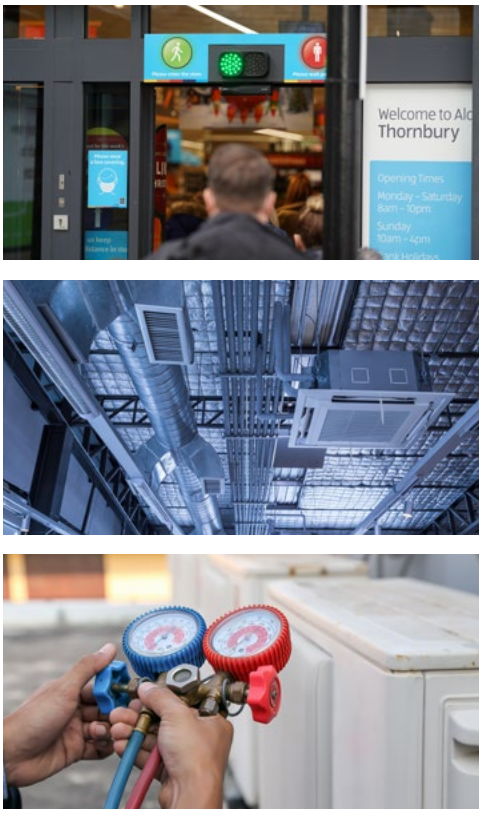
Wireless Logic **IoT Solutions**








# Connectivity for Smart Building Solutions

## Connecting, controlling and securing Smart Building applications

# The smart building digital transformation

## The pressure on commercial and public sector building operators to minimise costs, improve safety and reduce environmental impact has never been higher.

With many buildings either empty or at lower capacity than before, the global Covid-19 pandemic has accelerated the pace of change in a sector that was already pushing the boundaries of technology.

The global smart building market is expected to grow by more than 23% by 2026. This growth will be driven by the increasing demands on building operators which will in turn spur on solution providers to innovate using connected devices and big data, all powered by resilient and secure connectivity.

Today, solution providers are delivering smart applications that address a range of building management challenges, from optimising energy use to safely managing the flows of people around a building. The common theme for all of these solutions is the need for reliable and secure data transmission – something that can be more of a challenge than providers foresee when developing their solutions.

*By 2026, the global* ***smart building market*** *is likely to grow to* ***$109.48 bn***

There are **three main factors** which are **accelerating the adoption** of smart building applications:

## Operational Efficiency

**The need for buildings to be operated and managed more cost efficiently through connected solutions.**

**Example use cases:**

- > *Optimising energy costs from HVAC and lighting systems*
- > *Minimising site visits through predictive maintenance*
- > *Optimising the use of workspaces through occupancy and people flow tracking*
- > *Buying and selling energy dynamically through smart energy grids*

## Health, Safety & Security

**The need to keep buildings secure and people using the facility safe and healthy through connected solutions.**

**Example use cases:**

- > *Safety and communication systems for elevators*
- > *Maintaining wellbeing through social distancing solutions*
- > *Air purification and monitoring air quality*
- > *Keeping people safe with fire safety and sprinkler systems*
- > *Safeguarding buildings through access control and CCTV*

## Reducing Emissions

**Shareholders, governments and employees are creating increasing pressure to minimise the impact that buildings have on the environment as we move towards the net zero target by 2050.**

- > *Minimising emissions by optimising energy systems*
- > *Minimising energy wastage using sensors and building analytics*



PLEDGE TO NET ZERO

# Connectivity challenges
## for solution providers

When deploying smart building solutions, there are a number of connectivity challenges that solution providers typically encounter.

Unless managed effectively, these challenges can result in spiralling costs, poor performance and security risks, which could each hinder the benefits that end customers see from smart applications.

Ideally, these challenges should be addressed through the development of the solution, not just at the point of deployment.

## **Key challenges** and how to overcome them…

### Network Access

Building IT managers are typically reluctant to allow network access to 3rd party solution providers, dogged by concerns around IT security and hampered by (sometimes) outdated policies. Those that eventually access these networks can find that connectivity is not always reliable due to unilateral changes to network policies and security rules.

