



# Network, communications and cloud solutions for energy and utilities

Brochure

Alcatel·Lucent   
Enterprise



## Overview

The energy and utilities industries provide extremely diverse essential services. Some organisations are focused on extraction, production, storing (oil, gas, electricity, water, mining, nuclear, and more) while others are focused on transportation and distribution. Some of them are public, others are private or a combination.

Each organisation has its unique challenges and requirements and is at a different stage in its transformation. However, despite their many differences, all of them face a common set of global challenges that have led to a collective need: They must accelerate their transformation by investing in innovation and technology.

Climate change is forcing energy and utilities companies to transform by providing more renewable energy, reducing carbon footprints and limiting pollution. This global reality is driving energy and utilities companies to implement efficiency policies and technological improvements to help with consumption reduction as well as increasing their resiliency to ensure service continuity and an efficient recovery plan.

Energy and utilities operators are facing three types of challenges, including; global, technological and customer retention.

**At the global level**, they need to increase their operations safety and security, reduce their carbon footprint, protect against cyberattacks and address new regulations.

**On the technology front**, energy and utilities organisations expect to benefit from operational improvements as they accelerate their digital transformation and adopt innovations. However, they will still have to deal with migration plans, technology obsolescence, interworking between the new and old technology and the management of very large scale networks. The convergence of operational technology (OT) and information technology (IT), the massive deployment of Internet of Things (IoT) and the Industrial Internet of Things (IIoT), as well as process automation and preventive maintenance will help.

**On the customer side**, organisations will need to develop new customer relationship strategies and services to address new types of customers, meet their expectations, consumption demand and usages.

Alcatel-Lucent Enterprise is tackling these challenges with a **three-pillar approach** that focuses on **enhancing safety and security, increasing operations efficiency and improving customer engagement**.

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# Enhance safety and security

There are enormous pressures on the energy and utilities organisations today. As cybersecurity breaches, vandalism and terrorist attacks become pervasive, this sector must be prepared to deal with the threats. Investment is required across a number of areas, including; building a strong and safe digital infrastructure for networking and communications; protecting people and assets; and developing mechanisms to address cybersecurity threats.

## Mission-critical networks for mission-critical services

To address the global challenges energy and utilities operators face, the IT network must provide multiple layers of resiliency, optimise traffic flows and minimise service disruption. To make that possible, they need to create a resiliency plan to ensure service continuity and develop an efficient disaster recovery plan. The resiliency plan should be supported by reliable infrastructure and a mission-critical network. It must be cybersecure, application aware, with a unified management platform.

A **strong network backbone** needs to be reliable, resilient and secure to interconnect the different domains. The backbone must have the following capabilities:

- Service segmentation
- Multi-service applications network convergence
- Deterministic QoS to meet application specific requirements
- High network availability
- Granular security
- Precise network synchronisation
- Simple and centralised network management

Network infrastructure must go beyond the normal redundancy and high convergence protocols. The ability to continue in operation when an intervention is made in the network, requires advanced implementations and features, to complete all the tasks without a network stoppage. The Alcatel-Lucent Enterprise high availability and redundant architecture ensures alternative links are always available to upgrade services without having to stop or restart the network.



The **reliable communications infrastructure** is also key to protect the organisation from service outages. It must provide high security and a high availability architecture with:

- Hot standby redundancy for robust communication system
- Geographical redundancy for physical location back up
- Reliable communications for an always-on communication platform
- Remote sites deployment with continuity services through local survivability
- Multi-device compliancy for specific purposes such as IP, SIP, TDM, analogue
- Full virtualisation for data centre optimisation deployment
- Hybrid architecture to protect investments and evolve to new models
- Support for private and public cloud services

Communications covers a gamut of activities such as; operational safety, staff security, field worker protection in dangerous environments, enabling a resiliency plan based on a reliable communications infrastructure to ensure operation continuity.

The network and communications solutions must be highly reliable and future-proof, capable of meeting the challenges of today and tomorrow.



## People safety

Operational staff safety is paramount for energy and utilities operators because it can directly impact the continuity of service. Standard practices are required to address everyday situations and an emergency plan is essential to address unexpected security incidents.

