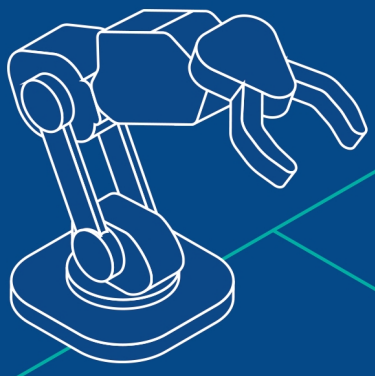
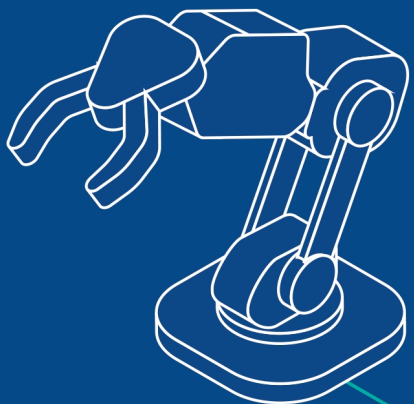
TeamViewer IoT for **Remote Operations**

Remotely control and centrally manage IoT endpoints, saving field force costs and boosting daily operational efficiencies





Introduction

Companies across industries are prioritizing IoT solutions as part of their strategic initiatives to optimize, automate, and grow their business at every level. But, attaining even the most obvious revenue and efficiency opportunities with IoT is not as straightforward as people assumed it would be. While **early adopters have paved the way,** they faced challenges and were only able to **implement IoT projects after multiple proofs of concept.**

Now, with a plethora of emerging IoT use cases ready for large-scale deployment, **late adopters realize they must act fast** or risk missing out on the **competitive edge IoT offers** — potentially jeopardizing their current marketplace standing.

One of these ready-to-scale IoT use cases is Remote Operations of distributed, essential devices, equipment, or machines (i.e., IoT endpoints). These can be found in all industries today and typically require costly manual on-site management — a cost that can be significantly reduced with the ability to monitor and control endpoints remotely.

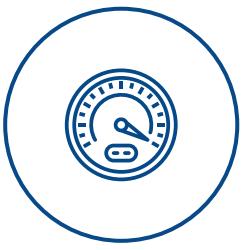
This is where **TeamViewer helps businesses quickly set up secure Remote Operations** for distributed endpoints with an easy-to-use, secure, and scalable cloud IoT solution.

What IoT Remote Operations means

- Remote Operations is the ability to **remotely control, monitor, and manage your endpoints in the field** from any location. It enables you to perform changes remotely and investigate endpoint status in real time, reducing the need for on-site visits.
- Remote Operations has a fast ROI **across all industries and dispersed endpoints** (e.g., windmills, production machines, pumps, vehicles, or digital signage).

The Value IoT Remote Operations Brings To Business

Save field force cost by checking and changing IoT endpoint settings remotely, reducing the need for on-site visits



Mitigate endpoint damage risks by remotely controlling settings, parameters, and attributes

IoT market is on the rise fueled by three mega trends

The market for **IoT is growing at ~20 percent** p.a. receiving substantial attention and funding. IoT revenues are **expected to double from ~$230B in 2017 to >$520B* by 2021** across industries.

Decision makers across industries are increasingly aware that **not investing in IoT use cases will affect their competitive position in the short- to medium-term.**

By 2021, smart and connected endpoints are expected to reach approximately **36 billion**** – 3 mega trends fueling IoT growth:

