

CoinDesk 60-Minute VWAP Reference Rate Methodology

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Introduction

Objective

The CoinDesk Reference Rates provide real-time, USD-denominated reference rate prices for single digital assets (“Reference Rates”). Each Reference Rate calculation is a volume weighted average price (VWAP) and includes all traded prices and quantities during a 60-minute lookback period on at least two contributing exchanges.

Additional Details

This Reference Rate methodology (“Methodology”) was developed by CoinDesk Indices (“CDI”) to achieve the stated above Objective. There may be circumstances or market events which require CDI, in its sole discretion, to deviate from these rules to ensure each Reference Rate continues to meet its Objective. This document should be read in conjunction with the CoinDesk Digital Asset Indices Policy Methodology which can be found [here](#).

Eligibility Criteria

Digital asset eligibility

Eligible digital assets for which Reference Rates will be constructed and maintained will be determined based on meeting the eligibility criteria defined below.

CDI maintains and calculates multi digital asset index families all of which have their own methodology and eligible digital assets which require reference rates as inputs to the index calculation. Each index methodology indicates which reference rate type, and corresponding methodology, is used to price index constituents.

Exchange eligibility

To be eligible, an exchange must meet the Exchange Eligibility criteria outlined in the CoinDesk Exchange Eligibility Methodology¹. The list of exchanges is reviewed on a regular basis and uses the CoinDesk Exchange Benchmark (“Exchange Benchmark”)² to select exchanges. Exchanges must be among the 15 highest scoring exchanges in the most recent Exchange Benchmark report. Exchanges that do not currently contribute must be among the 12 highest.

For each Reference Rate, the following additional criteria is used to establish eligible exchanges.

1. Must support USD-denominated trading for the single asset.
2. USD-denominated trading volume must be greater than zero for each of the 30 consecutive days leading up to and including the reference date. To reduce turnover, the trading volume for an existing contributing exchange must be greater than zero for at least 24 days of the 30-day period leading up to and including the reference date.

For each Reference Rate, the list of exchanges that pass all eligibility criteria listed above form the Selection Universe. The Index Committee reserves the right to relax the eligibility criteria based on market conditions.

Reference Rate Construction

Contributing exchange selection

For each Reference Rate, exchanges in the Selection Universe are included subject to a minimum of two³ and a maximum of three contributing exchanges (“Contributing Exchanges”). Contributing Exchanges for each digital asset Reference Rate are determined each quarter based using the following process:

Step 1: Determine the 90-day notional volume in the USD-quoted market on each Eligible Exchange. If less than 90 days are available, all available data is used to determine the 90-day notional volume.

¹ For more details on the CoinDesk Exchange Eligibility Methodology, click [here](#).

² For more details on the CoinDesk Exchange Benchmark, click [here](#).

³ Two Contributing Exchange minimum subject to ‘Inactivity’ section.

Step 2: Rank the results of Step 1 in descending order.

Step 3: Select the two highest ranked exchanges with U.S. Licensure.

Step 4: If additional exchanges remain after Step 3, the third Contributing Exchange will be selected from the remaining exchanges based on the following rule: If one of the remaining exchanges is an existing Contributing Exchange, it will remain a Contributing Exchange unless the highest ranked non-contributing exchange not selected in Step 3 is 1.20 times the volume of the current Contributing Exchange. Otherwise, the third exchange selected will be the highest ranked exchange not selected in Step 3.

For a complete list of exchanges that may contribute to a Reference Rate, refer to the column labelled [CoinDesk 60-minute VWAP] in the CoinDesk Eligible Exchange List which can be found [here](#).

Reference Rate Calculation

Reference Rates are calculated using a volume weighted average price (VWAP) across Contributing Exchanges over the prior 60 minutes. Price and volume inputs are sourced and normalized from the Contributing Exchanges. Additional validations on the data inputs, such as outliers, are not performed.

Reference rate calculation formula

$$Reference\ Rate_{i,t} = \frac{\sum_1^n (TradeVolume_{i,LB} * TradePrice_{i,LB})}{\sum_1^n TradeVolume_{i,LB}}$$

where,

$Reference\ Rate_{i,t}$ is the reference rate of digital asset i at time t

$TradeVolume_{i,LB}$ is the volume of each trade of digital asset i during the lookback period

$TradePrice_{i,LB}$ is the price of each trade of digital asset i during the lookback period
 n is the number of constituent exchanges
 LB is the 60 minute lookback period ending at time t

Calculation frequency

Reference Rates for digital asset tokens are calculated approximately every five seconds.

