



Manage your global IoT estate

**The Vodafone Managed
IoT Connectivity Platform**

The future is exciting.

Ready?



The Vodafone Managed IoT Connectivity Platform

A complete end-to-end solution for managing all your IoT SIMs, connectivity and services, wherever they are deployed.

The Vodafone Managed IoT Connectivity Platform is a powerful self-service delivery and management solution underpinned by patented technology, located at the heart of every Internet of Things (IoT) solution we offer.

IoT challenges

An IoT project is like any other large technology initiative; you need to be able to manage it effectively, from deployment to in-life operations.

You need a way to monitor your connectivity all over the world, order and deploy more devices as your business grows, diagnose faults quickly in hard-to-reach areas, and much more. You also need to ensure that your data remains secure and keep your costs under control.

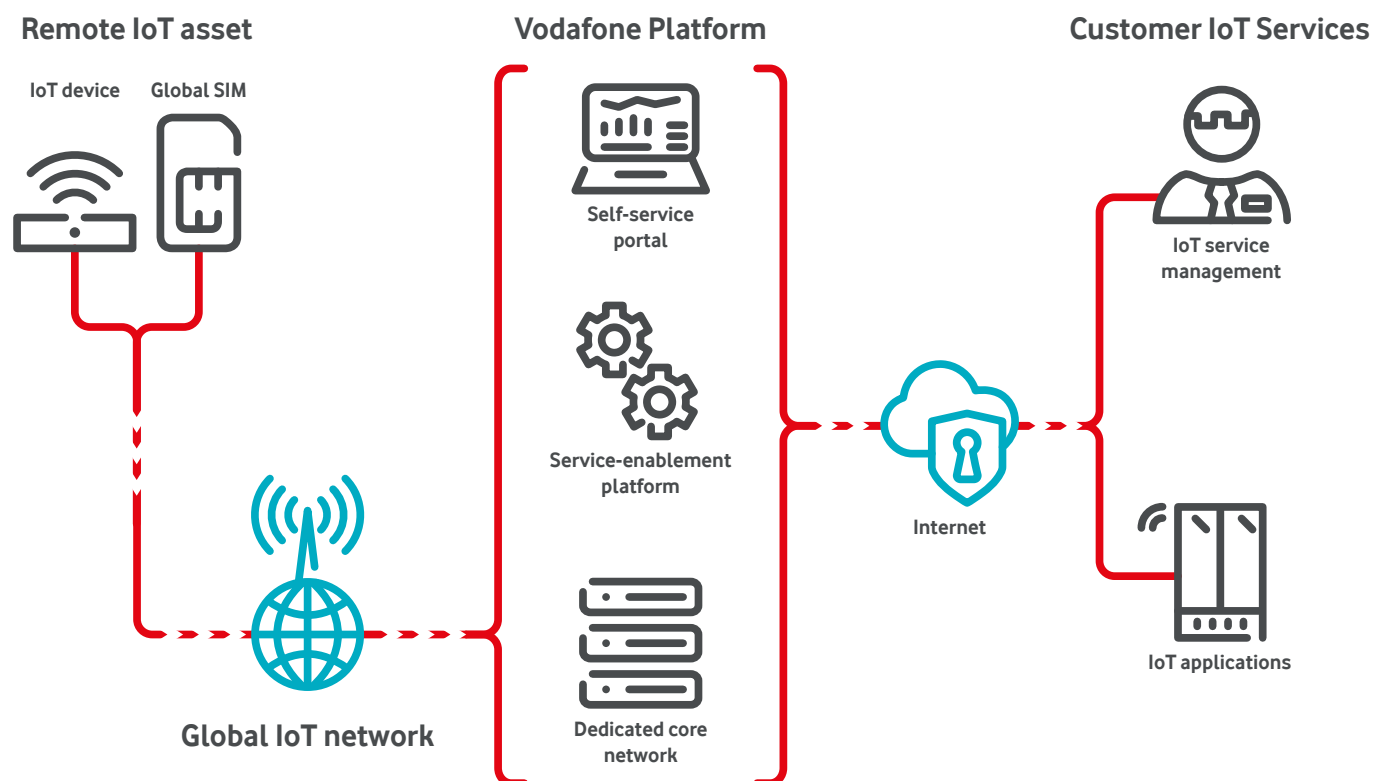
IoT is transforming the way businesses operate. According to ABI Research, by 2020 there will be 41 billion connected devices.¹

Making IoT simpler

The Vodafone Managed IoT Connectivity Platform simplifies IoT management, so you can realise the technology's full potential. Whether you have thousands of IoT-enabled assets worldwide or just a few in one location, our platform enables you to manage your entire IoT estate centrally, and gives you visibility and control of your IoT devices anywhere within our global footprint. It can alert you to unusual activity, produce reports on performance and data usage, activate new subscriptions, and much more — all in real time.

