

CBDC Part 3: An Introduction to Hyperledger Fabric

WEEKLY RECAP

- Total market cap. reached \$114bn (a 4.5% decrease), and 7 day trading volume rose 7% for top 100 crypto

WEEK AHEAD

- 7 Feb:** ADA to release roadmap update

THOUGHTS OF THE WEEK

Hyperledger Fabric is part of the Hyperledger family of projects hosted by the Linux Foundation. These projects have all been designed to be modular, with the intention of offering greater flexibility to customers and developers alike. In theory, this allows developers to experiment with different components without affecting the rest of the system, allowing for a Lego-like approach to building solutions for diverse problems from a fixed set of components. Fabric further runs distributed applications written in general-purpose programming languages, without depending on a native cryptocurrency.

The concept of channels is also at the core of Fabric. The system is built on a network of bilateral channels between participants, with each bilateral channel forming one ledger. By establishing such channels, data privacy can be maintained within the channel and away from other system participants. A third party, such as a monetary authority, can be included in the channel for purposes of transaction recording and monitoring. Multilateral channels can also be created, such as in the case of Singaporean project Ubin, where participating banks are linked by multilateral funding and netting channels. Such a funding channel allows participants to move funds between their individual channel-level accounts. Note that the number of bilateral channels, and thus system complexity, grows with each new system participant.

Any blockchain that sees usage within financial market infrastructure must provide immediate finality, rendering consensus algorithms such as proof of work and proof of stake unviable. Fabric prevents double spending attacks via a system endorsements and an orderer. Participating nodes validate a transaction against the system endorsement policy (defined by the chaincode) to ensure the validity of the transaction and its signatures (see the chart of the week). An orderer packages endorsed transactions into blocks, and broadcasts these blocks to the channel participants. These subsequently validate the transactions before they are committed to the ledger. It is also possible to include a consensus mechanism that allows for a multiple node ordering service.

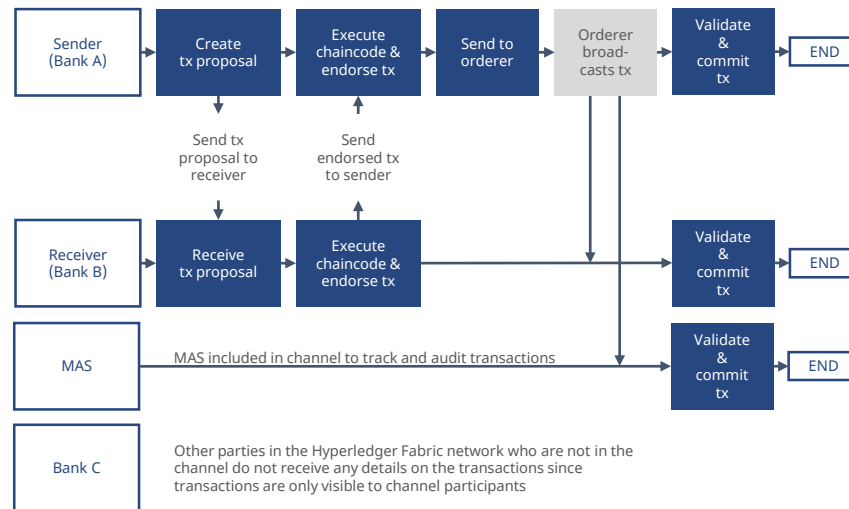
Several proof of concept Central Bank Digital Currency (CBDC) systems have been built on Hyperledger Fabric, most notably so Singaporean Ubin 2 and Japanese-European Stella 1 & 2. Alongside Corda and Fabric stands JP Morgan's Quorum, an introduction to which will be the topic of Part 4 of this introduction to CBDC.

TOP CRYPTO PERFORMANCE SUMMARY

Name	Price	7D%	Vol.	7D%	Mkt Cap.	% Total Mkt
BTC	\$3,471.73	-3.30%	32.49bn	4.06%	60.82bn	53.37%
XRP	\$0.30	-2.22%	3.41bn	53.44%	12.50bn	10.97%
ETH	\$107.84	-6.01%	15.53bn	5.07%	11.29bn	9.91%
EOS	\$2.38	-0.74%	4.02bn	1.45%	2.15bn	1.89%
BCH	\$118.94	-3.72%	1.47bn	11.43%	2.09bn	1.84%
USDT	\$1.00	-0.76%	23.53bn	9.65%	2.02bn	1.78%
LTC	\$33.50	2.14%	4.46bn	19.35%	2.02bn	1.77%
TRX	\$0.03	-12.32%	1.39bn	-9.57%	1.71bn	1.50%
XLM	\$0.08	-15.15%	0.86bn	21.78%	1.58bn	1.39%
BSV	\$63.98	-11.47%	0.43bn	42.77%	1.13bn	0.99%

CHART OF THE WEEK

Transaction Flow in Hyperledger Fabric



TOP CRYPTO NEWS AT A GLANCE

Ethereum Developers delay ASIC-Resistant PoW algorithm decision until third-party audit is performed: The audit is an attempt to test the effectiveness of mining using GPUs, field-programmable gate arrays and ASICs.

