JT IoT

WHITE PAPER

Preparing for GLOBAL IOT Deployments

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Preparing for GLOBAL IoT Deployments

Table of contents

Figure 1:

Installed base of IoT units by category, 2014 to 2020

Source: Statista

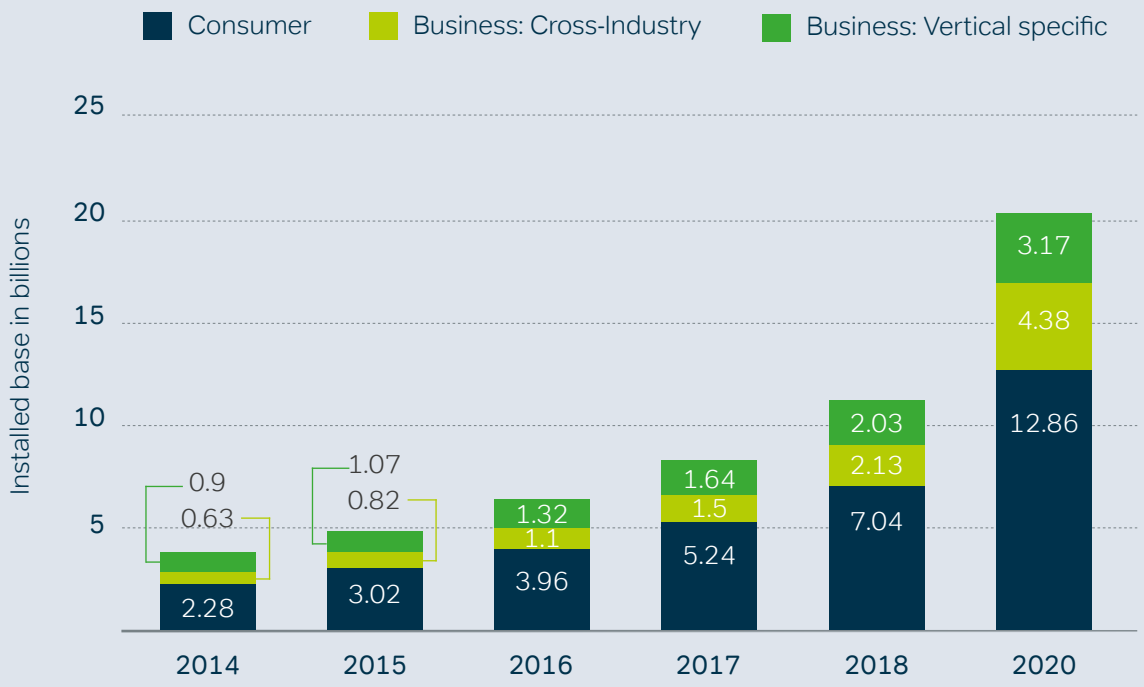
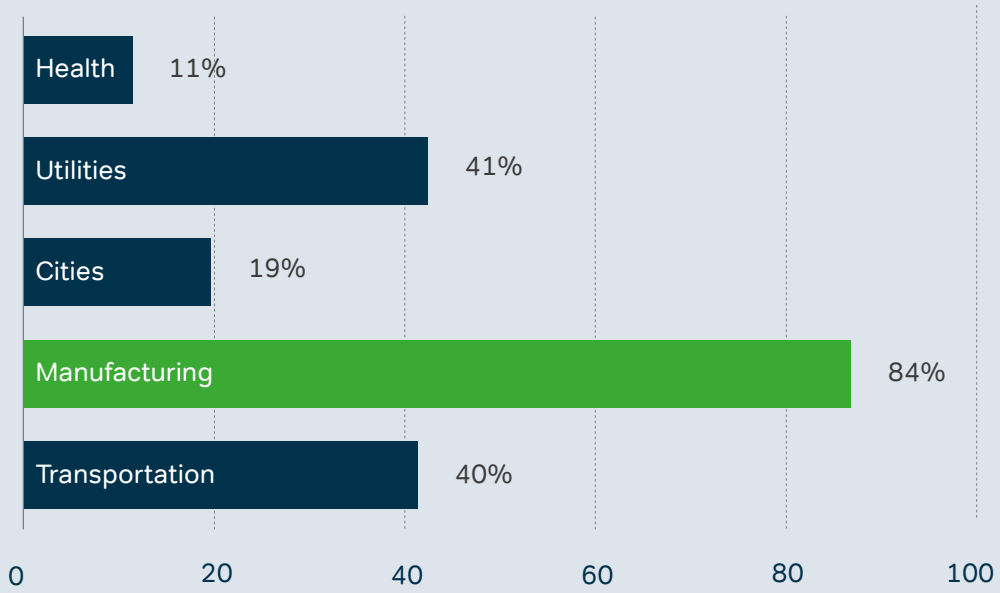