Vodafone owns the platform, so we can:

- Integrate with our own core network for better performance, reliability and manageability.
- Control our own development roadmap so we can extend the platform's capabilities to meet your changing needs.
- Give you a single point of contact for any questions about the the platform, network or SIMs.



Key features

Connect to the platform through a secure web portal, which gives you access to all the management functions you need.

A user-friendly dashboard

The portal's dashboard gives you a picture of your global IoT estate at a glance. It can be customised to job roles, ensuring you are only presented with the most vital information. The portal enables you to group devices according to characteristics, so they can be managed in bulk to reduce your administrative workload. The dashboard gives an instant overview of the different groups of devices you've set up, including information on the number of subscriptions, data usage and current operational state.

Easy SIM management

Using the self-service management tool, you can provision subscriptions in bulk, set country and regional restrictions, and change operational states to align with different stages of your manufacturing lifecycle. For example, you can set a subscription to "test" for the ones in factory testing, "ready" when they're in manufacturing or warehousing prior to activation, "live" for active use, and "suspended" for stopping data transmissions.

Real-time alerting

The platform enables you to define upper and lower data thresholds for subscriptions in each group. If a subscription should operate outside of the parameters you set, the platform will alert you immediately. For example, if a subscription exceeds its data allowance, you will be automatically notified and you can halt transmissions to keep costs under control. Similarly, if the subscription isn't transmitting as much data as it should, an alert will be generated so you can investigate the potential problems.

Transparent reporting

You have access to a variety of standard reports for the current and previous billing periods to help understand how your remote assets are operating on the network. The reports contain graphs on high and low data usage, usage by IMSI, current states, state changes, alerts, and much more. Using this information, total data consumption can be optimised and your costs controlled.

Service diagnostics

The portal also serves as the first point of contact for support for SIM issues. Using the self-service diagnostic tools and the transaction log, you can diagnose SIM problems such as misconfiguration, RADIUS proxy issues, sudden spikes in data transmissions, and more. If a problem is detected you can try changing the SIM state, but if issues persist you can contact the Vodafone IoT service desk, which operates 24x365.

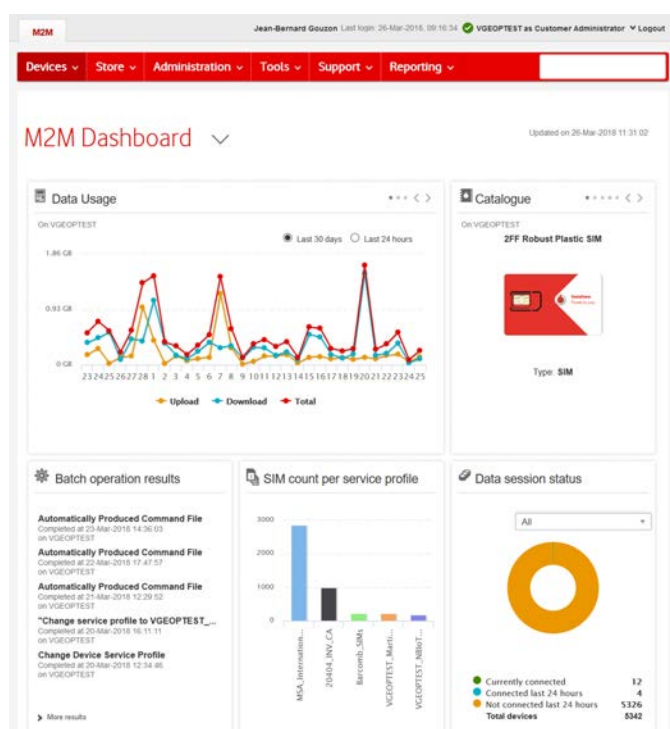
Our fast-track offering

All of these management tools are available as part of our fast-track offering, which we can get up and running for you in five working days.

The fast-track offering supports:

- Standard SIMs or robust plastic SIMs.
- Packet-switched data communications over GPRS, 3G and 4G.
- Satellite connectivity.
- Narrowband-IoT (NB-IoT) network.
- Connectivity between your IoT devices and our core network on a shared, resilient public internet APN with controlled access.

