

WHITEPAPER

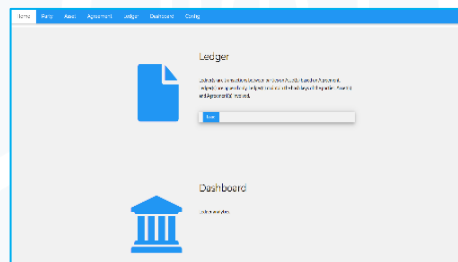
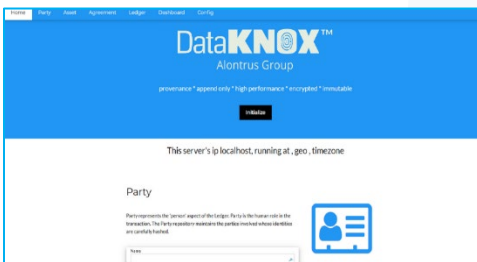
DataKNOX™ Provenance | Append Only | High Performance | Immutable | Self-Propagating
SHA-512 | Zero-Trust | Broadcasting | Open-Source Data Transportation | DLT

Executive Summary

Using a military grade SHA-512 encryption, **DataKNOX™** is an open-source, self-propagating, broadcasting, immutable, append only distributed ledger, designed to transport your most sensitive data to the cloud. It possesses the properties of Blockchain without being a Blockchain and built using Flow Programming. As you move from one end point to the next, decisions are made just like business process automation. With **DataKNOX™** you build a flow and in between the flow points you can introduce business decisions. Decisions can be fuzzy in nature, such as if the result is between 20 and 30, take route A, or if the weighted average is between 10 and 40, take route B. You can program a decision to either fork or jump dimensionally to a long process, or a long flow using the fuzzy logic. **DataKNOX™** is not ML or AI, but you can utilize concrete logic. Most of **DataKNOX™** is based on concrete logic to introduce business rules into the process itself.

DataKNOX™ is an extremely secure, low cost open-source solution utilizing SQLite V3 with such a small footprint, it can be imbedded into a microchip.

This document introduces the **DataKNOX™** line of business to everyone, from the experienced advisor to the aspiring technology architect. The document discusses the product, the needs, what's missing and what's trending.



DataKNOX™

- Distributed Ledger
- Not a Blockchain - All the Attributes of Blockchain
- Immutable
- Broadcasting
- Military Grade SHA-512 Encryption for Hashing
- Append Only
- Imbedded
- Language - C
- High Throughput Transaction Engine - Crosses country in <2ms.
- Self-Replicating - Doesn't need a Database
- Built using Flow Programming
- Derived from SQLite3
- Fully Supported by SQLite3 for all new versions
- NodeJS
- Small Footprint - 32 Bit, 1504 DBM system
512 MB RAM, 5G HD (Smallest footprint because you can't get anything smaller)

Alontrus Technology Universe

The Alontrus Group mantra, "Transform, Optimize, Improve and Innovate", promises several capabilities that address the rapidly changing IT landscape.

- **Enterprise Architecture Discipline**
- **Zero-Trust Architecture**
- **Proponents of Microservices**
- **New Technology Adoption** through Proofs-of-Concept and Technology
- **Team of Advisors** on technology adoption and emerging trends
- **Developments in Cloud** with DevOps



In this fast-paced digital world, technology and architectural methods play a pivotal role in defining how businesses rapidly implement designs and solutions. Modern architectures are the table stakes and require a systematic, well thought-out and in-depth set of models.

The Problem

- **Data Transportation Services** are complicated and costly
- **Network Mishaps and Data Breakages** occur as information increases.
- **The Underserved Segment** of data transportation and distribution pay a premium

