

Nasdaq Options Test Facility (NTF)

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Abstract

This document provides market participants of Nasdaq's U.S. Options Markets with the necessary information to use Nasdaq's Test Facility (NTF) environment for testing of their trading applications for the INET trading system.

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1. Introduction to NTF

Nasdaq offers a test environment, the Nasdaq Test Facility (NTF), where market participants can test their trading applications with the INET trading system. The NTF environment allows members to test sending and executing quotes and orders offered by our six options exchanges: Nasdaq PHLX (PHLX), Nasdaq BX Options (BX Options), Nasdaq Options Market (NOM), Nasdaq ISE (ISE), Nasdaq GEMX (GEMX), and Nasdaq MRX (MRX).

1.1. Intended Audience

This document is for programmers, analysts, and IT managers who are developing and testing applications on the INET Options trading system. It provides all the necessary information to access and utilize the NTF environment.

2. Environment Setup

The setup of the NTF environment is similar to the production INET environment.

2.1. Supported Interfaces

Below are the supported interfaces market participants can use to access the NTF environment which supports all six US Options exchanges.

- Specialized Quote Feed (SQF) supports market maker quoting and market maker protections.
- Ouch to Trae Options (OTTO) supports order entry providing for various market participant types
- FIX Order Routing System is an industry standard trading interface based on standard FIX version 4.2.
- Clearing Trade Interface (CTI) will provide trade details enriched with clearing and billing information.
- FIX Drop will provide trade and/or order details with clearing and billing information
- The multicast-based Market Data Feeds (MDF) provides market data for the PHLX trading system.

2.2. System Availability

To support development and testing for the broad range of market participants from different time zones, the NTF environment is available 16 hours a day from Monday to Friday, 4:00 a.m. to 8:00 p.m. ET. Technical support is only available during normal working hours from 8:00 a.m. to 5:30 p.m. ET.

The environment is available on most weekends as well; however, due to potential maintenance activities, full weekend access cannot be guaranteed. In general, technical support is not available on weekends.

The following table provides a schedule for the different phases of a trading day.

Nasdaq Test Facility (NTF) Hours of Operation

Time (ET)	Action
4:00 a.m.	<ul style="list-style-type: none">• System is available for logins
4:15 a.m.	<ul style="list-style-type: none">• Market opens• System opens underlying products• System rotates instruments (series) of selected products to a regular state• System starts publishing reference and market data• System statically quotes instruments (series) of selected products on ISE, GEMX, MRX, PHLX, NOM & BX
10:00 a.m.	<ul style="list-style-type: none">• Weekly on Wednesdays, the system will halt AAPL allowing participants to test participation in the opening process. Pre-opening interest is accepted at this time.
10:30 a.m.	<ul style="list-style-type: none">• Weekly on Wednesdays, Market Opens for AAPL after the 10 AM halt
8:00 p.m.	<ul style="list-style-type: none">• Environment closes for end-of-day processing

2.3. Market Structure

The market structure of the NTF environment is identical to the structure of the production system with designated Specialists/Primary Market Makers (PMM), Market Makers, and Electronic Access Members (EAM) for each market. Primary Market Makers (PMMs) are assigned, as in production, to designated symbols. In order to provide continuous quoting for testing, a fictitious Market Maker, run by Nasdaq, automatically quotes selected products across the PHLX, ISE, NOM, GEMX, BX Options and MRX markets.

All members — PMMs, Market Makers, and EAMs — are provided the same rights and entitlements to the test environment as they have in the production environment.

2.4. Product Setup

Reference data in the NTF environment is similar to the production environment. Because each NTF environment (PHXL, ISE, GEMX, MRX, NOM and BX Options) is a discrete system, reference data cannot be shared between the six environments.

2.5. Automated Quoting of Instruments

In order to provide an active market for participants in the NTF environment, the system automatically opens all products and continuously quotes selected instruments in the market. In addition, the system will return order executions for orders in instruments that are auto-quoted.

