

aelf Public Testnet and Supporting Features Introduction



V1.0

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Content

1. aelf Overview	4
1.1 aelf Blockchain System Introduction	4
1.2 Highlights of aelf's Blockchain System	4
2. Competitive Analysis of aelf's Technological Performance	5
2.1 Smart Contract Performance Comparison with ETH	5
2.2 Comprehensive Comparison	6
2.3 Comparison of Cross-chain Solutions - aelf, Cosmos & Polkadot	7
2.3.1 Cross-chain Solutions Comparison	7
2.3.2 Cross-chain Asset Comparison	8
2.3.2.1 aelf's Cross-chain Assets Introduction	8
2.3.2.2 aelf's Cross-chain Asset Transaction Mechanism	8
2.3.2.3 Cross-chain Asset Call Solution Comparison	9
3. Introduction to aelf's Public Testnet and Supporting Features	10
3.1 Joining aelf's Public Testnet	11
3.1.1 Procedures for Accessing aelf Public Testnet	11
3.2 aelf Block Explorer	11
3.2.1 Overview	11
3.2.2 Block Explorer Addresses	11
3.2.3 Block Explorer Interface	12
3.2.3.1 View the Whole Network Status	12
3.2.3.2 View Contracts and History	13
3.2.3.3 View Block Information and Detailed Transactions	14
3.2.3.4 Check Addresses	15
3.2.3.5 Join Node Election and Vote	15
3.2.3.6 Purchase Resource	16
3.2.3.7 Proposal	17
3.3 aelf IOS / Android Wallet	19
3.3.1 Overview	19
3.3.2 Wallet Download Link	19
3.3.3 Interface	20
3.3.3.1 Preview	20

3.3.3.2 Cross-chain Transfer Operation Preview	21
3.4 aelf Web Wallet	23
3.4.1 Overview	23
3.4.2 Web Wallet Address	23
3.4.3.1 aelf Web Wallet Overview	23
3.4.3.2 How to use aelf Web Wallet for cross-chain transfer	24
3.5 Apply for aelf Test Tokens	25
4. aelf Public Testnet Node Election	26
4.1 Application Requirement	26
4.2 Testnet Node Election Application Process	26
4.2.1 Building a Node	26
4.2.2 Downloading and Installing the Night ELF Plug-in	26
4.2.3 Receiving Test Tokens	26
4.2.4 Apply to Become a Node	27

1. aelf Overview

1.1 aelf Blockchain System Introduction

aelf is a decentralized cloud computing platform designed to help clients easily and efficiently build decentralized applications (DApps) using blockchain technology. In traditional systems, we use services such as Amazon's cloud deployment services. In the blockchain domain, the system can be hosted on aelf's decentralized cloud computing blockchain network.

aelf provides a high-performance smart contract platform that supports cross-chain interactions. Each application can be deployed independently on a single, designated chain to achieve true resource segregation. The ecosystem consists of a large number of contracts, supported by a well designed economic model and governance system.

1.2 Highlights of aelf's Blockchain System

1. The world's first parallel computing system

aelf's nodes are "cluster" data centers that scale up to provide flexible computing power and powerful parallel processing.

2. High-performance comparable to "centralized servers"

aelf's nodes utilize parallel processing, separating the database and processing components. aelf's testnet reached 15,000 TPS, far exceeding the industry standard.

3. Innovative cross-chain interoperability mechanism

aelf's cross-chain technology is constructed based on a multi-level main chain - side chain system. Information from the side chains is preserved in a merkle root through the main chain indexing mechanism, allowing interoperability with other side chains and other public chains.

4. Modular development components

aelf's development components are designed with a modular structure, creating a practical and efficient deployment system. Developers can quickly build their own blockchain systems or develop smart contracts and dApps on aelf's blockchain system.

5. Developer friendly deployment environment

The main development language and mature IDE were selected to ensure that the developer friendly environment is maintained. CodeGenerator greatly reduces the cost of contract development and provides professional development tools and technical documentation, creating a smooth learning curve for developers building on aelf.

2. Competitive Analysis of aelf's Technological Performance

2.1 Smart Contract Performance Comparison with ETH

Under the same machine configuration, aelf's smart contract performance is up to 1,000 times faster than Ethereum's EVM.

Operation method	Operation Times	Ethereum EVM	aelf	Times
Cyclic Addition and Division	10 Million	14,236.81ms	84.01ms	169 Times
Empty Loop	1 Million	639.17ms	0.52ms	1,223 Times

Comparison of aelf and ETH smart contract performance

Machine Configuration: OS Ubuntu 16.04; OEMU Virtual CPU, 2 CPU, 2 Logical and 2 physical cores; CPU MHz: 2,194,916; Cache Size: 16,384 KB

The relevant code for this performance test can be found at:

<https://github.com/aelfProject/aelf/blob/dev/bench/aelf.Benchmark.PerformanceTestContract/>

2.2 Comprehensive Comparison

aelf compared 14 indicators consensus, type, programming language, contract engine, smart contract language, community governance authority, TPS, consensus efficiency, scalability, archiving support, cross-chain support, parallel processing support, customization, protocol upgrade which Ethereum and EOS.

	aelf	Ethereum	EOS
Consensus	AEDPOS	POW+POS	DPOS
Type	Public Chain	Public Chain	Public Chain
Programming Language	C#	Go	C++
Contract Engine	Native	EVM	Webassembly
Smart contract language	C# (and supporting other languages)	Solidity	C++
Community governance authority	Self Governance	N/A	N/A
TPS	14968	100	1000-8000
Consensus Efficiency	500ms	14s	500ms
Scalability	scale-up and scale-out	scale-up	scale up
Archiving Support	Ledger data archiving	N/A	N/A
Cross-chain Support	Native across chain	Contract	Contract
Parallel Processing Support	Support	N/A	Support
Customization	Highly customized	Hard	Hard
Protocol Upgrade	Easy	Hard	Hard

Overall comparison of aelf, ETH, and EOS

2.3 Comparison of Cross-chain Solutions - aelf, Cosmos & Polkadot

2.3.1 Cross-chain Solutions Comparison

	aelf	Cosmos	Polkadot
Security	The main chain and side chains share security through joint mining (each chain is required to ensure their own security should they not adopt joint mining)	Each chain must supply its own validator in order to guarantee security	Parachain shares security, any chain connected by the transition bridge must ensure their own security
Consensus	Supports multiple consensus algorithms	Supports multiple consensus algorithms (ACBI)	Supports multiple consensus algorithms
Parallel Processing	Parallel processing + inter-chain transaction	Parallel processing	Parallel processing
Economic Model	Deflation Model through a burn function. Diversified governance rules balance all parties' rights and interests. Each chain has its own governance system, while also participating in the main chain economic system, such as supporting dividends and token issuance.	Inflation model There is 7% ~ 20% inflation every year Each chain has its own governance	Inflation model The cost may be relatively high according to the description(Parallel chain reserve is large)
Cross-chain focus	Performance and transaction verification. This leads to functions such as cross-chain transfers and authorization verification. After a certain action has been confirmed to have occurred on chain A, an action on chain B can then occur - this is equivalent to verifying a user on chain A	Cross-chain Asset Transaction	Cross-chain Infrastructure
Interoperability	Transfer of tokens and/or data	Transfer of tokens and/or data	Cross-chain Infrastructure
Access Methods	Stake ELF to apply for access	Stake ATOM Auction for access	Stake DOT Auction for access