Inactivity during lookback period

There may be periods of trading inactivity on Contributing Exchanges. A digital asset's Reference Rate will continue to be calculated provided at least one Contributing Exchange has an eligible trade during the applicable lookback period. In the event there are no trades on any of the Contributing Exchanges during the applicable lookback period, the most recent calculated Reference Rate price will be maintained until trading resumes. Contributing Exchanges that do not meet the minimum trading requirements defined in Eligibility Criteria will be removed at the next review.

Reference Rate Maintenance

The review process and schedule for the Settlement Reference Rates is detailed below.

Quarterly review

Each Reference Rate is reviewed quarterly based on the rules described above. Any constituent exchange changes resulting from the quarterly review are announced prior to the effective date and implemented on the second business day of the reconstitution months: January, April, July, and October.

Schedule of quarterly review

The quarterly review is conducted and communicated on the following schedule:

1. **Reference Date.** This is the snapshot date for data used to perform the monthly review. This is two weeks prior to the Announcement Date..
2. **Announcement Date.** This is the date on which changes to Contributing Exchanges are announced. This is two weeks prior to the Effective Date, or if not a business day, the following business day.
3. **Effective Date.** The date on which the changes become effective. This is the second business day of January, April, July and October, or if not a business day, the following business day.

Table 1: Review Timing Example

Activity Description	Timing	Example
Reference Date	Announcement Date minus 2 business days	06/14/2024
Announcement Date	Effective Date minus 14 calendar days (following business day if this is a holiday)	06/18/2024
Effective Date	4 p.m Eastern Time on the second business day of Jan, Apr, Jul and Oct.	07/02/2024

In addition to the quarterly process, each Reference Rate is monitored for trading disruptions. Out-of-review monitoring, which would require a modification, only applies in extraordinary circumstances.

Deletions

If a digital asset is delisted or no longer trading on a Contributing Exchange, the impacted exchange will no longer contribute to the calculation of the applicable Reference Rate (see Additions section).

Additions

There will be no additions to the Reference Rates between reconstitutions unless the number of exchanges contributing to the calculation of the Reference Rate drops below two. If the constituent count drops below two, the Committee will review the eligible universe monthly and determine the appropriate action. The action may include adding an additional exchange prior to the next scheduled review. In certain circumstances, a Reference Rate may be calculated with only one contributing exchange.

Reference rate termination

CDI reserves the right to terminate a Reference Rate for a digital asset, including in the event the required number of Contributing Exchanges cannot be met.

Data Distribution

Real-time reference rates values are calculated 24x7 at 5 second intervals and are available to subscribers via API and scheduled email updates.

Governance

The Reference Rates are governed by a Committee that provides ongoing oversight of each Reference Rate and its Methodology. For more details on the Committee, please refer to the Index Governance section of the [CoinDesk Digital Asset Indices Policy Methodology](#).

Appendix 2: Methodology Changes

The table below is a summary of modifications to this Methodology.

Effective Date	Prior Treatment	Updated Treatment	Material Change
May 1, 2024	Contributing Exchanges for each CoinDesk Reference Rate reviewed monthly.	Contributing Exchanges for each CoinDesk Reference Rate reviewed quarterly.	Yes
Apr 1, 2024	Only U.S. licensed exchanges are eligible for inclusion.	U.S. and non-U.S. exchanges that meet eligibility requirements are eligible for inclusion subject to a minimum of 2 U.S. Licensed exchanges	Yes
Aug 23, 2023	Reference rates with three constituent exchanges were not updated on non-quarter-end reviews unless a contributing exchange failed the exchange eligibility criteria	All reference rates undergo a full review of each month. Any updates are announced and implemented based on the reconstitution timing	No

Appendix 3: Document Revision History

Timing	Description
Mar 5, 2026	Updated exchange eligibility language to reference the CoinDesk Exchange Eligibility Methodology and associated list of exchanges.
Oct 29, 2025	Annual methodology review. Removed Spot Reference Rates as these were replaced with CCIXber for all “Spot” indices.
Aug 23, 2024	Addition of Spot Reference Rates
Apr 29, 2024	See Methodology Changes appendix.
Apr 1, 2024	See Methodology Changes appendix.
Aug 23, 2023	Annual methodology performed including minor updates and clarifications and the modification included in the Methodology Changes appendix.
Jul 21, 2023	Updates and clarifications to various sections.
Feb 16, 2023	Inserted <<Monthly Review>> description under Reference Rate Maintenance section to provide additional clarification on potential additions/deletions of contributing exchanges between quarterly reviews.
Dec 21, 2022	Clarification in Data Sources appendix related to the procedure to estimate notional volume.
Oct 9, 2022	Minor edits
Aug 23, 2022	Initial Version

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