Apache
ResilientDB
Incubating

ResilientDB Fullstack

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ExpoLab
Creativity Unfolded

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From LAMP to Next.js: Modern Full-Stack Evolution

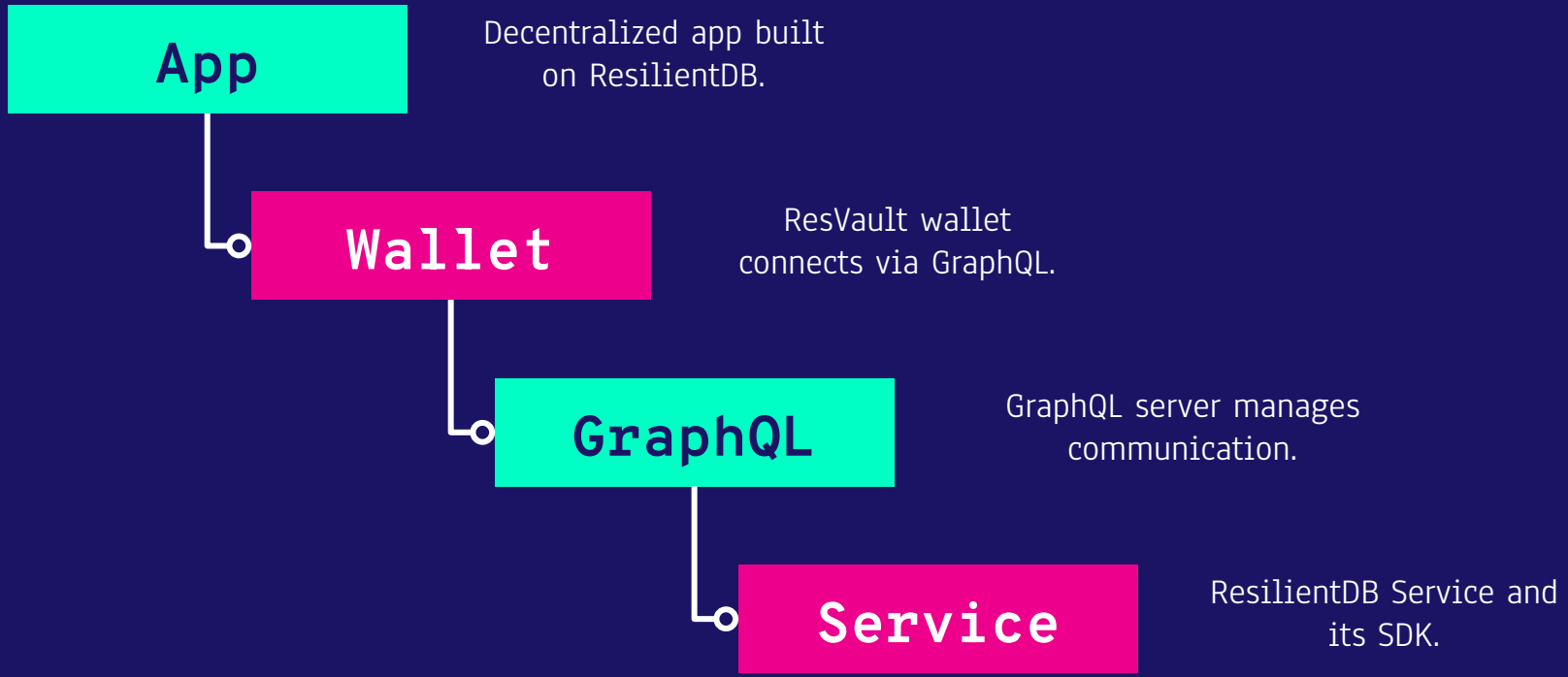
Full-stack development has evolved from the LAMP stack, powering early dynamic sites, to the MERN stack, which improved speed and user experience with JavaScript. Today, modern frameworks like Next.js by Vercel and Nuxt.js for Vue bring server-side rendering and actions to the forefront, offering faster, more efficient web apps with better SEO and scalability. These advancements make building powerful, dynamic web applications easier than ever.

What is ResilientDB Fullstack?

ResilientDB Fullstack comprises applications built on ResilientDB, utilizing ResVault as the wallet interface for seamless interaction via the ResilientDB GraphQL server. Web applications can effortlessly connect with ResVault using the provided web SDK.

Furthermore, ResilientDB enhances development flexibility by offering SDK support for languages like Python, Rust, and TypeScript, facilitating easy integration and application development with ResilientDB.

