

CoinDesk Indices, Inc.

System and Organization Controls 1 (SOC 1) Type 2 Report

Report on CoinDesk Indices, Inc.'s Description of its
Digital Currency Index Platform System and on the
Suitability of Design and Operating Effectiveness of its
Controls Throughout the Period January 1, 2023 to
December 31, 2023



CoinDesk Indices, Inc.

Report on CoinDesk Indices, Inc.'s Description of its Digital Currency Index Platform System and on the Suitability of Design and Operating Effectiveness of Controls for the Period January 1, 2023 to December 31, 2023

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Section 1

Independent Service Auditor's Report



Section 1 - Independent Service Auditor's Report

To the Management of CoinDesk Indices, Inc.

Scope

We have examined CoinDesk Indices, Inc.'s description of its Digital Currency Index Platform System and CoinDesk, Inc.'s description of its human resources and corporate information technology services provided to CoinDesk Indices, Inc. both of which are included in entitled "Description of CoinDesk Indices, Inc.'s Description of its Digital Currency Index Platform System" for processing user entities' transactions throughout the period January 1, 2023 to December 31, 2023, (description) and the suitability of the design and operating effectiveness of CoinDesk Indices, Inc.'s and CoinDesk, Inc.'s controls included in the description to achieve the related control objectives stated in the description, based on the criteria identified in "CoinDesk Indices, Inc.'s Management Assertion" and "CoinDesk, Inc.'s Management Assertion" assertions. CoinDesk, Inc. is a subservice organization that provides human resources and corporate information technology services to CoinDesk Indices, Inc. CoinDesk Indices, Inc.'s description includes a description of CoinDesk, Inc.'s human resources and corporate information technology services used by CoinDesk Indices, Inc. to process user entities' transactions, including controls relevant to the control objectives stated in the description. The controls and control objectives included in the description are those that management of CoinDesk Indices, Inc. and management of CoinDesk, Inc. believe are likely to be relevant to user entities' internal control over financial reporting, and the description does not include those aspects of the Digital Currency Index Platform system that are not likely to be relevant to user entities' internal control over financial reporting.

The information about CoinDesk Indices, Inc.'s Digital Currency Index Platform system in section 5, "Other Information Provided by CoinDesk Indices, Inc." is presented by management of CoinDesk Indices, Inc. to provide additional information and is not a part of CoinDesk Indices, Inc.'s description of its Digital Currency Index Platform system made available to user entities during the period January 1, 2023 to December 31, 2023. Information about CoinDesk Indices, Inc.'s response to control findings has not been subjected to the procedures applied in the examination of the description of the Digital Currency Index Platform system and of the suitability of the design and operating effectiveness of controls to achieve the related control objectives stated in the description of the Digital Currency Index Platform system and, accordingly, we express no opinion on it.

CoinDesk Indices, Inc. uses Amazon Web Services (AWS) for cloud hosting services. The description includes only the control objectives and related controls of CoinDesk Indices, Inc. and excludes the control objectives and related controls of the subservice organization. The description also indicates that certain control objectives specified by CoinDesk Indices, Inc. can be achieved only if complementary subservice organization controls assumed in the design of CoinDesk Indices, Inc.'s controls are suitably designed and operating effectively, along with the related controls at CoinDesk Indices, Inc. Our examination did not extend to controls of the subservice organization, and we have not evaluated the suitability of the design or operating effectiveness of such complementary subservice organization controls.

The description indicates that certain control objectives specified in the description can be achieved only if complementary user entity controls assumed in the design of CoinDesk Indices, Inc.'s controls are suitably designed and operating effectively, along with related controls at the service organization and the subservice organization. Our examination did not extend to such complementary user entity controls and we have not evaluated the suitability of the design or operating effectiveness of such complementary user entity controls.



Service organization’s responsibilities

In section 2, CoinDesk Indices, Inc. and CoinDesk, Inc. has or have provided an or their assertion(s) about the fairness of the presentation of the description and suitability of the design and operating effectiveness of the controls to achieve the related control objectives stated in the description. CoinDesk Indices, Inc. and CoinDesk, Inc. is or are responsible for preparing the description and its or their assertion, including the completeness, accuracy, and method of presentation of the description and the assertion or assertions, providing the services covered by the description, specifying the control objectives and stating them in the description, identifying the risks that threaten the achievement of the control objectives, selecting the criteria stated in the assertion or assertions, and designing, implementing, and documenting controls that are suitably designed and operating effectively to achieve the related control objectives stated in the description.

Service auditor’s responsibilities

Our responsibility is to express an opinion on the fairness of the presentation of the description and on the suitability of the design and operating effectiveness of the controls to achieve the related control objectives stated in the description, based on our examination.

Our examination was conducted in accordance with attestation standards established by the American Institute of Certified Public Accountants. Those standards require that we plan and perform the examination to obtain reasonable assurance about whether, in all material respects, based on the criteria in management’s assertion or assertions, the description is fairly presented and the controls were suitably designed and operating effectively to achieve the related control objectives stated in the description throughout the period January 1, 2023 to December 31, 2023. We believe that the evidence we obtained is sufficient and appropriate to provide a reasonable basis for our opinion.

An examination of a description of a service organization’s system and the suitability of the design and operating effectiveness of controls involves

- performing procedures to obtain evidence about the fairness of the presentation of the description and the suitability of the design and operating effectiveness of the controls to achieve the related control objectives stated in the description, based on the criteria in management’s assertion or assertions.
- assessing the risks that the description is not fairly presented and that the controls were not suitably designed or operating effectively to achieve the related control objectives stated in the description.
- testing the operating effectiveness of those controls that management considers necessary to provide reasonable assurance that the related control objectives stated in the description were achieved.
- evaluating the overall presentation of the description, suitability of the control objectives stated in the description, and suitability of the criteria specified by the service organization and subservice organization in their or its assertion(s).

We are required to be independent and to meet our other ethical responsibilities in accordance with relevant ethical requirements relating to the engagement.

Inherent limitations

The description is prepared to meet the common needs of a broad range of user entities and their auditors who audit and report on user entities’ financial statements and may not, therefore, include every aspect of the system that each individual user entity may consider important in its own particular environment. Because of their nature, controls at a service organization or subservice organization may not prevent, or detect and correct, all misstatements in processing or reporting transactions. Also, the projection to the future of any evaluation of the fairness of the presentation of the description, or conclusions about the suitability of the design or operating effectiveness of the controls to achieve the related control objectives,



is subject to the risk that controls at a service organization or subservice organization may become ineffective.

Description of tests of controls

The specific controls tested and the nature, timing, and results of those tests are listed in section 4.

Opinion

In our opinion, in all material respects, based on the criteria described in CoinDesk Indices, Inc.'s assertion and CoinDesk, Inc.'s assertion

- a. the description fairly presents the CoinDesk Indices, Inc.'s Digital Currency Index Platform system and CoinDesk, Inc.'s provided services to the CoinDesk, Indices, Inc. that was or were designed and implemented throughout the period January 1, 2023 to December 31, 2023.
- b. the controls related to the control objectives stated in the description were suitably designed to provide reasonable assurance that the control objectives would be achieved if the controls operated effectively throughout the period January 1, 2023 to December 31, 2023 and subservice organization and user entities applied the complementary controls assumed in the design of CoinDesk Indices, Inc.'s controls throughout the period January 1, 2023 to December 31, 2023.
- c. the controls operated effectively to provide reasonable assurance that the control objectives stated in the description were achieved throughout the period January 1, 2023 to December 31, 2023 if complementary user entity controls assumed in the design of CoinDesk Indices, Inc.'s controls operated effectively throughout the period January 1, 2023 to December 31, 2023.

