



Digital Age Networking

for Hospitality



Hospitality

Alcatel-Lucent Enterprise Digital Age Networking provides a network foundation to deliver comprehensive mobility, as well as the latest in-room-automation services to ensure a memorable guest experience. ALE hospitality solutions optimize staff efficiency, simplify IT operations and help provide impeccable guest services. In addition, they can increase revenue, and support competitive differentiation while maintaining a low Total Cost of Ownership (TCO).

In an increasingly competitive landscape, the guest experience has become one of the top differentiators in the hospitality industry with guest Wi-Fi, loyalty and customer-facing mobile apps topping investments for digital transformation. Most guests travel with several devices and once in the hotel they just want to connect, relax, and feel at home. In addition to the flood of guest devices and the staff devices needed to operate the facility, the influx of IoT means hotels need to be hyper-connected, mobile, and secure.

In this environment, the network can no longer be just a cost center and underlying infrastructure. To support a truly digital transformation the network must be an active component in the delivery of guest experiences and in enabling value-add services to provide new revenue streams to the hotelier.



[Alcatel-Lucent Enterprise Digital Age Networking](#) provides the foundation for innovative hotel services and digital transformation. Not only does it eliminate the need for hoteliers to be involved in technical complexity, allowing them to focus on their business, Digital Age Networking goes one step further, helping hoteliers achieve their business goals by delivering advanced guest services to increase customer loyalty, deploying cutting-edge solutions to improve the staff efficiency, and standing-out as an innovative brand to differentiate from competition and attract new customers.

ALE Digital Age Networking is based on three pillars and enables hoteliers to enter the digital transformation era.

- A high-performance [Autonomous Network](#) can automatically provision network services and automate mission-critical network operations to allow IT resources to

focus on enabling new guest services. In complex hotel environments, as well as hotels with limited IT budgets, the automated network configuration eliminates manual errors and increases operational efficiencies.

- [IoT](#) onboarding enables hotel operators to scale-up digitalization through secure IoT provisioning and management. It can integrate, onboard, and connect a massive number of IoT devices that are at the foundation of new digital business processes. It can improve hotel operations and guest experiences with automated provisioning of IoT devices in a secure and reliable manner.
- [Business Innovation](#) helps hotels accelerate their digital transformation with new automated workflows, taking the effort out of labor-intensive or repetitive tasks. In the hotel industry, business innovation improves staff efficiency and guests' digital engagement with new digital processes and services.

 <p>Autonomous Network</p>	 <p>IoT</p>	 <p>Business Innovation</p>
Automate mission-critical network operations and improve user experience	Scale up digitalization with secure IoT onboarding and management	Accelerate transformation with automated workflows

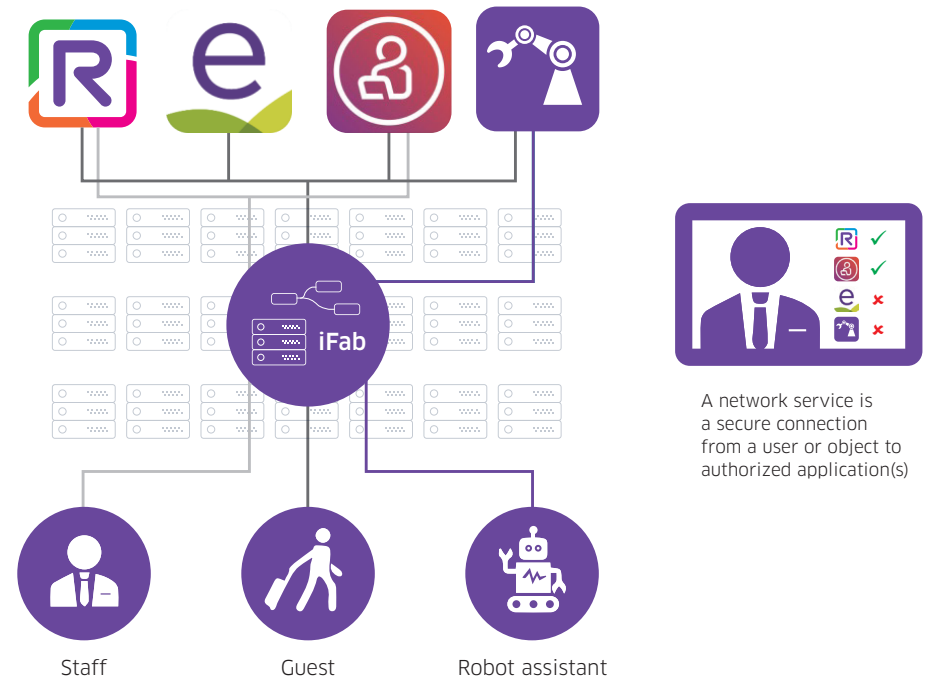
Autonomous network

IT infrastructure has evolved over the last 20 years to where it is now fully automated. Networks unfortunately have not kept up. While it takes minutes to deploy a new application, it can take days or even weeks to manually configure the hotel network, element-by-element. This is now changing. IT leaders are shifting their focus to business transformation rather than just building and running the infrastructure as was previously required.

