



IoT Security

Enabling Secure Access to IoT Data

Entrust IoT Security allows organizations to seamlessly secure IT and OT devices through scalable machine and user identity management. It provides the building blocks of strong security by delivering identity services then seamlessly connecting to your IT identity services. Providing high-assurance certificate based identities, Entrust IoT Security ensures that no machine goes unmanaged.

- Machine identity & scale
- Authentication & encryption across IT & OT systems
- Dedicated private trust or public trust chains, agent or agentless

**ENTRUST**

SECURING A WORLD IN MOTION



Entrust IoT Security Solution

SOLUTION HIGHLIGHTS

Extend your enterprise identity and PKI systems to scale for machine identities and IoT

Entrust's IoT solution provides a modular solution that can be added in pieces to an existing infrastructure or consumed as a complete turnkey management stack.

The embedded Agent adds key and certificate management for embedded and virtual workloads that don't natively have such abilities.

Certificate and key management via a single console ensures that green and brownfield devices can be managed centrally through the IoT Agent, or system-level automation and integrations to cloud providers and MDM platforms.

KEY FEATURES & BENEFITS

Security

- Scalable machine identity management
- Maintain crypto agility for your deployed endpoints with fully managed crypto agent
- Authentication and authorization for IoT infrastructure with embedded TLS stack
- Prevent unauthorized command and control
- Ensure data integrity
- Dedicated private trust chains
- Bring your own trusted CA chain
- Prepare for threats post quantum
- CAs backed by FIPS-certified HSM
- Secure firmware and software upgrades with Code Signing
- Secure key generation and storage with TPM 2.0 supported on IoT device

Control

- Manage machine identity lifecycle from one central console
- Automated certificate deployment throughout your distributed system
- DevOps ready solution through API integration with popular tools like Ansible and Hashicorp Vault
- Embedded OCSP service for easy validation of certificates

Adoption

- Reduce time-to-market, turnkey solution sets up Entrust CA (PKIaaS) in under a minute
- Ensure supply-chain integrity while leveraging secure REST API CA Gateway
- Technology-agnostic deployment, supports Entrust and external CAs
- Solutions for highly constrained devices and networks
- Private and public issuing CA chain per organization
- Security starts at time of manufacturing with an enterprise-grade root of trust
- Complete control on certificates deployed on devices that can go operational at scale
- Lightweight endpoint agent providing crypto capabilities and dynamic discovery organization



Entrust IoT Security Solution

IoTrust Security solution stack

Endpoint Agent - Enables secure management of device certificates, secure key generation, device monitoring, and automated service discovery/provisioning

Certificate Enrollment Gateway - Microservices-based enrollment service supporting protocols like SCEP

CA Gateway - RESTful interface for providing certificate issuance and management functions that enables manufacturers and operators to embed secure identities

Certificate Hub - GUI -based certificate lifecycle management tool to provide complete visibility and control over machine identities

