



Hospitality Network Guide

A practical guide to optimizing your guest experience and hotel operations with an ideal network infrastructure

A single network infrastructure for your hotel: delivering fast, reliable and secure performance

Only a few years ago, the primary function of hotel technology was to provide wireless connectivity. Today, technology has the power to impact every aspect of your hotel's operations and your guests' experiences. However, because media headlines are often filled with reports about data breaches and cyber-attacks, security remains a concern and a barrier for many hotels. The result – technology is both a top challenge and a top opportunity for hotels.

By undergoing a digital transformation, and by selecting and integrating the right technology, hotels can create unique, personalized guest experiences while creating a clear differentiator from other properties. This means increased revenue from improved guest satisfaction, increased service purchases, and return bookings.

Hotels unable to rise to industry challenges will find it impossible to meet or exceed guest expectations. The lack of technology will likely impact every aspect of the hotel from the guest experience to the operations.

The solution – redesign the hotel operations and processes to fully integrate technology throughout the entire experience for both employees and guests. To remain competitive, hotels must take a three-fold approach to technology:

1. Allow guests to continue their typical online activities, such as streaming movies, participating in a video conference call for work, or uploading vacation photos to social media.
2. Provide a personalized experience for guests with data analytics and Internet of Things (IoT) technology to anticipate their needs, such as setting a preferred room temperature before they enter the room.
3. Increase operational efficiency through staff communication and collaboration, such as housekeeping increasing room turnover by using a mobile app to signal that a room is ready.

Start with the right infrastructure

In order to accomplish these three objectives, hotels must have the infrastructure to support the required technology. This means they must have a network that is reliable, fast, and secure. Without this infrastructure, it is simply impossible to provide the technology your guests expect and your hotel needs, to run efficiently.

However, beyond just purchasing and deploying the infrastructure – the IT department (or in the case of a smaller hotel, perhaps just one employee) must be able to successfully manage the network. If not, the hotel will likely experience increased costs and dissatisfied guests. To ensure that does not happen the network must be resilient, secure, deliver high performance, and be easy to manage. With a single network, managing the infrastructure requires less time and expertise, which decreases the total cost of ownership.

Additionally, the network can provide a flexible business model for additional revenue streams. For example location-based services can increase your guests' use of amenities. You can send or text a discount code to guests in the vicinity of the restaurants. This can increase revenue by enticing diners that might otherwise walk right by the restaurant.

The hospitality industry is competitive. Guests have many choices. By deploying the right network to meet your hotel's needs, you can build the foundation to differentiate your hotel and increase your revenue.

Technology: Changing the hotel experience for both staff and guests

Technology trends are evolving quickly and changing the hospitality industry. Since many of these trends directly impact the infrastructure needed to power the hotel, it's essential for hoteliers to be familiar with what's happening today, as well as be aware of predicted future trends.

- **Guest room upgraded with IoT technology** – Hotels are rapidly installing IoT devices on their property to provide a more customized experience, especially in guest rooms. According to the 2016 [HiTech Report](#), “The Future of IoT in Hospitality,” IoT has many uses in the hotel environment, such as controlling room environments in terms of lighting and temperature, setting the alarm clock based on the guest’s mobile calendar, opening the blinds when sensors detect the guest is awake, starting the coffee maker when the guest gets out of the shower, and turning the television on to the guest’s favorite channel.
- **Employee and guest mobility** – Hotels are increasingly integrating both guest and employee mobility into all aspects of the hotel. Guests have come to expect to be able to accomplish tasks, such as check-in and check-out, using mobile apps. Products such as the ALE Guest Softphone, lets guests access the hotel telecommunications network with their phones. Equipping employees with mobile handsets helps increase productivity.
- **Data and operational tools move to the cloud** – Previously, hotel software was installed on individual computers, while the shared data was typically saved on a shared network. However, many data and operational tools have now moved to the SaaS model, which means employees access tools from the internet, and data is stored in the cloud. If the network is down or slow, the hotel is often either unable to serve their guests or they provide unsatisfactory service.
- **Guest preference for mobile hotel apps** – Many hotels now use a mobile app as “command central” for the guest experience – check-in/check-out, a guest room key, paying for services, and even controlling guest room settings, such as temperature and lighting. This convenience is so important to guests that the



availability of a hotel app can influence their booking decision. According to [Hospitality Technology](#), almost half (48%) of guests reported that if faced with a choice between two hotels, they would choose the hotel with a mobile app. Hotels can also use the app to collect additional guest data, and then use that data to further personalize the guest experience.

