Cboe Global Cloud: Frequently Asked Questions

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1. **What is Cboe Global Cloud?**

   Cboe Global Cloud is a new real-time data streaming service from Cboe Global Markets delivering Cboe Data with tick-level granularity and built-in redundancy. Cboe Global Cloud enables Cboe Data availability and dissemination in multiple locations around the world and offers various secure connectivity and access options. Cboe Global Cloud does not require any cloud account or presence, as clients can be running on-premises systems in a local data center, or within another infrastructure provider's environment.

2. **What Cboe Data products are currently available as part of the Cboe Global Cloud service?**

   Cboe Global Cloud will initially provide access to the following Cboe Data products: Cboe One Premium, Cboe One Summary, Cboe One Options, Cboe One Canada Summary, Cboe One Canada Premium, BZX Top, EDGX Top, CFE Top, BXE Last Sale, CXE Last Sale, DXE Last Sale, BXE Top, CXE Top, DXE Top, CXA Top, CXA Pitch, and Cboe Global Cloud Indices Feed. Additional Cboe Data will be included in the service through a phased rollout.

   For additional information on the specifications, please review the following Cboe Global Cloud Specifications:

   - **Cboe Global Cloud Specification** – *This document describes the technical specifications associated with all Cboe data products available within Cboe Global Cloud.*

   Additional Cboe Data products to be added to the Cboe Global Cloud service in the future include the complete Cboe Global Equities Data package covering U.S., Canadian, Pan-European, Australian, and Japanese international equity securities from 22 countries, Cboe Global Indices, Cboe Options Data, Cboe FX Data, and Analytics.

3. **Where will Cboe Data be made available through Cboe Global Cloud?**

   Cboe Global Cloud enables Cboe Data availability and dissemination in locations around the world. Cboe Data will be made available through leveraging the Amazon Web services ("AWS") global network in the following five (5) regions:
   - Virginia ("US-East-1")

- London ("EU-West-2")
- Hong Kong ("AP-East-1")
- Canada ("CA-Central-1")
- Sydney ("AP-Southeast-2")

Additional regions will be included in the service through a phased rollout based on client demand.

4. **What are the access options available through Cboe Global Cloud?**

The Cboe Global Cloud service provides the following three (3) distinct secure connectivity and access options for customers:

- **PrivateLink** – This option is a suitable access method if customer systems and/or processes are running within AWS Cloud (i.e., a current AWS customer).
- **Internet Gateway ("IGW")** – This option is a suitable access method for customer systems and/or processes running on-premises in a local data center, or in another infrastructure provider's environment.
- **Virtual Private Network ("VPN")** – This option is a suitable access method for customer systems and/or processes running on-premises in a local data center, or in another infrastructure provider's environment, where a virtual private connection is preferred over internet delivery.

5. **What rate of delivery can be expected for Cboe Data through the Cboe Global Cloud service?**

Cboe Global Cloud offers Cboe Data through a fully real-time streaming dissemination service with tick-by-tick level granularity.

6. **What format will Cboe Data be made available via Cboe Global Cloud?**

Cboe Global Cloud will make Cboe Data available in JSON format for simple consumption and integration within customer systems and processes. Cboe Data's native binary format has been translated into JSON format for ease of access, use, and integration within client systems and/or processes.

Additional formats such as exchange native binary format can be delivered based upon customer request.

7. **What reference data will be made available through Cboe Global Cloud alongside Cboe Data?**

Reference data will include the following fields and be delivered to an AWS S3 bucket once per day before the trading day begins for the U.S. equity market:

- Cboe ID
- Name
- Description
- CountryCode
- Currency
- EntityType
- Exchange
- LotSize

This feature of Cboe Global Cloud will not be available upon launch. It is scheduled to be available in a future phased release. Additional reference data can be requested and will be evaluated for inclusion in the service based on client request.