With solutions dependent on resilient and secure connectivity, relying on a third party network brings risks. **Ultimately the provider can no longer control their end-to-end solution.**

*Cellular IoT provides a highly attractive alternative. Cellular connectivity is highly cost-effective and works on an OPEX basis, which allows solution providers to avoid major investment in owned IT architecture, leased lines and support infrastructure. Solutions can be connected in a matter of days and deliver reliability, full control and secure data transmission through a private APN.*

### Cellular Signal Penetration

With systems often located in basements, behind thick walls, or in cabinets, cellular signal strength can be a substantial challenge.

*These problems can be addressed through a combination of selecting the correct network, the right bearer (i.e. services such as NB-IoT or LTE-M have strong building penetration) and/or the use of high gain antennas.*

### Complex and time consuming management

With solution providers typically needing to manage deployments across multiple cellular networks and locations, they require a single managed connectivity provider so the management overheads are small.

*Juggling hardware, SIMs and services from multiple providers will only cause added complexity. By using a specialist Managed Service Provider (MSP), you can have all your connectivity via one single bill, reducing admin time and making life that little bit easier.*

### Securely transmitting data

Solution providers are responsible for ensuring the security of any transmitted data from hackers, fraudulent activity or cyber crime. Securing processes and the infrastructure at every step of the deployment is paramount, as any security breach can cause both network disruption and damage reputation through loss of data.

*To ensure secure data transmission, solution providers should consider overlaying an encrypted Virtual Private Network solution, static IPs or direct interconnects, to reduce the risk of communication interception and provide secure, two-way connectivity. IP white listing will ensure any data traffic can only be sent to defined end points. Not only will this prove cost-effective but will ensure that data is managed safely and securely. By working with an MSP with ISO27001 accreditations, solution providers can be reassured that security processes are robust and that data is kept and transmitted in a secure way, mitigating any risk to reputational damage.*

# **Changing** technology

## Technology changes have the potential to negate the benefits anticipated with smart application installations.

However, with expert knowledge and careful management these challenges can be overcome, or strategically managed to deliver the security, connectivity and control that you are looking for.

## Technology doesn't stand still for long, so when developing a smart building it's important to have one eye on the longevity of your solutions.

Here are some of the upcoming technology changes that will impact the smart building applications market.

### Sunsetting 2G/3G Networks

Systems that rely upon 2G or 3G services will need to ensure compatibility with alternative bearer services as they are phased out globally in the coming years. In general, 3G services are being phased out before 2G, but we can expect that the majority of these services will be discontinued by 2026.

Networks are calling it sunsetting. But with large numbers of machine-to machine (M2M) and Internet of Things (IoT) applications still relying on 2G and 3G services, owners of these services must consider the need for decommissioning, SIM swaps, upgrading and/or complete replacement of devices.

Find out more at ***www.wirelesslogic.com/sunset***

### eSIM/eUICC

eUICC is growing, enabling businesses to future-proof their solutions and manage costs more effectively by swapping networks and changing a profile on a SIM over the air (OTA). If you want to find out more about eSIM or eUICC, please get in touch.

Find out more at ***www.wirelesslogic.com/esim***

### Low Power Wide Area Networks (LPWAN)

Mobile operators across the globe are building out highly secure, standards-based LTE-M and NB-IoT networks to support the rapid growth of IoT applications. These networks are directly replacing 2G and 3G services as Mobile Network Operators phase these technologies out. Unlike previous cellular technologies, both options were designed with IoT devices in mind and are part of the LTE mobile standards.

In order to future-proof deployments, new applications are now typically designed with combined modem modules that are both LTE-M/NB-IoT ready and work with existing 2G and 3G networks.

In addition to requiring relatively low power input, these low to medium bandwidth services can function on battery power for long periods of time and deliver strong building and subterranean signal penetration, which can be crucial for many smart building applications.

Find out more at ***www.wirelesslogic.com/lpwan***

### Dual-Tone Multi-Frequency (DTMF)

Already support is declining, and the 2025 end date for DTMF used in landlines is fast approaching. Networks will be switching off the DTMF systems, often used in emergency lift telephone systems. Buildings that use this technology will need to find alternative solutions.

By switching these systems to a gateway and translating the DTMF into data packets, this data can continue to be transferred over the mobile network. Using cellular connectivity with an unsteered SIM solution that doesn't prioritise any one network offers a much more cost-effective solution than adopting an Analogue Telephone Adapter (ATA) and continuing to transfer data over a fixed line.