Guest expectations

As technology becomes more integrated into our daily lives, guests' expectations regarding technology during their stay continues to rise. Guests arrive with the following expectations:

- **Ability to connect multiple devices** – Hotels now expect guests to arrive with their own devices, but the number of devices continues to rise. Forty-five percent of guests travel with two or more devices, and forty percent have at least three devices in their luggage.
- **Fast and reliable network** – Wireless access has become increasingly important to guests in recent years. Slow and unreliable internet service decreases guest satisfaction and is often a topic of online reviews.
- **Personalized service** – Guests have become accustomed to personalization throughout their daily life, such as Netflix recommending movies to watch, and Amazon displaying recommended products. Since guests have become accustomed to a high level of personalization, they arrive in your lobby expecting that same level of service.



Hospitality industry challenges

While many of the changes in the hotel industry that revolve around technology are positive, it has also brought some challenges:

Increased data breaches and security threats – The increased use of technology also means an increased risk of security issues, with cyber criminals using a variety of tactics to target hotels. In 2016, hoteliers ranked payment and data security as their top objective (67%). The issue remains a top concern with recent events making the news, including:

- Guests locked out of their hotel rooms in an Austrian hotel, which was the victim of a ransomware attack that shut down the hotel's door lock system
- In late 2016, credit card data at twelve InterContinental Hotels was compromised when malware was installed on their credit card processors
- Hyatt Hotel guests at over 250 hotels in fifty countries were potentially affected by unauthorized access to payment information

Aging hotel infrastructure – Network infrastructure in many hotels was built to handle legacy Wi-Fi and simply cannot adequately support the new digital transformation requirements. In addition, the process and expense of updating the network infrastructure can be overwhelming. Further add to that, the increase in traffic that continues to impact the already overwhelmed network, and you end up with decreased guest satisfaction and hotel productivity.

IT experience and skills – Infrastructure needs have become increasingly complex in recent years, especially with growing guest and staff services provided via both wired and wireless networks. Many hotels either have one IT person with basic skills, or no IT department at all – and in many cases, the current hotel IT requirements exceed their skill sets. Hotels using managed service providers incur increased costs for management as the need for those services continues to rise.



Your hotel is not alone in determining how to embrace these expectations, opportunities and challenges. We have helped hotels around the globe develop the network infrastructure to power the technology to exceed both today's and tomorrow's needs. Based on this experience we have created some best practices to guide you on your journey.

Recommendation 1: Deploy pervasive Wi-Fi

Ensuring that your guests and employees have a fast and reliable network to use at all times is an essential part of hotel operations. Because most devices and computers now use wireless, and many more are moving in this direction, the number of devices on your wireless network will only continue to rise.

While your hotel may still need to maintain a wired network for rooms with cable TV or desktop phones, your infrastructure needs should be designed primarily for wireless. The devices your guests bring are wireless and include: tablets, smartphones and laptops. Additionally, your employees can significantly increase productivity and collaboration with mobile tools enabled by a wireless network. People expect the same performance using their devices in your hotel as they experience on their home or work wireless network. This can be a challenge for areas with a high density or large number of devices, such as common areas in large hotels. Having a network that provides consistent performance and connectivity for both wired and wireless devices can only be delivered when Unified Access is supported.

While wireless access is essential in guest rooms, hotels must also provide access in common areas, such as lobbies, restaurants, pools, outdoor areas, and parking lots. Providing access in these areas is important. Enabling services, with mobile apps, such as the ability order a drink from the pool bar, can make a huge difference in guest satisfaction. Pay close attention to coverage in “popular” areas, such as lobbies, breakfast areas, and employee break rooms to ensure a sufficient density of access points are provided.

However, full coverage is not enough – capacity is critical, to maintain high performance for all wireless spectrum users. For this reason, IEEE 802.11ac is the recommended standard for all new deployments. Personal devices, for the most part, already support 802.11ac, and even older devices that support 802.11n will benefit from the increased throughput and increased battery life.