Restricted use

This report, including the description of tests of controls and results thereof in section 4, is intended solely for the information and use of CoinDesk Indices, Inc., user entities of CoinDesk Indices, Inc.'s Digital Currency Index Platform system during some or all of the period January 1, 2023 to December 31, 2023, and their auditors who audit and report on such user entities' financial statements or internal control over financial reporting and have a sufficient understanding to consider it, along with other information, including information about controls implemented by user entities themselves, when assessing the risks of material misstatement of user entities' financial statements. This report is not intended to be and should not be used by anyone other than these specified parties.

Maye Hoffman McCann P.C.

Boston, Massachusetts

April 3, 2024

Section 2

Assertions of Management



Section 2 - CoinDesk Indices, Inc.'s Management Assertion

We have prepared the description of CoinDesk Indices, Inc.'s Digital Currency Index Platform System entitled "Description of CoinDesk Indices, Inc.'s Digital Currency Index Platform System" for processing user entities' transactions throughout the period January 1, 2023 to December 31, 2023, (description) for user entities of the system during some or all of the period January 1, 2023 to December 31, 2023, and their auditors who audit and report on such user entities' financial statements or internal control over financial statement reporting and have a sufficient understanding to consider it, along with other information, including information about controls implemented by subservice organizations and user entities of the system themselves, when assessing the risks of material misstatements of user entities' financial statements.

CoinDesk Indices, Inc. uses CoinDesk, Inc., a subservice organization, to provide human resources and corporate information technology services. CoinDesk Indices, Inc.'s description includes a description of CoinDesk, Inc.'s human resources and corporate information technology services used by the CoinDesk Indices, Inc. to process transactions for user entities, including controls relevant to the control objectives stated in the description. CoinDesk Inc.'s assertion is presented in section 2.

CoinDesk Indices, Inc. uses a subservice organization for cloud hosting services. The description indicates that complementary subservice organization controls that are suitably designed and operating efficiently are necessary, along with controls at CoinDesk Indices, Inc. to achieve CoinDesk Indices, Inc.'s service commitments and system requirements based on the applicable trust services criteria. The description presents CoinDesk Indices, Inc.'s controls, the applicable trust service criteria, and the types of complementary subservice organization controls assumed in the design of CoinDesk Indices, Inc.'s controls. The description does not disclose the actual controls at the subservice organization.

The description indicates that certain control objectives specified in the description can be achieved only if complementary user entity controls assumed in the design of CoinDesk Indices, Inc.'s controls are suitably designed and operating effectively, along with related controls at the service organization. The description does not extend to controls of the user entities.

We confirm, to the best of our knowledge and belief, that:

- a. The description fairly presents the Digital Currency Index Platform system made available to user entities of the system during some or all of the period January 1, 2023 to December 31, 2023 for processing user entities' transactions as it relates to controls that are likely to be relevant to user entities' internal control over financial reporting. The criteria we used in making this assertion were that the description:
 - i. presents how the system made available to user entities of the system was designed and implemented to process relevant user entity transactions, including, if applicable:
 - (1) the types of services provided including, as appropriate, the classes of transactions processed.
 - (2) the procedures, within both automated and manual systems, by which those services are provided including, as appropriate, procedures by which transactions are initiated, authorized, recorded, processed, corrected as necessary, and transferred to the reports and other information prepared for user entities of the system.

- (3) the information used in the performance of the procedures including, if applicable, related accounting records, whether electronic or manual, and supporting information involved in initiating, authorizing, recording, processing, and reporting transactions; this includes the correction of incorrect information and how information is transferred to the reports and other information prepared for user entities.
 - (4) how the system captures and addresses significant events and conditions other than transactions.
 - (5) the process used to prepare reports and other information for user entities.
 - (6) the services performed by a subservice organization, if any, including whether the inclusive method or the carve-out method has been used in relation to them.
 - (7) the specified control objectives and controls designed to achieve those objectives including, as applicable, complementary user entity controls and complementary subservice organization controls assumed in the design of the service organization's controls.
 - (8) other aspects of our control environment, risk assessment process, information and communications (including the related business processes), control activities, and monitoring activities that are relevant to the services provided.
- ii. includes relevant details of changes to the CoinDesk Indices, Inc.'s system during the period covered by the description.
 - iii. does not omit or distort information relevant to the service organization's system, while acknowledging that the description is prepared to meet the common needs of a broad range of user entities of the system and their user auditors, and may not, therefore, include every aspect of the Digital Currency Index Platform System that each individual user entity of the system and its auditor may consider important in its own particular environment.
- b. the controls related to the control objectives stated in the description were suitably designed and operating effectively throughout the period January 1, 2023 through December 31, 2023 to achieve those control objectives if subservice organizations and user entities applied the complementary controls assumed in the design of CoinDesk Indices, Inc.'s controls throughout the period January 1, 2023 to December 31, 2023. The criteria we used in making this assertion were that
 - i. the risks that threaten the achievement of the control objectives stated in the description have been identified by management of the service organization.
 - ii. the controls identified in the description would, if operating effectively, provide reasonable assurance that those risks would not prevent the control objectives stated in the description from being achieved.
 - iii. the controls were consistently applied as designed, including whether manual controls were applied by individuals who have the appropriate competence and authority.

CoinDesk Indices, Inc.

Section 2 – CoinDesk, Inc.’s Management Assertion

CoinDesk, Inc. provides human resources and corporate information technology services to CoinDesk Indices, Inc. The services provided by CoinDesk, Inc. are part of CoinDesk Indices, Inc.’s Digital Currency Index Platform system. We are responsible for the description of CoinDesk, Inc.’s human resources and corporate information technology services provided to CoinDesk Indices, Inc. and user entities of CoinDesk Indices, Inc.’s Digital Currency Index Platform system, which is included in “Description of CoinDesk Indices, Inc.’s Digital Currency Index Platform System” for processing user entities’ transactions throughout the period January 1, 2023 to December 31, 2023, (description) for user entities of the system during some or all of the period January 1, 2023 to December 31, 2023, and their auditors who audit and report on such user entities’ financial statements or internal controls over financial reporting and have sufficient understanding to consider it, along with other information, when assessing the risks of material misstatement of user entities’ financial statements.

We confirm, to the best of our knowledge and belief, that

- a. the description fairly presents CoinDesk, Inc.’s human resources and corporate information technology services made available to CoinDesk Indices, Inc. and user entities of CoinDesk Indices, Inc.’s Digital Currency Index Platform system during some or all of the period January 1, 2023 to December 31, 2023, for processing user entities’ transactions as it relates to controls that are likely to be relevant to user entities’ internal controls over financial reporting, The criteria we used in making this assertion were that the description
 - i. presents how the human resources and corporate information technology services made available to CoinDesk Indices, Inc. and user entities of CoinDesk Indices, Inc.’s Digital Currency Index Platform were designed and implemented to process relevant user entity transactions including, if applicable.
 - (1) the types of services provided by CoinDesk, Inc., including, as appropriate, the classes of transactions processed.
 - (2) the procedures, within both automated and manual systems, by which those services are provided, including as appropriate, procedures by which transactions are initiated, authorized, recorded, processed, corrected as necessary, and transferred to the reports and other information prepared for user entities of the system.
 - (3) the information used in the performance of CoinDesk, Inc.’s procedures, including, if applicable, related accounting records, whether electronic or manual, and supporting information involved initiating, authorizing, recording, processing and reporting transactions; this includes the correction of incorrect information and how information is transferred to the reports and other information prepared for user entities.
 - (4) how the human resources and corporate information technology services captures and addresses significant events and conditions other than transactions.
 - (5) the process used to prepare reports and other information for user entities.