There is one way of quoting selected instruments:

- Static quotes: The test market maker continuously quotes static quote prices.

NOTE: The following lists of auto-quoted products are subject to change without notice.

2.5.1. Statically quoted Products/Instruments:

The Market Maker will quote the following products/instruments continuously during the trading day, starting at 4:15 a.m., after the system has opened the instruments.

Statically Quoted Products/Instruments

Market	Products	Price
PHLX		
NOM		
BX	AAPL, SPY	\$1.50 - \$2.50
GEMX		
MRX		
ISE	AMGN, GOOG	

Static Underlying Stock Price for Stock Combo Orders

Market	Products	Price
PHLX		
MRX	AAPL, CSCO	\$56.00-\$57.00

3. NTF for SQF/OTTO/CTI users

3.1. SQF/OTTO/CTI Access

Market participants who want to test their applications must establish a TCP/IP connection between their trading application and the SQF/ CTI gateways in the NTF environment. NTF does not support gateways at the market participants' premises.

For SQF/ CTI access in the NTF, market participants can connect to the Carteret, NJ data center (via IPSEC, cross-connects or Extranet Providers). A list of approved vendors is available here:

<http://www.nasdaqtrader.com/content/ProductsServices/Trading/extranets.pdf> Complete connectivity information is also available on the Nasdaq' website.

http://www.nasdaqtrader.com/content/ProductsServices/Trading/Direct_Connect_Providers.pdf

3.1.1. SQF, OTTO, CTI and FIX Drop Connectivity

The following table provides current connection details of SQF/ CTI interfaces in the NTF environment.

3.1.1.1. PHLX

Market	Interface	IP Address	Port
PHLX	SQF	206.200.20.145	7000-7099
PHLX	SQF	206.200.20.146	7000-7099
PHLX	SQF	206.200.20.147	7000-7099
PHLX	SQF	206.200.20.148	7000-7099
PHLX	SQF Purge	206.200.20.144	7900-7999
PHLX	CTI	206.200.20.140	6000-6099
PHLX	CTI	206.200.20.141	6000-6099
PHLX	CTI	206.200.20.142	6000-6099
PHLX	CTI	206.200.20.143	6000-6099

3.1.1.2. NOM

Market	Interface	IP Address	Port
NOM	SQF	206.200.20.156	6000-6099
NOM	SQF	206.200.20.157	7000-7099
NOM	SQF	206.200.20.158	7000-7099
NOM	SQF	206.200.20.159	7000-7099
NOM	SQF Purge	206.200.20.160	7000-7099
NOM	CTI	206.200.20.150	6000-6099
NOM	CTI	206.200.20.151	6000-6099
NOM	CTI	206.200.20.152	6000-6099
NOM	CTI	206.200.20.153	6000-6099
NOM	OTTO	206.200.20.162	7100-7199
NOM	OTTO Drop	206.200.20.164	6100-6199
NOM	FIX Drop	206.200.20.154	10500-10599

3.1.1.3. BX Options

Market	Interface	IP Address	Port
BX Options	SQF	206.200.13.96	7000-7099
BX Options	SQF	206.200.13.97	7000-7099
BX Options	SQF	206.200.13.98	7000-7099
BX Options	SQF	206.200.13.99	7000-7099
BX Options	SQF	206.200.13.100	7000-7099
BX Options	SQF	206.200.13.101	7000-7099
BX Options	SQF	206.200.13.102	7000-7099
BX Options	SQF	206.200.13.103	7000-7099
BX Options	SQF Purge	206.200.13.121	7000-7099
BX Options	CTI	206.200.13.64	6000-6099
BX Options	CTI	206.200.13.65	6000-6099
BX Options	CTI	206.200.13.66	6000-6099
BX Options	CTI	206.200.13.67	6000-6099
BX Options	CTI	206.200.13.68	6000-6099
BX Options	CTI	206.200.13.69	6000-6099
BX Options	CTI	206.200.13.70	6000-6099
BX Options	CTI	206.200.13.71	6000-6099
BX Options	CTI	206.200.13.72	6000-6099
BX Options	CTI	206.200.13.73	6000-6099
BX Options	CTI	206.200.13.74	6000-6099
BX Options	CTI	206.200.13.75	6000-6099
BX Options	FIX Drop	206.200.13.81	6200-6299
BX Options	FIX Drop	206.200.13.82	6200-6299

