



Bezant

Bezant Technical White Paper
V1.0

ABSTRACT

The Bezant Blockchain is a BaaS (blockchain as a service) offering a secure and scalable end-to-end blockchain solution and a native SDK for any service providers who want to utilize the blockchain without having to construct one themselves independently. This is done by utilizing the open source system hyperledger fabric, a permissioned distributed ledger technology, that delivers “enterprise-ready network security, scalability, confidentiality, and performance, in a modular blockchain architecture.”¹ The result of this architecture is a highly secure blockchain network based on membership authentication, which aims to achieve up to 100,000 transactions per second², significantly reduce fees, and allow security and confidentiality within the network through channels. Furthermore, the key attribute of the Bezant blockchain architecture will be efficient processing. Since the blockchain is based on a permissioned network, all participants are known and trusted, therefore, fewer levels of trust and verification are required across node types, and network scalability and performance are optimized. This paper will outline Bezant’s background and the rationale in utilizing the hyperledger fabric, details of Bezant’s blockchain architecture, implementation, and then use cases.

¹ <http://hyperledger-fabric.readthedocs.io/en/release-1.0/capabilities.html>

² https://openblockchain.readthedocs.io/en/latest/FAQ/usage_FAQ/

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1. INTRODUCTION

1.1. Company Vision

Bezant's blockchain platform consists of both a blockchain and a service platform that work together to provide Service partners (SPs) with a dynamic blockchain-based payment platform to create new services. Bezant is targeting SPs with significant user and subscriber traffic across many industries: game publishing, e-commerce, music and video streaming, communications, social networking, and media channels.

1.2. Service Platform

On top of this blockchain, the Bezant service platform will provide a Blockchain as a Service (BaaS) system design, which will allow Service Partners to create dynamic blockchain-based services for their users.

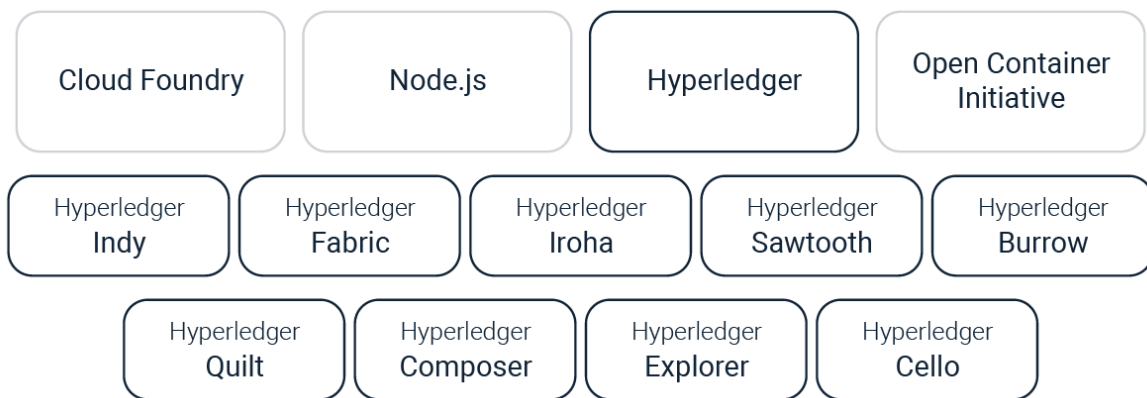
There are primarily two types of users for the service platform: 1) Enterprise users and 2) Individual end users who indirectly use the platform via Service Partners. The number of users on the blockchain and platform will increase as the Bezant network of Partners grows. The Bezant blockchain will provide multiple authentication services for each user and will create multiple channels to help ensure that there are no security problems.

2. BACKGROUND

2.1. Hyperledger

The Hyperledger project is an umbrella initiative under which communities are developing interoperable enterprise-grade, open source permissioned blockchain tools and frameworks. The Linux foundation launched Hyperledger in 2016 with 30 founding corporate members. Hyperledger is the fastest growing open source blockchain solution, currently supported by 231 organizations across more than 25 countries.

2.2. Why Hyperledger Fabric



Hyperledger Fabric is a blockchain framework implementation and one of the Hyperledger projects hosted by the Linux Foundation. Hyperledger Fabric was initially contributed by Digital Asset and IBM.