Challenges

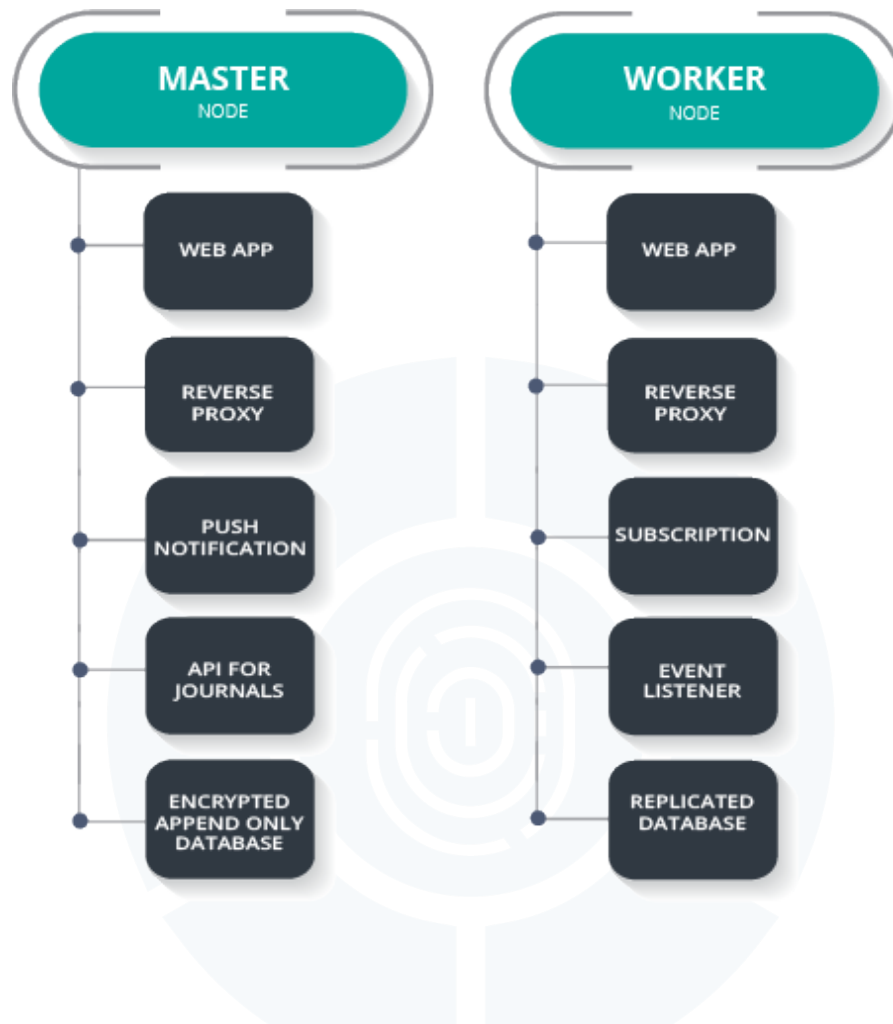
- Moving data in a highly secure fashion from an on-premise legacy system to a cloud-based system is the modern challenge. Most migrations are too expensive. Tools and knowledge are limited, and execution can take an exorbitant amount of time. The market wants to transport the data without breaking anything and then use the currently available cloud tools. Corporations invest time and effort into database search tools to mine the data they need for running their business efficiently.
- Challenges, drivers and regulations that impact the architecture are discussed here. As usual, there are perceived risks in early adoption and likely disruption to existing industry practices. Sometimes it is hard to provide evidence of business gains or the economic impact the proposed solution may have. There are some shortages in governance, which has been the landmark with blockchain, and we can propose a clear understanding on how **DataKNOX™** architecture can be governed.

The Alontrus Solution

DataKNOX™ is an open source distributed datafile system with high encryption. Unlike blockchain, the **DataKNOX™** distributed ledger does not promote its data in structured blocks. Instead, it uses Distributed Ledger Technology. The ledger is distributed across multiple sites, regions, and / or participants. The **DataKNOX™** distributed ledger model describes exactly how one would envision a blockchain solution. The technology in this section is derived from our deep knowledge of blockchains, combined with our long history gathering enterprise requirements and designing solutions, mixed with a healthy layer of motivation. **DataKNOX™** was built extending a few known open source products:

Benefits

- Users can create and maintain multiple networks with multiple channels (Smartphones, Internet, IoT devices) in a highly secure environment.
- The small footprint of **DataKNOX™** reduces data and security volatility.
- As the ledger expands immensely, the **DataKNOX™** cold storage mechanism pushes older data into vaults, keeping the nodes and network at new state efficiency.
- Users can conveniently add journals to the ledger 'lake'.
- Multiple copies minimize data corruption or accidental deletion risks
- Request ad hoc queries at any point in the lifecycle of the ledger
- Conveniently audit, track, manage and reconcile ledger entries using 'analytics'
- Benefit SMB's to Enterprise companies that are looking for a cloud migration path. It can reduce overhead costs for both infrastructure and personnel.
- Can be used as a means of transporting the critical data in legacy systems to the cloud where you can perform analysis with all the new gen tools. **All in real time.**
- Can be utilized for encrypted chat or peer-2-peer token exchange.
- Provides a decentralized, immutable, append only database with providence. Any industry or agency where data history or genesis is important would benefit from **DataKNOX™** As an example, Origin of food, metals, ethical mining, electronic parts, clothing, etc.