3.1.1.4. ISE

Market	Interface	IP Address	Port
ISE	SQF	206.200.20.229	7000-7099
		206.200.20.230	
		206.200.20.231	
		206.200.20.232	
		206.200.20.233	
ISE	SQF Purge	206.200.20.234	7900-7999
		206.200.20.235	
ISE	OTTO	206.200.20.236	7100-7199
		206.200.20.237	
		206.200.20.238	
		206.200.20.239	
		206.200.20.240	
ISE	CTI	206.200.20.243	6000-6099
		206.200.20.244	

3.1.1.5. MRX

Market	Interface	IP Address	Port
MRX	SQF	206.200.36.192	7000-7099
		206.200.36.193	
		206.200.36.194	
		206.200.36.195	
		206.200.36.196	
		206.200.36.197	
		206.200.36.198	
MRX	SQF Purge	206.200.36.199	7000-7099
MRX	OTTO	206.200.36.200	7100-7199
		206.200.36.201	
		206.200.36.202	
		206.200.36.203	
		206.200.36.204	
		206.200.36.205	
MRX	CTI	206.200.36.206	6000-6099
		206.200.36.207	
MRX	FIX Drop	206.200.36.208	6200-6299

3.1.1.6. GEMX

Market	Interface	IP Address	Port
GEMX	SQF	206.200.36.72	7000-7099
		206.200.36.73	
		206.200.36.74	
		206.200.36.75	
		206.200.36.76	
		206.200.36.77	
		206.200.36.78	
GEMX	SQF Purge	206.200.36.79	7000-7099
GEMX	OTTO	206.200.36.80	7100-7199
		206.200.36.81	
		206.200.36.82	
		206.200.36.83	
		206.200.36.84	
		206.200.36.85	
GEMX	CTI	206.200.36.85	6000-6099
GEMX	FIX Drop	206.200.36.86	6200-6299

3.1.1.7. ISE Replat form (NTF Available April 15th- Prod Go Live September 9th)

Market	Interface	IP Address	Port
ISE	SQF	206.200.36.226	7000-7099
		206.200.36.227	
		206.200.36.228	
		206.200.36.229	
		206.200.36.230	
		206.200.36.231	
		206.200.36.232	
		206.200.36.233	
		206.200.36.234	
		206.200.36.235	
		206.200.36.236	
		206.200.36.237	
		206.200.36.238	
206.200.36.239			
ISE	SQF Purge	206.200.36.239	7900-7999
ISE	OTTO	206.200.36.240	7100-7199
		206.200.36.241	
		206.200.36.242	
		206.200.36.243	
		206.200.36.244	
ISE	CTI	206.200.36.246	6000-6099
		206.200.26.247	

3.2. Market Data Feeds Access

Market Data disseminates over a multicast network. Market data is not provided through SQF/ CTI. Reference data is provided across SQF, CTI and market data feeds.

Similar to the SQF/ CTI, for market data access in the NTF environment, market participants can connect to the Carteret, NJ data center via Cross-connects or Extranet Providers who support Multicast.