Figure 2:

IoT network connections by sector - annual growth (2017)

Source: Verizon, '2017 State of the Market: IoT Report'



The IoT market – a growing opportunity for industry and enterprise

The Internet of Things (IoT) has been hailed as the 'next industrial revolution', with more than 20 billion devices, from waste bins to tractors, forecast to be connected to global networks by 2020. From smart cities and healthcare to agriculture, manufacturing and energy, the IoT is transforming the industrial landscape.

This offers a huge opportunity for service providers, technology companies, operators, and an entire ecosystem of organisations across every vertical, to not only streamline operations, but also drive new revenue streams through the creation of entirely new applications and services, as well as through the collection of so-called 'Big Data' that connected devices provide. The insights obtained from this data will help transform industrial and business processes, leading to more efficient operations as well as unlocking new innovations.

As a result, IoT is gaining momentum as organisations and providers – from manufacturing to transport and utilities – are adding IoT capabilities to their applications, devices and services to enable more efficient data collection, to create significant cost savings and improve efficiencies, as well as support entirely new edge applications and services.

The challenge of preparing for global IoT deployment

Of course, this also creates a significant challenge. As modern industries transition to the IoT, organisations are being faced with new business models, but lack expertise of deploying IoT at scale and on a global basis.

Businesses that deploy IoT-enabled devices not only need connectivity but also a complete management platform with relevant supply chain functionality, automated provisioning, deep insight and advanced billing capabilities, in order to monitor and manage their entire fleet of connected devices on a global basis.

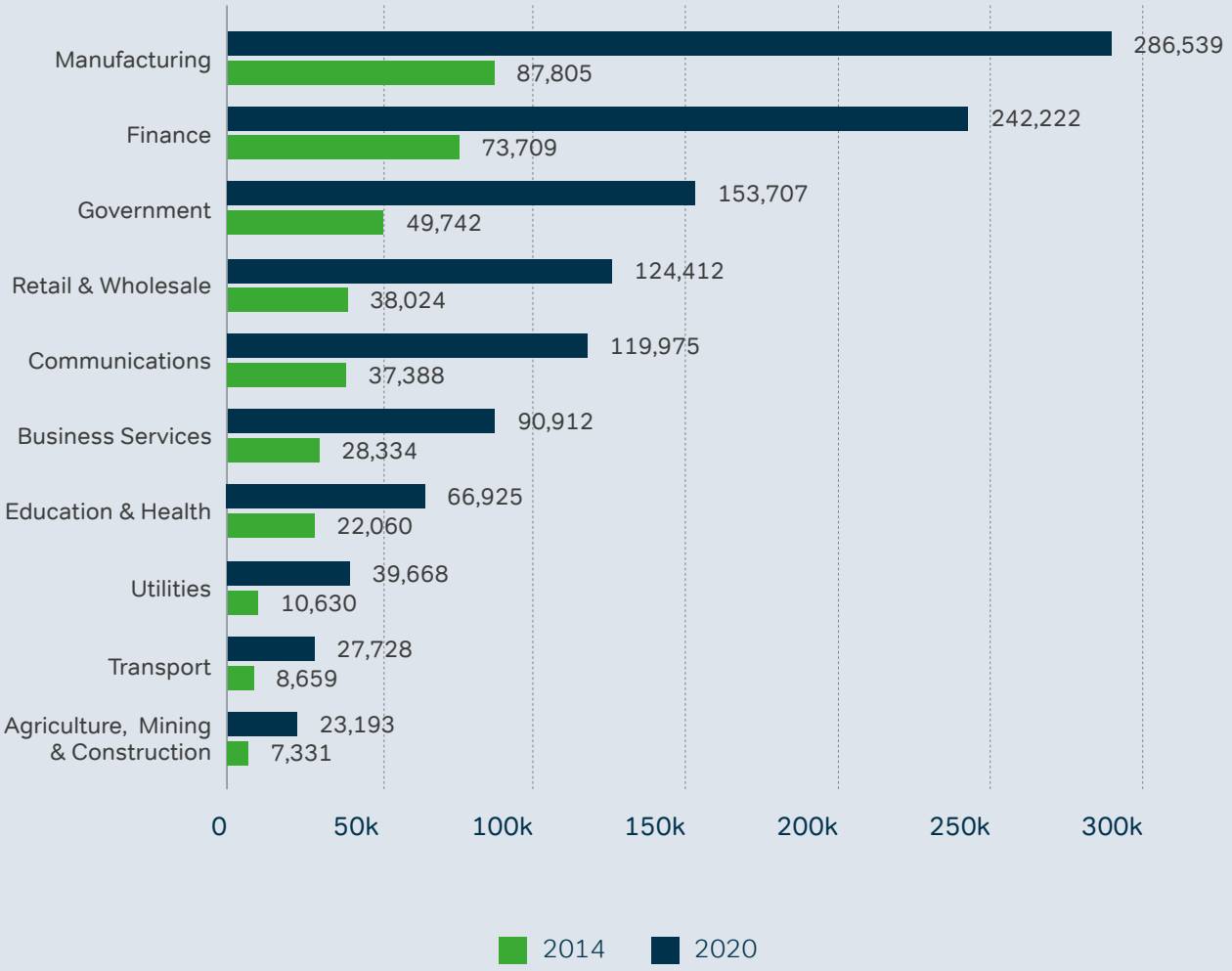
This white paper describes how manufacturing organisations and providers can prepare themselves for global IoT deployment, at scale. It outlines the pitfalls of introducing large-scale IoT deployments, the importance of open connectivity, and how JT can help organisations to achieve this simply and efficiently, at scale, and without fuss.