Massive increase in **computing power** and data processing capabilities

Drastic decrease in the cost of **connectivity, bandwidth,** and data storage

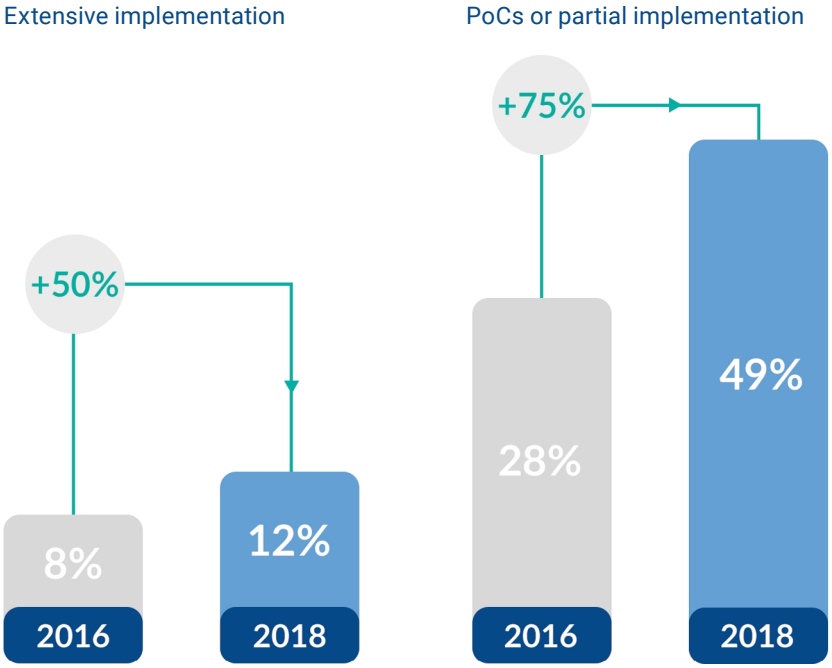
AI and Machine Learning innovation enabling better, automated decision-making

IoT adoption rising, but many companies still evaluating

Almost 50 percent of large enterprises and SMBs across industries*** in the US, Europe, and APAC, have engaged in IoT proofs of concept in 2018. However, only 12 percent of companies had entered into extensive deployments that year.

As more and more companies engage in IoT, the execution hurdles become more visible, while decision makers' view on the strategic importance has indeed solidified.

Companies by stage of IoT adoption



Key lessons learned

Almost all **companies learn IoT through PoCs**

- Large enterprises often run **multiple PoCs in parallel** before entering large-scale deployments
- Many PoCs produce **mixed results** – often due to lack of rigor and cross-functional ownership
- Leaders in IoT adoption have built up substantial **internal use case and security know-how**

3 main challenges of moving from PoC to full-scale IoT deployment

Complexity of integration with IT and business processes – especially with legacy IT infrastructure

Uncertainty of returns on investment

Security concerns, especially regarding proprietary data and cyber attacks

* Source: Bain & Company; ** Source: IHS; *** Source: Bain & Company; survey decision makers across industries in US, Europe, and APAC; ~60 percent SMBs and ~40 percent LE, N=627 (2018) and 533 (2016)

TeamViewer “democratizes” IoT

Easy and fast setup, flexible integration

Get started immediately

- Install TeamViewer IoT on your endpoints/edge devices today
- Save deployment time through quick setup and smooth integration with enterprise IT
- Avoid building out complicated and hard-to-manage IoT VPNs
- Test your IoT concept with the TeamViewer IoT Starter Kit

Flexibly integrate and customize your IoT solution

- Compatible with most widely used protocols
- TeamViewer IoT easily integrates into several third-party platforms using TeamViewer’s SDK and ready-to-use APIs

Clear return on investment

Reduce operating costs by minimizing on-site visits – lowering your field force cost by up to 70 percent

Reduce operating costs by remotely examining and changing IoT endpoint settings in a faster and more flexible manner – manage devices remotely, reducing the need for in-person on-site visits (e.g., remote scheduled maintenance, switch off wind turbine, update content on billboard screens, change settings on a production machine)

Mitigate damage risks by remotely controlling settings, parameters, and attributes: Understand precise environmental conditions to optimize equipment performance (e.g., change settings when certain temperatures, humidity, or wind conditions are reached)

Low total cost of ownership and predictable investment with a SaaS **license model (typically <6 months payback)**

