
# INDEX GOVERNANCE POLICIES AND PROCEDURES ASSESSMENT FOR COMPLIANCE WITH THE IOSCO PRINCIPLES FOR FINANCIAL BENCHMARKS

February 2020

# Contents

# 1. Introduction

This document describes Devexperts Inc. d.b.a. dxFeed (hereafter referred as “DXFEED”) systems, the environment of controls and the extent of compliance with the IOSCO Principles for Financial Benchmarks.

The Principles for Financial Benchmarks were initially published by the International Organization of Securities Commissions (IOSCO) on 17 July 2013 (the IOSCO Principles) and are an overarching framework of recommended practices for benchmarks used in financial markets.

The IOSCO Principles set out a requirement that Benchmark Administrators publicly disclose the extent of their compliance with the IOSCO Principles.

For such purposes, we set out in this document the list of IOSCO Principles and the manner and extent to which we comply with them in respect of the indices and benchmarks we produce.

The benchmark governance environment is currently evolving, and we evaluate our practices on an ongoing basis in such context.

Parts of this document follow International Standard on Assurance Engagements 3402, "Assurance Reports on Controls at a Service Organization”, issued by the International Auditing and Assurance Standards Board. This standard requires that we comply with ethical requirements, and plan and perform our procedures to obtain reasonable assurance that the description of controls implemented on our system fairly represents all material aspects. It also assures that the appropriate controls are operating effectively following development and integration.

This document also follows the recommendations of the final report “Mechanisms for Trading Venues to Effectively Manage Electronic Trading Risks and Plans for Business Continuity” by The Board of the International Organization of Securities Commissions.

The description of IT controls represents system components and services offered to customers as recently as August 2018, with relevance to the system’s security, data protection and operating efficiency in all material aspects.

The overall purpose of this description is to accurately inform customers of DXFEED and their auditors about the systems and procedures at DXFEED and to ensure that the requirements of the applicable international standards have been met. The description has also been produced to highlight the controls that have been implemented to secure the safe and stable operation of the services delivered to customers of DXFEED.

# 2. Overview

DXFEED is a leading provider of investment decision support tools, including equity indexes, commodity indexes, portfolio risk and performance analytics and research. Our products and services address multiple markets, asset classes and geographies and are licensed to a diverse institutional investor client base.

DXFEED is an independent index provider, headquartered in New Jersey, and does not have any stock exchange, asset manager, broker dealer, bank, or trading/clearing facility in its corporate group. DXFEED does not create, market, trade or clear securities or financial products.

We have a coordinated team approach to product development and production. Our index research, data operations and technology departments are at the center of this process. Utilizing a deep understanding of the investment process worldwide, our research department develops, reviews and enhances our methodologies. Our data operations and technology team designs and manages our processes and systems for market data procurement, proprietary data production and quality control. As part of our product development process, we also commonly undertake xtensive consultations with our clients and other market participants to understand their specific needs and investment process requirements.

Our index research department combines extensive academic credentials with broad financial and investment industry experience. They work on both developing methodologies and enhancing existing ones.

Our data operations and technology teams consist of a combination of operations and information technology specialists. We procure market data for the markets we serve, including fundamental and price data. We apply our methodologies to this market data to produce our proprietary index data. Our data operations team oversees this process. Our experienced information technology staff builds proprietary software and databases that house all of the data we procure and produce; our data operations team performs data quality checks and runs our data production systems. This data factory produces our proprietary index data such as end of day and real time indexes.

## Representativeness

The indices use a consistent, systematic process to represent the markets. To achieve a fair representation, DXFEED uses both liquidity data and various U.S. based data in determining the relative quantities of included components.

## Economic Significance

An index should fairly represent the importance of a diversified group of financial instruments to the world economy. To achieve a fair representation, DXFEED uses both liquidity data and U.S. based data in determining the relative quantities of included components. DXFEED primarily relies on liquidity data.

## Continuity

A third goal of DXFEED is to be responsive to the changing nature of markets in a manner that does not completely reshape the character of the Index from year to year. DXFEED is intended to provide stable indices and benchmarks, so that end-users may be reasonably confident that historical performance data is based on a structure that bears some resemblance to both the current and future composition of an index.

## Liquidity

Another goal of DXFEED is to provide a highly liquid index. The explicit inclusion of liquidity as a weighting factor helps to ensure that DXFEED can accommodate substantial investment flows. To the extent that market inefficiencies may result from substantial inflows of investment capital, these inefficiencies—and corresponding distortions in index performance—will be minimized by weighting distributions that more closely mirror actual liquidity in the markets

## Market Disruption Events

An unexpected market/exchange closure is when a market/exchange fully or partially fails to open or trading is temporarily halted. This can apply to a single exchange or to a market as a whole, when all of the primary exchanges are closed and/or not trading. Unexpected market/exchange closures are usually due to unforeseen circumstances, such as natural disasters, inclement weather, outages, or other events.

If all major exchanges fail to open or unexpectedly halt trading intraday due to unforeseen circumstances, such as natural disasters, inclement weather, outages, or other events, DXFEED will take the following actions:
Market Disruption Prior to Open of Trading:

(i) If all exchanges indicate that trading will not open for a given day, DXFEED will treat the day as an unscheduled market holiday. The decision will be communicated to clients as soon as possible through the normal channels. Indices containing multiple markets will be calculated as normal, provided that at least one market is open that day. Indices which only contain closed markets will not be calculated.

(ii) If exchanges indicate that trading, although delayed, will open for a given day, DXFEED will begin index calculation when the exchanges open.

## Index Policy Announcements

All index constituents are evaluated daily for data needed to calculate index levels and returns. All events affecting the daily index calculation are typically announced in advance. Any unusual treatment of a corporate action or short notice of an event may be communicated via email to clients. Announcements of additions and deletions for headline indices are generally made shortly after market close.

## Pro-forma Files

DXFEED provides constituent files for many indices at the time of rebalancing. The pro-forma file is typically provided daily in advance of the rebalancing date and contains all constituents and their corresponding weights and index values effective for the upcoming rebalancing. Since index values are assigned based on prices prior to the rebalancing, the actual weight of each constituent at the rebalancing will differ from these weights due to market movements.

## CERTAIN RISKS ASSOCIATED WITH THE INDEX METHODOLOGY

- Market prices may change unpredictably, affecting the value of an index in unforeseeable ways
- Suspension or disruptions of market trading may adversely affect the value of an index
- Future prices of the index components that are different relative to their current prices may affect the value of an index

The weightings for the index, related indices are determined by the Administrator, which has a significant degree of discretion with respect to the index. This discretion would permit, among other things, changes to the composition of the index, related indices or changes to the manner or timing of the publication of the values of such indices at any time during the year if the Administrator deemed the changes necessary in light of factors that include, but are not limited to:

(i) changes in liquidity of the underlying financial instruments that are included in the Index, related indices or

(ii) changes in legal, regulatory, sourcing or licensing matters relating to publication or replication of the Index, related indices.

In particular, without limitation, the Administrator's access to and rights to use data in connection with calculating, publishing and licensing the index, related indices remain subject to the ongoing consent of the sources of such data (including, without limitation, exchanges), which consent can be revoked at any time.

# 3. General Procedures

DXFEED uses the following committees to provide overall oversight and governance for indexes:

- Oversight is provided by the Oversight Committee ("OC").
- Governance is provided by the Risk and Regulatory Committee ("RRC") and the Index Policy Committee ("IPC").

Benchmark determinations are made by personnel who possess the relevant levels of expertise and has in place a process for periodic review of their competence. Committees are staffed by personnel with extensive relevant experience. We believe that operational independence is critical to objectivity, efficiency and avoiding conflicts of interest. All committee members are expected to act with integrity as is required of all our employees according to our Code of Ethics and Business Conduct. All decisions taken by the committees are the responsibility of their members.

# 4. Index Oversight Committee

The OC provides independent oversight of all aspects of the governance of benchmark administration for DXFEED indexes. While the OC is independent of the RRC and the IPC, the OC may rely on reports provided by these committees to perform its responsibilities. The OC has no authority to make specific index content decisions, which are the independent editorial responsibility of the IPC. The key responsibilities of the OC include, but are not limited to, the following:

- Oversee the other governance committees to ensure their respective responsibilities are adequately performed.
- Make recommendations to relevant stakeholders based on reports and information provided by functional areas and other governance committees. Provide a summary report of any such recommendations to relevant members of Executive Committee, at least quarterly.
- Report to the national competent authority, as required by law.
- The OC may seek information regarding any aspect of benchmark administration and is authorized to seek detailed information and presentations on relevant topics from any employee.
- The OC may request internal or commission external audits of relevant benchmark administration processes.
- The OC is comprised of members from areas not directly involved in benchmark administration, such as DXFEED's Legal and Compliance and/or Internal Audit departments, and members with backgrounds and experience in research and data operations that can provide specific market knowledge and operational expertise and may include external advisors with relevant expertise.
- Membership shall be revoked for the following reasons:
    - The member notifies the committee of his or her decision to resign from the OC.
    - The member does not fulfill or is not capable of fulfilling his or her responsibilities on the committee, including attendance at meetings.
- To allow the committee to operate effectively and have access to appropriate information in challenging decisions in the provision of indexes, all voting and nonvoting members will be designated subject to all associated compliance policies.
- Meetings are to be held at least quarterly and as needed and may be attended in person or by teleconference.
- The chairperson and at least one other voting member of the committee must be present at any meeting. Each voting member has one vote.

- In instances when an OC decision is required and scheduling an ad-hoc OC meeting is not possible, such decision may be reached via email communication.
- Decisions will be taken by simple majority of the voting members present at a meeting or voting by email.
- Members must disclose any potential conflict of interest before each agenda item and recuse themselves from any discussions where they have a conflict of interest. This will be recorded in the minutes.
- The committee may ask any personnel to attend or to present at the meeting. These attendees will not have voting rights.
- The agendas for all the OC meetings contain the date, time, expected attendees and topics. Topics presented at the OC may have supporting documents.
- Generally, the minutes of all OC meetings contain the date, time, attendees, topics discussed, and decisions made.
- The secretary will record minutes of each meeting, which will be retained for at least five years.

# 5. The Index Policy Committee

The IPC presides over methodology developments and changes as well as market classification decisions. These terms of reference are reviewed and approved by the relevant OC annually.
The key responsibilities of the IPC include, but are not limited to, the following:

- Review and approve new methodologies or methodology changes.
- Make decisions on market reclassifications for the indexes.
- Make decisions on index terminations.
- Review summary of regular equity index rebalancing results.
- Review and approve complex or exceptional corporate event treatment that cannot be addressed by current methodologies.
- The IPC is composed of senior members of DXFEED's Index Research and firm management and may include external advisors with relevant expertise.
- Changes in membership are proposed by the IPC and approved by the CEO.
- The IPC meets on an ad-hoc basis as required.
- IPC meetings require the attendance of at least three members.
- No substitutes and no delegates are accepted.
- The agendas for all IPC meetings contain the date, time, expected attendees and topics. All topics presented at the IPC generally have supporting documents.
- Generally, the minutes of all IPC meetings contain the date, time, attendees, topics discussed, and decisions made.
- The secretary will record minutes of each meeting, which will be retained for at least five years.
- In instances when an IPC decision is required, while scheduling an IPC meeting is not possible within the required timeframe, such decision may be reached via email communication, provided at least three members of the IPC explicitly approve a proposal. In case of exceptionally time critical, typically market driven topics, consent of two IPC members may be enough.

# 6. Risk and Regulatory Committee

The RRC presides over operational and business risks and regulatory compliance matters. These terms of reference are reviewed and approved by the OC annually. The key responsibilities of the RRC include, but are not limited to, the following:

- Preside over the integrity of the index processes. The aim is to ensure that there is in place an effective system reasonably designed to evaluate and control general risks within the index product line. Their responsibilities include, but are not limited to:
    - Review and approve the index control framework.

  - Review the results of internal and external audits and recommend actions.
  - Review and implement recommendations from the OC, as appropriate.
- Highlight and address potential material risks and issues, including operational risks, changes in regulatory environment, and conflicts of interest.
- Review any formal index complaints.
- Assess and manage the firm's compliance with existing regulation or regulatory principles for existing, new and proposed indexes, as well as changes in processes.
- Discuss regulation and potential regulation and the impact on the index product line.

The composition of the committee is determined by job function. Membership changes are proposed by the RRC and approved by the OC. The RRC is chaired by the Head of Index and is comprised of at least six other members representing senior leadership selected from each of:

- Index Research,
- Data Operations,
- Product Management,
- IT / Infrastructure,
- Legal and Regulatory Process and Procedures Management.

Membership shall be revoked for the following reasons:

- The member notifies the committee of his or her decision to resign from the RRC.
- The member does not or is not capable of fulfilling his or her responsibilities on the committee, including attendance at meetings.