"IoT is gaining momentum as organisations and providers – from manufacturing to transport and utilities – are adding IoT capabilities to their applications, devices and services"

Figure 3:

IoT market sizing, 2014 to 2020. Market size in million euros.

Source: Statista



Industrial IoT market growth

Forecasts for IoT market growth suggest significant growth in IoT across the board. More recently, a number of forecasts and market estimates reflect the fact that enterprises now have higher expectations for scale, scope and return on investment (ROI) from their IoT initiatives. The number of deployed devices has already grown dramatically – and, as organisations discover the benefits that IoT solutions can bring, they seek to accelerate this growth.

As a result, according to market analyst firm Statista, the total installed base of IoT units grew from just under 4 billion in 2014 to over 11 billion in 2018. However, in the next two years, that figure is forecast to almost double to over 20 billion units. While the consumer category accounts for the majority of those units, by 2020 business cross-industry and vertical specific IoT devices will account for 37 per cent of the total number of installed IoT units, representing a sizable addressable opportunity (see Figure 1).

Growth is also strong across all segments, although the pace varies. According to estimates from telecoms provider Verizon, Manufacturing IoT network connections grew fastest in the Business sector in 2017, expanding by 84 per cent during the year. By comparison, Utilities and Transportation grew half that amount in 2017 at 41 per cent and 40 per cent, respectively (see Figure 2).

This is confirmed by other data. For example, Statista estimates that Manufacturing will be the largest IoT market by 2020, reaching nearly €287 billion, followed by Finance, Government and Retail (see Figure 3).

It's clear that the IoT represents a significant opportunity for enterprises across all verticals. Not only will it extend the capabilities of existing devices and shipments, but it will also create new revenue opportunities from the delivery of new services and applications.

This opportunity is set to be global, and as such organisations cannot be left behind, but many are lacking the expertise and know-how to understand how to deploy global IoT capabilities. The following section highlights the importance of connectivity when it comes to IoT deployments.

"...the total installed base of IoT units grew from just under 4 billion in 2014 to over 11 billion in 2018. However, in the next two years, that figure is forecast to almost double to over 20 billion units. "

Figure 4:

Connected IoT devices (billion)