Highest security standards

Secure your data

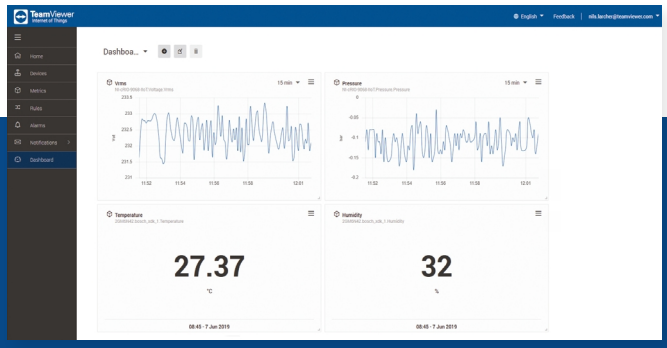
- End-to-end encryption – no one, including TeamViewer, can read the encrypted data stream
- Store your data either in the TeamViewer cloud (hosted in Germany, ensuring GDPR compliance) or keep it in your network, and only send alarms by using TeamViewer’s rule engine on the edge – ensuring full data sovereignty in both cases

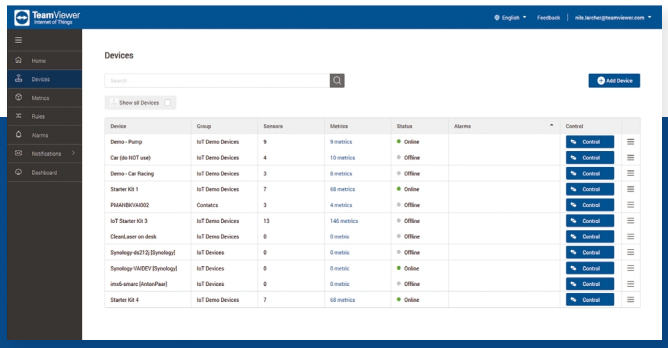
TeamViewer provides a second “safety net”

- TeamViewer IoT does not require your remote workers to be part of the company/machinery network
- This sets us apart from most VPN solutions that expose your company network to remote workers’ computer – and all the threats that it may host

Secure remote access, control, and monitoring for all your devices and machines

- Leverage our high performance, **low latency network** with >1,100 routers around the world
- Operate **touch control panels** remotely (“Remote Screen”)
- Access your **front-end machine management** remotely (“AppControl”)
- Get full control accessing the command line with our **Remote Terminal**
- Leverage TeamViewer’s **Global Access Network for secure connectivity**, no complicated VPN required
- Get **dashboard insights** with near real-time **edge visualizations of IoT data**, and **set rules to trigger alarms and next action(s)**
- Connect securely using our **end-to-end encryption** and state-of-the-art **authentication**





Predictable costs and simple pricing model

Predictable endpoint-based fee for the most common IoT use cases

High-volume discounts, no hidden costs

Get started today with a TeamViewer IoT Starter Kit

Test your IoT concept, build a **fully functional POC** with a TeamViewer IoT Starter Kit. Get all the hardware and software components you need to **kickstart your IoT project** with **instant connectivity, monitoring, and remote control.**

- **Avoid high upfront investments** while having a secure end-to-end encrypted solution that can easily be scaled

Price: €1,990 (Europe) or $2,249* (US and APAC)

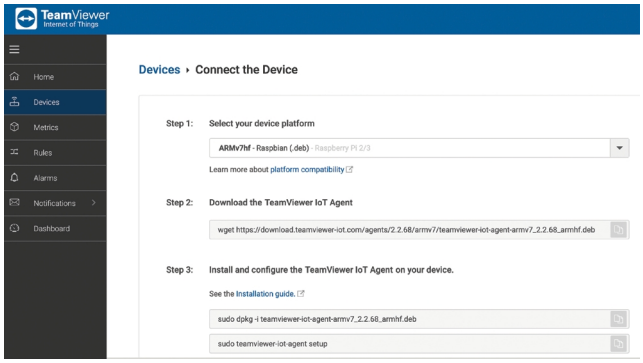
TeamViewer IoT Starter Kit includes:

- **1x Dell 3001 Edge Gateway** including antennas and connectors
- **3x Bosch XDK110** with sensors measuring temperature, humidity, acceleration (vibration), light and gyroscope
- **1x TeamViewer IoT** account, 6-month license
- **One full day of onboarding training** & consulting services

*Suggested Retail Price (SRP) excluding Value Added Taxes (VAT)

TeamViewer tools & characteristics enabling fast deployment

- **Several SDKs available** for integration and customizing
- **Simple integration** into several third-party platforms
- Compatible with **most widely used protocols**
- Exposing functionalities via **documented APIs**
- **No complicated VPNs** or firewalls required



TeamViewer IoT – 3 use cases in 1 product

Growing ecosystem of partners

IoT Hardware Partners

SAMSUNG · KUNBUS industrial communication · NATIONAL INSTRUMENTS · DELL · GFR create comfort control energy. · SYS TEC ELECTRONIC · BOSCH · PHILIPS

Integration Partners

salesforce · zendesk · Intune · Microsoft Dynamics 365 · IBM · MobileIron

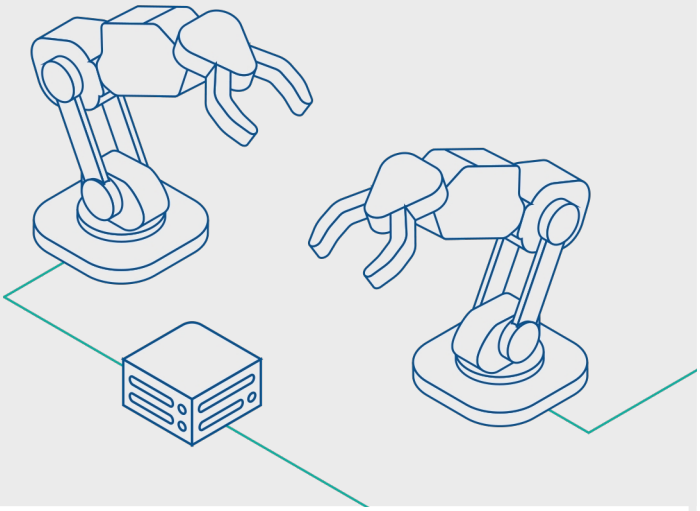
Platform Integration

ptc · amazon web services · vodafone · Microsoft · Alibaba Cloud

Discrete Manufacturing

Manufacturing companies increasingly use IoT solutions along the end-to-end supply chain – from automated supplier management and predictive maintenance to quality control and inventory or asset tracking.

While these use cases have high-value potential, most solutions require companies to purchase new IoT-enabled machines, which is often cost-prohibitive.



With TeamViewer IoT, existing machines can be retrofitted with remote operations capabilities, delivering immediate value, by allowing companies to increase operational efficiencies and decrease production downtime.

How does this help you?

There are many opportunities to reduce downtime and/or service costs:

- **Decrease your factory downtime** by operating and servicing your manufacturing machines remotely – payback typically within less than 6 months*
- **Enable Equipment-as-a-Service offering** by providing remote monitoring of machine parameters
- Boost **employee productivity**

What does this look like?

