

IBM Blockchain Platform Explained

An Introduction to the IBM Blockchain Platform

Olivier VALLOD

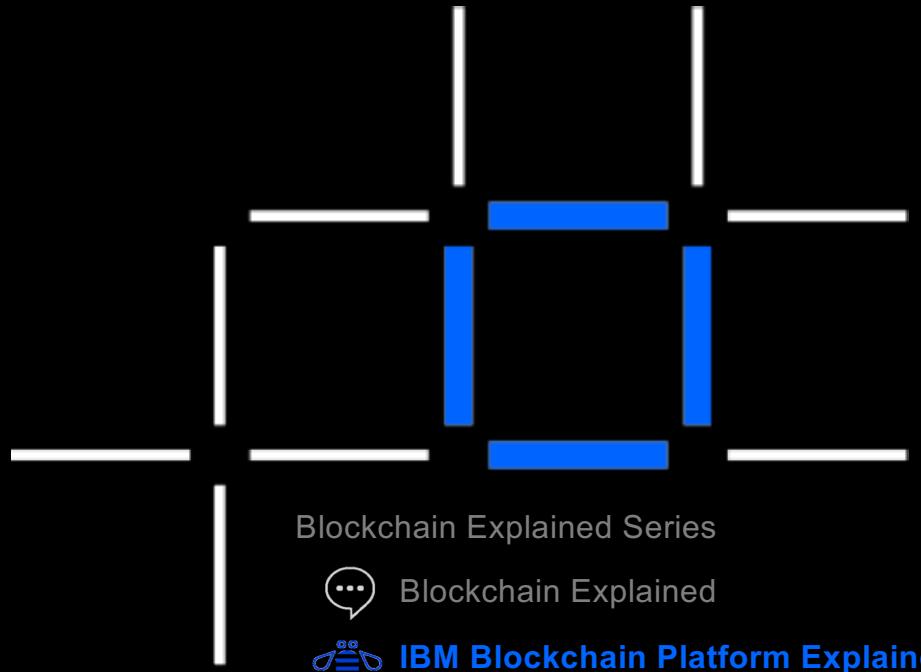
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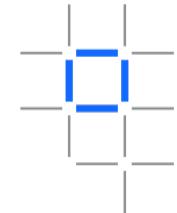
IBM Blockchain



Blockchain Explained Series

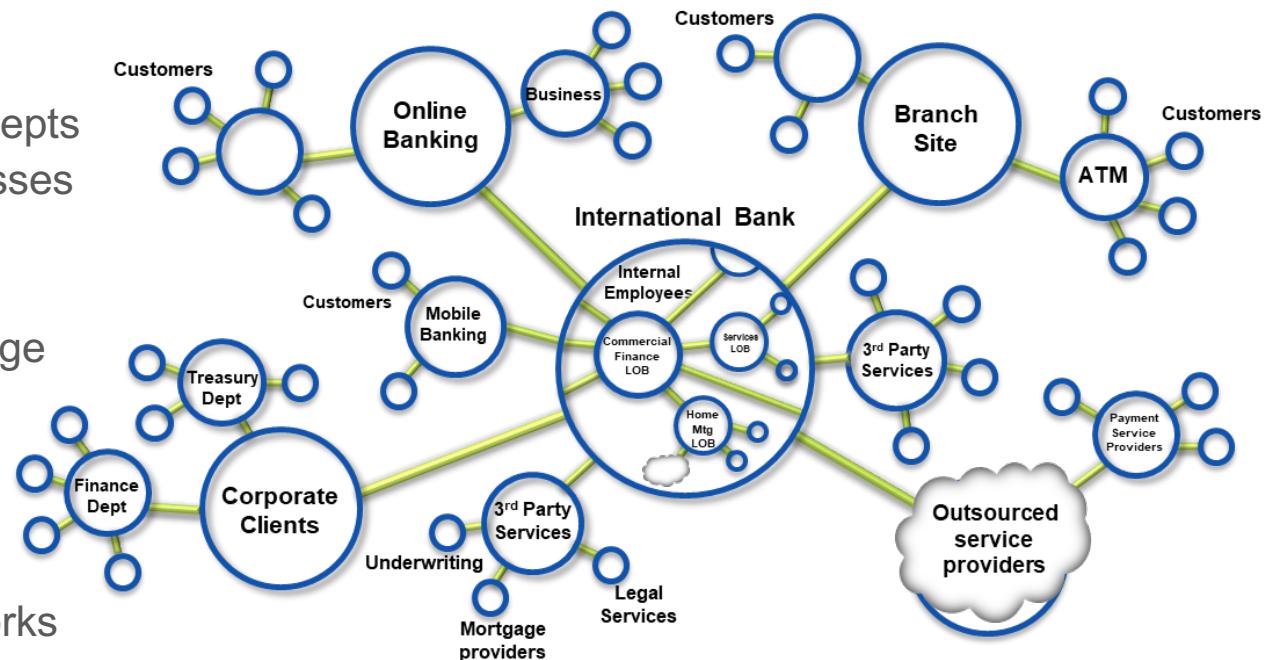
- Blockchain Explained
- IBM Blockchain Platform Explained**
- IBM Blockchain Usage Patterns
- Solutions Explained
- What's New
- Labs Explained