ResilientDB Fullstack Components



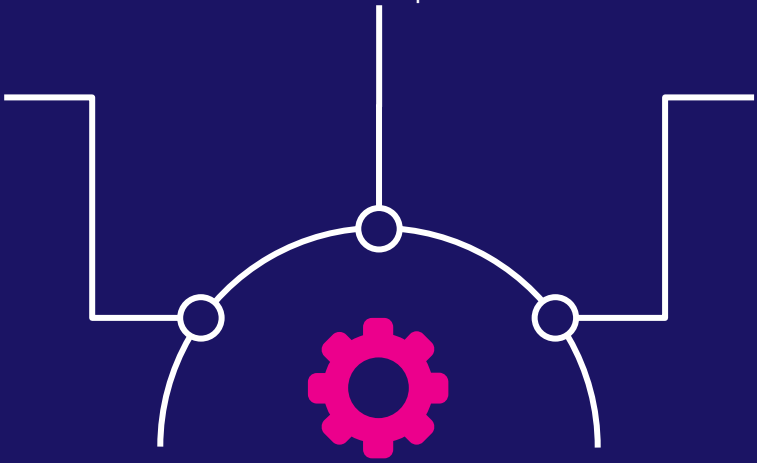
ResilientDB Service and SDK

Crow HTTP server

HTTP server exposes ResilientDB's key-value service endpoints.

KV service

ResilientDB Key-Value service offers efficient data management.



Python SDK

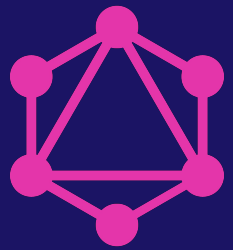
Python SDK utilizes HTTP server to connect with key-value service.

ResilientDB SDK Support

	Python	Rust	Typescript
Status	Stable	Alpha	Alpha
Usage	GitHub	Cargo	NPM

ResilientDB GraphQL Server

ResilientDB GraphQL server offers efficient data retrieval by allowing specific data requests, reducing over-fetching. Its single endpoint simplifies API structure compared to REST's multiple endpoints. The GraphQL Playground further enhances development with an interactive interface for testing and exploring APIs.



Repo: https://github.com/apache/incubator-resilientdb-graphql

Query vs Mutation

Query

GraphQL

Fetches data without changing it, allowing precise and efficient data retrieval.

Mutation

GraphQL

Modifies data, handling create, update, and delete operations, altering data state.

ResilientDB GraphQL Queries & Mutations

Query

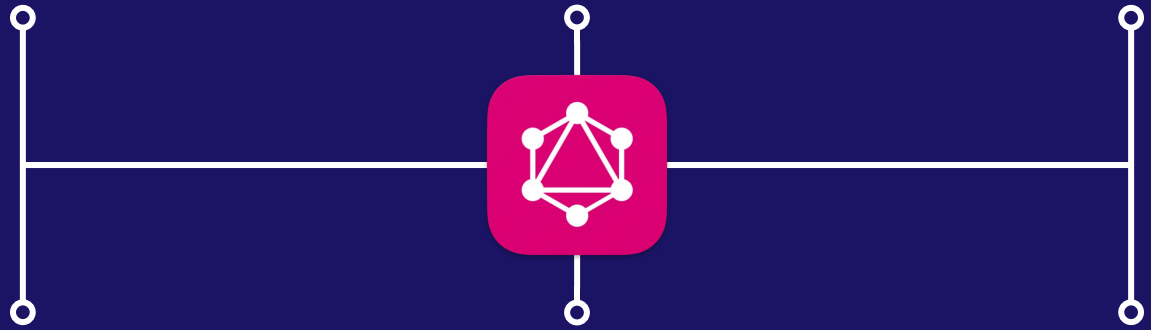
getTransaction

Mutation

postTransaction

Mutation

updateTransaction



Query

getFilteredTransactions

Mutation

generateKeys

Mutation

updateMultipleTransaction

What is ResVault?

ResVault is a chrome extension that serves as a wallet for ResilientDB. The wallet allows you to commit and retrieve data from ResilientDB and provides user account creation and deletion. It communicates with ResilientDB using the ResilientDB GraphQL server and enables transaction logging.

So, ResVault is quite similar to Metamask in terms of functionality.

Repo: https://github.com/apache/incubator-resilientdb-resvault

What is MetaMask?

