US Equities/Options Connectivity Manual

Version 9.1.2

January 16, 2019

Contents

1 Introduction

1.1 Overview

Cboe's primary trading platforms, BZX Exchange, BYX Exchange, EDGA Exchange, EDGX Exchange, BZX Options Exchange, EDGX Options Exchange, and the C2 Options Exchange ("C2") are housed in the NY5 Equinix data center in Secaucus, New Jersey. The secondary data center is hosted by Cyxtera ("ORD1") in Chicago, IL for all platforms except for C2 which is located in a managed data center at 400 South La Salle ("400SL"), also in Chicago. Customers are strongly encouraged to establish connectivity to both data centers to minimize service disruption in the event of an issue at either data center. Secaucus is the "primary" or "hot" site, with Chicago being "secondary" or "warm". Customers may receive market data from Chicago, and they may connect and heartbeat with order entry systems in Chicago. Orders submitted to Chicago will be rejected until Cboe declares the primary site in Secaucus "down."

Cboe also provides a primary network Point of Presence ("PoP") in the Equinix NY4 data center in Secaucus, NJ and Cyxtera EWR2 data center in Weehawken, NJ. Customers can leverage their EWR2 and NY4/NY5 PoP connectivity to access multicast market data feeds and order entry sessions in the Cboe's primary data center. Customers may access the secondary network via Cyxtera ORD1, Equinix CH1 or 400SL data centers in Chicago, IL.

It is the customer's responsibility for selecting their telecommunications provider and arranging for connections to Cboe's data centers and PoPs.

Cboe supports the following network connectivity choices for access to both Equities and Options:

- **IPSec VPN** via the Internet (only for certification or test sessions);
- **Co-location Cross-connect** (i.e. for customers co-located in the same data center as the Cboe trading platforms or a PoP);
- **Extranet** connectivity (See the Cboe Approved Extranet Provider section for a list of approved Extranet Providers); and
- **Private line Ethernet** (circuit extension from a carrier to Cboe, see the Carriers section for a list of Carriers)

1.2 Connectivity Matrix

	NY4/NY5 Latency Equalized	EWR2	ORD1	CH1	400SL
Data Center Role	Primary		Secondary		
Data Center Provider	Equinix	Cyxtera	Cyxtera	Equinix	Cboe
Site Location	Secaucus, NJ	Weehawken, NJ	Chicago, IL	Chicago, IL	Chicago, IL
Site Status	Hot/Primary	PoP for Primary	Warm/Secondary	PoP for Secondary	Warm/Secondary
Accepts Co-location Cross connects?	Yes	Yes	Yes	Yes	Yes
Accepts Circuit Extension from Telco?	Yes	Yes	Telco must be co-located within Telx	Yes	Yes
Access to Production Sessions/feeds?	Yes	Yes	No	No	No
Access to Disaster Recovery Sessions/feeds?	No	No	Yes	Yes	Yes
Access to Certification Sessions/Feeds?	Yes	Yes	No	No	No
Colocation of Network Equipment?	No	No	No	Yes	Yes
1G Monthly Recurring Connectivity Fees	See Cboe Fee Schedule for details				
10G Monthly Recurring Connectivity Fees					
Supported Media Types	SMF	SMF, MMF, Copper	SMF, MMF, Copper	SMF, MMF, Copper	SMF, MMF
Round Trip Time to Production FIX gateways	~11µs	~<100µs	N/A	N/A	N/A
Connectivity Contact	Greg Nelson (312) 994-3906	Bob Luparello (914) 309-2646	Bob Luparello (914) 309-2646	Greg Nelson (312) 994-3906	noc@cboe.com (913) 815-7005

1.3 Physical Interfaces

The following standard physical interface specifications are supported in the EWR2, ORD1, CH1, and 400SL data center and PoPs. For other interface specifications contact noc@cboe.com.