IBM

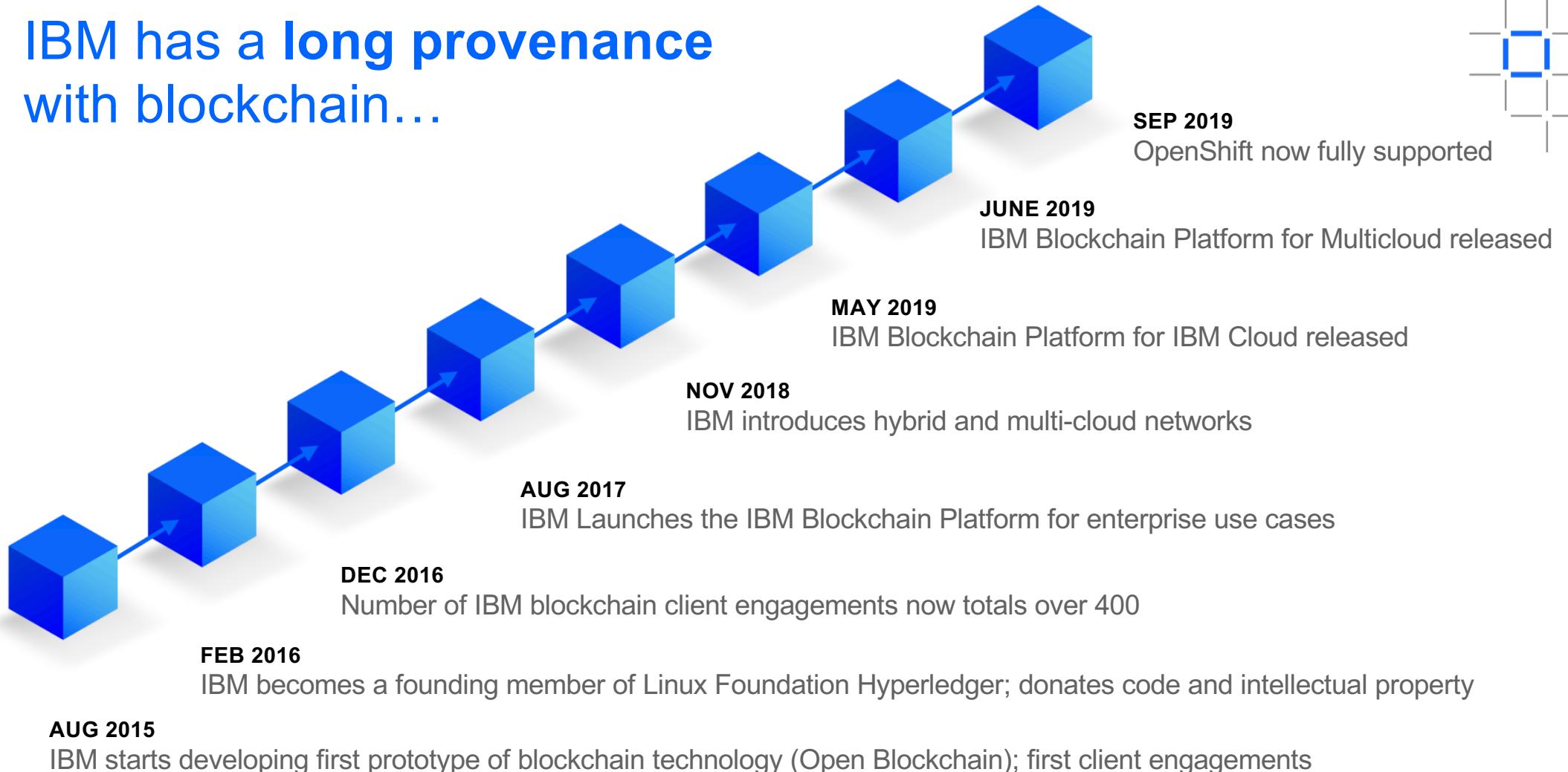
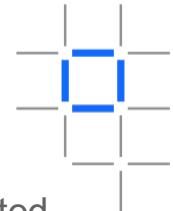


What is blockchain?

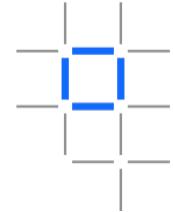
- Blockchain lets you build a decentralized **business network**
- Blockchain builds on basic business concepts
 - **Business networks** connect businesses
 - **Participants** with Identity
 - **Assets** flow over business networks
 - **Transactions** describe asset exchange
 - **Contracts** underpin transactions
 - The **ledger** is a log of transactions
- **IBM Blockchain Platform** allows you to build, operate and grow blockchain networks in heterogeneous environments



IBM has a **long provenance** with blockchain...



IBM is the leader in enterprise blockchain technology



We are the only provider of end to end enterprise blockchain services in the industry

IBMer are the undisputed enterprise blockchain experts

IBM has more production blockchain networks than any other competitive platform

Only enterprise blockchain platform with true multi-cloud capabilities

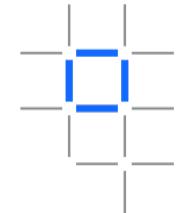
Most advanced developer and operator tools that make network configuration simple

Only blockchain platform that doesn't lock you in to a single vendor

IBM is making blockchain real for business with cross-industry solutions and over 100 active networks.

Bank Guarantees			stellar						Clearing & Settlement				Unlisted Securities
	CLS Fundamental to FX			nab		BBVA		BNI		U.S. Customs and Border Protection		SBI	
gsf	Carrefour	Trade Finance		AIG	WORLDCOM FINANCE	Universal Payments		mandiri	Desjardins	Global Trade			FDA
Kroger		Food	Tyson		Danamon		KASIKORNTHAI			Scotiabank	Belastingdienst		Healthcare
McLANE			Smithfield	Walmart		BANK BRI		RBC	sovrin	BMO		Insurance	
m	Nestle	Driscoll's Only the finest berries	we.trade				Government	Dole				Tennet	
IBM Blockchain													

IBM Blockchain Platform is a key part of IBM's Blockchain Strategy



Services

Collaborate with services teams from ideation all the way to production



Ecosystem

Tap into our diverse ecosystem to develop strategic partnerships and create your competitive advantage



Solutions

Solve critical industry challenges by building and joining new business networks and applications