Security personnel and public safety responders must act quickly and effectively to address emergencies. They cannot allow operational obstacles to interfere with their mission. To respond quickly, they require accurate information about a caller, including location and emergency details. It is also crucial to broadcast messages to mobilise staff and record calls for training and coaching purposes, or for aftermath investigations. The following solutions can help field workers performing critical and dangerous tasks, work safely:

The **isolated worker solution** provides a handset able to trigger alarms in case of an incident, as well as provide the worker location. These devices provide a complete set of Isolated Worker Protection services, including man-down, no movement, pull cord functions and an emergency button. The notification server helps increase responsiveness and safety for operational staff across facilities, in indoor and outdoor environments. It can track all emergency calls from all workspaces, localising and routing the calls to the correct emergency responders. Additionally, the notification solution allows broadcast messages over any device for staff mobilisation during incidents.

**Remote visual assistance streamlines on-site interventions.** A remote visual assistance (RVA) solution offers communication services to allow a handsfree, rich interaction between the on-site technician and the experts. Services are comprised of voice, video sessions and documents sharing (photos and videos), which can be collected and centralised.

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## Asset protection

A good physical security system is more than the sum of its parts. Access controls are essential to protect facilities from crime and attacks, but energy and utilities facilities are large and remote, which often makes them difficult to monitor.

**CCTV cameras** provide a global view of entry and exits. Intelligent video analytics offers a new way to see more with less operators, using AI and analytics to identify suspicious movements and correlate behaviour throughout the facilities. Also, intrusion protection sensors are now being connected to the data network, replacing proprietary protocols and dedicated communications systems with easy to integrate IP systems. Notifying the right people is key to coordinate the right support activities and automate processes.

**Secure alarm processes and workflows** allow operations to connect and monitor alarms from a large range of **sensors** (such as fire detection, gas leaks, temperature, and high pressure) and IIoT sensors to streamline the flow of operational staff alarm notifications. An emergency notification server follows predefined scripts for the right call to action that could include notification through a wide range of telephony devices, collaboration applications and IoT interactions.

**Industrial switches and access points (APs) bring industrial-grade capabilities** with highly secure, superior performance to mission-critical applications running in harsh environments and extreme temperatures. This enables network deployment in areas where it is necessary to provide physical connectivity for security solutions. It complies with certifications, is cybersecurity and can be managed remotely.

## Cybersecurity

When looking for threats, you need to think beyond physical security since many threats are now digital. Advanced machinery and OT with many sensors systems such as IIoT, are becoming more connected, bringing operational efficiencies. They are even sometimes connected to a public internet and can pose a severe security risk. Hackers can easily use compromised devices to gain entry to the rest of the company's network. The need for mobile connectivity, with wireless and cloud applications, further increases threats.

A **zero trust network** can protect against cybersecurity threats to maintain the integrity of energy and utilities systems while delivering full operational capabilities. It protects the organisation's resources, rather than just the network, with a focus on protecting access to resources.

The zero trust architecture attributes advanced security policies, devices authentication, identification, segmentation and micro-segmentation. It is based on five steps: monitoring, validation, planning, simulation and production.

Communications systems must also integrate all the cybersecurity policies with:

- Security elements built into the architecture
- Native encryption to maintain the integrity of the system
- Best practices that force internal and external customer authentication, as well regular system audits and password policy
- Software support capabilities that update the code in response to attack and vulnerability detection

Alcatel-Lucent Enterprise is ISO 27001 certified for information security management:

- Industrial switches are security-hardened and include advanced security technologies verified and validated by third-party organisations
- A single, secure operating system reduces the organisation's attack surface, simplifies risk mitigation and enables targeted remediation
- Solutions include key security technologies such as Wi-Fi Protected Access 3 (WPA3), Shortest Path Bridging (SPB), MACsec encryption, Address Space Layout Randomisation (ASLR), and role-based network access control

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## The Zero Trust Network by Alcatel-Lucent Enterprise

The zero trust network architecture is effective, easy to manage and extremely scalable. It promotes security far beyond the network perimeter and it is based on a multi-layer approach to bring security to the entire network, including individual devices. It assumes attackers are already present and always ready to strike. There is no implicit trust. The same high levels of security protection are applied equally to every internal and external person, system, subsystem, application and device that attempts to access the network. Access is strictly limited to the required resources when the request is made, and all network resources are continuously scanned for unusual or malicious activities.

# Increase operations efficiency

Energy and utilities operations typically cover large geographic areas in complex environments, with limited human and technical resources to manage them. Without connectivity or communications, energy cannot be generated, extracted or distributed, which means no utilities services. Today, authority and customer expectations are increasing. Technology and innovation in the hands of innovative people will enable agile operational models to match those requirements.