Comparison of aelf, Cosmos and Polkadot Cross-chain Solutions

2.3.2 Cross-chain Asset Comparison

2.3.2.1 aelf's Cross-chain Assets Introduction

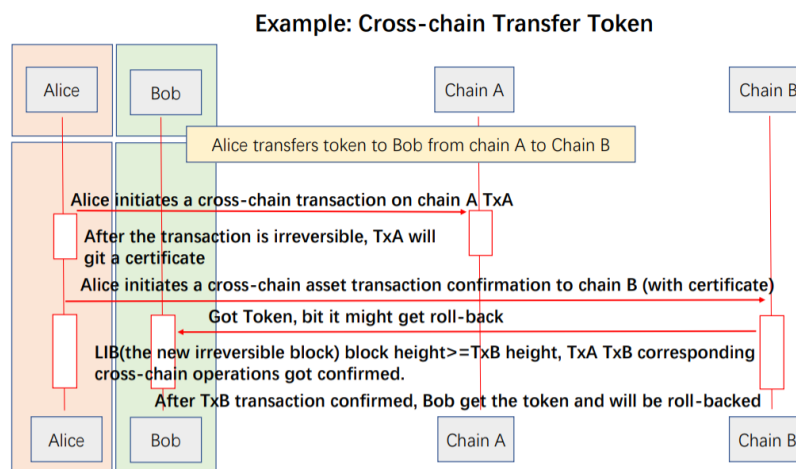
1. aelf's main chain and side chain are isomorphic chains as they both maintain a ledger with multiple asset types. The difference between a side chain and the main chain is that the main chain maintains the index of all side chains and determines which assets are recorded in the multi-asset ledger.
2. Each side chain can receive assets from other side chains, and can also transfer its own assets to other side chains.
3. Direct communication between the main chain and any side chain can occur; For side chain to side chain communication to occur, a relay through the main chain must be setup.

2.3.2.2 aelf's Cross-chain Asset Transaction Mechanism

1. Token transfer in/out and cross-chain transfer via multiToken contract.
2. Consensus authentication between production nodes to complete cross-chain transfers.

Example: Alice in chain A needs to transfer asset X to Bob in chain B as an example

- a. Alice initiates a cross-chain transaction on chain A
- b. Asset X will be destroyed in chain A and returned to Alice with a certificate
- c. After the transaction is irreversible, Alice initiates a cross-chain asset transfer transaction to chain B
- d. Chain B performs the asset receiving operation. Asset X is regenerated on chain B. Bob receives asset X on chain B.



Schematic diagram of aelf's cross-chain asset transaction mechanism

2.3.2.3 Cross-chain Asset Call Solution Comparison

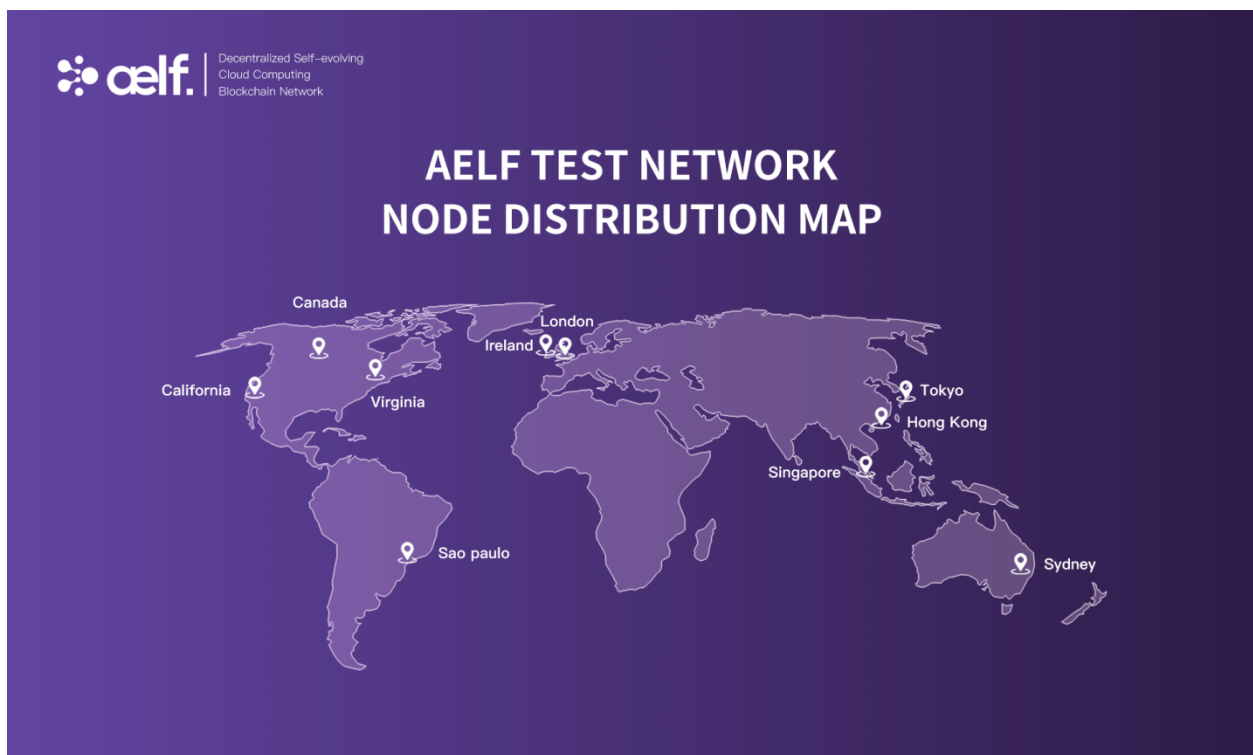
In aelf's ecosystem, the main chain and side chain can communicate directly between chains. side chains only need to communicate through the main chain index, and can share the security of the main chain, focusing on performance and cross-chain verification.

- In Cosmos' ecosystem, cross-chain communication is conducted indirectly through the Hub. The security is completely dependent on the Hub, and Cosmos only focuses on asset transactions.
- Polkadot communicates via Parachain or a relay chain. After Parachain accesses RelayChain, Parachain can share security with RelayChain, but any chain connected by the bridge needs to ensure its own security. Polkadot can be used for cross-chain asset transactions.

3. Introduction to aelf's Public Testnet and Supporting Features

The public testnet is a mature, easy-to-use, publicly accessible testnet with complete functionality. It is comprised of a complete blockchain smart contract system, development kits, development documentations, among other features. Since launch, the network has been stable with perfect cross-chain implementation, and the economic system has been comprehensively functional without fail. Performance in security, scalability and efficiency has been held to a high standard.

Currently, the testnet nodes are distributed in 10 different countries and regions around the world:



aelf's Public Testnet Node Distribution

The current network provides the following functions and tools:

- Build a local test environment, test nodes, and side chains
- Write, issue and execute smart contracts, and efficiently build individual blockchain systems
- Create DApps in aelf's ecosystem with the aid of development templates
- Perform multi-assets on-chain/cross-chain transactions in the official wallet
- Query main chain/side chain block and transaction details on the Block Explorer

3.1 Joining aelf's Public Testnet

There are two methods available to run an aelf node:

- **Docker** (recommended method)
- **Binaries** available on Github.

3.1.1 Procedures for Accessing aelf Public Testnet

You can check the procedures on aelf developer documentation:

<https://docs.aelf.io/v/dev/resources/testnet>

1. Setup the database
2. Node configuration
3. Running a full node with Docker
4. Running a full node with the binary release
5. Check the node
6. Run side chains

We currently support two key-value databases to store node data: Redis and SSDB. During the testnet we will only provide snapshots for SSDB. We will configure two SSDB instances: one for the chain database and another for the state database (you can run these on different machines for better performance).

3.2 aelf Block Explorer

3.2.1 Overview

The aelf Block Explorer is used to monitor the main chain and side chain, allowing users to search for specific information, and participate in the aelf ecosystem.

1. **Search:** basic data such as the number of transactions per minute, block height, total transaction volume, the total number of token holders, node applications, side chains;
2. **Query:** specific information regarding block height, transaction ID, and wallet addresses;
3. **Network Participation:** Grow the aelf ecosystem through joining proposals, node elections, resource purchasing, and viewing contracts.