Carteret RP for all Multicast Feeds: 207.251.255.40/32

Nasdaq NTF Networks

PHLX, NOM	206.200.20.0/23
BX Options	206.200.13.0/24
ISE, MRX, GEMX	206.200.36.0/24

3.2.1. NTF Environment

3.2.1.1. PHLX

Feed Name	Channel	Protocol	Group	Port	Source IP
Market Data Feeds					
TOPO Quote	Broadcast	mold64	233.56.159.120	18000	206.200.21.38
	Re-request	mold64rewind/soupbin		18100	206.200.21.53
TOPO Trade	Broadcast	mold64	233.56.159.120	18001	203.200.21.38
	Re-request	mold64rewind/soupbin		18101	206.200.21.53
TOPO Orders	Broadcast	mold64	233.56.159.121	18002- Simple 18003- Complex 18102 - Simple	206.200.21.38
	Re-request	mold64rewind/soupbin		18103 - Complex	206.200.21.53
Depth of Mkt	Broadcast	mold64	233.56.159.122	18004	206.200.21.38
	Re-request	mold64rewind/soupbin		18104	206.200.21.53
	Glimpse			18305	206.200.21.53

3.2.1.2. NOM

Feed Name	Channel	Protocol	Group	Port	Source IP
Market Data Feeds					
BONO	Broadcast	mold64	233.56.159.123	18001	206.200.21.54
Trades 3.0	Re-request	mold64rewind/soupbin		18101	206.200.21.54
BONO	Broadcast	mold64	233.56.159.123	18002	206.200.21.54
Quotes 3.0	Re-request	mold64rewind/soupbin		18102	206.200.21.54
	Broadcast	mold64	233.56.159.124	18004	206.200.21.54
	Re-request	mold64rewind/soupbin		18104	206.200.21.54

3.2.1.3. BX Options

Feed Name	Protocol	Group	Port	Source IP
Market Data Feeds				
Depth of	mold64	233.56.159.188	18000	206.200.13.48
	mold64rewind/soupbin		18100	206.200.13.49
Market Feed	Glimpse		18300	206.200.13.54
Top Quote Feed	mold64	233.56.159.189	18001	206.200.13.50
	mold64rewind/soupbin		18101	206.200.13.51
	Glimpse		18301	206.200.13.55
	mold64	233.56.159.190	18002	206.200.13.52
	mold64rewind/soupbin		18102	206.200.13.53
	Glimpse		18302	206.200.13.56

3.2.1.4. ISE

Feed Name	Protocol	Group	Port	Source IP
Market Data Feeds				
Depth of Market Feed	mold64	233.56.159.181	18001	206.200.20.23
	mold64rewind/soupbin		18101	206.200.21.143
Top Quote Feed	mold64	233.56.159.181	18000	206.200.20.23
	mold64rewind/soupbin		18100	206.200.21.142
Trade Feed	mold64	233.56.159.181	18003	206.200.20.23
	mold64rewind/soupbin		18103	206.200.21.145
Order Feed	mold64	233.56.159.181	18002	206.200.20.23
	mold64rewind/soupbin		18102	206.200.21.144
Complex Top Quote Feed	mold64	233.56.159.181	18004	206.200.20.23
	mold64rewind/soupbin		18104	206.200.21.146
Complex Trade Feed	mold64	233.56.159.181	18007	206.200.20.23
	mold64rewind/soupbin		18107	206.200.21.149
Complex Order Feed	mold64	233.56.159.181	18006	206.200.20.23
	mold64rewind/soupbin		18106	206.200.21.148

3.2.1.5. MRX

MRX Multicast Channels

Feed Name	Protocol	Group	Port	Source IP
Market Data Feeds				
Depth of Market Feed	mold64	233.56.159.191	18001	206.200.36.161
	mold64rewind/soupbin		18101	206.200.36.164
	Glimpse		18301	206.200.36.164
Top Quote Feed	mold64	233.56.159.191	18000	206.200.36.161
	mold64rewind/soupbin		18100	206.200.36.162
	Glimpse		18300	206.200.36.162
Trade Feed	mold64	233.56.159.191	18003	206.200.36.161
	mold64rewind/soupbin		18103	206.200.36.168
Order Feed	mold64	233.56.159.191	18002	206.200.36.161
	mold64rewind/soupbin		18102	206.200.36.166
Complex Depth of Market	mold64	233.56.159.192	18005	206.200.36.169
	mold64rewind/soupbin		18105	206.200.36.172
Feed	Glimpse		18305	206.200.36.172
Complex Top Quote Feed	mold64	233.56.159.192	18004	206.200.36.169
	mold64rewind/soupbin		18104	206.200.36.170
	Glimpse		18304	206.200.36.170
Complex Trade Feed	mold64	233.56.159.192	18007	206.200.36.169
	mold64rewind/soupbin		18107	206.200.36.176
Complex Order Feed	mold64	233.56.159.192	18006	206.200.36.169
	mold64rewind/soupbin		18106	206.200.36.174

