial critical traffic over the new infrastructure with the same timing and reliability criteria. What made it all possible was RAD's pseudowire emulation technology.

Teleprotection systems are critical for electric power utilities because they control their transmission grids. In this case, the electric company uses low-frequency analog and serial V11 (64 or 128 kbps) services to carry Teleprotection traffic, which requires low jitter and latency (less than 10 ms one way, end-to-end).

Runs over Multiple Hops for More than 1,000 km with Low Jitter and Latency

Supporting such mission-critical data over IP is enough of a challenge, but this case was complicated by the need to comply with the M1020/G821 standard for error performance over a digital connection. Compliance ensures that the Teleprotection data transiting over the IP network will not be degraded and will remain consistent with the functional requirements of the criteria of the transmission time. In addition, the solution would have to run the legacy traffic between 1,000 substations dispersed along more than 1,000 kilometers (over 620 miles) while guaranteeing the low jitter and latency required by the utility.

To meet these multiple challenges, the carrier selected RAD's ETX-205A Advanced Carrier Ethernet Demarcation Device.

"After over a year of testing and evaluation, the incumbent carrier was able to decide on a solution," notes Mati Epstein, Head of RAD's Utilities Line of Business. "RAD was ultimately selected because our Network Termination Unit (NTU), equipped with reliable pseudowire technology, is ideal for complying with the strict requirements inherent in transporting the utility's most critical traffic – Teleprotection," he adds.

Typical Users

- Carriers with power utility customers

Typical Application

- Transport of mission-sensitive legacy data over packet switched networks

ETX-205A

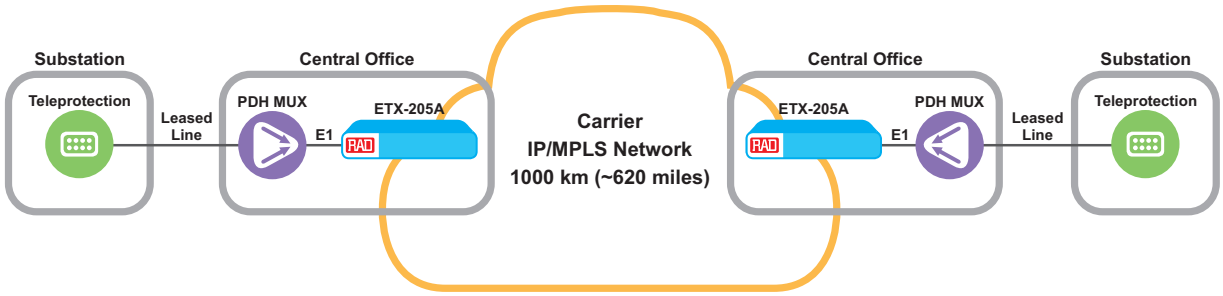
Advanced Carrier Ethernet Device

RAD

Your Network's Edge

ETX-205A NTUs with advanced Carrier Ethernet 2.0 demarcation and pseudowire functionality are deployed at the carrier's central office (CO), where they are connected on one side to an E1 coming from an existing PDH mux and on the other to the carrier's IP/MPLS national core network. The PDH mux aggregates Teleprotection data from leased lines that connect remote substations and then sends it on to the ETX-205A at the CO. The ETX-205 encapsulates the traffic and then, using pseudowire emulation technology, transports it over the IP/MPLS core network while meeting all the jitter and delay constraints.

"We see many utilities facing the same problem as their service providers terminate their old legacy services," Epstein notes. "In such instances, we offer them the opportunity to deploy RAD's migration solutions at their substations or work together with their service providers to enable them to maintain those services over new packet switched networks using either Carrier Ethernet or IP/MPLS," he concludes. "We are always happy to share our extensive experience in ensuring the highest level of reliability for critical applications."



Features	Benefits
Supports M1020/G821 standard	Ensures the quality of Teleprotection data as it transits the IP network
Pseudowire emulation (PWE)	Runs legacy services seamlessly over packet networks
Integrates Channel Associated Signaling (CAS)	Transports channelized E1 over packet networks
Low jitter and latency	Required for the transport of Teleprotection data