Automated operations simplify network provisioning, deployment and maintenance, cut down on roll-out time and minimize risks of human errors, saving IT time and resources. The ALE Autonomous Network is configured and provisioned automatically through automated operations and zero-touch provisioning and deployment capabilities. It ensures mission-critical, secure network operations, while optimizing the user experience. As part of the Autonomous Network architecture, [Intelligent Fabric](#) (iFab) technology automates the deployment of the network and simplifies moves, adds, and changes, while reducing the time and effort it takes to maintain and operate a network. In the future, it will adapt dynamically to changing business conditions and provide a secure connection automatically from a user, or object, to an authorized application. By analyzing network configurations, Quality of Experience (QoE) measurements, and known issues, correlated with network hardware and software version information, the network management software will be able to suggest configuration changes and updates to the administrator.

The ALE Autonomous Network provides a resilient and seamless connected experience to hotel guests and staff with the [Alcatel-Lucent OmniSwitch](#)® (LAN) and [Alcatel-Lucent OmniAccess](#)® Stellar (WLAN) portfolios which provide ultra-fast convergence, secure network access control, and assured Quality of Service (QoS). The basic principles of ALE LAN and WLAN unified access and unified management ensures seamless interoperability between users, devices, and services across the hotel network. At the same time, they provide appropriate security levels to prevent network bottlenecks and reduce the risk of cyberattacks.

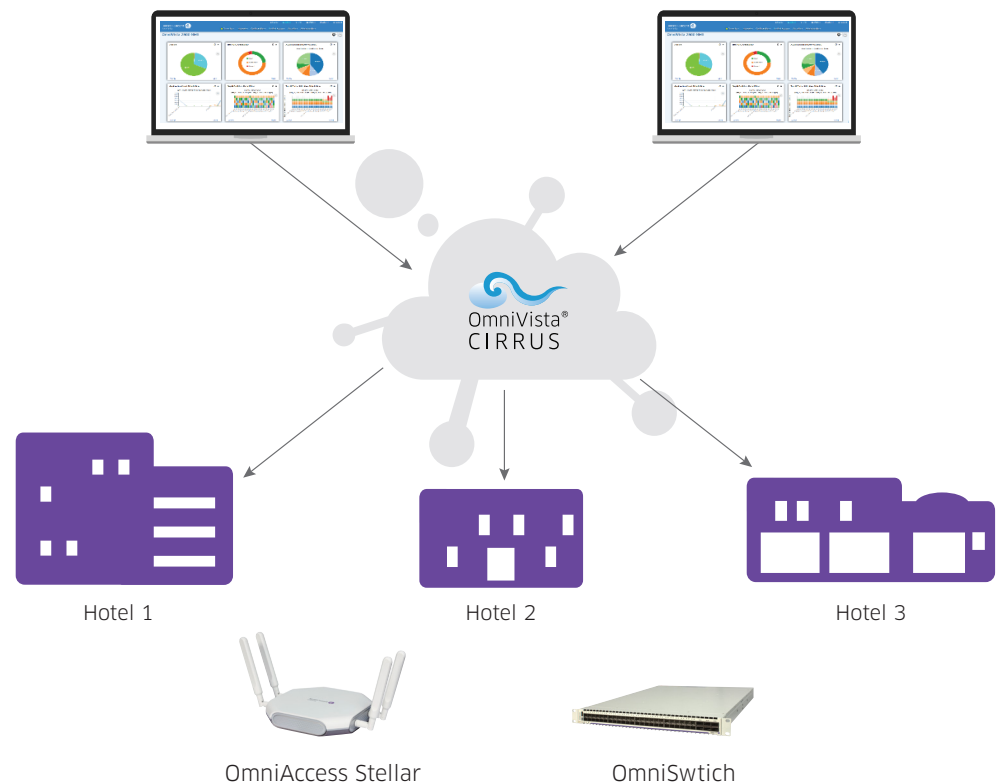
New generation enterprise Wi-Fi with embedded WLAN control in access points remove the need for physical centralized controllers. This distributed control intelligence delivers the best performance and scalability, and ensures high availability, with easy deployment, operational simplicity and low total cost of ownership (TCO). The Alcatel-Lucent OmniAccess Stellar WLAN solution is coupled with a comprehensive wired LAN that supports deployment requirements ranging from access, to core, and data center. The OmniAccess Stellar WLAN provides seamless and pervasive Wi-Fi connectivity for guests and staff throughout the hotel, whether they are indoors or outdoors, anywhere on the premises. The ubiquity of the Wi-Fi connectivity creates an opportunity for hoteliers to introduce new guest services and to generate new sources of revenue.