10G	SR (multi-mode) , LR (single-mode) & ER (single-mode)
1G	SX (multi-mode), LX (single-mode) & 1000BaseT

The following standard physical interface specifications are supported in the NY4 and NY5 data center:

10G	LR (single-mode)
1G	LX (single-mode)

2 Types of Connectivity

2.1 IPSec VPN

- Customers may connect via an IPSec Virtual Private Network (VPN) over the Internet for access to order entry and unicast market data feeds for certification and test purposes only. LAN-to-LAN IPSec VPN supported.
- IP address of the host presented to Cboe must be registered.
- Customers must contact Cboe NOC for encryption details and to receive their pre-shared key.

Note: Cboe does not offer multicast market data feeds over VPN.

2.2 Co-location Cross-connect

Equities and Options customers may co-locate within the NY5 data center or a data center where a Cboe PoP is located and cross-connect to Cboe.

- Each physical port connection (1Gpbs and 10Gbps) within the Secaucus, Weehawken, and Chicago data centers/PoPs will be subject to a monthly recurring charge. See the Cboe Fee Schedule for more information.
- Co-location cross connect requests must come from a demarcation point on the data center floor or Mezzanine level. Roof-top access requests will not be accepted.
- Cboe reserves the right to charge for one-time setup and monthly recurring fees incurred connecting customers or extranets. See the Cboe Fee Schedule for more information.

With data center co-location, customers can place equipment, terminate communications circuits, and establish a cross-connect to Cboe (or other destinations) in their space. This gives the maximum amount of control to the Member. This option is neutral for the customer and provides the greatest

flexibility for the customer in determining when and to whom to connect. Customers interested in co-location services should contact the data center/PoP Point of Contact (refer to the Connectivity Matrix section for POC information).

2.3 Extranet

Customers may provision connectivity to Cboe via an extranet.

- Extranets have provisioned redundant connections to Cboe for use by multiple customers.
- Contact information for a variety of extranet providers is found below within the Cboe Approved Extranet Providers section below.

This method is an attractive alternative when:

- The customer would otherwise have to provision a long-haul private line;
- Outsourcing of network services and network management is an option; or
- The ease and speed of turn-up are important (when both the customer and Cboe have an existing connection to the extranet).

2.4 Directly Connected via Private Line Ethernet

Customers may connect to Cboe via Private Line Ethernet.

- No co-location space is required. Cross-connect from Telco demarcation point to Cboe network via an Ethernet interface.
- Each physical port connections (1Gpbs and 10Gbps) within the Secaucus, Weehawken, and Chicago data centers/PoPs will be subject to a monthly recurring charge. See the Cboe Fee Schedule for more information.
- Cboe reserves the right to charge for one-time setup and monthly recurring fees incurred connecting customers or extranets. See the Cboe Fee Schedule for more information.
- Contact your carrier of choice to arrange connectivity to Cboe, see the Carriers section below.

3 Ordering a Cross Connect to Cboe

3.1 Submit Request via Cboe Portal

A Cboe Customer Web Portal account is required to request a new cross connect to Cboe. Please see your firm's account administrator or contact the Cboe Trade Desk for an account:

- Cboe Trade Desk - (913) 815-7001
- Email – tradedesk@bats.com

3.2 Required Information

- Location (NY5, NY4, EWR2, …)
- Number and speed of connections requested (1G or 10G)
- Registered BGP ASN (Cboe NOC can assign a private ASN)
- Networks advertised to Cboe (registered public IP's or Cboe assigned private addresses are accepted
- Network and billing contact information
- Transit IP address (Public or private range assigned by Cboe NOC)

3.3 LOA-CFA

Upon approval of cross connect request, Cboe NOC will provide a Letter of Authorization - Customer Facility Assignment with the "Z-side" cage, cabinet, panel, and port pair assignment. The customer requesting the cross connect is known as the "A-Side."

