

# Securely Unlock the Value of Digital Business

## Leverage IoT to Gain a Measurable Competitive Advantage

The Internet of Things (IoT) is transforming business. The ability to collect massive amounts of data from billions of devices and trillions of sensors — connected to secure ecosystems anywhere in the world — will empower organizations to make highly informed decisions and take action in real-time. The potential for driving down costs, elevating efficiency and creating new sources of revenue offers great value for organizations across all vertical markets. The enterprises that harness this power will gain true competitive advantages.

## Creating a Trusted Infrastructure

The challenges of an IoT deployment are clear. Connecting and securing the infrastructure required to collect and transmit commands and data — from devices, applications or people — is a sizable challenge. Entrust Datacard™ ioTrust™ security solutions empower enterprises to address this rapidly emerging need. Our offerings, which are based on enterprise-grade encryption technologies, establish trusted identities for devices across IoT infrastructures. So you can create secure ecosystems and transmit data from devices in the field to value engines efficiently and securely.

## ADDRESSING PIVOTAL IoT CHALLENGES



### Security

- Scalable device trust & identity
- Authentication & authorization for IoT infrastructure
- Navigate dynamic on-demand data configuration
- Apply policies to data transport
- Prevent unauthorized command & control
- Ensure data integrity



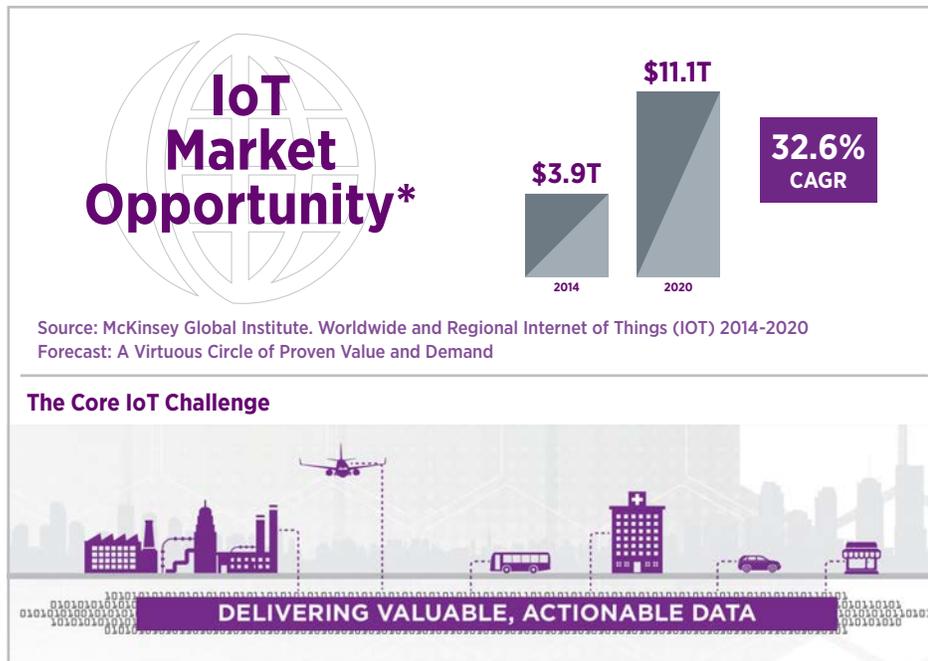
### Control

- Granular control over interactions
- Manage privilege levels of all devices, applications, users
- Manage identity lifecycle