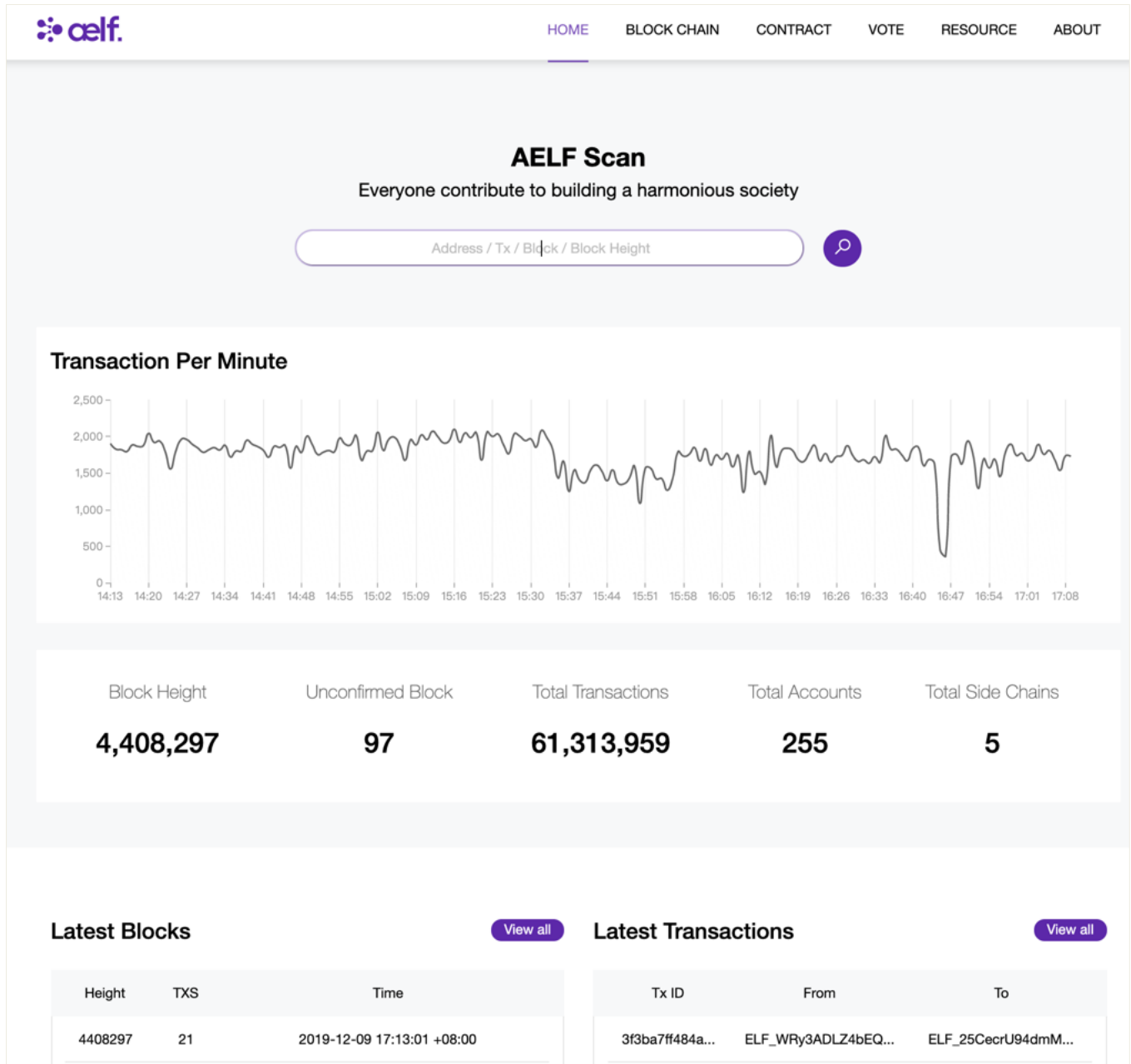
3.2.2 Block Explorer Addresses

Main chain: <https://explorer-test.aelf.io>

Side chain 1: <https://explorer-test-side01.aelf.io/>

3.2.3 Block Explorer Interface

3.2.3.1 View the Whole Network Status



3.2.3.2 View Contracts and History

Contract Address	Contract Type	Author	Last Updated At
ELF_2F5C128Sr5rHCXoSY2C7uT5sAku48mkgiaTTP1Hi...	User	ELF_HPZdKgEZ47UgAUICDAZ88TfpToo8Zd6idnUNEKALJ...	2019/11/22 03:09:43+00:00
ELF_FAJcKnSpbViZfAufBFzX4nC8HtuT93rxUS4VCMACU...	System	ELF_2gaQh4uxg6tzyH1ADLoDxvHA14FMpzEIMqsQ6sDG...	2019/11/21 13:30:36+00:00
ELF_Acv7J84Ghi19JesSBQ8d56XenwCrJ5VBPvrS4mthb...	System	ELF_2gaQh4uxg6tzyH1ADLoDxvHA14FMpzEIMqsQ6sDG...	2019/11/21 13:30:36+00:00

ELF_FAJcKnSpbViZfAufBFzX4nC8HtuT93rxUS4VCMACUwXWYurC2_AELF

Author: ELF_2gaQh4uxg6tzyH1ADLoDxvHA14FMpzEIMqsQ6sDG5HT8cmjp8_AELFContract Type: System

Contract Info

AcS0

ACS0Container.cs

AcS0Reflection.cs

AuthorChanged.cs

ChangeContractAuthorInput.cs

CodeUpdated.cs

ContractDeployed.cs

ContractDeploymentInput.cs

ContractInfo.cs

ContractUpdateInput.cs

InitializeInput.cs

SystemContractDeploymentInput

ValidateSystemContractAddressli

AcS1

AcS3

AElf.Contracts.Consensus.AEDPoS

AElf.Contracts.Economic

AElf.Contracts.Economic.csproj

AElf.Contracts.Election

AElf.Contracts.MultiToken

AElf.Contracts.ParliamentAuth

AElf.Contracts.Profit

AElf.Contracts.TokenConverter

AElf.Contracts.Treasury

Properties

AcS0/ACS0Container.cs

1 using AElf.CSharp.Core;
2 using AElf.Sdk.CSharp.State;
3 using AElf.Types;
4 using Google.Protobuf;
5 using Google.Protobuf.Reflection;
6 using Google.Protobuf.WellKnownTypes;
7 using System;
8 using System.Collections.Generic;
9
10 namespace AcS0
11 {
12 internal static class ACS0Container
13 {
14 public class ACS0ReferenceState : ContractReferenceState
15 {
16 internal MethodReference<SystemContractDeploymentInput, Address> DeploySystemSmartContract
17 {
18 get;
19 set;
20 }
21
22 internal MethodReference<ContractDeploymentInput, Address> DeploySmartContract
23 {
24 get;
25 set;
26 }
27
28 internal MethodReference<ContractUpdateInput, Address> UpdateSmartContract
29 {
30 get;
31 set;
32 }
33
34 internal MethodReference<ChangeContractAuthorInput, Empty> ChangeContractAuthor
35 {
36 get;
37 set;
38 }
39
40 internal MethodReference<InitializeInput, Empty> Initialize
41 {
42 get;
43 set;
44 }
45 }
46 }

History

Author Changed 2019/11/22 03:09:43+00:00

Author: [ELF_HPZdKgEZ47UgAUICDAZ88TfpToo8Zd6idnUNEkALJ6Jb2ammD_AELF](#) [🔗](#)

Code Hash: [329515bf8ac7518cf95bace4c1899c299b2a6460e9decc3ae34fe85890f656aa](#) [🔗](#)

Transaction Id: [98604fa3cf4d2e60899183e50a37c00149d6b2424a1df056253c6bf2f482ee86](#) [🔗](#)

Block Height: [54708](#) [🔗](#)

Code Updated 2019/11/22 03:07:31+00:00

Author: [ELF_2RCLmZQ2291xDwSbDEJR6nLhFJcMkyfrVTq1i1YxWC4SdY49a6_AELF](#) [🔗](#)

Code Hash: [329515bf8ac7518cf95bace4c1899c299b2a6460e9decc3ae34fe85890f656aa](#) [🔗](#)

Transaction Id: [07791d880cb1a00ec8f8354e804387c7d9bb43a0be8f1450470d75953fb430fc](#) [🔗](#)

Block Height: [54569](#) [🔗](#)