- (6) services performed by a subservice organization, if any, and whether the carve-out or the inclusive method has been used in relation to them.
 - (7) the specified control objectives and controls designed to achieve those objectives including, as applicable, complementary user entity controls assumed in the design of the service organization's controls.
 - (8) other aspects of our control environment, risk assessment process information and communications (including the related business processes), control activities, and monitoring activities that are relevant to the services provided.
- ii. includes relevant details of changes to CoinDesk, Inc.'s services during the period covered by the description.
- iii. does not omit or distort information relevant to CoinDesk, Inc.'s services, while acknowledging that the description is prepared to meet the common needs of a broad range of user entities of the system and their user auditors, and may not, therefore, include every aspect of the human resources and corporate information technology services that each individual user entity of the system and its auditor may consider important in its own particular environment.
- b. CoinDesk, Inc.'s controls related to the control objectives stated in the description were operating as described throughout the period January 1, 2023 to December 31, 2023. The criteria we used in making this assertion were that
 - i. CoinDesk, Inc.'s controls were consistently applied as described, including whether manual controls were applied by individuals who have the appropriate competence and authority.

CoinDesk, Inc.

Section 3

CoinDesk Indices, Inc.'s Description of its
Digital Currency Index Platform System

CoinDesk Indices, Inc.

Report on CoinDesk Indices, Inc.'s Description of its Digital Currency Index Platform System and on the Suitability of Design and Operating Effectiveness of Controls for the Period January 1, 2023 to December 31, 2023

Section 3 – CoinDesk Indices, Inc.'s Description of its Digital Currency Index Platform System

Overview of Operations

Company Background

CoinDesk Indices has three distinct product lines: single-asset reference indices, broad market and sector indices, and systematic strategy indices. The CoinDesk Bitcoin Price Index (XBX) has the longest index track record and underlies the world's largest digital asset products. The broad market and sector indices offer the most comprehensive broad market benchmarks, and the investible sectors are constructed using CoinDesk Indices' industry-adopted taxonomy. The systematic strategy indices help investors target specific outcomes.

In 2014, CoinDesk Indices launched with its flagship CoinDesk Bitcoin Price Index (XBX). Since then, financial institutions have been relying on the XBX and other CoinDesk Indices products to benchmark billions of dollars in assets under management.

CoinDesk Indices was acquired and established in 2021 as an independent subsidiary of CoinDesk, Inc., a trusted media platform for news and events for the next generation of investing and the future of money. With the acquisition, CoinDesk positioned itself to be a unified source for crypto media, events, research, pricing, and data. CoinDesk was an independent operating subsidiary of Digital Currency Group, which invests in cryptocurrencies and blockchain startups, until November 17, 2023, when CoinDesk was acquired by the Bullish group, owner of Bullish, a regulated, digital assets exchange. The Bullish group is majority-owned by Block.one. Both companies have interests in a variety of blockchain and digital asset businesses and significant holdings of digital assets, including Bitcoin.

The Digital Asset Classification Standard (DACS) was developed by CoinDesk Indices to provide a reliable, comprehensive, and standardized classification system for digital assets. Currently, the DACS includes the top 500 eligible digital assets by market capitalization and the DACS structure offers 3 levels of granularity across 7 Sectors, 26 Industry Groups and 40 Industries.

While DACS is unique to digital assets, it will serve many of the same functions as classification systems used for traditional asset classes. Among other things, DACS provides the market with a transparent and standardized method to determine sector and industry exposure, facilitates portfolio attribution analysis, and will help pinpoint investment opportunities.

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Components of the System Used to Provide the Service

Boundaries of the System

The scope of this SOC 1 is solely around the Digital Currency Index Platform (the “System”) that maintains CoinDesk Indices and market data as operated and managed by the team during the period under review. The scope does not include other CoinDesk, Inc. services and offerings.

Infrastructure

Supporting servers for market data are responsible for collecting trade data from exchanges, calculating index and reference rate values, building candles, sending data directly to client emails, publishing data to WebSocket, and archiving data.

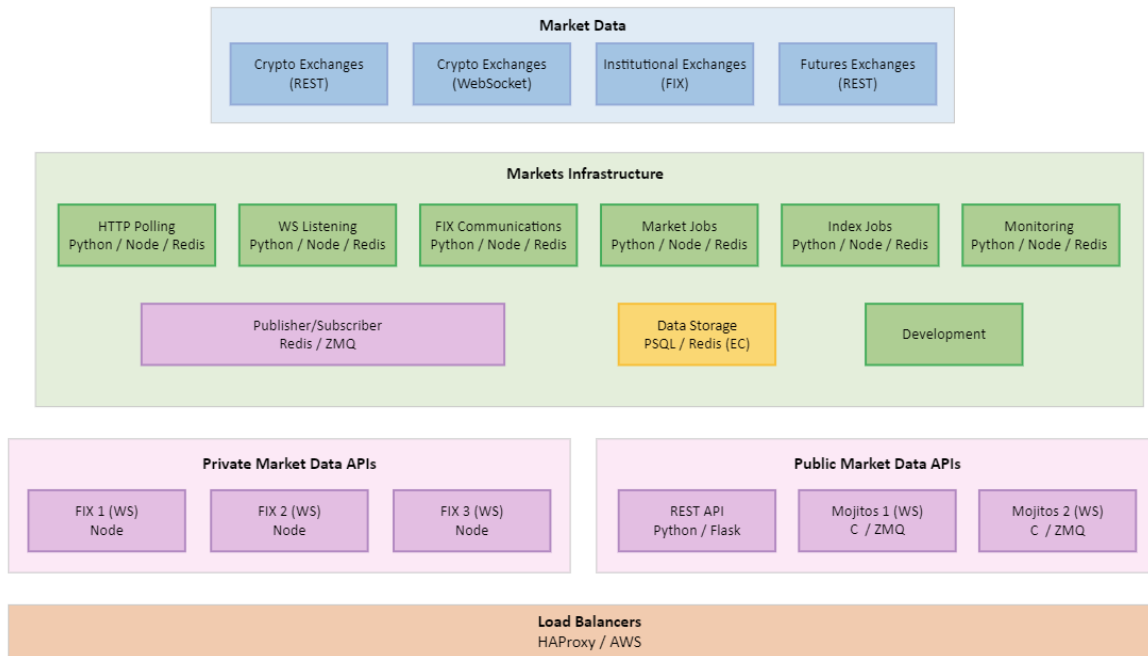
Indices and market APIs (Application Programming Interface) provide programmatic access to normalized data from market venues and for CoinDesk Indices’ proprietary indices. The API is designed for low-latency, high-throughput applications that require high availability.

The System is 100% hosted in AWS. The System functionality depends on the following AWS and ancillary services:

- AWS Elastic Container Registry (ECR) - Serverless Computation and Containerization
- AWS Fargate - Serverless Computation and Containerization
- AWS Lambda - Serverless Computation and Containerization
- Elastic Compute Cloud (EC2) - Application hosting – Market boxes
- Identity Access Management (IAM) – Access control
- GitHub – Development and version control
- Load Balancer – Reverse proxy and traffic distributor
- Mojitos - WebSocket
- MongoDB – Database storage
- RabbitMQ – Calculation logs
- Redis – Database, cache, message broker
- Relational Database Service (RDS) – Postgre SQL database
- Simple Storage Service (S3) - Digital asset/file storage
- Squid-proxy – Proxy for exchange integration

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Software

CoinDesk Indices is supported by systems and software used for the delivery of indices and market data and services, which include:

- AWS Inspector – Vulnerability Management
- AWS GuardDuty – Threat Detection
- BambooHR – Human Resource documentation and personnel management
- Confluence – Team collaboration and policy retention
- Grafana – Observability monitoring
- Jira – Change management, user provisioning and workflows
- PagerDuty – System and Application Alerting
- Sophos Intercept X Advanced – Anti-malware protection and detection
- Terraform - Infrastructure as code
- WireGuard – Remote access and virtual private network (VPN)

People

CoinDesk Indices personnel involved in the operation, success, and use of the System are:

- Executive Management
 - President
 - Responsible for general oversight of business operations and the culture of the organization.
 - Head of Index Governance and Operations

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- Responsible for day-to-day production and oversight of the indices and governance of new products or changes to existing products.
 - Head of Engineering
 - Responsible for development and day-to-day operations of the System
 - Product Owner
 - Responsible for product development with regards to the System.
- Information Security Committee
 - Provide guidance, oversight, and direction to CoinDesk Indices' teams as it relates to data governance, privacy, compliance, and information security initiatives undertaken by the organization. The Committee includes at least one member who is not involved in the performance of controls.
- Security, Risk, and Compliance Team
 - Oversee and monitor the security and compliance of systems and assets utilized to support the System.
- Engineering Team
 - Developers
 - Write and maintain code for the frontend and backend of the System, such as new features, patches, and bug fixes.
 - Site Reliability Engineers
 - Responsible for the infrastructure that hosts and supports the System. Supports information technology, security, and compliance responsibilities.
- Product Management Team
 - Research and identify opportunities to create new product functionality and indices.
 - Responsible for collecting and organizing feedback and enhancement requests from current clients.
 - Responsible for revenue-generating activities. This includes managing digital marketing initiatives, the creation and maintenance of digital marketing assets and all sales and renewal activity.

Procedures and Control Activities

The Information Security Committee and supporting management personnel maintain and annually review the following documented CoinDesk Indices operating policies and procedures:

- Acceptable Use of Technology
- Business Continuity Management (BC) Policy and Plan
- Change Management Policy and Procedures
- Client Account Management Procedures
- Code of Conduct
- Confidentiality and Rights Agreement
- Conflict of Interest Policy
- Cybersecurity Policy
- Data Classification and Handling Policy

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- Disaster Recovery (DR) Policy and Plan
- Employee Handbook
- Incident Response (IR) Plan
- Pandemic Policy
- Password Standards Policy
- Remote Access Policy
- Provisioning Procedures
- Risk Management Policy
- Vendor Management Policy
- Whistleblowing Policy

1. **Physical Security**

The System is hosted entirely on AWS so all physical security relating to the infrastructure is provided by Amazon.

2. **Logical Security**

Employee Authentication and Authorization

Authentication requirements (password configuration settings and multifactor authentication) to the System's backend environment are configured in accordance with CoinDesk Indices' Password Standards Policy. Employee access to the backend environment is restricted to only authorized personnel that require access to perform their job responsibilities.

CoinDesk Indices also deploys authentication requirements (password configuration settings and multifactor authentication) for software, tools, and other solutions used to support the operation of the System. Authentication requirements to access client information, the source code repositories and deployment tools are configured in accordance with CoinDesk Indices' Password Standards Policy. Furthermore, access is restricted to authorized personnel that require access to work with the source code or migrate code to different environments.

Access Provisioning

New access to in-scope components must be approved by authorized Management, documented, and follow a predefined workflow. The requestor and reason for the new access is also documented within an Onboarding or Change of Access ticket. Evidence of approval or denial, who approved it and when, is retained within the request ticket.

On at least an annual basis, accounts that support the systems and software used for the delivery of indices and market data services are reviewed. If an account is determined to not be required, it is removed and documented in the dedicated ticket workflow.

Access Removal

Terminated employees' access to in-scope systems is removed in a timely and expedited manner per CoinDesk Indices' defined workflow. Access to systems, applications, and accounts are documented and retained through an employee's tenure at the organization. Upon termination, remote access to the System

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is removed. Depending on the type of access, the responsible party is assigned for removing access to that account from the terminated employee. Each of these accounts has a manager and backup listed. Depending on the type of account, this would involve a password change or removing the employee's user from the account. If required, user access to accounts that involve a password change and maintain being active beyond termination are documented.

Privileged Access

Administrative privileges to AWS and supporting systems are limited to only authorized and documented personnel. Access administrative activity, including but not limited to system changes, adding new assets, and adding new users in the production environment is logged and monitored.

On a quarterly basis, accounts with privileged accounts to in-scope AWS services and resources are reviewed by the Information Security Committee. If an account is determined to not be required, it is removed and documented in the dedicated ticket workflow.

Users with heightened system access attend technical security training to ensure they are up to date on cyber vulnerabilities and threats.

3. Change Management

Application Change Management

CoinDesk Indices has a formal systems development life cycle (SDLC) methodology that governs the development, implementation, and maintenance of information systems and related technology requirements.

The Engineering Team employs an Agile project methodology, specifically Scrum, for production fixes and enhancements. Production fixes are done by dedicated developers. The development team is composed of Vice President of Engineering and backend engineers. Additionally, oversight is provided by executive management and the product owner. Meetings are held using a bi-weekly sprint cadence.

At the beginning of each sprint, the sprint planning meeting is held. The attendees include all developers, the Head of Engineering, and Product Owners. Product Owners explain each product request in detail, the developers estimate the effort required to complete the item, which includes development, testing, and deployment to production. If approved for the sprint, the item is then moved into a sprint. This is done for each backlog item until the average effort per sprint is exceeded.

The sprint review meeting is held at the end of each sprint. During this meeting, Engineering Team members provide the demo of the system integration (SI) that he/she has worked on, and feedback is provided by others. Any follow-up action items are documented and added to the next sprint.

In the event of an identified emergency change, the lifecycle of the change will be executed with utmost urgency. There may be fewer people involved in the change management process review, and the change assessment may involve fewer steps, but any emergency change must still be authorized by the management team, even in cases where the change is not reviewed in advance. Emergency changes are recorded and retained in the change log.

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Changes to the System are documented in the change log, authorized, tested, and approved prior to migration to production. Changes to system code are developed and tested in separate development and staging environments before implementation. The change log is handled by the project management software, Jira.

Infrastructure and Network Change Management

AWS infrastructure changes are documented and tracked throughout the entirety of the change process. All changes to the AWS infrastructure are recorded within weekly meetings held during the change lifecycle to discuss pending questions, blockers, and the progress of the change. All changes must be reviewed prior to implementation into the production environment.

The above change process is applied to all servers and services that are critical to the production environment's availability and functionality.

All changes impacting the security of ancillary systems that contain client information or support systems and software used for the delivery of indices and market data are tracked within a dedicated security change log and follow the standards within the Change Management Policy.

If it is decided that the change shall be tested, changes are made to an AWS virtual private cloud (VPC) development environment first and tested until the team is confident that the change can be pushed to the staging and finally production environments.

4. Backups

Backup Strategy

Back-ups are scheduled and retained for all critical production resources in accordance with procedures. All critical production resources are backed up nightly. Production backups are copied in two different AWS geographic regions for redundancy; US-West-2 and a disaster recovery vault in US-East-1. In the event a backup fails, an alert is sent to the Site Reliability Engineer team for investigation and remediation.

Testing is performed on a scheduled quarterly basis to validate backups are reliable and data is recoverable. The test is documented and retained within a dedicated change management ticket.

CoinDesk Indices deploys critical AWS resources and services (databases, digital assets, and web servers) to multiple data centers in AWS' US-West-2 region (Oregon) physically secured by AWS to ensure physical redundancy.

5. Availability

System Availability

Baseline rate limits have been defined on CDI's load balancers to ensure traffic to the CDI services is managed and available for all authorized customers.

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Indices and market data is hosted on three production servers (one primary and two replicas) and where possible, resources are deployed redundantly across multiple availability zones to ensure durability and redundancy.

System health and availability are monitored. Alarm criteria are established and managed by Site Reliability Engineers, and management. These include the reachability of the services hosted as well as underlying system metrics such as Central Processing Unit (CPU) usage, disk storage, and memory utilization. Triggered alarms are sent to Site Reliability Engineers for investigation and resolution.