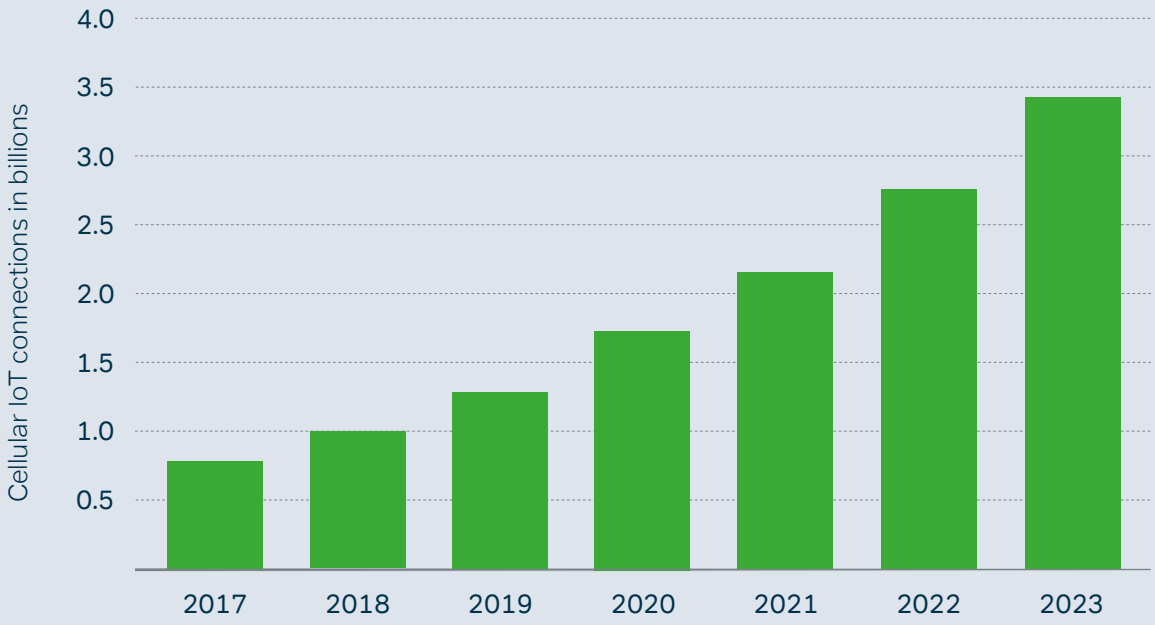
Source: Ericsson Mobility Report

IoT	2017	2023	CAGR
Wide- area IoT	0.8	4.1	30%
Cellular IoT	0.7	3.5	30%
Short-range IoT	6.2	15.7	17%
Other devices			
PC/ laptop/ tablet	1.6	1.7	0%
Mobile phones	7.5	8.6	2%
Fixed phones	1.4	1.3	0%
Total connected devices	**17.5**	**31.4**	**11%**

Figure 5:

Cellular IoT connections (billion)

Source: Ericsson Mobility Report



Number of mobile IoT connections

With numbers spiralling, it's clear that one of the biggest challenges when it comes to IoT deployments is connectivity. While a number of different connectivity options exits for connecting IoT devices, from Bluetooth to Lo-Ra, mobile (or cellular) connectivity is likely to be the best option for the majority of organisations, due to the flexibility and coverage potential it offers. Standards-based mobile networks are widely deployed and span almost every country.

According to the most recent Ericsson Mobility Report, for example, mobile (cellular) IoT connections will grow at a CAGR of 30 per cent between 2017 and 2023, reaching 3.5 billion devices at the end of the period (see Figure 4).

Interestingly, according to the same report, this growth in mobile IoT connections will mainly be driven by North East Asia, and specifically China, followed by Western Europe and North America (see Figure 5). But, regardless of region, mobile connectivity is set to be a significant option for IoT deployments.

Connectivity is key

Manufacturers do not need to know the ins and outs of all the connectivity options, but they do need to be aware of them. Cellular wireless solutions for IoT devices provide a single, simple and, most importantly, standardised way for enterprises of all sizes to achieve their IoT ambitions, particularly as networks evolve towards 4G, LTE, LTE-A, and of course 5G. IoT enablement allows organisations to launch new services in more markets, as well as supplementing existing services and shipments. Put simply, if enterprises want to grow their IoT capabilities on a global scale, they need to consider carefully the type of connectivity solution required.

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While some applications will only require sporadic, low-bandwidth, low latency connections, for the majority of IoT deployments, cellular connectivity represents a quick and simple solution.

To enable this, solutions need to be fitted with communications capabilities, which means they need SIMs to allow connectivity to the mobile network. A SIM card is the fundamental unit required for connecting to the IoT and is, therefore, an essential component to getting it right. The right SIM card needs to offer a variety of connectivity options, ideally out of the box, making global IoT deployments simple and fast.