#### *What is DTMF?*

***DTMF is an analogue system often used in emergency lift telephone systems.***

*It communicates using 16 audible tones generated by pushing the numbers 0-9, #,* and on engineer testing equipment A,B,C and D.*

# Delivering **smarter solutions** for **smarter buildings**

## Wireless Logic create tailored, end-to-end connectivity solutions to give you the smart capabilities you are looking for.

With the right connectivity, network, security and hardware, you'll be able to deliver the remotely controlled services now demanded by the market.

**Wireless Logic's bespoke connectivity solutions for smart buildings deliver:**

### Resilient connectivity

Network and bearer choice for each location and private APN.

### The right hardware

Sector-leading routers – pre-configured, ready to go with expert technical support.

### Secure two-way data

Private infrastructure and VPN solutions – ISO27001 and ISO9001 accredited.

### Cost-effective

Avoid major investment in owned IT architecture, leased lines and support infrastructure.

### Total Control

Any network, any number of deployments, all under a single monthly bill through SIMPro.

# How we can help you **get more from your smart building solutions**

## Enhanced connectivity

### By selecting the right bearer service and network

By looking at the amount of data you're transmitting and the signal strength in a given location, we can identify the most appropriate bearer service and network. For example, using NB-IoT to connect an application that only submits a small amount of data, like a fire alarm, or requires deep signal penetration would be a better option than 4G which is more suited to higher bandwidth applications.

### By selecting the right solution

For most static applications, a single network SIM should work well. However, if your application is mission critical, or mobility and resilience essential, a roaming SIM or multi-network SIM would be more reliable. A roaming solution can also help to cut down on site-surveys prior to deployment as you don't need to know which network is needed at a particular site. With a multi-network SIM you may have to decide whether it should be a steered or non-steered SIM (which would mean it isn't automatically directed to any one network, but can find the best network depending on signal strength).

### By choosing the right hardware *(if required)*

Selecting and configuring routers can be complex and time consuming, but failure to effectively configure and manage hardware can lead to operational delays and unnecessary costs. You can take the complexity out of creating a tailored solution for your smart building application by working with an MSP that offers a fully-configured 'plug and play' solution and delivers dedicated technical support to ensure a seamless transition and minimal downtime.

**Contact us today...**

to discover how we can help you manage your next IoT project or smart building applications.

Call: **0330 056 3300**
Email: **hello@wirelesslogic.com**
Web: **wirelesslogic.com/smartbuildings**

# How we can help you **get more from your smart building applications**

## Keeping your data and reputation secure

Keeping data secure, from application to end-point, is critical for all solution providers. Our private infrastructure solutions and ISO27001 accredited processes and people are there to ensure that we minimise data security risks.

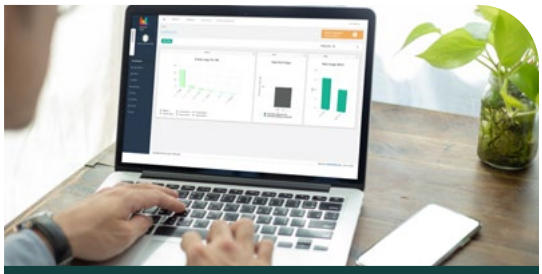
- Private APNs to deliver a multi-carrier choice over a single VPN interconnect
- VPN options for a secure overlay such as a policy and route-based IPsec, SSL, OpenSSL and Direct Interconnects
- Static Private IPs
- Scalable infrastructure

## Improved control

With greater control, monitoring and alerts, you'll be able to access invaluable insights that enable you to make better decisions, decrease the cost of ownership and avoid unnecessary costs or surprise bills. Using a connectivity platform will give you improved control over your applications and the networks they use.

A connectivity management platform like SIMPro will enable you to activate SIMs to your estate, giving you the ability to activate, suspend, cancel and report, so you can manage your costs and your data limit, and identify any suspicious activity.