Vodafone Managed IoT Connectivity Platform web portal



Configuration options

We offer a range of advanced capabilities and features that can be tailored to business requirements.

Service integration

We can integrate IoT connectivity data directly into your existing back-end systems — for example, ERP or SCM systems — via APIs and SMPP. Location-based services are just one example of the type of IoT data that can be integrated into your environment. Using Cell ID and assisted GPS, where available, The Vodafone Managed IoT Connectivity Platform can feed location directly into any system — for example, a fleet management or asset tracking system. To locate an asset, you can easily access the Cell ID information on where the first communication session happened.

Communications types

In addition to packet-switched data over 2G, 3G, 4G and NB-IoT networks, we also support SMS (mobile originated and terminated), or circuit-switched voice over GSM networks to connect your SIMs to the platform. Our SIMs have dedicated IMSI and mobile number ranges that are not assigned to a geographical destination or network, which means they can be used on any Vodafone or Vodafone IoT roaming partner network anywhere in the world where regulation allows.

SIMs for every environment

The Vodafone Managed IoT Connectivity Platform supports multiple SIMs, suitable for a wide range of operating conditions:

- **Standard Plastic** is our standard SIM, which has great value and is ideal for a wide range of working conditions.
- **Robust and Super Robust Plastic** are SIMs hardened for tougher conditions, which have a highly stressable memory area that preserves frequently updated files.
- **Standard Industrial** is our toughest SIM, designed for extreme environments. It's also soldered directly to the terminal's PCB, making it ideal for tight spaces.
- **Automotive** is a tough SIM, specifically designed for automotive uses, capable of operating at high temperatures and withstanding intense vibrations.

Enhanced reporting

These reports supplement those in our fast track offering, giving you extra information on the performance of your subscriptions so you can improve connectivity performance and optimise the total data consumption of your devices. You can configure each report, choose groupings, filters, set a date range, copy and move operations between profiles and applications, and change SIM custom attributes. Reports are downloadable in CSV, XML and PDF formats.

Vodafone platform

Authorised users can access the customisable connection dashboard, which provides an overview of your entire SIM estate, with quick access menus and a SIM/connection search.

You can define the capabilities of a group of SIMs, such as roaming permissions. You can also retrieve a list of SIMs based on predefined criteria like status, or your own custom attributes.

The screenshot shows the M2M interface with a search results table. The table has columns for IMSI, State, Service Profile, and eCall mode. The results show various SIMs with different states (Active Sleep, Active Live, Active Test, Inactive) and service profiles (VGEOPTEST_LBS_CSP, VGEOPTEST_DEMO_).

IMSI	State	Service Profile	eCall mode
204043201457825	Active Sleep	VGEOPTEST_LBS_CSP	No eCall support
204043201457826	Active Live	VGEOPTEST_LBS_CSP	No eCall support
204043201457827	Active Live	VGEOPTEST_LBS_CSP	No eCall support
204043201457828	Active Live	VGEOPTEST_LBS_CSP	No eCall support
204043201457829	Active Live	VGEOPTEST_LBS_CSP	No eCall support
204043201457830	Active Live	VGEOPTEST_LBS_CSP	No eCall support
204043201457831	Active Live	VGEOPTEST_LBS_CSP	No eCall support
204043201457832	Active Test	VGEOPTEST_LBS_CSP	No eCall support
204043201457833	Active Live	VGEOPTEST_LBS_CSP	No eCall support
204043201457834	Inactive	VGEOPTEST_LBS_CSP	No eCall support
204043201457835	Inactive	VGEOPTEST_LBS_CSP	No eCall support
204043201457836	Inactive	VGEOPTEST_LBS_CSP	No eCall support
204043201457837	Inactive	VGEOPTEST_LBS_CSP	No eCall support
204043201457838	Inactive	VGEOPTEST_LBS_CSP	No eCall support
204043201457839	Inactive	VGEOPTEST_LBS_CSP	No eCall support
204043201457840	Inactive	VGEOPTEST_DEMO_	No eCall support
204043201457841	Inactive	VGEOPTEST_DEMO_	No eCall support
204043201457842	Inactive	VGEOPTEST_DEMO_	No eCall support
204043201457843	Inactive	VGEOPTEST_DEMO_	No eCall support
204043201457844	Inactive	VGEOPTEST_DEMO_	No eCall support

A platform you can trust

At Vodafone, we've put years of experience and expertise into making the Vodafone Managed IoT Connectivity Platform reliable, robust and secure.