MetaMask is a software cryptocurrency wallet used to interact with the Ethereum blockchain. It allows users to access their Ethereum wallet through a browser extension, which can then be used to interact with decentralized applications.

URL: https://metamask.io

ResVault Features

Txns

Submit transactions via ResVault.

History

Access history to view transactions.

Account

Create and log into accounts easily.

Remove

Effortlessly delete your account.

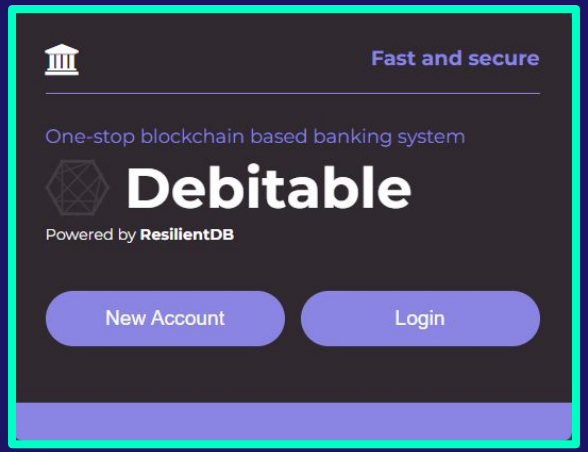
Our Showcase

Resilient Applications

Powered by **ResVault** and **GraphQL**

What is Debitable?

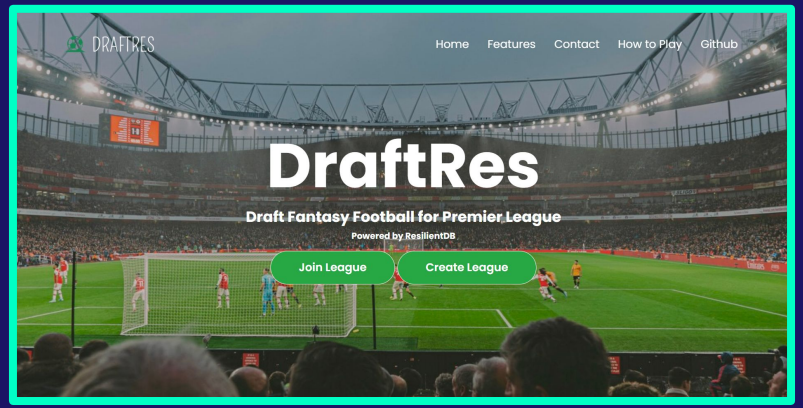
Debitable is a decentralized banking application built on top of ResilientDB. It utilizes ResVault to communicate with the ResilientDB Backend and provides features such as account creation, login and transfer of funds.



Live URL: https://debitable.resilientdb.com

What is DraftRes?

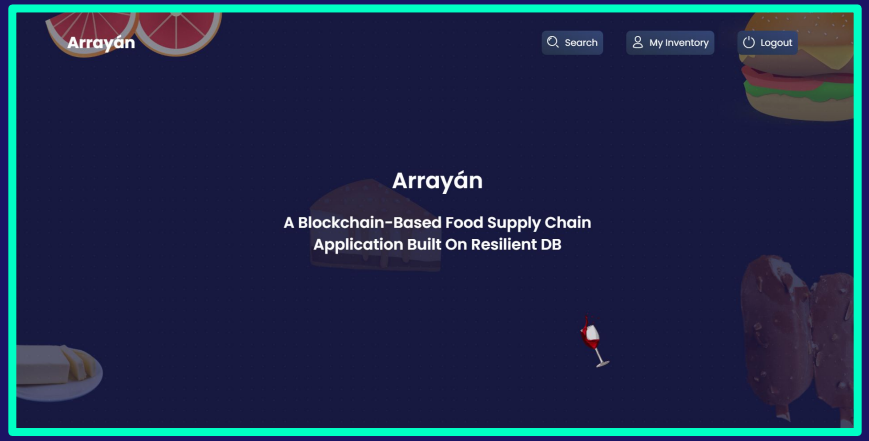
DraftRes is a fantasy football application built on top of ResilientDB. It utilizes ResVault to communicate with ResilientDB Backend and provides features such as team draft, room creation, and room joining to play with other users.



Live URL: https://draftres.resilientdb.com

What is Arrayán?

Arrayán is an innovative solution that digitizes the food supply chain through a blockchain app, fostering industrial symbiosis between the processing food industry, green hydrogen producers, and cosmetic companies.

