

Service Assured Networking for the Power Industry CELPE, Brazil

Migration to an All-Packet Network that Supports Smart Grid Applications

Compliant with the IEC 61850 Standard for Automation and Security

Challenge

Deliver guaranteed services for production and mission-critical systems, including SCADA and telemetry over packet-switched infrastructure.

Solution

RAD's Service Assured Networking, featuring a core operational network using carrier-grade Ethernet.



The Brazilian utility CELPE distributes and sells power to 184 municipalities in the state of Pernambuco and the archipelago of Fernando de Noronha, and also serves the city of Pedra do Fogo in the state of Paraíba. Its production plant includes two 138/69 kV substations and 132 69/3 8 kV substations, all of which are automated. The company runs 3,960 kilometers of transmission lines and 121,000 kilometers of distribution extensions, operating with 103,000 distribution transformers. In addition, CELPE has 160 automated distribution keys, and controls its entire structure from a single distribution center in the city of Recife, which is also where its corporate headquarters is located.

When CELPE decided to upgrade its communications network by extending its digital backbone to the city of Serra Talhada, 415 kilometers from Recife, it turned to RAD, whose Service Assured Networking solution for power utilities is ideal for substation connectivity and migration. The solution was based on RAD's Megaplex-4 multiservice access nodes, which were integrated into twelve CELPE sites, comprised of eleven substations and its main network core situated at its integrated operations center.

CELPE had previously replaced its old 2 Mbps PDH infrastructure with a Megaplex platform. In so doing it turned its original optical transport network into a 155 Mbps Ethernet ring with central management of all legacy and new packet-switched Ethernet services. This was a critical step that would enable an eventual migration to an all-packet infrastructure and the implementation of Smart Grid applications.

"Megaplex also enables us to adhere to the power sector's new security and automation protocols."

Mauricio Santos Moraes,
CELPE Telecommunication
Manager



Case Study Service Assured Networking for the Power Industry, CELPE, Brazil

In addition to extending the optical network to Serra Talhada, the deployment of the Megaplex-4 increased CELPE's network speed from 155 Mbps to 1Gbps, and set this higher speed as the standard for the company's new projects.

Seamless Migration of Old Serial Circuits

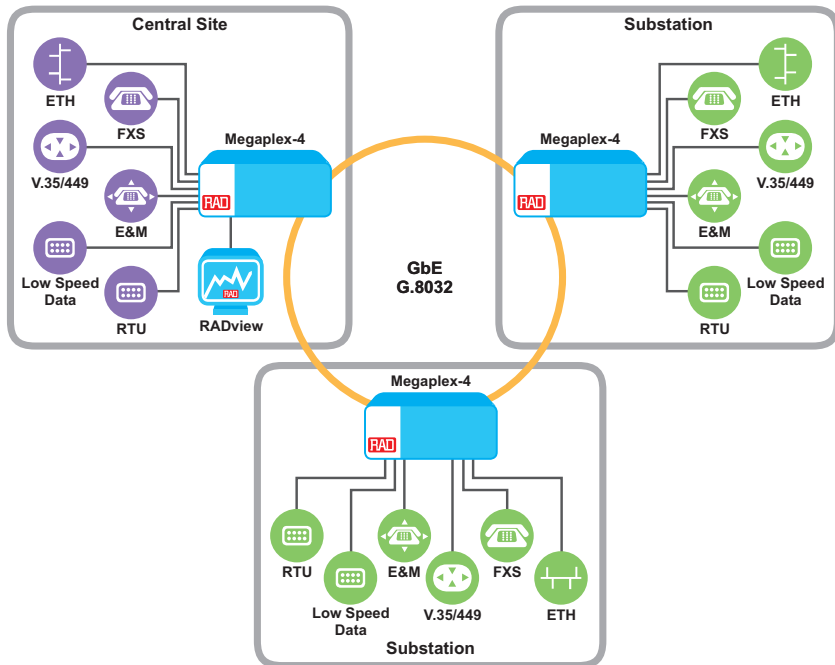
According to Maurício Santos Moraes Lobo, CELPE's Telecommunications Manager, RAD's multiservice Service Assured Networking solution provides a seamless migration from SDH to new intelligent networks while fully utilizing old serial circuits such as TDM voice and RS-232. "Megaplex also enables us to adhere to the power sector's new security and automation protocols," Lobo states. In fact, CELPE is replacing its current DNP3 protocol so as to be compliant with IEC 61850 requirements. IEC 61850 is a new standard for automation and security that is designed for the Smart Grid.

Using the Megaplex platform and RAD's Service Assured Networking solution, CELPE can now deliver guaranteed services for production and mission-critical systems over its new architecture. These services include SCADA traffic information and telemetry channels for the electricity that enters and exits the substations that are connected to the network.

CELPE also transmits qualimetry applications (which monitor power quality) over its Ethernet network, as well as all data and PBX services, including telecommunications, Voice over IP and analog traffic.

Supports QoS and Power Distribution Automation

All of CELPE's Megaplex access nodes are being connected over fiber optic lines. "The new IP network also supports QoS applications and power distribution automation," adds Valter Teixeira, General Manager of RAD do Brasil.



International Headquarters
RAD Data Communications Ltd.
24 Raoul Wallenberg Street,
Tel Aviv 69719, Israel
Tel: 972-3-6458181
Fax: 972-3-7604732
email: market@rad.com www.rad.com

North American Headquarters
RAD Data Communications, Inc.
900 Corporate Drive, Mahwah, NJ 07430, USA
Tel: 1-201-529-1100
Toll free: 1-800-444-7234
Fax: 1-201-529-5777
email: market@radusa.com www.radusa.com

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Valter Teixeira,
General Manager, RAD do Brasil

Features

- Supports SDH/SONET/PDH and new intelligent networks while fully utilizing old serial circuits
- Increases network speed from 155 Mbps to 1Gbps
- Supports QoS applications and power distribution automation

Benefits

- Enables adherence to the power sector's new security and automation protocols
- Facilitates migration to all-packet infrastructure and implementation of Smart Grid applications
- Transmits SCADA, telemetry channels and qualimetry