IBM Blockchain Platform

Build, operate and grow blockchain networks in heterogeneous environments

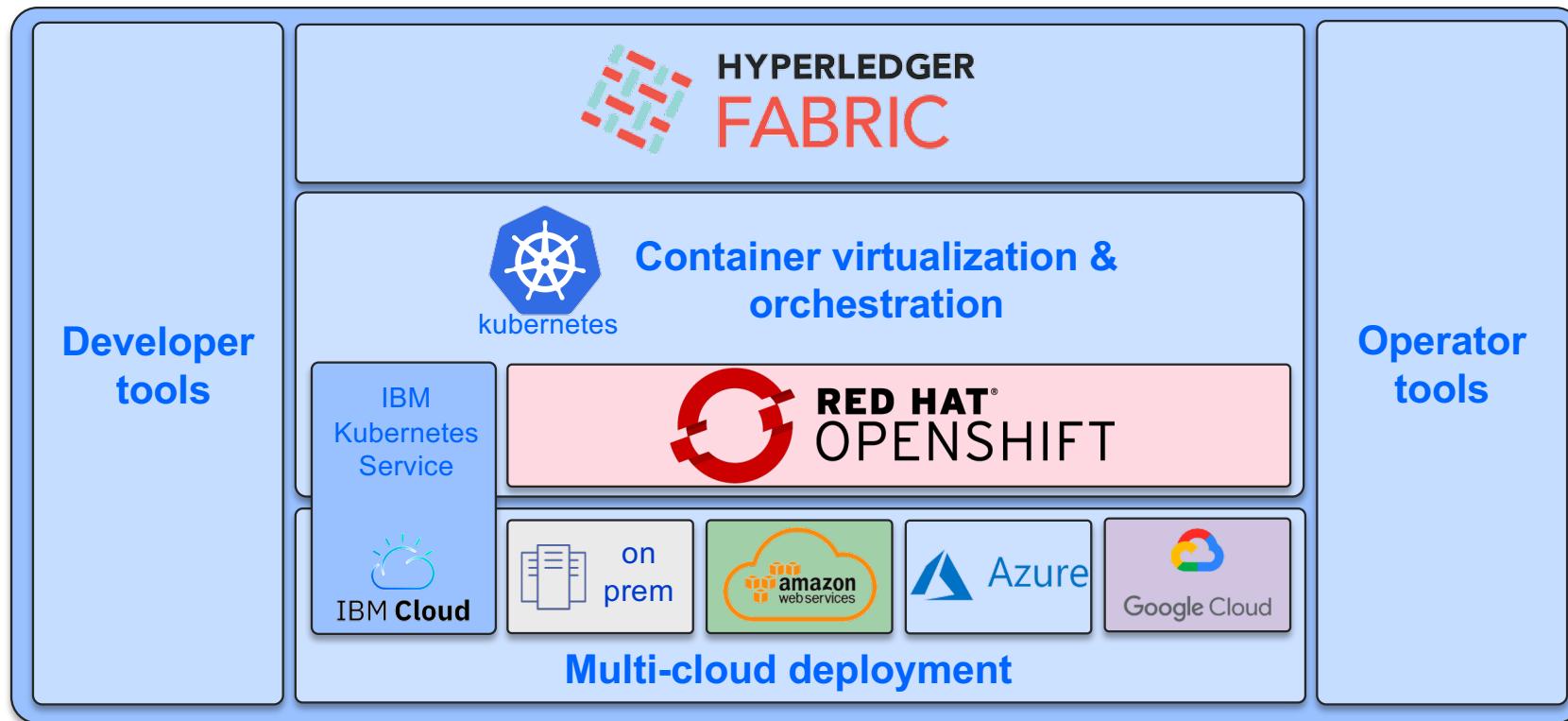
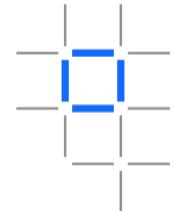


HYPERLEDGER

A founding, premier member of Hyperledger, IBM is committed to open source, standards & governance

Introducing IBM Blockchain Platform

Build, operate and grow Hyperledger Fabric networks



Advanced tooling

Create & manage smart contracts,
applications & networks

IBM Blockchain

Open technology

Hyperledger Fabric,
Containers, Kubernetes

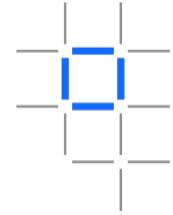
Deploy anywhere

Comprehensive cloud &
on-premises options

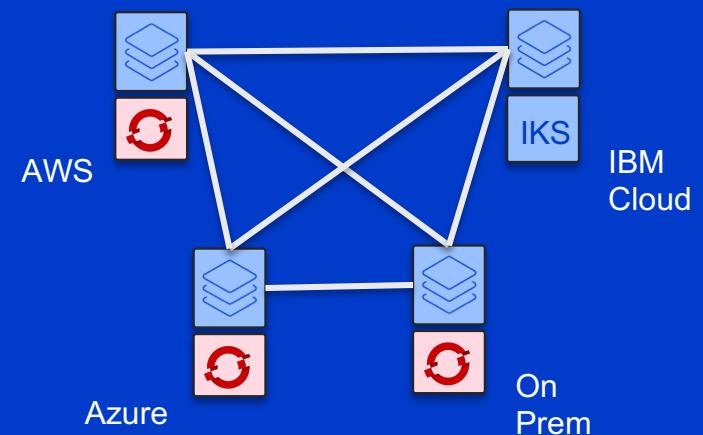
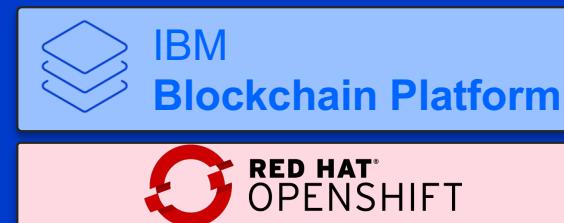
IBM

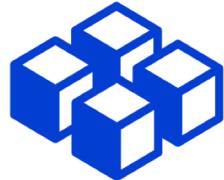


IBM Blockchain Platform: Deploy anywhere

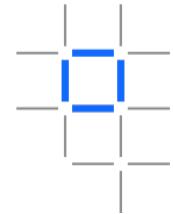


- IBM Blockchain Platform can be deployed wherever you want
 - **IBM Cloud** for an IBM-managed service
 - **On-premises** or in **other cloud providers** through OpenShift for greater deployment flexibility (e.g. AWS, Azure)
- **Fully heterogeneous:** different components can be deployed in different environments
- Caters for different vendor biases in the business network and **avoids lock-in**