There are various endpoints that can be operated remotely in discrete manufacturing:

- **Operate conveyors** in manufacturing processes dynamically and **route production flow** away from line failures by starting/stopping conveyors remotely
- **Provide Equipment-as-a-Service in measuring production** throughput and performance
- **Conduct proactive health checks on roofing sheet roll forming machines** to prevent machine failures

* Example: Decrease of production downtime by 10 percent after implementation of self-optimizing conveyor belt network in manufacturing company

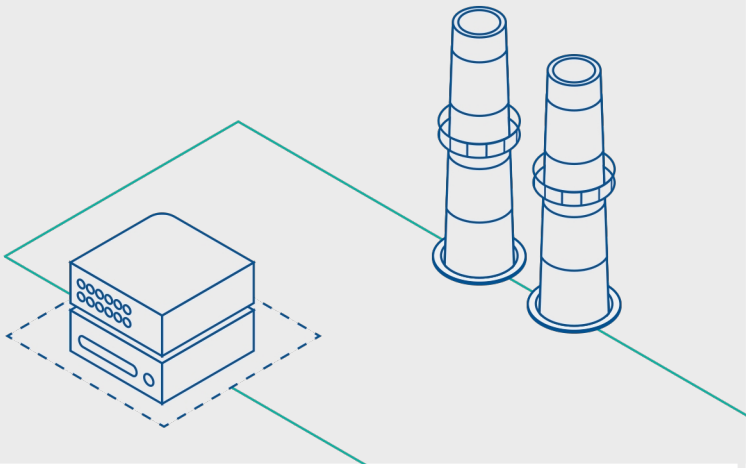
How TeamViewer can help?

With TeamViewer IoT, you can remotely connect and control devices or machines in your factories 24/7. Immediate **re-configuration** helps ensure **smooth operations and reduces downtime.**

Process Manufacturing

With large and often dispersed plants and remote facilities, the process industry has many IoT opportunities with immediate payback.

Opportunities range from remote monitoring and operation of critical elements in the production flow (e.g., pumps, conveyor belts) to fully automating entire facilities (e.g., oil rigs, paper mills, chemical reactors) – significantly reducing the need for human interventions.



Given the catastrophic effect that damage to equipment and facilities can have to both human life and/or physical assets, IoT solutions for the process industry need to be highly secure and extremely robust.

How does this help you?

There are many opportunities to improve processing performance and reduce cost of servicing:

- **Improve overall equipment effectiveness** through **remote and preventative maintenance** – payback typically within less than a year*
- **Measure internal temperature** of mission-critical pump to **avoid production outage and down-stream damages**
- **Drive efficiency and reduce servicing cost** by remotely monitoring and controlling production flow equipment at any time

What does this look like?

There are various endpoints that you can operate remotely in the processing industry:

- **Measure and display relevant data** from sensors attached to **centrifugal pumps**
- **Monitor and control conveyor belts** at any time at any place within the production facility
- **Conduct health checks and remote maintenance** of heated barrels in injection molding
- Access and operate **fluid dispenser** (dosing) equipment

* Example: Increase of overall equipment effectiveness (OEE) by 10 percent through sensors attached to mission-critical machines and taking preventative actions

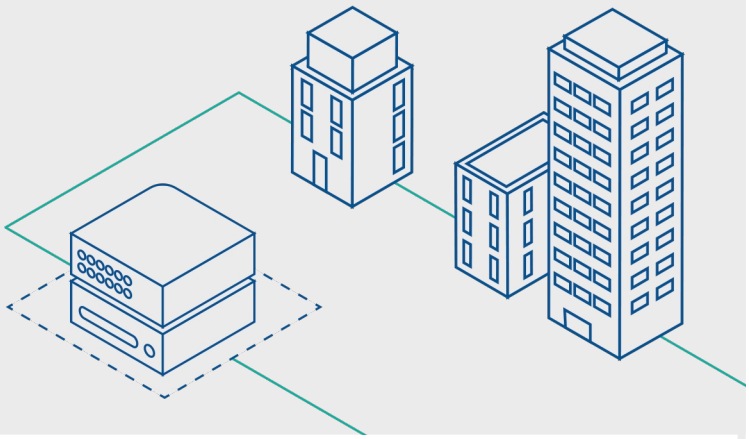
How TeamViewer can help?

With TeamViewer IoT for Remote Operations, **processing companies of all types and sizes** can quickly and securely **bring practical IoT use cases to life**. We provide an exceptional expertise that will enable you to **control and manage even hard-to-access devices — anytime, from anywhere.**

Building and Infrastructure

IoT opportunities in buildings and infrastructure range from monitoring and controlling single elements in a building to smart cities, connecting people and infrastructure.