159 engineers from 28 organizations contributing to this project and the key Features are like below

- Channels for sharing confidential information
- Ordering Service delivers transactions consistently to peers in the network
- Endorsement policies for transactions
- CouchDB world state supports wide range of queries
- Bring-your-own Membership Service Provider (MSP)

3. ARCHITECTURE (Bezant Overview)

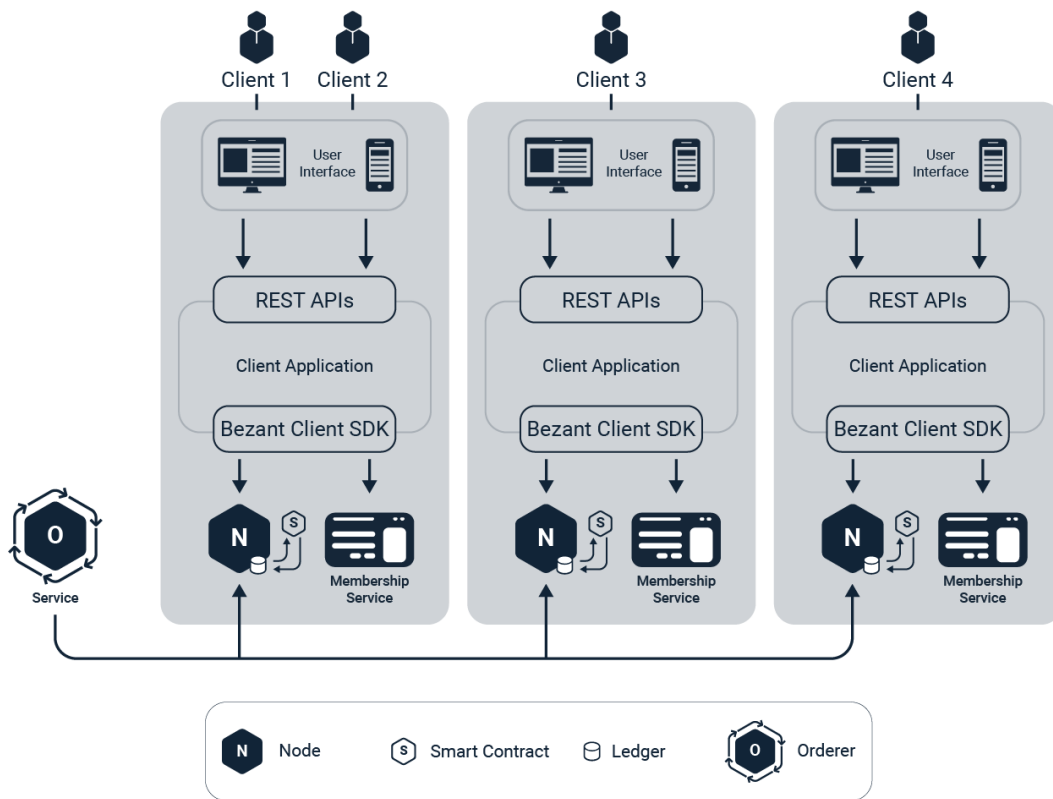


Figure 1 Bezant Baas(Blockchain as a Service) Overview

The purpose of Bezant Blockchain service is to allow related partners to implement blockchain service by providing web-based platform services easily. Supporting the blockchain service, Bezant Foundation will act as the Root CA issuing authentication certificates to partners and provide membership management services. SDK and Rest API services will enable support for blockchain based services to each of the partners. In addition to the blockchain service, partners will be able to use the BZNT coin, a native cryptocurrency on the Bezant Blockchain, in their own provided service through the Bezant’s SDK and Rest API. Additional technical support will be provided for: membership services, node management, smart contract development, and platform service will be provided by the Bezant Foundation.

3.1 Transaction Flow

The Bezant blockchain is comprised of three key components: Client (SDK), Node, and Orderer. Unlike the transaction architecture of Ethereum, each of the nodes in the Bezant chain has its own unique role. Here we will provide an overview of the roles of each of the key components, transaction flow within the Bezant blockchain, and how a block is recorded onto the ledger.

- **client (sdk):**

The client (SDK) plays a role in making a transaction in the external portion of the blockchain. This mostly applies to the user and the application. The SDK will initially be provided in Node.js and Java and will support more languages eventually.

