

Prometheus

free forever files for any EOSIO blockchain
v 0.8

Background

Decentralized and/or blockchain filestorage solutions include IPFS, Filecoin, Sia, Storj, and Swarm. Some of these projects receiving astonishing levels of investment -- hundreds of millions of dollars worth. However for many use cases, Prometheus seems like the better solution, thanks in large part to the power of EOSIO.

Introduction

Prometheus encodes files into EOSIO transactions and pushes the transactions onto an EOSIO blockchain. One file can be spread across many transactions and many blocks. 800MB video files have been successfully uploaded to the JungleTestnet. "Download nodes" receive http requests, and based on the filename, locate and reassemble all the shards and serve a file.

***** This approach allows the blockchain to be invisible to a web browser. The browser just sees a file whose suffix expresses any standard file type: .jpg, .png, .pdf, .html, etc. *****

Modules

Upload Nodes

Servers accessible by URLs provide the interface and logic and push files onto the blockchain.

- Encode the file using the encoding method chosen by the users.
- Make calls to the Prometheus smart contract to send pieces of the file out to the blockchain in transaction data.
- Monitor the successful upload of various pieces of the file.
- Create a filename based on a block which contain a map of the file, plus (if needed) some encoding information. Without the filename is it difficult, and possibly impossible, to locate a file uploaded by Prometheus.
- (Optional) wait for the Last Irreversible Blocks.
- (In Development) API services as well.

Smart Contract

prometheusup

- upload - a transaction containing all or part of the encoded file.

prometeusfi

- publish - records a filename on chain along with some additional data about the file. This makes files easier to find.

Download Nodes

Servers accessible by URLs decode, assemble and serve files. Once a file is uploaded any download node can be the root of the URL: <download node URL>[:port]/<filename>

- Receive http requests for a Prometheus file with a filename.
- Assemble and decode files and serve them to the requester.
- Stream large video and music files.

Features

- No RAM required! Only uses NET while upload in progress
- Browser-ready URLs for uploaded files
- 100% file immutability
- LIB confirmation
- Video/Music streaming
- Micro-fork resilient
- Filename publishing to publicize files
- Encrypting data
- Easy to add new encoding / encryption algorithms
- No History Node required
- Customizable upload delays and shard size to optimize NET

Positioning

Prometheus offers the most readily accessible file storage solution for EOSIO application.

Dapps which need to store large amounts of information which does not often change may choose Prometheus over RAM.

Many different application can be built on top of Prometheus.

Prometheus-based Dapps Applications

Ideas

Prometheus can be the basis for many dapps. Here are some ideas:

- * ***Blockchain as a webserver***: Create a smart contract to simulate DNS functionality.
- * ***Drop-Box like functionality***: Simulate folder structures and create an access layer using encryption.
- * ***Pinterest***: A smart contract that allows collecting and sharing Prometheus Links.
- * ***Website Archive Service***: The permanence of Prometheus makes it a good candidate for website archive services. A simple dapp can resolve DNS-like names to on-chain web pages.
- * ***Data integrity applications***:

- **Data Verification applications (like Wordproof)** - To date, blockchain based data verification applications have only stored hashes. Prometheus allows content (encrypted or not) to be easily stored. This has the potential to vastly improve the scope of blockchain based data verification.

- **Software download** - Prometheus may be a good solution for storage of software for download. Downloaders can be sure that the content has not been modified.

* **Versioning**: Create a middle layer to simulate file versioning, like github or IPFS.

We may use the FIRE token to sponsor development of Prometheus based applications.

PupShare

The PupShare Gallery, visible now on pupload.io, is launching together with Prometheus. It is one example of many applications which can be built on Prometheus. Users can share content, categorize it, upvote and downvote, and comment.

FIRE Token

We will distribute a FIRE token to Prometheus users. The token will power the pupshare gallery and other future applications. Until the upload and download software goes fully open-source, FIRE tokens will also be required to unlock Premium upload features.