Meetings are to be held at least quarterly and as needed and may be attended in person or by teleconference. The chairperson and a member from each of the other functions must be present at any meeting. If a member is unable to attend, he or she must be represented by a delegate from his or her function to ensure that all relevant areas are present. Each voting member has one vote. Decisions will be taken by simple majority of the voting members present at a meeting. In instances when an RRC decision is required and scheduling an ad-hoc RRC meeting is not possible, such decision may be reached via email communication, provided at least three voting members of the RRC explicitly approve a proposal. Members must disclose any potential conflict of interest before each agenda item and recuse themselves from any discussions where they have a conflict of interest. This will be recorded in the minutes. The committee may ask any personnel to attend or to present at the meeting. These attendees will not have voting rights. The agendas for all RRC meetings contain the date, time, expected attendees and topics. Topics presented at the RRC may have supporting documents. Generally, the minutes of all RRC meetings contain the date, time, attendees, topics discussed, and decisions made. The secretary will record minutes of each meeting, which will be retained for at least five years.

# 7. Discontinuation of a Benchmark

In accordance with IOSCO's Principle 13, Administrators' transition policies and procedures should be proportionate to the estimated breadth and depth of contracts and financial instruments that reference a benchmark and the economic and financial stability impact that might result from the cessation of the benchmark. The Administrator should take into account the views of Stakeholders, Subscribers and any relevant Regulatory and National Authorities in determining what policies and procedures are appropriate for a particular benchmark. Principle 13 further provides that Administrators' written policies and procedures to address the possibility of benchmark cessation could include the following factors, if determined to be reasonable and appropriate by the Administrator: a) Criteria to guide the selection of a credible, alternative Benchmark such as, but not limited to, criteria that seek to match to the extent practicable the existing Benchmark's characteristics (e.g., credit quality, maturities and liquidity of the alternative market), differentials between Benchmarks, the extent to which an alternative Benchmark meets the asset/liability needs of Stakeholders, whether the revised Benchmark is investable, the availability of transparent transaction data, the impact on Stakeholders and impact of existing legislation;

b) The practicality of maintaining parallel Benchmarks (e.g., where feasible, maintain the existing Benchmark for a defined period of time to permit existing contracts and financial instruments to mature and publish a new Benchmark) in order to accommodate an orderly transition to a new Benchmark;
c) The procedures that the Administrator would follow in the event that a suitable alternative cannot be identified;
d) In the case of a Benchmark or a tenor of a Benchmark that will be discontinued completely, the policy defining the period of time in which the Benchmark will continue to be produced in order to permit existing contracts to migrate to an alternative Benchmark if necessary; and he process by which the Administrator will engage Stakeholders and relevant Market and National Authorities, as appropriate, in the process for selecting and moving towards an alternative Benchmark, including the timeframe for any such action commensurate with the tenors of the financial instruments referencing the Benchmarks and the adequacy of notice that will be provided to Stakeholders.

ALTERNATIVE BENCHMARK(S)

The suitability of any alternative benchmark would depend on, among other things, the particular needs and circumstances of Subscribers and other Stakeholders. As such, DXFEED does not pre-identify any default alternative for any benchmark covered by this policy. However, information on each of the Benchmarks currently administered by DXFEED is available on the website and can assist users in considering any alternative benchmarks.
IOSCO's Principle 13 refers to a benchmark administrator's procedures in the absence of a suitable alternative benchmark. Should DXFEED not have a suitable alternative benchmark, DXFEED's benchmark cessation procedure would be applicable.

PARALLEL BENCHMARKS

DXFEED has assessed the practicality of maintaining parallel benchmarks to the benchmarks covered under this Policy but, at this time, has concluded that this would not be a feasible proposition in respect of any of these benchmarks. However, in the event of discontinuation, where practical and feasible, a parallel production period will be contemplated based upon current client usage of the index by Subscribers and other Stakeholders with the goal of accommodating an orderly transition to a new index.

TIMING OF CESSATION AND MIGRATION

In the event of discontinuation of part or all of an DXFEED benchmark, the considerations in terms of timing and migration are set out in the benchmark cessation procedure.

ENGAGING WITH STAKEHOLDERS

DXFEED is committed to open and transparent communication with stakeholders. If the cessation of an DXFEED benchmark or associated tenor(s) were under consideration, the DXFEED would invoke a consultation process with Subscribers and Stakeholders, as appropriate.

STAKEHOLDER AWARENESS AND FALLBACK PROVISIONS

Parties to contracts that reference a benchmark are encouraged to review on a periodic basis the suitability of such benchmark and in particular to take into consideration factors such as whether:

- the methodology and construct of the benchmark, as well as the underlying market interest it seeks to represent, are appropriate for the relevant contracts.
- the benchmark administrator observes the Principles for Financial Benchmarks published by the International Organization of Securities Commissions (IOSCO) in July 2013, as per this document
- the integrity of the benchmark calculation is sufficient for the purposes of the contract.
- the governance and oversight of the benchmark is sufficient
- the benchmark administrator is independent and can take an appropriately neutral approach without distorting conflicts of interest
- any changes have been made in the construction of the benchmark that may impact the suitability of its use

in the contract

- any changes are necessary or desirable in the way in which the relevant benchmark is described in the contractual arrangements (for example, whether there has been a change in the benchmark administrator or the method/time of publication of the benchmark)

# 8. Compliance with IOSCO principles

| Principle | DXFEED reply |
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| **Principle 1 – Overall Responsibility of the Administrator**<br>The Administrator should retain primary responsibility for all aspects of the Benchmark determination process.<br>For example, this includes:<br>a) Development: The definition of the Benchmark and Benchmark Methodology;<br>b) Determination and Dissemination: Accurate and timely compilation and publication and distribution of the Benchmark;<br>c) Operation: Ensuring appropriate transparency over significant decisions affecting the compilation of the Benchmark and any related determination process, including contingency measures in the event of absence of or insufficient inputs, market stress or disruption, failure of critical infrastructure, or other relevant factors; and<br>d) Governance: Establishing credible and transparent governance, oversight and accountability procedures for the Benchmark determination process, including an identifiable oversight function accountable for the development, issuance and operation of the Benchmark. | Overall responsibility for all aspects of the Index determination process lies with the Administrator. The IPC and OC provide support to fulfill this responsibility. Development: The definition of the Benchmark and Benchmark Methodology; The Administrator creates a written Methodology for each Index which details rules, procedures, criteria and processes involved with the creation, operation and ongoing maintenance of each Index. These methodologies are monitored and updated periodically to address evolving market conditions. The Administrator is responsible for the accurate and timely compilation, publication and distribution of the Indices in accordance with our Index Methodologies.<br>Transparency over significant decisions affecting the compilation of the Index is provided through Index constituent and return files, which reflect changes to an Index for each rebalance period and is provided to Subscribers on a scheduled basis. An advisory process is in place to alert Subscribers to the Administrator's response to market stress or disruption. The IPC and OC provide transparent governance as follows:<br>– Conduct oversight of the Indices and the Administrator's role in relation to the Indices.<br>– Review and advise on the Policies and Methodologies by which the Administrator calculates, administers, and publishes Index levels.<br>– Oversee the development, design, governance, issuance, and operation of the Index (for all Indices);<br>– Monitor that the procedures for Index determination, including any Methodology documents, are accurate and current;<br>– Review of Methodology document(s) on a periodic basis, and no less than quarterly;<br>– Overseeing the management and operation of the Index, including activities related to Index determination undertaken by a third party;<br>– Monitor process of disseminating Indices for accuracy, timeliness and completeness;<br>– Monitor advisory process for adequacy;<br>– Review of business continuity measures in place;<br>– Review of the Submitter Code of Conduct on an annual basis;<br>– Ensure that pertinent Operating Manuals are current and include an appropriate control framework;<br>– Review and approve procedures for termination of the Index, including guidelines that set out how the Administrator should consult with Stakeholders about such cessation; |

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| | – Periodic review of Complaint Policy **(See Principle 16)** |
| **Principle 2 - Oversight of Third Parties**<br>Where activities relating to the Benchmark determination process are undertaken by third parties - for example collection of inputs, publication or where a third party acts as Calculation Agent – the Administrator should maintain appropriate oversight of such third parties. The Administrator (and its oversight function) should consider adopting policies and procedures that:<br>a) Clearly define and substantiate through appropriate written arrangements the roles and obligations of third parties who participate in the Benchmark determination process, as well as the standards the Administrator expects these third parties to comply with;<br>b) Monitor third parties' compliance with the standards set out by the Administrator;<br>c) Make Available to Stakeholders and any relevant Regulatory Authority the identity and roles of third parties who participate in the Benchmark determination process; and<br>d) Take reasonable steps, including contingency plans, to avoid undue operational risk related to the participation of third parties in the Benchmark determination process.<br>This Principle does not apply in relation to a third party from whom an Administrator sources data if that third party is a Regulated Market or Exchange. | As of the date of this document, there are no third parties involved in activities relating to the Index determination process. If and when any third parties are considered in relation to the Index determination process, they will be subject to oversight in accordance with this Principle.<br><br>The applicability of this Principle for DXFEED indexes is minimal given that DXFEED independently designs, calculates, maintains and publishes the indexes. DXFEED uses third party data aggregators that provide data feeds of exchange data and other market data and uses third party redistributors that redistribute published DXFEED indexes. Where feasible, DXFEED sources data from more than one vendor to improve accuracy and lower operational dependencies on single vendors. DXFEED sometimes supplements vendor data with information sourced through publicly available sources, when the vendor data is not complete or there is not a second source.<br>In an effort to avoid operational risk and reduce the operational dependency on specific market data vendors and data aggregators, DXFEED does not typically publicly release the names of all of its market data vendors and data aggregators, as recommended in (c) of the Principle.<br>The framework of terms, conditions, policies, procedures and standards which form the basis on which recipients are provided access to market data (whether written or not) is established by the market data vendor and not the benchmark administrator and there is often very little scope for Benchmark Administrators to change or modify those frameworks. |
| **Principle 3 - Conflicts of Interest**<br><br>To protect the integrity and independence of Benchmark determinations, Administrators should document, implement and enforce policies and procedures for the identification, disclosure, management, mitigation or avoidance of conflicts of interest. Administrators should review and update their policies and procedures as appropriate. Administrators should disclose any material conflicts of interest to their users and any relevant Regulatory Authority, if any.<br>The framework should be appropriately tailored to the level of existing or potential conflicts of interest identified and the risks that the Benchmark poses and should seek to ensure:<br>a) Existing or potential conflicts of interest do not inappropriately influence Benchmark determinations;<br>b) Personal interests and connections or business | The Administrator maintains, regularly reviews, and where applicable, updates the following corporate policies which pertain to the identification, disclosure, management, and mitigation or avoidance of conflicts of interest:<br>– Code of Conduct;<br>– Confidential Information;<br>– Employee Trading;<br>– Directorships, Outside Interest and Private Securities Transactions;<br>– Gifts and Entertainment and Charitable Giving; and<br>– Global Anti-bribery.<br>These policies require employees to comply with applicable laws and regulations, protect confidential and material nonpublic information; establish whistleblowing and complaints mechanisms, and require the Administrator to avoid any actual or perceived appearance of conflict of interest, where applicable. These documented policies include the action that should be taken, if any, when potential/actual conflicts of interest arise. |

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| connections do not compromise the Administrator's performance of its functions;<br>c) Segregation of reporting lines within the Administrator, where appropriate, to clearly define responsibilities and prevent unnecessary or undisclosed conflicts of interest or the perception of such conflicts;<br>d) Adequate supervision and sign-off by authorized or qualified employees prior to releasing Benchmark determinations;<br>e) The confidentiality of data, information and other inputs submitted to, received by or produced by the Administrator, subject to the disclosure obligations of the Administrator;<br>f) Effective procedures to control the exchange of information between staff engaged in activities involving a risk of conflicts of interest or between staff and third parties, where that information may reasonably affect any Benchmark determinations; and<br>g) Adequate remuneration policies that ensure all staff who participate in the Benchmark determination are not directly or indirectly rewarded or incentivized by the levels of the Benchmark.<br>An Administrator's conflict of interest framework should seek to mitigate existing or potential conflicts created by its ownership structure or control, or due to other interests the Administrator's staff or wider group may have in relation to Benchmark determinations. To this end, the framework should:<br>a) Include measures to avoid, mitigate or disclose conflicts of interest that may exist between its Benchmark determination business (including all staff who perform or otherwise participate in Benchmark production responsibilities), and any other business of the Administrator or any of its affiliates; and<br>b) Provide that an Administrator discloses conflicts of interest arising from the ownership structure or the control of the Administrator to its Stakeholders and any relevant Regulatory Authority in a timely manner. | The enforcement of such policies is overseen by departments such as the Legal department and operational departments.<br>DXFEED segregates Index governance and commercial activities, subject to the below. The Administrator licenses its services in such a way that there is no commercial benefit for the Administrator tied to Index returns. |
| **Principle 4 - Control Framework for Administrators**<br>An Administrator should implement an appropriate control framework for the process of determining and distributing the Benchmark. The control framework should be appropriately tailored to the materiality of the potential or existing conflicts of interest identified the extent of the use of discretion in the Benchmark setting process and to the nature of Benchmark inputs and outputs. The control framework should be documented and available to relevant Regulatory Authorities, if any. A summary of its main | A Control Framework has been developed which describes the processes associated with determining and distributing the Indices. This Control Framework is tailored to the potential for a conflict of interest in he Index determination process, which is low. The Control Framework has addressed the relevant items set out in Principle 4, including controls as summarized below. A stand-alone Customer Complaint Procedure has been implemented, which allows for an effective complaint reporting and investigation mechanism.<br>Regarding a whistleblowing mechanism, violations to the Code of Ethics are required to be reported by staff to either their manager, senior management or the Chief Legal Officer of the |

