



# Digital Age Networking

for Enterprises



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Digital age technologies that help improve efficiency are being adopted by businesses at an increasing rate. To stay competitive, enterprises need to integrate the latest mobility, data analytics, cloud, and Internet of Things (IoT) digital innovations into their operations, processes, and computing systems. This trend, known as digital transformation, enables organizations to evolve to an infrastructure that supports connectivity for digital applications, IoT and user devices, while supporting workflow optimization, more efficient processes, differentiated products and services, resulting in improved customer and employee satisfaction.

In the past it took days to provision a service on the network and configure it. Today it takes only seconds to provision using error-free automation with Alcatel-Lucent Enterprise Digital Age Networking. In this new paradigm, the network evolves from being a complex and costly underlying infrastructure, into an enabler of new revenue streams with low operational costs.

[Digital Age Networking](#) is based on three pillars and enables businesses and organizations to enter the digital transformation era.

- A high-performance **Autonomous Network** can automatically provision network services and automate mission-critical network operations while improving the user experience.

- **IoT** onboarding enables enterprises 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 enterprise digital business processes.
- **Business Innovation** helps enterprises accelerate their digital transformation with new automated workflows, taking the effort out of labor-intensive or repetitive tasks.



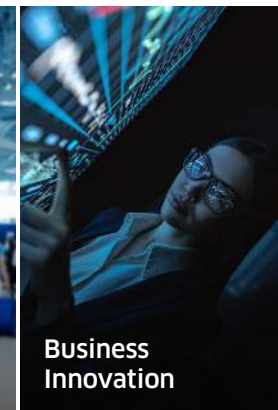
**Autonomous Network**

Automate mission-critical network operations and improve user experience



**IoT**

Scale up digitalization with secure IoT onboarding and management



**Business Innovation**

Accelerate transformation with automated workflows

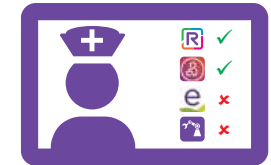
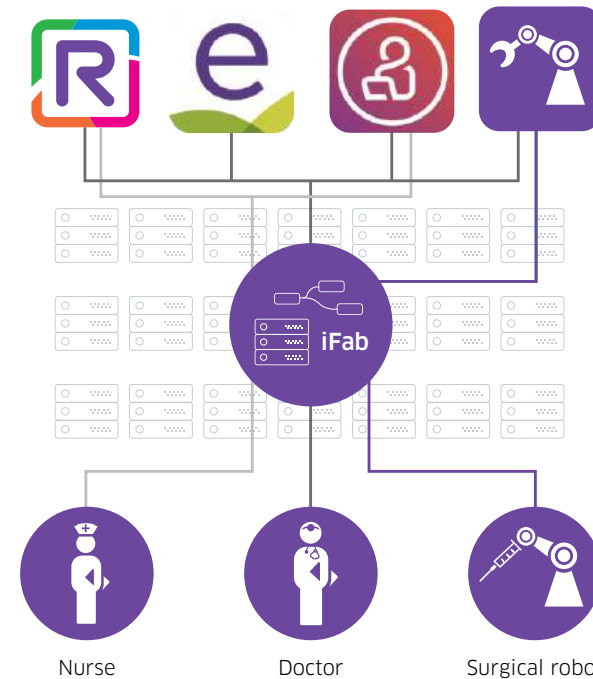
# Autonomous Network

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 enterprise network, element-by-element. This is now changing. IT leaders are shifting their focus to business transformation rather than building and running the infrastructure as was previously required.

The Alcatel-Lucent Enterprise Autonomous Network is configured and provisioned automatically. 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, reducing the time and effort it takes to maintain and operate a network. In the future, with the help of machine learning, it will adapt automatically 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 Autonomous Network provides a resilient and seamless connected experience with the [Alcatel-Lucent OmniSwitch®LAN](#) and [Alcatel-Lucent OmniAccess®Stellar WLAN](#) with ultra-fast convergence, secure network access control, assured QoS, and secure diversified code to ensure an OS hardened switch. New generation enterprise Wi-Fi with embedded WLAN control in access points removes the need for physical centralized controllers. This distributed architecture delivers the best performance and scalability, and ensures high availability, with operational simplicity and low total cost of ownership (TCO). The WLAN solution is coupled with a comprehensive wired LAN that support deployment requirements ranging from access, to core, and data center. All of this is supported in even the most extreme and harshest environments.

A single [Network Management System \(NMS\)](#) provides an additional level of integration between wired and wireless networks. This reduces the IT manager 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 NMS provides unified service management and network-wide visibility, which can improve IT efficiency and business agility.