### Adoption

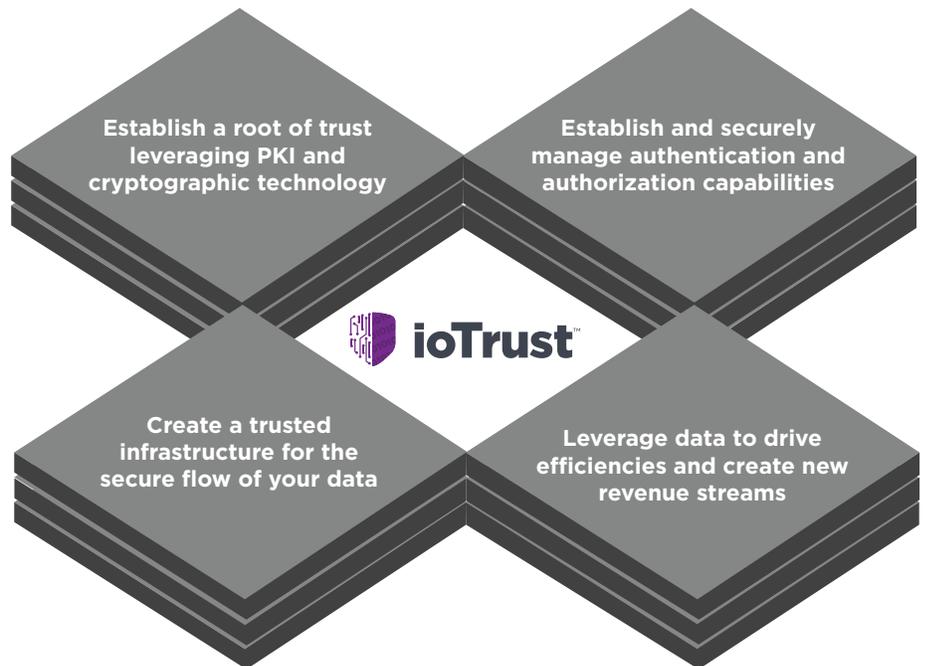
- Reduce time-to-market
- Ensure supply chain integrity
- Deploy with technology agnostic approach
- Solutions for highly constrained devices & networks



# ADDRESSING IoT CHALLENGES & RISKS

## OUR SOLUTION FOR A TRUSTED INTERNET OF THINGS

Realizing your IoT vision begins with securing your infrastructure. ioTrust security solutions unlock business value by enabling secure access to IoT data. Our solutions leverage decades of expertise in cryptography, embedded systems and trusted infrastructures to ensure the right security level for every device, application, system and user. We ensure that data is usable only by authorized devices, applications and users. This allows you to create trusted IoT ecosystems and safeguard the flow of data across your infrastructure. Our solutions also accelerate adoption of IoT into your enterprise architecture. With Entrust Datacard, you gain the trust to put your data to work.



## CREATE A TRUSTED ECOSYSTEM

### Keep untrusted devices off your network

Entrust Datacard is uniquely capable of identifying and authenticating your ecosystem of devices, applications and users. By establishing a trusted identity in each device — including those on the very edge of your infrastructure — untrusted devices are prevented from communicating on your network.

### Easily adapt with hardware and platform-agnostic security

We apply our experience in working with a diverse array of embedded systems — from ATMs to smart cards to smart meters — to ensure exceptional IoT security. Our manufacturer-agnostic solutions adapt to a broad range of device capabilities, allowing you to manage a diverse portfolio of devices. Our expertise also helps avoid conflicts of interest in similar capabilities tied to device manufacturers.

### Future-proof your solution

Given the rapid advance of technology, it's critical that your devices and infrastructure can be updated to capitalize on new capabilities and changing security requirements. Through the use of a secured remote channel, we enable on-demand upgrades and updates of security, data model and other features.

### Take command by retaining control

Because all devices on your network do not play the same role, you must define the level of privilege for each one. We ensure devices on your network perform only authorized actions by defining the scope of command execution and data access, and by enforcing the principle of least-privilege.

## SECURE OUTCOMES FROM A CONNECTED ECOSYSTEM

### Know your data is secure on the device and in transit

In order to safeguard your data from attack, we secure it on the device, as well as during transit to your chosen business applications and engines.

### Ensure the right security level for the right device

We use cryptographic protection and enforce strong authorization requirements to ensure that any data moving through your system is usable only by things, systems and users with proper privileges.

### Meet compliance and privacy requirements

In the unlikely event data is captured by unauthorized actors in transit, our enterprise-grade encryption technologies render it unintelligible, ensuring that compliance and privacy requirements are still met.

### Ensure access to only trusted sources

Retaining absolute command and control over your devices is paramount. We cryptographically enforce control over your network by ensuring devices act only on commands from trusted sources — and within the proper context.

### Establish security for legacy data sources

A comprehensive security strategy must encompass data generated by legacy devices and other data sources. We deliver a uniform IoT security model for ingesting, integrating and enforcing security for data generated by legacy systems.

# ioTrust BY ENTRUST DATACARD

	MANUFACTURING	OPERATIONS	
Offering	Identity Issuance	Identity Management	Identity & Data Security
Primary Focus	Secured devices manufacturing	Secure channel for acquiring data from devices and submitting to enterprise data hubs	Granular control over access to data and command execution
Market Segment	Device manufacturer and Tier 1 component providers	Device operator focused on operational state of security deployment	Device operators with analytics-driven business use case
Technology Foundation	PKI: Root-of-trust delivered via IoT-centric infrastructure design	Scalable provisioning of managed identities enabling authentication and authorization policy management	Integrated secured data acquisition and ingestion with policy-driven equipment data management

## TIERED OFFERING ALIGNS WITH THE SECURITY & ENABLEMENT NEEDS OF BOTH MANUFACTURING & OPERATIONS

ioTrust security solutions from Entrust Datacard are tiered offerings designed to address the concerns of two major segments of the market.

