BOND

Contributors

Name	Organization
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Taxonomy Formula: tF{~d,t,c}

Token Specification Summary

Token Classification

Template Type:	SingleToken	This token has no sub or child tokens.
Token Type:	Fungible	Tokens have interchangeable value with one another, where any quantity of them has the same value as another equal quantity if they are in the same class or series.
Token Unit:	Whole	There can be many instances of this token, but they cannot be subdivided.
Value Type:	Reference	This token is a receipt or title to a material item, property or right. The value is referenced and the token represents it and can be owned or used digitally via its token.
Representation Type:	Common	This token is simply represented as a balance or quantity attributed to an owner address where all the balances are recorded on the same balance sheet, like a bank account. All instances can easily share common properties and locating them is simple.

This is a Fixed Supply Whole Fungible where the total supply is set at creation using the Quantity property of the Base token. It is fractional by setting the Decimals property on the subdividable behavior. A token instance can be burned.

Example

Fixed denomination, fungible, transferable off-chain security.

Bond - f58bb0b08d30e4a311274ac737d5301f3b461d4551f6dab9013d2c968774bf621

Analogies

Name	Description
Bond	Fixed denomination, fungible, transferable off-chain security.

Comments

Note that the quantity for the base token will be the only tokens created. The first implementation of this token issued 100 tokens.

Bond is:

- Non-Subdividable
- Compliant
- Transferable

Bond Details

Whole Fungible

Type:	Base
Name:	Whole Fungible
Id:	b1eacdf8-35d8-454a-b1af-92eb0b6f45d4
Visual:	τ_F{<i>~d</i>}
Tooling:	tF{~d}
Version:	1.0

Definition

Whole Fungible tokens have interchangeable value with each other, where any owned sum of them from a class has the same value as another owned sum from the same class. A whole token cannot be sub-divided so it doesn't support the notion of 'making change'.

Example

An inventory item or SKU, where an item is treated as a whole because it makes no sense to own a fraction of a SKU or loyalty point.

Analogies

Name	Description
Loyalty Points	Most credit card or retail loyalty point programs deal with whole numbers so that redeeming points is easy to understand for their customers.
General Admission Movie Ticket	Purchasing a general admission ticket to a movie only allows for you to have a seat, but the seat that you actually get depends on factors like when you arrive. Your not likely to want to share a seat with another adult.

Dependencies

Artifact Type	Symbol	Description
Base	t	Base Token Definition

Incompatible With

Artifact Type	Symbol	Id
Behavior	~d	d5807a8e-879b-4885-95fa-f09ba2a22172

Influenced By

Description	Symbol	Applies To

Artifact Files

Content Type	File Name	File Content
Control	whole-fungible.proto	
Uml	whole-fungible.md	

Code Map

Map Type	Name	Platform	Location

Bond - f58bb0b08d30e4a311274ac737d5301f3b461d4551f6dab9013d2c968774bf623

Implementation Map

Map Type	Name	Platform	Location
Implementation	Banco Santander, first end-to-end blockchain bond.	EthereumSolidity	https://www.santander.com/csgs/Satellite/CFWCSancomQP01/en_GB/Corporate/Press-room/2019/09/12/Santander-launches-the-first-end-to-end-blockchain-bond.html

Resource Map

Map Type	Name	Location	Description

Base Details

Token Name:	
Token Type:	Fungible
Representation Type:	Common
Value Type:	Reference
Token Unit:	Whole
Symbol:	
Owner:	
Quantity:	100
Decimals:	0
Constructor Name:	Constructor

Behaviors

Non-Subdividable

Type:	Behavior

Bond - f58bb0b08d30e4a311274ac737d5301f3b461d4551f6dab9013d2c968774bf624

Name:	Non-Subdividable
Id:	d5807a8e-879b-4885-95fa-f09ba2a22172
Visual:	<i>~d</i>
Tooling:	~d
Version:	1.0

Definition

An ability or restriction on the token where it cannot be subdivided from a single whole token into fractions. Sets the base token Decimals property to 0 which will make the token non-sub-dividable and a whole token is the smallest ownable unit of the token.

Example

Non-subdividable is common for items where subdivision does not make sense, like a property title, inventory item or invoice.

Analogies

Name	Description
Non-Fractional	It is not possible to own a fraction of this token.
Barrel of Oil	Barrels of Oil don't make sense to subdivide.

