Distributed Financial System

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Discussion

A Distributed Financial System is a Distributed System in which financial processing, state, data, or services are allocated across multiple networked Nodes.

The participating Nodes communicate and coordinate to provide the financial behavior of the system.

A Distributed Financial System can allocate:

- Transaction processing
- Agreement processing
- Financial-event processing
- Financial calculations
- Financial state
- Financial data
- Validation
- Policy evaluation
- Regulatory evaluation
- Risk analysis
- Settlement
- Payment
- Reconciliation
- Reporting
- Evidence
- Provenance
- Traceability

The participating Nodes do not need to perform identical functions. Different Nodes can perform different financial, technical, operational, governance, security, monitoring, or supporting roles.

The financial behavior can depend on cooperation among:

- Financial Nodes
- Communication Nodes
- Validation Nodes
- Policy Nodes
- Calculation Nodes
- Persistence Nodes
- Monitoring Nodes
- Governance Nodes
- External-system Nodes

A Distributed Financial System can distribute the processing of financial information without distributing every financial Data Object to every Node. The governing architecture determines which

Nodes receive, maintain, process, validate, or publish each item of financial information.

Definition

Distributed System in which financial processing, state, data, or services are allocated across multiple networked Nodes

Source

Adapted from:

- Distributed System
- Financial Systems Archetype conceptual and logical architecture
- FX Demo Reference Architecture
- Financial Node
- DIDO Reference Architecture distributed-system and Node concepts

The definition specializes Distributed System by identifying financial processing, state, data, and services as the coordinated subject matter of the system.

Note

Every Distributed Financial System is a Distributed System. A Distributed System is not necessarily a Distributed Financial System.

A Distributed Financial System is not defined by a particular:

- Financial product
- Financial market
- Financial institution
- Jurisdiction
- Regulatory framework
- Data model
- Communication protocol
- Middleware technology
- Deployment platform
- Persistence mechanism
- Distributed ledger
- Blockchain
- State-agreement mechanism

A Distributed Financial System can contain Nodes that are not Financial Nodes.

A Node that provides general infrastructure, communication, security, monitoring, or administrative support does not become a Financial Node solely because it participates in a Distributed Financial

System.

A Node becomes a Financial Node when its assigned role forms part of the financial processing, financial state, financial data, financial controls, financial services, or financial outcomes of the system.

A Distributed Financial System differs from a centralized financial system. A centralized financial system concentrates primary financial processing, authoritative state, data, or services within a central Node or central location. A Distributed Financial System allocates one or more of those responsibilities across multiple networked Nodes.

A Distributed Financial System can contain centralized components when those components do not hold exclusive authority over the complete financial behavior or authoritative state of the system.

Example

A distributed foreign-exchange system contains:

- An Origination Node that creates a proposed transaction
- A Confirmation Node that evaluates agreement between the parties
- A Validation Node that evaluates structural and lifecycle constraints
- A Policy Node that evaluates applicable policies
- A Calculation Node that calculates financial events and obligations
- A Settlement Evidence Node that records settlement-related Evidence
- A Commit Guard Node that determines whether the validated state transition can be committed

The Nodes exchange information and coordinate their assigned roles to provide the financial behavior of the system.

The system constitutes a Distributed Financial System because financial processing, state, data, validation, and services are allocated across multiple networked Nodes.
