5 minutes to understand

the challenges of WiFi in warehouses

wifirst

Why WiFi in Warehouses?

WiFi is the foundation of your connected warehouse

Warehouse and logistics managers are facing **unprecedented pressure on costs and lead times,** To add to the pressure, they must also integrate the increased **complexity of operations** due to the proliferation of SKUs and the growing demands for inventory and data traceability.

To meet these conflicting priorities, they can rely on a **myriad of technological solutions,** such as the Warehouse Management System, connected handhelds and supply chain robotisation boosted by artificial intelligence.

These solutions have one thing in common:
they all require secure, reliable and efficient wireless Internet access

The Connected Warehouse: productivity, traceability & flexibility

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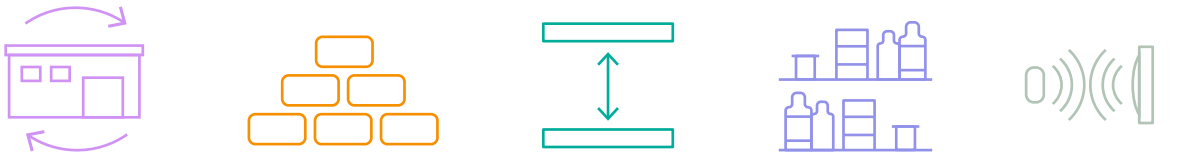
// CHALLENGE N°1: PROVIDING PERFECT COVERAGE IN A COMPLEX ENVIRONMENT

Why is it important?

Imperfect WiFi coverage or **service interruptions** can cause **slowdowns or even interruption of production.** All areas of the warehouse must have optimal coverage (unloading docks, control and reception areas, storage areas, order preparation and consolidation areas, offices, etc.).

Why is it a challenge?

Warehouses are **complex environments** for wireless connectivity because of their **dynamic nature,** subject to stock variations, but also because of their high ceilings and the many metal objects and structures.



Changing environment | Materials | Ceiling height | Obstacles (shelving) | Multi-technology interference

Factors that can influence network coverage and quality

How can this be achieved?

The network infrastructure **must anticipate changes in the environment,** particularly in relation to stock variations. With a **thorough radio survey** and considering the changing nature of the warehouse, our engineers **must anticipate all scenarios** to guarantee optimal service, whether the warehouse is empty or at his maximum activity level.

FURTHER INFORMATION

We strongly recommend that **5GHz coverage** throughout the warehouse to avoid 2.4GHz connections. Many connected terminals in warehouses, such as electronic handhelds, are too often connected on the 2.4GHz frequency band, which is the lowest quality WiFi band.

// CHALLENGE N°2: PUTTING WIFI AT THE HEART OF IOT

Why is it important?

In warehouses, we see on a daily basis the constraints and **risks associated with the deployment of more and more wireless services** competing on the same frequency band, in particular the 2.4GHz frequency band.

The multiplication of IoT protocols, such as Zigbee or Bluetooth Low Energy (BLE), has made the frequency bands incresingly sensitive.

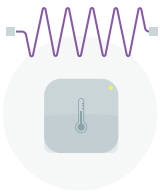
Why is it a challenge?

The **proliferation of wireless technologies** such as WiFi, UWB, Zigbee or BLE, if not properly orchestrated, **can cause interference** that degrade signal quality and put the supply chain at risk.

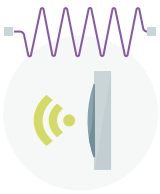
How can this be achieved?

