Note To Reviewer: Single State Block Is Expanded To Contain Token Related Commands

Single State Block

The *single state* block is a single unit of operation that can be performed on an account. The table below depicts the format of a state block:

Field Name	Size (Byte)	Description
Header	8	Message header
Account	32	Account address
Previous	32	Previous block hash on account
SQN	4	Sequence Number, the number of sends, increment only
Type	1	Request type
Request	depend on the Request Type	Request
Fee	16	Transaction Fee
Signature	64	EdDSA signature
Work	8	Proof of Work Nonce

Note that Signature = Sign(Hash(Header.Version, Account, Previous, SQN, Type, Request, Transaction Fee))

Note that the "Work" field is not covered by the signature. This field is sent from the client to the primary delegate. After verifying it, the primary does not send it to the backup delegates.

Request Type

Request Type	Code	Description
Native_Single_Send	0	Send one transaction from the native Logos account
Native_Multi_Send	1	Send multiple transaction from the native Logos account
Native_Change_Representative	2	Change the representative of the native Logos account
Token_Issuance	3	Issue a new token

Request Type	Code	Description
Token_Issuance_Addition	4	Issue more of an existing token
Token_Change_Setting	5	Change one token account setting
Token_Immute_Setting	6	Make one token account setting immutable
Token_Revoke	7	Revoke some amount of tokens from one account and deposit the tokens in another account
Token_Freeze	8	Freeze a token account
Token_Fee_Rate	9	Change the transaction fee rate of a token
Token_Whitelist_Request	10	Request to be whitelisted of a token
Token_Whitelist	11	Whitelist an account
Token_Issuer_Info	12	Update the issuer's information
Token_Controller	13	Add or remove a controller, or change the privilege of an existing controller
Token_Burn	14	Burn some amount of tokens from the token account
Token_Account_Send	15	Send some amount of tokens from the token account
Token_Account_withdraw_Fee	16	Withdraw some amount of tokens from the transaction fee pool
Token_Signle_send	17	Send one transaction from an user account
Token_multi_send	18	Send multiple transactions from an user account

Note that open and receive transactions of accounts are inferred from the send (any type of send) transaction request.

Native_Single_Send

Field Name	Size (Byte)	Description
Address	32	Transaction target address
Amount	16	Transaction Amount.

Native_Multi_Send

Field Name	Size (Byte)	Description
Count	1	Number of requests, [1-8]

Field Name	Size (Byte)	Description
Native_Single_Send[]	sizeof Native_Single_Send * Count	Array of Native_Single_Send requests

Native_Change_Representative

Field Name	Size (Byte)	Description
Address	32	Representative address

Token_Issuance

Field Name	Size (Byte)	Description
Symbol	8	The symbol of the token. It could be less than 8 bytes. Only English letters and numbers are allowed. Other characters are ignored.
Name	32	The name of the token. It could be less than 32 bytes. Only English letters and numbers are allowed. Other characters are ignored.
Issuer_Address	32	The Issuer's account address
Total_Supply	16	The total amount of token issued
Settings	2	A set of settings as shown in the Token Setting table
Controller_Count	1	The number of controllers, in [0, 10]
Controllers[]	Controller_Count * sizeof Controller	An array of controllers. The format of controllers is defined in the Controller table.
Issuer Info	<= 512	Optional field for the issuer to put its information. It is suggested to be json encoded with fields such as email, homepage, location, etc.

Note that tokens always have 3 less decimals than the native Logos.

Token Setting

Every token account has a set of settings stored in a bit array, and each setting also have a mutability setting, as the table below shows.

Index	Setting	Description
0	Allow_Additional_Token	If additional token could be issued

Index	Setting	Description
1	Allow_Additional_Token_Mutable	If the Allow_Additional_Token setting is mutable
2	Allow_Revoke	If tokens in any account could be revoked
3	Allow_Revoke_Mutable	If the Allow_Revoke setting is mutable
4	Allow_Freeze	If any account could be frozen
5	Allow_Freeze_Mutable	If the Allow_Freeze setting is mutable
6	Allow_Adjust_Fee	If the transaction fee rate could be changed
7	Allow_Adjust_Fee_Mutable	If the Allow_Adjust_Fee setting is mutable
8	Need_Whitelist	If an account needs to be whitelisted before receiving tokens
9	Need_Whitelist_Mutable	If the Need_Whitelist setting is mutable

Controller

Field Name	Size (Byte)	Description
Address	32	The account address of the controller
Privilege	3	The set of privileges that the controller has, as defined in the Controller Privilege table.

Controller Privilege

Every controller has a set of privileges, which is stored in a bit array as shown in the table below.