Nginx (TLS)

Reverse Proxy

Node.JS

Node-RED (TLS)

Encryption/Decryption Hashing functions

Dashboard functions

DBLite - SQLite3 (modified to be encrypted, append only)

Built in Ledger / HL7 FHIR

Database level / Row level encryption

Rows keep Hashkeys of previous

DBLite - REDIS (fully encrypted)

Pub-Sub (with encryption)

Can be substituted with MQTT for IoT devices

Can be substituted with Kafka

Cloud Provider

AWS

Alibaba Cloud

Can use SDN

Additional Firewall/No-Trust architecture

Built around the notion of distrust, it supports all zero-trust architectures

And firewalls like Palo Alto

API

RESTful (JSON only)

Interaction with Secure Storage / BLOB storage

Docker container (if necessary)

Cloud DevOps

Data

Encrypted and hashed at rest

Encrypted in motion

A dashboard view connects the dots between events, activities and journals (incremental patient data).

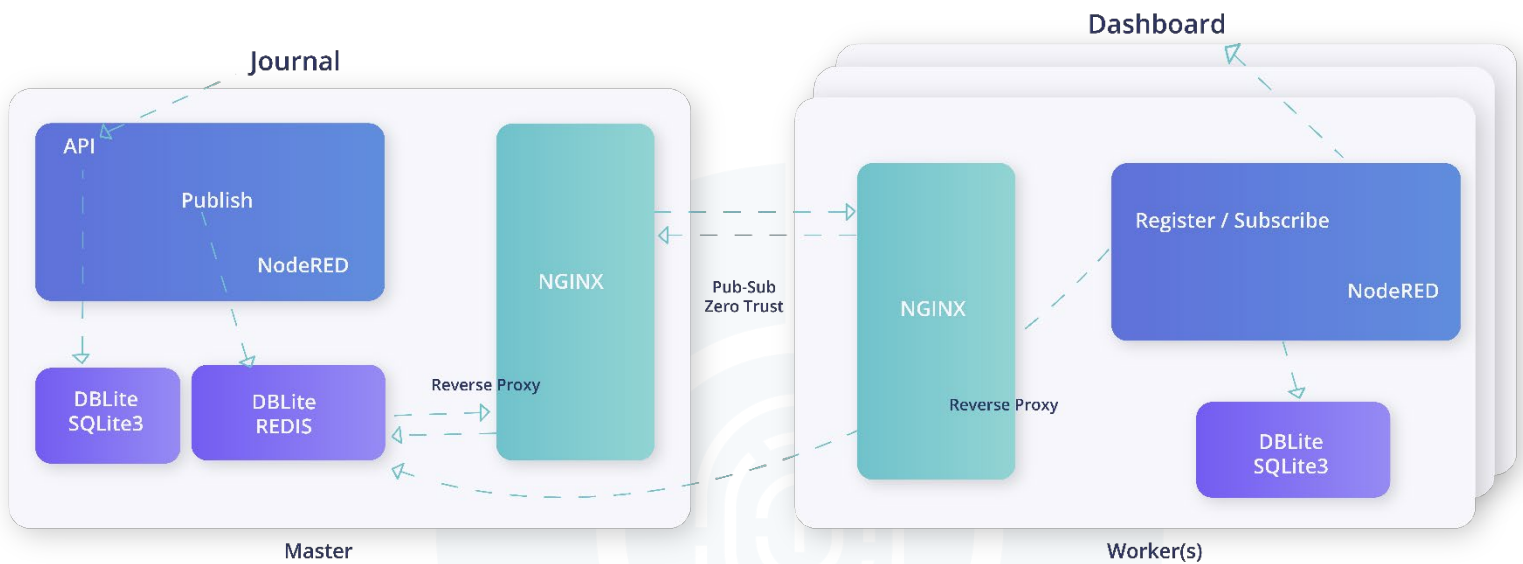


Figure 1 - Master and Worker nodes are networked as illustrated.

Resource/ Support Requirements

Knowledge of Node.JS (essentially Server-side JavaScript)

Knowledge of SQL

Node-RED skills are suggested

A clear understanding of Zero-Trust architecture