Nomadic Device

Your Ultimate Guide to IoT in

LOGISTICS
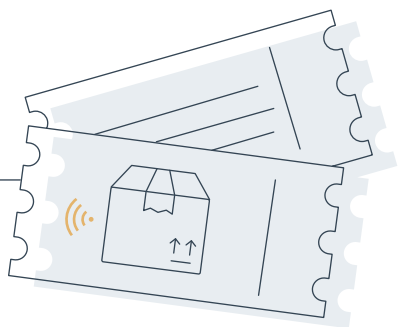
Plan Your Trip:

Your IoT Boarding Pass

Welcome to The World of Logistics!

IoT in Logistics is predicted to be worth $100,984 million by 2030, so if you're thinking about traveling to this unique destination, you're in good company. This trip may well be the destination of a lifetime for many forward-thinking adventurers, but if you're going to put it on your travel bucket list, it's important to be prepared.

This Lonely Device guide will cover what you need to know before you get going, as well as essential items to make the road(map) a whole lot smoother once you're on the move.

Popular IoT Landing Spots for Logistics

Choosing a destination! There are a number of up and coming hotspots for Logistics that could be a great fit for your needs.

Cold Chain and Supply Chain

Time is of the essence when it comes to cold chain management, from fresh fruits and vegetables and other foodstuffs, through to vaccines and medications in Pharma manufacturing and distribution. Regulations dictate that you're on top of temperature, humidity, impact, location and more, and the results could be catastrophic if gaps in the supply chain go unnoticed.

Global cold chain management, at rest and on the move

The challenge

Connectivity and visibility to meet regional compliance, health and safety laws, theft prevention, asset recovery, and a need to reduce operational costs.

The solution

Macro-level tracking, where devices wake up to check in - reducing the impact on battery. Full lifecycle management from a single console with Over-the-air (OTA) management and control, alerts, reporting and troubleshooting.

Location and Route Management

Improve decision making and predict patterns in driver behavior, identifying imminent breakdowns in vehicles in a preventive way for fleet management or last-mile logistics for example, or planning inspections and maintenance ahead of time where it causes the least disruption to service. GPS tracking and geo-fencing techniques can be used to stay on top of shipments anywhere in the world, and make smart adaptations on the fly because of traffic or weather.

Real-time insights on drivers, vehicles and assets

The challenge

Last-mile operations, consumer demand, and regulatory needs such as low emissions makes visibility and control a priority for today's fleets. However, as they move across the country - this is a tough ask.

The solution

Smart SIM solutions allow for multiple IMSIs and split data routing, plus integration with back-office systems such as HR. The company now has real-time tracking of all vehicles in a fleet, optimizing routes, driver behavior, staffing and more.

Inventory Tracking & Warehousing

IoT in logistics has opened the door for Just in Time warehousing and inventory management, ensuring that businesses have transparency into supply and demand in the most cost effective way, while supporting customers with their needs. A smart warehousing system can be managed by IoT, ensuring safe and secure storage, accurately monitoring conditions with less reliance on manual handling, and efficiently finding the items the business needs in real-time.

Pack Your [Real-world IoT] Use Case!

A smart label for logistics tracking and cold chain management

The challenge

Enabling efficient palette tracking with global NB-IoT/CAT-M coverage, "permanent roaming safe", offering low latency and efficient data communication.

The solution

A single-use disposable label comprising an NB-IoT/CAT-M modem, GPS, peripheral sensors and battery. This dictated a new billing option - a one-time fee for device/service/connectivity all in one.