3.4 Data Center Provider Request

The requesting customer submits a cross connect request with the appropriate data center provider:

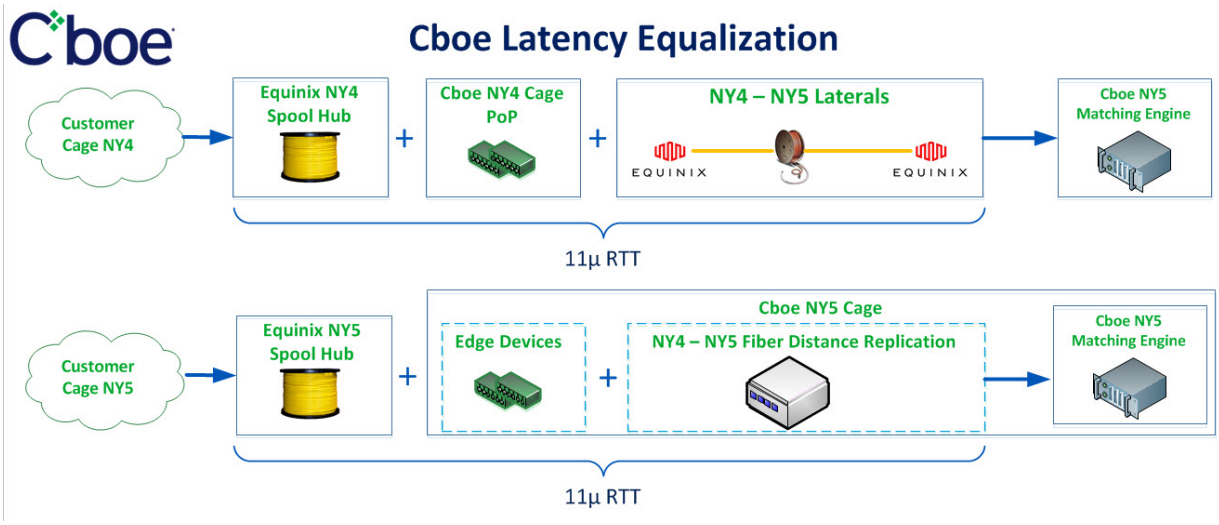
- Equinix – NY5, NY4, and CH1
- Cyxtera – EWR2 and ORD1
- Cboe – 400SL

The data center provider will need the LOA-CFA and the "A-side" details to complete the connection. The "A-Side" customer is responsible for any data center setup fees and monthly recurring costs associated with the cross connect. As the "A-Side" customer, the customer is also responsible for initiating troubleshooting requests with the data center provider in the event of a down cross connect.

3.5 Latency Equalization

Cross connects originating within either NY4 or NY5 data centers will be engineered to provide equivalent latency between member demarcation points and the Cboe's order entry gateways in NY5. Equal fiber pathway latency will be determined by OBR testing. WAN circuits originating outside

Secaucus, NJ will also be subject to latency equalization. For more details, see Cboe Latency Equalization.



4 Bandwidth

4.1 Market Data Feeds

Cboe offers four different types of market data feeds:

- Multicast PITCH
- TCP PITCH
- TOP
- Last Sale

Cboe requires that customers allocate a ***minimum*** of 1 Gb/s per Multicast PITCH Gig-Shaped feed and 100 Mb/s per Multicast PITCH WAN-Shaped feed. With respect to TCP PITCH and TOP feeds (not available in options), Cboe understands that firms will have varying levels of sensitivity with respect to latency and as such encourages customers to use the statistics provided below to make a well-informed decision regarding the bandwidth they will require based on their organization's latency sensitivity.

The table below shows the bandwidth statistics for historical highs for Cboe market data feeds. The table shows the bandwidth and Messages Per Second (MPS) peaks for 1, 5, 10, 30, and 60-second intervals. Peaks for 1 and 10 millisecond interval peaks are also included. The TCP statistics include 11 bytes for TCP/IP overhead per packet and do not include the data link layer overhead.