## Operations Control Centre

The Operations Control Centre (OCC) is the brain that manages the day-to-day monitoring, directing and coordinating of energy and utilities operational activities to ensure quality of services. It includes remote maintenance support to identify and respond to unexpected situations that demand specific, immediate and efficient attention, coordination and action. These actions are required to avoid unacceptable delays and recover from operational interruptions, to minimise negative impacts to customer service, cost and security. A smart OCC relies on connectivity, digitalisation, and real-time communications and collaboration. Tackling the main OCC challenges requires three key areas of consideration, including:

- An efficient digital workplace for OCC agents to manage call taking/dispatch tasks, and for staff in the field or in the back office to facilitate day-to-day work, from anywhere, with any device or application, using any media
- End-to-end personnel and asset protection through recording capabilities and emergency management solutions
- Innovative and efficient services by connecting everything; people, objects and applications

## The Operations Control Centre by Alcatel-Lucent Enterprise

ALE is a recognised OCC partner for secure network and real-time communications and collaboration. Our success is the result of the reliability, security, wide-ranging features and openness of our systems, essential for a smarter OCC.

We provide OCCs with a mission-critical IT network infrastructure to easily onboard Internet of Things (IoTs) and support new video usages such as CCTV and high-definition IP cameras used in video surveillance.

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## Centralised management and predictive maintenance

Modern technologies, such as the Internet of Things (IoT) and digitalisation, have a wide number of applications that contribute to operations efficiency. All the devices, sensors and actuators require maintenance from both the IT management and operation teams, to keep them operational across the facilities. However, keeping components working requires not just network connectivity status, but also quick control and remote response capabilities in the event of a service issue. Centralised management and preventive maintenance tools can help energy and utilities operators save time and reduce network downtime.

**Centralised management:** This tool manages the WLAN and LAN, and simplifies operations. Centralised analytics also helps with proactive and preventive decisions to maintain network health and improve operational time. The ability to proactively prevent and anticipate malfunctions in the network (Loops, DoS, High CPU usage, among other), helps avoid service disruptions, ensuring higher operation time and reduced costs. Interoperability and an open architecture (APIs) with other systems (SCADA for example) enables quality of service, security and scalability and provides a foundation for IT/OT convergence.

**Predictive maintenance:** An AI-based network operations companion can provide real-time network monitoring, alerts of potential risks and resolution for network issues, maximising the Quality of Experience (QoE). Network preventive maintenance means being on top of fixes, catching problems before they appear and taking all-around proactive care of your network, including:

- Fixing network issues automatically with one tap
- Reducing troubleshooting efforts
- Understanding network behaviours using historical data
- Receiving cybersecurity alerts and responding immediately
- Addressing unknown issues with Artificial Intelligence and Machine Learning (AI/ML)
- UCaaS/CPaaS integration: collaborate, react faster, improve and connect to third-party applications

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# Improve customer engagement

New players are emerging in this evolving market, creating intensified competition. New expectations and new renewable energy offers are providing alternative options for end customers. Those elements have triggered customer churn that may result in significant revenue reduction for energy suppliers.

Today, customers are willing to use online channels to interact with their service providers. They want a personalised experience, detailed data about their consumption, as well as contract update and modification information. Energy and utilities organisations need to digitise their processes to improve their customer-centric approach, boost their customer service to ensure their customers' needs are a top priority, and reduce response time.

**Automated welcome:** In business, a telephone call is often the first point of contact. A visual automated attendant provides a professional image with a virtual receptionist available 24/7, delivering a quality response to your customers. A great service experience starts with a courteous greeting and routes callers directly to employees, departments or voicemail. The programming interface is intuitive with prompts that can be easily customised and routing rules that instantly adapt to new business needs.

**Multimedia contact centre:** Today, end users want to contact their operators through their channel of choice; from voice and email, to live chat through the company website, or social media. A multimedia contact centre optimises omnichannel interactions through voice and digital channels, with quality, availability and efficiency. The multimedia contact centre is based on a Contact Centre as a Service (CCaaS) solution that enables organisations to harness the power of the cloud while leveraging their communications equipment investments. The multimedia contact centre also offers AI-based assistance for fast and accurate responses, resulting in an improved first contact resolution and customer experience.