So, it's important to think about how equipment and devices can easily and reliably connect to any mobile network, irrespective of the country and location in which they are deployed.

Why is a global IoT connectivity solution important?

To succeed with IoT, you need a mobile connectivity solution that can easily be integrated with your equipment and machinery. You need assured connectivity and coverage regardless of global location, backed by performance guarantees and with full control to manage your deployed fleet.

Of course, many connected IoT devices are likely to be mobile rather than static, for example, agriculture machinery or a fleet of buses. This means that the ability to connect seamlessly to different networks, according to best signal or price for example, is essential.

Likewise, global IoT deployments will of course cover different regions of the world, each with different operators and providers so the ability to be able to track a device from one country to another, for example during export, or to monitor and manage devices across multiple local operators is also paramount.

The benefits of using a single global solution provider

That's why it's essential when considering partnering with an IoT provider to ensure that they provide a genuinely global solution. A single provider offers many benefits. First, using a single provider for your global IoT requirements cuts complexity, makes shipments easier and, in turn, helps to deliver operational efficiencies and leaner, more flexible operations.

By partnering with a provider that offers a global solution, enterprises gain a number of benefits:

- Connectivity to the networks they need, regardless of location
- Backup connectivity options when cellular is not available or appropriate
- Global coverage to ensure that IoT can be deployed anywhere
- Flexibility to change providers (for example, to take advantage of better pricing options locally)
- Robust security
- Complete visibility of IoT devices, from location to status, and more.

Simplified connectivity

Simplified connectivity supports growth, and allows IoT services to scale to meet the success of your business.

As you grow and deploy more devices, you need to be able to easily manage connectivity, manage your device fleet and manage their operational performance. That's why you need a solution that takes care of all of this, from activation, connection and ongoing management, while you scale and deploy more devices wherever you need them.

Gaining global connectivity, of course, is not simple. Using multiple partners in different regions of the world, for example, creates complexity and does not provide a single overview of your device estate.

Many operators, for example, may try to steer you towards a preferred network operator with whom they have partnering agreements in place, which means that organisations have significantly less flexibility that they might need.

What you need to ask a prospective IoT partner

- Do you have reliable coverage in any country or location to meet my ambitions?
- Can your solution be easily integrated with my equipment, machinery and business processes?
- Can you offer assured connectivity backed by performance guarantees?
- Do you offer full control to manage my deployed IoT fleet?

How does a global solution provider help you to scale in IoT?

Flexibility of roaming partners

Working with a global partner allows you to control network selection, so it's possible to use a preferred roaming partner in a particular location, or simply change providers whenever necessary or desirable. In both cases, it's important to have the flexibility to specify the provider and to migrate from an existing provider to another.

However, there are two types of Global Multi-Network Roaming SIM cards: Steered and Non-Steered.

Non-Steered SIM cards have no logic on the SIM that prefers a particular provider, unless upon request. As a result, the SIM card doesn't default to a preferred network. The advantage is that no individual network has priority. This method is very popular with IoT and M2M solutions as devices can seamlessly change between networks.

The roaming SIM will only change networks when the mobile signal drops below a certain threshold. As a result, your IoT device will always connect to the strongest signal available. Non-steered cards are therefore more flexible and effective.

Steered SIM cards, on the other hand, use one primary network that then steers to another if the network drops. This one primary network has preference over all other networks that may be available. The major difference is that if the primary network of the steered SIM drops, the SIM can't change to a different one. As a result, this causes major problems for IoT devices that need resilience built in.

Unfortunately, most solutions either force you to use a specific operator or lock you in to a long-term contract which means you are not protected against price changes – for example, do you know where your business will be in 5 years' time, or if your IoT solution offers the right flexibility if pricing conditions change.

You therefore need to be sure that your SIM provider gives you the flexibility you need to select roaming partners, while enabling connection to an alternative if this is unavailable, as well as to allow you to migrate to another, should new pricing become more attractive.

Connectivity options

Enterprises need reliable connectivity that can work wherever your solutions are deployed – in any country and in any location.

The right IoT solution also needs to offer multiple connectivity options, when cellular is either unavailable or inappropriate. This provides the flexibility to ensure that you have the right connectivity option regardless of location.

Once connectivity is assured, it underpins future evolution of the service; when connectivity is in place, it can be used as an enabler to deliver more functionality through time. Services will evolve and become more complex, so the right connectivity is essential in order to ensure that enterprises remain flexible and agile, and to future proof themselves against connectivity evolution. The right connectivity partner means there's one less thing to worry about when creating and executing growth strategies.