Cboe Market	Interval Seconds	Multicast PITCH		TOP		TCP PITCH	
		MPS	Mb/s	MPS	Mb/s	MPS	Mb/s
BZX Exchange	.001	15,531,000	1,740	1,098,000	322	1,953,000	907
	.010	13,512,100	1,513	757,400	208	1,812,300	842
	1	402,422	138	168,714	45	352,607	158
	5	192,815	66	85,237	22	249,388	116
	10	176,739	61	79,303	21	229,095	107
	30	159,833	55	70,997	19	207,030	96
	60	140,200	48	64,124	17	180,113	84
BYX Exchange	.001	16,950,000	1,898	1,091,000	320	1,629,000	750
	.010	11,149,100	1,249	776,100	213	1,380,000	540
	1	216,316	69	108,395	28	257,021	119
	5	122,092	40	59,984	16	151,437	68
	10	97,770	33	52,312	14	125,664	57
	30	75,116	25	44,086	11	97,798	45
	60	57,299	19	34,143	9	74,633	35
BZX Options Exchange	.001	24,488,000	2,742	N/A	N/A	N/A	N/A
	.010	22,550,800	2,525	N/A	N/A	N/A	N/A
	1	9,133,941	2,740	N/A	N/A	N/A	N/A
	5	3,029,695	1,039	N/A	N/A	N/A	N/A
	10	2,662,430	914	N/A	N/A	N/A	N/A
	30	1,847,146	634	N/A	N/A	N/A	N/A
	60	1,370,917	471	N/A	N/A	N/A	N/A
EDGA Exchange	.001	18,898,000	2,117	992,000	293	1,455,000	536
	.010	11,955,800	1,339	652,300	176	1,250,100	490
	1	209,444	65	71,154	18	194,984	77
	5	92,745	30	49,149	13	95,557	43
	10	69,549	23	44,423	11	82,011	37
	30	55,258	19	39,033	10	67,367	31
	60	41,676	14	30,214	8	51,206	24
EDGX Exchange	.001	17,734,000	1,986	972,000	286	1,530,000	822
	.010	12,206,100	1,367	691,400	185	1,338,900	696
	1	298,441	89	122,722	32	255,212	113
	5	103,420	36	58,841	15	119,928	56
	10	88,518	30	50,844	13	102,535	47
	30	65,526	22	38,670	10	75,804	35
	60	61,160	20	36,474	9	71,229	33
EDGX Options Exchange	.001	15,130,000	1,851	N/A	N/A	N/A	N/A
	.010	14,633,300	1796	N/A	N/A	N/A	N/A
	1	7,924,248	2,378	N/A	N/A	N/A	N/A
	5	2,521,908	869	N/A	N/A	N/A	N/A
	10	1,716,043	592	N/A	N/A	N/A	N/A
	30	987,273	334	N/A	N/A	N/A	N/A
	60	827,783	283	N/A	N/A	N/A	N/A
C2 Options Exchange	.001	14,130,000	1,773	N/A	N/A	N/A	N/A
	.010	13,727,900	1,691	N/A	N/A	N/A	N/A
	1	6,429,531	1,940	N/A	N/A	N/A	N/A
	5	1,945,475	626	N/A	N/A	N/A	N/A
	10	1,379,443	454	N/A	N/A	N/A	N/A
	30	914,742	311	N/A	N/A	N/A	N/A
	60	715,944	243	N/A	N/A	N/A	N/A

*Statistics as of 01/16/2019.

It should be noted that Cboe data will have microbursts within the one-second interval above, and that these microbursts will exceed the peak rates at the one-second interval. This is demonstrated within the 1 and 10 millisecond interval statistics. The extent to which the network connection to the customer

will cope with the microbursts exceeding the available bandwidth without packet loss will depend heavily on the buffers in the end to end path.

During spikes in quote updates, customers using less than sufficient bandwidth will experience queuing of their market data. Customers using the same bandwidth to both receive quotes and transmit orders may expect their orders to be slightly delayed if they have less than sufficient bandwidth. Many customers will find these delays unacceptable and should provision their bandwidth to reduce these delays. The following table demonstrates statistics regarding latency incurred as a result of queuing on Gig-Shaped and WAN-Shaped Multicast PITCH feeds.

