

# Securing Symbiont Smart Securities™ with Thales HSMs



## Making Blockchain Transactions Secure

Thales and Symbiont have partnered to transform the way financial markets transmit value and establish trust by bringing together the leading provider of hardware security modules (HSMs) with the pioneer of Smart Securities™ based on blockchain technology to allow institutions and investors to issue, manage and trade a range of financial instruments more efficiently.

Symbiont's Smart Securities System provides users with the ability to issue and trade financial instruments which are self-executing and can be administered and traded on a distributed ledger platform. Smart Securities provide users with equivalent economic exposure to traditional securities, while creating the opportunity for significant automation of post-trade processing and administration. Once a security is issued onto Symbiont's distributed ledger, it acts autonomously, eliminating the traditional manual processing of financial transactions.

Thales Luna HSMs are appliances that store the private keys used to sign all Smart Security actions, which is an essential component to maintain the trusted integrity of the distributed ledger. Luna HSMs are dedicated cryptographic processors specifically designed for protection of the lifecycle of cryptographic keys that secure transactions, identities and applications and act as a root of trust for the cryptographic infrastructures of the most security-conscious organizations in the world.

## Smart Contracts and Distributed Ledger Technology

### About Smart Contracts

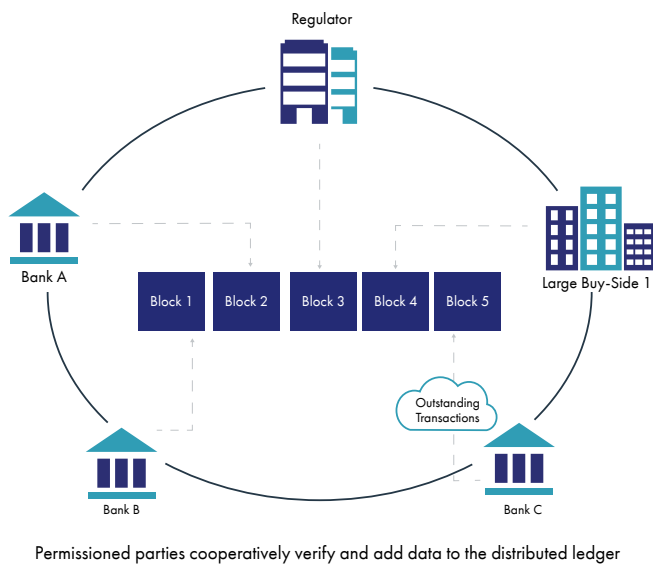
Smart contracts are software applications that are written to and stored on a distributed ledger. They can be thought of as computer code that captures the terms for financial instruments such as stocks and bonds to be represented digitally. Symbiont's smart contract technologies, called Smart Securities, are published to the ledger and executed in an automated and secure fashion. They are self-executing, and self-enforcing, unlike traditional contracts.

### What Is a Distributed Ledger?

- A strictly ordered, shared database that only allows data to be systematically added over time
- Copies of the database are hosted by multiple users
- A peer-to-peer protocol is employed to allow each user to add to the database as well as to validate the other users' additions
- The users seek consensus, a state of agreement by the users regarding the data and its ordering
- The peer-to-peer protocol employed to accomplish this is known as a consensus protocol
- Cryptography is the cornerstone of security and used to ensure that the ledger is highly tamper-resistant.

## Why Use Distributed Ledgers and Smart Contracts?

Distributed ledger and smart contract technology can eliminate the work associated with reconciliation of records across users. The technology provides a secure and transparent platform to automate post-trade processes. Financial institutions can use distributed ledgers to record and disseminate financial transactions where each user involved has permissioned, role-based access to publish and interact with the ledger. Through the verifiable and auditable functioning of the distributed ledger network, the users gain efficiency compared to the existing model that relies on reconciliation with a trusted central counterparty. Distributed ledgers allow transactions to occur without the need for trusted intermediaries. In addition, by virtue of publishing and sharing data via a distributed ledger the following benefits materialize:



## Benefits of Luna HSMs Protecting Blockchain Smart Contracts

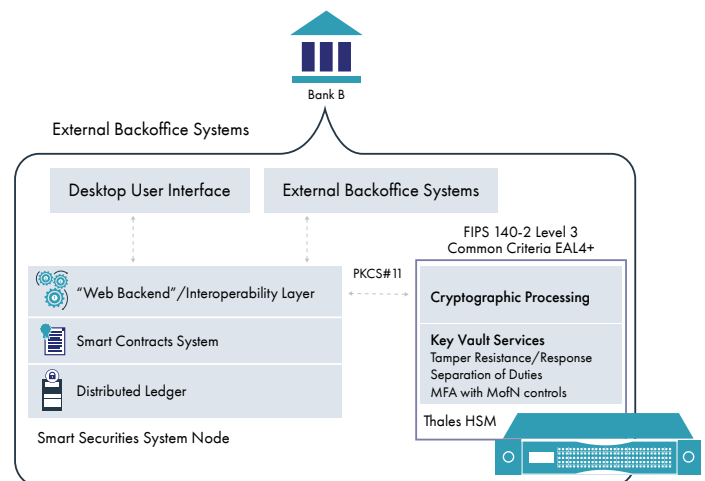
- Proven market leadership in security
- Trust and customer control
- Industry regulations & compliance
- Auditability of transactions proof
- High assurance security in data centers and cloud
- Multi-tenancy capability of blockchain identities
- Major cost reduction of back-office functions
- Increased efficiency by removing internal control requirements
- Faster settlement times
- Enhanced data security
- Real-time forecasting and visibility

## Smart Contract Trust and Customer Control

By providing the basis for both identity management and authorization, cryptographic public and private keys play a central

role in the operation of the Smart Securities system. All private keys are created and stored on the Luna Network HSM device itself, and signing operations are performed within the secure confines of the appliance. The Symbiont-Thales partnership leverages the proven security and robust feature set of Luna HSMs to serve as the gatekeeper and repository of such keys. With Luna HSM organizations can protect the entire key-lifecycle on a centralized platform, accelerate cryptographic operations, and leverage a single point of audit for cryptographic keys.

Luna Network HSMs are the most trusted general purpose HSM on the market in part because of Thales's unique approach to protecting cryptographic keys. Unlike other methods of key storage which move keys outside of the HSM into a "trusted layer," the keys-in-hardware approach protects the entire key lifecycle within the FIPS 140-2 validated confines of the Luna Network HSM appliance. This method ensures that your keys always benefit from both physical and logical protections of the Luna Network HSM. This is one reason Luna HSMs are trusted by many of the world's largest financial institutions to protect more than \$1 trillion dollars in financial transactions every day. With this integration Thales continues to lead the way in facilitating trusted exchange in the new digital environment of blockchain technology.



## Symbiont Smart Contract Leadership

- Blockchain agnostic, able to work with any distributed ledger
- Works with established programming languages
- Market-leading self-executing and self-enforcing smart contract logic that is independent of data storage

## About Thales

The people you rely on to protect your privacy rely on Thales to protect their data. When it comes to data security, organizations are faced with an increasing number of decisive moments. Whether the moment is building an encryption strategy, moving to the cloud, or meeting compliance mandates, you can rely on Thales to secure your digital transformation.

Decisive technology for decisive moments.

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