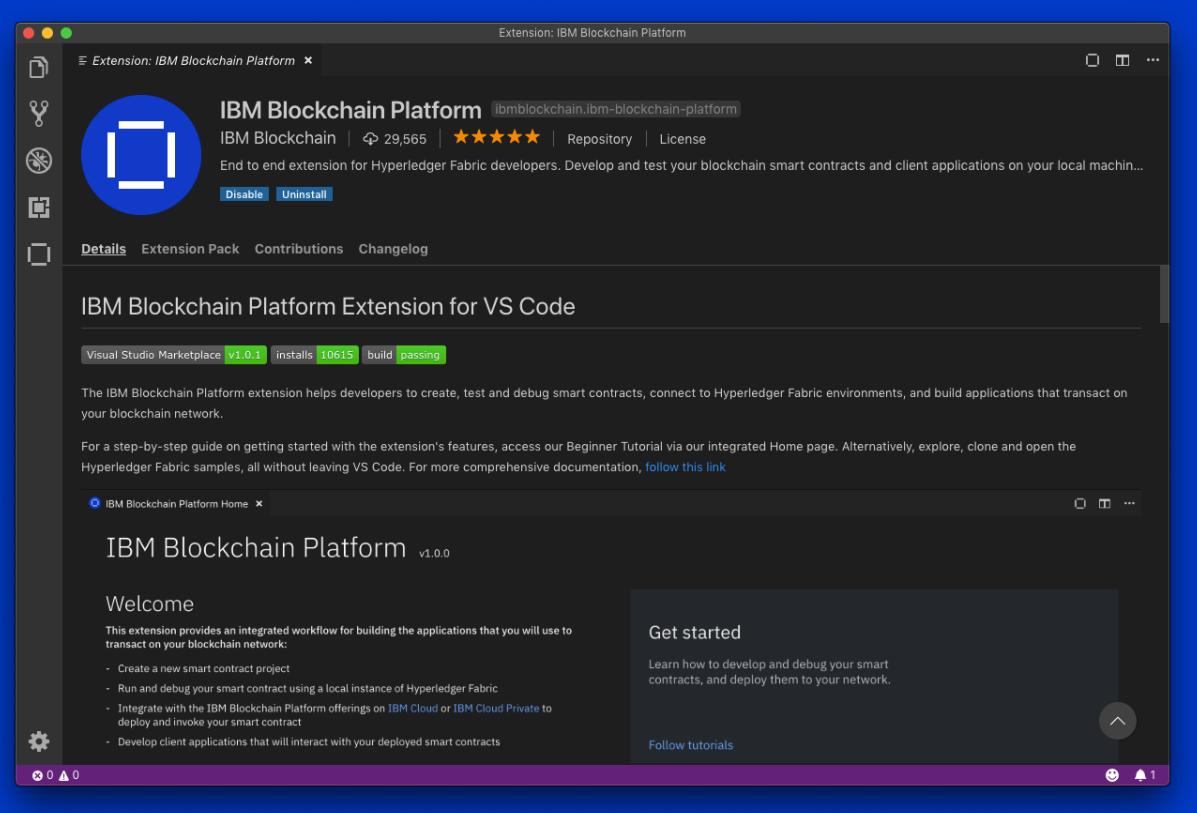




IBM Blockchain Platform's advanced tooling: Build

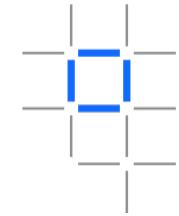


- Comprehensive developer tools for smart contracts and client applications, based on the popular **Visual Studio Code** environment
- Broad range of industry code samples and tutorials; smart contracts in JavaScript, TypeScript, Java and Go
- **Simplified DevOps** allows you easily move from development to test to production from a single console





IBM Blockchain Platform's advanced tooling: Operate & Govern

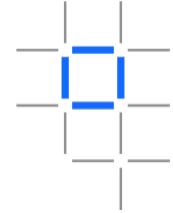


- Maintain **complete control** of your blockchain: govern and operate ledgers, channels, identities and other assets in one intuitive console
- Deploy only the blockchain components you need and manage them - wherever they are hosted
- Support for **highly available** environments and **disaster recovery** scenarios

Enroll ID	Type	Affiliation
admin	client	
tester2@test.com	client	org1
tester3@test.com	client	org1
tester@test.com	client	org1
user2	client	org1



IBM Blockchain Platform's advanced tooling: Grow



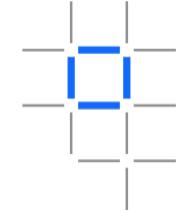
- Start small, pay as you grow for what you use with **no upfront investment** and upgrade easily through Kubernetes
- **Easily connect** a single peer to multiple industry networks
- Connect to nodes running in any environment (on-premises, public, hybrid clouds)

The screenshot displays the IBM Blockchain Platform dashboard. On the left, there is a sidebar with various icons for navigation. The main area is divided into three sections: **Nodes**, **Peers**, and **Certificate Authorities**.
Nodes: Shows four nodes labeled DVI Euro - 1, DVI Euro - 2, DVI Euro - 3, and DVI Euro - Test, all categorized as Peer and managed by euroadmin, running on IBM Cloud. A "Patch available" badge is visible for each.
Peers: Shows four peers labeled DVI Euro - 1, DVI Euro - 2, DVI Euro - 3, and DVI Euro - Test, all categorized as Peer and managed by euroadmin, running on IBM Cloud. A "Patch available" badge is visible for each.
Certificate Authorities: Shows five certificate authorities: AP Credentials, Dev Credentials, Euro Credentials, Staging Creden..., and US Credentials, all categorized as Certificate Authority and managed by euroadmin, running on IBM Cloud. A "Patch available" badge is visible for each. An "Add Certificate Authority" button is also present.
Notifications: A sidebar on the right shows a list of notifications from today, dated 9 May 2019, including:

- Signature request submitted by euroadmin Proposed channel configuration update on flexneteuro 1/2 signatures received View channel configuration updates → 13:23
- New channel flexnettest2 created by euroadmin New channel flexnettest2 created by euroadmin View channel information → 13:17
- New channel flexnetstagingus created by euroadmin New channel flexnetstagingus created by euroadmin View channel information → 13:16
- New channel flexnetstagingeuro created by euroadmin New channel flexnetstagingeuro created by euroadmin View channel information → 13:15
- New channel flexnexus created by euroadmin New channel flexnexus created by euroadmin View channel information → 13:15
- New channel flexnettest created by euroadmin New channel flexnettest created by euroadmin View channel information → 13:14
- New channel flexneteuro created by euroadmin New channel flexneteuro created by euroadmin