Cboe Market	Measurement	5G-Shaped Multicast PITCH Serialization Delay (ms)	Gig-Shaped Multicast PITCH Serialization Delay (ms)	WAN-Shaped Multicast PITCH Serialization Delay (ms)
BZX Exchange	**Average**	N/A	0.0056	1.823
	Standard Deviation	N/A	0.253	10.964
	Historical High	N/A	8.2	552
BYX Exchange	**Average**	N/A	0.001	0.119
	Standard Deviation	N/A	0.069	2.090
	Historical High	N/A	.004	98.3
BZX Options Exchange	**Average**	0.000037	14.711	N/A
	Standard Deviation	0.0209	74.905	N/A
	Historical High	.0084	36.371	N/A
EDGA Exchange	**Average**	N/A	0.004	0.129
	Standard Deviation	N/A	0.181	3.509
	Historical High	N/A	.014	1.035
EDGX Exchange	**Average**	N/A	0.003	0.710
	Standard Deviation	N/A	0.137	5.310
	Historical High	N/A	.021	1.035
EDGX Options Exchange	**Average**	0.000006	8.810	N/A
	Standard Deviation	0.0111	50.950	N/A
	Historical High	.00006	8.810	N/A
Cboe C2	**Average**	0.00001	18.996	TBD

Options Exchange	Standard Deviation	0.008213	158.169	TBD
	Historical High	0.00001	18.996	TBD

* Statistics as of 01/16/2019.

As the volume on an exchange increases, the market data feed bandwidth required to accommodate peaks will also grow. Customers can obtain the latest published market data bandwidth and serialization statistics within this Connectivity Manual. Additionally, monthly statistical updates are presented through the FIF Market Data Capacity working group.

4.1.1 Multicast PITCH

Key features include:

- Low latency, up to 50% latency reduction vs. TCP PITCH.
- Bandwidth versions:
    - Gig-Shaped, requires minimum gigabit cross-connect.
    - WAN-Shaped (Equities Only).
    - 5 Gig-Shaped (Options only) requires a dedicated 10G connection
- Gap Response Proxy to recover small data gaps.
- Spin Server to efficiently recover from intra-day disconnects.
- Efficient binary messaging and new modify order message.

Refer to the US Equities/Options Multicast PITCH specification on the Cboe web site for complete details.

4.1.1.1 Multicast PITCH Feed Availability Matrix

Cross Connect Data Center & Bandwidth	Primary Data Centers																									
	Equites																Options									
	1 Gig-Shaped								WAN-Shaped								5 Gig-Shaped				1 Gig-Shaped				5 Gig-Shaped		1 Gig-Shaped	
	BZX		BYX		EDGA		EDGX		BZX		BYX		EDGA		EDGX		BZX		EDGX		BZX		EDGX		Cboe C2		Cboe C2	
	A	B	A	B	A	B	A	B	C	D	C	D	C	D	C	D	C	D	C	D	A	B	A	B	C	D	A	B
Secaucus NY4/NY5 10G	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					✓	✓	✓	✓			✓	✓
Secaucus NY4/NY5 1G	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					✓	✓	✓	✓			✓	✓
Secaucus NY4/NY5 Options 10G Primary																	✓		✓		✓	✓	✓	✓	✓		✓	✓
Secaucus NY4/NY5 Options 10G Secondary																		✓		✓	✓	✓	✓	✓		✓	✓	✓
Weehawken EWR2 10G	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					✓	✓	✓	✓			✓	✓
Weehawken EWR2 1G	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					✓	✓	✓	✓			✓	✓

Cross Connect Data Center & Bandwidth	Secondary Data Center						
	Equities				Options		
	WAN-Shaped				1 GIG-Shaped		
	BZX	BYX	EDGA	EDGX	BZX	EDGX	C2
Chicago 10G	✓	✓	✓	✓	✓	✓	✓
Chicago 1G	✓	✓	✓	✓	✓	✓	✓

4.1.2 TCP PITCH

Refer to the TCP PITCH specification on the web site for complete details.

4.1.3 TOP

The Cboe TOP feed offers up to 66% reduction in events and 84% reduction in bandwidth compared to the Cboe PITCH market data feed. Refer to the TOP specification on the Cboe web site for complete details.

4.1.4 Last Sale

The Last Sale feed is ideal for market data distributors. It is a real-time, intraday TCP feed that disseminates matched trade price, volume, and execution time from the Cboe Exchange order book. Users only need 2Mb of bandwidth to take this extremely efficient feed in real-time. Refer to the Last Sale specification on the Cboe web site for complete details.