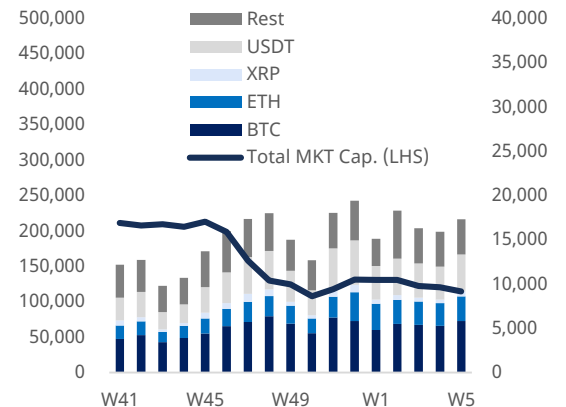
B2C2 OTC Ltd. receives license from Financial Conduct Authority: This enables the offering of contracts for difference (CFDs) to counterparties and professional clients.

Fidelity Cryptocurrency Platform enters 'Final Testing' stages: The development team is working with auditors to ensure regulatory compliance and "adapt existing operational processes" to the platform.

NETWORK FUNDAMENTALS

	BTC	ETH
Hashrate	42,227,223 TH/s (-0.2%)	143,213 GH/s (-16.3%)
# Wallet Users	32,835,486 (+0.6%)	56,251,219 (+0.8%)
Top 3 Miners	BTC.com (18%) F2Pool (14%) AntPool (13%)	Ethermine (29%) SparkPool (15%) NanoPool (14%)

MARKET CAP & TRADING VOL. (US\$ MN)



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WEEKLY SUMMARY | 28 JANUARY – 3 FEBRUARY

DISCLAIMER

Abbreviations: ADA: Cardano; ASIC: Application specific integration circuit; BCH: Bitcoin ABC; BSV: Bitcoin Satoshi Vision; bn: billion; BTC: Bitcoin; Central Bank Digital Currency: CBDC; crypto: cryptocurrencies; CFD: Contract for differences; ETH: Ethereum; GPU: Graphical Processing Units; ICO: Initial Coin Offerings; Market Cap: Market Capitalization; mn: million; Trading Vol.: Trading Volume; TRX: Tron; tx: transaction(s); US\$: United States Dollars; USDT: USD Tether; XLM: Stellar Lumeñs; XMR: Monero; XRP: Ripple

Chart of The Week: Sources: Project Ubin Phase 2 whitepaper, Standard Kepler Research

Market Cap & Trading Vol.: Sources: Coinmarketcap, Standard Kepler Research
The horizontal axis represents the week number in 2018. For instance, W41 indicates the forty first week in 2018. W1 indicates the first week in 2019. The primary vertical axis represents total market capitalization; and the secondary vertical axis represents total trading volume.

Network Fundamentals: Sources: Blockchain.com, Blocktrail, Etherchain.org, Etherscan.io, Standard Kepler Research

Thought of The Week: Sources: Hyperledger Fabric Architecture Volume 1, Quorum whitepaper, Project Jasper 1 whitepaper, Project Jasper 2 whitepaper, Project Jasper 3 whitepaper, Project Ubin 1 whitepaper, Project Ubin 2 whitepaper, Stella 1 whitepaper, Stella 2 whitepaper, Project Khokha whitepaper, Standard Kepler Research

Top Crypto News At a Glance: Sources: Blockcast.it, CCN, Coindesk, Cointelegraph, Standard Kepler Research

Top Crypto Performance Summary: Sources: Coinmarketcap, Standard Kepler Research

Week Ahead: Sources: Cryptocalendar.pro, Standard Kepler Research

Weekly Recap: Sources: Coinmarketcap, Standard Kepler Research

Past performance does not guarantee future results.

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The price of Bitcoin and other cryptocurrencies are highly volatile in nature. It is suggested that clients should perform their own due diligence and consult a fully qualified independent professional financial adviser before making any investments in cryptocurrencies.

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Unless otherwise stated, all data is as of February 3, 2019 or as of most recently available.

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