Contract Deployed 2019/11/22 03:04:12+00:00

Author: [ELF_2RCLmZQ2291xDwSbDEJR6nLhFJcMkyfrVTq1i1YxWC4SdY49a6_AELF](#) [🔗](#)

Code Hash: [17655fb71ed2d6bc857c04ab41e694c2701d6b820837b1b966a738d2f33ce57f](#) [🔗](#)

Transaction Id: [8a75176596d676ada5de90951e0592b379e2ad72e7f5308b277279630fff3605](#) [🔗](#)

Block Height: [54281](#) [🔗](#)

3.2.3.3 View Block Information and Detailed Transactions

Latest Blocks

[View all](#)

Height	TXS	Time
3602044	3	2019-12-04 22:14:52 +08:00
3602876	18	2019-12-04 22:21:52 +08:00
3603362	6	2019-12-04 22:25:56 +08:00
3603546	13	2019-12-04 22:27:28 +08:00
3603578	19	2019-12-04 22:27:44 +08:00
3610771	3	2019-12-04 23:28:32 +08:00
3610770	3	2019-12-04 23:28:32 +08:00

Latest Transactions

[View all](#)

Tx ID	From	To
f31104a58a76...	ELF_2ZYyxEH6j8zA...	ELF_25CecrU94dmM...
01fbcd092de3...	ELF_2ZYyxEH6j8zA...	ELF_25CecrU94dmM...
81b76ba77fb3...	ELF_2ZYyxEH6j8zA...	ELF_RnQLF2SnJL9H...
17e4bc01360c...	ELF_2frDVeV6VxUo...	ELF_25CecrU94dmM...
d3de578ff6e9...	ELF_2frDVeV6VxUo...	ELF_25CecrU94dmM...
feb2a121b7b7...	ELF_2frDVeV6VxUo...	ELF_RnQLF2SnJL9H...
9eba7c2e45d4...	ELF_611B3j5Zc8fw...	ELF_25CecrU94dmM...

3.2.3.4 Check Addresses

Address #ELF_2oSMWm1tjRqVdfmrdL8dgrRvhWu1FP8wcZidjS6wPbuoVxbhEz_AELF

Home / Transactions List / Address

100,000 Transactions

Tx Id	Block Height	From	To
c6d61afca98e9638bd1e00004dab166e73ca3fe23da6c4...	3595395	ELF_2oSMWm1tjRqVdfmrdL8dgrRvh...	→ ELF_25CecrU94dmMdbhC3LWMKxt...
3cacff45871c6d82ce531351ae27edf905a7e5057298141...	3595396	ELF_2oSMWm1tjRqVdfmrdL8dgrRvh...	→ ELF_25CecrU94dmMdbhC3LWMKxt...
7a19f084c0e99bba244bcea08b40b7b0856266bb22ce5...	3595396	ELF_2oSMWm1tjRqVdfmrdL8dgrRvh...	→ ELF_25CecrU94dmMdbhC3LWMKxt...

3.2.3.5 Join Node Election and Vote

Current Term's Countdown (4th term)

2 day 05 : 44 : 16

Current Node's Amount

2

Current Votes Amount

233

Current Mining Reward (ELF)

100,392.00

Node Election

Every token holder has the opportunity to become a BP node. However, in order to make our networks and communities operate more smoothly and effectively, we have developed a set of standards and regulations to make eligible people candidate nodes. We increased their chances of being elected by voting. We will vote on the new BP consensus node every week and publish the election results.

[View the node election plan >](#)

Become a candidate node

My Wallet

Name: [Vote](#)

Address: [ELF_2hxDg6Pd2d4yU1A16PTZVMMrEDYEPR8oQoJMDwWdax5LsBaxX_AELF](#)

Total assets: 196,889.12

Balance: 196,656.12

Active votes: 233

Claimable profit: 0.00

Claim

Redeemed votes: 0

Earliest vote expired time: 2020-02-27 17:13:58

Node Table


Rank	Node Name	Node Type	Terms	Produce Blocks	Obtain Votes	Voted Rate	My Votes	Operations
1	ELF_2Dyh4ASm6z...KeVoTMJ3ugQi3P	BP	1	168843	232		232	<div>Vote</div> <div>Redeem</div>
2	ELF_YF8o6ytMB7...LPCH2b9LxdTEq	BP	1	165958	1		1	<div>Vote</div> <div>Redeem</div>

Total 2 items


1

3.2.3.6 Purchase Resource

Users can purchase CPU, RAM, DISK, NET, READ, WRITE, STORAGE, and TRAFFIC resources for on-chain governance through aelf's Block Explorer.


HOMEBLOCKCHAINCONTRACTVOTERESOURCEABOUT

Address / Tx / Block / Block Height

AELF


Resource Trading

Home / Resource

AELF Wallet

牧童 ELF_2RCLmZQ2291xDwSbDEJR6nLhFJcMkyfrVTq1i1YxWC4SdY49a6_AELF

Transaction Details

change wallet

Balance:195.66 ELF

CPU Quantity:102.20

RAM Quantity:23.44

DISK Quantity:0.00


NET Quantity:0.00

READ Quantity:0.00

WRITE Quantity:0.00

STORAGE Quantity:0.00

TRAFFIC Quantity:0.00

Resource Money Market

5 Min30 Min1 Hour4 Hours1 Day5 Days1 Week

CPU

RAM

DISK

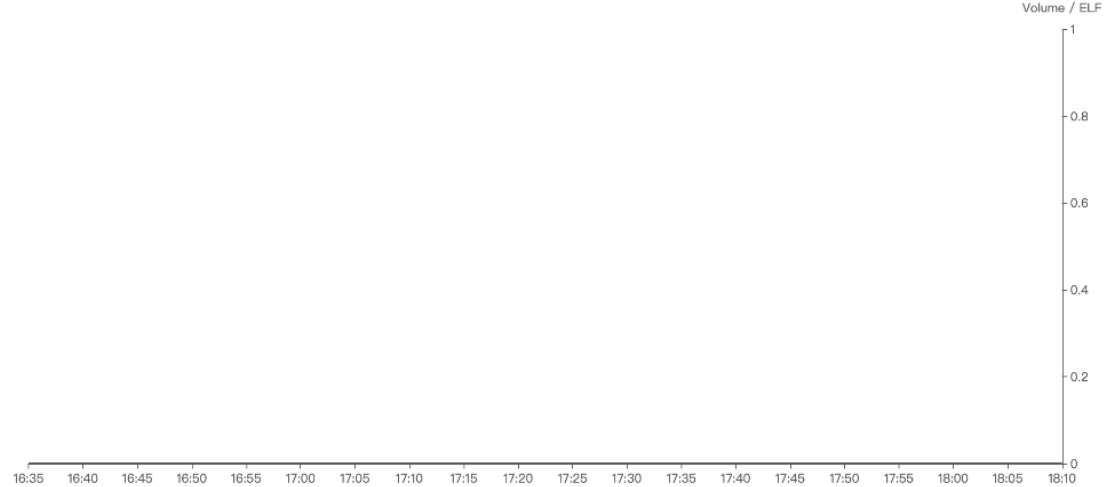
NET

READ

WRITE

STORAGE

TRAFFIC



Buy

Sell

Buying quantity:Enter CPU amount

≈ 0.00 ELF

Available:0.00 ELF

0.00 ELF

Buy

Selling quantity:Enter CPU amount

≈ 0.00 ELF

Available:0.00 CPU

0.00 CPU

Sell

Real Time Transactions

	Average price(ELF)	Number	Cumulative
15:04:54.671 Sell	0.00024929	119,400.00	29.77
15:04:21.525 Sell	0.00000833	1,000,000.00	8.33
15:03:55.154 Sell	0.00002829	1,000,000.00	28.29
10:42:48.408 Sell	0.00082229	9,400.00	7.73
17:19:15.804 Sell	0.00082257	18,800.00	15.46
15:05:27.951 Buy	0.00147062	10,000.00	14.71
15:02:25.192 Buy	0.00004282	1,000,000.00	42.82
14:19:37.941 Buy	0.00020349	100,000.00	20.35
14:19:00.015 Buy	0.00149087	10,000.00	14.91
12:14:48.011 Buy	0.00002039	1,000,000.00	20.39

3.2.3.7 Proposal

Users can get involved in Chain Governance by submitting proposals, viewing active ones, and building their own organizations through the aelf Block Explorer. One way to submit a proposal and build your own organization, is to use the Explorer Extensions to log in.