4.2 FIX Order Entry

Bandwidth recommended for submitting orders via FIX depends on expected customer order volume. If a customer intends to submit orders to Cboe and will not receive market data, then it is possible that the customer can connect with less than a T1 equivalent connection. The following table shows the maximum number of inbound orders (and/or cancels) per second that can be handled, with no buffering or delay, with different capacity connections.

Example Connection Rates

Order Protocol	256Kb	512Kb	1.5Mb
FIX	75/sec.	150/sec.	450/sec.

5 Telecommunications Providers

Some telecommunications providers available within the Secaucus, Weehawken and Chicago data centers/PoPs are listed below. This list is a summary and is not indicative of Cboe's preference or recommendation. For telecommunications providers not included on the list, please contact the Cboe NOC to discuss.

5.1 Extranet Providers

Cboe partners with several extranet providers to aggregate customer connectivity and provide low cost, value-added B2B services such as multicast market data feeds. Extranet providers are required to sign Telecommunications Service Provider Agreement after meeting the requirements outlined in the Extranet Provider Manual.

5.1.1 Cboe Approved Extranet Providers

Company	Contact	Phone	Multicast Feeds *	Data Center(s)
BT Radianz www.btradianz.com	Gregory Knopp Gregory.Knopp@bt.com	(212) 205-1849	Z, Y	Secaucus Weehawken Chicago
CenturyLink http://www.centurylink.com/technology	Danielle Durkin gems@centurylink.com	(973) 650-1107	Z, Y, O, A, X	Weehawken Chicago
Interactive Data www.interactivedata.com	Sales info@interactivedata.com	(212) 771-6565	Z, Y, O	Secaucus Chicago
IPC Systems, Inc. www.ipc.com	John Tarantino john.tarantino@ipc.com	(212) 709-1099		Secaucus Weehawken Chicago
NYSE Technologies (SFTI) www.nyse.com/technologies	NYSE Technologies Sales Sfti-Info@theice.com	(212) 656-3400	Z, Y, O, A, X	Secaucus Weehawken Chicago
TMX Atrium Networks www.tmxatrium.com	TMX Atrium USA sales@tmxatrium.com	(917) 848-3718	Z, Y, O	Secaucus Weehawken Chicago
TNSi www.tnsi.com	Joanna Nicklas jnicklas@tnsi.com	+1 703 453 8473	Z, Y, O	Secaucus Weehawken Chicago

*** Z = BZX, Y = BYX, A = EDGA, X = EDGX, O = BZX Options or EDGX Options**

5.1.2 Carriers

Telecom carriers provide a dedicated circuit between customers in different data centers to a demarcation point in the Secaucus, Weehawken or Chicago data centers/PoPs. The circuit is extended from the demarc to a Cboe's network device.

It is recommended that customers use redundant connectivity via multiple telecommunications providers to each of the Cboe data centers.

Contact the Cboe NOC for information about circuit ordering details (e.g. NPA-NXX, LOA/CFA requirements, demarcation information, etc.).

Company	Contact	Phone	Data Center
Anova Technologies www.anova-tech.com	Heather Cannon hcannon@anova-tech.com	(312) 540-9594 x1113	Weehawken Chicago
A T & T www.business.att.com	Dale Rife wr7024@att.com	(816) 275-2335	Weehawken
Hibernia Atlantic www.hiberniaatlantic.com	Hibernia Sales sales@hibernianetworks.com	(908) 516-4200 (888) 774-8080	Weehawken Chicago
Hudson Fiber www.hudsonfiber.com	Thomas Kennedy tkennedy@hudsonfiber.com	(201) 820-8206	Weehawken
Level(3) Communications www.level3.com	William Simmons william.simmons@level3.com	(913) 909-9009	Weehawken Chicago
Lightower Fiber Networks www.lightower.com	Christopher J. Schook cschook@lightower.com Jeffrey Mollica jmollica@lightower.com	(631) 974-4307 (516) 375-6808	Weehawken Secaucus
NexGen Networks www.nexgen-net.com	Jeffrey Barth jeffrey.barth@nexgen-net.com	(800) 310-2501	Weehawken Chicago
Optimum LightPath www.optimumlightpath.com	Colleen M. Capen ccapen@optimumlightpath.com	(201) 644-9610	Weehawken
Perseus www.perseus.co	Tony Gerace agerace@perseus.co	(347) 325-9416	Secaucus Weehawken Chicago
Sidera Networks www.sidera.net	Stephen Papa stephen.papa@sidera.net	(212) 324-5033	Weehawken Chicago
Spread Networks, LLC www.spreadnetworks.com	Spread Network Sales sales@spreadnetworks.com	(646) 837-0330	Weehawken Chicago
Verizon Financial Network www.verizonbusiness.com/solutions/finance/institutional/servicesnetwork.xml	Verizon Financial Network Sales vfnsales@verizon.com	(800) 825- 9196	Weehawken Chicago
XO Communications www.xo.com	Robert Bye robert.g.bye@xo.com	(630) 544-8512	Weehawken Chicago
Zayo Fiber Solutions/AboveNet www.abovenet.com	Travis Brown tbrown@above.net	(212) 803-5597	Weehawken Chicago