A single [Network Management System](#) (NMS) provides an additional level of integration between wired and wireless networks. All devices – from guests and staff, as well as IoT – are connected to the network automatically with specific profiles, meaning that they have different network access levels, security, and QoS, according to their role. For example, access to hotel applications are restricted to authorized staff and are not accessible to guests. This reduces IT managers' workload as they no longer have to handle two management systems with two sets of policies and configuration rules – one for the LAN and another for the WLAN. The ALE NMS provides unified service management and network-wide visibility. Network resource usage is monitored to proactively address any potential problems, which can improve IT efficiency and business agility.

With limited IT budgets and resources to manage the hotel network, cloud-based management-as-a-service presents a practical option for hoteliers. [Alcatel-Lucent OmniVista® Cirrus Network Management as a Service](#) is the ALE network management platform in the cloud, that hoteliers, hotel integrators and hospitality managed service providers can leverage using a “pay-as-you-go” business model. This ALE offering provides a friendly and powerful management tool without the need for up-front investment and on-site equipment.



Internet of Things (IoT)

ALE Digital Age Networking allows for easy and secure onboarding and managing of IoT devices. This is especially important in the hospitality industry where hotels are experiencing an increasing ecosystem of building and room sensors, and automation devices. Superior guest room comfort is clearly an asset for hoteliers seeking differentiation. A smart room that delivers a combination of high-speed, high-quality Wi-Fi, with easy-to-use, non-intrusive in-room automation offers a winning formula to provide guests with an unforgettable experience. Along with guestroom sensors, many different types of IoT devices can be found throughout a hotel. These devices provide increased automation, and security and contactless interactions, such as surveillance and thermal cameras, IPTVs, digital signage, digital door locks, self-registration kiosks, tablets for guests and staff, and even robots to perform specific hotel services.

IoT technology contributes to improve the guest digital experience and to streamline hotel operations, however, at the same time it can create challenges in terms of network management and security. Digital Age Networking provides an automated solution to securely onboard IoT devices while protecting the network at the same time.

Three major steps to connect, manage, and properly control any IoT device must be followed:

- **Discover and classify:** Each object connected to the network must be discovered and classified. Digital Age Networking provides the ability to access a very large (29+ million) device database to immediately identify the object connected to the network and automatically provision a configuration associated with a specific device.
- **Virtual segmentation:** Once classified, each object is placed into the right virtual network segment according to its profile. It is critical to segment a single physical network infrastructure into separate virtual networks, or containers, so that devices, users, and applications are logically isolated in their own dedicated segment, ensuring proper function and secure operations.
- **Continuous monitoring:** Finally, each object is put into a centralized inventory and under monitoring. The network monitors the behavior of the connected IoT devices to ensure that they are functioning as desired. The inventory enables IT to know exactly and instantly, how many devices are connected on the network, what their associated data is, and their status.

With this three-step procedure, Digital Age Networking provides IT managers with an automatic means to securely connect IoT devices and manage them. The continuous monitoring enables the detection of potential deviations from a device's expected behavior. In the event of unusual activity, the network can detect and take immediate actions such as, disconnecting the faulty device, sending a notification to the network administrator, or changing the destination of the dedicated IoT container for further verification, increasing network security and mitigating the risk of a cyberattack through the connected IoT.

Digital Age Networking provides multi-standard IoT support to cope with a large variety of enterprise IoT scenarios and deployments. Ethernet, Wi-Fi, BLE, and Zigbee connected objects are natively supported by the ALE network equipment. With this support, Digital Age Networking covers many types of IoT devices and use cases in the hospitality industry. For standards not natively supported, ALE implements an IoT controller, the IoT Hub, capable of integrating with other IoT technologies through standard APIs and third-party gateways.