The screenshot displays the aelf Block Explorer's 'PROPOSAL' section. The top navigation bar includes links for HOME, BLOCKCHAIN, CONTRACT, PROPOSAL, VOTE, RESOURCE, and ABOUT. A search bar is located on the right. Below the navigation bar, there are tabs for Proposals, Apply, and Organizations. The 'Proposals' tab is selected, showing a list of proposals. The first proposal is titled 'Parliament' and is in a 'Pending' state. It includes details such as 'Proposal Expires: 2020-03-12T06:24:45.000Z', 'Contract: 25CecrU94dmMdbhC3LWMKxtoaL4Wv8PChGvVJM6PxkHAYvXEhB', and 'Contract Method: Transfer'. Below the details, there is a voting section with four circular progress indicators for 'Approved Votes', 'Rejected Votes', 'Abstained Votes', and 'Total Votes', all showing 0 (0%). At the bottom of the proposal card, there are buttons for 'Approve', 'Reject', and 'Abstain'.

View a proposal in the aelf Explorer

Proposals
Apply
Organizations
Proposal Rules
aelf test

Ordinary Proposal

Deploy/Update Contract

* Proposal Mode: Parliament

* Organization: aeXhTqNwLWxCG6AzwYKrPMWRrzZBskW3HwVD...

* Contract Address: AElf.ContractNames.Token

* Method Name: GetBalance

* Method Params: 1 123

* Expiration Time: 2020-03-25 16:36:53

Apply

Submit a [proposal](#) in the aelf Explorer

Proposals
Apply
Organizations
Proposal Rules
aelf test

Parliament
Association
Referendum
Create Organization>

Organization Address

Parliament Organization

2fW6ViZKsWiRBBdSo3doGaK9qNXLtWvKW6TiuHR3iQ4H4zW3...

Author: ELF_2gaQh4uxg6tzyH1ADLoDxvHA14FMpzEIMqsQ6sDG5iHT8cmjp8_...

Update Time: 2020-02-27T11:16:28.000Z

Voting Data: Votes (Votes / Minimum Votes)

Approved Votes
5 (66.67%)

Rejected Votes
1 (10%)

Abstained Votes
1 (10%)

Total Votes
5 (66.67%)

Members: ELF_2ZYyxEH6j8zAyJjef6Spa99Jx2zf5GbFktyAQEBPWLCvuSAn...

Proposer White List: All Users

Parliament Organization

ZDcYSTbBRACaEQh6K1nqPb2SHKPCTggB9E66onthFoGrVnKfi

Author: ELF_2gaQh4uxg6tzyH1ADLoDxvHA14FMpzEIMqsQ6sDG5iHT8cmjp8_...

Update Time: 2020-02-27T11:16:28.000Z

Voting Data: Votes (Votes / Minimum Votes)

Approved Votes
5 (66.67%)

Rejected Votes
1 (10%)

Abstained Votes
1 (10%)

Total Votes
5 (80%)

Members: ELF_2ZYyxEH6j8zAyJjef6Spa99Jx2zf5GbFktyAQEBPWLCvuSAn...

Proposer White List: ELF_2ZYyxEH6j8zAyJjef6Spa99Jx2zf5GbFktyAQEBP...

View and create organizations in the aelf Explorer

3.3 aelf IOS / Android Wallet

3.3.1 Overview

The aelf wallet is a blockchain wallet developed by both aelf and third-party teams on the main chain. It guarantees basic asset management and allows users to trade multi-assets on-chain/cross-chain. With aelf's IOS/Android Wallet, users can:

- Create addresses and manage assets
- Asset classification management on the chain: switch, add, and trade assets according to the selected chain
- View basic token information
- Perform transactions including between the main chain and specified side chain and between side chains through the cross-chain asset transfer function
- Deploy applications on aelf's standard protocol

3.3.2 Wallet Download Link

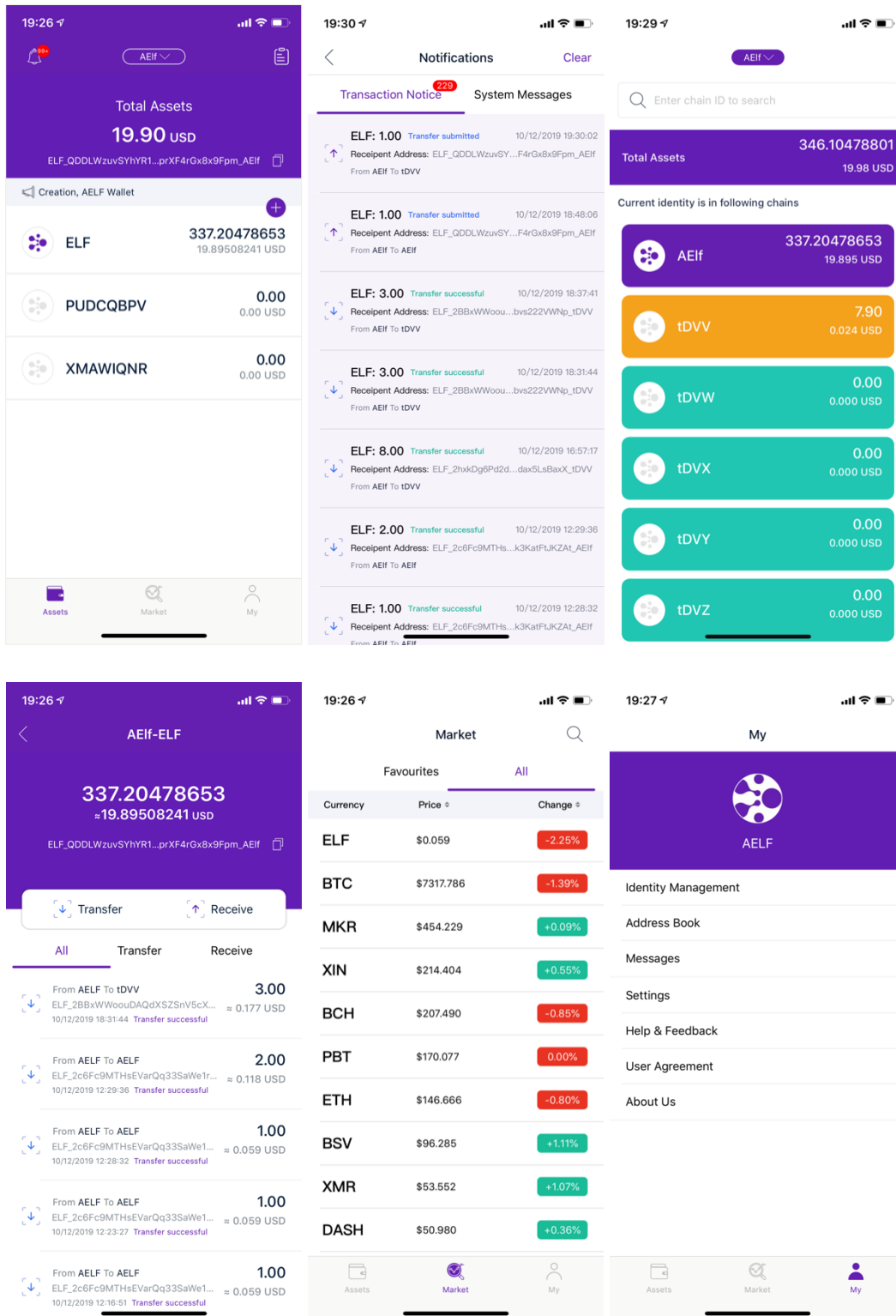
iOS Enterprise: <http://d.6short.com/iOSAEIf> (Available soon in the App Store outside Mainland China)