### Device Manufacturers

**ioTrust Identity Issuance:** Identity issuance is the mechanism for establishing root of trust. Our solutions leverage PKI and cryptographic capabilities to help manufacturers embed trusted identities on their devices. Embedding trusted identities at the time of manufacture is a critical step to achieving “Secure by Design” considerations that are foundational to IoT success.

### Device Operators

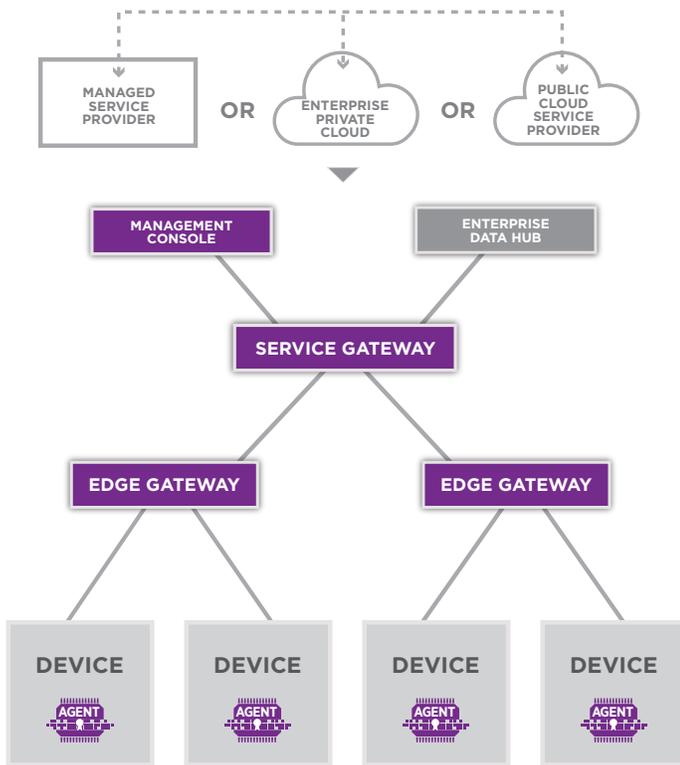
**ioTrust Identity Management:** Authentication, authorization and bi-directional data flow capabilities help operators improve the operationalization of devices into their connected ecosystems.

**ioTrust Identity & Data Security:** Identity and data security bring security and create trust in integrated platforms for customers who are looking to monetize their digital outcomes. This requires scalable security policy management of the relationships between devices, applications and users.

## SOLUTIONS FOR A RANGE OF VERTICAL MARKETS

<p><b>AUTOMOTIVE</b></p> 	<p><b>INDUSTRIAL</b></p> 	<p><b>SMART CITY</b></p> 
<p><b>ENERGY &amp; UTILITY</b></p> 	<p><b>TELECOM</b></p> 	<p><b>MEDICAL DEVICES</b></p> 

# OUR IoT SOLUTION PORTFOLIO



## KEY FEATURES

### Self-Service Platform

- Policy Management
- Monitoring & Reporting
- Audit & Compliance\*
- Edge Analytics Integration\*
- Subscription Management
- Entitlement Management
- Usage Metering

### Supported Connectivity & Protocols

- Wi-Fi, 2G/3G/4G/LTE
- Ethernet
- ZigBee
- USB
- RS-232/485
- RFID
- Bluetooth
- Industrial Ethernet
- MQTT, AMQP, CoAP, REST

### Device Management

- Enrollment & Provisioning
- Device Supply Chain Control
- Equipment Data Model & Policy Enforcement

### Device Security

- Authentication & Authorization
- Credential Management
- Application Code Signing\*
- Certificate Lifecycle Management

### Data Security

- Secure Transport & Data Encryption
- Filtering & Aggregation\*

\* Future release

## LEVERAGE YOUR ENTERPRISE INFRASTRUCTURE

### Operationalize your devices whenever you're ready

Our solutions make future device integration seamless. We enable companies to build in trust anchors during manufacturing, along with device information, which can be operationalized when devices are added onto a network — or when the infrastructure is ready to take advantage of the security and data capabilities built in to the device.

### Establish secure services quickly

Combine your devices and services with our security. Device manufacturers who partner with us can quickly establish secure services based on the trust we enable in those devices.