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| features should be Published or Made Available to Stakeholders.<br>This control framework should be reviewed periodically and updated as appropriate. The framework should address the following areas:<br>a) Conflicts of interest in line with Principle 3 on conflicts of interests;<br>b) Integrity and quality of Benchmark determination:<br>i. Arrangements to ensure that the quality and integrity of Benchmarks is maintained, in line with principles 6 to 15 on the quality of the Benchmark and Methodology;<br>ii. Arrangements to promote the integrity of Benchmark inputs, including adequate due diligence on input sources;<br>iii. Arrangements to ensure accountability and complaints mechanisms are effective, in line with principles 16 to 19; and<br>iv. Providing robust infrastructure, policies and procedures for the management of risk, including operational risk.<br>c) Whistleblowing mechanism:<br>Administrators should establish an effective whistleblowing mechanism to facilitate early awareness of any potential misconduct or irregularities that may arise. This mechanism should allow for external reporting of such cases where appropriate.<br>d) Expertise:<br>i. Ensuring Benchmark determinations are made by personnel who possess the relevant levels of expertise, with a process for periodic review of their competence;<br>and<br>ii. Staff training, including ethics and conflicts of interest training, and continuity and succession planning for personnel.<br>Where a Benchmark is based on Submissions:<br>Administrators should promote the integrity of inputs by:<br>a) Ensuring as far as possible that the Submitters comprise an appropriately representative group of participants taking into consideration the underlying Interest measured by the Benchmark;<br>b) Employing a system of appropriate measures so that, to the extent possible, Submitters comply with the Submission guidelines, as defined in the Submitter Code of Conduct and the Administrators' applicable quality and integrity standards for Submission;<br>c) Specifying how frequently Submissions should be made and specifying that inputs or Submissions should be made for every Benchmark determination; and<br>d) Establishing and employing measures to effectively monitor and scrutinise inputs or | Administrator. DXFEED will not terminate, demote, suspend, discipline, or retaliate against any employee who in good faith reports a complaint or concern. Material concerns of any potential misconduct or irregularities will be escalated to the Legal department, and will be reported externally, when appropriate.<br>An employee that does not comply with the Code of Ethics will potentially be subject to disciplinary action, depending on the circumstances, including written reprimand, suspension from employment, demotion, or termination. Sufficient staff training, including ethics and conflict of interest training, is conducted for all new staff of the Administrator upon hiring, and is ongoing for the entire staff of the Administrator. |

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| Submissions. This should include precompilation or pre-publication monitoring to identify and avoid errors in inputs or Submissions, as well as ex-post analysis of trends and outliers. | |
| **Principle 5 - Internal Oversight**<br>Administrators should establish an oversight function to review and provide challenge on all aspects of the Benchmark determination process. This should include consideration of the features and intended, expected or known usage of the Benchmark and the materiality of existing or potential conflicts of interest identified.<br>The oversight function should be carried out either by a separate committee, or other appropriate governance arrangements. The oversight function and its composition should be appropriate to provide effective scrutiny of the Administrator. Such oversight function could consider groups of Benchmarks by type or asset class, provided that it otherwise complies with this Principle.<br>An Administrator should develop and maintain robust procedures regarding its oversight function, which should be documented and available to relevant Regulatory Authorities, if any. The main features of the procedures should be Made Available to Stakeholders. These procedures should include:<br>a) The terms of reference of the oversight function;<br>b) Criteria to select members of the oversight function;<br>c) The summary details of membership of any committee or arrangement charged with the oversight function, along with any declarations of conflicts of interest and processes for election, nomination or removal and replacement of committee members.<br>The responsibilities of the oversight function include:<br>a) Oversight of the Benchmark design:<br>i. Periodic review of the definition of the Benchmark and its Methodology;<br>ii. Taking measures to remain informed about issues and risks to the Benchmark, as well as commissioning external reviews of the Benchmark (as appropriate);<br>iii. Overseeing any changes to the Benchmark Methodology, including assessing whether the Methodology continues to appropriately measure the underlying Interest, reviewing proposed and implemented changes to the Methodology, and authorising or requesting the Administrator to undertake a consultation with Stakeholders where known or its Subscribers on such changes as per Principle 12; and<br>iv. Reviewing and approving procedures for termination of the Benchmark, including guidelines that set out how the Administrator should consult with Stakeholders about such cessation. | The Administrator has established the Index Oversight Committee. As noted in the introduction, the OC is responsible for oversight regarding Index design and the integrity of the Index determination process and control framework. Oversight includes Index design and Methodology, changes to the Methodology, termination, and day to day operations. OC members are selected to represent various Administrator functions, as well as to include a balanced representation on behalf of a range of Stakeholders, and to counterbalance conflicts of interest. |

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| b) Oversight of the integrity of Benchmark determination and control framework:<br>i. Overseeing the management and operation of the Benchmark, including activities related to Benchmark determination undertaken by a third party;<br>ii. Considering the results of internal and external audits, and following up on the implementation of remedial actions highlighted in the results of these audits;<br>and<br>iii. Overseeing any exercise of Expert Judgement by the Administrator and ensuring Published Methodologies have been followed.<br>Where conflicts of interests may arise in the Administrator due to its ownership structures or controlling interests, or due to other activities conducted by any entity owning or controlling the Administrator or by the Administrator or any of its affiliates: the Administrator should establish an independent oversight function which includes a balanced representation of a range of Stakeholders where known, Subscribers and Submitters, which is chosen to counterbalance the relevant conflict of interest.<br>Where a Benchmark is based on Submissions: the oversight function should provide suitable oversight and challenge of the Submissions by:<br>a) Overseeing and challenging the scrutiny and monitoring of inputs or Submissions by the Administrator. This could include regular discussions of inputs or Submission patterns, defining parameters against which inputs or Submissions can be analysed, or querying the role of the Administrator in challenging or sampling unusual inputs or Submissions;<br>b) Overseeing the Code of Conduct for Submitters;<br>c) Establishing effective arrangements to address breaches of the Code of Conduct for Submitters;<br>and<br>d) Establishing measures to detect potential anomalous or suspicious Submissions and in case of suspicious activities, to report them, as well as any misconduct by Submitters of which it becomes aware to the relevant Regulatory Authorities, if any. | |
| **Principle 6 – Benchmark Design**<br>The design of the Benchmark should seek to achieve, and result in an accurate and reliable representation of the economic realities of the Interest it seeks to measure, and eliminate factors that might result in a distortion of the price, rate, index or value of the Benchmark.<br>Benchmark design should take into account the following generic non-exclusive features, and other factors should be considered, as appropriate to the particular Interest:<br>a) Adequacy of the sample used to represent the | The Administrator is responsible for Index definition and Index Methodology. The Administrator creates a Methodology for each Index which details inclusion criteria and the process involved with the creation, operation and ongoing maintenance of the Index. These Methodologies may be created in collaboration with clients receiving custom Index services, or by the Administrator alone. The goal of this process is to create accurate and reliable representations of the economic realities of the interest each Index seeks to measure including the items in sections a) to e). Specifically, inclusion criteria such as size, maturity, and rating are determined with an understanding of the economic realities of a |

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| Interest;<br>b) Size and liquidity of the relevant market (for example whether there is sufficient trading to provide observable, transparent pricing);<br>c) Relative size of the underlying market in relation to the volume of trading in the market that references the Benchmark;<br>d) The distribution of trading among Market Participants (market concentration); and<br>e) Market dynamics (e.g., to ensure that the Benchmark reflects changes to the assets underpinning a Benchmark). | particular marketplace, such as liquidity, trading volumes and other market dynamics. If the client serves as an Administrator, DXFEED may provide backtesting, quality assurance and calculation services to the client as a Calculation Agent. |
| **Principle 7 – Data Sufficiency**<br>The data used to construct a Benchmark determination should be sufficient to accurately and reliably represent the Interest measured by the Benchmark and should:<br>a) Be based on prices, rates, indices or values that have been formed by the competitive forces of supply and demand in order to provide confidence that the price discovery system is reliable; and<br>b) Be anchored by observable transactions entered into at arm's length between buyers and sellers in the market for the Interest the Benchmark measures in order for it to function as a credible indicator of prices, rates, indices or values.<br>This Principle requires that a Benchmark be based upon (i.e., anchored in) an active market having observable Bona Fide, Arms-Length Transactions.<br>This does not mean that every individual Benchmark determination must be constructed solely of transaction data. Provided that an active market exists, conditions in the market on any given day might require the Administrator to rely on different forms of data tied to observable market data as an adjunct or supplement to transactions. Depending upon the Administrator's Methodology, this could result in an individual Benchmark determination being based predominantly, or exclusively, on bids and offers or extrapolations from prior transactions.<br>This is further clarified in Principle 8. | DXFEED measures and calculates the sufficiency of all data inputs for its indexes to assure that the accuracy of a benchmark is sufficiently met.<br>Each index's methodology document, or a similar rulebook that is separately referenced in the methodology, will dictate the treatment of data used in the calculation, generally aligned to the asset class type of the index.<br>If the client serves as an Administrator, DXFEED as a Calculation Agent will approve necessary data sources together with the client or will use the ones specified in the client's methodologies (if any). |
| **Principle 8 – Hierarchy of Data Inputs**<br>An Administrator should establish and Publish or Make Available clear guidelines regarding the hierarchy of data inputs and exercise of Expert Judgement used for the determination of Benchmarks. In general, the hierarchy of data inputs should include:<br>a) Where a Benchmark is dependent upon Submissions, the Submitters' own concluded arms-length transactions in the underlying interest or related markets;<br>b) Reported or observed concluded Arm's-length | The hierarchy of data inputs vary by index. Each is described in the applicable published methodology. All data inputs are anchored in actual market activity or transactions in accordance with the following: (i) equity and commodity benchmarks use transactions pricing; and (ii) for currency and fixed income benchmarks use evaluated pricing.<br><br>Where a market price or data derived from market price behavior can be used, DXFEED will seek to use such data to calculate the applicable index. In instances where other data inputs are utilized, including derived or judgment based created data, DXFEED will |

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| Transactions in the underlying interest;<br>c) Reported or observed concluded Arm's-length Transactions in related markets;<br>d) Firm (executable) bids and offers; and<br>e) Other market information or Expert Judgements.<br>Provided that the Data Sufficiency Principle is met (i.e., an active market exists), this Principle is not intended to restrict an Administrator's flexibility to use inputs consistent with the Administrator's approach to ensuring the quality, integrity, continuity and reliability of its Benchmark determinations, as set out in the Administrator's Methodology. The Administrator should retain flexibility to use the inputs it believes are appropriate under its Methodology to ensure the quality and integrity of its Benchmark. For example, certain Administrators may decide to rely upon Expert Judgement in an active albeit low liquidity market. | derive such data from sources it reasonably believes to be objective and to help fulfil the objectives of the applicable index.<br><br>If the client serves as an Administrator, DXFEED as a Calculation Agent will approve necessary data sources together with the client or will use the ones specified in the client's methodologies (if any). |
| **Principle 9 – Transparency of Benchmark Determinations**<br>The Administrator should describe and publish with each Benchmark determination, to the extent reasonable without delaying an Administrator publication deadline:<br>a) A concise explanation, sufficient to facilitate a Stakeholder's or Market Authority's ability to understand how the determination was developed, including, at a minimum, the size and liquidity of the market being assessed (meaning the number and volume of transactions submitted), the range and average volume and range and average of price, and indicative percentages of each type of market data that have been considered in a Benchmark determination; terms referring to the pricing Methodology should be included (i.e., transaction-based, spread-based or interpolated/extrapolated);<br>b) A concise explanation of the extent to which and the basis upon which Expert Judgement if any, was used in establishing a Benchmark determination. | The Administrator creates a Methodology for each Index which details the Methodology and process involved with the creation, operation and ongoing maintenance of the Index. These Methodologies will be made publicly available via the DXFEED website and serve as concise explanations facilitating the ability to understand how a determination was developed.<br><br>a) The Methodology provides sufficient context on the size and liquidity of the market the index is based upon, information on volume and pricing considerations and a description of other market data, if any, in use.<br><br>b) For indexes that may include expert judgment, the explanation of this involvement is disclosed with each index determination in the methodology document.<br><br>DXFEED will ensure quality of any third-party Methodologies received if it serves as a Calculation Agent and may provide backtesting and quality assurance services to the client as a Calculation Agent. |
| **Principle 10 – Periodic Review**<br>The Administrator should periodically review the conditions in the underlying Interest that the Benchmark measures to determine whether the Interest has undergone structural changes that might require changes to the design of the Methodology.<br>The Administrator also should periodically review whether the Interest has diminished or is nonfunctioning such that it can no longer function as the basis for a credible Benchmark.<br>The Administrator should Publish or Make Available a summary of such reviews where material revisions have been made to a Benchmark, including the rationale for the revisions. | The Administrator is responsible for governance, accountability and oversight of the Indices it maintains. The periodic review of the Index and underlying market conditions is also a responsibility of the OC and IPC, and any client feedback as well as a consideration of points required by these Principles will be included in these reviews. Any recommended changes are made pursuant to the documented rebalancing and reconstitution policies and processes within the Methodologies. |

