



Blockchain Solutions: Steps and Measures

Steps to create your Blockchain Solution

- **Identify a suitable use-case:** Identify a use-case that makes business sense.
- **Identify the most suitable consensus mechanism:** Depending upon your use-case, choose the consensus mechanism that makes the most sense.
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- **Identify the most suitable platform:** Depending upon the consensus mechanism, choose the suitable platform.

Steps to create your Blockchain Solution

Designing the Nodes: Blockchain solutions can be private, public or hybrid.

Design the Blockchain Instance: Carefully planned configuration for the following elements:

- Permissions
- Asset issuance
- Asset creation
- Atomic exchanges
- Key management
- Multi signatures
- Parameters
- Native assets
- Address formats
- Key formats

Steps to create your Blockchain Solution

Building the APIs: Some blockchain platforms come with pre-made APIs while some don't. The major categories of APIs that you would need are for:

- Generating key pairs and addresses
- Performing audit-related functions
- Data authentication through digital signatures and hashes
- Data storage and retrieval
- Smart-asset lifecycle management –issuance, payment, exchange, escrow and retirement
- Smart contracts

Design the Admin and User Interface: Select the front end and programming languages such

Centralized Architecture

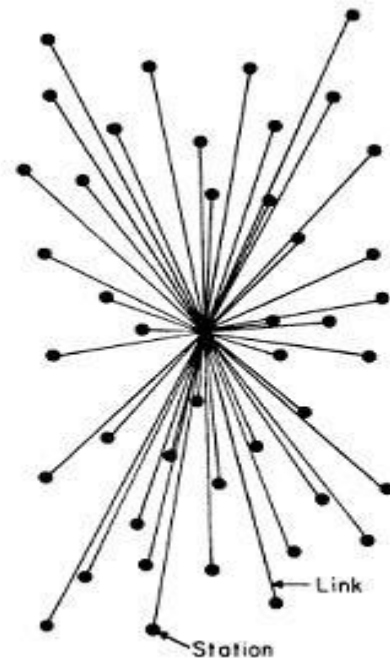
In the centralized architecture, there are two types of nodes that participate in the system. The first one is the server or super node and the second one is the client or user node. The super node is the heart of the network which stores the data and provides services to the clients connected to it.

The **advantages** of this approach are:

- It is simple for deployment.
- The development time for this approach is relatively short.
- It is cheaper, which means the development, deployment and maintenance costs are less.
- It is practical when there is a need to control the data at one location.

The **disadvantages** are:

- There is always a chance that the system is prone to failure.
- Higher security and privacy risks for users.
- It requires longer time for accessing the data for users who are physically far from the server.



Decentralized Architecture

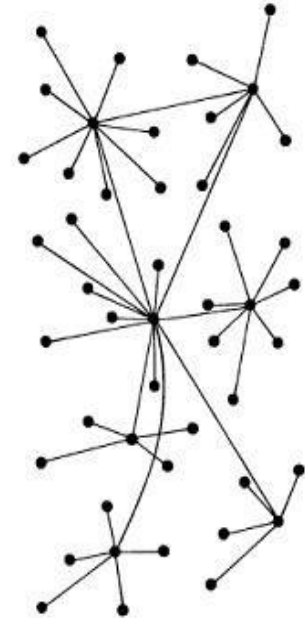
As the name suggests, the system is not centric, it is distributed to multiple super nodes or servers. Every super node in the network is connected with at least one another super node. Each super node contains the same copy of data available and must provide the same services as other nodes.

The **advantages** of using decentralized system are:

- The system is less likely to be unavailable for users than a centralized system.
- It assures better performance in availability and response time.
- It provides space for diverse and flexible systems.

The **disadvantages** are:

- There are some security and privacy concerns to be taken care of as the data is available at multiple locations.
- The maintenance costs are higher because we are maintaining multiple servers which are high performing computers with advanced hardware.
- The system needs to be properly optimized, else it leads to inconsistent performance.



Distributed Architecture

A distributed system is the same as a decentralized system with no central owners. In distributed systems, users have the same level of data access, though user privileges can be restricted if needed.

The **pros** of distributed systems are:

- The system is highly fault-tolerant.
- The network is transparent and more secure.
- It promotes resource sharing that can reduce burden on single or selected machines.
- The network can be extremely scalable.

The **cons** of using distributed systems are:

- It is more difficult to deploy a network.
- The maintenance costs are higher than any other method.