Autonomous Vehicles and Drones

Smart businesses are using real-time data and shipment parameters to create smart driving solutions such as autonomous vehicles and unmanned aerial solutions like drones. These allow companies to reduce operational costs, add safety and consistency to routes and shipping, and ensure the best possible service for cargo deliveries of all kinds, especially in remote areas.
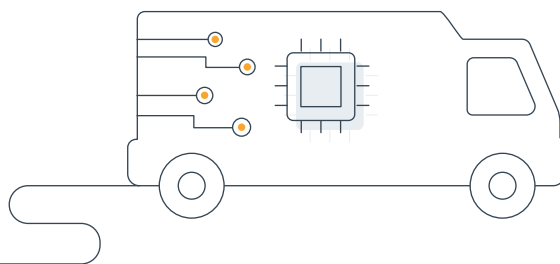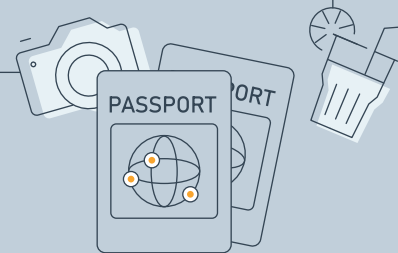
Need to Know

Whichever location satisfies your wanderlust, you're going to need to prepare yourself in advance. Here's your pre-travel checklist; tuck it in right next to your passport and in-flight sandwich!

IoT Map

Pre-Travel Checklist

Regulations for Travel

Less vaccinations and visas, and more compliance & data privacy

☑ **Permanent Roaming**

If you want devices to move freely through your locations of choice, you can't be held back by 3-6 month limits on how long they can roam. Just like you need a visa to stay in a new location for as long as you choose, think of smart global connectivity solutions like citizenship status for IoT! Consider an example like food or medicines that need to travel from Europe to LATAM, and the regulations that are involved in their data and movement.

☑ **Privacy Laws**

Especially in logistics, data can be sensitive, carrying end-user information that must be kept confidential, isolated, and in the country of origin. If your devices collect data en-route and then open it up to each country on their roadmap, this could be difficult to obtain under the consumer's right to be forgotten under GDPR or CCPA for example.

☑ **Logistics Regulations**

Regulations change regularly and may halt your travels before they've begun. Think about IMO regulations on fuel usage when shipping overseas, Hours of Service regulations that dictate how long truckers and other drivers can be on the road, and global tariff agreements and insurance rates, which can make it prohibitive to do business in logistics.

Technology

Consider the technology to pack in your rucksack, and how it's going to get

☑ **Coverage**

What technology coverage will you look to achieve, from 2G, to 3G, 4G, 5G, and LPWAN? If you have a 2G device for example, and then your region decides to sunset this technology, how long will it be before you need to replace your modem and the technology altogether?

☑ **Device types**

Depending on your reason for travel, you might want to think about the types of devices you choose. In pharmaceuticals you may need pressure or temperature gauges, while in manufacturing or last-mile logistics for retail, location alone might do the trick.

Rates

What countries will be on your multi-leg journey, and what are the rates for each?

☑ Your IoT devices may well be world travelers themselves, manufactured in China, sent to the US by plane, and then travelling by boat or truck through Mexico to South America or somewhere else entirely. Whatever the start and end destination, you need to think about rates across every country in which they land, and from where they connect and send information.

On the Road:
Your Travel Guide for IoT

Ask a helpful local in your destination of choice, and they'll know where to eat to avoid food poisoning, where to shop to sidestep tourist traps, and the tips and tricks that take your adventure to the next level. Consider us that friendly advisor for choosing the right connectivity solution for your IoT needs, and keep on reading for the ultimate lowdown.

Insider Tips

Keep it Simple

The more relationships you have, the more complicated your itinerary is going to look, and the more stakeholders need to be involved in ensuring the trip of a lifetime.

One key pillar of IoT for logistics is simple operations, with global coverage in a single SKU. That means all of your devices have a single, common service provider. One approach to make that happen is to use local IMSIs in key countries and regions, so that one SIM can support many locations. In our case, this includes the same bootstrap mechanism for all countries, coverage for all technologies from 2G-5G, and support for all form factors, including eUICC compliance if needed.

Grab Hold of Visibility

With unparalleled access to the entire connectivity stack, your enterprise has full control over device connectivity, offering lifecycle management from the moment of device manufacture, through to analytics and iteration over IoT deployments.