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| **Principle 11 – Content of the Methodology**<br>The Administrator should document and Publish or Make Available the Methodology used to make Benchmark determinations. The Administrator should provide the rationale for adopting a particular Methodology. The Published Methodology should provide sufficient detail to allow Stakeholders to understand how the Benchmark is derived and to assess its representativeness, its relevance to particular Stakeholders, and its appropriateness as a reference for financial instruments.<br>At a minimum, the Methodology should contain:<br>a) Definitions of key terms;<br>b) All criteria and procedures used to develop the Benchmark, including input selection, the mix of inputs used to derive the Benchmark, the guidelines that control the exercise of Expert Judgement by the Administrator, priority given to certain data types, minimum data needed to determine a Benchmark, and any models or extrapolation methods;<br>c) Procedures and practices designed to promote consistency in the exercise of Expert Judgement between Benchmark determinations;<br>d) The procedures which govern Benchmark determination in periods of market stress or disruption, or periods where data sources may be absent (e.g., theoretical estimation models);<br>e) The procedures for dealing with error reports, including when a revision of a Benchmark would be applicable;<br>f) Information regarding the frequency for internal reviews and approvals of the Methodology.<br>Where applicable, the Published Methodologies should also include information regarding the procedures and frequency for external review of the Methodology;<br>g) The circumstances and procedures under which the Administrator will consult with Stakeholders, as appropriate; and<br>h) The identification of potential limitations of a Benchmark, including its operation in illiquid or fragmented markets and the possible concentration of inputs.<br>Where a Benchmark is based on Submissions, the additional Principle also applies:<br>The Administrator should clearly establish criteria for including and excluding Submitters. The criteria should consider any issues arising from the location of the Submitter, if in a different jurisdiction to the Administrator. These criteria should be available to any relevant Regulatory Authorities, if any, and Published or Made Available to Stakeholders. Any provisions related to changes in composition, including notice periods should be made clear. | The Administrator maintains Methodologies for the Indices it maintains.<br>The index methodologies within the rulebooks detail all criteria and procedures such as eligibility requirements, weightings, and calculations used for the determination of the benchmarks. The methodologies provide stakeholders with sufficient information to understand how the index is calculated and its relevance to the market as an instrument for financial measurement. If expert judgment is considered in the benchmark determination, all analysis is provided in the index methodology.<br>In the event of market stress or disruption, stakeholders will be made aware. Such events will be resolved at the discretion of the IPC and will follow the governance process. Information regarding the frequency for internal reviews and approvals of the methodology are available in published methodologies. Any methodology changes are made public on the corporate website. Additionally, stakeholders are contacted about any changes and their impact to the index.<br>If the client serves as an Administrator, DXFEED as a Calculation Agent will review the Methodologies together with the client and may provide backtesting and quality assurance services to the client as a Calculation Agent. |

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| **Principle 12 – Changes to the Methodology**<br>An Administrator should Publish or Make Available the rationale of any proposed material change in its Methodology, and procedures for making such changes. These procedures should clearly define what constitutes a material change, and the method and timing for consulting or notifying Subscribers (and other Stakeholders where appropriate, taking into account the breadth and depth of the Benchmark's use) of changes. Those procedures should be consistent with the overriding objective that an Administrator must ensure the continued integrity of its Benchmark determinations. When changes are proposed, the Administrator should specify exactly what these changes entail and when they are intended to apply.<br>The Administrator should specify how changes to the Methodology will be scrutinized, by the oversight function.<br>The Administrator should develop Stakeholder consultation procedures in relation to changes to the Methodology that are deemed material by the oversight function, and that are appropriate and proportionate to the breadth and depth of the Benchmark's use and the nature of the Stakeholders. Procedures should:<br>a) Provide advance notice and a clear timeframe that gives Stakeholders sufficient opportunity to analyze and comment on the impact of such proposed material changes, having regard to the Administrator's assessment of the overall circumstances; and<br>b) Provide for Stakeholders' summary comments, and the Administrator's summary response to those comments, to be made accessible to all Stakeholders after any given consultation period, except where the commenter has requested confidentiality. | The IPC will approve any necessary changes in the Index Methodology based upon a definition of a material change established in the Methodologies. The Administrator is then responsible for making the changes and notifying Stakeholders.<br>a) Advance notice will be provided; the amount of notice will be based upon the severity of the impact of the change to allow for Stakeholder comments and appropriate preparation to implement the change.<br>b) Comments from Stakeholders will be collected and addressed by the IPC and/or OC. |
| **Principle 13 – Transition**<br>Administrators should have clear written policies and procedures, to address the need for possible cessation of a Benchmark, due to market structure change, product definition change, or any other condition which makes the Benchmark no longer representative of its intended Interest. These policies and procedures should be proportionate to the estimated breadth and depth of contracts and financial instruments that reference a Benchmark and the economic and financial stability impact that might result from the cessation of the Benchmark. The Administrator should take into account the views of Stakeholders and any relevant Regulatory and National Authorities in determining what policies and procedures are appropriate for a particular Benchmark.<br>These written policies and procedures should be Published or Made Available to all Stakeholders. | Index reviews are conducted quarterly. The Index review meeting agenda typically includes a review of Index performance throughout the year with a focus on any Methodology maintenance meetings and subsequent changes. Other agenda items address the need for possible cessation of an Index, based upon a review of market structure changes, product definition changes, or other market conditions impacting the Index's intended interest. The agenda will also include the views of Stakeholders, and any relevant Regulator and National Authorities, when applicable. The IPC makes a determination if the Methodology is still accurately measuring performance of securities in the intended marketplace. Changes to the Methodology, if made, are documented and provided along with the revised version of the Methodology as described elsewhere.<br><br>Termination of an Index may occur. A decision to terminate an Index will be made only after allowing time for 1) feedback from |

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| Administrators should encourage Subscribers and other Stakeholders who have financial instruments that reference a Benchmark to take steps to make sure that:<br>a) Contracts or other financial instruments that reference a Benchmark, have robust fallback provisions in the event of material changes to, or cessation of, the referenced Benchmark;<br>and<br>b) Stakeholders are aware of the possibility that various factors, including external factors beyond the control of the Administrator, might necessitate material changes to a Benchmark.<br>Administrators' written policies and procedures to address the possibility of Benchmark cessation could include the following factors, if determined to be reasonable and appropriate by the Administrator:<br>a) Criteria to guide the selection of a credible, alternative Benchmark such as, but not limited to, criteria that seek to match to the extent practicable the existing Benchmark's characteristics (e.g., credit quality, maturities and liquidity of the alternative market), differentials between Benchmarks, the extent to which an alternative Benchmark meets the asset/liability needs of Stakeholders, whether the revised Benchmark is investable, the availability of transparent transaction data, the impact on Stakeholders and impact of existing legislation;<br>b) The practicality of maintaining parallel Benchmarks (e.g., where feasible, maintain the existing Benchmark for a defined period of time to permit existing contracts and financial instruments to mature and publish a new Benchmark) in order to accommodate an orderly transition to a new Benchmark;<br>c) The procedures that the Administrator would follow in the event that a suitable alternative cannot be identified;<br>d) In the case of a Benchmark or a tenor of a Benchmark that will be discontinued completely, the policy defining the period of time in which the Benchmark will continue to be produced in order to permit existing contracts to migrate to an alternative Benchmark if necessary; and<br>e) The process by which the Administrator will engage Stakeholders and relevant Market and National Authorities, as appropriate, in the process for selecting and moving towards an alternative Benchmark, including the timeframe for any such action commensurate with the tenors of the financial instruments referencing the Benchmarks and the adequacy of notice that will be provided to Stakeholders | Subscribers and other Stakeholders and 2) transition, taking into account the likely impact of the termination such as the breadth and depth of contracts and financial instruments that reference the Index. Alternative Indices will be reviewed with Subscribers and other Stakeholders, and a parallel production period will be contemplated based upon current client usage of the Index by Subscribers and other Stakeholders. The Administrator believes addressing items relating to the possibility of Benchmark cessation as part of the Index review meeting agenda meets the objectives and functions of the Principles, based on a proportionate view of the Principles. The Administrator's Methodologies discuss material changes to Indices. **(See Principle 11)** |
| **Principle 14 – Submitter Code of Conduct**<br>Where a Benchmark is based on Submissions, the following additional Principle also applies:<br>The Administrator should develop guidelines for Submitters ("Submitter Code of Conduct"), which should be available to any relevant Regulatory Authorities, if any and Published or Made Available to Stakeholders. | DXFEED indexes are calculated based on data from regulated trading venues and are therefore not based on submissions. |

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| The Administrator should only use inputs or Submissions from entities which adhere to the Submitter Code of Conduct and the Administrator should appropriately monitor and record adherence from Submitters. The Administrator should require Submitters to confirm adherence to the Submitter Code of Conduct annually and whenever a change to the Submitter Code of Conduct has occurred.<br>The Administrator's oversight function should be responsible for the continuing review and oversight of the Submitter Code of Conduct.<br>The Submitter Code of Conduct should address:<br>a) The selection of inputs;<br>b) Who may submit data and information to the Administrator;<br>c) Quality control procedures to verify the identity of a Submitter and any employee(s) of a Submitter who report(s) data or information and the authorization of such person(s) to report market data on behalf of a Submitter;<br>d) Criteria applied to employees of a Submitter who are permitted to submit data or information to an Administrator on behalf of a Submitter;<br>e) Policies to discourage the interim withdrawal of Submitters from surveys or Panels;<br>f) Policies to encourage Submitters to submit all relevant data; and<br>g) The Submitters' internal systems and controls, which should include:<br>i. Procedures for submitting inputs, including Methodologies to determine the type of eligible inputs, in line with the Administrator's Methodologies;<br>ii. Procedures to detect and evaluate suspicious inputs or transactions, including inter-group transactions, and to ensure the *Bona Fide* nature of such inputs, where appropriate;<br>iii. Policies guiding and detailing the use of Expert Judgment, including documentation requirements;<br>iv. Record keeping policies;<br>v. Pre-Submission validation of inputs, and procedures for multiple reviews by senior staff to check inputs;<br>vi. Training, including training with respect to any relevant regulation (covering Benchmark regulation or any market abuse regime);<br>vii. Suspicious Submission reporting;<br>viii. Roles and responsibilities of key personnel and accountability lines;<br>ix. Internal sign off procedures by management for submitting inputs;<br>x. Whistle blowing policies (in line with Principle 4); and<br>xi. Conflicts of interest procedures and policies, including prohibitions on the Submission of data from Front Office Functions unless the Administrator is satisfied that there are adequate internal oversight and verification procedures for Front Office Function Submissions of data | |

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| to an Administrator (including safeguards and supervision to address possible conflicts of interests as per paragraphs (v) and (ix) above), the physical separation of employees and reporting lines where appropriate, the consideration of how to identify, disclose, manage, mitigate and avoid existing or potential incentives to manipulate or otherwise influence data inputs (whether or not in order to influence the Benchmark levels), including, without limitation, through appropriate remuneration policies and by effectively addressing conflicts of interest which may exist between the Submitter's Submission activities (including all staff who perform or otherwise participate in Benchmark Submission responsibilities), and any other business of the Submitter or of any of its affiliates or any of their respective clients or customers. | |
| **Principle 15 - Internal Controls Over Data Collection**<br>When an Administrator collects data from any external source the Administrator should ensure that there are appropriate internal controls over its data collection and transmission processes. These controls should address the process for selecting the source, collecting the data and protecting the integrity and confidentiality of the data.<br>Where Administrators receive data from employees of the Front Office Function, the Administrator should seek corroborating data from other sources. | In accordance with this statement under Principle 4 and Principle 5, DXFEED maintains a robust operational infrastructure that manages the risks associated with the maintenance, production and operation of the indexes.<br>Where practicable, DXFEED sources data from more than one vendor to improve accuracy and lower operational dependencies on single vendors. DXFEED sometimes supplements vendor data with information sourced through publicly available sources, such as company filings, when the vendor data is not complete or there is not a second source.<br>DXFEED employs a suite of manual and automated quality checks around the data used to calculate and rebalance the indexes. If data is flagged as suspect in any of these checks, it is investigated and a decision made on whether to use it. Such decisions are signed off by supervisors in the data operations team or, if necessary, are escalated for review. |
| **Principle 16 – Complaints Procedures**<br>The Administrator should establish and Publish or Make Available a written complaints procedures policy, by which Stakeholders may submit complaints including concerning whether a specific Benchmark determination is representative of the underlying Interest it seeks to measure, applications of the Methodology in relation to a specific Benchmark determination(s) and other Administrator decisions in relation to a Benchmark determination.<br>The complaints procedures policy should:<br>a) Permit complaints to be submitted through a user-friendly complaints process such as an electronic Submission process;<br>b) Contain procedures for receiving and investigating a complaint made about the Administrator's Benchmark determination process on a timely and fair basis by personnel who are independent of any personnel who may be or may have been involved in the subject of | The Administrator employs support staff available to handle complaints and challenges from Stakeholders and Subscribers related to our indices. The Complaint Policy includes the following principles, as well as all items required by this Principle:<br>– All investigations of complaints raised by any party to the Administrator must be handled in a fair and timely manner;<br>– Whenever practical, the Administrator will avoid conflicts of interest in the investigation of a complaint;<br>– Resolution of a complaint will be communicated to the third party raising it in a timely fashion;<br>– All records and correspondences relating to any complaints must be kept by the Administrator for five years.<br>The Complaint Policy will be available upon request. |