Hosting, SLAs and scalability

We host and run the platform, so we take care of maintenance and updates, allowing you to focus on your business. The platform offers carrier-grade availability and we give you competitive SLAs for additional peace of mind. Our SLAs cover platform and service desk availability, incident management and maintenance events. As your business grows, the platform's scalable architecture also enables you to expand your solution easily.

World-class support

We're there for you throughout your IoT project, from designing, configuring and deploying your solution, to in-life operations. We have 400 IoT specialists who can help you test devices and solutions before deployment, and can also provide you with a staging and production environment with dummy SIMs for testing, training and demonstration purposes. Once your IoT solution is set up, we offer round the-clock support in several languages via email and a dedicated telephone hotline as well. We use a support ticketing system to track and escalate incidents with agreed response and resolution times for your queries.

Security

We take data security seriously, which is why we provide an encrypted end-to-end data connection from each endpoint to your back-end systems. By default, your devices connect over a shared APN using a dynamic IP address, but if you wish, you can opt for a dedicated private access point name (APN) and dynamic, fixed or mixed IP allocations over a range of connections including IPSec tunnels and leased lines. Only devices and assets with SIMs assigned to your organisation can transfer data via the dedicated APN — preventing unauthorised access. We can also protect your terminals from making unauthorised data transfers. We offer device-specific credentials and IMEI locks so SIMs only work with the terminals you specify.

The link connecting the platform's web services server and your IoT back-end systems is secured too, using HTTPS. The implementation includes server and client certificates, protecting your IoT infrastructure. To prevent unauthorised users at your company from accessing sensitive information, your administrators can restrict certain functionalities for users by creating tiered access levels. Only administrators can edit your company details, and add and delete users.

Customer portal capability

You will be able to drill down to information on individual connections and access a variety of standard reports such as, usage, alerts or newly activated subscriptions. You can also customise the portal for different roles. For every device, details like connection status or location can be easily viewed.

The screenshot shows the 'Device Information' section of the customer portal. The device ID is 204046209342938. The 'State' is 'Active Live'. The 'Manufacturer' is 'None'. The 'Device Model' is 'None'. The 'IMEI (last detected)' is 0145820072629806, last detected on 28-Sep-2017 17:47. The 'IMEI (Assigned)' is 0145820072629806. The 'IMSI' is 204046209342938. The 'ICCID' is 89314404000238101068. The 'Voice MSISDN' is 862396209342938. The 'Service Profile' is VGOOPTTEST_LBS_CSP, created on 29-Feb-2016 10:21. The 'First Used on' is not specified. The 'Last activity status' shows a 'Data Session' finished 20 days ago, with 21 hours of activity, 25.55 MB download, and 1.42 MB upload. The 'Mobility' status shows the device registered 3 hours ago, with a location update 35 minutes ago. The 'Location' map shows the device is in London, near Westway. The 'Data Usage' chart shows 95.27 MB used in the last 30 days and 47.68 MB in the last 24 hours.

The screenshot shows the 'History' section of the customer portal. The device ID is 204046209342938. The 'Timeline' is selected, showing a view of events from 05-Mar-2018 to 05-Mar-2018. The 'Voice call' section shows 'No events found'. The 'Data' section shows two yellow bars representing data usage, with green checkmarks indicating successful events. The 'Administrative operations' and 'RADIUS events' sections show 'No events found'. The x-axis of the timeline ranges from 12:10 to 12:50.

Part of a complete solution

The Vodafone Managed IoT Connectivity Platform is the foundation of any IoT solution, delivering simple, trusted and scalable IoT.



Global SIMs

We provide global SIMs to suit every operating environment. All of our SIMs feature dedicated IMSI and mobile number ranges not assigned to a geographical destination or network, so you can use them on any Vodafone or Vodafone partner network almost anywhere in the world. Since you don't need to customise SIM settings for each country, you can reduce the complexity and time it takes to deploy your IoT solution.



Global networks

Vodafone has the largest mobile telecommunications network in the world. We provide services via 500 wireless networks on five continents and fixed-line infrastructure in more than 40 countries — serving customers across 2G, 3G, 4G, satellite and NB-IoT. Wherever your business may take you, we're probably already there.