When planning network extension options, you should consider:

- Environmentally-hardened access switches and access points to provide connectivity around hotels and at outdoor locations, such as parking lots and green spaces
- WLAN-based point-to-point and/or point-to-multipoint bridging connections, which offer a great way to extend your entire network to another building without having to lay cables. This is essential for hotels with additional guest rooms in an annex location outside the main hotel as well as historic hotels where some rooms are unreachable with cables.



Radisson Blu Hotel, a 583 guest room hotel located in Doha, maximized its limited IT resources by deploying easy to manage wireless internet throughout the hotel property. Guests get internet access anywhere in the hotel, and employees, such as the housekeepers, can be connected on the move to provide better services.

Challenges:

- Upgrade internet services in all rooms and public areas
- Offer all guests, free internet access
- Introduce one-touch service button telephones to all rooms
- Connect maintenance staff with Wi-Fi phones offering a full deskphone experience

Benefits:

- Allows hotel to add new features and benefits as needed
- Provides a clear view of IT operations with a centralized solution
- Easy-to-use, stable, and reliable
- Fast upload and download speeds
- Easily scalable for future needs
- Low OPEX infrastructure
- Higher housekeeping productivity due to increased collaboration

Recommendation 2: Evaluate the entire access network and right-size the core

Your access network, like all elements of a modern hotel network, needs to focus on maximizing up time and performance.

When you upgrade your Wi-Fi network with the latest 802.11ac technology, the wired network connecting the APs most likely requires a 2.5 GB or 5 GB LAN connection to ensure it doesn't become the bottleneck for your wireless users.

Having sufficient Power over Ethernet (PoE) capability is also critical; powering VoIP handsets and access points is, of course, a prime consideration. Also keep in mind, more and more hotels are migrating to IP-based video cameras to secure their facility and protect guests and staff alike. All of these devices will require PoE and HPoE (High Power-over-Ethernet).

An efficient, high-performance access network is only as good as the core network to which it is connected. The core is the most critical part of your hotel infrastructure; again, redundancy, resiliency and performance are paramount.

From an operational point of view, it is essential to have a single network management system that allows you to have a single view of the entire network for both wired and wireless devices. When planning your new network you should consider:

- Deploying Multigigabit Ethernet access switches (2.5 GB) with enough PoE budget to support the new 802.11ac wave 2 APs and other devices, such as IP Phones and surveillance cameras
- Constructing a high performance and resilient core using a pair of small form factor switches that leverage virtual chassis technology
- Streamlining your wired infrastructure by reducing the number of layers in your network design; eliminating the distribution layer reduces your capital expenditures (CAPEX) and operating expenditures (OPEX)
- Choosing newly designed switches with lower power requirements
- A single management system for the entire network infrastructure
- Vendors that support pay-as-you-grow strategies, which reduce budget pressures, but don't compromise product features or scalability





The Mogador Hotel chain includes eleven hotels in major tourist areas of Morocco and often hosts conferences with as many as 5,000 guests. The hotels introduced a wireless network and communication system that enabled mobility and optimized internet for both employees and guests.

Challenges:

- Fluctuating number of users
- Initially equipped with basic telephone services
- Significant growth expected in the number of employees and guests

Benefits:

- Ability to scale to handle an increase in the number of users
- Reduced operating costs
- Increased level of guest services
- Optimization of the internet access

“ We consider Alcatel-Lucent Enterprise as our partner, since the company has a thorough understanding of our business sector and knows how to anticipate our requirements by proposing a reliable and scalable offer. ”

Khaoula Abdellaoui, Director of Finance & Administration, Mogador Hotels

Recommendation 3: Enable personalized user-based access

Every day, various types of users access a hotel network – guests, VIP guests, meeting attendees, hotel staff, hotel management, IT employees. Each of these user types needs a different level of access on the network.

A business holding a Board of Directors meeting does not want hotel guests to be able to access private financial information, and hotel guests should not be able to access the network administration portals that IT staff uses to control the infrastructure.

Personalized user-based access provides security by recognizing each user before granting access. These capabilities are very important to support both guest and employee mobility while offering a consistent, secure environment for both wired and wireless connections. This personalized user-based access is offered as part of the Unified Access technology from ALE. It ensures a seamless user experience for hotel guests and staff and simplifies IT operations.