Find out more at *www.wirelesslogic.com/simpro*



With **SIM**Pro you can:

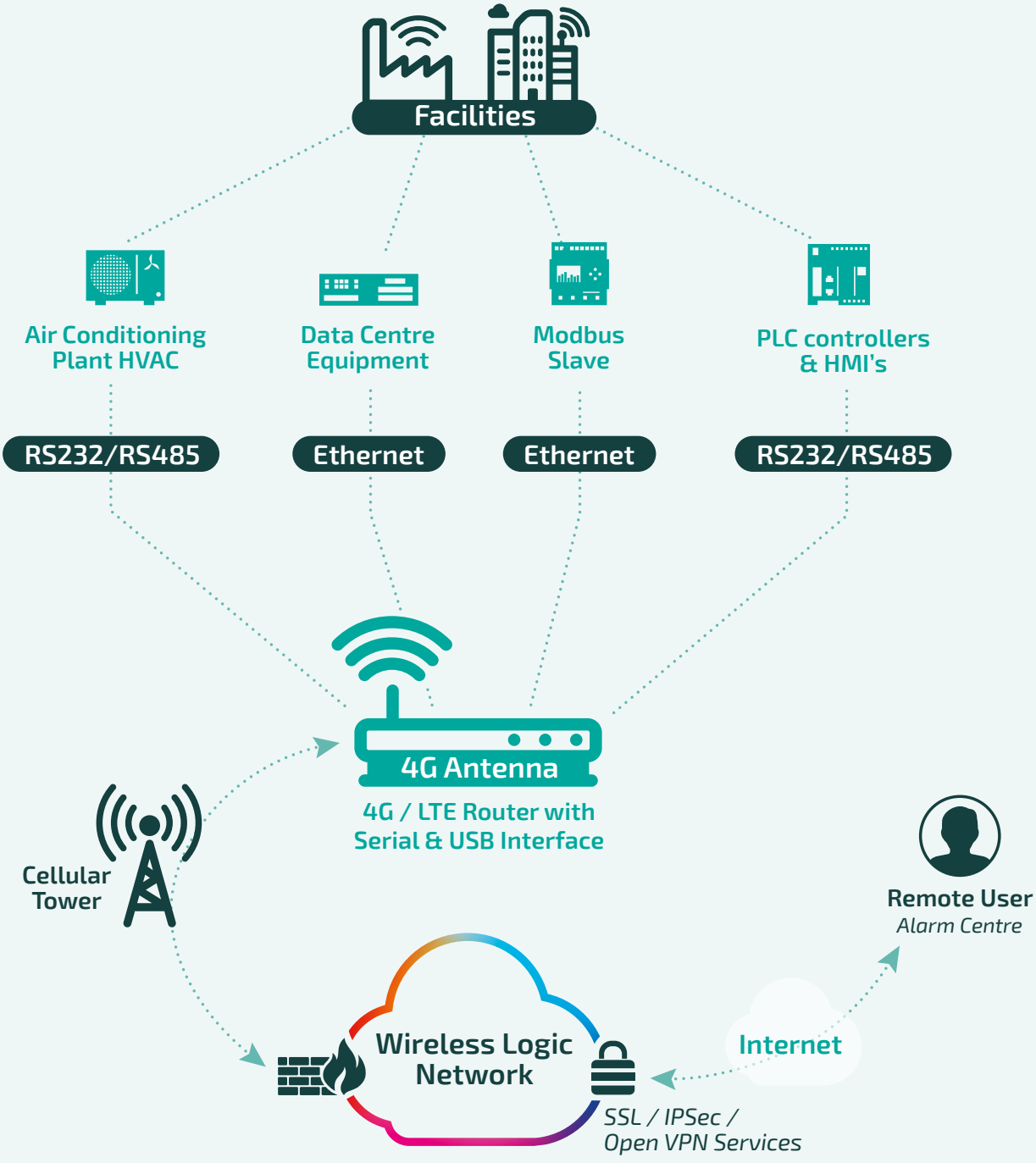
- *Deploy and manage assets*
- *Optimise costs and pre-empt issues*
- *Automate connectivity using APIs*
- *Arrange unified and flexible billing*
- *Access real-time help and support*

**Contact us today...**

to discover how we can help you manage your next IoT project or smart building applications.

Call: **0330 056 3300**
Email: **hello@wirelesslogic.com**
Web: **wirelesslogic.com/smartbuildings**

# How **cellular connectivity** works for **smart building solutions...**



Case Study:
**Thermatic Energy Services**

# How **reliable connectivity** led Thermatic Energy to **improved sustainability**

## About Thermatic Energy Services

***Thermatic Energy Services*** **works with end-user clients to achieve their energy management targets. Their support ranges, from install to on-going monitoring, compliance and procurement.**

Their main focus is around giving their customers visibility of their systems and data to allow them to reduce their energy consumption, improve their building operation and achieve their sustainability targets.