3.2.1.6. GEMX

Feed Name	Protocol	Group	Port	Source IP
Market Data Feeds				
Depth of Market Feed	mold64	233.56.159.25	18001	206.200.36.56
	mold64rewind/soupbin		18101	206.200.36.58
	Glimpse		18301	206.200.36.58
Top of Market Feed	mold64	233.56.159.24	18000	206.200.36.56
	mold64rewind/soupbin		18100	206.200.36.57
	Glimpse		18300	206.200.36.57
	mold64	233.56.159.26	18002	206.200.36.56
	mold64rewind/soupbin		18102	206.200.36.59
Trade Feed	mold64	233.56.159.26	18003	206.200.36.56
	mold64rewind/soupbin		18103	206.200.36.59

3.2.1.8. ISE Replatform (NTF Available April 15th, Production Go Live September 9th)

Feed Name	Protocol	Group	Port	Source IP
Market Data Feeds				
Depth of Market Feed	mold64	233.56.159.183	18001	206.200.36.99
	mold64rewind/soupbin		18101	206.200.36.101
	Glimpse		18301	206.200.36.109
Top Quote Feed	mold64	233.56.159.183	18000	206.200.36.99
	mold64rewind/soupbin		18100	206.200.36.100
	Glimpse		18300	206.200.36.108
Order Feed	mold64	233.56.159.183	18002	206.200.36.99
	mold64rewind/soupbin		18102	206.200.36.102
Trade Feed	mold64	233.56.159.183	18003	206.200.36.99
	mold64rewind/soupbin		18103	206.200.36.103
Complex Depth of Market Feed	mold64	233.56.159.184	18005	206.200.36.99
	mold64rewind/soupbin		18105	206.200.36.105
	Glimpse		18305	206.200.36.111
Complex Top Quote Feed	mold64	233.56.159.184	18004	206.200.36.99
	mold64rewind/soupbin		18104	206.200.36.104
	Glimpse		18304	206.200.36.110
Complex Trade Feed	mold64	233.56.159.184	18007	206.200.36.99
	mold64rewind/soupbin		18107	206.200.36.107
Complex Order Feed	mold64	233.56.159.184	18006	206.200.36.99
	mold64rewind/soupbin		18106	206.200.36.106

3.3. Conformance Testing for SQF and OTTO Users

Market participants developing SQF and OTTO applications must conduct a conformance test in the NTF environment before they are allowed to access the INET production environment. All functions used by the application must be tested and certified.

3.3.1. Conformance Test Procedures

As soon as a market participant completes its internal development and testing for SQF or OTTO they should contact the Market Operations team to obtain the necessary conformance test scripts and schedule conformance testing.

During the conformance test, a representative of the Market Operations team will run through the test script with a market participant representative. The actual time taken to complete all of the required tests will depend upon the functionality used by the market participant. The Market Operations representative will advise the market participant of the probable duration of the test effort on a case-by-case basis.

Upon completion of the test scripts, the Market Operations representative will review the results of each individual conformance test script to ensure the test steps within each conformance test script have been completed correctly and match the expected results.

Once all of the scripts have been officially recorded as passed, a conformance test certificate will be issued to the market participant for that version of their application against the relevant version of the trading system.

4. NTF for INET FIX Users

FIX Order Routing System is available for all FIX users in the NTF environment.