IBM Blockchain Platform has **affordable pricing** that scales with your network



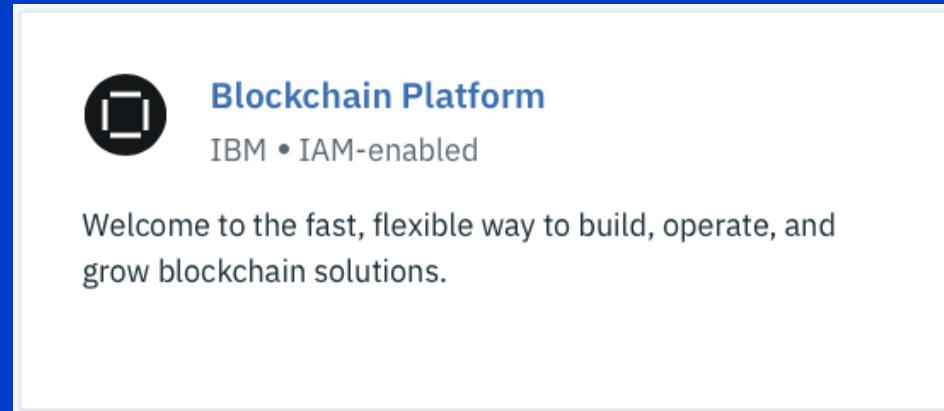
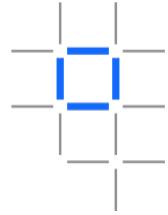
- Get what you need and **only pay for what you use**
- **Pay less** per CPU-hour as your network grows
- **Customize** your components and compute allocation to fit your use-case and budget with **no fixed membership fees!**

Pricing options** (1 VPC = 1 CPU)	Test Network	Join a Production Network
CPU allocation	1.85 CPU Includes: - 1 peer - 2 CAs - 1 ordering node	4.9 CPU Includes: - 2 peers (for HA) (2x default compute) - 1 CA
Hourly cost: IBM Blockchain Platform	\$0.54 USD (1.85 CPU x \$0.29 USD/VPC-hr)	\$1.42 USD (4.9 CPU x \$0.29 USD/VPC-hr)
Hourly cost: IBM Cloud Kubernetes cluster	\$0.12 USD (Compute: 2 x 4 tier) (IP Allocation: \$16 USD/month)	\$0.46 USD (Compute: 8 x 32 tier) (IP Allocation: \$16 USD/month)
Hourly cost: Storage	\$0.07 USD 340GB <u>Bronze</u> ↗ 2 IOPS/GB	\$0.13 USD 420GB <u>Silver</u> ↗ 4 IOPS/GB
Total hourly cost	\$0.73 USD	\$2.01 USD

<https://cloud.ibm.com/docs/services/blockchain?topic=blockchain-ipb-saas-pricing>



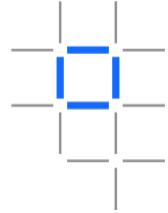
Starting with IBM Blockchain Platform for IBM Cloud



1. Go to the IBM Cloud console (cloud.ibm.com) and search the catalog for blockchain



Starting with IBM Blockchain Platform for IBM Cloud



1. Go to the IBM Cloud console (cloud.ibm.com) and search the catalog for blockchain

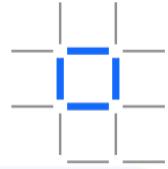
The screenshot shows the IBM Cloud catalog page for the 'Blockchain Platform'. At the top, there's a section titled 'Images' with four screenshots of the platform's user interface. Below that is a section titled 'Pricing Plans' with a table. The table has columns for 'PLAN', 'FEATURES', and 'PRICING'. There are two rows: a 'Beta trial' row and a 'Standard' row. The 'Standard' row is expanded, showing details: 'All the tooling you need to build, operate, and grow your blockchain solution.' and a price of '\$0.29 USD/Virtual Processor Core-Hours'. A note at the bottom of this row states: 'Quickly progress from development, to pilot, to production with a single plan that scales as you grow. Please note that you will be charged additionally for infrastructure and storage. File storage will be provisioned unless you change your Kubernetes storage preferences.' At the bottom of the table are 'Add to estimate' and 'Create' buttons.

PLAN	FEATURES	PRICING
Beta trial		
Standard	All the tooling you need to build, operate, and grow your blockchain solution.	\$0.29 USD/Virtual Processor Core-Hours

2. Create your blockchain service instance



Starting with IBM Blockchain Platform for IBM Cloud



1. Go to the IBM Cloud console (cloud.ibm.com) and search the catalog for blockchain

The screenshot shows the IBM Cloud Resource list with the service 'Blockchain Platform-gv'. The service is listed under 'Resource group: default' and 'Location: Dallas'. A 'Add Tags' button is visible. On the left, a sidebar shows steps: 'Welcome and pre-requisites' (checked), 'Create cluster Optional' (checked), 'Link to a cluster' (selected), and 'Launch IBM Blockchain Platform console' (unchecked). The main area displays the text: 'Deploy the IBM Blockchain Platform on your IBM Kubernetes Service cluster'. Below it, a dropdown menu says 'Select the cluster to deploy IBM Blockchain Platform on:' followed by 'Select an IBM Kubernetes Service cluster'. A note states: 'Choose your cluster carefully. You will be billed based on [IBM Kubernetes Service cluster pricing](#)'. At the bottom, a progress bar indicates 'This step can take up to 10 minutes to complete.' Buttons for 'Back' and 'Deploy to cluster' are at the bottom.

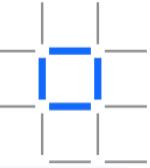
2. Create your blockchain service instance

The screenshot shows the 'Blockchain Platform' service details page. It includes sections for 'Images' (with three thumbnail screenshots), 'Pricing Plans' (listing 'Standard' plan with features like 'All the tooling you need to build, operate, and grow your blockchain solution.' and a price of '\$0.29 USD/Virtual Processor Core-Hours'), and a 'Create' button.

3. Create and attach an IBM Kubernetes Service cluster



Starting with IBM Blockchain Platform for IBM Cloud



Blockchain Platform
IBM • IAM-enabled

Welcome to the fast, flexible way to build, operate, and grow blockchain solutions.