A single IoT device management platform

It's also essential that organisations have the ability to view, monitor and manage their entire IoT device SIM estate, regardless of location, which is essential for scaling and efficient operations.

The right provider should also offer the flexibility to work with organisations of all sizes, and offer out-of-the-box, as well as bespoke development when required.

Out-of-the-box mobile connectivity just works. Working with a solution provider that allows you to activate a SIM, securely and remotely, wherever it is, and connect to the right network to secure the best coverage for your equipment is a key requirement when solutions are being shipped globally. Enterprises need to be sure that they can immediately connect to the network and maintain connectivity.

If it's not, then manual intervention will be required, wasting time and money. Flexibility matters to maximise efficiency and reduce costs – you need a solution that will connect as soon as it's activated and maintain connectivity, even when network conditions change.

Ambitious companies are using IoT to add new capabilities and to support market expansion, which means they need to be able to scale, easily and effectively, with seamless coverage. The IoT offers significant growth opportunities on a global basis, allowing organisations not only to expand within existing markets and with existing products and services, but also to launch into new markets with entirely new services and applications.

Enterprises need the right global partner to support these growth plans.

Why choose JT?

Heritage and flexibility

JT's services are unique, due to the truly global coverage delivered, spanning more than 700 operators and more than 700 roaming agreements. We are one of the most connected operators globally.

Offering the flexibility and agility of an integrator, but with the global reach and network control of a Mobile Network Operator, JT has more than 120 years of heritage. We're a strategic asset of the local government, the State of Jersey, so our customers benefit from the security of long-term viability and commitment. That's one reason why 18 of the world's top 20 banks depend on our services.

Our IoT connectivity solution allows customers to swap between networks within 1 second, with no network preference or steering, eliminating downtime and ensuring compete freedom and flexibility in terms of connectivity options and networks, regardless of location.

JT also offers a wide range of connectivity options to suit almost any situation in any location around the world. For example, NOMAD supports narrow band IoT, WiFi and, of course, 3G, 4G, LTE, LTE-A and 5G, as well as other evolving connectivity technologies.

Agile business model

We have our own core network with all the machinery of a multinational operator, but because of our size and agility in the market, we can move quickly, and work with enterprises of all sizes. Our Jersey-based testing infrastructure also allows enterprises to test their IoT capabilities and requirements, and we have the ability to work flexibly with customers – from out-of-the-box to bespoke.

We also offer our complete connectivity solution SIM card as a 'white label' option for MNOs and MVNOs who want to offer global connectivity to their own customers.

With the volume of IoT enabled devices shipped to customers in the coming years estimated to increase dramatically, IoT inherently sets a demand for automation; ensuring quality standards and the lowest possible amount of handling and support costs. JT takes care of this automation, backed by key processes that we maintain in our network and via NOMAD, our IoT connectivity management platform.

NOMAD – A single platform with unique, global capabilities

Our fully-fledged connectivity management platform, NOMAD, offers unique capabilities for building and customisation of IoT services, covering connectivity, provisioning, monitoring, and remote diagnosis. JT offers the complete IoT stack, providing a robust, secure solution for your IoT service requirements.

Using our NOMAD portal, customers can view their entire estate of SIMS down to the single device level, providing actionable insights into the lifecycle of devices, and offering complete scalability. NOMAD can wake a device and connect it to over 700 networks around the world, which means that device shipment and activation can be accomplished with ease.

With JT NOMAD IoT, automation is the core of the architecture using workflows to ensure a 100% degree of automation. JT NOMAD IoT supports both mobile and fixed communication networks in a clean homogenic and extensible architecture.

Security built in

Furthermore, security comes built in. For example, it's possible to ensure that a SIM only works with a specific device, or within a defined location ('geofencing'), according to your preferences.

Our heritage and expertise as a market leader in IoT means that our customers can rest assured they are working with a global solutions provider that can provide the simplicity, scalability, security, global reach, and flexibility to meet all of their IoT requirements.

Key questions – how JT solves your business connectivity challenges

Q: **Do you have reliable coverage in any country or location to meet my ambitions?**

A: JT offers unrivalled coverage, spanning more than 200 countries and 700 roaming operators, which means you can confidently deploy anywhere to meet your growth targets.