Android: <http://d.6short.com/AelfAndroid>

Note: The wallet is currently in the internal beta stage, but we encourage users to submit issues. After downloading, please refer to 3.5 to get test token

3.3.3 Interface

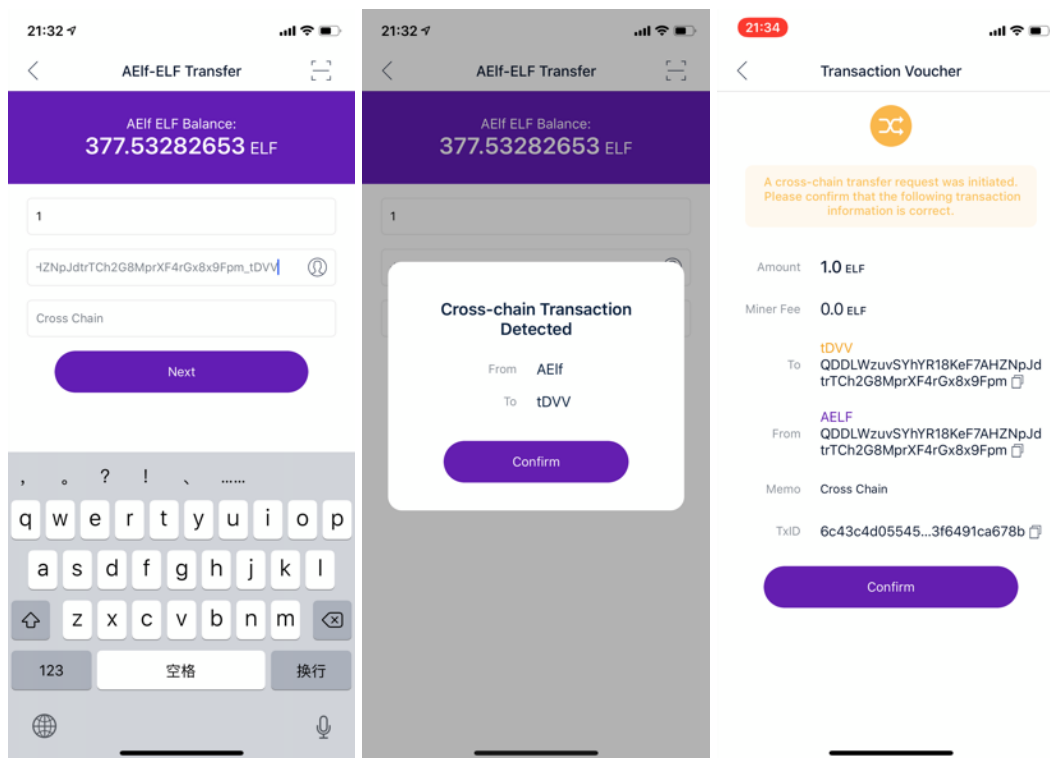
3.3.3.1 Preview



3.3.3.2 Cross-chain Transfer Operation Preview

As described in 2.3.2.2, cross-chain transfers on aelf require two transactions to be initiated. In the wallet app, an example of the scene operation is as follows:

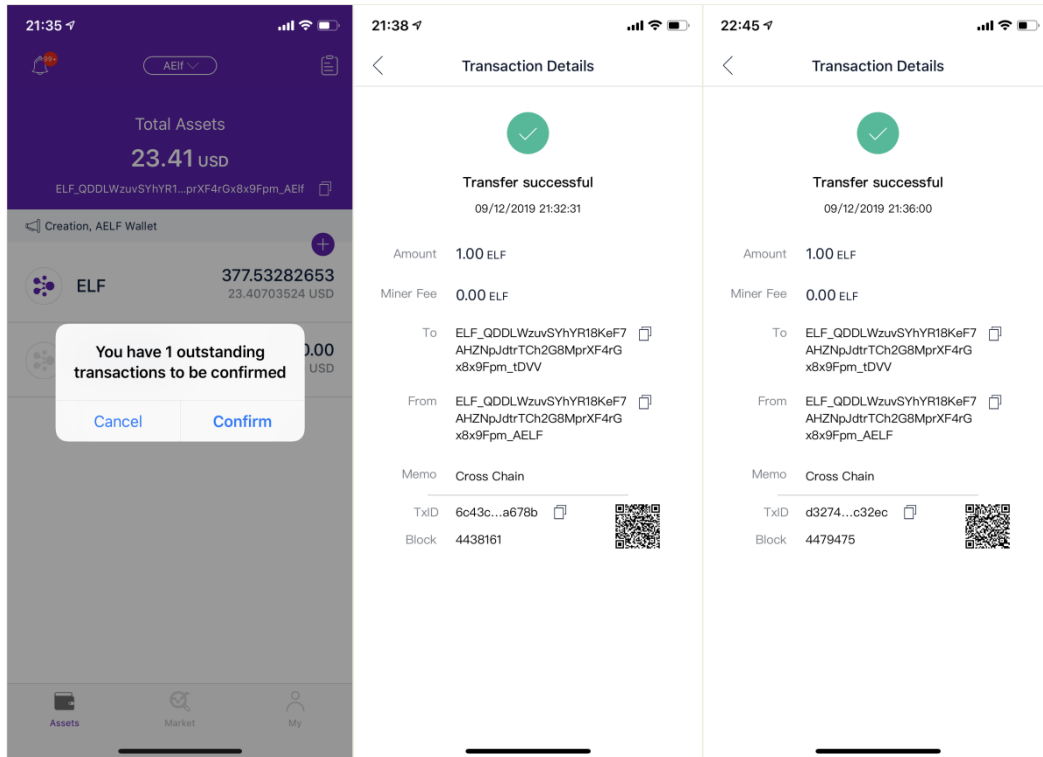
1. Scenario: Bob has found an interesting application on the chain tDVV and needs to use ELF, but Bob does not have any ELF right now, and Bob's friend Alice has ELF on the chain AELF. Bob goes to Alice to borrow ELF.
2. Example of address format for different chains:
Alice: ELF_2oSMWm1tjRqVdfmrdL8dgrRvhWu1FP8wcZidjS6wPbuoVtxhEz_AELF
Bob: ELF_25CecrU94dmMdbhC3LWMKxtoaL4Wv8PChGvVJM6PpkHAYvXEhB_tDVV
3. Initiate cross-chain transfer operations:
Alice enters Bob's address with _tDVV in the wallet. At this time, the wallet will recognize that Alice wants to transfer from chain AELF to Bob of chain tDVV. At this point, Alice initiates a cross-chain transfer operation.



4. Initiate the receiving operation of cross-chain transfer:
After the two chains reach a consensus on the cross-chain transaction, Alice also needs to sign a receiving transaction on the chain tDVV.

After the consensus is reached, the wallet app will prompt Alice to confirm the transfer on the chain tDVV. After confirmation, Bob received the ELF that Alice transferred to Bob on the chain tDVV.

At this time, Alice can query her two signed cross-chain transfer related transactions on the chain AELF and the chain tDVV.



3.4 aelf Web Wallet

3.4.1 Overview

aelf web wallet can be used to create an aelf wallet or import existing keys into a new wallet.

