



Core Enterprise Solution for Power Utilities

Executive brief

Power distribution grids depend upon wide-area communications to operate their network. Services such as machine-to-machine connectivity for smart meters and pole-top monitors, distribution automation, security video and remote inspection of lines and plants using UAVs or drones help reduce overall operations costs.

A private wireless network with 4G or 5G provides a modern way to enable these communications using 3GPP standards, and Nokia's cloud-native 4G/5G core network provides the infrastructure to connect the devices and networks. This core solution delivers secure mission critical connectivity and enables low latency for fast machine response to maintain safety and ensure service reliability, as well as simple scalability and optimum cost-effectiveness.

The need for exceptional connectivity

The connectivity needs of power utilities are changing rapidly as they advance their digitalization and automation plans to support the transition to low carbon energy. Power grids require secure, reliable wide area wireless coverage to connect grid devices, sensors, smaller substations, massive IoT applications and remote workers.

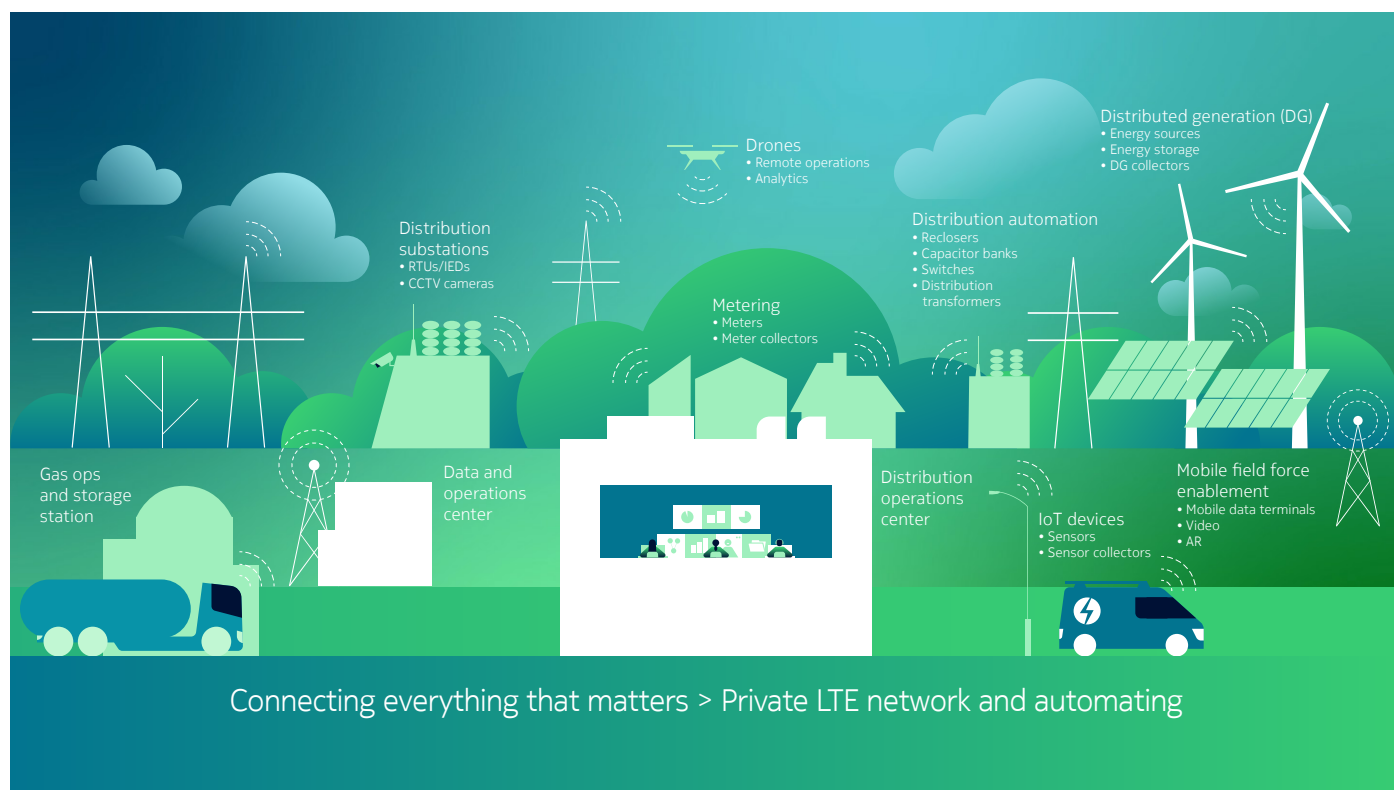
To meet these needs, a converged mission-critical Private LTE field area network (FAN) can provide low latency connectivity to the grid's edge for distribution automation and renewables integration, along with extensive broadband to connect field forces.

