CSE Connectivity Guide

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2. OVERVIEW

The Canadian Securities Exchange (CSE) supports FIX 4.2 for order entry and provides a multicast market data feed. Clients are responsible for selecting their preferred method of production and test connectivity for order entry and market data gateways.

CSE operates two trading books: CSE and CSE2. Both books trade CSE listed and Other (TSX and TSX Venture) listed securities.

3. SERVICE DESCRIPTIONS

Multicast Market Data Feed: A real-time multicast feed service that includes trades, bid/offer information, and visible orders for securities traded on the CSE.

FIX Order Entry: Order entry access is available to CSE Dealers. This service provides dealers with the ability to submit orders and execute trades on the CSE.

FIX Drop Copy: A FIX drop copy feed includes a copy of public and private portions of messages on a specified FIX session. This service can be used to feed downstream applications (e.g. risk systems) and support back office activities.

4. DATA CENTER CONNECTIVITY

The CSE offers direct access to its services from its Toronto data centers, TR2 and TR1 (Table 1).

Table 1: CSE's Hosting Data Centers

Data Center	Address	Connectivity Options
Primary Data Center: TR2	Equinix Inc. - TR2 45 Parliament Street Toronto, Ontario M5A 2Y5	Connectivity to the production and test environments. • Copper (1 Gbps) • Single mode fiber (1 and 10 Gbps)
Secondary Data Center: TR1	Equinix Inc. – TR1 151 Front Street Toronto, Ontario M5J 2N1	Connectivity to the production environment. • Copper (1 Gbps) • Single mode fiber (1 and 10 Gbps)

Note: For both production and test environment connectivity, clients are required to provide the public IP address from which their traffic will be sourced. Clients also need to identify which services they wish to access and supply a technical contact.

4.1 Connectivity Methods

The CSE supports the three connectivity methods detailed in this section for both the production and test environment. Note that, for an immediate connection to the test environment only, clients also have the option to connect via the internet to our public address.

- **Cross-Connect:** Clients that are co-located at the Equinix data centers may request in-house cross-connect from their Point of Presence (PoP) to the CSE.
- **Point-to-Point:** Clients may connect using a point-to-point connection through leased lines.
- **Extranet Provider:** The CSE is currently on-network with the extranet providers listed in Table 2. Clients must select and directly contact a provider to arrange connectivity to the CSE.

Table 2: Extranet Provider Options for Connectivity to the CSE

Extranet Providers	Contact
CenturyLink	Alicia VanDeVeer 630-229-8724 gems@centurylink.com
GuavaTech Inc.	GT Sales Team 312-604-4300 sales@guavatech.com
Intercontinental Exchange (ICE)	Brian Norris 312-282-3645 brian.norris@theice.com
IPC Systems Inc.	Mike Smith 201-253-2305 mike.smith@ipc.com
Options Technology Ltd.	Sales 646-205-2500 sales@options-it.com
Pico Quantitative Trading LLC	Bruce P. Boytim 312-466-5766 bruce.boytim@picotrading.com
Transaction Network Services Inc. (TNS)	Joanna Nicklas – Director, FM Sales Operations 703-453-8473 jnicklas@tnsi.com

5. HOURS OF OPERATION

This section provides the hours of operation for CSE's two trading books: CSE (Table 3) and CSE2 (Table 4).

Table 3: CSE Hours of Operation

Environment	Session	CSE Listed Securities	Other Listed Securities (TSX/TSX-V)
Production	Pre-open	07:00	07:00
	Open	09:30	08:00
	Close	16:00	17:00
	CCP Open	16:15	----
	CCP Close	17:00	----
	System Shutdown	20:00	20:00
Test (GTE)	Pre-open	07:00	07:00
	Open	09:30	08:00
	Close	16:00	22:00
	CCP Open	16:15	----
	CCP Close	17:00	----
	System Shutdown	22:15	22:15

Table 4: CSE2 Hours of Operation

Environment	Session	CSE Listed Securities	Other Listed Securities (TSX/TSX-V)
Production	Open	08:00	08:00
	Close	17:00	17:00
	System Shutdown	20:00	20:00
Test (GTE)	Open	08:00	08:00
	Close	17:00	17:00
	System Shutdown	22:15	22:15

6.   BANDWIDTH REQUIREMENTS

The bandwidth guideline detailed in this section is applicable per instance of the Multicast Market Data Feed for CSE and CSE2.

Bandwidth Guideline *as of Jan 1, 2022*

Multicast Market Data Feed	30 Mbps

The bandwidth requirement for order entry depends on the size of the order flow being submitted to the CSE. In general, 400 messages per second usually equates to a bandwidth requirement of 1 Mbps; for example, if 800 messages are being entered per second, the bandwidth requirement would be 2Mbps.

7.   TECHNICAL SPECIFICATIONS

The following technical specification documents are available:

- CSE FIX Order Entry Programmers' Guide
- CSE2 FIX Order Entry Programmers' Guide
- CSE Multicast Market Data Programmers' Guide
- CSE2 Multicast Market Data Programmers' Guide

To request a copy, please email trading@thecse.com.

8.   CERTIFICATION

The CSE requires clients to certify their approach to FIX Order Entry gateway connectivity with the CSE Market Operations team.

Certification is performed to confirm the following:

- A gateway can be used by a client or vendor as a method of reliable communication between the CSE's system and the client or vendor.
- The connection does not impact the operation of the gateway or its use by other clients.

Once certified, clients are permitted to conduct trading and trading-related activities through the FIX Order Entry gateway on the CSE.

9.   AGREEMENT AND FORMS

In order to access CSE trading and services, clients must complete and submit the appropriate CSE agreements and forms, depending on the method of access and intended use of the access/services.

Vendors offering client access to one of the gateways must execute the *Gateway Access Agreement*. This document also covers the issues around the vendor's use and redistribution of real time market information from CSE. Vendors looking to redistribute real time market data only are required to execute the CSE *Market Information Agreement*.

10. PRODUCTION BUNDLES

Production bundles (i.e., sign-on credentials for dedicated sessions) will be assigned by the CSE Market Operations team once the following tasks are completed:

- Certification on the FIX Order Entry gateway
- Completion of connectivity testing to the production system
- Execution of the applicable CSE forms and agreements
- If applicable, registration as a CSE Dealer

Note: production bundles may also be provided to dealers through an authorized order entry vendor.

11. CONTACT

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