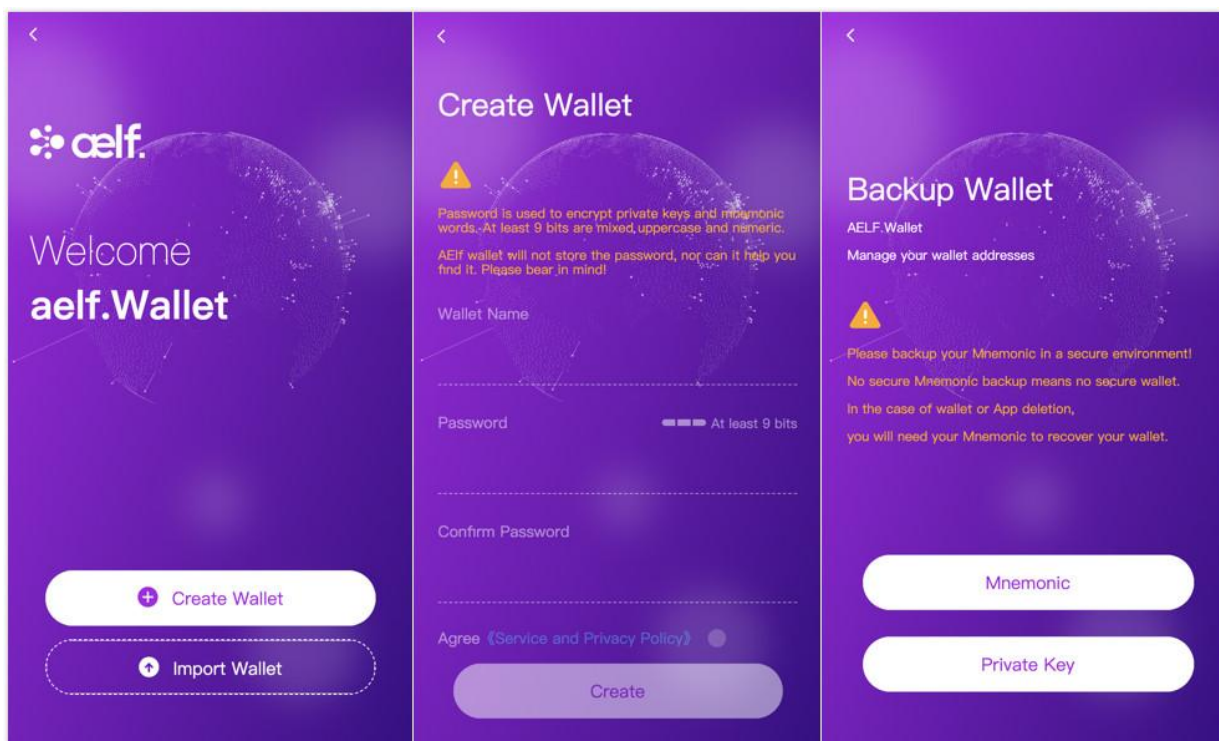
3.4.2 Web Wallet Address

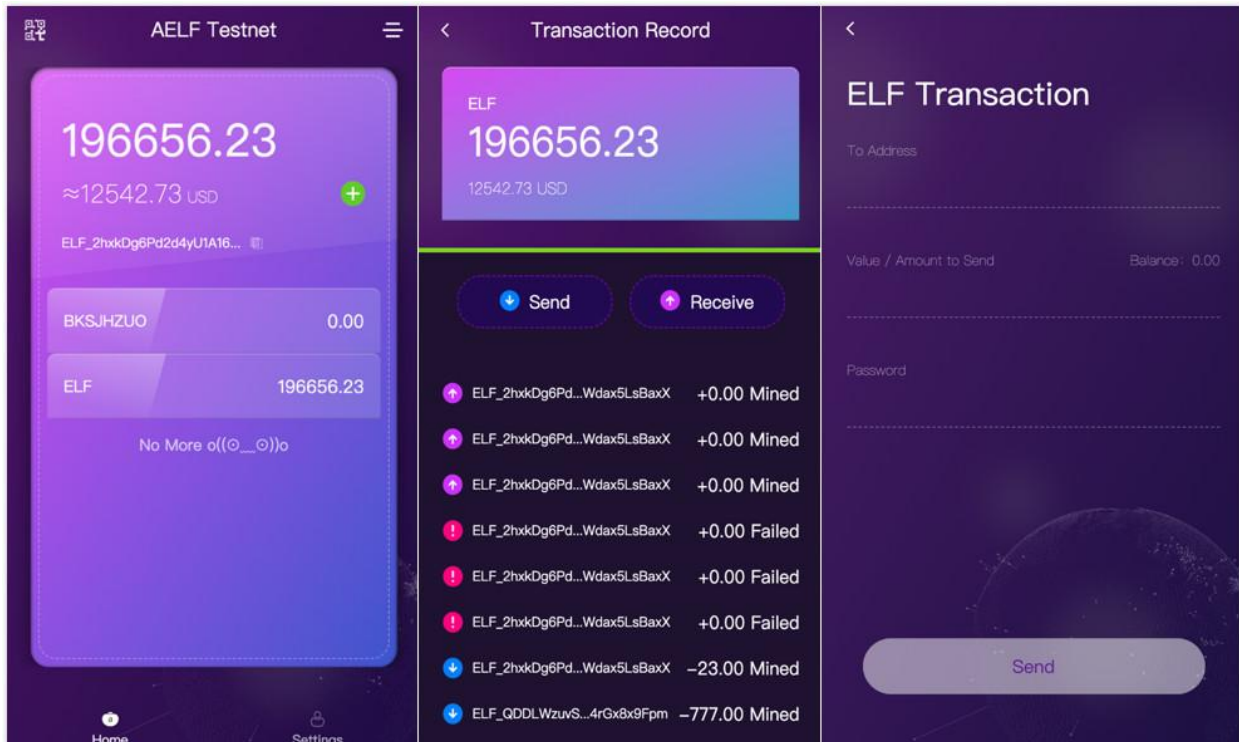
main chain: <https://wallet-test.aelf.io>

side chain1: <https://wallet-test-side01.aelf.io/>

3.4.3 Interface

3.4.3.1 aelf Web Wallet Overview





3.4.3.2 How to use aelf Web Wallet for cross-chain transfer

As described in 2.3.2.2, cross-chain transfers on aelf require the initiation of two transactions. In the wallet APP, an example of a scenario-based action is shown below:

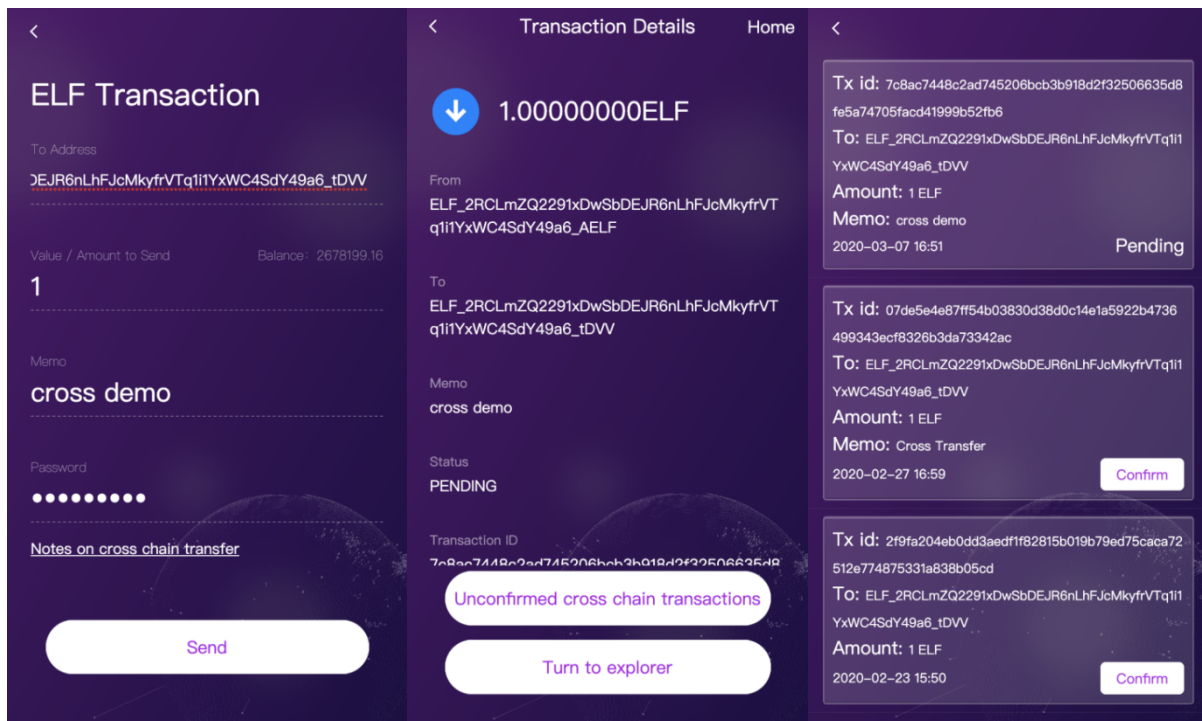
1. Scenario: Bob found an interesting application on chain tDVV that required ELF. When Bob ran out of ELF, he borrowed ELF from Alice, who had ELF on another chain,
2. Examples of different chains address formats:

Alice: ELF_2oSMWm1tjRqVdfmrdL8dgrRvhWu1FP8wcZidjS6wPbuoVtxhEz_AELF

Bob: ELF_25CecrU94dmMdbhC3LWMKxtoaL4Wv8PChGvVJM6PpkHAYvXEhB_tDVV

3. Initiate cross-chain transfer:

Alice enters the address of Bob with Suffix "_ tDVV" in the wallet and the wallet will recognize that Alice wants to transfer from the chain AELF to the Bob's chain tDVV. At this time, Alice successfully initiated the cross chain transfer.