## The challenge facing Thermatic Energy Services

One of the key challenges Thermatic Energy face is accessing secure connectivity on customers' sites. There are a number of ways they can connect with their clients' estates, but existing infrastructure and security risks are deciding factors on how these connections are established. One option would be to connect remote monitoring systems to the internal IT network, creating a secure connection between the customer's IT network and Thermatic Energy's energy centre. However, this could be a lengthy process and is often slowed down by lack of co-ordination and differing IT policies.

## How Wireless Logic enabled Thermatic Energy to connect quickly and securely to support their clients

Thermatic Energy worked with Wireless Logic to create a secure and cost-effective 4G 'plug and play' remote connectivity solution. This would enable them to get their customers' projects off the ground quickly and confidently. It comprised of a managed 4G router that was pre-configured and tested by the Wireless Logic Hardware Team to give Thermatic Energy peace of mind. Combined with the support of Wireless Logic, Thermatic felt reassured that support was available if it was needed.

Wireless Logic then provided an unsteered roaming 4G SIM solution meaning that Thermatic Energy was able to deploy within days without having to go through site-surveys to identify the best network option or account for the cost of managing and deploying a new network through fixed line or Wi-Fi. Additionally, as some Smart Building systems are in hard-to-reach areas such as basements, behind thick walls or in cabinets, having a solution that can penetrate and access these areas without risking connectivity, and without causing down-time or lag, was also required. Thermatic Energy knew that Wireless Logic's access to LPWAN technologies would be able to deliver this reliable connectivity.

To ensure that security risks were managed, Wireless Logic provided a secure Private APN with IPsec VPN to securely process all data, away from public networks. This enabled Thermatic Energy to add and remove devices easily, with no risk of data breaches. This has also allowed Thermatic Energy to have secure, two-way connectivity with customers' sites, without any risk to the customer's own IT infrastructure.

Using the SIM Connectivity Management Platform, ***SIMPro***, Thermatic Energy can easily manage and control their entire SIM estate. SIMPro has also been a useful tool for troubleshooting, allowing Thermatic Energy to quickly identify sites that may be experiencing issues. This means that they can manage engineer site visits more efficiently, which has been particularly important over the past year, with access to sites more limited.

## The outcome

The ability to bring a secure, stand-alone network to their customers' sites gives Thermatic Energy Services a distinct advantage, as they can implement solutions quicker than many competitors and be confident about the time required to complete the setup and gain connectivity. This means their customers can get their projects moving quicker and recognise energy savings faster.



*"We are very particular with the partners we work with due to the prestigious nature of our clients.*

*When you are implementing large national projects, you don't have time to hit roadblocks, especially when it comes to connectivity and visibility.*

*Wireless Logic continues to support us with delivering for our clients across a range of connectivity solutions. They work with us to tackle potential complications and we can rely on them to deliver our requirements and meet our customers' high expectations."*

Jen Johnson, MD, Thermatic Energy Services

Case Study:
Avire

# Improving **lift safety** and **operational management** through **cellular connectivity**

## About Avire

***Avire*** **are a leading provider and manufacturer of safety and communication products for lifts.**

Their products include light curtains, emergency telephones, connectivity solutions and displays, and have been installed in over four million buildings worldwide. Market leading brands such as E-Motive, Janus, TK Jones, Memco and Microkey make up some of Avire's range of products across Barcelona, Czech Republic, Shanghai and Singapore with global sales representation, customers receive a high-quality product and hassle-free experience to easily maintain and modernise their lifts.

## The challenge

As a key part of Avire's offering, communication is fundamental to ensuring both mechanical data and human interaction are facilitated. This has traditionally been made possible through Avire's canbus technology, which enables users to manage and control multiple lift brands through one cloud-based hub, delivering future-proofed technology to extend a lift's life, whilst creating more accountable, measurable functionality complemented by fully-remote diagnostics and control.