It is essential that a **single department** is responsible for coordinating the frequency plan. In addition, the WiFi infrastructure must be **compatible with IoT protocols.**

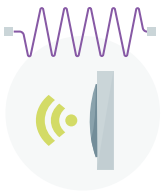
BLE
2.4GHz



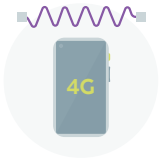
Zigbee
868MHz and 2.4GHz



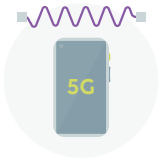
WiFi 4/5/6
2.4GHz and 5GHz



WiFi 6E
2.4GHz, 5GHz and 6GHz



4G Cellphone
700MHz, 800MHz, 1,800MHz, 2,100MHz and 2,600MHz



5G Cellphone
700MHz, 800MHz, 1,800MHz, 2,100MHz, 2,600MHz and 3.5GHz

FURTHER INFORMATION

In order to avoid interferences, make sure that the **radio spectra of the different technologies are well isolated** and **favour the 5GHz frequency** for the WiFi network.

// CHALLENGE 3: INTEGRATE ALL THE WAREHOUSE'S CONNECTED SERVICES INTO THE NETWORK

Why is it important?

The WiFi network is the foundation of the digitalisation of the warehouse, at the benefit of all businesses and all tools. Interoperability between the network and the existing IT infrastructure must guarantee **simple and secure integration** of existing and future connected services.

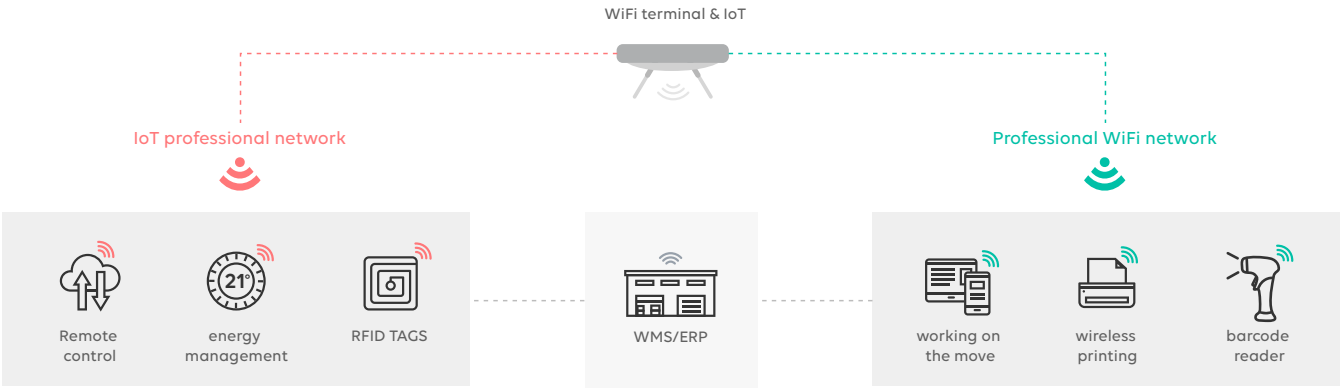
Why is it a challenge?

The technological environment of warehouses is heterogenous, with **equipment of different generations** and following **various connection protocols:** WMS and ERP solutions, barcode readers, IoT energy management, office automation, etc. **Unifying this ecosystem** into a coherent network is **complex and requires the intervention of high-level network architects.**

How can this be achieved?

In order to connect the systems to a **shared infrastructure** without compromising security, it is essential to isolate the various services in **virtual networks** (VLANs), while at the same time adapting the quality of service to the criticality of the applications.

In order to prepare the integration of the various types of equipment and software used, a **survey and engineering** phase must be carried out to ensure that all the systems in the warehouse are seamlessly interconnected and **carefully documented.**



FURTHER INFORMATION

When it comes to WiFi, **not all "client" devices are equal!** It is crucial to adapt the choice of terminals by taking into account the standards related to WiFi, such as 802.11k, 802.11v or 802.11r.

// CHALLENGE 4: DEPLOY THE NETWORK WITHIN THE OPERATIONAL CONSTRAINTS OF THE WAREHOUSE

Why is it important?

The network deployment must be **aligned with the operation of the warehouse,** so as not to interfere in any way with the productivity of the teams and the smooth running of day-to-day operations.

Why is it a challege?

The first deployment challenge is to ensure **continuity of service when migrating** the existing network to the new infrastructure.