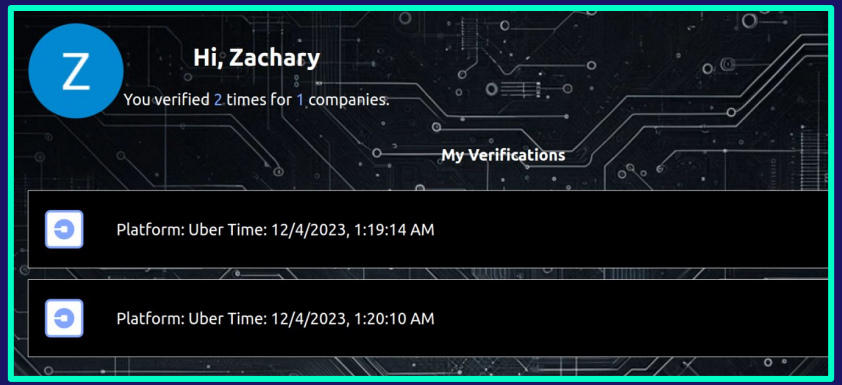


AIFS Winner

Live URL: https://arrayan.resilientdb.com

What is Echo?

Echo is a pioneering app that transforms contractor verification by combining advanced facial recognition with blockchain security. It offers an efficient, accurate ecosystem that enhances trust and mobility across service platforms, ensuring effortless and reliable verification.

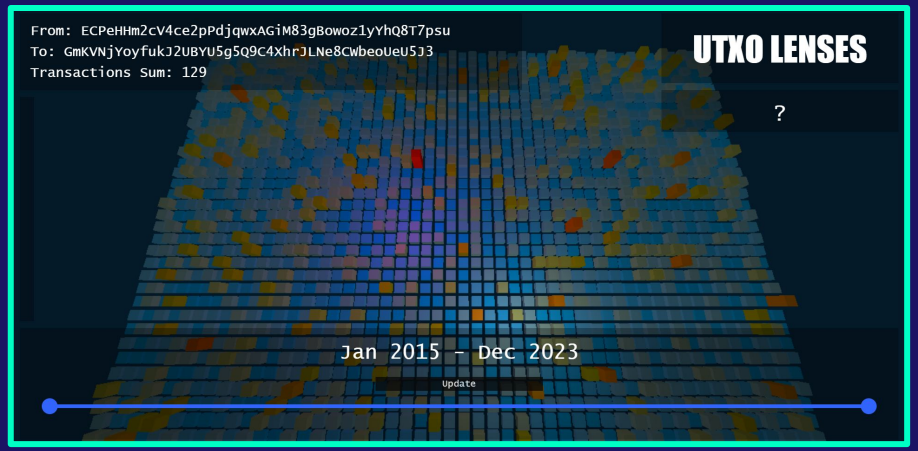


HackMIT Winner

Live URL: https://echo-app.resilientdb.com

What is UTXO Lenses?

UTXO Lenses enhances ResilientDB's visualization by representing user transactions as a 3D Heatmap. This innovative feature transforms complex transaction data into intuitive, multi-dimensional visual maps, offering clear insights into transaction patterns and user interactions.



Live URL: https://utxo-lenses.resilientdb.com

What is ResCounty?

ResCounty is a blockchain-based land registration system that simplifies property ownership. It uses ResVault for communication with ResilientDB and features User Registration, Buyer and Seller Dashboards, and Payments Processing, enhancing transaction transparency and security.

Live URL: https://rescounty.resilientdb.com

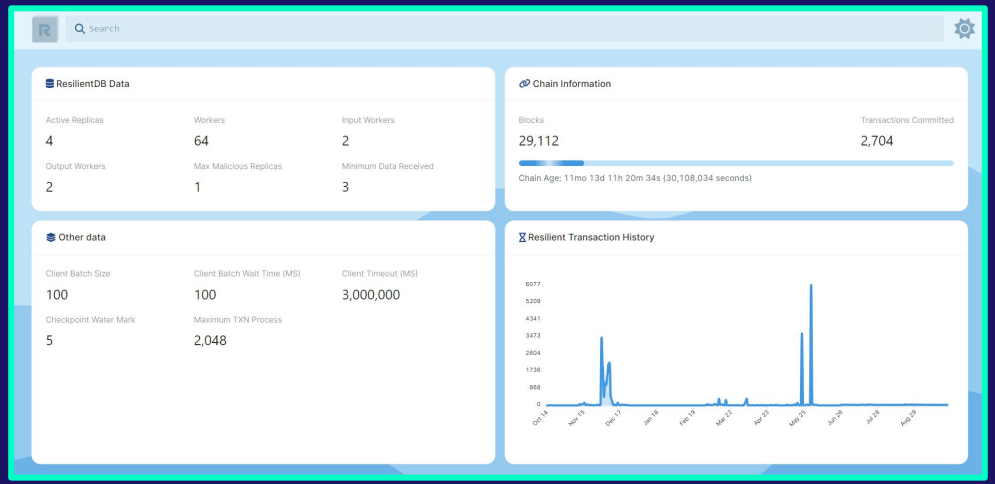
What is CrypGo?