Capacity and performance forecasting is performed on an ongoing basis to evaluate system demands. Resources are allocated where necessary. The change management process is initiated when system usage exceeds control tolerances. Tolerances are defined based on the resource requirements for each system component and set at a level to allow for changes to be made proactively. Alerts are generated when defined tolerances are met and/or exceeded.

6. Index Governance Processes

CDI's index committee ("Index Committee") serves as the primary governance body to oversee the design, maintenance, and publication of CDI's indices and their corresponding methodologies to ensure each index achieves its stated objective and is calculated and reconstituted according to the rules detailed in its respective methodology. The Index Committee reports into the executive management of CDI.

The Index Committee meets on a regular basis (at least quarterly) and is responsible for the following Benchmark Administration functions:

1. Application of the Index Methodology to achieve the stated objective.
2. Oversight of consultations seeking feedback on potential changes to an Index Methodology.
3. Review and approval of material changes to an Index Methodology.
4. Use of discretion and/or expert judgement during the application of the Index Methodology. Review and approval of new Index Methodologies prior to launch including use of new data sets and other inputs.
5. Review and approval of modifications for material data inputs used during the application of the Index Methodology.
6. Perform an annual review of all Methodology and Policy documents that govern the administration of CoinDesk Benchmarks.
7. Ensure the team has the necessary bandwidth, skill sets and systems to manage, calculate and publish the indices.
8. Determine temporary measures that may be required to achieve the Index Objective based on market conditions or disruptions not contemplated in the Index Methodology.
9. Oversee and approve any unscheduled index changes and index recalculations.

For pricing of its reference rates and single digital asset indices, CDI leverages exchange data from a group of eligible exchanges. The list of eligible exchanges is reviewed on a semi-annual basis to ensure adherence to set of criteria as outlined in index methodology documents. To ensure the accuracy and reliability of

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CoinDesk's index data, CDI performs various validations on its reference rates and multi-digital asset indices.

7. New Client Onboarding

CDI utilizes several controls to provide reasonable assurance that new clients are authorized prior to connecting to the CDI platform, namely its index data API. First, CDI Sales and, if necessary, Legal, will establish the terms and conditions for use of its services via its Master License Agreement. Once the agreement is in place, Sales will notify Index Operations and Engineering that the new client is authorized to receive data via the API. Next, API procedures and guidelines will be provided to the client for purposes of onboarding to the API. CDI engineering maintains such API client procedures and guidelines, which are reviewed on an annual basis.

8. New Indices

CDI maintains processes and controls regarding the launch of new CoinDesk indices. The catalogue of current indices is maintained and published on CDI's Governance website. The catalogue includes details about each index including index tickers, names, launch dates, methodology documents, base dates and base values.

Requests for new indices are input into a project management application and tracked during the various phases of the process to design, build, approve and launch the index. Once the specific requirements for an index are finalized, an Index Methodology will be created or, if the index is part of an existing family, updated to reflect the necessary details and rules to administer the new index.

The relevant Index Methodology will be presented to the Index Committee for review. The Index Committee will review the methodology to ensure the index as described in the methodology meets the stated objective and can be properly administered and overseen by CDI. If applicable, the Index Committee will seek additional feedback and supporting materials from other stakeholders to help assess the suitability of the index methodology.

New indices and their associated index methodologies will be eligible for launch only after the Index Committee reviews and approves the index as described above.

New indices will be set-up on CDI's calculation system by engineers based on requirements provided by the CDI business and/or operations team(s). This process will be tracked through Jira. Following the set-up of the indices by CDI's engineering team, the new indices will be validated and approved by the CDI Operations team.

On or prior to the launch date, CDI will publish the methodology for the new index on its governance website.

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9. Index Calculations

Overview

Index calculation can be broken down into three phases and is completely automated by software. The first phase is exchange data ingestion, followed by processing and calculation, and then data dissemination. During all phases we have monitoring in place to ensure reliability for clients.

Exchange Data Ingestion

For all indices, multiple exchanges are used to source asset pricing. Multiple consumers connections to exchanges are used to ensure redundancy. In addition, the systems are able to backfill gaps in data that may occur as a result of connection outage with an exchange, if the exchange provides a historical data lookup function.

Processing/Calculations

For Single Digital Assets (SDA) indices, price and volume is used to determine Over the Counter (OTC) trades which are then excluded from calculation. SDA indices also factor in price variance and trading volume over a period of time to determine the weighting of each asset for calculation. For Multiple Digital Asset (MDA) indices, a volume-weighted average price (VWAP) across all contributing exchanges is used in the algorithm to reduce price anomalies that would otherwise impact index levels.

Dissemination

The System disseminates data through a request/response web interface, a streaming socket interface, and through emails.

Monitoring

For all indices, real time monitoring of the System is done automatically through software. The System monitors all three phases and alerts are sent to the response team immediately. The response team will then take the appropriate action to remedy the situation. The System has a high fault tolerance and can recover when components fail due to its redundancy in data and servers.

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10. Reconstitution Process and Index Methodology Changes

CDI maintains processes and controls regarding the reconstitutions of each CoinDesk index. The procedures and timing of index rebalances is captured in the relevant Index Methodology. The effective dates for upcoming reconstitutions are maintained and published on CDI's Governance website.

Index reconstitutions are broken into five steps.

Step 1: CDI gathers necessary input data as described in the Index Methodology to reconstitute the index. These data may be obtained from internal or external sources. These data are considered point-in-time data and reflect the data as of a defined reconstitution reference date.

Step 2: CDI processes the reconstitution based on the rules described in the applicable Index Methodology using the data obtained from Step 1. CDI leverages two separate processes to apply the index reconstitution rules to determine the reconstitution results.

Step 3: Once the results from Step 2 are validated, the proposed reconstitution results are provided to the Index Committee. In the event discretion is used or there are any deviations from the rules described in the Index Methodology, the Index Committee must review and vote on the results before they are announced. Otherwise, the results will be considered finalized and approved.

Step 4: CDI announces the approved reconstitution results prior to the implementation effective date. These results may be announced through email to subscribers and/or published on CDI's governance website.

Step 5: CDI operations team members provide reconstitution results to engineers to implement via a Jira ticket. Once engineers implement the changes, CDI operations team validates the results.

Index Methodology Changes

CDI maintains processes and controls regarding material changes to its Index Methodologies. Index Methodologies are reviewed on an annual basis to ensure each index continues to meet its stated objective. The review also aims to ensure that the rules to manage, rebalance and calculate each index are accurate, transparent, and complete. As part of this review, or on an ad hoc basis, the Index Committee may propose and implement material modifications to the Index Methodology.

A proposal to modify an Index Methodologies may be initiated by the Index Committee, an internal stakeholder, or a client. All proposals to modify an Index Methodology must be presented to the Index Committee with supporting data/analysis. These proposals will be reviewed by the Index Committee and, if deemed material, may be accompanied by a consultation seeking feedback from market participants.

For material changes to an Index Methodology, the Index Committee will review all data, analysis and consultation feedback (if applicable) prior to making a decision. The decision of the Index Committee will be recorded through a vote and any changes resulting from this decision will be announced to clients and published on CDI's governance website prior to becoming effective.

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Data

Client and Company data are protected through technical, administrative and physical controls covered in the Procedures section of this report. Data maintained by CoinDesk Indices is defined into three categories, Confidential, Private, and Public. The production environment is designed to only maintain internal company-related proprietary information. Confidential client personally identifiable information (PII) is not utilized or retained within production systems and is limited to ancillary systems, such as the company's customer relationship management (CRM) tool.

Subservice Organizations

Amazon Web Services (AWS) provides infrastructure as a service (IaaS) solution. Every layer of the System from development to hosting is hosted in AWS. That being the case, AWS is solely responsible for the physical security of the infrastructure the System is hosted on. Most of AWS's services offer some degree of redundancy and resiliency out of the box but being able to integrate across servers and data centers allows the System to expand on that.