### Trust your devices throughout their lifecycle

We provide total security and trust support for your device — at the place of manufacture and throughout their entire operational lives.

### Never be locked-in

With iotTrust security solutions, you're not locked into one level of entitlement. You'll only pay for services you consume.

### Connect to any back-end system

Whatever the final destination of your data, we ensure it arrives securely by plugging into your enterprise data hubs, decision points, cloud services or related security services.

## REALIZE BUSINESS VALUE

### Reduce time-to-market

Start benefiting from the value of your data without delay. Our solutions allow you to quickly recognize trusted devices and operationalize them onto your network. You get up and running securely, deliver data quickly, and consistently reduce your total cost of ownership.

### Ensure supply chain integrity

Get visibility into the entire security history of the product, from device manufacture through its entire released lifecycle. Not only is supply chain integrity enabled, but data may be used to speed activation within your operations.

### Get your devices into the IoT market quickly

By partnering with Entrust Datacard, your customers can be assured that once your devices are in an operational environment, they may be quickly and securely connected to the network infrastructure.

### Deploy with any connectivity approach

Our solutions support all major connectivity methods: Wi-Fi, 2G/3G/4G/LTE, Ethernet, ZigBee, USB, RS-232/485, Bluetooth, Industrial Ethernet, and RFID.

# ioTrust PLATFORM OVERVIEW

## IDENTITY ISSUANCE ADDRESS THE CHALLENGE OF IDENTITY ISSUANCE

You want to consistently provide added value to your products and bring devices to market faster and more securely — while increasing supply chain visibility. This means you must accelerate provisioning of trusted identities for new products in order to optimize time-to-market. This will allow products to be validated as authentic by other manufacturers.

### HOW ioTRUST ADDRESSES THE CHALLENGE

- Provide the ability to establish a trusted identity for every device during the manufacturing process.
- Create a foundation of trust that enables device ownership federation and the ability to validate device authenticity.
- Leverage identity issuance for improved manufacturing scalability — on-demand and bulk-issuance as needed.
- Provide value through a deployment model (on-premises or cloud-based) that meets changing manufacturing needs.

### BENEFITS OF THE ioTRUST SOLUTION

**Secure by Design.** We help you establish trusted identities for devices as they are manufactured, so they can be integrated with broader IoT ecosystems — which helps drive demand.

**Accelerate Enrollment.** We provide you with the ability to extend trust and enable on-demand enrollment at multiple points in the supply chain.

**Trusted Devices from the Beginning.** ioTrust security solutions offer the ability to extend value to your customers with pre-provisioned identities in your components.

## IDENTITY MANAGEMENT ADDRESS THE CHALLENGE OF SECURE EXCHANGES BETWEEN DEVICES

You want to operationalize devices into your ecosystem to safeguard access to critical systems and ensure integrity of data. Scalability is achieved by leveraging the secure identity lifecycle that can begin early in the supply chain or post-manufacture. After scalable enrollment, devices, applications and people can securely identify themselves, enabling strong authentication and authorization, which is managed from a dedicated console. This secure ecosystem gives you full visibility into the operational environment, including how individual parts interact from the sensor level to the enterprise data hub.

### HOW ioTRUST ADDRESSES THE CHALLENGE

- Secure the interaction of people, applications and things in the connected ecosystem by leveraging trusted identities.
- Managed identities have the advantage of having a defined lifecycle, including revocation and replacement. Mitigate risk without risking uptime and reliability.
- Ensure data moving through the system is only usable by authorized people, applications and devices.
- Prevent unauthorized users, applications and devices from accessing or controlling critical environments.

### BENEFITS OF THE ioTRUST SOLUTION

**Secure by Design.** Provide secure device and data access through authentication of devices, applications and users.

**Enforce Privileges.** Provide rule-based authorization and keep untrusted devices off your environment.

**Increase Supply Chain Visibility.** With a solution able to extend trust into devices throughout the entire product lifecycle.

**Avoid Lock-In.** Choose a security solution that works with your existing systems, or your new operational design, working with multiple protocols.

## IDENTITY & DATA SECURITY ADDRESS THE CHALLENGE OF MANAGING GRANULAR CONTROL OVER ACCESS, COMMAND EXECUTION & DATA

You want to leverage IoT strategies to enhance service offerings, improve user experiences and enable new business models. Your investments in technology should help you realize IoT value by securely delivering on the promise of connectivity and automation.