Many warehouses **operate 24 hours a day, 7 days a week,** making it impossible to install outside of business hours. The deployment of both active (e.g. access points) and passive (e.g. cable links) equipment must run in **parallel with warehouse operations,** without causing disruption.

How can this be achieved?

The key to success in the deployment phase is the **expertise of the installation teams** and the rigour of the project management. They must have the **expertise and accreditations necessary** to meet the safety standards of each building.

The **deployment schedule** must be **planned with the warehouse teams** to ensure a fast and smooth implementation.

FURTHER INFORMATION

In terms of safety, the characteristics of the warehouses may require specific skills, such as **CACES accreditation** for the installation of WiFi terminals at high altitude on MEWP platforms.

// CHALLENGE 5: ENSURING FULL CONTINUITY OF SERVICE

Why is it important?

With the critical importance of connectivity to warehouse operations, **a network failure or simple service disruption can put the supply chain at risk,** or in the worst case, bring production to a halt.

Why is this a challenge?

The robustness of the solution must **not only** be based on **technical resources,** but also on **human resources** and **contractual guarantees** if the service is outsourced.

In a complex and mixed technological environment such as that of a warehouse, **the prevention, analysis and treatment of incidents involves the coordination of all parties involved:** warehouse teams, connected service providers and service providers responsible for the network.

How can this be achieved?

The key to guaranteeing total service continuity is the **end-to-end redundancy of the links in the connection chain:** from the local network (LAN and WLAN) to the Internet access (WAN).

Beyond the initial robustness of the technical architecture, network management must be accompanied by human resources. The teams or service providers responsible for the network must rely on **industrialised processes and advanced analysis tools** allowing for optimal anticipation and responsiveness.

If network management is outsourced, **these resources must be backed up by contractual service commitments** (e.g. 99.5% availability rate, 4-hour GTR).

FURTHER INFORMATION

In addition to ensuring temporal continuity, an optimal WiFi network must guarantee **geographical continuity.** For example, when a Fenwick moves between different units in the warehouse separated by signal-blocking materials, poor roaming management can lead to connection breakdowns and slow down the work of the teams.

CHECKLIST FOR A SUCCESSFUL WAREHOUSE WIFI PROJECT

- ☑ Precise identification of the areas to be covered and the equipment to be connected.
- ☑ WiFi coverage audit on both 2.4GHz and 5GHz frequency bands.
- ☑ WiFi radio interference management (intra/inter-channel) and IoT.
- ☑ Network engineering for interconnection with business applications (WMS, ERP, etc.)
- ☑ Synchronisation and project management so as not to interfere with operational activity during the worksite.
- ☑ Accreditation for technicians to use aerial platforms.
- ☑ Roaming between all areas of the warehouse (no disconnection).
- ☑ Redundancy of equipment to guarantee total service availability.

To discuss each of these points with one of our engineers and address your connectivity challenges, simply **contact us!**

5 REASONS TO TRUST WIFIRST FOR YOUR WAREHOUSE CONNECTIVITY PROJECT

1. You get the highest level of coverage throughout your warehouse, for all your connected systems, at all times.

2. You reduce costs with a shared network and get a one-stop shop for WiFi, IoT and fibre.

3. You ensure a fast deployment with no impact on your warehouse operations.

4. You get the peace of mind of exceptional monitoring and maintenance with uncompromising service commitments.

5. You trust the French leader in professional WiFi, already chosen by the largest European organisations.

GROUPE
12,000 m² of connected warehouses

les Mousquetaires
4,000 points of sale equipped with WiFi 6

MINISTÈRE DES ARMÉES
Liberté Égalité Fraternité
150,000 connected soldiers

ACCOR
800 hotels operated

LA POSTE
3,000 branches equipped

Since 2002, Wifirst has been connecting businesses with WiFi and fibre. The growing demand of professionals has pushed us to offer a technical and personal solution to meet their connectivity needs, in order to keep our promise:

A high quality of service everywhere, all the time and for all connected services.

To find out more about us, visit **wifirst.com/en**

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