CoinDesk, Inc. provides human resources and corporate information technology, marketing, and finance services, as the parent company of CoinDesk Indices. CoinDesk employees are restricted from having access to production systems that support indices and market data. If access to any ancillary systems is required, employees are provisioned with a CoinDesk Indices device and account. CoinDesk employees are required to sign a Confidentiality and Rights Agreement, the Acceptable Use of Technology Policy, and abide by processes set forth by CoinDesk Indices.

Subservice Organizations Monitoring

AWS status is monitored using their public-facing Service Health Dashboard at <https://status.aws.amazon.com/>. The vendor, and associated SOC 2 report, is reviewed on an annual basis.

CoinDesk Indices periodically audits and investigates the systems managed by CoinDesk, Inc. to ensure access is provisioned correctly and system controls meet a defined standard.

Sprint reviews at the end of each sprint provides insight into what is done and what is left. Continuous testing of the application provides the quality of the application.

Control Environment

Governance

CoinDesk Indices has established an Employee Handbook and Code of Conduct which outlines the organization's commitment to integrity and ethical values and their expectations regarding employee conduct. All newly hired employees must read the Handbook, Code of Conduct, and provide a signed acknowledgement.

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Human Resources

Background checks are performed for employees who have access to corporate resources or customer data as a contingency of employment and to ensure there are no conflicts with CoinDesk Indices values. Further, all new CoinDesk Indices employees are required to sign a Confidentiality and Rights Agreement as well as sign the Acceptable Use of Technology Policy and data protection policies.

Performance reviews are conducted on an annual basis by the employee's supervisor and results are submitted to Human Resources. Included in the reviews are the employee performance and adherence with Corporate Values and Ethics.

Risk Assessment

CoinDesk Indices designated Information Security Committee member performs a risk assessment annually using an industry-standard risk management framework which includes:

- a. Evaluating the effect of regulatory, technological, and environmental changes on CoinDesk Indices system security
- b. Involving appropriate levels of management
- c. Analyzing risks associated with the threats
- d. Identifying threats to operations, including security threats
- e. Identifying threats to operations, including threats from vendors, business partners, and other parties
- f. Considering changes that could significantly impact CoinDesk Indices system of internal control
- g. Determining a risk mitigation strategy and remediation tracking mechanism
- h. Communicating annual risk assessment results and risk mitigation strategy to the Information Security Committee

Information and Communication

Internal Communications

Internal communications to employees and staff is managed through two different channels, Slack and Confluence. Updates impacting the System and associated applications are provided via predefined Slack channels. In addition, policies, procedures, and other company resources are made available to employees and staff within a dedicated Confluence page.

External Communications

Defined standards have been established for communicating incidents, failures, concerns, and other matters with external parties. In the event of an incident, system failure, or control change that affects external clients or stakeholders' communication is sent out to explain the problem and when they can expect a resolution. Further, Master License Agreements are established with external parties to provide the responsibilities, boundaries, confidentiality, and service levels to set expectations.

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Monitoring Activities

Ongoing Monitoring

An inventory of key security controls implemented is formally maintained. On an annual basis, the Information Security Committee and control owners review, approve and if needed, modify the control wording. Controls are reviewed throughout the year in accordance with a defined internal audit schedule that is approved by the Information Security Committee. The audit program is broken down into quarterly audits with dedicated testing requirements. Findings noted via the audit cycle are documented and tracked to resolution.

Complementary Subservice Organization Controls

The Company relies on following services and complementary controls at the subservice organizations as part of its controls in meeting the following Control Objectives:

Control Objective Ref #	Applicable Subservice Organization	Complementary Subservice Organization Controls
Control Objective 6, 7, and 8	AWS	AWS is responsible for logical access, change management, and computer operations controls related to the hosted infrastructure and physical security and environmental control around its data centers.
Control Objective 6	CoinDesk	CoinDesk, Inc. is responsible for controls related to the human resources and corporate information technology and information technology functions.

Section 4

Description of CoinDesk Indices, Inc.'s
Control Objectives and Related Controls, and
Independent Service Auditor's Description of
Tests of Controls and Results

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Section 4 – Description of CoinDesk Indices, Inc.’s Control Objectives and Related Controls, and Independent Service Auditor’s Description of Tests of Controls and Results

Information Provided by the Independent Service Auditor

This report when combined with an understanding of the controls at user entities is intended to assist auditors in planning the audit of user entities’ financial statements or user entities’ internal control over financial reporting and in assessing control risk for assertions in user entities’ financial statements that may be affected by controls at CoinDesk Indices, Inc.

Our examination was limited to the control objectives and related controls specified by CoinDesk Indices, Inc. in Sections 3 and 4 of the report, and did not extend to controls in effect at user entities.

It is the responsibility of each user entity and its independent auditor to evaluate this information in conjunction with the evaluation of internal control over financial reporting at the user entity in order to assess total internal control. If internal control is not effective at user entities, CoinDesk Indices, Inc.’s controls may not compensate for such weaknesses.

CoinDesk Indices, Inc.’s internal control represents the collective effect of various factors on establishing or enhancing the effectiveness of the controls specified by CoinDesk Indices, Inc. In planning the nature, timing and extent of our testing of the controls to achieve the control objectives specified by CoinDesk Indices, Inc., we considered aspects of CoinDesk Indices, Inc.’s control environment, risk assessment process, monitoring activities, and information and communications.

The following table clarifies certain terms used in this section to describe the nature of tests performed:

<i>Test</i>	<i>Description</i>
Inquiry	Inquiry of appropriate personnel and corroboration with management
Observation	Observation of the application, performance, or existence of the control
Inspection	Inspection of documents and reports indicating performance of the control

In addition, as required by paragraph .35 of AT-C section 205, *Examination Engagements* (AICPA, *Professional Standards*), and paragraph .30 of AT-C section 320, when using information produced (or provided) by the service organization, we evaluated whether the information was sufficiently reliable for our purposes by obtaining evidence about the accuracy and completeness of such information and evaluating whether the information was sufficiently precise and detailed for our purposes.

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CoinDesk Indices, Inc. Controls	MHM Test Procedures	Results of Tests
Control Objective 1 – Governance		
Controls provide reasonable assurance that Index methodology and index operations policies are authorized by the Index Committee.		
1.1 CoinDesk Indices has a defined Index Committee with assigned governance responsibilities and an independent reporting line.	Inspected the Index Committee Charter to determine that CoinDesk Indices has a defined Index Committee with assigned governance responsibilities and an independent reporting line.	No exceptions noted.
1.2 The Index Committee meets on a periodic basis to authorize new indices, significant changes to indices methodologies and policies, and approve new exchanges.	For a sample of meetings, inspected Index Committee agendas and meeting minutes to determine that the Index Committee meets on a periodic basis to authorize new indices, significant changes to indices methodologies and policies, and approve new exchanges.	No exceptions noted.
1.3 CoinDesk Indices maintains and annually reviews an external CDI Index policy that covers critical elements of creating and maintaining an index.	Inspected management's annual review of the external CDI Index policy to determine that CoinDesk Indices maintains and annually reviews an external CDI Index policy that covers critical elements of creating and maintaining an index.	No exceptions noted.
1.4 CoinDesk Indices maintains and annually reviews an external index methodology for each publicly available index/ benchmark.	Inspected management's annual review of the external index methodology policies to determine that CoinDesk Indices maintains and annually reviews an external index methodology for each publicly available index/ benchmark.	No exceptions noted.