Dependencies

Artifact Type	Symbol	Description

Incompatible With

Artifact Type	Symbol	Id
Behavior	d	6e3501dc-5800-4c71-b59e-ad11418a998c

Influenced By

Description	Symbol	Applies To

Bond - f58bb0b08d30e4a311274ac737d5301f3b461d4551f6dab9013d2c968774bf625

Artifact Files

Content Type	File Name	File Content
Control	non-subdividable.proto	
Uml	non-subdividable.md	

Code Map

Map Type	Name	Platform	Location
SourceCode	Code 1	Daml	

Implementation Map

Map Type	Name	Platform	Location
Implementation	Implementation 1	ChaincodeGo	

Resource Map

Map Type	Name	Location	Description
Resource	Regulation Reference 1		

Specification Behavior

<div align="center">

Non-Subdividable

</div>

Taxonomy Symbol: ~d

An ability or restriction on the token where it cannot be subdivided from a single whole token into fractions. Sets the base token Decimals property to 0 which will

make the token non-sub-dividable and a whole token is the smallest ownable unit of the token.

Example

Non-subdividable is common for items where subdivision does not make sense, like a property title, inventory item or invoice.

Analogies

Name	Description
Non-Fractional	It is not possible to own a fraction of this token.
Barrel of Oil	Barrels of Oil don't make sense to subdivide.

Is External:	True
Constructor:	

Non-Subdividable responds to these Invocations

Properties

Name: Decimals

Value Description: Set to Zero, not allowing any subdivision, usually this is applied to the base token.

Template Value: 0

Invocations

GetDecimals

Id: 2ca7fbb2-ce98-4dda-a6ae-e4ac2527bb33

Description: Should return 0

Request

Control Message: GetDecimalsRequest

Description:

Parameters

Name	Value

Response

Control Message: GetDecimalsResponse

Description: Return 0

Parameters

Name	Value
Decimals	0

GetDecimals

Id: 2ca7fbb2-ce98-4dda-a6ae-e4ac2527bb33

Description: Should return 0

Request

Control Message: GetDecimalsRequest

Description:

Parameters

Name	Value

Response

Control Message: GetDecimalsResponse

Description: Return 0

Parameters

Name	Value
Decimals	0

Properties

Compliant

Type:	Behavior
Name:	Compliant

Id:	03dd1c48-dfdb-4ec1-86c8-69c3abac76b7
Visual:	<i>c</i>
Tooling:	c
Version:	1.0

Definition

A regulated token needs to comply with several legal requirements, especially KYC and AML. If the necessary checks have to be made off-chain the token transfer becomes centralized. Further the transfer in this case takes longer to complete as it can not be done in one transaction, but requires a second confirmation step. A compliant token fulfills all legal requirements on-chain without interaction from an off-chain entity

Example

When doing a bank transfer the transaction is checked by the involved banks according to legal requirements. A compliant token can

Analogies

Name	Description

Dependencies

Artifact Type	Symbol	Description

Incompatible With

Artifact Type	Symbol	Id

Influenced By

Description	Symbol	Applies To

Bond - f58bb0b08d30e4a311274ac737d5301f3b461d4551f6dab9013d2c968774bf629

Artifact Files

Content Type	File Name	File Content
Control	compliant.proto	
Uml	compliant.md	

Code Map

Map Type	Name	Platform	Location

Implementation Map

Map Type	Name	Platform	Location

Resource Map

Map Type	Name	Location	Description

Specification Behavior

Compliant

Taxonomy Symbol: c

A regulated token needs to comply with several legal requirements, especially KYC and AML. If the necessary checks have to be made off-chain the token transfer becomes centralized. Further the transfer in this case takes longer to complete as it can not be done in one transaction, but requires a second confirmation step. A compliant token fulfills all legal requirements on-chain without interaction from an off-chain entity

Example

When doing a bank transfer the transaction is checked by the involved banks according to legal requirements. A compliant token can

Is External:	**True**
Constructor:	

Compliant responds to these Invocations

CheckTransferAllowed

Id: 3f591127-0508-445b-b449-4adc3d8d90e9

Description: Checks if the transfer request is allowed to be executed with the given parameters.

Request Message:

CheckTransferAllowedRequest

Description: The request

Request Parameters

Name	Value
From	AccountId to transfer ownership from.
To	AccountId to transfer ownership to.
Quantity	Number of tokens to transfer.

Response Message

CheckTransferAllowedResponse

Description: The response

Response Parameters

Name	Value
Result	A boolean value whereas true means the transfer is allowed and false means it is not.

CheckMintAllowed

Id: 0323b374-71af-48f6-93ff-2a63366267db

Description: Checks if the mint request is allowed to be executed with the given parameters.

Bond - f58bb0b08d30e4a311274ac737d5301f3b461d4551f6dab9013d2c968774bf6211

Request Message:

CheckMintAllowedRequest

Description: The request

Request Parameters

Name	Value
ToAccount	Account Id to mint the tokens to.
Quantity	Number of tokens to transfer.

Response Message

CheckMintAllowedResponse

Description: The response

Response Parameters

Name	Value
Result	A boolean value whereas true means the minting request is allowed and false means it is not.