A fully automated solution should allow you to define your own rules and policies, for example making changes to monitoring for different shipment needs, or choosing how regularly you want devices to report back to a centralized dashboard. Make sure you have a direct line to information when you need it, so that you can check in on data usage, costs, battery life, latency and more.

Multi Layer Your Security

Don't underestimate the importance of security when it comes to IoT, because logistics providers need to secure not only the device itself, but also the data and the connectivity.

Logistics has some of the most important security needs of all industries, including the physical safety and security of cargo and shipments, alongside fraud, IT operations and data privacy to name just a few. To set policies with your corporate guidelines and security needs in mind, you may want to consider private network solutions, which can be leveraged with public Radio Access Networks, and yet provide a tight amount of security and control.
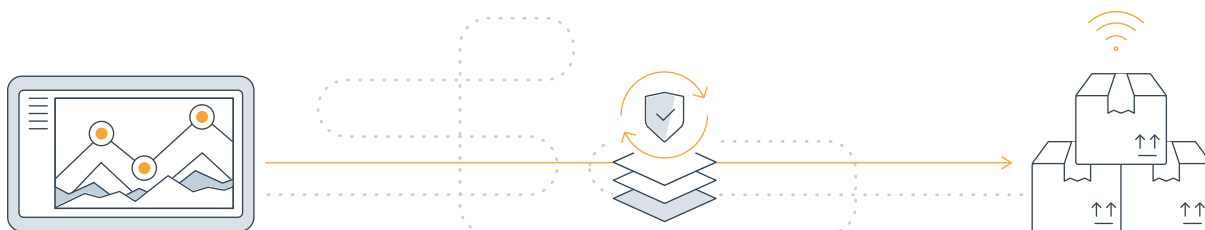
Got Yourself into Trouble? Your Guide to Events and Response

When you're in a new location and something goes wrong, who are you going to call? Here are some of the most common challenges you might encounter during your sojourn in new territory.

Poor Availability

When devices are traveling cross-country or even across a global landscape, it only takes a single loss of service from one network operator to take your visibility off the map. When customers are relying on an update to their shipment, or compliance dictates that you can track metrics at all times, loss of coverage can quickly equal loss of business.

Plan Ahead Autonomous switching logic can be pre-defined ahead of time, so that your device simply switches to a new cellular provider according to thresholds that you choose.

Troubleshooting

When something happens to devices in the field, you can be left with nothing but gut feeling and guesswork, when what you need is data. In a worst-case scenario, you don't even know about spikes in data usage, loss of connectivity, or shipments gone off route, until the bill arrives at the end of the month, or a customer calls about critical missing cargo or deliveries. In a new location, you need the local language within your grasp to speak to your local MNO, which we all know can be a struggle when you're a worldwide traveler like IoT!

Plan Ahead A centralized connectivity management platform provides real-time insight into your devices & their behavior, alerting you ahead of time to any deviations or disruptions.

Security and Fraud

What happens if a shipment goes missing, or if you onboard new drivers or handlers who seem to have a higher loss, idling, or incident rate than others? How can you ensure that your devices only communicate with authorized endpoints? Staying on top of IoT devices in logistics means having eyes everywhere, something that can't be done without a digital platform and smart security on the device, too. But, will security slow down performance?

Plan Ahead An agentless device security suite focuses on protection without an impact on performance, and intelligent analytics proactively tells you when something's not right.

Maintenance and Support

IoT devices are far from 'set it and forget it', and yet it can be hard to maintain them to your own best advantage. As battery-operated devices, you want to extend the lifespan as much as possible, and this involves reducing latency to stretch battery life to its full potential and identifying inefficiencies ahead of time. With thousands of devices in the field, manual servicing is expensive, time consuming, and often impossible to manage.