Index	Privilege	Description
0	Allow_Additional_Token_Setting	If the controller can change the Allow_Additional_Token setting in the token account
1	Allow_Additional_Token_Mutable_Setting	If the controller can change the Allow_Additional_Token_Mutable setting in the token account
2	Allow_Revoke_Setting	If the controller can change the Allow_Revoke setting in the token account

Index	Privilege	Description
3	Allow_Revoke_Mutable_Setting	If the controller can change the Allow_Revoke_Mutable setting in the token account
4	Allow_Freeze_Setting	If the controller can change the Allow_Freeze setting in the token account
5	Allow_Freeze_Mutable_Setting	If the controller can change the Allow_Freeze_Mutable setting in the token account
6	Allow_Adjust_Fee_Setting	If the controller can change the Allow_Adjust_Fee setting in the token account
7	Allow_Adjust_Fee_Mutable_Setting	If the controller can change the Allow_Adjust_Fee_Mutable setting in the token account
8	Need_Whitelist_Setting	If the controller can change the Need_Whitelist setting in the token account
9	Need_Whitelist_Mutable_Setting	If the controller can change the Need_Whitelist_Mutable setting in the token account
10	Promote_Controller	If the controller can promote another account to be a controller and assign privileges to new or existing controllers
11	Issue_Additional_Token	If the controller can issue additional tokens
12	Revoke	If the controller can tokens from an account
13	Freeze	If the controller can freeze an account
14	Adjust_Fee	If the controller can change the transaction fee rate
15	Whitelist	If the controller can whitelist an account
16	Burn	If the controller can burn tokens from the token account balance
17	Withdraw_Balance	If the controller can withdraw tokens from the token account balance
18	Withdraw_Fee	If the controller can withdraw tokens from the token account transaction fee pool

Note that the _mutable settings can not be changed from mutable (True) to immutable (False).

Token_ID

Once a Token_Issuance request is post-committed, a unique token account identifier hash is computed: Token_ID = Hash(Symbol, Name, Issuer_Address, Primary Delegate Address, Pre-prepare SQN, Pre-prepare timestamp).

Token_Issuance_Addition

Field Name	Size (Byte)	Description
Token_ID	32	Unique ID of the token
Amount	16	The amount of additional tokens

Token_Change_Setting

Field Name	Size (Byte)	Description
Token_ID	32	Unique ID of the token
Setting_Index	1	Index to the token settings bit array. Must be in [0,2,4,6,8].
Value	1	The new value of the setting, if 0 false, else true

Token_Immute_Setting

Field Name	Size (Byte)	Description
Token_ID	32	Unique ID of the token
Setting	1	Index to the token settings bit array. Must be in [1,3,5,7,9].

Token_Revoke

Field Name	Size (Byte)	Description
Token_ID	32	Unique ID of the token
From	32	The account that token is revoked from
To	32	The account that the token is deposited to
Amount	16	The amount of token to revoke

Token_Freeze

Field Name	Size (Byte)	Description

Field Name	Size (Byte)	Description
Token_ID	32	Unique ID of the token
Address	32	The account address
Action	1	If 0 freeze, else unfreeze

Token_Fee_Rate

Field Name	Size (Byte)	Description
Token_ID	32	Unique ID of the token
PercentageOrFlat	1	If 0, the rate will be a percentage, else the rate is flat
Rate	16	New rate

Token_Whitelist_Request

Field Name	Size (Byte)	Description
Token_ID	32	Unique ID of the token

Token_Whitelist

Field Name	Size (Byte)	Description
Token_ID	32	Unique ID of the token
Address	32	The account to be whitelisted

Token_Issuer_Info

Field Name	Size (Byte)	Description
Token_ID	32	Unique ID of the token
Info	<= 512	New information

Token_Controller

Field Name	Size (Byte)	Description
Token_ID	32	Unique ID of the token
AddOrRemove	1	If 0, add, else remove

Field Name	Size (Byte)	Description
Controller	sizeof Controller	The controller as defined in the Controller table

Token_Burn

Field Name	Size (Byte)	Description
Token_ID	32	Unique ID of the token
Amount	16	The amount of token to burn

Token_Account_Send

Field Name	Size (Byte)	Description
Token_ID	32	Unique ID of the token
To	32	The account that the token is deposited to
Amount	16	The amount of token to send

Token_Account_withdraw_Fee

Field Name	Size (Byte)	Description
Token_ID	32	Unique ID of the token
To	32	The account that the token is deposited to
Amount	16	The amount of token to send

Token_Single_Send

Field Name	Size (Byte)	Description
Token_ID	32	Unique ID of the token
To	32	The account that the token is deposited to
Amount	16	The amount of token to send
Fee	16	The transaction fee in tokens

Token_Multi_Send

Field Name	Size (Byte)	Description
Token_ID	32	Unique ID of the token
Count	2	The number of single transactions
Txn[]	Count * sizeof Token_Send_Txn	An array of transactions Token_Send_Txn, as defined below.
Fee	16	The transaction fee in tokens

Token_Send_Txn

Field Name	Size (Byte)	Description
To	32	The account that the token is deposited to
Amount	16	The amount of token to send

Rejection

The existing method of rejection (via Process_Result objects) will be extended to include more error codes.