A network service is a secure connection from a user or object to authorized application(s)



# Internet of Things (IoT)

Billions of connected devices are already deployed, and this surge in IoT is not slowing down any time soon. IoT is changing our lives, the world we live in, and the way we do business. It is increasingly becoming the critical foundation and enabler for improved customer experiences and optimized digital business processes.

However, the limited processing power of connected objects prevents devices from having embedded, sophisticated security capabilities. This creates two major problems; devices are hard to configure, and they are easy to hack. The highest security risk is not the objects themselves, but rather the doors they open to other network segments. Once the object is compromised and hacked, the whole enterprise network becomes vulnerable to attack vectors such as a Trojan horse or other virus. When you consider the fact that enterprises connect thousands, if not millions, of these objects, the challenge becomes clear; configuration and management of individual devices is totally unrealistic, and the security risks are enormous.

Alcatel-Lucent Enterprise's [IoT containment](#) approach is designed to provide an automated solution to efficiently and 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:** It is critical to segment a single physical network infrastructure into separate virtual networks or containers, to ensure that each service or application has its own dedicated segment, ensuring proper function and secure operations.

- **Continuous monitoring:** The network monitors behavior to ensure that the IoT devices and applications are functioning as desired. Each authorized object is stored in an inventory. This enables IT to know exactly and instantly, how many devices are connected on the network. It is important to continuously monitor a connected object on the network to take immediate action in the event that there is a deviation from usual behavior. In the event of unusual activity the network can take 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.



# Business Innovation

New business processes are optimized when they leverage user, application, and IoT metrics in real-time. Digital Age Networking can help businesses optimize processes and services. This is the key to 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 enterprises 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.

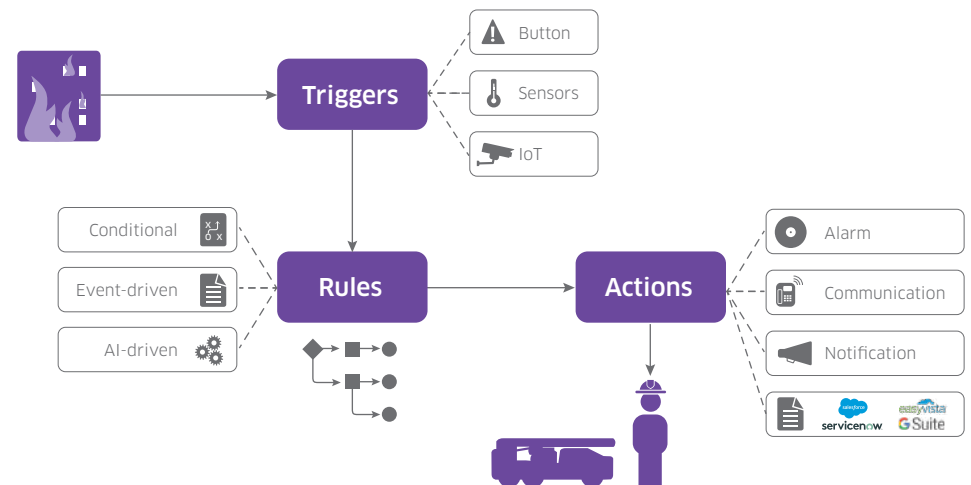
[Alcatel-Lucent OmniAccess Stellar Asset Tracking](#) provides real-time and historical location of users or objects, in indoor facilities, using Wi-Fi and Bluetooth technologies. This information allows businesses to better understand workflows, increase utilization of equipment, significantly reduce 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 businesses every year. Knowing where assets are in a real-time, or where they are stored, can help businesses 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 allow follow-up notifications with individuals in the event of an incident such as, possible exposure to harmful chemicals or infectious diseases.

[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 offices and conference rooms, as well as other points of interest such as, the cafeteria and restrooms. **Geonotifications** are messages relevant to the location, which can be sent to employees' and visitors' mobile devices. LBS enables businesses 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 businesses and facilities run more efficiently, enable indoor navigation, and generate revenue by offering customer promotions and services based on the customer's location.

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.





## Summary

[Digital Age Networking](#) is the Alcatel-Lucent Enterprise blueprint that enables businesses and organizations to enter the digital era and grow their digital businesses.

The ALE digital transformation blueprint is based on three pillars:

- **An Autonomous Network that easily, automatically, and securely connects people, 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 our 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 the 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 businesses 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, into Rainbow workflow capabilities, simplifies the creation and roll-out of new automated digital business processes and services. This is the key to business innovation, enhanced productivity, and enabling new revenue streams.

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