### HOW ioTRUST ADDRESSES THE CHALLENGE

True operational scalability means managing the complexity associated with the increased number of relationships between devices, applications and users. Take granular control of the policy definitions that will enable secure interactions within your operational environment, as well as the integrity of the associated data. Realize the full value of IoT by securely delivering on the promise of connectivity and automation.

### BENEFITS OF THE ioTRUST SOLUTION

**Secure by Design.** Leverage the unbroken chain of trust that began in the supply chain, allowing scalable deployments.

**Leverage Analytics.** Data filtering, aggregation and integration with edge analytics.

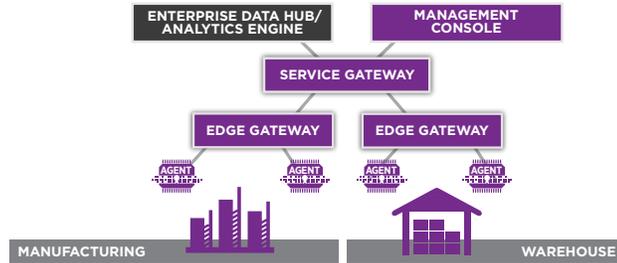
**Improve Service Delivery.** Implement over-the-air strategies for updates and enhanced user experience.

**Extending Trust.** Securely interact with third parties.

# IoT SOLUTIONS FOR A WIDE RANGE OF INDUSTRIES

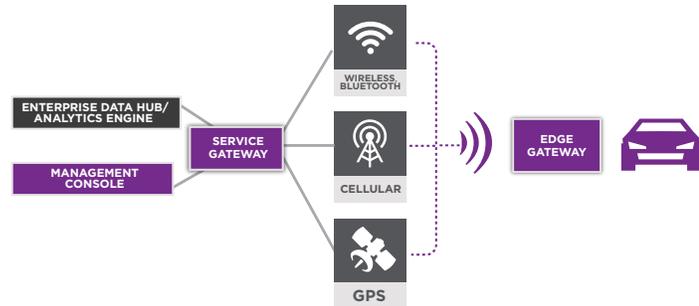
## Manufacturing

Our approach allows you to quickly operationalize systems throughout manufacturing plants and other industrial facilities. Data is securely collected and transmitted from trusted things to data processing systems, enabling productive and profitable decisions.



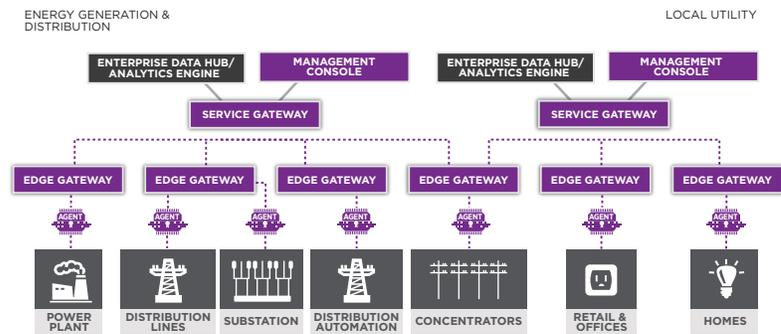
## Automotive Manufacturing & Internal/External Domains

Automotive systems are increasingly connected, requiring risk mitigation. Our IoT solutions for the automotive industry span from the supply chain to internal automotive components to service delivery platforms. Our solutions can be used to mitigate security risks within the automobile as well as explore new revenue opportunities across internal and external domains.



## Industrial Control Systems

Energy and utility companies face a variety of critical business challenges and opportunities in their operational systems. To realize that potential, risk mitigation and data integrity are critical. We offer the expertise and technology required to ensure ecosystems are secure and reliable. Our expertise in encryption and constrained environments mitigates security risks and unlocks the value of digital assets within operational environments.



## Telecom

The Entrust Datacard ioTrust security solution empowers telcos to capitalize on opportunities in the IoT value chain. Our trusted identity and data security solutions allow a wide range of services — ensuring data connectivity, strong authentication and policy-based authorization at scale. ioTrust™ can help bring solutions to market securely with flexible service delivery options and the ability to extend trust across third parties in the telecom value chain.

## ABOUT ENTRUST DATACARD

Entrust Datacard provides global enterprises and national governments with a broad range of solutions for establishing trusted identities and conducting secure transactions. For more than 45 years, we've provided payment and information technologies for the world's most security-minded organizations. Today, our complete portfolio of solutions — including enterprise-grade encryption technologies — positions us to meet the needs of enterprises looking to unlock the full value of the Internet of Things (IoT). More than 2,000 Entrust Datacard employees provide sales, service and support in 150+ countries.



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