Hotels can also use personalized user-based access to provide a top-tier experience for VIP guests, either based on loyalty club status or as an add-on purchase. For example, VIP guests may receive more bandwidth, high priority on network, access to specific app, such as Netflix, and additional privileges in the fitness room.

Unified Access

Unified Access technology allows corporations to take full advantage of user mobility. It provides differentiated access rights to group of individuals, such as guests, VIP guests, staff and contractors, while keeping the network secure. It enforces user authentication and authorization on every connection, based on user network profiles that define a set of QoS rules and security rules (including access rights). This set of rules applies wherever the user is connected, with any device (wired or wireless), and provides a consistent user experience everywhere. An employee accessing the network over wireless on their mobile device by the pool will have access to the exact same network drives, applications and documents as when they log in from their wired desktop computer in the office.

This Unified Access technology includes a management system that provides end-to-end configuration and visibility (for all LANs and WLANs), avoids duplication of tasks, and offers better troubleshooting tools for all network management requirements.

Recommendation 4: Ensure your network is IoT friendly

By integrating IoT technology, hotels can enhance the guest experience while also improving operational efficiency.

While IoT opens up a lot of new possibilities, it also introduces new challenges and risk, especially in terms of security. An HVAC system that is IoT enabled could be hacked, and every air conditioning unit could be turned up to high – creating a negative impact on a guest’s personal comfort. Additionally, all data transmitted from an IoT device must be connected to the network, which increases network traffic.

By using a container approach to IoT, hotels ensure both security and network resources for connected devices can run successfully. This means that the devices share a single physical network infrastructure while leveraging separate virtual containers for different device types. IoT containment allows hotels to manage IoT devices in the most efficient way. Most importantly, if a security breach occurs it cannot spread outside the container, as was the case in the [Austrian hotel ransomware incident](#), where the attack would have been contained to the door lock system rather than spreading through the hotel operations.

In a hotel environment a multitude of IoT devices can be connected to your network: HVAC systems using sensors to control the temperature in the hotel, slot machines in the casino, surveillance cameras for security, and in-room automation sensors for curtains, door locks and lightening. When using a container approach, the slot machine devices are logically separated from the other devices on the network and can only “talk” with devices controlling the slot machines – they don’t communicate with other devices or “see” other devices on the network. This means that the network can be set to only expect a certain type of traffic in the casino IoT container. If another type of traffic is detected then the network can block the activity in case it’s a hacker.

As hotels begin to add IoT devices in large numbers in the near future, it’s important to use a solution that automatically recognizes new IoT devices. This will significantly reduce manual administration for the IT department. For example, when deploying IoT devices to automatically close room curtains at night time, the devices are likely deployed in sections. This way when devices are added to a new floor, the sensors are simply installed and the network automatically knows they are the same as the devices on the second floor and adds them to the same IoT container.

IoT containment

IoT containment technology makes it easy and secure for your hotel to embrace IoT. The solution provides three main benefits: simplifies the onboarding of IoT devices, ensures the conditions for your IoT system to run effectively, and improves overall cyber security.

IoT containment leverages network virtualization techniques (VLAN, SPB) to create logically isolated environments for each group of IoT devices, while all the devices share the same physical infrastructure. This brings simplification from both the management and cost point of view.

The device onboarding process is simple. Network profiles are created for each group of IoT devices that define how they can be recognized, which container they should be associated with, and what set of QoS rules and security rules should apply. As devices connect, the network automatically binds the devices with the profile and, consequently, with the virtual network segment.

Because IoT devices only “see and talk to” devices, applications and users within the same virtual network segment, IoT systems operate more effectively. Additionally, the QoS rules ensure the necessary network resources, such as bandwidth and prioritization, are reserved for each device.

The overall security is improved: Within an IoT container access to devices are restricted; fine tuned security rules are enforced (including the use of Deep Packet Inspection (DPI)); and eventual security breaches are limited to the virtual container, preventing it from spreading to the rest of the network.

Recommendation 5: Use a multi-layered security approach

Previously, many hotels' primary defense against a security concern consisted of a firewall to protect the hotel network from outside threats. With the increased number of user devices and IoT devices, this traditional approach no longer provides the best protection.