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| the complaint, advising the complainant and other relevant parties of the outcome of its investigation within a reasonable period and retaining all records concerning complaints;<br>c) Contain a process for escalating complaints, as appropriate, to the Administrator's governance body; and<br>d) Require all documents relating to a complaint, including those submitted by the complainant as well as the Administrator's own record, to be retained for a minimum of five years, subject to applicable national legal or regulatory requirements.<br>Disputes about a Benchmarking determination, which are not formal complaints, should be resolved by the Administrator by reference to its standard appropriate procedures. If a complaint results in a change in a Benchmark determination, that should be Published or Made Available to Subscribers and Published or Made Available to Stakeholders as soon as possible as set out in the Methodology. | |
| **Principle 17 – Audits**<br>The Administrator should appoint an independent internal or external auditor with appropriate experience and capability to periodically review and report on the Administrator's adherence to its stated criteria and with the Principles. The frequency of audits should be proportionate to the size and complexity of the Administrator's operations.<br>Where appropriate to the level of existing or potential conflicts of interest identified by the Administrator (except for Benchmarks that are otherwise regulated or supervised by a National Authority other than a relevant Regulatory Authority), an Administrator should appoint an independent external auditor with appropriate experience and capability to periodically review and report on the Administrator's adherence to its stated Methodology. The frequency of audits should be proportionate to the size and complexity of the Administrator's Benchmark operations and the breadth and depth of Benchmark use by Stakeholders | In addition to internal controls, DXFEED internal audit group shall perform a routine review regarding DXFEED's compliance with the IOSCO Principles. Following each such routine review, the OC shall consider the detailed findings of the review and, when remedial measures are necessary or appropriate, will oversee implementation of those measures to address the findings. |
| **Principle 18 – Audit Trail**<br>Written records should be retained by the Administrator for five years, subject to applicable national legal or regulatory requirements on:<br>a) All market data, Submissions and any other data and information sources relied upon for Benchmark determination;<br>b) The exercise of Expert Judgment made by the Administrator in reaching a Benchmark determination;<br>c) Other changes in or deviations from standard procedures and Methodologies, including those made during periods of market stress or disruption; | Records related to various aspects of the Indices are kept for five years or longer.<br>The Administrator will retain the written records as detailed in the Principle. Archived data includes:<br>– Methodology<br>– Backtesting<br>– Index levels<br>– Constituent lists<br>– Proforma processes<br>– Evaluated pricing<br>– Reference data |

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| d) The identity of each person involved in producing a Benchmark determination; and<br>e) Any queries and responses relating to data inputs. If these records are held by a Regulated Market or Exchange the Administrator may rely on these records for compliance with this Principle, subject to appropriate written record sharing agreements.<br>**When a Benchmark is based on Submissions, the following additional Principle also applies:**<br>Submitters should retain records for five years subject to applicable national legal or regulatory requirements on:<br>a) The procedures and Methodologies governing the Submission of inputs;<br>b) The identity of any other person who submitted or otherwise generated any of the data or information provided to the Administrator;<br>c) Names and roles of individuals responsible for Submission and Submission oversight;<br>d) Relevant communications between submitting parties;<br>e) Any interaction with the Administrator;<br>f) Any queries received regarding data or information provided to the Administrator;<br>g) Declaration of any conflicts of interests and aggregate exposures to Benchmark related instruments;<br>h) Exposures of individual traders/desks to Benchmark related instruments in order to facilitate audits and investigations; and<br>i) Findings of external/internal audits, when available, related to Benchmark Submission remedial actions and progress in implementing them | |
| **Principle 19 – Cooperation with Regulatory Authorities**<br>Relevant documents, Audit Trails and other documents subject to these Principles shall be made readily available by the relevant parties to the relevant Regulatory Authorities in carrying out their regulatory or supervisory duties and handed over promptly upon request. | The Administrator will make readily available relevant documents, Audit Trails and other documents subject to these principles to the relevant Regulatory Authorities upon request.<br>DXFEED will reasonably cooperate with relevant Regulatory Authorities with respect to proper and legitimate enquiries to the extent we are able give<br>other legal and contractual constraints, including confidentiality. |

# 9. DXFEED Systems Review

## General Overview

DXFEED utilizes state-of-the-art electronic index management platform supporting management and R&D processes on multiple index families with controlled workflows and flexible environment for data manipulation and research.

The platform provides full lifecycle management solution for indices, with support for index design, backtesting, basket analysis, reweighting/rebalancing, version management for methodology and transfer to operations/production.

# System Diagram

The solution consists of the following five elements:

1. Common data layer
2. Index R&D development environment
3. Index workflow maintenance environment
4. Index workflow scheduling and execution control environment
5. Calculation engine and distribution infrastructure


# Common data layer

Normalization support for different data sources to centralize and unify access to required data sets:

- flat files (CSV, XML, JSON, Apache Parquet)
- Cloud data (AWS S3, AWS Athena)
- Streaming low-latency data
- RDBMS
- Methods of access: REST/Java/C/C#/Python/R APIs.
- Packaged and custom data vendor integrations.

# R&D environment

In the scope of the solution we offer predefined templates for Jupyter Notebook, R Console, R Studio and other development and collaboration tools.

Python and R analytical libraries are offered for common data transformations and operations of index analysis.

Index types supported:

- price weighted indices,
- equal weighted indices,
- indices weighted by other factors such as maximum weight restrictions or certain attributes used to choose the stocks,
- leveraged and inverse indices,
- weighted return indices,
- dividend indices,
- risk control, excess return, currency, currency hedged, domestic currency return, and the special opening quotation calculations,
- capitalization weighted indices,
- modified market capitalization weighted indices,
- capped indices,
- capped market capitalization indices,

- weighted return indices,
- leveraged and inverse indices,
- periodically rebalanced leverage or inverse futures indices.

The solution provides normalized approach to documenting index design and workflow – live documents with both code and rich text, human-readable, with analysis description, code and results in the form of figures, tables, etc. combined in a single electronic document:

# Version control

Version control can be introduced on any stage of the process or implemented for the full scope of the implemented solution. Software Development Lifecycle best practices are used to setup and maintain source control and the processes around.

# Data Management

dxFeed runs fully managed ticker plants sourcing and storing direct market data feeds from a variety of exchanges in the US, Canada and Europe and delivering streaming tick-by-tick data in a consolidated format, accessible via a simple and efficient API with very low latency. In addition to its high-volume streaming data capabilities, the platform includes a complete managed, scalable solution for the storage and retrieval of historical data. This includes tick-level market replay technology, providing a very efficient and cost-effective trading strategy and back-testing facility for companies trying to enter new markets.

The full scope of data dissemination system consists of the following:

- Real-time and delayed streaming market data feed (normalized and consolidated) for equities, futures, options and indexes.
- Basic reference data (instrument definitions and essential information + trading hours)
- Charting aggregated streaming data (ready-made charting candles or on-the-fly calculations)
- Enhanced reference data (stock fundamentals, corporate actions, events, ownership, etc.)
- Historical tick data services (tick level market replay, tick-level and aggregated data extraction)
- Calculated data services (market indicators, live watch lists for gainers/losers, theoretical arbitrage-free option prices, greeks)
- Live market alerts services

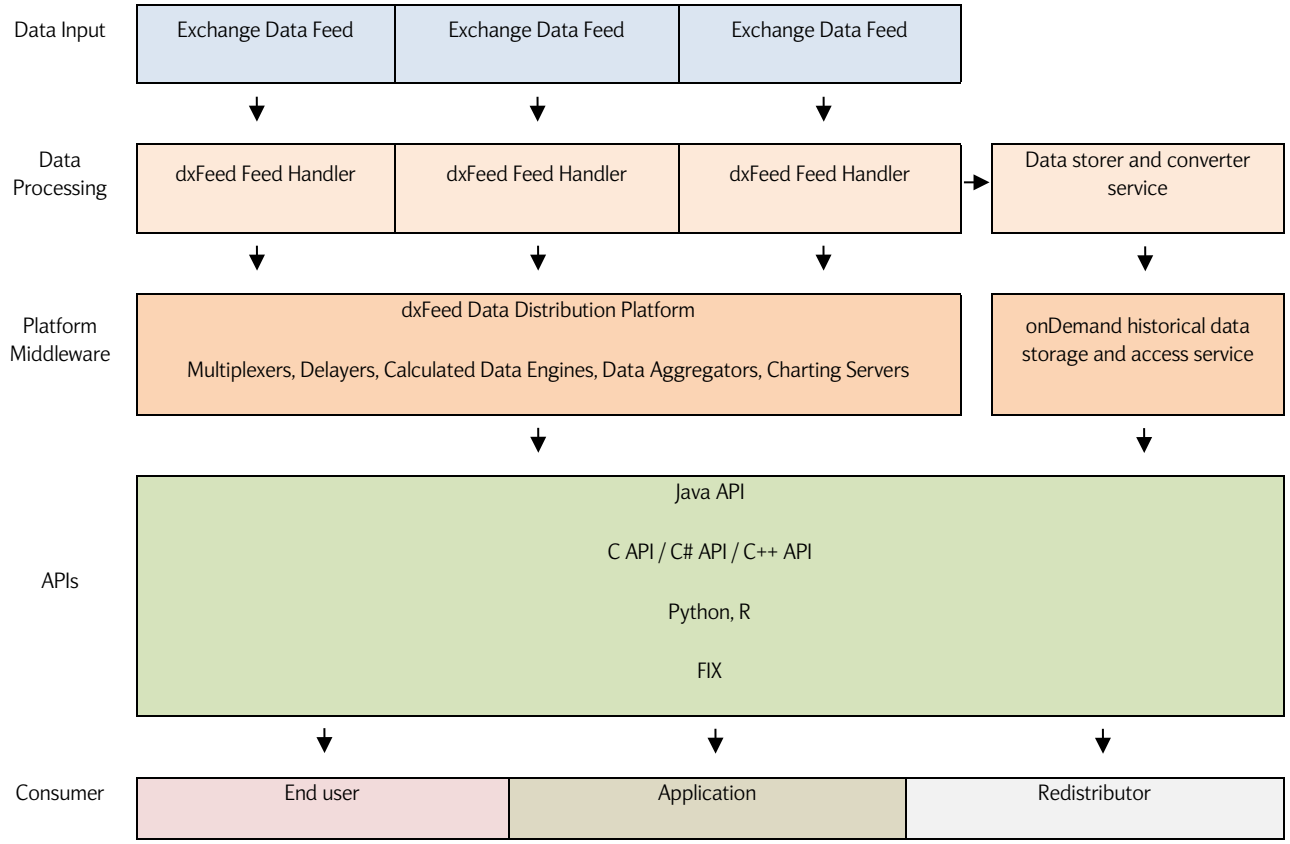
Data platform provides the following benefits:

- Consolidation of a variety of market data feeds for equities, options and derivatives, from different exchanges in a single optimized format.
- High performance - up to 4 million messages per second over a million instruments, with sub-millisecond platform latency on a mid-range commodity server, and able to efficiently handle microbursts.
- Scalable solution that can be easily expanded from a simple low cost solution, to a more advanced system capable of accommodating a larger number of feeds and very high message volumes.
- Hardware footprint with advanced technology that maximizes performance. Data rates and volumes are efficiently managed and scale both vertically and horizontally, distributing the load and utilizing parallelization.
- Subscription management up to a per instrument level, avoiding the management of unnecessary instruments.
- Easy data integration through advanced APIs including Java and C/C++ or FIX

The ticker plant consists of the following components: feed handlers, feed utilities, multiplexers, delayers, storers

/replayers, calculated data engine, data aggregations engine and database, and historical data access engine. All services are accessed through corresponding APIs.