- **node:**

The blockchain network is mostly comprised of nodes; each with its own ledger, can execute a smart contract in order to save and read data onto the ledger. Further, the node endorses the client's transaction queries and also transmit the block to nearby nodes.

- **orderer :**

The orderer then organizes the validated transactions in chronological order and then creates blocks and then sends these blocks to the concerned nodes.

This will be a simple explanation of process of how a ledger is updated when a client carries out a transaction from the nodes point of view.

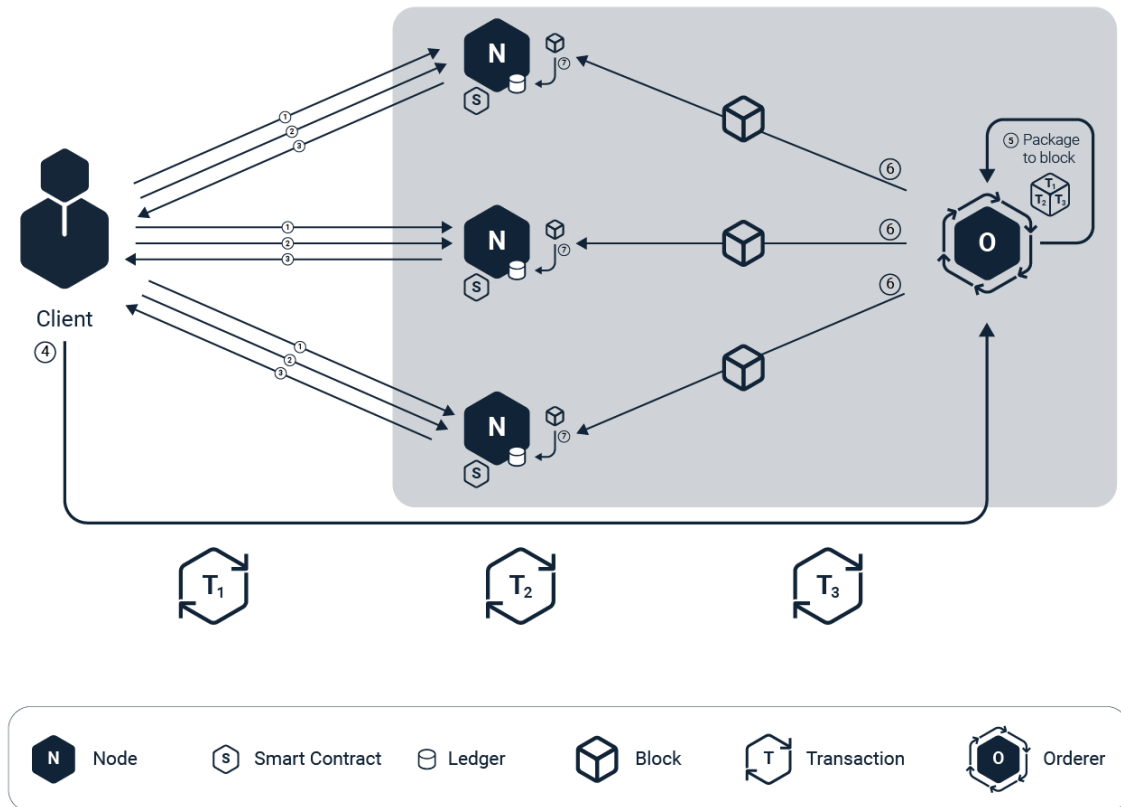


Figure 2 Bezant Blockchain Transaction Flow

1. The client carries out a transaction request to multiple nodes
2. The client request the activation of the smartcontract saved in the node
3. The node endorses the query and passes on the result to the client
4. The client compares the different results and decides the validity of it
5. The validated transaction is passed onto the orderer
6. The orderer packages the transaction into blocks and then broadcasts this to the nodes
7. The nodes receive the block and then after validating, it is saved unto the ledger

3.2 Bezant Authentication

Service partners and users must go through an authentication process in order to gain access to the Bezant Blockchain. The Bezant Authentication will provide authentication where it will issue an authentication certificate to the partners and its users. The authentication will also provide membership service through the web and rest api, a convenient method to issuing authentication to utilizing the Bezant blockchain. The authentication of the membership service is comprised of a public key infrastructure, PKI and the Root CA.