Hotel networks are now accessible with many different devices and contain many new types of traffic, which increase both the opportunity and risk of breaches and attacks. It is also important to keep in mind that some security attacks come from inside the hotel from individuals trying to steal guest information.

By using a multi-layered security approach, hotels protect their network at each layer. When planning your security approach you should consider:

- Authenticating and authorizing each individual (guest, staff and contractors), so you can grant them proper access rights according to your expectations
- Using DPI technology to view all applications and then control them by either prioritizing, limiting or blocking applications
- Protecting network devices from attacks, especially switches, by securing their operating system with the latest techniques. See how ALE achieves this level of security with [CodeGuardian](#).
- Separating IoT devices by type/function with network virtualization techniques to contain security issues to one portion of the hotel operations
- Having the ability to detect and block the operation of rogue APs, preventing individuals from stealing valuable information from your guests
- Enforcing guest traffic isolation to ensure user privacy against users in other rooms
- Integrating a firewall to protect your staff and guests from threats coming from the Internet





白天鵝賓館

WHITE SWAN HOTEL

The Guangzhou White Swan Hotel, located on Shamian Island, upgraded its network infrastructure during a renovation, to enable the hotel to deploy new IT trends such as mobility, multimedia and collaboration. All users, including guests, employees and administrators, are now assigned proper user rights and access through a user profile.

Challenges:

- Poor network performance
- Upgrade must not disrupt guest use of current network
- Reduce total cost of ownership (TCO)

Benefits:

- Easy to manage and highly available network
- Increased security through user authentication and rights
- Reduced operational costs by thirty percent due to green IT

“The hotel’s network has improved tremendously, as it is not only simpler for the staff to maintain, but also saves on the general electric energy consumption. Therefore, we consider Alcatel-Lucent Enterprise to be our primary choice for other similar projects.”

Zhang Hao, Project Manager, White Swan Hotel

Recommendation 6: Simplify network management and enhance application visibility with analytics and policy management

Guest technology and network expectations vary between hotels, even under the same brand, based on usage patterns of the guests. Understanding your guests' technology habits is essential to providing the technology needed to enhance their stay.

User group policy management allows hotel management to determine employee and guest network access by profile type and limit or restrict access to specific sites. For example, hotel marketing employees must be able to access Facebook to promote the hotel and engage with guests. However, custodians and housekeepers do not have a legitimate work need to access social media during work hours. Additionally, hotels can restrict all employees from accessing inappropriate content over the hotel network. By controlling access, hotels can ensure that employees have the tools to do their job, while restricting access from distracting or inappropriate sites.

Choose a single solution that enables you to provision, monitor and manage:

- Network elements and resources of the entire property, including pool areas, parking lot, outdoor space, and all inside areas of the hotels, such as maintenance and housekeeping areas
- Security and priority policies across the access layer on both wired and wireless networks
- Application awareness and control across the network

A simplified, integrated network management approach that spans wired and wireless networks allows you to better manage IT time and resources.

Smart analytics

Smart Analytics allows for improved business decisions and network planning. This can be achieved by providing visibility and detailed information about the network, users, devices, and applications being used on the network. ALE Smart Analytics technology include DPI capabilities, predictive analysis and a multitude of users, devices and applications reports to assist in making the right decisions.

DPI capabilities provide details not just on what people are accessing online, but also on application usage. This provides insights on which apps are most popular, as well as which applications consume large amounts of bandwidth. Data can then be aggregated, presented, and acted upon, such as restricting specific applications or limiting bandwidth usage.

Predictive analysis monitors and analyzes trends for multiple days and weeks. An artificial intelligence (AI) algorithm built into the analytics tool creates baselines based on "normal" network traffic behavior, which allows the AI algorithm to predict what will likely happen in the future. For example, you can enable the appearance of a warning to upgrade a switch that is low on available bandwidth. Finally, analytics can also be used to improve security. Based on the same established baselines, the AI algorithm can send notifications when unusual network traffic patterns are detected.



RUI Hotels & Resorts in Spain deployed the core network solution and improved access to hotel data. The hotels serve over 3.2 million guests a year.