1. Go to the IBM Cloud console (cloud.ibm.com) and search the catalog for blockchain

3. Create and attach an IBM Kubernetes Service cluster

Resource list / Blockchain Platform-gv

Resource group: default Location: Dallas Add Tags

WELCOME AND PRE-REQUISITES

Create cluster (Optional)

Link to a cluster

Launch IBM Blockchain Platform console

Deploy the IBM Blockchain Platform on your IBM Kubernetes Service cluster

Select the cluster to deploy IBM Blockchain Platform on:

Select an IBM Kubernetes Service cluster
Choose your cluster carefully. You will be billed based on [IBM Kubernetes Service cluster pricing](#).

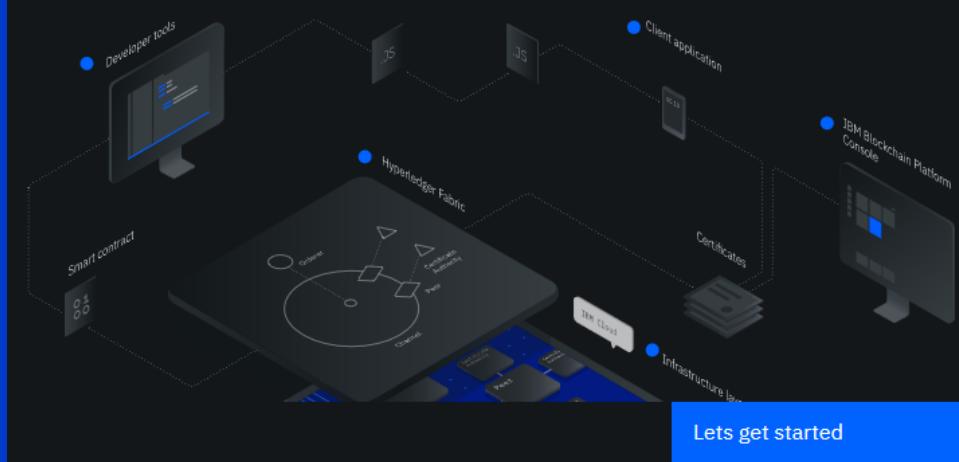
This step can take up to 10 minutes to complete.

Back Deploy to cluster

IBM Blockchain

Welcome to the IBM Blockchain Platform

IBM Blockchain Platform comprises this operational tooling console and a number of other elements. Hyperledger Fabric components are deployed on IBM Cloud and developer tools are used to create smart contracts and client applications. Hover over each part of the diagram to learn more.



4. Launch blockchain console

Images

Images can be screen captures, slides, or videos. Click an image to view the details.

Pricing Plans

PLAN	FEATURES	PRICING
Beta trial	All the tooling you need to build, operate, and grow your blockchain solution.	\$0.29 USD/virtual Processor Core-Hours

Quickly progress from development, to pilot, to production with a single plan that scales as you grow. Please note that you will be charged additionally for infrastructure and storage. The storage will be provisioned until you change your automatic storage thresholds.

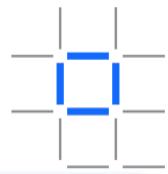
Add to estimate Create

2. Create your blockchain service instance

IBM



Starting with IBM Blockchain Platform for IBM Cloud



Blockchain Platform IBM • IAM-enabled

Welcome to the fast, flexible way to build, operate, and grow blockchain solutions.

1. Go to the IBM Cloud console (cloud.ibm.com) and search the catalog for blockchain

The dashboard displays two main sections: Nodes and Certificate Authorities. Under Nodes, there are four peers listed: DVI Euro - 1, DVI Euro - 2, DVI Euro - 3, and DVI Euro - Test, all running on IBM Cloud. There is also an 'Add peer' button. Under Certificate Authorities, there are five entries: AP Credentials, Dev Credentials, Euro Credentials, Staging Creden..., and Test Credentials, all running on IBM Cloud. There is also an 'Add Certificate Authority' button.

3. Create and attach an IBM Kubernetes Service cluster

The wizard shows the following steps:

- Welcome & pre-requisites
- Create cluster (Optional)
- Deploy onto cluster** (selected)
- Launch console

Under 'Deploy onto cluster', it says 'Select an IBM Kubernetes Service cluster' and 'Deploy to cluster'. A note at the bottom says 'Choose your cluster carefully. While IBM Blockchain Platform is free for Beta, you will be charged for your IBM Kubernetes Service cluster. This step can take up to 10 minutes to complete.'

IBM Blockchain

The page shows the following:

- Images: Three screenshots of the platform interface.
- Pricing Plans: A table with columns PLAN, FEATURES, and PRICING. It lists a 'Beta trial' plan for Standard users, which includes 'All the tooling you need to build, operate, and grow your blockchain solution.' The price is \$0.29 USD/Virtual Processor Core-Hours.

2. Create your blockchain service instance

4. Launch blockchain console

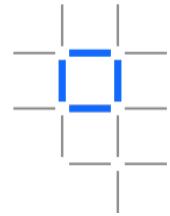
Welcome to the IBM Blockchain Platform. The text says: 'IBM Blockchain Platform comprises this operational tooling console and a number of other elements. Hyperledger Fabric components are deployed on IBM Cloud and developer tools are used to create smart contracts and client applications. Hover over each part of the diagram to learn more.' Below is a diagram illustrating the architecture with nodes, peers, and certificates.

5. Success! Create or join networks, scale, customize, add HA...

...and you're on your way!