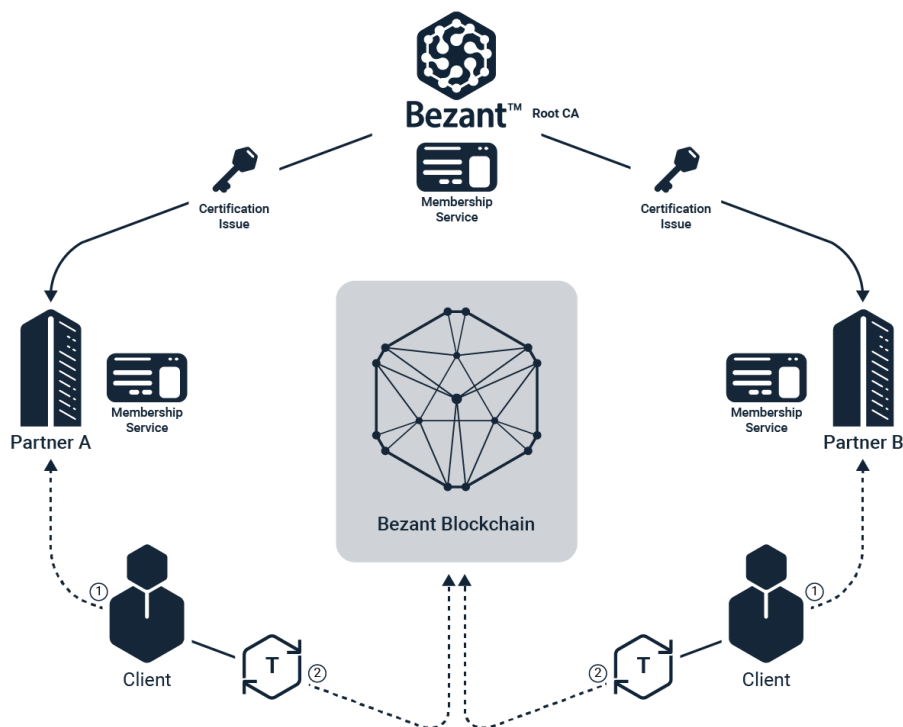


Figure 3 How to work Bezant Authentication

Service Partners can manage their own users through membership service or Bezant Authentication. Partners will have their own channels which provides private communication between certain groups within the organization and through these channels will be able to manage and control these groups.

Private channels act as a limited messaging pathway and provide privacy of personal information of a transaction of a specific subgroup within the blockchain network. All data (transactions in the channels, member and channel information) cannot be accessed or viewed by members of the network who are not approved. Bezant Foundation has authorization as Root CA and while partners who are participating in the network, will be issued an ICA. Each ICA certificate will use the Membership Service by Bezant and will be able to manage the transaction, disposal, and issuance of certifications to users. These also can be autonomously managed apart from the Membership Service.

- RootCA (Bezant Foundation)
- ICA (Partners)
- Membership Service

3.3 Scalability Using Channel

The Bezant blockchain can be logically partitioned internally, a function that gives it great scalability. The Bezant blockchain can choose to save a block by channels. It can choose at least one channel for each node through the logical sharding structure. In a particular channel, all the nodes will have to maintain consensus. Therefore because of the logical sharding, each node can save blocks by choice and without having to broadcast unnecessary blocks; this feature allows greatly improve network capability and also increase scalability.