Business Innovation

Digital transformation is a trend in the hospitality industry which analysts agree will accelerate post-2020. In their battle to differentiate, hospitality leaders will employ digital processes to deliver better guest services, improve staff efficiency, and leverage guest analytics for further personalization.

New processes are optimized when they leverage user, application, and IoT metrics in real-time. Digital Age Networking can help hotel operators optimize processes and services. This is key to business innovation, improved productivity, workflow optimization, and an enhanced user experience.

Technology innovations including IoT, location services, and collaboration platforms are at the forefront of business process and services automation. Alcatel-Lucent Enterprise is leading the way by integrating these components to help hotel operators reap the benefits of their technology investments.

[Alcatel-Lucent OmniAccess Stellar Location Services](#) which include asset tracking and location-based services can help increase safety and reduce both operational and asset-related costs.

[Alcatel-Lucent OmniAccess Stellar Asset Tracking](#) provides real-time and historical location of users or objects in hotel facilities using Wi-Fi and Bluetooth technologies. This information allows hotel operators to better understand workflows, increase utilization of equipment, significantly reduce the time it takes to find someone or something, avoid lost or stolen assets, and increase productivity, while enhancing user

experiences. From an operations perspective, misplaced or lost equipment incurs heavy costs to hotels every year. Knowing where assets are in a real-time, or where they are stored, can help facilities keep equipment costs under control. Other key OmniAccess Stellar Asset Tracking features include real-time hot spot tracking and historical contact tracing which can help identify areas where crowd restrictions are being exceeded, or set it up for family groups so hotel guests know the location of their children within the hotel premises and can be notified if they leave certain areas.

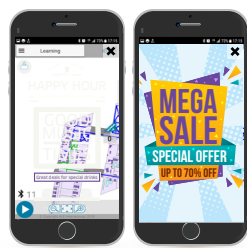
[Alcatel-Lucent OmniAccess Stellar Location-based Services](#) (LBS) includes wayfinding (self-navigation indoors), and geonotifications (push messages) based on geolocation, all managed from a cloud application. **Wayfinding** enables turn-by-turn directions to guest rooms, and conference rooms, as well as other points of interest such as, restaurants, pools, and spas. **Geonotifications** are messages relevant to the location, which can be sent to staff, guests' and visitors' mobile devices. LBS enables hotel operators to understand user behaviors and patterns. The LBS cloud application captures the data and provides analytic dashboards that can be used to optimize people, assets, and operational workflows. This information can help facilities run more efficiently, enable indoor navigation, and generate revenue by offering promotions and services based on the guests' location.

Following are a few examples of LBS and asset tracking at work in a hospitality environment.



Geopositioning and Wayfinding

The guest mobile app identifies the guest's location on the map and provides directions to the room



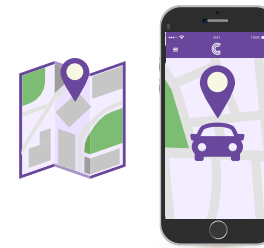
Geofencing Notifications

While walking through the hotel, promotional coupons and offers can be sent to the guest mobile app



People location services for staff

Managers know where the staff members are, hotel staff can locate customers to deliver ubiquitous services



Asset location in real-time

Track hotel valuables, track guests' cars in large parking lots



People location services for guests

know where other members of a group are, get notifications if someone leaves the hotel perimeter