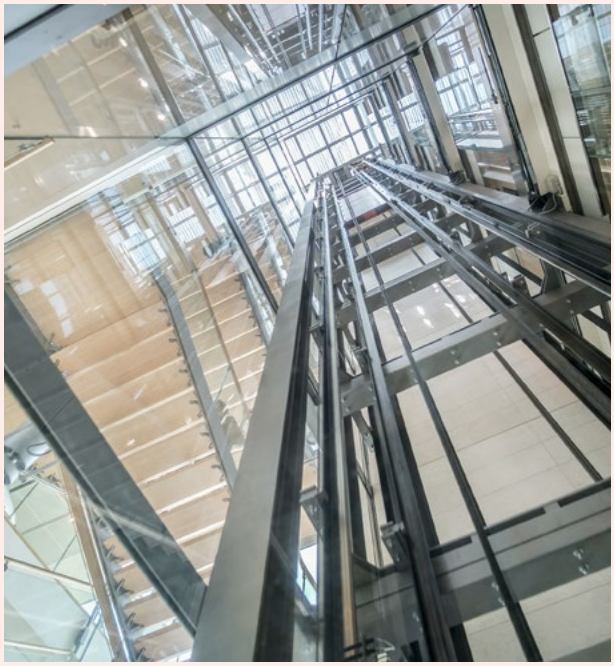
Avire's overall goal was to make lift operations simpler, smarter and safer, and with SIM-based modems integrated into many of their product solutions now becoming the norm, they required a SIM solution that could easily be installed, could be effectively deployed in the field and keep costs manageable.

## The solution

To address these issues, and ultimately to keep SKU (Stock Keeping Units) manageable and minimise the work of selecting the right Mobile Network per location, we provided Avire with a single one size fits all SIM solution. This solution utilised our SIM management platform, SIMPro, which allows Avire to monitor the performance, usage, and control of their SIMs.

Having tested a number of network options through a rigorous programme of trials, the outcome of requirements needed was a single, unsteered SIM that managed data, SMS and voice. And because of the nature of an unsteered smart SIM, a Mobile Network was selected on signal strength alone, therefore not being hampered by preferences which could potentially affect the seamless connection. One SIM to suit all installations and locations simplifies Avire's entire connectivity platform with just a single stock unit to be held at its factories for assembly.

A secure network solution with IPsec VPN also ensured that the two-way datalinks from the monitoring units to Avire's hub could never be compromised. The secure status of the network



has resulted in Avire's communication channels being private, with SMS, data and voice all being delivered across one bearer service.

Finally, Avire needed to continue to provide value to their customers and so also worked with Wireless Logic to create a highly competitive range of tariffs that reflect the likely usage of a deployed SIM-based management unit. This was achieved by Avire pursuing precise analysis of data usage to then set tariffs to match the expected usage. Wireless Logic were then able to aggregate the usage over groups of SIMs, therefore ensuring communication costs are controlled and budgeted on a per-deployment or per-customer basis.

## The outcome

A one SIM solution to suit all installations and locations has simplified Avire's entire connectivity platform with just a single stock unit to be held at its factories for assembly meaning ease of installation, effective deployment and cost management. Rapid deployment of unsteered roaming SIMs is now being seen amongst OEM's who require a cross-border solutions supported by a single management platform.

Avire now have a complete 360 degree visibility of their entire SIM estate through the use of SIMPro, allowing for a seamless and accountable overview of their data and network usage, to then optimise their lift management and performance.

**Contact us today...**

to discover how we can help you manage your next IoT project or smart building applications.

Call: **0330 056 3300**
Email: **hello@wirelesslogic.com**
Web: **wirelesslogic.com/smartbuildings**

*"At Avire, our mantra is simpler, smarter safer.*

*Our technology is designed for multi-brands and lift types giving operators the assurance that their lifts can be better managed and controlled whilst minimising wasted engineer visits. The power of cellular as a communication channel is giving us more flexibility as we develop new solutions to keep the world's lifts operating at peak performance.*

*Following extensive testing across a number of territories we are pleased with the Wireless Logic's connectivity platform which creates a seamless and accountable solution with strong resilience."*