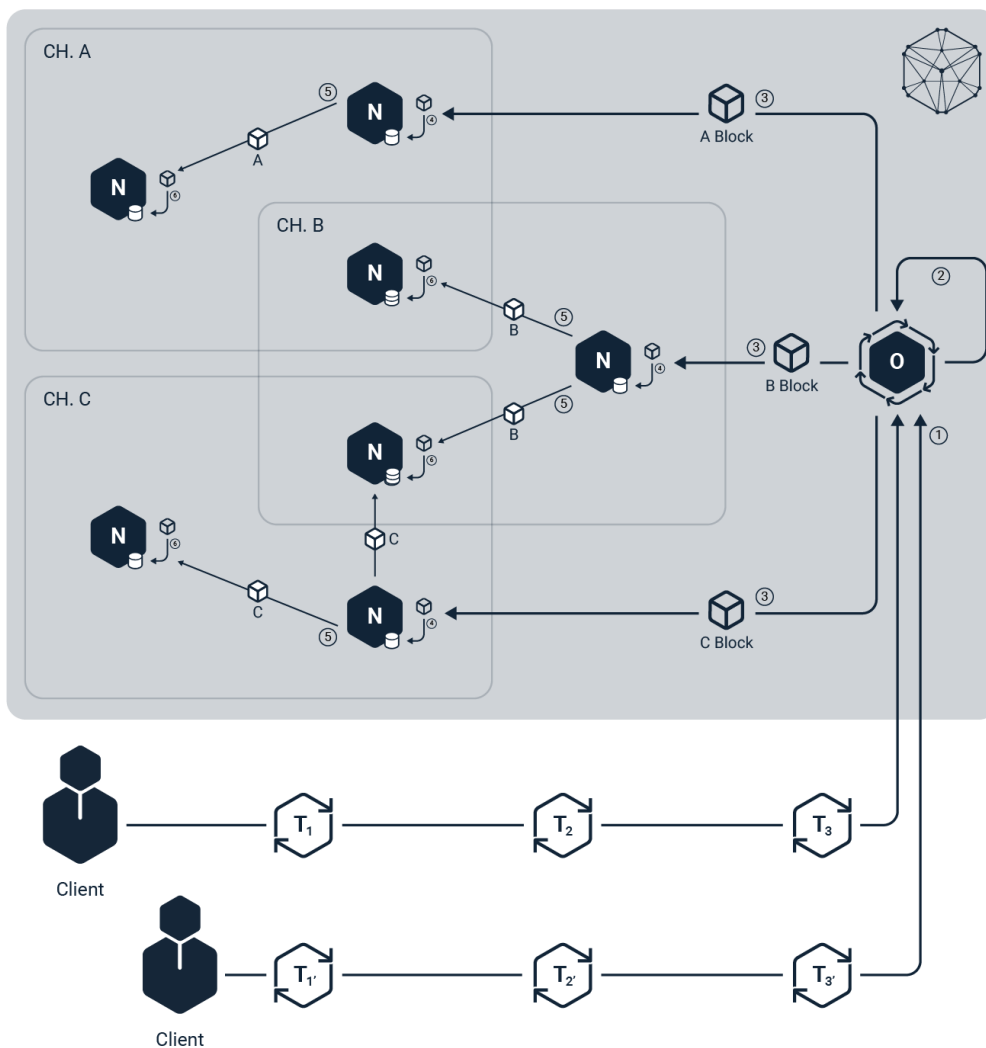


Figure 4 Bezant Blockchain Transaction Flow with Channel

1. The The channeled transactions by the client are all sent to the orderer.
2. The batch time is designated, and the transactions are packaged into blocks through channels.
3. The connected nodes broadcast the blocks.
4. The connected nodes validate the blocks and then saves it into the ledger.
5. The blocks are then cascaded to nearby peer nodes.
6. Step 4 and 5 are repeated.

3.4 BZNT Coin

BZNT coin will be available as the default coin on all channels. Hence all partners that have signed membership to Bezant Foundation and the users of these partner entities will be able to use BZNT coin, which is the integral currency of Bezant Blockchain. Bezant will provide Wallet SDK and Rest API service to allow the usage of BZNT coin in all partners' payment solutions.