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CoinDesk Indices, Inc. Controls	MHM Test Procedures	Results of Tests
1.5 On a daily basis, the index operations team independently validates all CDI multi-digital asset index values at a point in time to identify calculation errors, reconstitution errors, stale prices, inaccurate constituents and significant price changes.	For a sample of days, inspected the daily multi-digital asset value review to determine that the index operations team independently validates all CDI multi-digital asset index values at a point in time to identify calculation errors, reconstitution errors, stale prices, inaccurate constituents and significant price changes.	No exceptions noted.
1.6 A semi-annual review of exchanges is performed to validate they meet defined eligibility requirements.	For a sample semi-annual review, inspected the completed review to determine that a semi-annual review of exchanges is performed to validate they meet defined eligibility requirements.	No exceptions noted.
1.7 On a weekly basis, the index operations team independently validates the reference rates systematically calculated by the platform to ensure ongoing software releases do not impact the accuracy of reference rates.	For a sample of weeks, inspected the weekly reference rate review to determine that the index operations team independently validates the reference rates systematically calculated by the platform to ensure ongoing software releases do not impact the accuracy of reference rates.	For 2 of 4 sampled weeks, the index operations team did not independently validate the reference rates systematically calculated by the platform.
1.8 A Conflicts of Interest and Code of Conduct policy have been established and are reviewed by CoinDesk Indices personnel.	For a sample of CDI employees, inspected their signed acknowledgement of the policy to determine that a Conflicts of Interest and Code of Conduct policy have been established and are reviewed by CoinDesk Indices personnel.	No exceptions noted.

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CoinDesk Indices, Inc. Controls	MHM Test Procedures	Results of Tests
Control Objective 2 – New Clients		
Controls provide reasonable assurance that new clients are authorized prior to connecting to the CDI platform		
2.1 New client procedures and API guidelines are documented and reviewed on an annual basis.	Inspected management's review of the new client procedures and API guidelines to determine that new client procedures and API guidelines are documented and reviewed on an annual basis.	No exceptions noted.
2.2 Master License Agreements are authorized by CDI and the client prior to accessing CDI data and indexes.	For a sample of new clients, inspected the signed Master License Agreements to determine that Master License Agreements are authorized by CDI and the client prior to accessing CDI data and indexes.	No exceptions noted.
Complementary User Entity Controls		
1. Clients are responsible for restricting access to credentials used to access CDI data.		

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CoinDesk Indices, Inc. Controls	MHM Test Procedures	Results of Tests
Control Objective 3 – New Indices		
Controls provide reasonable assurance that indices set up on the CDI platform are authorized by the Index Committee and completely and accurately processed.		
3.1 A standard operating procedure and associated requirements are documented for the implementation of a new index.	Inspected the new index procedure to determine that a standard operating procedure and associated requirements are documented for the implementation of a new index.	No exceptions noted.
3.2 New indices are tested according to defined standards and approved by management prior to being added to the CDI platform.	For a sample of newly implemented indices, inspected testing and approval records to determine that new indices are tested according to defined standards and approved by management prior to being added to the CDI platform.	No exceptions noted.
3.3 Index methodologies are posted on CDI's public website prior the launch of the new index.	For a sample of newly implemented indices, inspected internal release records and the CDI public website to determine that Index methodologies are posted on CDI's public website prior the launch of the new index.	No exceptions noted.
3.4 The Index Committee meets on a periodic basis to authorize new indices, significant changes to indices methodologies and policies, and approve new exchanges.	For a sample of meetings, inspected Index Committee agendas and meeting minutes to determine that the Index Committee meets on a periodic basis to authorize new indices, significant changes to indices methodologies and policies, and approve new exchanges.	No exceptions noted.

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CoinDesk Indices, Inc. Controls	MHM Test Procedures	Results of Tests
Control Objective 4 – Index Calculation		
Controls provide reasonable assurance that indices on the CDI platform are completely and accurately processed.		
4.1 Index levels are completely and accurately calculated through automated programs.	For a sample of calculation methods, inspected index calculation programming logic to determine that index levels are completely and accurately calculated through automated programs.	No exceptions noted.
4.2 Multiple exchanges are used to source asset pricing. In addition, redundant connections are established to exchanges feeds.	For a sample of calculation methods, inspected index calculation programming logic to determine that multiple exchanges are used to source asset pricing and redundant connections are established to exchanges feeds.	No exceptions noted.
4.3 The algorithm adjusts contributing exchange weightings based on price variance and trading inactivity on a given contributing exchange.	For a sample of calculation methods, inspected index calculation programming logic to determine that the algorithm adjusts contributing exchange weightings based on price variance and trading inactivity on a given contributing exchange.	No exceptions noted.
4.4 OTC trades are excluded from the index calculation.	For a sample of calculation methods, inspected index calculation programming logic to determine that OTC trades are excluded from the index calculation.	No exceptions noted.

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CoinDesk Indices, Inc. Controls	MHM Test Procedures	Results of Tests
4.5 Automated controls are utilized to maintain uptime of index calculations in the event of a failure or interruption.	For a sample of single and multi-digital asset calculation methods, inspected index calculation programming logic to determine that automated controls are utilized to maintain uptime of index calculations in the event of a failure or interruption.	No exceptions noted.
4.6 Calculation algorithm leverages a volume-weighted average price (VWAP) across contributing exchanges to reduce the impact of price anomalies from impacting index levels.	For a sample of calculation methods, inspected index calculation programming logic to determine that calculation algorithm leverages a volume-weighted average price (VWAP) across contributing exchanges to reduce the impact of price anomalies from impacting index levels.	No exceptions noted.
4.7 CoinDesk Indices maintains and annually reviews an external index methodology for each publicly available index/ benchmark.	Inspected management's annual review of the external index methodology policies to determine that CoinDesk Indices maintains and annually reviews an external index methodology for each publicly available index/ benchmark.	No exceptions noted.

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Control Objective 5 – Reconstitution Process and Index Methodology Changes		
Controls provide reasonable assurance that indices are rebalanced completely and accurately, and on a timely basis.		
5.1 Indices are rebalanced and reconstituted in accordance with their Index Methodology policy.	For a sample index rebalancing events, inspected the Index Methodology policy and the rebalancing documentation to determine that indices are rebalanced and reconstituted in accordance with their Index Methodology policy.	No exceptions noted.
5.2 An independent review is performed of the reconstitution and rebalancing process to validate the process is in alignment with documented methodology.	For a sample of index rebalancing events, inspected the completed independent review to determine that an independent review is performed of the reconstitution and rebalancing process to validate the process is in alignment with documented methodology.	No exceptions noted.
5.3 CoinDesk Indices has a defined Index Committee with assigned governance responsibilities and an independent reporting line.	Inspected the Index Committee Charter to determine that CoinDesk Indices has a defined Index Committee with assigned governance responsibilities and an independent reporting line.	No exceptions noted.

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CoinDesk Indices, Inc. Controls	MHM Test Procedures	Results of Tests
Control Objective 6 – Logical Access		
Controls provide reasonable assurance that logical access to system resources, including programs and data, is restricted to properly authorized and/or appropriate individuals based upon roles and responsibilities.		
<p>6.1 Prior to issuing system credentials and granting system access, CoinDesk Indices documents and authorizes new users whose access is administered.</p>	<p>Inspected the CDI Provisioning Procedures to determine that prior to issuing system credentials and granting system access, CoinDesk Indices documents and authorizes new users whose access is administered.</p> <p>For a sample of new employees, inspected documented authorization to determine that prior to issuing system credentials and granting system access, CoinDesk Indices documents and authorizes new users whose access is administered.</p>	<p>No exceptions noted.</p>
<p>6.2 User system credentials are revoked in a timely manner upon notification of termination.</p>	<p>Inspected the CDI Provisioning Procedures to determine that user system credentials are revoked in a timely manner upon notification of termination.</p> <p>For a sample of terminated employees, inspected termination documentation and the user's system account status to determine that user system credentials are revoked in a timely manner upon notification of termination.</p>	<p>For 2 of 3 terminated employees sampled, their user system credentials were not timely revoked.</p>

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CoinDesk Indices, Inc. Controls	MHM Test Procedures	Results of Tests
6.3 Password configuration settings are managed in compliance with the Password Standards Policy.	Inspected configured system password complexity requirements and Password Standards Policy to determine that password configuration settings are managed in compliance with the Password Standards Policy.	No exceptions noted.
6.4 Multi-factor authentication is enforced for corporate applications and remotely accessing Amazon Web Services.	Inspected the multi-factor authentication settings for AWS management console and corporate applications to determine that multi-factor authentication is enforced for corporate applications and remotely accessing Amazon Web Services.	No exceptions noted.
6.5 Access is reviewed at a minimum on an annual basis. Any adjustments identified from the review presented to the Information Security Committee (ISC) and are resolved.	Inspected the most recent user access review to determine that users access privileges are reviewed semi-annually by the Information Security Committee (ISC).	No exceptions noted.
6.6 Administrative privileges to systems are limited to only appropriate and documented personnel.	Inspected user access listing for in-scope systems to determine that administrative privileges to systems are limited to only appropriate and documented personnel.	No exceptions noted.