Challenges:

- Improve user experience
- Increase availability of data centers
- Improve access to data
- Optimize network performance

Benefits:

- Migration was quick and easy, thanks to a pre-configured solution
- Improved network performance
- Easy to manage the virtual environment

“ **The first reason we chose Alcatel-Lucent Enterprise for the core network solution was because the proposal they made put forward a comprehensive solution with the functionality we needed and met our budget.** ”

Manuel Ramierz, CTO, Rui Hotels & Resorts, Mallorca

Recommendation 7: Add additional revenue generating services

While IT has previously been a cost center, new technology offers hotels increased loyalty as well as the opportunity for a new business model, which enables hotels to pay for their investment many times over.

Once you have the network capability, your hotel can begin using its network to generate additional revenue –directly and through increased revenue with existing amenities.

Consider customer requests, such as premium Wi-Fi or premium content, and think about revenue models that would work for your target guest. Many hotels are able to use their network to provide premium access at an additional cost.

Consider your current amenities and determine what would motivate guests to visit or spend more. For example, can you use location based services to send an offer for happy hour as guests walk by the bar? Or if there is a cancellation at the spa, would a notification with a discount to all guests possibly interested in the treatment help fill the appointment? You can also leverage location based services to better understand the path and motion patterns of your guests, and then use this knowledge to optimize the positioning of advertisement or position your staff more strategically.



Recommendation 8: Keep the future in mind

Hospitality technology has evolved significantly, in recent years, as technology has become an integral part of our lives. Guest expectations will continue to increase, and hotels wanting to remain competitive must continually be thinking about and planning for the future.

IoT technology and capabilities will significantly increase in the near future and likely become even more integrated throughout every aspect of a day. As a result, hotels are expected to become even more automated and personalized with IoT technology. This means a significant increase in the number of devices, which will result in an increase in network traffic, requiring more powerful and resilient networks.

In the near future, your hotel may offer wireless connectivity even from the shuttle so that hotel guests traveling to/from the airport or other destination will be able to access and benefit from the hotel network. Guests can then check-in to the hotel before they arrive – decreasing wait times for guests and increasing employee efficiency. Guests might also want to use the e-concierge app on the way to the hotel for reservations, or to change a flight if they running late for their flight home.

By deploying the right network infrastructure today – high resiliency, secure, broader wireless coverage, high performance, low latency – hotels can differentiate by being early adopters as technology emerges. It is important to build this technological foundation, otherwise your hotel will either be unable to offer the personalized services or the implementation will be seriously lacking due to network issues. Most importantly, these hotels will quickly find themselves consistently playing catch-up in terms of technology instead of being a leader in operational efficiency and personalized service.



Your hotel cannot afford to wait to upgrade its network. Now is the time. At ALE, we help hundreds of hotels each year deliver the ultimate hotel experience for guests and employees. We understand your needs, challenges and opportunity. We have the technology you need to digitally transform your hotel. Let's partner together today to create the network you must have for tomorrow.



The Winn Hotel Group owns and operates thirteen hotels in Sweden. The group deployed a “media gateway” powered by a centralized PBX at the group’s headquarters, simplifying management and maintenance, and facilitating communications across the portfolio.

Challenges:

- High guest expectations in Sweden for quality Wi-Fi
- Aging infrastructure at properties resulted in low bandwidth capability
- Multiple vendors increased costs and maintenance time

Benefits:

- Delivers four times more bandwidth for high quality wireless connectivity at all thirteen sites. Improved guest satisfaction due to free, fast and reliable Wi-Fi
- Single provider solution allows quick resolution of issues – reduced providers from four companies to one company
- Replacing aging equipment, some over thirty years old, sharply reduced maintenance requirements
- The reliable and high performance Wi-Fi enables smartphone apps for guests to check-in and check-out quicker and also to receive calls from the hotel on their own device

“Infrastructure is so good in Sweden that everyone has come to expect great free Wi-Fi. It is an absolute must have in our business, more important than hot water! With Alcatel-Lucent Enterprise we have delivered reliable Wi-Fi to our guests while implementing a unified solution that is both simple and cost effective. ”

Peter Tillman, Chief Information Officer
Winn Hotel Group

Hospitality Network Guide

A practical guide to optimizing your guest experience and hotel operations with an ideal network infrastructure
September 2017

We are ALE. We make everything connect by delivering technology that works, for you. With our global reach, and local focus, we deliver networking and communications. On Premises. Hybrid. Cloud.



ALE | **Where
Everything
Connects**