Below is an architectural diagram of the ticker plant infrastructure:




# Data Centers

Our choice of colocation data centers was carefully made to ensure stable operation and low latency and allow for connectivity to a broad community of market participants including exchanges, execution brokers, buy-sides and other technology service providers.

Our U.S. managed services infrastructure is hosted at two of the US Financial Industry's most important data centers - the 350 East Cermak CH1 Equinix facility in Chicago and the NY4/NY5 Equinix facilities in Northern New Jersey – and includes a high-performance, state-of-the-art fully managed blade footprint, OS/Hypervisor, and all related computing and networking elements required to run our applications and services with 100% uptime.

The two locations were specifically chosen for space, resiliency and power availability. The Chicago CH1 Equinix data center is a business hub for more than 500 companies. Our customers here can choose from a broad range of network services from more than 130 providers. They can also interconnect directly to customers and partners in their digital supply chain. Below are some important specifications of the 350 East Cermak Data Center:

| | |
|---|---|
| **Building** | Equinix, CH1 (350 East Cermak) |
| **Power** | Electrical Capacity – 2.4 kVA per cabinet<br>UPS Configuration – N+1 Distributed<br>Redundant System: |

| | |
|---|---|
| | # of Utility Feeders – 2# of Power Transformers – 5<br>Utility Voltage – 12kV, 3-phase<br>Standby Power – Six 1,500 kW diesel engine-generator power<br>Standby Power Config – N+2 |
| **Cooling** | Cooling Capacity – 1.75 kW per cabinet (5,973 BTUH)<br>Cooling Plant – Air-cooled chillers and air handlers |
| **Security** | Physical – "Man trap" entry<br>Human – 24x7 security guards<br>Electronic – CCTV and Recorders, Motion Detection, Hand Geometry Readers, Fiber Vault |
| **Interconnection** | System – Overhead proprietary cable tray system with multi-tier ladder rack<br>Cross Connects – Single-Mode fiber, Multi-Mode fiber (62.5 and 50 micron), CAT5, CAT6, CAT5 (T1), and CAT3 (POTS)<br>Equinix Metro Connect – Extends choice and reach for carrier and network availability across metro areas<br>Equinix Exchange™ – Central switch for public and private peering Equinix Carrier Ethernet Exchange – Enables Ethernet Service Providers to interconnect to CENs and expand the reach of Ethernet services Equinix Direct™ – Automated network provisioning, multi-homing and billing |

Our New York data centers – Equinix NY4 and NY5 – are a business hub for more than 700 companies. Our New York clients can choose from a broad range of network services from more than 135 providers. They can also interconnect directly to customers and partners in their digital supply chain.

Some of the key advantages of this data center location are:

- Large ecosystem of financial firms in Equinix's New York data centers
- Capacity to handle large footprint deployments with more than 425,000 square feet of colocation space across seven data centers
- Low-latency connectivity to DirectEdge, CBOE, ICAP, ISE and BOX
- Access to rich array of service providers
- Connections to international carriers including Chungwha Telecom, China Telecom, Reliance Communications, SingTel and Bharti Airtel Ltd.

Below are some important specifications of the Equinix NY4 and NY5 Data Centers:

| **Building** | **Equinix NY4 / NY5** |
|---|---|
| **Power** | Electrical Capacity – 4 & 5 kVA per cabinet<br>UPS Configuration – N+1 Block Redundant<br>Utility Feeders – 2<br>Power Transformers – 4<br>Utility Voltage – 26.4 kV 3 Phase<br>Standby Power – 4 x 2,500 kW diesel engine generator Standby Power Config. – N+1 |

| | |
|---|---|
| **Cooling** | Cooling Capacity – 4.0 kW (13,648 BTU/Hr) per cabinet average; 6.0 kW (20,472 BTU/Hr) per cabinet peak Cooling Plant – 146 Ton water-cooled self contained DX penthouse air conditioning units in 3+1 configuration |
| **Security** | Physical – Exterior Fencing, Vehicular Barrier, Car Trap Human – Site Personal, Security 24x7 Electronic – CCTV and Recorders, Motion Detection, Hand Geometry Readers, Card Readers |
| **Interconnection** | System – Overhead proprietary cable tray system with multi-tier ladder rack<br>Cross Connects – Single-Mode fiber, Multi-Mode fiber (62.5 and 50 micron), CAT5, CAT6, CAT5 (T1), CAT3 (POTS), and COAX Campus Cross Connects – Single-Mode fiber, Multi-Mode fiber (62.5 and 50 micron), CAT5, COAX and CAT5 (T1) connectivity to NY2 and NY4<br>Metro Connects – 100M, 1G, and 10G lit services to NY1, NY7, NY8, and NY9<br>Extended Metro Connects – 100M, 1G, and 10G connectivity to the 111 8th Ave MMR via NY9 and the 60 Hudson St MMR via NY8 quinix Internet Exchange™ – 100MB, GigE and 10GigE Internet Exchange Ports available Equinix Ethernet Exchange™ – Enables Ethernet Service Providers to interconnect to CENs and expand the reach of Ethernet services Innerduct – Conduit access for network service providers installing bulk fiber Management Access – 10M IP Transit access for out-of-band device management |

# Reference Data

| | |
|---|---|
| **Market data** | indexes, options, equities, futures and mutual finds |
| **Instrument definitions and essential attributes** | Data compiled and maintained |
| **Trading hours and holiday data for all instruments** | Data compiled and maintained |
| **Continuous futures symbols mapping: Futures product codes for current month, and other shortcuts** | Mapped product shortcut symbols are available in the data feed and other data services (charting – providing consolidated chart by product code, historical and reference data) along with original products (e.g. /ES for current month's CME E-Mini S&P along with original symbol /ESH2). |
| **Fundamentals, corporate actions, ownership and corporate events, for the complete symbol universe for the US and Canada, UK and Ireland, EU, Asia Pacific** | Comprehensive database of essential reference data from several providers.<br><br>Asset classification, company profiles, company fundamentals, corporate actions, corporate events and ownership data. |
| **Macroeconomic data** | Global data series accessible via API and chart server. |

# Historical Data

| | |
|---|---|
| **Tick-level and aggregated historical data** | Tick-level history – since Jan 1, 2010.<br><br>Historical aggregates – since 1993. |

# Aggregated Data and Charting

| | |
|---|---|
| **Pre-aggregated charting OHLCs for all instruments** | Managed charting services delivered over the real-time feed.<br><br>Pre-loaded historical charting information available up to 1993. |

# Calculated Data

| | |
|---|---|
| **Market indicators (advancers, decliners, TRINs, etc.)** | Calculated in real-time. |
| **Top N gainers / losers lists** | Calculated in real-time. |
| **Alerts** | Simple alerts service sending signals by configurable expressions on real-time feed |
| **Options theoretical arbitrage free price and Greeks feed** | dxPrice calculation engine provides real-time arbitrage-free theoretical option prices calculation based on real-time or historical data. Pricing data may be delivered along with real-time data feed via API or calculated based on historical onDemand data store. |

# Performance

In order to minimize latency, data is processed locally as close to its source as technically possible. Regional markets are collected into these ticker plants, before being normalized, stored and distributed globally.

Feed handlers and ticker plant software are designed for performance and sub-millisecond average latency.

Detailed latency measurements can be provided on demand for a known customer location and the selected array of services.

Current throughput for consolidated market data is about 14,000,000 messages per second in intraday peaks.

# Source Data Connectivity, Reliability and Resilience

Data is sourced via resilient circuits, directly from the exchanges/sources into our redundant ticker plants. The process ensures continued availability of the data feeds in the event of an outage on an inbound circuit or on the exchange feed itself. Our support services operate 24x7 with automated monitoring of all incoming sources.

Each data source undergoes a rigorous integration process, involving our development team. The full integration of the content must be signed-off by our Quality Assurance team. Our Q&A and Development groups operate hand-in-hand in an iterative approach to tracking, managing and releasing updates to all feed handlers.

Experienced project managers oversee exchange integration and migration projects, to ensure customer impact is fully assessed and minimized and that the project is run to meet required deadlines.

All of the data collection, processing and delivery are engineered to provide maximum uptime on a 24x7x365 basis. All inbound sources are dual fed into diverse ticker plants. Data delivery is also available to clients via redundant, diverse points of presence allowing dual connections to be deployed to data centers of the clients' choice.

Our ticker plant infrastructure is reviewed regularly with capacity levels of 60% throughput, being the trigger to upgrade the hardware and/or network components.

# Customer Connectivity Infrastructure

The services can be accessed via the internet, secure VPN, cross-connect (within the same data center), or extranet connection. Bandwidth estimates can be provided, based on the instrument universe required by the client.

Connections utilize the industry standard TCP/IP protocol, and are fully managed by the APIs provided. Full resilience is built into the hosted platform, meaning there is only a single hostname which clients can connect to.

Connections are fully load-balanced to ensure clients do not need to take any action in their applications in the event of an outage or failure of an upstream component.

# Risk assessment

The management is responsible for identifying risks and for establishing the required level of control to avoid these risks. This includes managing the controls on all of the systems, facilities and infrastructure in the datacenters.

The management team meets on a regular basis to discuss the business risks, including financial and technical risks. Regular meetings attended by management and employees are held to discuss current projects, maintenance of the systems, education and new products in order to provide general information and to identify potential risks.

On an annual basis, the control team carries out a risk assessment on the systems and businesses of DXFEED. The theory used for assessing the risks in the systems and businesses is based on a matrix of “consequence of the risk multiplied with the probability of the risk happening”. The risk assessment takes both internal and external factors into consideration and also the ability of management to focus on the impact of these factors. The risk assessment is published to the management and board of directors.

# Information security

A formal IT security policy is in place. The policy has been designed by the chief information security officer and senior management in order to include both technical and company policies. On an annual basis, the policy is reviewed and presented to all the employees to ensure that everyone understands and complies with it.

We implemented a written information security policy which is applicable to all our business units. Security is tested annually according to this policy. We regularly identify and assess new threats and vulnerabilities and adjust the security accordingly. Our information security policy includes policies for the use and storage of personally identifiable or other confidential information on mobile devices.

Our information security policies include the following:

- Firewalls to filter all traffic
- Authentication and Access Lists
- Enterprise use of Anti-virus program
- Regularly scheduled patch management process
- Encryption used on data at rest and in transit
- Access revocation following termination or departure
- Use of Penetration and Vulnerability Scans
- Annual employee and authorized user training

# Human Resources security

The recruitment procedures have been standardized. When recruitment is required, the Human Recourses department posts the available position, including a description of the tasks and responsibilities of the position. The candidates are reviewed regarding qualifications, and interviews are made. Whether a job offer is made is dependent on qualifications, references, personality and criminal record.

Our policies, procedures and values are available on the company intranet. Employees are encouraged to create value for the customers, be responsible, react to issues, communicate in a clear way and be committed to their job.

New employees at are required to participate in a program of introduction. This program is aimed to familiarize new recruits with the organizational ethos and business philosophy.

We have implemented numerous systems of communication to help its employees understand their individual roles and responsibilities. These control mechanisms help them to ensure that important incidents are communicated in time. These include:

- Programs of guidance for new employees and existing employees who experience a change in their job description. New employees are familiarized with policies as part of the information process.
- Newsletters and memos are routinely published informing of important incidents and changes to existing company policies. Urgent information is communicated to all employees via email.
- Staff meetings are held twice a month or when necessary. These meetings offer the employees the opportunity to ask questions about the standard policies or exceptions to these.

All employees are entitled to a vacation as specified in their contract of employment. The vacation must be approved by their supervisor. Upon retirement and employee terminations, interviews are made and the properties of the company are collected. Standard procedures are in place regarding collection of the property of the company, deactivation of access keys and logins.

The ethical standards serve as a guideline to all employees with regards to issues dealing with customers, the public, suppliers or colleagues.

# Asset Management

Our datacenter colocations are operated according to a 'best-of-breed' policy by only using hardware, software and middleware from leading manufactures on the market, for example HP, Cisco, Oracle, Juniper, Linux and Solaris. This ensures reliability and compatibility.

Examples of equipment in use:

- Fiber switches
- Datacenter switches
- Software for virtualization
- UPS
- Monitoring system
- Fire extinguishing equipment

Only equipment approved by management can be used for our services.

# Physical and Environmental security

*Security – physical access*

We have formal policies and procedures in place concerning access control to facilities and data centers. These policies and procedures define the levels of access, referring to the classification of employees, and describe the permits demanded to obtain and survey access.

Internal policies are written to work in conjunction with data centers' policies.

*Administration of access control*

The entrances to the data centers are secured by key cards, which are connected to a central alarm unit. Access to facilities is granted in connection with job responsibility and is administrated by the management according to internal procedures.