Initiate, check and confirm cross-chain transfers on aelf Web wallet

3.5 Apply for aelf Test Tokens

The test token can be used to perform same-chain/cross-chain transfers, the purchase of resources, voting, pay transaction fees, and other actions. You can apply through the following link. After approval by aelf's tech team, applicants will be contacted within 7 business days and will be issued their test tokens. Test Token application address:

<https://docs.google.com/forms/d/1OJ1SdJ93FPbvJiWgajL9ZJ5tldtkwn13xN76TstsmUI>

4. aelf Public Testnet Node Election

4.1 Application Requirement

1. The individual or team applying for the test network node election needs to hold at least 100,000 test tokens.
2. Successfully run the testnet with one main chain and five sidechain nodes.

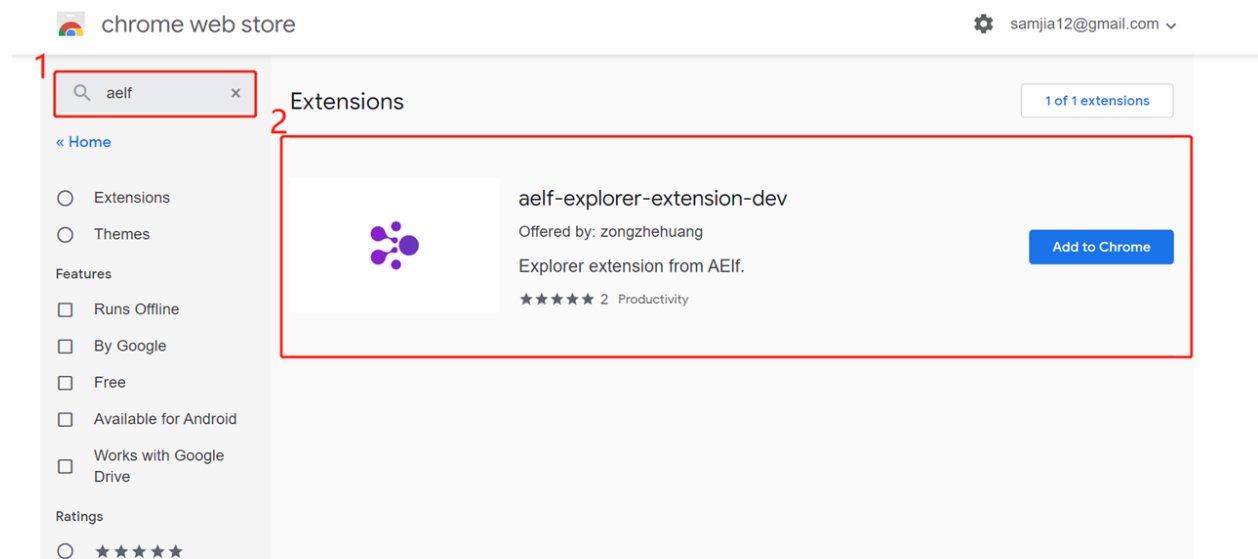
4.2 Testnet Node Election Application Process

4.2.1 Building a Node

Tutorial: <https://docs.aelf.io/v/dev/resources/testnet>

4.4.2 Downloading and Installing the Night ELF Plug-in

Go to Google Chrome's web store, search aelf and add aelf plugin, then create wallet



Download aelf extension on Google Web Store

Plug-in tutorial: <https://docs.browser-extension.aelf.io/>

4.2.3 Receiving Test Tokens

1. Number of Tokens a node can receive: 10,000 test ELF tokens
2. Application Requirements:
 - a. Ensure that the node has been successfully built and the node block height is synchronized with the test chain.
 - b. Applicants will need to provide screenshots of configuration/(at least 6 CPUs with 2 cores each, 4GB of memory for each CPU; if the CPU has 8 cores and 16GB

or more than one machine can meet the requirements, basic bandwidth and storage levels are sufficient), cloud system console screenshot - 6 sets

3. Note:

- a. Applicants will need to submit personal information, and any duplicate applications will be disqualified
- b. The 100,000 test tokens can only be used for node staking. If used for any other purpose, all associated rewards will be void

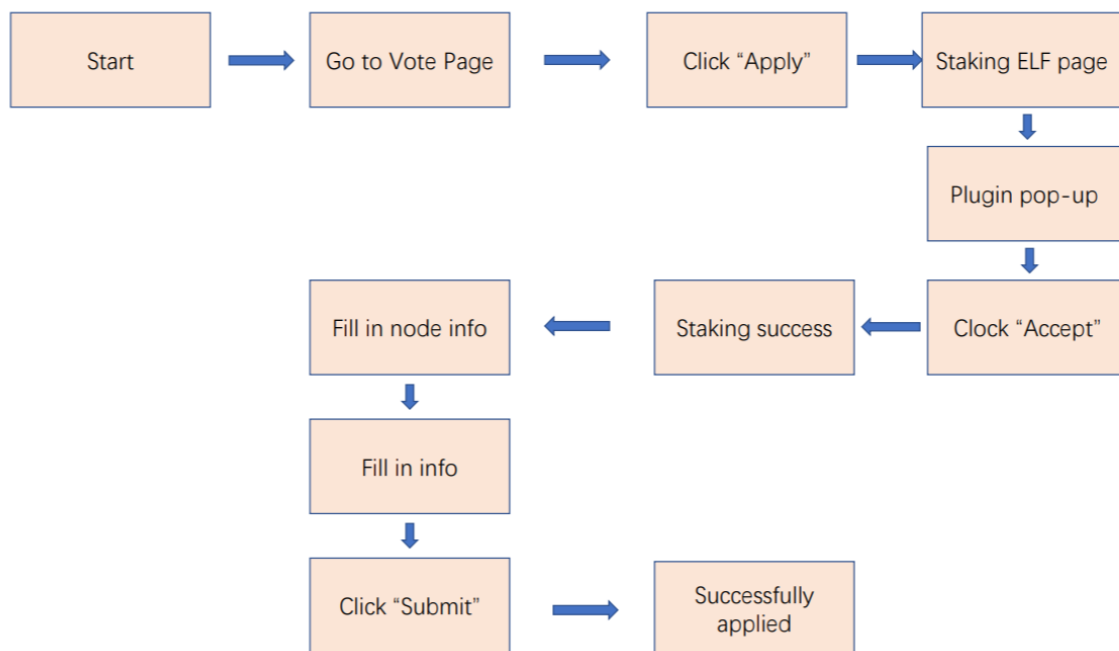
4. Application link: <https://forms.gle/KwedNtig3QipuRcm6>

5. Receive the token:

After passing the audit, the test token will be issued to test wallets within three days of a successful application. (Test tokens will be issued every three days)

4.2.4 Apply to Become a Node

Link: <http://explorer-test.aelf.io/vote/election>



aelf Public Testnet Node Application Process