IBM

IBM can help you make your blockchain a success



#1 USE CASE IDEAS

- { get right business model }
- { innovative }
- { potential for bank }
- ① Shared KYC / ID token
 - ↳ Simplify onboarding
- ② Write existing asset mgmt app with Blockchain DB { Try this in bank first }
- ③ Information exchange with Gov.
- ④ Signed document handling
 - ↳ Digital Vault provision
- ⑤ Loyalty programs
- ⑥ Mutual investment clubs - trading bank - strategy & capitalise

Business Value Assessment

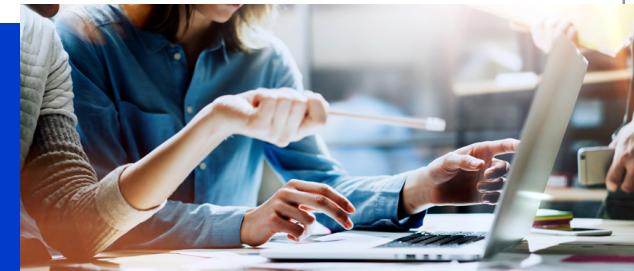
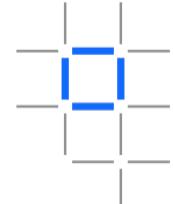
Problem		Solution			Participants		Asset & Trust		Transactions		Benefits benchmarks			KPI's (e.g.)			Blockchain Design Points					
90% of goods in global trade are carried by the ocean shipping industry each year. Costs associated with trade documentation processing and administration are estimated to be up to 20% of the actual physical transportation costs.		Manage and track the paper trail of tens of millions of shipping containers across the world by digitizing the supply chain process.			Supplier, couriers (*2), customs (*2), ports (*2), shipper and retailer ...		Need for trust around paperwork associated with a container		Supplier prepares to ship, release container to courier, load to ship, clear customs, retailer receipt		Value Tree			Baseline			Phase 1			Phase 2-3		
New revenue	# new value propositions	-	-	-	-	-	-	-	-	1 to 3	10%	+15%	1%	5%	5%	5%	5%	5%				
Improve client experience	Increase in customer satisfaction	-	-	-	-	-	-	-	-	30 days	25 days	10 days	-	-	-	-	-	-				
Reduce transport costs	Waste as % of total shipped	6%	5%	5%	5%	4%	4%	4%	4%	-	-	-	1%	0.5%	0.5%	0.5%	0.5%	0.5%				
	Fraud and errors as % of total costs	5%	5%	4%	4%	3%	3%	3%	3%	-	-	-	-	-	-	-	-	-				
	Documentation admin. as % of total costs	20%	15%	15%	15%	15%	15%	15%	15%	-	-	-	-	-	-	-	-	-				

Pain Points

- Transport remains highly decentralized
- Shipping information must pass through many different parties
- One alignment can require signatures from multiple parties
- One lost form or late approval can delay the entire process
- Fraudulent changes may be made

- Every **business** is different!
- IBM can help you with **all stages** of your blockchain network, for example:
 - Discovery workshop
 - Hands-on workshops
 - First Projects
 - Architectural Review
 - Services and Support
- Make use of the expertise located in the **IBM Garages** and in other locations worldwide

Continuing your blockchain journey...



Business Stakeholder

- Turn your blockchain strategy into **tangible** business outcomes.
- Request a **free** Discovery Workshop & talk to our experts

→ ibm.com/blockchain/services

Solution Architect

- **Learn** about blockchain use-cases and references
- **Find out** more about existing blockchain solutions
- **Join** an existing network

→ ibm.com/blockchain/use-cases

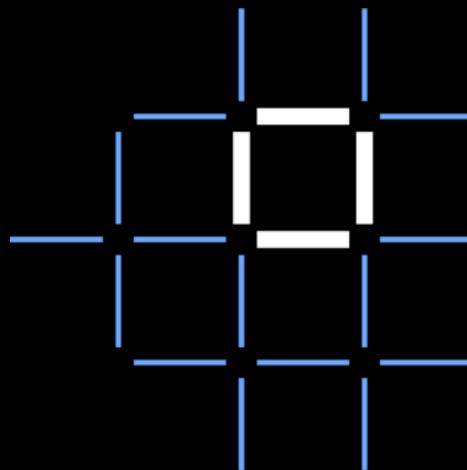
Developer

- **Learn** more about IBM Blockchain Platform
- Ready to start developing and testing? **Signup** and **try-out** the IBM Blockchain Platform

→ ibm.com/blockchain/platform

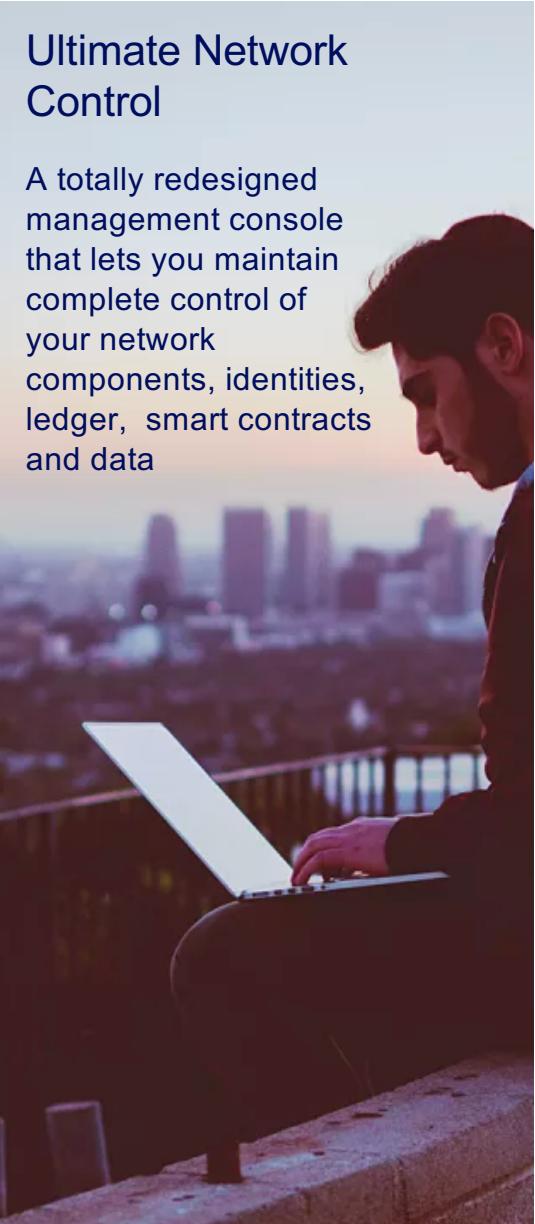
What's New

IBM Blockchain Platform is designed to provide you with best in class tools and support at every level of your blockchain maturity.