New market participants who connect to Nasdaq markets using the FIX interface are required to test their FIX-based applications with the INET trading system.

4.1. How to access the FIX Interface in NTF

Market participants need to connect to INET FIX in the NTF environment in order to test their FIX applications for the INET trading system.

For FIX access to the NTF, market participants can connect to the Carteret, NJ data center (via IPSEC tunnel, cross-connects, or Extranet providers).

In order to establish a session to INET FIX in the NTF environment, each market participant is provided with an individual port. The following table outlines the connection details for FIX users.

IP Addresses for Access to FIX

4.1.1.1. PHLX

Markets	Interface	IP Address	Port
PHLX	FIX	206.200.20.128	8200-8299
		206.200.20.129	
		206.200.20.130	

4.1.1.2. NOM

Markets	Interface	IP Address	Port
NOM	FIX	206.200.20.131	8200-8299
		206.200.20.132	
		206.200.20.133	

4.1.1.3. BX Options

Markets	Interface	IP Address	Port
BX Options	FIX	206.200.20.136	8200-8299
		206.200.20.137	

4.1.1.4. ISE

Markets	Interface	IP Address	Port
ISE	FIX	206.200.20.214	8200-8299
		206.200.20.215	
		206.200.20.216	
		206.200.20.217	

4.1.1.5. MRX

Markets	Interface	IP Address	Port
MRX	FIX	206.200.20.221	8200-8299
		206.200.20.222	

4.1.1.6. GEMX

Markets	Interface	IP Address	Port
GEMX	FIX	206.200.20.130	8200-8299
		206.200.20.131	

4.1.1.7. ISE Replatform (NTF Available April 15th, Production Go Live September 9th)

Markets	Interface	IP Address	Port
ISE	FIX	206.200.20.132	8200-8299
		206.200.20.135	

4.2. FIX Certification Testing

All functionality that market participants with a FIX interface intend to use in the production system must be tested and certified in a FIX certification test before they are allowed to use the production environment.

For details on the FIX certification testing procedures, please contact market operations at OptionsTest@nasdaq.com.

5. Support

Nasdaq supports market participants in the NTF environment. The support offered includes phone and email support by the Market Operations team.

5.1. Support Hours

The Market Operation team will offer technical phone and email support to market participants Monday to Friday between 7:30 a.m. and 5:30 p.m. ET.

5.2. Contacts

For any questions or requests related to NTF or technical support requests, please contact the Market Operations team (215) 496-1571 or email OptionsTest@nasdaq.com

6. Revision Table

Version	Date	Change	Section
1.2	June 16, 2017	Introducing PHLX, NOM, BX Options details	
1.2	June 27, 2017	Adding MRX, NOM & BX Market Data Subnet IP details	
1.2	July 7, 2017	Updating NOM ITTO IP Subnet IP details	
1.3	December 4, 2017	Removing Dynamically Quoted Symbols Adding Statically Quoted Underlying Stock Price Updating Market Data IP Details for BX, GEMX & MRX Updating FIX Protocol IP Details for ISE, GEMX & MRX Removing former ISE Contact Information Updating Hours of Operation to extend support hours	
1.3.1	December 15, 2018	Adding support for complex market data feed on MRX	
1.4.0	April, 2022	Updating BX NTF IPs from prior migration Updating MRX NTF IPs for upcoming migration planned for November 2022	
1.4.1	October 12, 2022	Clarifying the GEMX FIX IPs and removing multicast IP addresses from Re-request feeds.	
1.4.2	May, 2023	Updating GEMX NTF IPs for upcoming migration planned for November 2023	
1.4.3	July, 2023	Adding GEMX NTF FIX IPs for upcoming migration planned for November 2023	
1.4.3	September, 2023	Updating MRX market data Ips.	
1.4.4	March, 2024	Updating ISE NTF IPs for upcoming migration planned for September 2024.	
1.4.4	March, 2024	Removing GEMX replat form reference.	
1.4.5	September, 2024	Adding RP Information for multicast feeds.	