CheckBurnAllowed

Id: 8edffc4d-d14e-4a98-8c96-338835d5534c

Description: Checks if the burn request is allowed to be executed with the given parameters.

Request Message:

CheckBurnAllowedRequest

Description: The request

Request Parameters

Name	Value
From	AccountId to transfer ownership from.
Quantity	Number of tokens to transfer.

Response Message

CheckMintAllowedResponse

Description: The response

Response Parameters

Name	Value
Result	A boolean value whereas true means the burn request is allowed and false means it is not.

Properties

Transferable

Type:	Behavior
Name:	Transferable
Id:	af119e58-6d84-4ca6-9656-75e8d312f038
Visual:	<i>t</i>
Tooling:	t
Version:	1.0

Definition

Every token instance has an owner. The Transferable behavior provides the owner the ability to transfer the ownership to another party or account. This behavior is often inferred by other behaviors that might exist like Redeem, Sell, etc. This behavior is Delegable. If the token definition is Delegable, TransferFrom will be available.

Example

Analogies

Name	Description

Analogy 1	transferable analogy 1 description

Dependencies

Artifact Type	Symbol	Description

Incompatible With

Artifact Type	Symbol	Id
Behavior	~t	a4fa4ca8-6afd-452b-91f5-7103b6fee5e5

Influenced By

Description	Symbol	Applies To
If the token is Delegable, TransferFrom should be enabled.	g	[ ]
If Compliance is present, a CheckTransferAllowed request has to be made and verified before a Transfer request or a TransferFrom request.	c	[ ]
If issuable is present, an AcceptTokenRequest from the token issuer, in response to a RequestTokens, has to be made and verified before a Transfer request.	i	[ ]

Artifact Files

Content Type	File Name	File Content
Control	transferable.proto	
Uml	transferable.md	

Code Map

Map Type	Name	Platform	Location
SourceCode	Code 1	Daml	

Implementation Map

Map Type	Name	Platform	Location
Implementation	Implementation 1	ChaincodeGo	

Resource Map

Map Type	Name	Location	Description
Resource	Regulation Reference 1		

Specification Behavior

Transferable

Taxonomy Symbol: t

Every token instance has an owner. The Transferable behavior provides the owner the ability to transfer the ownership to another party or account. This behavior is often inferred by other behaviors that might exist like Redeem, Sell, etc. This behavior is Delegable. If the token definition is Delegable, TransferFrom will be available.

Example

Analogies

Name	Description
Analogy 1	transferable analogy 1 description

Is External:	True
Constructor:	

Transferable responds to these Invocations

Binding Is Influenced by Compliant's Invocation CheckTransferAllowedCompliant's Invocation CheckTransferAllowed Intercepts this behavior's invocation.'

CheckTransferAllowed

Id: 3f591127-0508-445b-b449-4adc3d8d90e9

Description: Check to see if the account has been whitelisted, KYC, by the custodian.

Request Message:

CheckTransferAllowedRequest

Description: Checking the whitelist.

Request Parameters

Name	Value
From	AccountId to transfer ownership from.
To	AccountId to transfer ownership to.
Quantity	Number of tokens to transfer.

Response Message

CheckTransferAllowedResponse

Description: The response

Response Parameters

Name	Value
Result	A boolean value whereas true means the transfer is allowed and false means it is not.

Transfer

Id: 5d4b8f10-7857-4a2f-9b8c-d61e367a6bcc

Description: >A transfer request will invoke a transfer from the owner of the token to the party or account provided in the To field of the request. For fungible or subdividable non-fungible tokens, this request may

also include value in the Amount field of the request to transfer more than one token of the class in a single request.

Request Message:

TransferRequest

Description: The request

Request Parameters

Name	Value
To	AccountId to transfer ownership to.
Quantity	Number of tokens to transfer.

Response Message

TransferResponse

Description: The response

Response Parameters

Name	Value
Confirmation	A confirmation receipt or error may be returned to the owner based on the outcome of the transfer request.

TransferFrom

Id: 516b4e2f-4a14-4c4f-a6f2-1419d4af35c6

Description: >A transfer request will invoke a transfer from the owner of the token to the party or account provided in the To field of the request. For fungible or subdividable non-fungible tokens, this request may also include value in the Amount field of the request to transfer more than one token of the class in a single request.

Request Message:

TransferFromRequest

Description: The request

Name	Value
From	AccountId to transfer ownership from.
To	AccountId to transfer ownership to.
Quantity	Number of tokens to transfer.

Response Message

TransferFromResponse

Description: The response

Response Parameters

Name	Value
Confirmation	A confirmation receipt or error may be returned to the owner based on the outcome of the transfer from request.

Properties