While smart cities have not materialized in successful large-scale deployments yet, more practical and fast ROI use cases continue to gain traction.



Housing service providers, real estate developers and hotel chains still have ample opportunities to lower their cost positions through remote operations use cases in their respective facilities.

How does this help you?

There are many opportunities to reduce servicing cost by using remote operations:

- **Update digital content or change device settings** on multiple distributed, faraway displays to reduce manual effort – payback typically within less than a year*
- Centrally **check component performance and ensure optimal functioning** of your devices
- Turn off **devices remotely** when not needed to **save energy costs** and reduce wear-off effects

What does this look like?

There are various endpoints that you can operate remotely in the building and infrastructure industries:

- **Upload new content** on **all your dispalys** across your whole stores network, from one central location, at once
- **Conduct health checks on your heating/cooling systems** remotely and get immediate visibility on any device downtime
- **Switch lighting systems** in a building **remotely** to save energy and increase sustainability

* Example: one FTE (average salary of € 60k p.a.) performing 20 digital content updates per months on 15 endpoints for an average of 0.25h per endpoint, compared to the corresponding costs for the TeamViewer IoT solution

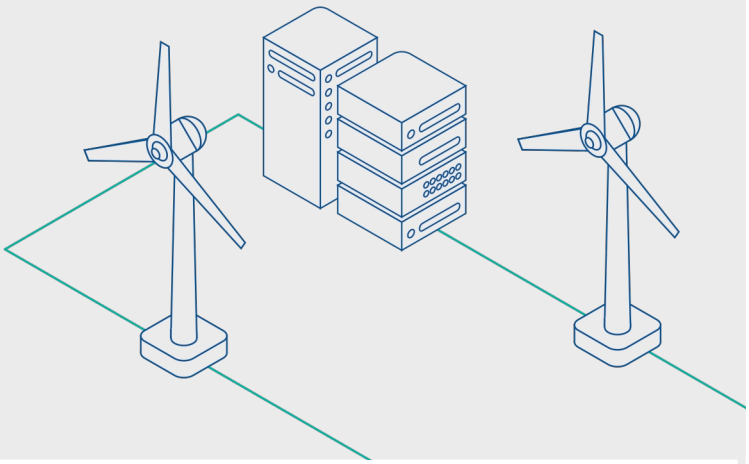
How TeamViewer can help?

Companies turn to TeamViewer when they need **proven expertise** in remote monitoring and control for building and infrastructure devices. With TeamViewer's IoT solution, you can support and assist every connected device – even hard-to-access endpoints — at anytime, from anywhere.

Utilities - Renewable Energy

Utilities are famous for having the most mature large-scale IoT deployments: smart metering of electricity and heating consumption.

While smart metering has advanced with new connectivity types (especially low-power-wide-area mobile connectivity) and smarter data analytics, there is still huge opportunity around remote operations in distributed renewable power generation, and storage (e.g., windmills, solar panels, and power plants).



Constant regulatory and political interventions, promoting renewable energy, as well as growing customer environmental awareness, increase the need for more economical and efficient management of renewable power generation.

How does this help you?

There are many opportunities to reduce cost of servicing by using remote operations:

- Centrally **evaluate system performance and ensure optimal functioning** of your renewable energy devices **no matter how far away and geographically dispersed they are**
- **Drive efficiency** and **reduce cost** by eliminating the need to deploy experts on-sites
- **Perform regular maintenance checks** – with a **payback period of less than a year***
- Take actions to **mitigate risks of damage** (e.g., switch off windmills before thunderstorms arrive)

What does this look like?

