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PKI for IoT

IoT Security Starts with PKI

Why do we connect things…the benefits are simple…greater control, efficiency and optimization. When everything is connected and communicating, things work together, we can access and control these things from everywhere and anywhere, and collect, share and analyze data to better manage our homes, our health, our cars, the environments we work in and the operations of our industries. All of this leads to higher performing systems, cost savings, efficiencies and new revenue streams.

The IoT Security Challenge

As we continue to connect more and more things to the Internet, the more challenging security becomes and the greater the risks are. GlobalSign's IoT strategy is primarily focused on high value ecosystems like the Industrial IoT where businesses rely on "always on" connected cyber-physical systems, secure infrastructures, and data security and privacy. A single security event can have a major impact on a company and its customers. The challenge with IoT security is that standards and frameworks are only in the early stages of development today and there is confusion with where to get started.

One security technology that is standards-based and proven in devices today is public key infrastructure (PKI). PKI has been securing network connected devices by delivering trust and high assurance for many years already – making it ready for managing Digital Certificates and identities for the IoT.

Getting Started with PKI

Identity and trust are integral to IoT security. By offering every "thing" a unique identity, PKI should be the foundation of any IoT security strategy. With a unique and strong device identity, things can authenticate when they come online, ensure secure communication between other devices, services and users, and prove their integrity. Because PKI is an established technology, it can be implemented immediately into your IoT ecosystem today and easily integrated with other components of your IoT security solutions as you bring them on.

WHY PKI?

- PKI-based identity supports privacy, data integrity, and device authentication for most popular IoT protocols

- Lightweight cryptographic support capabilities for constrained devices with ECC algorithms and streamlined certificate request formats

- High volume enrollment service capable of issuing thousands of device IDs per second

- Over 25 million certificates worldwide rely on the public trust provided by the GlobalSign root

- Automated provisioning process that can be built into existing manufacturing flows

Secure Device Identity

When implementing an IoT solution or manufacturing a connected device, identity and security should be built in from the start. Strong device identity supported by PKI can enable the fundamentals of IoT security: authentication, encryption and integrity.

- **AUTHENTICATION**
  When a device connects to the network, it must authenticate and establish trust between other devices, services and users. Once trust is established, devices, users and services can securely communicate and transact information.

- **ENCRYPTION**
  As more things connect, more data is generated, collected and shared. This data can include personal, sensitive and financial information that must be kept private and secure – often times under regulatory compliance. A strong cryptographic encryption mechanism tied to a device identity can ensure data is encrypted and communications are secure so that the data being transferred will remain secure and private.

- **INTEGRITY**
  The integrity of a device starts with proving it is what it says it is. With a unique strong device identity, PKI can ensure that the device, software and firmware are legitimate.

WHY BUILD IDENTITY IN?

- **GAIN A COMPETITIVE ADVANTAGE**
  Build identity into your IoT devices and services to leverage secure functionality as a competitive advantage
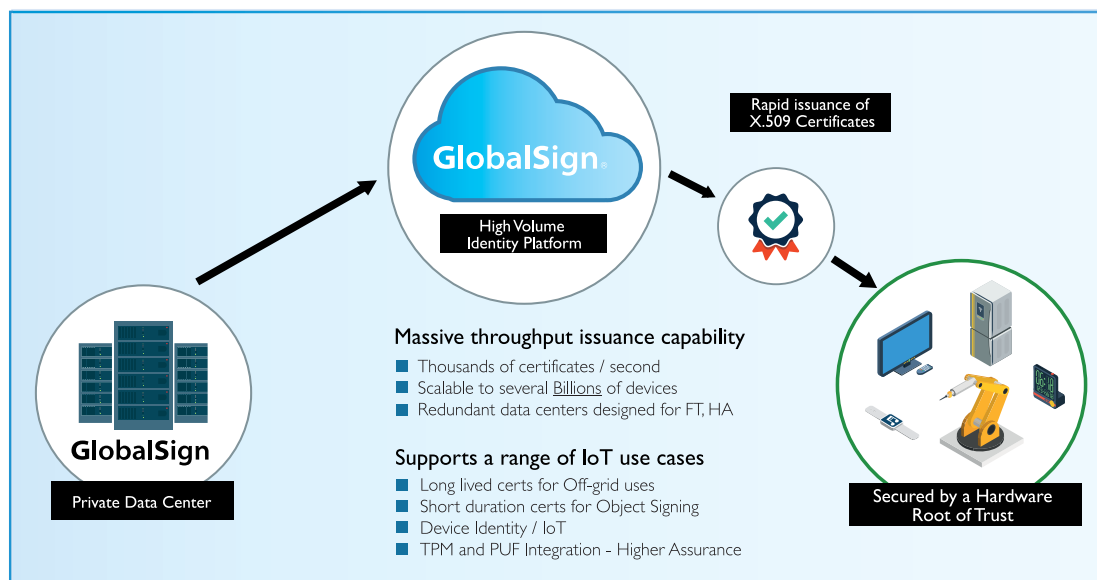
- **OFFER A SUPERIOR USER EXPERIENCE**
  Make security and identity easy to offer your customers and users a positive user experience

- **BRAND REPUTATION AND INTEGRITY**
  Assure products and software code are legitimate. Don't let counterfeit products and malware impact your brand

- **PRIVACY AND SAFETY ENSURED**
  Ensure sensitive data remains private and the safety of your customers and users is not jeopardized by a malicious attack

GlobalSign
Private Data Center

GlobalSign
High Volume Identity Platform

Rapid issuance of X.509 Certificates

Secured by a Hardware Root of Trust

Massive throughput issuance capability
- Thousands of certificates / second
- Scalable to several Billions of devices
- Redundant data centers designed for FT, HA

Supports a range of IoT use cases
- Long lived certs for Off-grid uses
- Short duration certs for Object Signing
- Device Identity / IoT
- TPM and PUF Integration – Higher Assurance

About GlobalSign

GlobalSign is the leading provider of trusted identity and security solutions enabling businesses, large enterprises, cloud service providers and IoT innovators around the world to secure online communications, manage millions of verified digital identities and automate authentication and encryption. Its high-scale Public Key Infrastructure (PKI) and identity solutions support the billions of services, devices, people and things comprising the Internet of Everything (IoE).

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