Plan Ahead Local connectivity allows you to reduce the amount of time that devices need to be awake, extending battery life. A centralized portal offers OTA management and control.
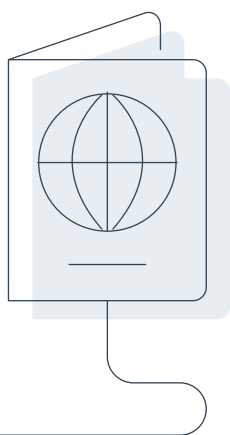
Survival guide: Understanding the Language of IoT

Glossary

2G
The second generation of GSM cellular technology, supporting voice and SMS

3G
The third GSM generation that introduced cellular data

4G/LTE
Long-term Evolution - the fourth GSM generation that improved IP data rates and capacity

5G
The fifth GSM generation, designed for supporting a massive number of connected devices to each cell, greatly improving data rates and adding special support for IoT and M2M use cases.

Autonomous Switching
The ability of a smart SIM to switch from network A to network B as a result of a predefined scenario, such as loss of coverage

CAT-M
One of the LPWAN (Low Power, Wide Area Network) access technologies, designed specifically for IoT, focusing on data and power efficient communication protocols.

CCPA
The California Consumer Privacy Act is a Californian privacy act that dictates data privacy for customers, mandating how companies manage, store and use consumer data.

Cellular Connectivity
Cellular connectivity runs on a cellular network, a communication method where the link is wireless, and the network is distributed over land areas known as "cells."

eUICC
A GSMA standard for Remote SIM Provisioning, designed with the purpose of bringing control to the users, and preventing mobile operators from locking-in their subscribers, with the introduction of embedded and integrated SIMs (eSIM and iSIM).

GDPR
The General Data Privacy Regulation is a European privacy regulation that enforces the use of customer data, such as keeping data in its country of origin and the right of customers to be forgotten.

Geo-Fencing
A virtual fence drawn on a map, that triggers an alert if an object (e.g. SIM, Device) enters or leaves that fence. Typically a circle or polygon.

IMO Regulations
Regulations that limit the percentage of sulphur in marine fuels as part of an attempt to reduce pollution.

IMSI
International Mobile Subscriber Identity - a number that uniquely identifies every user of a cellular network. Every mobile operator receives a dedicated IMSI range from the GSMA.

IoT Privacy
The privacy of the data that IoT devices collect, transmit and store, including compliance with data privacy laws and corporate policies.

IoT Security
The way that IoT devices are secured, including securing the IoT networks and the data which the IoT devices transmit and store.

LPWAN
Low Power, Wide Area Network - a term used to describe a new range of technologies aimed to prolong battery life and reduce data transmissions; LPWAN technologies span beyond cellular (e.g. LoRa, Sigfox, BLE)

MNO
Mobile network operator; a commercial entity that provides cellular connectivity services in a given footprint, typically a single country or a group of countries.

Narrowband IoT (NB-IoT)
One of the LPWAN (Low Power, Wide Area Network) access technologies, designed specifically for IoT, focusing on data and power efficient communication protocols.

OTA Provisioning/Management
The ability to control and manage SIMs over-the-air without requiring physical access to the device

Radio Access Networks (RAN)
The physical part of any cellular network, that includes the antennas (cells) and their data switching capabilities.

Roaming
The state in which a mobile device is visiting a network that is not its home network, typically in a different country.

Ready for the adventure of a lifetime?

Consider us your Travel Agents for this expedition into the unknown!

floLIVE offers advanced 5G network solutions and a full suite of global cellular connectivity services for IoT use cases. We're disrupting traditional networks and IoT solutions, and getting IoT up and running faster, more flexibly, and with more control. The platform comprises local core networks that provide local connectivity while being centrally managed and controlled over the cloud. This unique approach enables enterprises to benefit from high performance, secure and regulatory-compliant local connectivity on a global scale with all the flexibility and elasticity of a cloud-native platform.

floLIVE's solutions are offered as-a-service and support a pay-as-you-grow business model.

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Let's connect

Get in touch to discuss how we can meet your IoT requirements. We're sure to surprise you.

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