*Surveillance*

The entrances to the data centers are equipped with alarms and monitored with video cameras. Security personnel examine the activation of door alarms. Furthermore, all access to the data center is monitored so that controlled/authorized access is maintained. Regular controls are conducted to secure that the list of employees allowed access is updated. Technicians in need of access due to business errands will be escorted.

*Physical safety measures*

To mitigate outages during natural disasters, every data center meets or exceeds all local and regional structural standards for floods and earthquakes. IBX data centers are built at elevations above sea level (without basements) and feature moisture barriers on exterior walls, moisture-detection sensors, drainage/evacuation systems and dedicated pump rooms.

The data centers meet or exceed local building codes for lateral seismic design forces, and Equinix also anchor and brace all equipment and nonstructural components, including cabinets.

Redundancy is central to the design of used data centers. For example, to ensure maximum uptime, Equinix data centers have a minimum N+1 redundancy for its power systems and all major equipment, meaning there's at least one backup for each component. In addition, uninterruptible power supply (UPS) systems modulate and control power flow, and we have backup diesel generators on site with up to 48 hours of fuel.

As an added measure, power distribution systems have been designed with no single point of failure between primary and redundant circuits. Proprietary automated telemetric systems allow IBC operations personnel to monitor key power system components, either on-site or remotely, for quick response times and effective support. IBX data centers also utilize N+2 redundancy for chillers and thermal energy storage.

# Quality Control

Our quality control procedures include the following:

- Written and formalized quality-control program
- Alpha testing
- Beta testing
- Formal customer-acceptance procedure
- System development methodology in writing
- Formal product-recall plan
- Formal policy for documenting and responding to customer complaints or requests for changes or fixes
- Use of tools or other forensic methodologies to assist in identifying code vulnerabilities

All developers receive training on the best practices and techniques for writing secure applications. Developers use threat modeling to access the risks and vulnerabilities.

We have a formalized process to ensure that all products or services are continually evaluated throughout their life cycle for known and latent (security) vulnerabilities. Prior to release and throughout the product lifecycle we also have a methodology to communicate vulnerabilities and remedies. Besides this, we have a document-retention policy addressing all business functions.

# Monitoring

Monitoring and reporting system is a group of applications for real-time retrieval, transmission, processing and presentation of the monitoring data:

- Real-Time Monitoring of more than 100,000 parameters simultaneously
- General purpose monitoring agents action the retrieval of data from any device or program
- History Server with configurable data aggregation and retention policy enabling analysis of incidents and gathering of statistics
- Security and authorization enforces secure connections and enables the configuration of user access for monitoring sensitive information
- Event notifications when preconfigured conditions are met
- Out-of-the-box monitoring of the products
- Distributed Architecture bringing all the benefits of scalability and reliability together in a format that can decrease upgrade costs
- Configuration with the capacity to organize the management of automated configuration and delivery

## Data Retrieval and Processing

- Enterprise network and hardware health monitoring
- Report on CPU, memory, disk space usage, uptime, bandwidth, latency, dropped packets, errors, thresholds, and more.
- Monitoring of the interface traffic, utilization and error statistics
- Authorization and Secure connections. Ability to determine which part of the monitoring data is visible to the logged in user.
- Configurable data aggregation and retention
- Full SNMP support
- Database monitoring

- JMX Support
- Windows event log monitoring
- Custom log files monitoring
- Powerful error alerting with customizable message templates
- Out-of-the-box monitoring
- Simple monitoring protocol enabling the creation of custom monitoring agents

All services where possible are configured to synchronize towards standard time servers on the internet.

# Information Security and Data Classification

Company has defined standards serving to protect the confidentiality, integrity, and availability of company and their clients systems, applications, and data. Each employee is expected to adhere to these policies in order to provide appropriate level of protection of information resources. These policies intend to:

1. Acquaint all Company employees or associates with the requirements to protect the information resources of the company and its clients
2. Enable authorized persons to make decisions about information security that closely adhere to company standard policies and procedures.
3. Coordinate the efforts of different groups within Company so that information resources are properly and consistently protected, regardless of their location, form, or supporting technologies
4. Provide guidance for the performance of information system security audits and reviews.

In order to properly define different levels of access to the internal as well to customer information Customer has defined according information classification levels:

1. Public Information
2. Internal Document
3. Confidential
4. Strictly Confidential

Data access security is ensured via a gateway service, which processes the data requests, secures the communication protocol and the encryption. Authorization takes place on the customer side authorization servers. As such, no client data is transferred to or stored in the cloud; only time-limited identity-agnostic security tokens are used.

## Password Management

Company has defined a set of password management policies to ensure secure access to Company and Customer systems and information. The main goals of these policies are:

1. To provide integrity, accessibility and confidentiality of Company's information assets and resources.
2. To familiarize all the Company employees with policy requirements.
3. To appoint persons in charge of familiarization and monitoring the process of implementation

## Remote Access

To ensure secure access to Company systems and data Company gas defined a remote access policy that regulates employee and customer access to Company network from outside. Main objectives of the policy are:

1. To provide a control of remote access to company resources
2. To define criteria for a remote access to company resources
3. To assure safety of company resources while allowing remote access

### Removable media

In order to prevent the confidential information leakage through the uncontrolled removable media devices Company has defined a removable media policy. Main objectives of the policy are:

1. To establish main principles and working practices for usage and storage of removable media
2. To familiarize all the Company employees with policy requirements
3. To appoint persons in charge for familiarization and monitoring the process implementation

### Information Risk management

In order to approach information risk management Company has developed an according internal policy. It states the basic principles of the organization, implementation and control of Company's information risk managing process. It is aimed at ensuring integrity, availability and confidentiality of information. Main objectives of the policy are:

1. Describe the principal processes and risk management measures
2. Appoint individuals responsible for briefing and controlling the implementation of the policy
3. Comply with the requirements of clients, supervising organizations and external auditors
4. Reduce the possibility of undesirable outcome and minimize possible losses within the Company to ensure its successful functioning in risk conditions.

# Security policies overview

Access Control Policy is aimed to define access principles to the Company's information assets in order to provide the appropriate levels of protection.
The main goals are:

i. To define uniform requirements to the access control process;
ii. To develop a systematic approach to access control;
iii. To meet legislation requirements and industry standards;
iv. To reduce risks of unauthorized access to Company's information resources;

Information Classification Policy provides classification of the information levels in the Company, definition of the proper information security levels in accordance with the accepted classification.
The Policy also sets the areas of the document owner's responsibility, namely:

i. Data Classification Definition of asset classification;
ii. Periodical analysis in terms of actuality and conformity to the information class;
iii. Provision of proper security level;

The document outlines several categories of information, namely: Public, Internal, Confidential, and Strictly Confidential, and provides the list of the appropriate asset's "owner" and other employees' obligations.

Information Security Policy defines standards, serving to protect the confidentiality, integrity, and availability of the Company and its clients systems, applications and data. Each employee is expected to adhere to these policies in order to provide appropriate level of protection of information resources. The Policy also provides the list of the employees responsibilities, managers of the departments responsibilities; internal audit procedure; and general information resources usage standards (which are provided in addition to the Confidentiality Policy); network support and usage standards; desktop usage standards.
The document also describes auditing function, that stands for the evaluating of the effectiveness of the IT control.

Physical Security Policy defines the main requirements for the implementation of the necessary measures to control physical access. The purpose of the policy is to prevent unauthorized physical access to information; to

prevent loss, damage and theft of equipment and any other related illegal actions. It also outlines the different types of the threats, defines the physical security perimeter (with the access zone's division) and the appropriate types of the employees' behavior subject to the zone type.

Remote Access Control Policy outlines permissible types of the remote communications, using the Company's IT system; provides appropriate safety methods of the information resources usage; sets the procedure of the VPN access provision, types of the additional measures system configuration. In order to exclude/eliminate the threat of the confidentiality breach, there is an additional policy, which provides common rules for the employees for the removable media usage.

Risk Managing Policy states the basic principles of the organization, implementation and control of Company's information risk managing process. Based on the ISO/IEC Guide 73:2002.
The main goals are to:

i. Describe the principal processes and risk management measures;
ii. Appoint individuals, responsible for familiarization and controlling the implementation of the policy;
iii. Comply with the requirements of clients, supervising organizations and external auditors;
iv. Reduce the possibility of undesirable outcome and minimize possible losses within the Company to ensure its successful functioning in risk conditions.

Other Policies. In addition there are several policies, covering technical issues, which are sufficient for the fulfilling of the requirements, specified in the abovementioned policies.

# Business requirements for access control

Company has defined uniformed requirements to the assets access control process. Main objectives of this process are:

1. To meet access control legislation requirements and industry standards
2. To reduce risks of unauthorized access to Company's information resources.
3. To familiarize all the Company employees with policy requirements.
4. To appoint persons in charge of familiarization and monitoring the process of implementation.

For more information, please refer to Security policies overview section

Procedures for the control of access are firmly in place. In order to make changes to systems, access approval is required by management. This same protocol is used to decide which systems employees can access.

The server and infrastructure team is responsible for developing standards and administering logical safety for the employees on selected systems and applications. All customer environments are separate from one other.

The ID and password to access the infrastructure, platform and most applications, have internal settings. These allow a predetermined number of invalid access attempts before they are deactivated. Involvement of the server and infrastructure team is necessary if a password has been deactivated.

Management is responsible for controlling personnel access. User access is updated by the server and infrastructure team.

Access to systems is based on rights given to a domain user. This means that the termination of an employee only requires disabling the domain user. This immediately prohibits the individual from accessing the network and systems.

# User access management

User IDs are set up according to a strict process, whereby the management informs the server and infrastructure team of a new employee, specifies the systems to which access is needed, and clarifies the level of access required. This level of access is defined by the manager of the new employee based on the job description. Control of access to HS systems is conducted by senior management.

The employees may need access to customer systems for maintenance or support purposes. This is made possible through numerous levels of logical safety.

Every level of safety is adapted to the system platform, application and/or data files.

# User responsibilities

Employees are required to follow the policy for passwords as stated in the IT policy.

# Information systems acquisition

Hardware or systems new to the Company are discussed and tested by the relevant technical team before being approved by the management.

Existing hardware or systems are maintained according to the manufacturer's recommendation.

Major changes to hardware requires the approval of the management. A change request process is applied for all major changes to software and hardware.

# Intellectual Property aspects

IP assignment:

1. All the Employees must have the services instructions in written (where the IP development is mentioned as one of the main duties), which form an integral part of the employment agreement.

2. Particular job tasks are provided through the managers and should be normally fixed in the electronic system. At the same time all the daily routine tasks must be fixed by the Employee in the electronic time tracking system. In case there appear some IP items, either newly created or updated, it is also fixed and archived electronically (hereinafter "modules"). All the tracked modules further should be listed in the additional Assignment Acts or Agreements, periodically signed by the Employee and Employer.

3. Know-how and trade secrets are considered to be the strictly confidential information, owned by the Employer and covered by the Confidentiality clauses in the employment contract, Confidentiality Policy and additional

The complete copy of the source code and applicable documentation, updated and amended periodically, is deposited into the escrow account.

# Incident Management

All incidents involving the platform and services are reported to the management and logged in Atlassian JIRA. The relevant teams are required to submit a detailed written report to the management.

All created issues have a specific JIRA configuration, and should contain relevant description and type and a level of priority should be specified.

### *Support team*

DXFEED provides a 24x7x365 request service. A simple change of information can be made at any time and the support team will make sure the request is processed in the best and fastest way possible.

If any problems are detected and/or reported, investigation starts immediately according to the identified Priority Level. The support team will always focus on the recovery of the service by switching to alternative systems and then take remedial action for the affected source.

If the problem cannot be resolved by the TSC, then personnel from the engineering team will immediately get involved. Engineers investigate the issue and decide if the development team should be alerted. The support team along with the development team investigates the issue and confirms the appropriate plans for resolution. Restarts and/or patch deployments are made in accordance to an agreed plan keeping all stakeholders involved and informed.

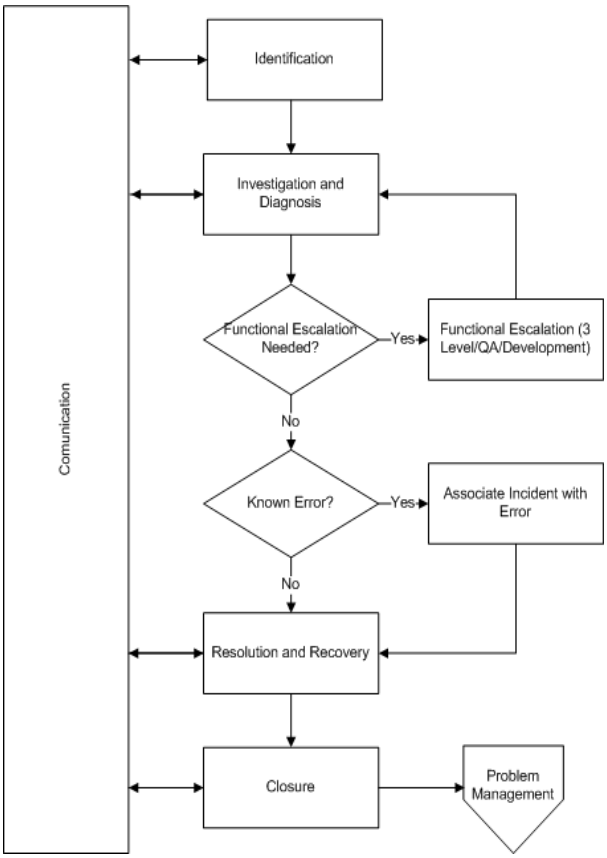
For all requests SLA monitoring is performed.

