

SOLUTION BRIEF

Securing Symbiont Smart Securities™ with SafeNet HSMs

Making Blockchain Transactions Secure

Gemalto 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.

Gemalto’s SafeNet Hardware Security Modules (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. SafeNet 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.

What is Distributed Ledger and Smart Contract Technology?

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.

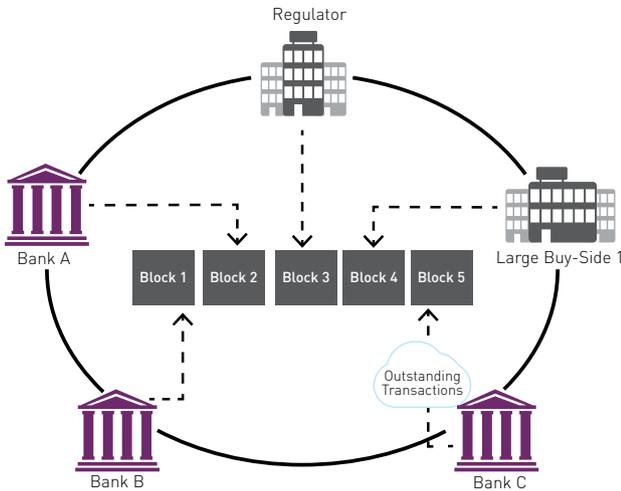
Benefits of SafeNet HSMs Protecting Blockchain Smart Contracts

- > 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

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:

- > 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



Permissioned parties cooperatively verify and add data to the distributed ledger

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 SafeNet HSM device itself, and signing operations are performed within the secure confines of the appliance. The Symbiont-Gemalto partnership leverages the proven security and robust feature set of SafeNet HSMs to serve as the gatekeeper and repository of such keys. With SafeNet 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.

SafeNet Network HSMs are the most trusted general purpose HSM on the market in part because of Gemalto'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 SafeNet Network HSM appliance. This method ensures that your keys always benefit from both physical and logical protections of the SafeNet Network HSM. This is one reason SafeNet 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 Gemalto continues to lead the way in facilitating trusted exchange in the new digital environment of blockchain technology.

About Gemalto's SafeNet Identity and Data Protection Solutions

Gemalto's portfolio of Identity and Data Protection solutions offers one of the most complete portfolios of enterprise security solutions in the world, enabling its customers to enjoy industry-leading protection of data, digital identities, payments and transactions—from the edge to the core. Gemalto's SafeNet Identity and Data Protection solutions enable enterprises across many verticals, including major financial institutions and governments, to take a data-centric approach to security by utilizing innovative encryption methods, best-in-class crypto management techniques, and strong authentication and identity management solutions to protect what matters, where it matters. Through these solutions, Gemalto helps organizations achieve compliance with stringent data privacy regulations and ensure that sensitive corporate assets, customer information, and digital transactions are safe from exposure and manipulation in order to protect customer trust in an increasingly digital world.

Contact Us: For all office locations and contact information, please visit www.safenet-inc.com

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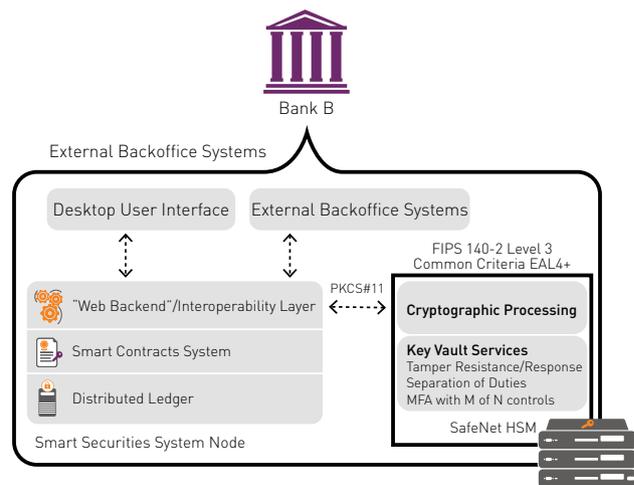
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What Is a Distributed Ledger?

- > 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.

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



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