6 Support

Please e-mail questions or comments regarding this manual to noc@cboe.com. Cboe NOC is a one-call shop that supports U.S. customer and telecommunications providers during initial setup and continuing support of all connectivity issues.

6.1 Support Hours

- Phone – **(913) 815-7005**
- Email – noc@cboe.com
- Core phone support hours are 7:00 AM – 11:00 PM ET Monday – Friday
- Outside of core support hours, to report a network issue that must be addressed prior to market open – leave a voice mail with the firm name, contact number, and the nature of the issue.
- For non-critical issues or for information, please email or NOC and your request will be responded to on the next business day.

Revision History

Document Version	Date	Description
7.0.0	04/04/14	Initial version of Manual supporting Cboe/Direct Edge integration changes.
8.0.0	02/21/15	Post-Direct Edge migration changes.
8.1.0	03/16/15	Added bandwidth statistics for EDGA/EDGX.
8.2.0	04/16/15	BZX Options move from NJ2 to NY5. Updated extranet contacts.
8.2.1	04/21/15	Update name change for Cboe Options Exchange to BZX Options Exchange.
8.3.0	05/04/15	Migration of BZX/BYX Exchanges to Secaucus, NJ.
8.3.1	05/07/15	Added to Approved Extranets table.
8.3.2	06/10/15	Updated Statistics Tables.
8.3.3	09/01/15	Updated Statistics Tables.
8.3.4	10/22/15	Updated Carrier Table.
8.3.5	12/03/15	Updated Statistics Tables.
8.4.0	12/07/15	Added section Feed Availability Matrix section 4.1.2.
8.5.0	02/19/16	Cboe branding/logo changes.
8.5.1	03/02/16	Updated Statistics Tables.
8.5.2	06/22/16	Updated Statistics Tables.
8.5.3	08/23/16	Updated Carrier Table.
8.5.4	09/01/16	Updated Statistics Tables.
8.5.5	09/23/16	Updated Carrier Table.
8.5.6	12/01/16	Updated Statistics Tables.
8.5.7	03/01/17	Updated Statistics Tables.
8.5.8	04/24/17	Updated Extranet Table.
8.5.9	06/01/17	Updated Statistics Tables.
8.5.10	08/01/17	Update Statistics Tables.
9.0.0	09/01/17	Added Cboe C2 connectivity information.
9.0.1	10/17/17	Cboe branding/logo changes.
9.0.2	01/02/18	Update Statistics Tables.
9.0.3	03/02/18	Update Statistics Tables.
9.0.4	07/02/18	Updated Statistics Tables.

9.0.5	07/30/18	Updated contact information for extranet providers.
9.0.6	08/06/18	Updated Statistics Tables.
9.0.7	08/15/18	Updated Statistics Tables.
9.0.8	10/05/18	Updated contact information for data center providers.
9.1.0	11/08/18	Updated Cyxtera data center identifiers. Added Latency Equalization diagram and link.
9.1.1	12/03/18	Updated Statistics Tables
9.1.2	01/16/19	Updated Statistics Tables