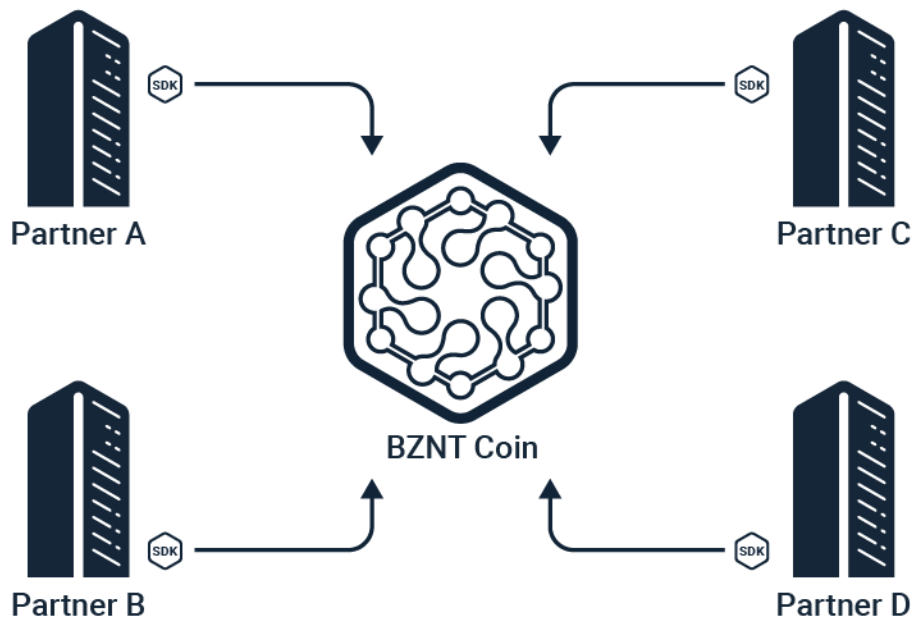


Figure 5 BZNT Coin available for all partners

3.5. Node Structure and Management

All the nodes of the Bezant blockchain will be managed by Bezant. Bezant will initially have 20 or more nodes and will increase this number accordingly. However, private channels, the related nodes will be managed by the partners themselves. In the case of a consortium channel, all the nodes will be managed by the consortium members directly.

If a partner wants to manage a blockchain with separate nodes, then they will be using a docker to easily manage nodes.

4. USE CASES

Bezant blockchain will be utilized as a BaaS, allowing partners and users who want to create services using blockchain. The following are the possible use cases for the Bezant Blockchain.

4.1 Create Membership Service and Registry Service for the Bezant Platform

In order to use the Bezant Blockchain service, a User or Partner will have to apply for membership through the Bezant Foundation, and then through the provided administration, they can generate their own membership service; this will allow them to easily create ID's for their users and monitor each user as well.

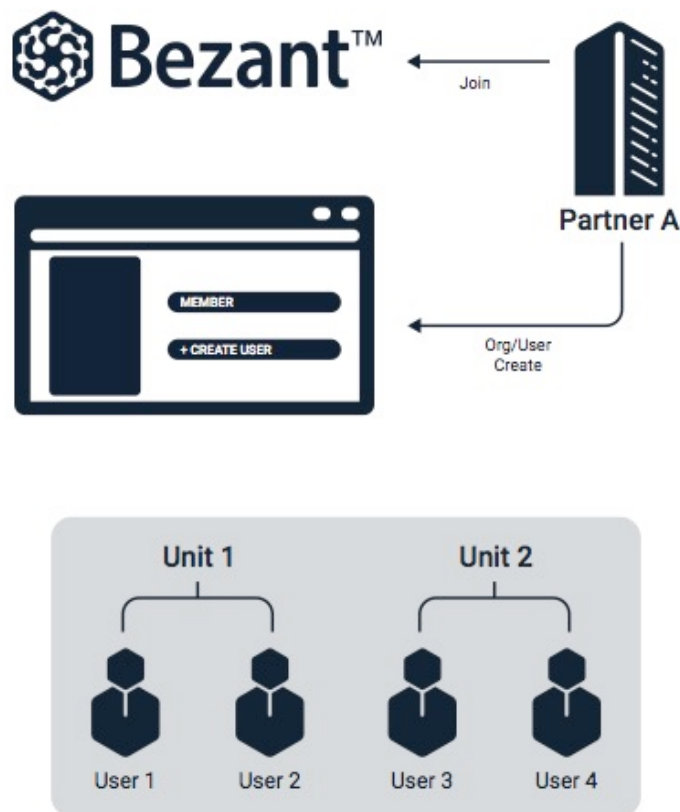


Figure 6 Web or Rest Membership Service provided by Bezant platform

4.2 Executing a Smart Contract

The authenticated Partners and Users can easily execute a smart contract in the platform and conveniently track the results through a web browser.

