

##

Data Scheme for StarGate

- This document **only defines** the farming performance gauge data of the StarGate bridge.
- This document does not specify optimized algorithms that collect and compute the data.

1. Block-level data

- **B-Average** of feature X in a block is defined to be $\frac{1}{n} * \sum_{i=0}^{n-1} x_i$, where $\{x_i \mid i = 0, 1, \dots, n-1\}$ are values that are held by X sequentially in the block and $x_k \neq x_{k+1}$ for all k .
- **Example:** If Balance has a constant value 30 in the block, then the B-Average of Balance is 30. If Balance has two values 30 and 40 in total sequentially in the block, then the B-Average of Balance is $\frac{1}{2} * (30+40) = 35$.
- **AvgBlockTime $\sim c$** : The average time duration spent to mine a block on the chain c.
- **STGPB $\sim c$** : The value of STG-per-Block on the chain c, at a given time.
- **STGPB $\wedge b \sim c$** : The B-Average of STGPB $\sim c$
- **ALLOC $\sim c, p$** : The value of AllocPoint for the pool p on the chain c, at a given time.
- **ALLOC $\wedge b \sim c, p$** : The B-Average of ALLOC $\sim c, p$
- **T_ALLOC $\sim c$** : The value of Total AllocPoint on the chain c, at a given time.
- **T_ALLOC $\wedge b \sim c$** : The B-Average of T_ALLOC $\sim c$
- **LPpUSD $\sim c, p$** : The value of LP-per-USD for the pool p on the chain c, at a given time.
- **LPpUSD $\wedge b \sim c, p$** : The B-Average of LPpUSD $\sim c, p$
- **STGP**: The value of STG price quote in USD
- **STGP $\wedge b$** : The B-Average of STGP
- **STGPB $\sim c, p$** : The value of STG-per-Block for the pool p on the chain c, at a given time. Note: $STGPB_{\sim c, p} = STGPB_{\sim c} * ALLOC_{\sim c, p} / T_ALLOC_{\sim c}$ at a given time.
- **STGPB $\wedge b \sim c, p$** : The B-Average of STGPB $\sim c, p$
- **SLP $\sim c, p$** : The value of Staked LP for the pool p on the chain c, at a given time.
- **SLP $\wedge b \sim c, p$** : The B-Average of SLP $\sim c, p$
- **STGpLP $\sim c, p$** : The value of STG-per-LP for the pool p on the chain c, at a given time. Note: $STGpLP_{\sim c, p} = STGPB_{\sim c, p} / SLP_{\sim c, p}$ at a given time.
- **STGpLP $\wedge b \sim c, p$** : The B-Average of STGpLP $\sim c, p$
- **ROI $\sim c, p$** : The value of Return-On-Investment for the pool p on the chain c, at a given time. Note: $ROI_{\sim c, p} = STGP * STGpLP_{\sim c} * LPpUSD_{\sim c, p}$ at a given time.
- **ROI $\wedge b \sim c, p$** : The B-Average of ROI $\sim c, p$
- **APY $\sim c, p$** : The value of Annual Profit Yield for the pool p on the chain c, at a given time. Note: $APY_{\sim c, p} = (1 + ROI_{\sim c, p})^{** (year / AvgBlockTime_{\sim c})} - 1$ at a given time.
- **APY $\wedge b \sim c, p$** : The B-Average of APY $\sim c, p$

2. Timeframe-level data

- **Timeframe:** time interval $[T_a, T_b)$, where T_a and T_b are the Unix timestamp of an integer second. Note the interval is closed to the left, meaning T_a belongs to the interval, and open to the right, meaning T_b does not belong to the interval.
- **A block belongs to a timeframe** if and only if the timestamp of the block belongs to the timeframe.
- **BlockValue(X, B)** denotes the value of the feature X at the block B. Example: $\text{BlockValue}(X, B) = X^B$ the B-Average of X.
- **#-Average** of a feature X in a timeframe is defined to be $\frac{1}{n} * \sum_{i=0}^{n-1} \text{BlockValue}(X, B_i)$, where $\{B_i \mid i = 0, 1, \dots, n-1\}$ are all blocks that belong to the timeframe.
- **Sum** of a feature X in a timeframe is defined to be $\sum_{i=0}^{n-1} \text{BlockValue}(X, B_i)$, where $\{B_i \mid i = 0, 1, \dots, n-1\}$ are all blocks that belong to the timeframe.
- **STGpB^{#~c~}**: The #-Average of STG-per-Block, on a given timeframe, on the chain c.
- **ALLOC^{#~c,p~}**: The #-Average of AllocPoint, on a given timeframe, on the chain c.
- **T_ALLOC^{#~c~}**: The #-Average of Total AllocPoint, on a given timeframe, on the chain c.
- **STGpB^{#~c,p~}**: The #-Average of STG-per-Block, on a given timeframe, for the pool p on the chain c.
- **SLP^{#~c,p~}**: The #-Average of Staked LP, on a given timeframe, for the pool p on the chain c.
- **LPpUSD^{#~c,p~}**: The #-Average of LP-per-USD, on a given timeframe, for the pool p on the chain c.
- **STGpLP^{#~c,p~}**: The #-Average of STG-per-LP, on a given timeframe, for the pool p on the chain c.
- **STGpLP^{s~c,p~}**: The Sum of STG-per-LP, on a given timeframe, for the pool p on the chain c.
- **STGP^{#~}**: The #-Average of STG price quote in USD on the timeframe f.
- **ROI^{#~c,p~}**: The #-Average of Return-On-Investment, on a given timeframe, for the pool p on the chain c.
- **ROI^{s~c,p~}**: The Sum of Return-On-Investment, on a given timeframe, for the pool p on the chain c.
- **APY^{#~c,p~}**: The #-Average of Annual Profit Yield, on a given timeframe, for the pool p on the chain c.
- **APY^{s~c,p~}**: The Sum of Annual Profit Yield, on a given timeframe, for the pool p on the chain c.