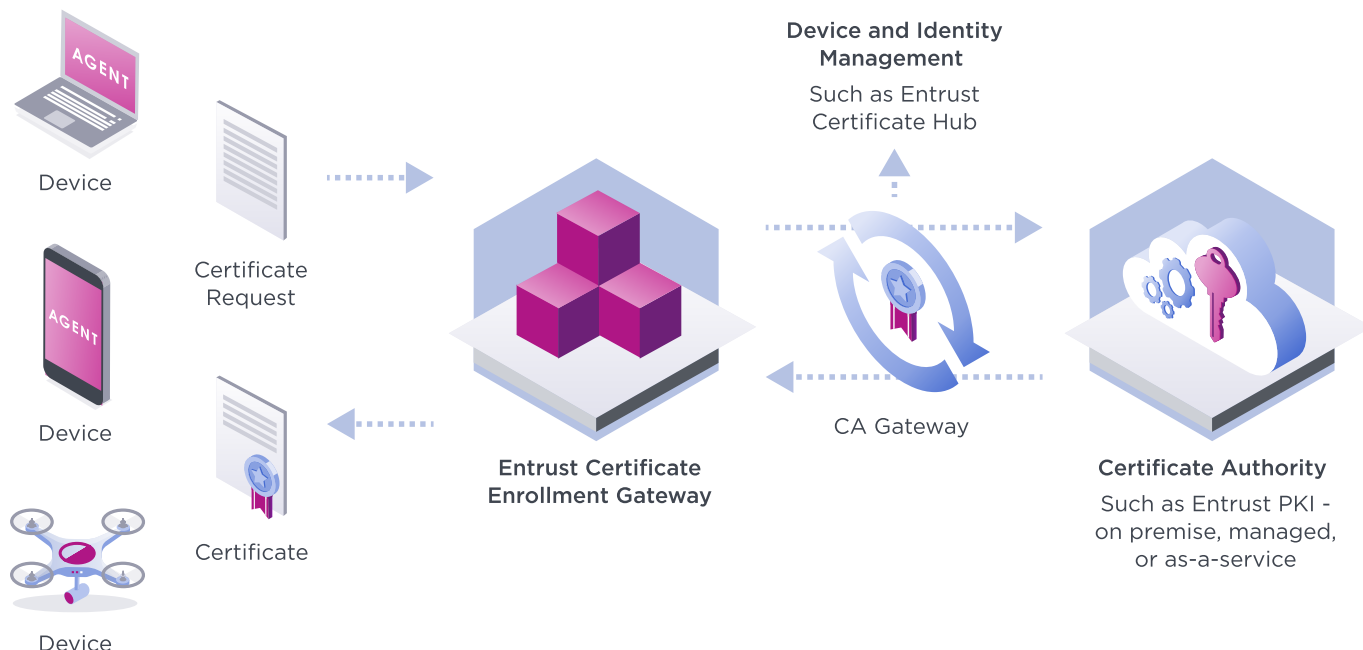
Code Signing Gateway - FIPS 140-2 certified HSM-backed solution to provide scalable code-signing service through GUI as well as REST-based APIs to provide integration into your existing DevOps cycle

Third-party trust chains - Administrators can trust OEM IDs issued by a third-party CA by uploading the third-party CA certificate as trust anchors

Managed HSMs (high assurance offering) - Provides protection for your data and systems in the cloud, while giving you complete control over your keys

HOW IT WORKS

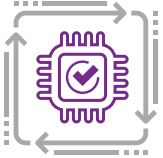
The IoT Security Solution Illustrated





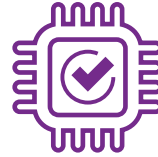
Entrust IoT Security Solution

Entrust IoT Security enables two major market segments – machine manufacturers and operators – to build in security, identity, and encryption solutions that seamlessly interoperate with their traditional security and IT systems.



Identity Management

- Secure agents for identity management across devices, systems, and applications
- Operator focused, providing managed crypto libraries and automated provisioning to cloud service providers
- Scalable provisioning of managed identities, enabling authentication and authorization policy management



Identity Issuance

- Secured device and user provisioning
- Device and service provisioning component providers
- PKI: root-of-trust delivered via IoT-centric infrastructure design

SYSTEM PREREQUISITES

| Component | System Requirement |
|-----------------------------------|--|
| Endpoint Agent (EPA) (C language) | 400-500kb RAM, 200-300kb flash/storage; Intel X86/64 or 32/64 bit ARM Cortex processor with CENTOS or LINUX OS |
| Approved development boards | Broadcom Raspberry PI 3, TI Beagle Bone Black, VMware Virtual Machine, Docker Container (Debian 8.x) |



Entrust IoT Security Solution

Technical Features

Endpoint Protection

- Hardware-agnostic endpoint agent
- RSA and ECC key management
- Hardware security enabled from endpoint to cloud: TPMs and HSMs
- Supports dynamic discovery and configuration of endpoint
- On-board/Off-board key generation workflows

Secure Workflow Transactions

- Securing data at rest: PKI encryption
- Securing data in motion: TLS, DTLS, SSL
- Secure communication: HTTPS, MQTTS
- Certificate lifecycle management
- Validation: CRL and OCSP

Security Configuration and Management

- Enrollment mechanism: SCEP, EST, and REST
- API interface to provisioning platform
- Securing root in a FIPS level 3 HSM
- Secure software and firmware updates with Code Signing Gateway



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