Faye Bartlett, Marketing Director, Avire

# **Compare Bearer Services** for IoT

| | LoRa | NB-IoT *(LTE Cat-M2)* |
|---|---|---|
| **Global Standards Based** | ⊗ | ✓ |
| **Major MNO Support** | ⊗ | ✓ |
| **Typical Connection Speed** *(Download/Upload)* | Up to 0.05 Mbps | 0.07 Mbps/0.03 Mbps |
| **Coverage** *(Decibel (dB) gain GSM)* | +5dB GSM *(Good for high density use)* | +20dB GSM *(Wide area & good subterranean penetration)* |
| **Connection Frequency** | Sometimes connected | Sometimes connected |
| **Mobility** | Seamless connectivity within managed network | Handover between cells not supported |
| **Response Time** | Medium | Slow ~1 sec |
| **Total Cost of Ownership** | *Deployment Specific* | Low *(low module costs and long device life cycle)* |
| **Power Efficiency** | Very High *(up to 10 year battery life)* | Very High *(up to 10 year battery life)* |
| **Power Saving Mode** (PSM) | ✓ | ✓ |
| **Extended Sleep Cycle** (eDRX) | ⊗ | ✓ |
| **International Roaming** | *n/a* | ✓ *May be restricted by some networks* |
| **SMS** | ⊗ | ⊗ |
| **Two-way Voice** | ⊗ | ⊗ |

| LTE-M *(LTE Cat-M1)* | 4G *(LTE-Cat 1-6)* | 5G *(LTE-Cat16)* |
|---|---|---|
| ✓ | ✓ | ✓ |
| ✓ | ✓ | ✓ |
| Up to 1 Mbps | 10-100Mbps/5-50Mbps | 600Mbps/120Mbps |
| +11dB GSM *(Wide area & good subterranean penetration)* | *-4dB GSM* | *-28dB GSM* |
| Frequently Connected | Always Connected | Always Connected |
| Seamless connectivity between cells | Seamless connectivity between cells | Seamless connectivity between cells |
| Medium ~100ms | Fast ~40ms | Immediate ~1ms |
| Low *(low module costs and long device life cycle)* | Medium/High | High |
| High *(up to 7 year battery life)* | Typically mains powered *(Up to 1 year battery life)* | Typically mains powered *(Up to 1 year battery life)* |
| ✓ | ✗ | ✗ |
| ✓ | ✗ | ✗ |
| ✓ *May be restricted by some networks* | ✓ *May be restricted by some networks* | ✓ *May be restricted by some networks* |
| ✓ | ✓ | ✓ |
| ✓ | ✓ | ✓ |

# Why you should choose to **work with Wireless Logic**

In just a matter of days, our IoT connectivity experts will have you up and running with a solution tailored to meet the needs of your deployment

**IoT Connectivity for any device, anywhere.**

Market leading IoT/M2M connectivity platform provider with over 6m+ devices connected globally.

## Global Coverage

Partnerships that provide private access into 750+ networks across 190 countries.

## Flexible Solutions

Operator and technology agnostic solutions, with pricing that scales with your business.