Simple pricing and contracting

We offer a flexible range of commercial models and a single global contract to cover your entire global IoT estate. Our tariffs let you forecast and manage costs without you needing to worry about roaming charges. All you have to pay is a monthly price, meaning you only pay for the period of time that you're using your IoT and for changing SIM states. We also offer pro-rated fee for data usage, a fee per subscription and a fee for active subscriptions.



Integrated IoT terminals

To help you reduce time to market and deploy your IoT solution more cost-effectively, we can provide Integrated IoT Terminals — a range of handpicked terminal models from leading manufacturers to suit different IoT applications. Each terminal comes with a Global SIM pre-installed — so they're ready to use out of the box.

To speed up implementation even further, we can pre-configure each terminal for your specific application environment and pre-register them to The Vodafone Managed IoT Connectivity Platform. Each model is tested and approved for compatibility by the Vodafone Innovation Park Labs — so they work perfectly on all Vodafone and Vodafone partner networks. By choosing our Integrated IoT Terminals, you can benefit from one point of contact for both connectivity and hardware, and have access to Vodafone's extensive expertise and support.



Application enablement

In addition to its well-established and world-leading managed connectivity, Vodafone delivers world-class IoT solutions across different verticals and geographical markets. Its unique global and local approach combines a robust and thoroughly engineered global platform with highly trained local teams capable of autonomously scoping, customising and integrating applications in direct collaboration with customers. Entire bespoke modules can even be created according to local requirements, while maintaining a consistent look and feel, and building on common data structures and user models to ensure compatibility.



IoT solutions

Vodafone has designed a series of IoT Solutions that are delivered as a complete managed service. These include our Mobile Asset Tracking solution, Connected Cabinet and automotive solutions. They also include data capture, network services, data management and data presentation to ensure your IoT deployments are delivering value as quickly as possible.

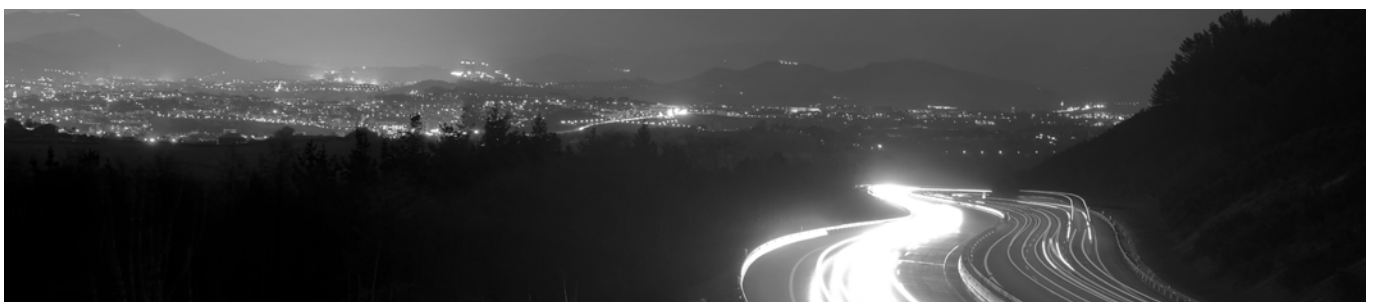


Device management

Managing all of your connected devices can be a handful. Devices are under continual risk of damage or misuse, and it can be challenging to understand if large, isolated deployments are all working correctly. Remote device management removes these risks, creating a secure environment for security, analysis, fault detection, correction, and updates.

Vodafone's IoT Device Management platform offers complete control over devices, making them more resilient, reducing operational costs and optimising uptime.

“Adopters want connectivity that's secure, reliable and pervasive. A top consideration when choosing connectivity for IoT projects is network coverage (74% of respondents²).”



Why Vodafone?

Whether working with a few IoT devices or tracking millions of them, Vodafone can provide connectivity solutions specifically designed to your needs. The Vodafone Managed IoT Connectivity Platform has been designed to provide all the self-service and automation tools required to keep costs low, do things more quickly and increase efficiency — all while maintaining service quality, regardless of business size. The platform provides a complete end-to-end environment for our customers' IoT-based services.

But don't just take our word for it: Vodafone IoT services are recognised as industry leading by IoT analysts. We provide an end-to-end service that meets your needs through a secure and reliable platform owned fully by Vodafone, backed by over 1,400 dedicated specialist employees and 25 years of proven IoT experience.

References

1. <https://www.abiresearch.com/press/the-internet-of-things-will-drive-wireless-connect/>
2. Vodafone IoT Barometer 2017/2018

[vodafone.com/business/iot](https://www.vodafone.com/business/iot)

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