CrypGo is a streamlined mobile wallet app for easy money transactions. It connects with ResilientDB via GraphQL, featuring Send/Receive Transactions, User Registration, and a complete transaction history view

URL: CrypGo - blog.resilientdb.com

What is Explorer?

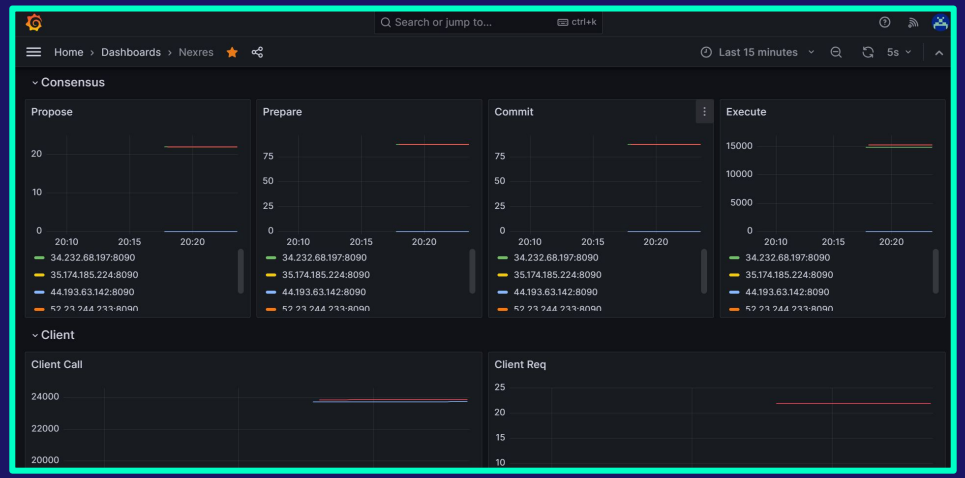
The Explorer, a tool for ResilientDB blockchain, displays blocks, transaction details, ledger configurations, and a transaction history chart, offering intuitive and informative blockchain visualization.



Live URL: https://explorer.resilientdb.com

What is Monitoring?

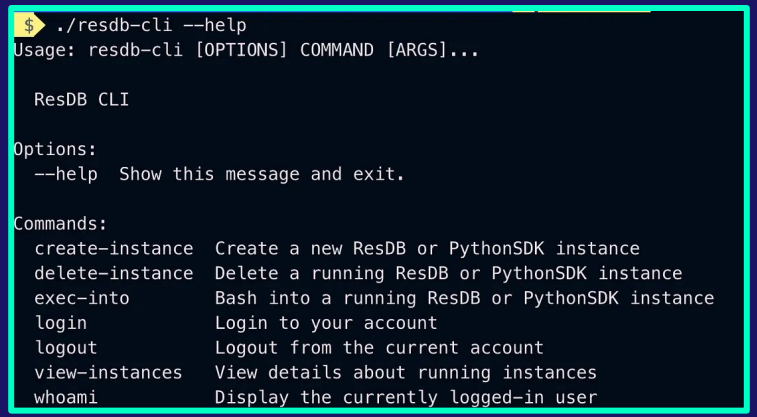
Monitoring for ResilientDB is a concise, real-time Grafana dashboard utilizing Prometheus for system insights, offering efficient and intuitive visualizations for streamlined troubleshooting.



Live URL: https://monitoring.resilientdb.com

What is ResilientDB CLI?