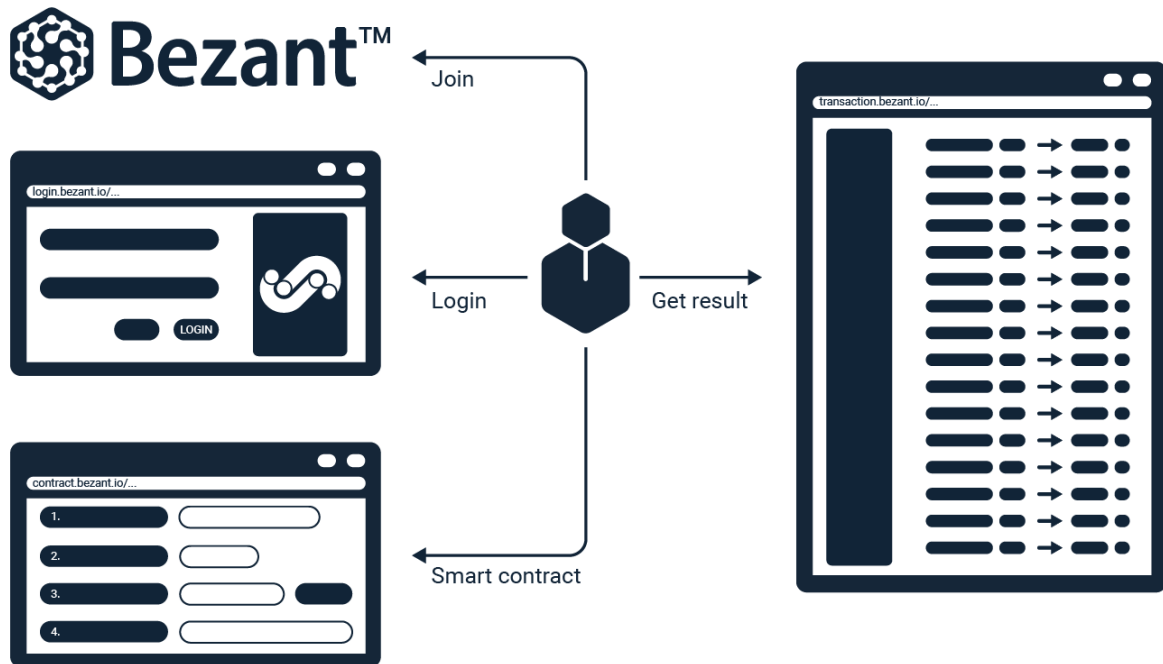


Figure 7 Bezant Blockchain Smart Contract and Transition Explorer

4.3 Blockchain Network

Through the channel structure, the Bezant platform service allows one to generate their own blockchain network. All that is needed to generate a channel is to simply connect to the Admin, and by using a related SDK or configuration, one is enabled to utilize the blockchain that is mounted onto one's application.

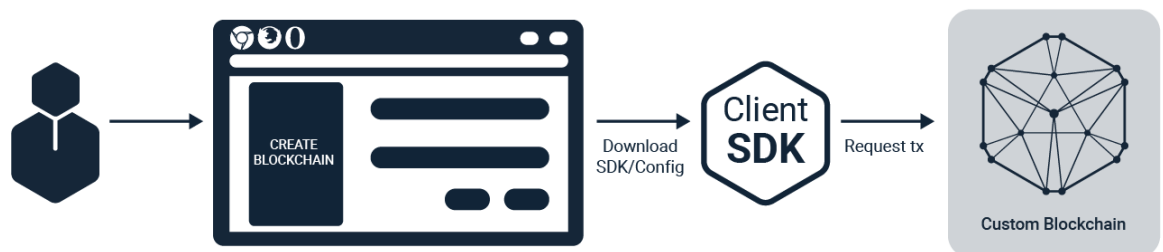


Figure 8 Bezant Blockchain Client SDKs

5. CONCLUSION

The Bezant Blockchain is built with a proven modular transaction architecture that allows the platform to provide blockchain solutions to businesses. Bezant addresses the key limitations in all blockchain technologies: security, privacy, and scalability. The native currency, BZNT, will provide Service Providers with a convenient means to utilizing blockchain technology enabling the creation of robust applications, globally.

Reference

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[2] Introduction
<http://hyperledger-fabric.readthedocs.io/en/release-1.1/blockchain.html#what-is-hyperledger-fabric>

[3] Hyperledger Overview
https://www.hyperledger.org/wp-content/uploads/2018/02/Hyperledger-Overview_February-2018-2.pdf

[4] Hyperledger Fabric Capabilities
<http://hyperledger-fabric.readthedocs.io/en/release-1.0/capabilities.html>

[5] Usage FAQ
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