The table below provides more information on timelines and actions performed by the support team:

| Priority | Response time | Update freq. | Lead time | Issues: Classification from Consumer Perspective | Technical Support | Engineering Team | Development Team |
|---|---|---|---|---|---|---|---|
| **P1 (ASAP)** | 5m | 30m | 4h | Severe Production issues:<br>- one or more quote service goes down, both primary and backup<br>- one or more quote service is significantly delayed, both primary and backup<br>- one or more quote service is experiencing constant losses, both primary and backup | - immediately escalate to Engineering<br>- notify customers affected | resolve issue ASAP or escalate further if needed | resolve issue ASAP |
| **P2 (Critical)** | 30m | 4h | 24h (issue to be resolved by next trading day start) | Production issues:<br>- one or more services goes down, backup is functioning normally<br>- one or more services is significantly delayed, backup is functioning normally<br>- API services down or malfunctioning<br>- vital auxiliary services malfunctioning (i.e. monitoring, ssh access, etc.) | - switch to backup, if available<br>- notify customers affected<br>- escalate to S3L/Engineering if issue cause ongoing service interruption | resolve issue ASAP or escalate further if needed | resolve issue ASAP |
| **P3 (Urgent)** | 2h | 1d | 3d | Production issues:<br>- any one-time issues caused no more than 1m outage<br><br>QA/Dev issues:<br>- any ongoing issue preventing QA/Dev from normal functioning | - switch to backup, if available<br>- notify customers affected<br>- escalate to S3L/Engineering at start of next business day | resolve issue ASAP or escalate further if needed | participate in issue investigation if needed |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **P4 (Normal)** | 1d | 1d | 3d | - any issues not causing service interruption/outage for any users (Prod, QA, Dev)<br>- any functional issues (wrong/incorrect data, unexpected behavior, etc.) -- until prioritized higher<br>- any Service Request | - register<br>- resolve issue/complete request<br>- escalate further if needed | - resolve issue/complete request<br>- escalate further if needed | participate in issue resolution if required |

We have implemented several methods of communication to ensure that the customers understand the roles and responsibilities, and in order to inform them about incidents as soon as possible. These methods include immediate reports to customers, regular posts in the newsletters and project managers keeping contact with the representatives of the customers to update them on new subjects and developments.




## *Management of information security incidents and improvements*

Major incidents are all evaluated and the root cause must be identified. Based on the incident and root cause, the management and technical team agrees on changes to avoid such incidents in the future.

## *Business Continuity Management*

To ensure the continuity a contingency plan is in place. This plan describes and sets forth guidelines to manage an emergency.

The contingency plan describes among other things how to determine whether to continue operation in the existing Data center, or to establish operation elsewhere. It also includes checklists, contact lists and procedures in order to ensure the contingency.

The contingency plan is tested each year with participation of all employees and management. The control team is responsible for setting up a “scenario” to challenge the participants. Findings and improvements are discussed with management and the contingency plan is updated.

# Problem Management

The process is aimed at minimizing the impact of incidents and problems on everyday activities of the business affected, as well as preventing potential incidents resulting from system errors contained in the IT infrastructure, from happening.

## Definitions

An incident is defined as any event which is not part of normal functioning of the system, leading or capable of leading to service outage or service quality reduction.

A problem is the undefined root cause of an Incident or several Incidents.

A known bug is a Problem which has been successfully diagnosed and for which a workaround solution has been developed.

A change request is defined as a request for introducing changes into the IT-infrastructure, procedures or a service.

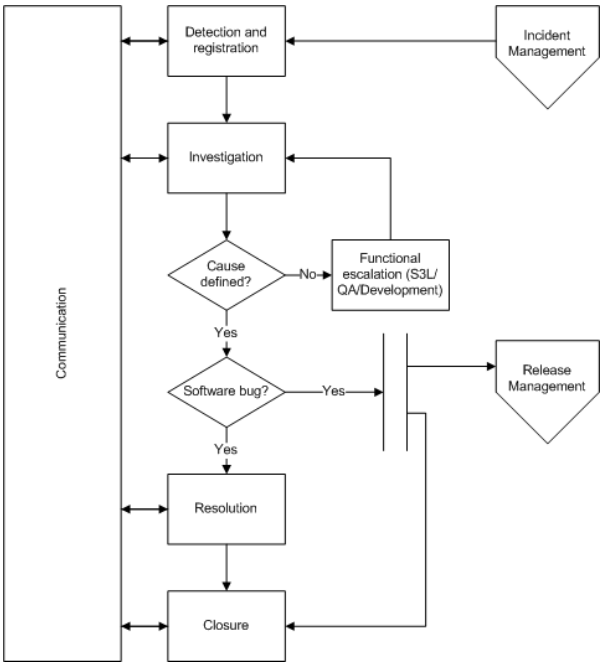
Incident resolution consists in eliminating the disruption in question and restoring the normal functioning of the service. It can be done by submitting the required information, giving recommendations on configuring and performing operations in the system, all of which allows eliminating the disruption, patch delivery, “workaround solution” delivery.

A workaround solution means resolving an incident temporarily by means of either taking unconventional measures or limiting the applicability of a certain feature.

Priority is defined as the order in which incidents are resolved and service requests are handled, based on their importance and urgency degree.

## Process Scope

The process only works within the Company, and the Customer is not enabled to initiate problems directly, he can only do so indirectly by creating incidents and by informing about certain occurrences affecting system operability.




*Problem Lifecycle*

## Problem Management: Process-related Actions

### Detection and registration

Information about a problem is obtained from an incident handling.
Problem ticket is created when the incident is closed and workaround solution is applied.

### Investigation

The process of investigation and diagnostics may follow repeated cycles when handled by each successive specialized support group that the Problem is passed on to.

The aim is to complete the Problem investigation within two weeks. In the course of investigation it is determined which side is responsible for the problem solution.

Resolution

The time for problem solution may vary depending on the particular case.

Problem is considered to be solved in any of the following events:

1. Bug confirmed and development ticket is created. Fix will be planned in Development Release Management Cycle.
2. Permanent fix applied and confirmed without additional development.
3. Risk accepted. No fix is required. – need to define authorized personnel to accept risks.
4. Issue is outside of our sphere of responsibility.

# Redundancy

There are three types of connection configuration that we use and provide to customers:

# Fully geo-redundant

1. Hosting in two data centers. Each data center has:

   a) Redundant equipment and infrastructure in both data centers. Equinix's data centers have a minimum of N+1 redundancy for their power systems (and all major equipment) to ensure maximum uptime. This means there is at least one backup for each component.
   b) Uninterruptible power supply (UPS) systems that modulate and control power flow, and backup diesel generators on site with up to 48 hours of fuel.

   In addition, the power distribution system has been designed with no single point of failure between primary and redundant circuits. And proprietary automated telemetric systems allow IBC operations personnel to monitor key power system components, either on-site or remotely, for quick response times and effective support. IBX data centers also utilize N+2 redundancy for chillers and thermal energy storage.

2. Redundant high-speed physical interconnections between data centers. Low latency circuits via 3rd party leading connectivity providers.

3. Redundant physical connections from both data centers to exchanges and/or intranet providers, enables access to raw market data with minimal latency. Each physical connection to an exchange and/or market data provider is configured to receive both Network A and B independent raw data flows. If an exchange allows, we also receive the 3rd (DR) data flow.

4. Redundant connection from clients to both data centers:

   a) For clients connected via the internet, we have redundant internet service providers. We also have 2 or 3 different ISPs in each data center, with load-balancing and BGP/IP SLA for automatic switchover.

   b) For clients connected over physical connectivity, we have redundant physical connectivity (local cross-connect, intranet, 3rd party network providers). Physical connectivity is recommended.

5. Both data centers have several duplicate feed handlers. If one handler crashes, a client works fully with the second handler. Switchover between handlers is performed by the automatic reset of the TCP session. Client facing multiplexers receive data from local feed handlers by default, but they can be switched over to feed handlers from another site if necessary.

6. There are at least two redundant client-facing front-end distribution servers at each data center. If one of them were to fail for any reason, a backup will keep the system functioning without any outage.

7. A client-side API is connected to one of the front-end servers on a round-robin basis. If the client-side API is connected to a front-end server which goes down, then the API will automatically reconnect to a secondary server.

8. Front-end servers running in the first data center can be switched to receive market data from the second data center. This is a backup mechanism in case all feed handlers and/or connectivity to exchanges in one data center appear to be down or malfunctioning. This switchover is executed by members of the support team.

# Redundant, single data center

1. Hosting in one of the data centers. Each individual data center has:

   a) Redundant equipment and infrastructure in the data center. Equinix's data centers have a minimum of N+1 redundancy for their power systems (and all major equipment) to ensure maximum uptime. This means there is at least one backup for each component.
   b) Uninterruptible power supply (UPS) systems that modulate and control power flow, and backup diesel generators on site with up to 48 hours of fuel.

   In addition, the power distribution system has been designed with no single point of failure between primary and redundant circuits. And proprietary automated telemetric systems allow IBC operations personnel to monitor key power system components; either on-site or remotely, for quick response times and effective support. IBX data centers also utilize N+2 redundancy for chillers and thermal energy storage.

2. Redundant physical connections from the data center to the exchanges and/or intranet providers, enables access to raw market data with minimal latency. Each physical connection to the exchange and/or market data provider is configured to receive both Network A and B independent raw data flows. If an exchange allows, we also receive the 3rd (DR) data flow.

3. Redundant connection from clients to the data center:

   a. For clients connected via the internet, we have redundant internet service providers. We also have 2 or 3 different ISPs in each data center. With load-balancing and BGP/IP SLA for automatic switchover.

   b. For clients connected over physical connectivity, we have redundant physical connectivity (local cross-connect, intranet, 3rd party network providers). Physical connectivity is recommended.

4. Several duplicate feed handlers. If one handler crashes, the client works fully with the second handler. Switchover between the handlers is performed by automatic reset of TCP session. Client facing multiplexers receive data from local feed handlers by default, but they can be switched over to feed handlers from another site if necessary.

5. There are at least two redundant client-facing front-end distribution servers at each data center. If one of them were to fail for any reason, a backup will keep the system functioning without any outage.

6. A client-side API is connected to one of the front-end servers on a round-robin basis. If the client-side API is connected to a front-end server which goes down, then the API will automatically reconnect to a secondary server.

7. Front-end servers running in the first data center can be switched to receive market data from the second data center. This is a backup mechanism in case all feed handlers and/or connectivity to exchanges in one data center appear to be down or malfunctioning. This switchover is executed by members of the support team.

# Reduced redundancy

1. Hosting in one of the data centers. Each individual data center has:

   a) Redundant equipment and infrastructure in the data center. Equinix's data centers have a minimum of N+1 redundancy for their power systems (and all major equipment) to ensure maximum uptime. This means there is at least one backup for each component. To ensure maximum uptime, Equinix data center have a minimum N+1 redundancy for its power systems and all major equipment, meaning there's at least one backup for each component.
   b) Uninterruptible power supply (UPS) systems that modulate and control power flow, and backup diesel generators on site with up to 48 hours of fuel.

   In addition, the power distribution system has been designed with no single point of failure between primary and redundant circuits. And proprietary automated telemetric systems allow IBC operations personnel to monitor key power system components, either on-site or remotely, for quick response times and effective support. IBX data centers also utilize N+2 redundancy for chillers and thermal energy storage.

2. Redundant physical connections from the data center to exchanges and/or intranet providers allowing accessing raw market data with minimal latency. Each physical connection to exchange and/or market data provider is configured to receive both Network A and B independent raw data flows. If an exchange allows, we also receive the 3rd (DR) data flow.

3. Connection from the client to the data center is not redundant.

4. Several duplicate feed handlers. If one handler crashes, the client works with the second handler. Switchover between handlers is performed by automatic reset of TCP session. Client facing multiplexers receive data from local feed handlers by default, but they can be switched over to feed handlers from another site if necessary.

5. A client-side API is connected to one of the front-end servers on a round-robin basis. If the client-side API is connected to a front-end server which goes down, then the API will automatically reconnect to a secondary server.

6. Front-end servers running in the first data center can be switched to receive market data from the second data center. This is a backup mechanism in case all feed handlers and/or connectivity to exchanges in one data center appear to be down or malfunctioning. This switchover is executed by members of the support team.

We recommend clients to maintain geographic redundancy in order to preserve a stable and uninterrupted connection.

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