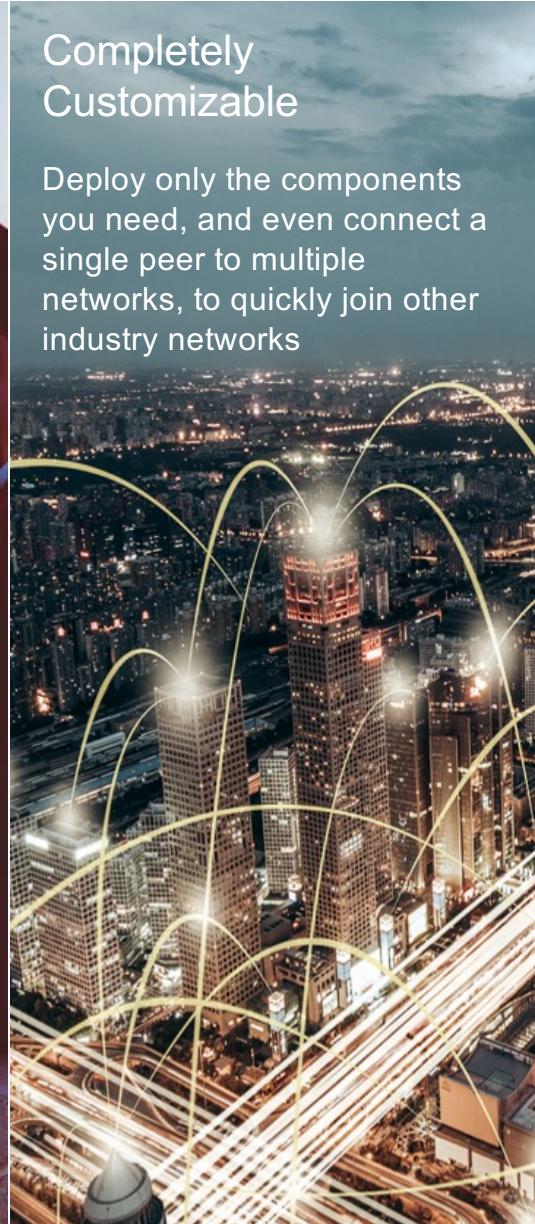
Ultimate Network Control

A totally redesigned management console that lets you maintain complete control of your network components, identities, ledger, smart contracts and data



Completely Customizable

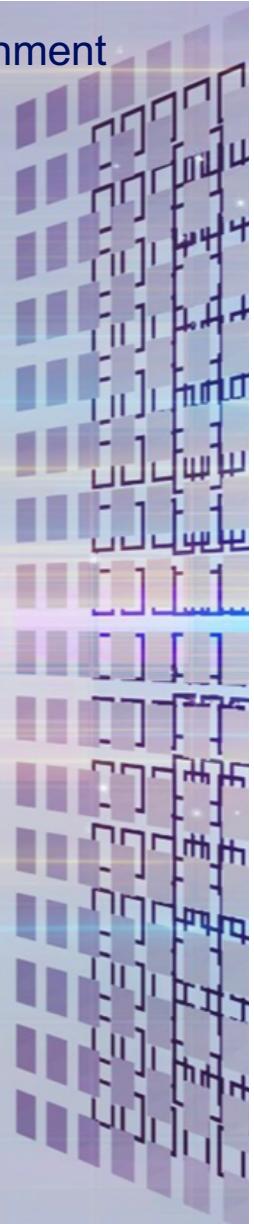
Deploy only the components you need, and even connect a single peer to multiple networks, to quickly join other industry networks



Same Environment at Scale

Now you can move from development to test to production in a single environment!

And our VSCode extension creates a seamless integration between smart contract development and network management



Thank you

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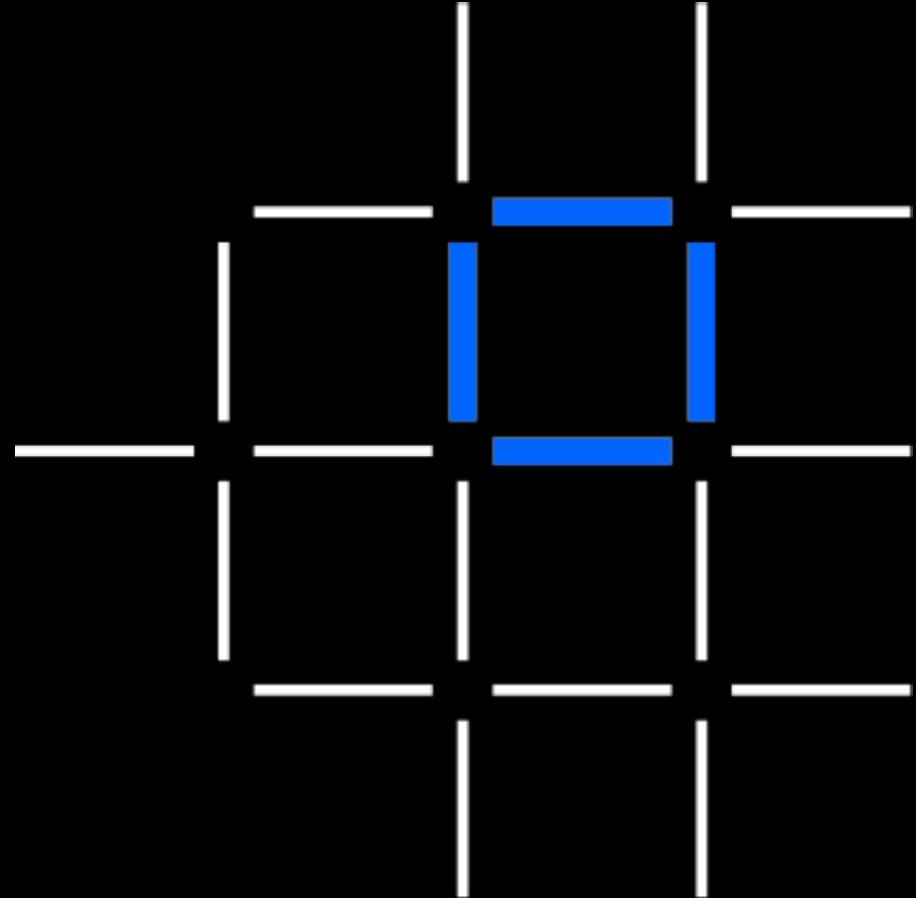
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go to ibm.com/blockchain

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IBM Blockchain



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