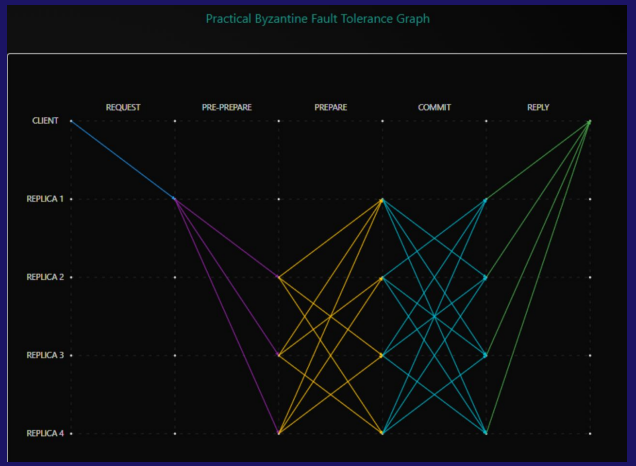
ResilientDB CLI enhances user experience with cutting-edge deployment tools, streamlining the ResilientDB journey. It features improved CLI capabilities and introduces new Docker images, simplifying and refining the deployment process.



URL: ResilientDB CLI - Blog

What is ResView?

ResView visualizes the PBFT process in Resilient DB, showing transaction stats graphically. It supports local and, with modifications, deployed instances. It's aimed at those learning about PBFT consensus in ResilientDB and developers monitoring system metrics.



URL: ResView - Blog

More Applications

Check out more Resilient Applications on
https://github.com/ResilientApp

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What are Smart Contracts?

- Self-executing contracts with predefined rules
- Stored and executed on blockchain networks
- No intermediaries; trustless and decentralized
- Automates transactions and enforces agreements
- Commonly used in decentralized finance (DeFi) and supply chain management

Smart Contracts CLI

- Node.js-based Command Line Interface (CLI)
- Part of the ResilientEcosystem project suite
- Supports smart contract compilation, deployment, and interaction
- Leverages Solc and Bazel for automation
- Key features: path management, contract configuration, and ownership handling

SCAN ME

Smart Contracts CLI

```
gopuman@node0:~/ResContract$ rescontract
Usage: rescontract [options] [command]

ResContract CLI - Manage smart contracts in ResilientDB

Options:
  -V, --version      output the version number
  -h, --help         display help for command

Commands:
  create [options]   Create a new account
  compile [options]  Compile a .sol file to a .json file
  deploy [options]   Deploy a smart contract
  execute [options]  Execute a smart contract function
  help [command]     display help for command
```

Smart Contracts GraphQL API

- GraphQL API for managing smart contracts in ResilientEcosystem
- Simplifies interaction with ResilientDB smart contracts
- Supports queries and mutations for flexible data handling
- Single endpoint access for a streamlined API structure

ResDB-ORM

- Python-based ORM for ResilientDB
- Simplifies database CRUD operations
- Supports both versioned and non-versioned key-value operations
- Enables interaction with ResilientDB's key-value store via Python SDK

SCAN ME

ResilientDB KV-Service Setup

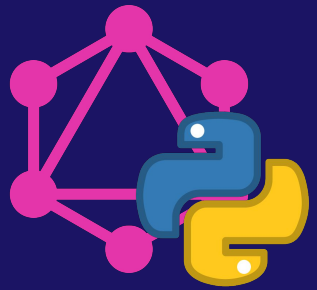
- Requirements: Ubuntu 20.04 or higher (recommended Ubuntu 22.04)
- Clone https://github.com/apache/incubator-resilientdb
- Then run, ./INSTALL.sh to install the dependencies
- Run ResilientDB KV service with: ./service/tools/kv/server_tools/start_kv_service.sh

ResilientDB Crow Setup

- Requirements: Python 3.10 or higher, build-essential, python3.10-dev, apt-transport-https, curl, gnupg, bazel
- Clone https://github.com/apache/incubator-resilientdb-graphql
- Then run the following command, bazel build service/http_server:crow_service_main
- Start crow server with bazel-bin/service/http_server/crow_service_main service/tools/config/interface/client.config service/http_server/server_config.config

ResilientDB GraphQL Setup

- The GraphQL server is bundled with the crow service (available in the same repository)
- Install requirements with, pip install -r requirements.txt
- Start with python3 app.py



Complete Tutorial

Blog URL: https://blog.resilientdb.com

Further Goals

- **ResVault User Interface Upgrade:** Combine modal-based interaction, account export and restoration for a more user-friendly experience.
- **GraphQL Server Enhancement:** Enable real-time tracking of transactions with subscription support in the GraphQL server.
- **Framework Support Expansion:** Introduce ResVault SDK support for key web frameworks: React, Vue, and Angular.

Thank you!