


Announcing the Coco Framework for enterprise blockchain networks



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Mark Russinovich
CTO, Microsoft Azure

Blockchain is a transformational technology with the potential to extend digital transformation beyond a company's four walls and into the processes it shares with suppliers, customers and partners. A growing number of enterprises are investing in blockchain as a secure and transparent way to digitally track the ownership of assets across trust boundaries and to collaborate on shared business processes, opening up new opportunities for cross-organizational collaboration and imaginative new business models.

Microsoft is committed to bringing blockchain to the enterprise—and is working with customers, partners, and the blockchain community to continue advancing its enterprise readiness. Our mission is to help companies thrive in this new era of secure multi-party computation by delivering open, scalable platforms and services that any company—from ledger startups to retailers to health providers to global banks—can use to improved shared business processes.

As enterprises look to apply blockchain technology to meet their business needs, they've come to realize that many existing blockchain protocols fail to meet key enterprise requirements such as performance, confidentiality, governance, and required processing power. This is because existing systems were designed to function—and to achieve consensus—in public scenarios amongst anonymous, untrusted actors with maximum transparency. Because of this, transactions are posted “in the clear” for all to see, every node in the network executes every transaction, and computationally intensive consensus algorithms must be employed. These safeguards, while necessary to ensure the integrity of public blockchain networks, require tradeoffs in terms of key enterprise requirements such as scalability and confidentiality.

Efforts to adapt existing public blockchain protocols or to create new protocols to meet these needs have generally traded one required enterprise attribute for another—such as improved confidentiality at the cost of greater complexity or lower performance.

Facilitating enterprise blockchain adoption

Today I am proud to introduce the Coco Framework, an open-source system that enables high-scale, confidential blockchain networks that meet all key enterprise requirements—providing a means to accelerate production enterprise adoption of blockchain technology.

Coco achieves this by designing specifically for confidential consortiums, where nodes and actors are explicitly declared and controlled. Based on these requirements, Coco presents an alternative approach to ledger construction, giving enterprises the scalability, distributed governance and enhanced confidentiality they need without sacrificing the inherent security and immutability they expect.

Leveraging the power of existing blockchain protocols, trusted execution environments (TEEs) such as Intel SGX and Windows Virtual Secure Mode (VSM), distributed systems and cryptography, Coco enables enterprise-ready blockchain networks that deliver:

- Throughput and latency approaching database speeds.
- Richer, more flexible, business-specific confidentiality models.
- Network policy management through distributed governance.
- Support for non-deterministic transactions.

By providing these capabilities, Coco offers a trusted foundation with which existing blockchain protocols can be integrated to deliver complete, enterprise-ready ledger solutions, opening up broad, high scale scenarios across industries, and furthering blockchain's ability to digital transform business.

We have already begun exploring Coco's potential across a variety of industries, including retail, supply chain and financial services.

"Being able to run our existing supply chain Dapp code much faster within Coco framework is a great performance improvement that will reduce friction when we talk about enterprise Blockchain readiness with our retail customers. Adding data confidentiality support without sacrificing this improvement is what will enable us to lead the digital transformation we are envisioning with Smart Supply Chains."

- Tom Racette, Vice President, Global Retail Business Development, Mojix

Whether a customer is designing an end-to-end trade finance solution, using blockchain to ensure security at the edge or leveraging Enterprise Smart Contracts to drive back office efficiencies, Coco enables them to meet their enterprise requirements. Microsoft is the only cloud provider that delivers consistency across on-premises and the public cloud at hyperscale while providing access to the rich Azure ecosystem for the wide range of applications that will be built on top of blockchain as a shared data layer.

An open approach

By design, Coco is open and compatible with any blockchain protocol. Microsoft has already begun integrating Ethereum into Coco and we're thrilled to announce that J.P. Morgan Chase, Intel and R3 have committed to integrating enterprise ledgers, Quorum, Hyperledger Sawtooth and Corda, respectively. This is just the beginning, and we look forward to exploring integration opportunities with other ledgers in the near future.

"Microsoft's Coco Framework represents a breakthrough in achieving highly scalable, confidential, permissioned Ethereum or other blockchain networks that will be an important construct in the emerging world of variously interconnected blockchain systems. "

- Joseph Lubin, Founder of ConsenSys

I believe Coco can only benefit from the diverse and talented open source communities that are driving blockchain innovation today. While Coco started as a collaboration between Azure and Microsoft Research, it has benefitted from the input of dozens of customers and partners already. Opening up Coco is a way to scale development far beyond the reach and imagination of our initial working group, and our intent is to contribute the source code to the community in early 2018.

Coco will be compatible, by design, with any ledger protocol and can operate in the cloud and on premises, on any operating system and hypervisor that supports a compatible TEE. We are building in this flexibility in part to allow the community to integrate Coco with additional protocols, try it on other hardware and adapt it for enterprise scenarios we haven't yet thought of.

Industry enthusiasm for blockchain is growing, and while it will still take time for blockchain to achieve enterprise assurance, we remain laser focused on accelerating its development and enterprise adoption in partnership with the community.

To learn more about Coco you can read our technical whitepaper (<http://aka.ms/cocopaper>) and watch my demo (<http://aka.ms/cocodemo>) on the MS Cloud Youtube page - be sure to star and follow the project on GitHub to keep up with the working group and receive notifications on the latest developments!

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