## SIMPro Platform

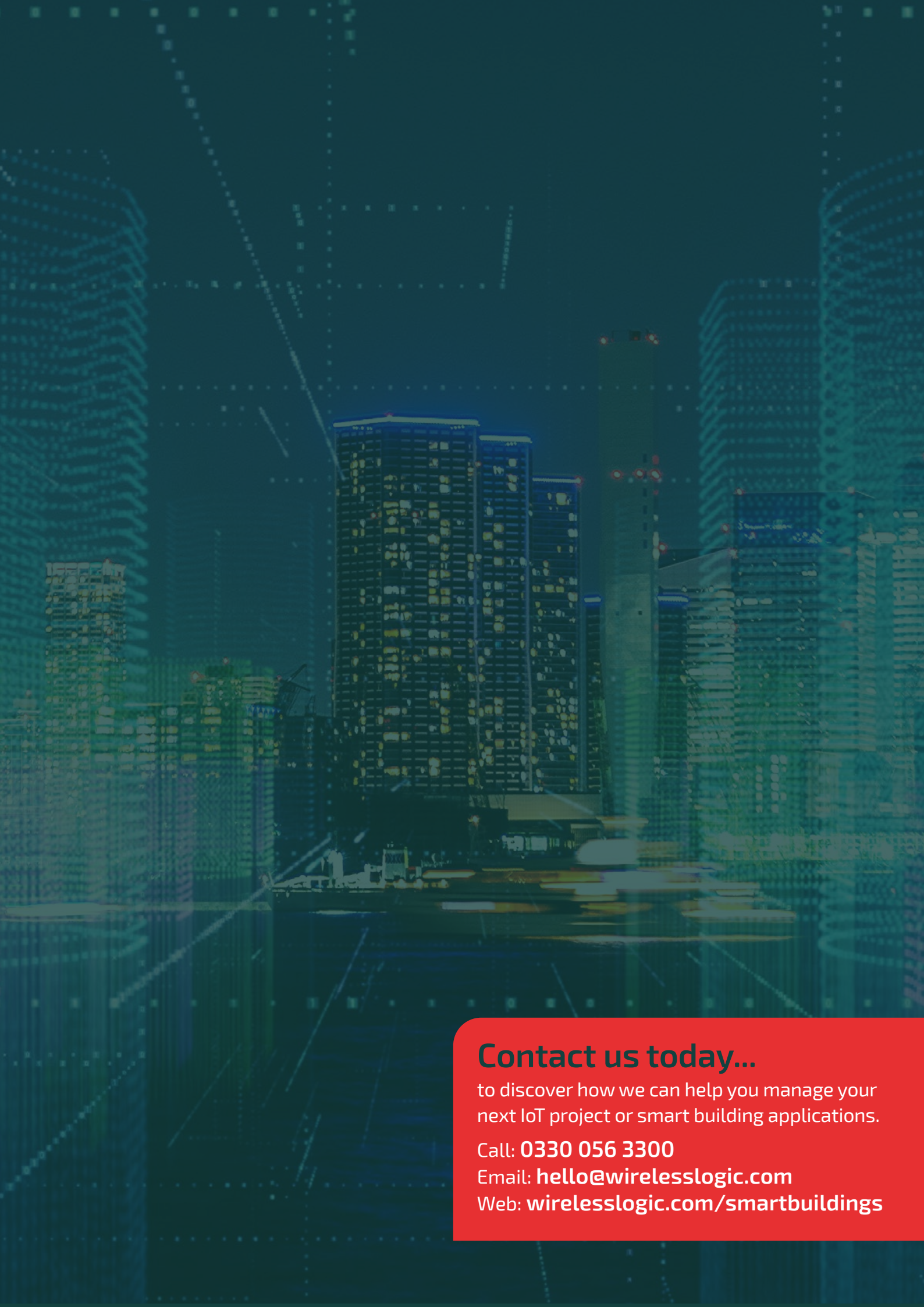
Simplify and automate connectivity management through a single, smart window.

## Expert Support

20 years' experience in helping our customers design, deploy and manage IoT and M2M applications.

## Secure & Resilient

Private infrastructure in 10 major data centres - transmitting data reliably from device to end-point.



## Contact us today...

to discover how we can help you manage your next IoT project or smart building applications.

Call: **0330 056 3300**
Email: **hello@wirelesslogic.com**
Web: **wirelesslogic.com/smartbuildings**


## UK

**Wireless Logic Group Ltd**
Horizon
Honey Lane
Hurley
Berkshire
SL6 6RJ, UK

0330 056 3300

## China

**Wireless Logic China Ltd**
华埃莱斯（常州）通信技术有限公司
Office (Changzhou)
No.82 Hehai Middle Road
Xinbei District
Changzhou
Jiangsu Province
China, ZIP 213025

4008718400

**Wireless Logic China Ltd (Sales Office)**
华埃莱斯（常州）通信技术有限公司
Building B
Qingdao Huaqiang Industry Park
Jingyi Road, Chengyang District
Qingdao Province
China, ZIP 266000

4008718400

## Denmark

**Wireless Logic Nordic**
Valdemarkshaab 11
DK 4600 Køge
Denmark

70 22 20 45

## France

**Wireless Logic France**
Parc de la Duranne
255, Avenue Galilée
13857 Aix-en-Provence
Cedex 3
France

04 42 16 60 17

**Matooma**
Le Liner
ZAC de l'Aéroport
Montpellier Méditerranée
Entrée 2 SIS -
2630 Avenue Georges Frêche
34470 Pérols
France

04 88 36 07 40

## Germany

**Wireless Logic GmbH**
Technopark
Am Hochacker 4
85630 Grasbrunn
Germany

089 55 06 21 39

**mdex GmbH**
Bäckerbarg 6
22889 Tangstedt
Germany

041 09 55 54 44

## Netherlands

**M2MBlue BV**
Josink Maatweg 43
7545 PS Enschede
The Netherlands

085 0 160 666

**SIMPoint**
Esp 237
5633 AD, Eindhoven
The Netherlands

040 8 489 489

## Spain

**Wireless Logic SL**
C/ Jose Luis Goyoaga 32
Edificio Noray, Oficina 103
48950 Erandio (Bizkaia)
Spain

34 944 043 962

wireless logic