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Control Objective 7 – Change Management		
Controls provide responsible assurance that new applications and changes to existing applications and systems software are tested, approved, properly implemented and documented.		
7.1 CoinDesk Indices has documented and approved change management standards that govern changes made to the production environment.	Inspected the approved change management procedure to determine that CoinDesk Indices has documented and approved change management standards that govern changes made to the production environment.	No exceptions noted.
7.2 Details related to a change are documented and retained..	For a sample of changes, inspected the change to determine that details related to a standard change are documented and retained.	No exceptions noted.
7.3 Standard changes to the production environment are tested according to defined standards prior to migration.	For a sample of standard changes, inspected evidence of testing and the Change Management Policy to determine that standard changes to the production environment are tested according to defined standards prior to migration.	No exceptions noted.
7.4 Standard changes are reviewed and approved prior to migration to the production environment. Emergency and configuration changes are reviewed and approved after the change in production.	For a sample of changes, inspected evidence of review and approval to determine that standard changes are reviewed and approved in accordance with the change management procedures.	For 4 of 40 sampled changes, changes were not independently reviewed and approved before deploying to production.
7.5 CoinDesk Indices maintains separate production and development environments.	Inspected network configurations to determine that CoinDesk Indices maintains separate production and development environments.	No exceptions noted.

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Control Objective 8 – Computer Operations		
Controls provide reasonable assurance that application and system processing are authorized and completely and accurately executed in a timely manner and errors are identified, tracked, recorded, and resolved in a timely manner.		
<p>8.1 Backups of critical AWS CoinDesk Indices systems are maintained and monitored for successful replication across multiple devices.</p>	<p>Inspected the automated backup schedule to determine that backups of critical CoinDesk Indices systems are maintained and replicated across multiple devices.</p> <p>For a sample of failed backups, inspected monitoring alerts, backup statuses and/or investigation tickets to determine that backup failures are monitored.</p>	<p>No exceptions noted.</p> <p>The operating effectiveness of the control related to monitoring could not be tested because there were no backup failures during the audit period.</p>
<p>8.2 An enterprise monitoring system continuously monitors systems for capacity and usage of production systems. Defined tolerances are established and managed through CDI's change management process. Triggered alerts are monitored, managed and resolved by the operations team.</p>	<p>For a sample of production systems, inspected the established monitoring alert thresholds to determine that defined thresholds are established and an enterprise monitoring system continuously monitors systems for capacity and usage of production systems.</p> <p>Inspected the change management ticketing system to determine that changes to defined tolerances are managed through CDI's change management process.</p> <p>For a sample of triggered alerts, inspected the alert documentation to determine triggered alerts are monitored, managed and resolved by the operations team.</p>	<p>No exceptions noted.</p>

CoinDesk Indices, Inc.

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CoinDesk Indices, Inc. Controls	MHM Test Procedures	Results of Tests
8.3 Critical system components are replicated across multiple Availability Zones.	For a sample of critical system components, inspected its AWS replication configurations to determine critical system components are replicated across multiple Availability Zones.	No exceptions noted.
8.4 Data backup restoration is validated and tested on a quarterly basis.	Inspected completed documentation for the annual data backup restoration tests to determine that data backup restoration is validated and tested on an annual basis.	No exceptions noted.

Section 5

Other Provided Information by CoinDesk
Indices, Inc.

CoinDesk Indices, Inc.

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Section 5 - Other Provided Information by CoinDesk Indices, Inc.

The information in section 5 is presented by management of CoinDesk Indices, Inc. to respond to identified exceptions and is not a part of CoinDesk Indices, Inc.'s description of its Digital Currency Index Platform system during the period January 1, 2023 to December 31, 2023. Management's responses to identified exceptions about CoinDesk Indices, Inc.'s Digital Currency Index Platform system has not been subjected to the procedures applied in the examination and, accordingly, we express no opinion on it. However, we noted that information in section 5 is materially consistent with CoinDesk Indices, Inc.'s description of its Digital Currency Index Platform system.

Management's Response to Exceptions Identified

Management's Control Activity #	Management's Control Activity Description	Testing Procedures Performed by MHM	Results of Tests
1.7	On a weekly basis, the index operations team independently validates the reference rates systematically calculated by the platform to ensure ongoing software releases do not impact the accuracy of reference rates.	For a sample of weeks, inspected the weekly reference rate review to determine that the index operations team independently validates the reference rates systematically calculated by the platform to ensure ongoing software releases do not impact the accuracy of reference rates.	For 2 of 4 sampled weeks, the index operations team did not independently validate the reference rates systematically calculated by the platform.
<p>Management response: We acknowledge and accept the finding of the audit team that the index operations team did not independently validate the reference rates systematically calculated by the platform. In the interim, we initiated an ad-hoc validation of reference rates until the calculation script and automated validation could be reestablished. The new automated validation process has now been implemented with weekly reviews on the calculation integrity to ensure the script is running as intended.</p>			

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Management's Control Activity #	Management's Control Activity Description	Testing Procedures Performed by MHM	Results of Tests
6.2	User system credentials are revoked in a timely manner upon notification of termination.	<p>Inspected the CDI Provisioning Procedures to determine that user system credentials are revoked in a timely manner upon notification of termination.</p> <p>For a sample of terminated employees, inspected termination documentation and the user's system account status to determine that user system credentials are revoked in a timely manner upon notification of termination.</p>	For 2 of 3 terminated employees sampled, their user system credentials were not timely revoked.
<p>Management response: We acknowledge and accept the finding of the audit team that 2 of 3 system credentials for terminated employees were not revoked in a timely manner. CoinDesk Indices noted the finding during the period and took steps to perform an internal audit all terminated employee accounts within the period to ensure access was revoked. In addition, a new IT manager was brought onboard and has since developed a new standard procedure to ensure employee access is completely removed in a timely manner.</p>			

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Management's Control Activity #	Management's Control Activity Description	Testing Procedures Performed by MHM	Results of Tests
7.4	Standard changes are reviewed and approved prior to migration to the production environment. Emergency and configuration changes are reviewed and approved after the change in production.	For a sample of changes, inspected evidence of review and approval to determine that standard changes are reviewed and approved in accordance with the change management procedures.	For 4 of 40 sampled changes, changes were not independently reviewed and approved before deploying to production.
<p>Management response: We acknowledge and accept the finding of the audit team that 4 of 40 sampled changes were not independently reviewed and approved before deploying to production. We initiated a retrospective review of the 4 changes identified to assess and mitigate any potential risks. We are committed to further strengthening our change management procedures, which were comprehensively updated in the third quarter of 2023. We will further reinforce these standards to ensure staff adhere to established escalation, review, and approval procedures. In addition, CoinDesk Indices has started a project to implement controls to further reduce the number of employees that can commit changes to the production environment.</p>			