Q: Can your solution be easily integrated with my equipment, machinery and business processes?

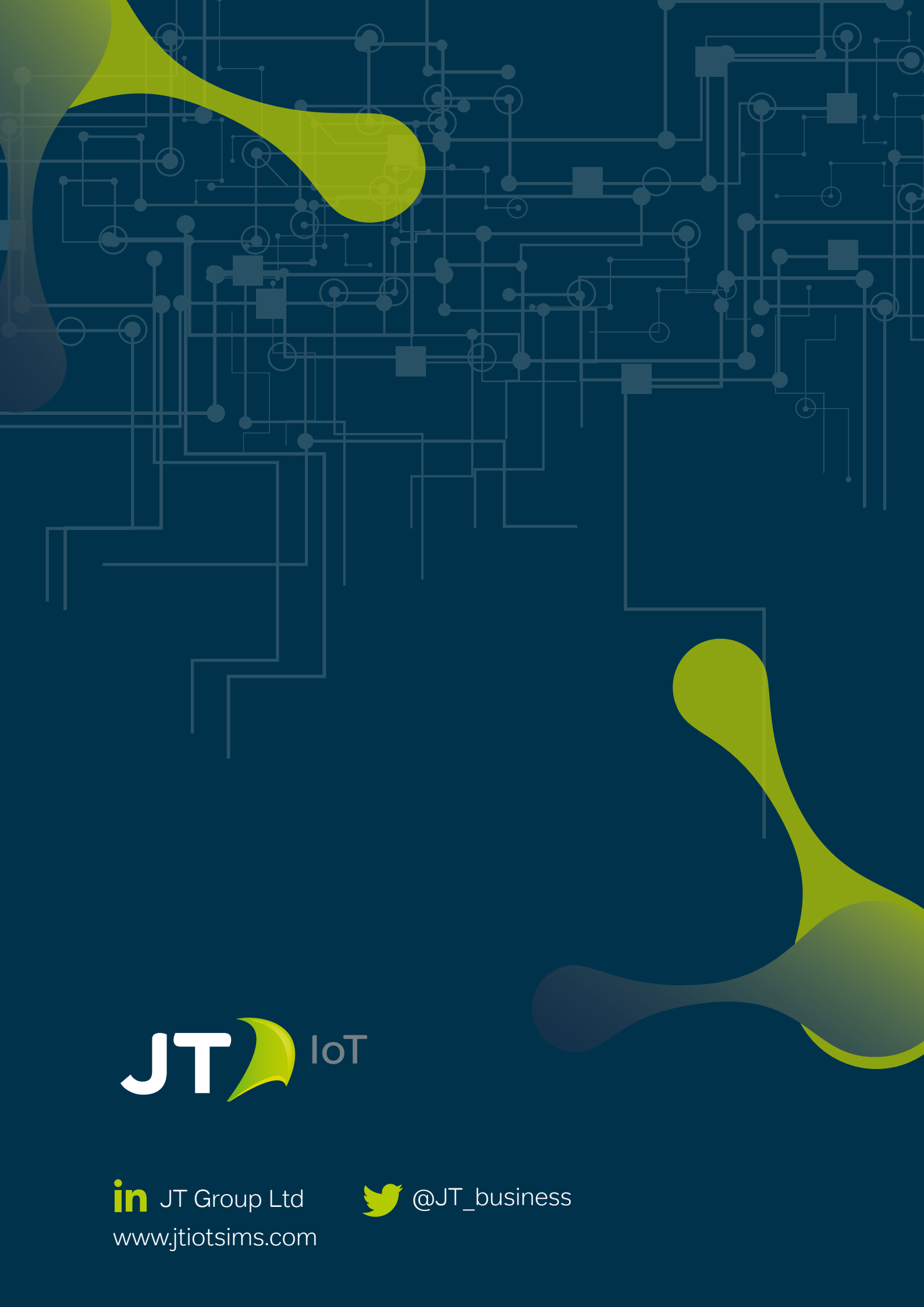
A: Extensive APIs allow rich integration with your solutions and processes.

Q: Can you offer assured connectivity backed by performance guarantees?

A: JT is a Tier 1 operator, offering the highest levels of performance, with SLAs and 99.999% uptime assurance.

Q: Do you offer full control to manage my deployed IoT fleet?

A: NOMAD provides complete insight and full visibility into all connected SIMs, allowing complete management of your entire device fleet.



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