



# A three-pillar approach for energy and utilities tackling today's challenges



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## Identifying energy and utilities challenges

Today, 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 have to deal with migration plans, technology obsolescence, interworking between the new and old technology and the management of very large-scale networks.
- **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.



# Three pillars to tackle the challenges

A three-pillar approach that focuses on enhancing safety and security, increasing operations efficiency and improving customer engagement can help energy and utilities operators tackle these challenges.

## 1. Safety and security first

As cybersecurity breaches, vandalism and terrorist attacks become pervasive, the energy and utilities 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.

To address these threats, the IT network must provide multiple layers of resiliency, optimise traffic flows and minimise service disruption. A resiliency plan that ensures service continuity and an efficient disaster recovery plan are required. 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. It must continue to without a network stoppage even when it has been compromised.

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

## A reliable network and communications infrastructure

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

The network 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

A reliable communication infrastructure includes:

- 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



## Keeping people safe

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 can help field workers performing critical and dangerous task, work safely:

- An **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 information including man-down, no movement, pull cord functions and an emergency button. A notification server can increase responsivity and safety for operational staff across facilities, by routing calls to the correct emergency responders. Notification services also allows broadcast messages over any device for staff mobilisation during incidents.
- A **remote visual assistance (RVA)** solution enables handsfree communications, with 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.

## Keeping assets protected

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. Implementing the following can help oversee activities:

- **CCTV cameras** provide a global view of entry and exits. Intelligent video, using AI and analytics can help identify suspicious movements and correlate behaviour throughout the facilities.
- **Intrusion protection sensors** connected to the data network, replaces proprietary protocols and dedicated communications systems with easy to integrate IP systems
- **Secure alarm processes and workflows** allow operations to monitor alarms from a large range of sensors (such as fire detection, gas leaks, temperature, and high pressure) and Industrial Internet of Things (IIoT) sensors streamline the flow of operational staff alarm notifications
- An **emergency notification server** follows a script to initiate the right call to action that could include notification through a wide range of telephony devices, collaboration applications and Internet of Things (IoT) interactions
- **Industrial switches and access points** 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 cybersecure and can be managed remotely.





## Cybersecurity beyond the network

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.

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.

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.

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## A zero trust network architecture

A zero trust architecture attributes include advanced security policies, devices authentication, identification, segmentation and micro-segmentation. Additionally, consideration should be given to:

- Security elements built into the architecture
- Native encryption to maintain the integrity of the system
- Best practices for internal and external authentication
- Regular system audits and a password policy
- Software support capabilities that update code in response to attack and vulnerability detection
- ISO 27001 certification for information security management
- Industrial switches that are security-hardened and include advanced security technologies verified and validated by third-party organisations
- A single, secure operating system to reduce the organisation's attack surface, simplify risk mitigation and enable targeted remediation
- Solutions that 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





## 2. 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. Technology and innovation in the hands of innovative people will enable agile operational models to match those requirements.

### OCC the brain behind the scenes

The Operations Control Centre (OCC) 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

## Efficiency in management and maintenance

Modern technologies, such as 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. However, keeping components working requires network connectivity status, as well as quick control and remote response capabilities. 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, improve operational time and reduce 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.







### 3. Improve customer engagement

Today, customers 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. The following solution can help provide the experience today's customers demand:

- **Automated welcome:** 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.



# ALE addresses energy and utilities sector needs

## Services for every step of the journey

Alcatel-Lucent Enterprise services for 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 and include:

- **Professional services** available, on-site and remotely, from project management and design definition to implementation, in collaboration with your Business Partner or System Integrator
- **Training services** to help develop or enhance your skills, adopt new technology and become autonomous
- **Managed services** that extend Business Partner service offerings with flexible services options to support customers' 24/7 network operations, with enhanced service level agreements and monitoring
- **Support services** to help maintain business continuity with 24/7 support services
- **Customisation services** to ease your digital transformation with coaching to help your team develop the specific application you need or even develop it based on our technology building blocks
- **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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# Customer case study

## Ocala Fiber Network

A vision to deliver broadband services created cost savings and provided vital connectivity to education and healthcare customers during a crisis.



Ocala Fiber Network in Florida evolved from the City of Ocala electric utility two decades ago. Its purpose: deliver a range of broadband Internet services based on the build-out of a 100 percent fiber network for city agencies as well as citizens. The network was modernised with Alcatel-Lucent Enterprise switches to deliver higher speeds with better network management and performance.

*"The OmniSwitch switches are the part of the brain that makes us work. All our ALE switches are vital in all the connections and delivering services across our network. ALE provides a great piece of equipment. My engineers say they like the simplicity of it and most importantly, the support they get."*

**MEL POOLE, DIRECTOR OF OCALA FIBER NETWORK**

Today's benefits include:

- A streamlined network that gives OFN the ability to deliver broader services and greater bandwidth to customers
- The [Alcatel-Lucent OmniSwitch®](#) portfolio that enables OFN to increase usage seamlessly in times of crisis
- Future-proof ALE switches that are 5-10 times faster than other vendor switches

[Read the full case study](#)

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# Solutions for today and tomorrow

[Alcatel-Lucent Enterprise energy and utilities solutions](#) address the challenges 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

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## 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](#) 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
- 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
  - [Remote visual assistance](#) between on-site technician and remote experts
  - [Visual automated attendant](#) and [multimedia contact center](#) to improve interactions
- ### 3. Cloud solutions:
- [Rainbow API connectors](#) and CPaaS to integrate communications
  - [Rainbow™ by Alcatel-Lucent Enterprise](#) cloud solution deployed on premises with Rainbow Edge
  - API and SDK for cloud deployments





Learn how Alcatel-Lucent Enterprise solutions are helping the energy and utilities sector address today's challenges.

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