Most importantly, the FIRE token will be used to incentivize providers of Prometheus Nodes.

Maximum Total Supply: 1 billion

As a multi-chain application, Prometheus will see part of its Maximum supply on various chains.

Chain Supply:

EOS -	300M FIRE (30%)
TELOS -	100M FIRE (10%)
Meet.one -	100M FIRE (10%)

10% of FIRE tokens are reserved for developers. The rest (40%) are reserves for tentative launches of other chains.

When a new chain supply is issued, the EOS chain supply will be decreased. This is the approach taken by the multi-chain blockchain game Prospectors.

Prometheus API

A Prometheus API will allow other Dapps to upload files using Prometheus and retrieve the filename. This may be a good alternative to RAM for Dapps which need to store large amounts of information, and modify it only intermittently.

Roadmap

Stage 1 - Introduction - Prometheus deployed to EOS mainnet, Telos, Meetone
_____ to _____ (tentatively)

goals:

- Introduce Technology
- Community Feedback
- Prepare network for possible increase in NET usage

Stage 2 - Early Distribution - FIRE Token distributed to users and node providers
_____ to _____ (tentatively)

goals:

- Recruit 1 to 3 download providers
- Create incentive system for download providers
- Refine Product

Stage 3 - Distribution - Opensource upload, slower distribution
_____ to _____ (tentatively)

goals:

- Prometheus API
- Partially Opensource
- Recruit 3 to 10 download providers
- Recruit 1 to 3 upload providers
- Launch on additional EOSIO chains
- FIRE token IBC

Stage 4 - decentralized
_____ to _____ (tentatively)

goals:

- Full decentralization
- Fully open source

Comparison Other Decentralized Storage Solutions

	Prometheus	Bit Torrent	IPFS	FileCoin	Storj / Sia
Short Description	On EOSIO blockchains	Super-fast peer-to-peer Download System	optimized content-addressable peer-to-peer storage, with versioning	an economic system for IPFS	peer to peer file systems with ETH economies
Accessible to EOSIO Dapps	very high	low	medium		low
Download speed	medium	very high	high		medium
On Chain	yes	no	no		no
immutable	yes	no	yes		yes
versioning	possible	no	yes		no
Cost of usage	Only NET while uploading	Availability of Voluntary Seeders	Your node + Voluntary others	ETH tokens	ETH tokens

Discussion of NET and Blockchain Size

Widespread use of Prometheus will create two challenges for the EOSIO communities:

- For the first time, NET may become a scarce resource
- The size of the blockchain will grow more quickly

Both of these challenges will be faced with without Prometheus, assuming EOSIO blockchains are successful (which seems likely!).

EOSIO technology allows the blockchain to grow as an absolute (and unlikely) maximum of 1 MB / second. This translates to 600 GB a week, or 2.6 TB a month.

By comparison, the entire EOSIO blockchain from June 2018 to January 2020 (two and half years) is 1 TB (a hyperion history node is an additional 2 TB). Telos from Dec 2018 to January 2020 (two years) is 80 GB.

So, it's a lot, but no insurmountable. Block Producers should find the means to scale at the rate that the software allows.

Blockchain Pruning

Some blockchains, including Bitcoin, allow "pruning". It seems likely that eventually some nodes on some EOSIO blockchains will only store part of the blockchain. Hypothetical solutions include referencing the nodes that still store the full blockchain, re-uploading important files, and caching.

Harmful / Illegal Content

Download nodes host their own blacklists, and can easily blacklist files. This is similar to the approach taken by the steem blockchain, where anything can get onto the chain, but the popular front end for the steemit blockchain, <https://steemit.com/>, blacklists illegal and other objectionable content.

Contact

<https://pupload.io>

<https://pupshare.io>

Telegram: https://t.me/Prometheus_io

Prometheus is being developed and will be operated by Fire Labs BVI