**Cloud-based connectors and apps** enhance customer interactions by integrating communications into existing business apps such as Customer Relationship Management (CRM) and IT service management tools. Click-to-call capabilities enable users to easily launch outbound calls to customer support services. CPaaS integration on operator website or mobile application enables end users to interact with agents through chatbot, text messages, voice and video communications.

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## Rainbow™ by Alcatel-Lucent Enterprise

Energy and utilities can improve their customer support by facilitating interactions between users and agents. Rainbow business communications solutions offer user friendly collaboration tools from voice to video, that connect people, machines and processes, including:

- Audio and video conferencing – create or join audio and video meetings with up to 120 participants and up to 12 simultaneous video streams
- Rich telephony capabilities – connect your existing on premises telephony system or a cloud PBX with Rainbow
- High level security – ISO 27001 compliant and designed with product security features to help prevent and detect security threats. Data privacy focused with adherence to laws including General Data Protection Regulation (GDPR) in the EU and California Consumer Privacy Act (CCPA).







## Services

Alcatel-Lucent Enterprise services are offered at every step of the deployment lifecycle to accompany and complement your ALE Business Partner or System Integrator. Our range of services are available off-the-shelf or tailored to specific needs, delivered on premises or remotely on top of solutions.

- **Professional services** are available, on-site and remotely, throughout your digital transformation journey, from project management and design definition to implementation, in collaboration with your Business Partner or System Integrator
- **Training services** help develop or enhance your skills, adopt new technology and become autonomous
- **Managed services** extend Business Partner service offerings with flexible services options to support customers' 24/7 network operations, with enhanced service level agreements and monitoring
- With **Support services**, you maintain business continuity with 24/7 support services to sustain your operations and production with your Business Partner or System Integrator
- **Customisation services** ease your digital transformation with coaching to help your team develop the specific application you need or even develop it altogether on our technology building blocks, with your Business Partner or System Integrator
- **Success management services** let you accompany your end users on their digital transformation, with solutions adoption and benefits, by defining success criteria, enabling it, and initiating any of the above services based on our ALE solutions, as needed.

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# Solutions for today and tomorrow

Alcatel-Lucent Enterprise solutions address the challenges energy and utilities organisations face every day including, safety and security, operations efficiency and customer engagement. We connect all subsystems to enable smarter and greener services, with 'as a Service' (aaS) models to move from connected to smart energy and utilities. ALE solutions provide increased efficiency and minimised environmental impact before, during, and after deployment, with:

- Energy-conscious product designs that require less power, manage power better, and reduce heat dissipation
- Reduced hardware size, miniaturised components and densified ports
- Virtualisation technologies to eliminate the need for some hardware altogether
- Cloud solutions to reduce space and energy requirements
- Architectures and product life cycles optimised for maximum longevity
- Eco-friendly packaging materials
- Compliancy to environmental directives for product end-of-life and disposal.
- Our Go Green program combines our efforts with those of our suppliers, partners, and customers to reduce digital pollution, improve waste management and decrease energy consumption across the entire value chain

## Learn more

Learn more about [Alcatel-Lucent Enterprise solutions for the energy and utilities sector](#)

# ALE solutions to address energy and utilities challenges

Innovative ALE solutions, including our industrial switch family, communications and cloud capabilities with specific application middleware for control centres, are helping energy and utilities operators around the globe increase their safety, improve efficiency and enhance their customer interactions, with:

## 1. Connectivity through our network solutions:

- Robust [mission-critical networks](#) and communication infrastructure
- High protection [industrial switches](#) for harsh environments
- [Video surveillance](#) and [IoT sensors](#) connected through a comprehensive workflow to protect people and assets
- [Zero trust network](#) to reduce the cyberthreats vulnerabilities
- [Predictive maintenance](#) platforms using AI-based integration
- [Centralised management](#) connecting all management subsystems as well as SCADA system and other hypervisors through open APIs or O2G
- Openness to interwork with other functional applications
- ANSI and DOD validated
- Zero emissions: Certification and Corporate Social Responsibility (CSR) compliance
- 10+ years support services

## 2. Communications and collaboration solutions:

- Smart [operations control centres](#) empowered with rich communications (conferencing, chat, video)
- [Remote visual assistance](#) between on-site technician and remote experts
- [Visual automated attendant](#) and [multimedia contact center](#) for improved interactions with users

## 3. Cloud solutions:

- [Rainbow API connectors](#) and CPaaS to integrate communications into business processes and applications
- Rainbow cloud solution can be deployed on premises with Rainbow Edge
- API and SDK for cloud deployments