8. **What redundancy will be made available through Cboe Global Cloud?**

    The Cboe Global Cloud service offers fully redundant and geographically diverse hosts made available to ensure service resiliency. A primary host will be available in New Jersey, while a secondary host will be available in Chicago. In the event of a primary host failure, the Cboe Global Cloud service will fail over to the secondary process in Chicago representing a seamless transition to end customers. In the case of a regional failure within AWS, a backup connection to Cboe Global Cloud in another region can ensure service continuity.

9. **What retransmission functionality will be made available via Cboe Global Cloud?**

    The TCP/IP protocol for delivery through Kafka will publish to a commit log ensuring that no messages are missed, while allowing any disconnects to be resumed at the state of the book where the connection had ceased. Additionally, all Cboe Data disseminated via Cboe Global Cloud will contain sequence numbers and timestamp messages in the event of a disconnect, or failover from NY to Chicago, for customers to track their current state of the book.

10. **What is the latency involved with Cboe Global Cloud?**

    Cboe Global Cloud offers diverse paths to the various regions where Cboe Data is available, and as such latencies may differ slightly. For estimated latencies depending on your setup and endpoint, please reach out to your Cboe Director of Sales for additional information.

11. **Will I still be able to access Cboe Data via Cboe Global Cloud if my systems and/or services are on-premises in a local data center, or hosted within another provider's infrastructure?**

    Yes, Cboe Global Cloud can be used to connect Cboe Data to your systems and/or services via either the VPN or Internet Gateway access methods, even if hosted on-premises in a local data center or within another infrastructure provider's environment.

12. **Will I be able to access Cboe Data via Cboe Global Cloud if my systems and/or services are hosted within AWS?**

    Yes, Cboe Global Cloud can be used to connect to your systems and/or services hosted within AWS via the PrivateLink, VPN, or Internet Gateway access methods.

13. **Do I need an AWS account to access Cboe Data via Cboe Global Cloud?**

    No, an AWS account is not needed to access Cboe Data via the Cboe Global Cloud service through either the VPN or Internet Gateway access methods. Only the PrivateLink access method will require that the client has an AWS account.

14. **What are the connectivity costs for Cboe Global Cloud?**

    The connectivity costs are a monthly fee based upon a consumer ID on a per feed basis. A consumer ID is a unique customer connection attached to a Cboe Global Cloud topic. Additional information regarding access costs can be found in the Cboe Global Cloud Connectivity Price List or by reaching out to your Cboe Director of Sales.

15. **Will I begin receiving an AWS invoice due to my connectivity to Cboe Global Cloud?**
The only case where AWS would invoice a Cboe Global Cloud client directly is for the PrivateLink access method, which is an AWS-native service that requires an AWS account and would result in PrivateLink charges being billed directly by AWS.

16. **What is the process for establishing connectivity to Cboe Global Cloud?**
The process for establishing connectivity to the Cboe Global Cloud service will be facilitated through the Cboe Customer Web Portal. Using the "Cloud Connection Request Tool" on the left-hand side of the screen under the Tools section, customers can submit a cloud connection request to begin the provisioning process. Upon receipt of the request, the Cboe Network Operations Center ("NOC") Team will work with each client to establish Cboe Global Cloud connectivity as per their specific access requirements.

17. **Where can I learn more about Apache Kafka?**
Cboe Global Cloud allows customers to receive real-time data from Cboe Global Markets through an Apache Kafka service hosted in AWS. Cboe does not recommend any specific Apache Kafka distribution or managed service, but general documentation can be found within https://kafka.apache.org/documentation.

18. **Who are the support contacts at Cboe for the Cboe Global Cloud service?**
The Cboe Global Cloud support team can be reached as follows:
- Cboe Network Operations Center ("NOC") – for connectivity, provisioning, and access-related questions (NOC@cboe.com)
- Cboe Trade Desk – for technical support and data-related inquiries (TradeDesk@cboe.com)
- Cboe Market Data Services – for administrative and service-related questions (MarketData@cboe.com)