Delivering mission-critical communications

The Nokia Core Enterprise Solution for Power Utilities uses cloud-native principles to provide flexibility and scalability to support mission-critical communications, as well as offering a compact footprint and low total cost of ownership (TCO).

The standards-compliant core solution supports large networks and is tailored for the needs of mission-critical power utility FAN infrastructure. To help achieve secure, high availability of grid operations, the core offers geo-redundancy options using modern cloud techniques, seamless scalability for massive IoT support and the high Quality of Service (QoS) needed for critical use case performance and scarce spectrum.

Figure 1. Power utilities need reliable connectivity across their grids to support existing and new use cases





The small footprint solution is pre-integrated for easy deployment and optimized for mission-critical 4G/LTE and 5G radio with a clear evolution path to 5G stand-alone core when required.

Power utilities can benefit from affordable, reliable and secure connectivity for their smart sensors, devices, renewables integration and mobile communications needs.

A single, future-proof platform

With the Nokia core as part of a Private LTE solution, power utilities can run existing use cases, such as SCADA, AMI and voice, on a single network. This simplifies operations and reduces costs. It also provides secure, reliable connectivity to support new use cases created by the rise of digitalization, automation and distributed energy sources.

Nokia has extensive experience of more than 200 power utility mission-critical communications networks and is a public and private wireless network technology leader.

Nokia infrastructure is enabling many new potential applications for utilities:

- Sensors to monitor the remotest equipment
- Remote control of drones with video feeds
- Real-time video to improve productivity and safety
- Deployable cells to maintain connectivity during natural disasters
- Real-time AI analysis to help optimize operations
- Augmented reality to improve maintenance processes..

As technology evolves and new use cases emerge that require even lower latency enabled by 5G, the Nokia Core Enterprise Solution offers a natural evolution path that helps power utilities achieve their digital transformation strategies.

Table 1: The Nokia Core Enterprise Solution addresses many power utility use cases.

Distribution system operations and maintenance • High voltage line inspection • High voltage tower inspection • Dynamic line rating and remote interrogation • Infrastructure mapping (e.g. ground penetrating radar using drones) • Transformer monitoring and control	Plant operations and maintenance • Solar and wind farm remote inspection • Real-time data monitoring (turbines, pitch motors, weather, staff presence and location) • Perimeter security
Sensors and automation • IoT pole top sensors • Meters • Plant and substation monitoring • Sensor and meter collectors	Plant and field communications • Field force enablement • Networking for voice and data in the field, and across plants • Remote assistance for complex jobs
Grid communications • Microgrid integration • Distribution automation with asset intelligence • Secondary substation comms over private wireless	• Pervasive grid control • Control renewables connection to transport grid LV monitoring, demand response, AMI backhaul



Learn more

Find out more about Nokia Core Enterprise Solution for Power Utilities by visiting our [web page](#).

About Nokia

At Nokia, we create technology that helps the world act together.

As a B2B technology innovation leader, we are pioneering networks that sense, think and act by leveraging our work across mobile, fixed and cloud networks. In addition, we create value with intellectual property and long-term research, led by the award-winning Nokia Bell Labs.

Service providers, enterprises and partners worldwide trust Nokia to deliver secure, reliable and sustainable networks today – and work with us to create the digital services and applications of the future.

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