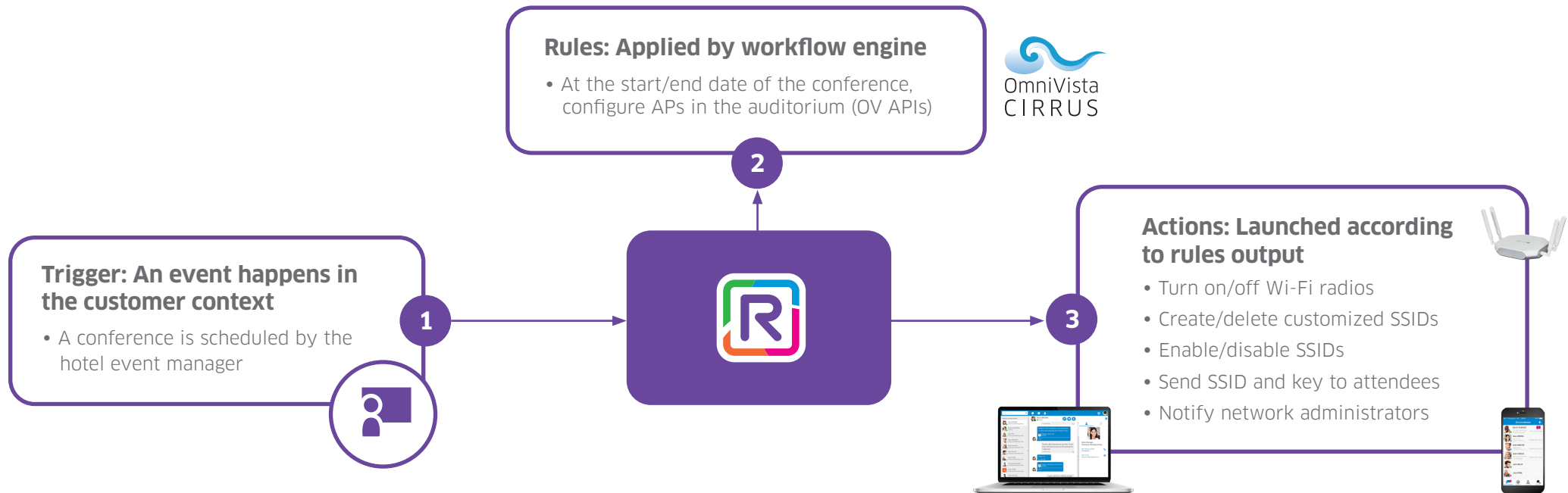
Brochure

Digital Age Networking for Hospitality

Real-time and historical data with a geolocation context enable the development of new innovative digital business processes and services. Integrating data from the OmniAccess Stellar Location Services with a business collaboration tool like [Rainbow™ by Alcatel-Lucent Enterprise](#) enables automation of simple or repetitive tasks. It also enables the development of workflows that can be automated using triggers, rules, and actions.

To illustrate this with an example, imagine a hotel that has an auditorium and several meeting rooms to support business conferences. The hotel has an application to manage and schedule the conferences. The **trigger** occurs when a new conference is scheduled in the tool, where the conference date and time, duration and customer data such as company name, event name, and organizer contacts are entered. The **rule** is that the conference will begin and end at a specified time for which the system will configure the access points in the meeting rooms where the conference will take place. The **actions** are: create/delete SSIDs, enable/disable SSIDs, turn-on/off Wi-Fi radios, send a message to organizers with the Wi-Fi key and notify the network administrators of the outcomes.

Finally, smart analytics and statistics embedded within Digital Age Networking provide augmented intelligence that helps hoteliers manage data collected by the network, and make informed decisions to optimize network usage, and grow their business. These analytics provide statistics about performance, network resource usage, applications, and (anonymous) guest location metrics and client behavior. Predictions about future network needs are possible based on present resource usage and inventory information. Location analytics can be used to fine-tune the marketing strategy and offers, aligning them with the peak/valley hours associated with the hotel amenities. A next step will be to combine the network statistics with guest data from other hotel applications, such as PMS and CRM systems, to deliver hyper-personalized services. For example, knowing where a guest spends most of their time, as well as their preferred services, will enable the hoteliers to create highly customized offers for each guest.





Summary

[Digital Age Networking](#) is the Alcatel-Lucent Enterprise blueprint that helps hotels enter the digital era and enable their digital transformation.

The ALE digital transformation blueprint is based on three pillars:

- **An Autonomous Network that easily, automatically, and securely connects guests, staff, processes, applications, and objects:** The Alcatel-Lucent Enterprise Autonomous Network is based on a streamlined portfolio complete with a true unified management platform, delivering common security policies across the LAN and WLAN. The Autonomous Network also provides deployment flexibility indoors, outdoors, and in industrial environments. Network management can be delivered on-premises, in the cloud, or in a hybrid deployment, depending on customer preference.

- **Secure and efficient onboarding of IoT devices:** Segmentation keeps devices in their dedicated containers and minimizes the risk of having the device and network compromised. IoT containment can help hotels easily and automatically understand if the device is behaving properly, or not, and help to keep the network safe.
- **Business innovation through workflow automation:** Integrating user, applications, and IoT metrics in real-time, with geolocation data. Rainbow workflow capabilities, simplifies the creation and roll-out of new automated digital processes and services. This is the key to innovation, enhanced productivity, and optimized workflows.

Alcatel-Lucent Enterprise is committed to developing networking technology and solutions that help hotels realize their potential through digital transformation.