There are various endpoints that you can operate remotely within the utilities and renewable energy industries:

- **Conduct health checks** and control **solar panels** remotely at any time
- **Maintain windmills** from distance by instantly and remotely **observing and changing settings**
- **Access and monitor** the performance of **water purification systems** remotely, preventing equipment downtime and keeping the infrastructure functioning smoothly

* Example: one FTE (average salary of € 60k p.a.) performing two maintenance checks per year on 100 endpoints for an average of 5h per endpoint, compared to the corresponding costs for the TeamViewer IoT solution

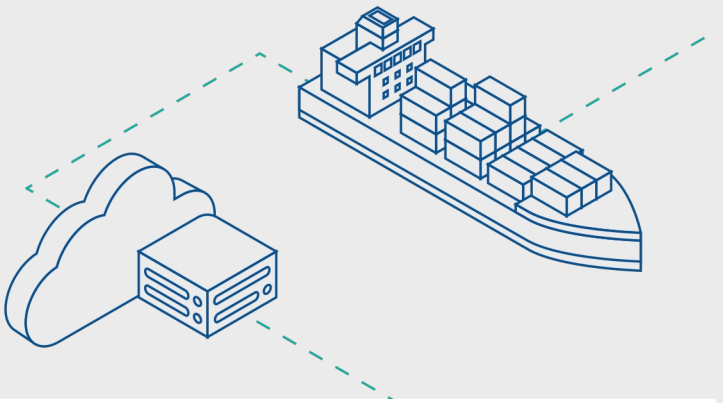
How TeamViewer can help?

TeamViewer's IoT remote operations solution offers a **wide set of features to steer energy generation sources**, reducing maintenance cost and preventing expensive damage to your equipment. We provide an **exceptional expertise** that will enable you to **control and manage even hard-to-access devices — anytime, from anywhere.**

Logistics and Transportation

Logistics and transportation is an early adopter of IoT (e.g., track and trace retrofits and in-car/ in-truck dongles to monitor vehicles).

These IoT solutions have given leading logistics companies a competitive edge from more efficient use of resources (e.g. drivers, vehicles) and enabling them to provide better services (especially delivery forecast, dynamic routing).



Massive untapped IoT potential remains especially in terms of enabling health checks for cargo ships or end-to-end digitalization of logistics chains. With TeamViewer's IoT solution, these use cases can be set up quickly and securely.

How does this help you?

There are many opportunities for fast-payback for IoT remote operations in logistics and transportation:

- **Operators of freight ships** can conduct the majority of required fleet health checks while travelling and can schedule physical maintenance in a more cost-efficient way
- Experts expect **30 percent reduction in cost of scheduled maintenance** (e.g. port berthing cost, deployment of the right experts based on ex-ante health check), with <1 year payback for these solutions*

What does this look like?

Despite large fleets of connected cars and trucks, there is more potential for IoT remote operations:

- **Connected cargo ships** – both on high sea (>40,000 ships) as well as on rivers
- **Logistics hubs** – from roll doors to fork lifters to autonomous in-huh vehicles
- **Valuable containers** – >10,000 containers lost every year, often noticed with many delayed days

* Example: 20 percent reduction in on-site maintenance time (part of health checks now conducted over the air) and cost reduction for on-site servicing expert (utilizing remote inspection results to deploy adequately skilled technican)

How TeamViewer can help?

TeamViewer's IoT remote operations offers a **wide set of features to monitor and operate your connected logistics and transportation vehicles,** reducing maintenance cost and enabling better end-customer service offerings.

TeamViewer
Internet of Things

Talk to our IoT experts:

e-mail us at

americaspartners@teamviewer.com

About TeamViewer

As a leading global remote connectivity platform, TeamViewer empowers users to connect anyone, anything, anywhere, anytime. The company offers secure remote access, support, control, and collaboration capabilities for online endpoints of any kind and supports businesses of all sizes to tap into their full digital potential. TeamViewer has been activated on approximately 2 billion devices; up to 45 million devices are online at the same time. Founded in 2005 in Goeppingen, Germany, the company employs about 800 people in offices across Europe, the US, and Asia Pacific.

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