For more than 30 years, RAD has worked closely with its worldwide energy utility customers to provide field-proven communications solutions that address the automation, Teleprotection and operational core network needs of their transmission and distribution (T&D) grids.

Service Assured Networking: RAD offers secure, reliable, scalable, managed, and performance guaranteed solutions for automation, protection, security, and ICT networking that support multiple deployment scenarios over SDH/SONET and carrier-grade Ethernet networks. A vast array of capabilities include service provisioning, traffic management, timing synchronization, TDM pseudowire, ongoing performance monitoring, fault management, and various resiliency mechanisms.

Typical users: Distribution power utilities
The evolution to Smart Grid encompasses a number of areas within the distribution network, with a direct effect on networking, automation and security directors of Distribution System Operators (DSOs):

### Distribution Automation

Delivering a range of advanced monitoring applications over the LV and MV distribution feeder circuits, including automatic restoration, dynamic reconfiguration, dynamic volt/VAR controls, and power quality measurements.

### Smart Metering and AMI

Providing frequent and granular usage and power quality measurements, two-way communications and control between the utility and the customer premises.

As a result, the implementation of a Smart Grid presents multiple communications challenges for each segment of the distribution grid:

- **How to support different types of traffic in an outdoor environment?**
- **Which infrastructure should be used to connect tens of thousands of secondary substations?**
- **Building out a private network or leasing services from public service operators?**
- **How to deal with security threats?**

### Harnessing RAD's Expertise for Smart Grid Communications

Smart Grid communications complexity is increased when the DSO is deploying Distribution Automation devices, as fault indicators, power quality meters or MV line load break switches and RTUs are colocated with Smart Meter concentrators at the same secondary substations.

RAD’s offering successfully alleviates the various pain points shared by DSOs by delivering connectivity for meter concentrators and automation devices over a single communications link:

- **Reliable backhaul** of LV transformer sites, aggregating traffic from a multitude of urban and industrial sites using point-to-point radio, fiber optics and/or cellular
- **Easier operations and lower costs** via shared communication links and infrastructure with central management
- **Smart and Safe City** deployments can share the high bandwidth and secure network of video surveillance or energy efficiency solutions
- **Securing critical bi-directional traffic** produced by automation and metering systems, to protect against threats emanating from the internet as well as from internal attacks
LV Transformer Site Backhaul

- A comprehensive solution addressing communications to secondary substations, metering and automation network integration and cyber security
- Comply with IEC 61850-3 and IEEE 1613 environmental standards for outdoor installations
- Seamless communication for IP SCADA over fiber optics, radio links, across 2G/3G cellular links, or copper circuits and leased lines from a local telecom service provider
- Integrated firewall with distributed SCADA security suite
- Point-to-multipoint radio connectivity supports high capacity mission-critical traffic over licensed and unlicensed sub-6 GHz bands, with dedicated bandwidth allocation and service level agreement (SLA) per subscriber

Airmux
Point-to-Multipoint Ethernet Radio

SecFlow
Secure Industrial Ethernet Switch/Router
Additional RAD Service Assured Networking Solutions for Power Utilities

- Operational Core Network Using Carrier-Grade Ethernet
- Substation Communications
- Teleprotection Connectivity for Differential and Distance Relays

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