

MIAX OPTIONS® IS A FULLY ELECTRONIC OPTIONS EXCHANGE COMMITTED TO EXCELLENCE IN PERFORMANCE, RELIABILITY AND CLIENT SERVICE.



HEADQUARTERED IN PRINCETON, NEW JERSEY, MIAX HAS AN ADDITIONAL OFFICE IN MIAMI.

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MIAMI INTERNATIONAL HOLDINGS ANNOUNCES DATA CENTER MIGRATION, DISASTER RECOVERY RELOCATION AND LATENCY EQUALIZATION IN ADVANCE OF PLANS TO LAUNCH A PRICE-TIME OPTIONS EXCHANGE

As previously announced, Miami International Holdings, Inc. (MIH), the parent holding company of the MIAX Options Exchange (MIAX Options) anticipates the launch of the MIAX PEARL Exchange (MIAX PEARL) in the fourth quarter of 2016, pending SEC approval. The new exchange will leverage the industry leading technology and infrastructure of MIAX Options to employ a price-time allocation model, and will enable MIH to compete for a segment of order flow that does not trade on the pro-rata market that MIAX Options currently operates.

In advance of the MIAX PEARL launch, MIAX will be modifying existing infrastructure to accomplish the following objectives: latency equalization of customer access to all MIAX platforms; relocation of MIAX Disaster Recovery platforms to improve customer access and latency; and to allow MIAX to better manage infrastructure costs as its data center footprint expands.

This primer is intended to provide a basic understanding of the plans, timelines and impact on MIAX Options exchange and MIAX PEARL exchange participants through the remainder of the year.



DATA CENTER MIGRATION, EXPANSION & CONSOLIDATION

MIAX provides low latency network transport and connectivity to geographically diverse trading platforms, market data distribution systems and financial services through the MIAX Express Network Interconnect (MENI). The infrastructure, comprised of low latency proximity solutions, provides universal access to all MIAX exchange services via a single common high speed network connection.

Current Data Center Operating Footprint

Aside from offering diverse, redundant 1 Gigabit, 10 Gigabit and 10 Gigabit ULL connectivity options for the MIAX Options Primary and Secondary Trading Systems residing in the NY4 and NY2 data centers located in Secaucus, NJ, MENI proximity services have extended reach across MIAX's private MPLS Backbone to the MIAX Options Test/Certification and Disaster Recovery Trading Systems residing in the PH1 data center, located in Philadelphia, PA, and diverse network POPs located at NY1 in Newark, NJ and NY9 in New York, NY.

Disaster Recovery Data Center Migration from Philadelphia to Chicago

MIAX plans to migrate the MIAX Options Disaster Recovery and the Test/Certification platforms from the PH1 data center in Philadelphia, Pennsylvania to an expanded facility located in the CH4 data center in Chicago, Illinois. The migration will be completed in a seamless, sequential manner with an expected **launch in September, 2016**.

The new Disaster Recovery data center located on the 8th floor at 350 East Cermak Road will accommodate additional platforms as they come online, such as MIAX PEARL, and will offer diverse network connectivity features for those seeking direct connectivity options.

The Chicago CH4 Disaster Recovery data center provides greater geographic diversity for business continuity planning by providing optimal distance from the exchange's primary Secaucus data center, decreasing risk and possibility of service-affecting impact from incidents stemming in the Eastern Region of the country. The CH4 location is well-situated in downtown Chicago and as one of the nation's largest carrier hotels is a focal point for Chicago's financial markets. Participants seeking connectivity can select from hundreds of telecommunication service providers available at this carrier neutral facility. Those with an existing presence or trading system at 350 East Cermak Road can simply cross-connect.

Primary and Secondary MIAX Options Trading System Migration to Expanded Primary Data Center

In an effort to improve cost and expand the range of technology services available to exchange participants, MIAX will migrate and consolidate the existing NY4 and NY2 Primary and Secondary MIAX Options Trading platforms to an optimized footprint located in a newly acquired, expanded and centralized NY4 data center



location. The new Data Center located in Phase II of NY4 will accommodate additional platforms as they come online, such as MIAX PEARL and will offer diverse network connectivity features for those seeking direct connectivity options.

The Secondary MIAX Options Trading System migration from NY2 to the new NY4 Phase II data center, planned for **May**, **2016** will be followed by migration of the Primary MIAX Options Trading System from the former MIAX NY4 Phase III data center location to the new MIAX NY4 Phase II data center location in **August 2016**. The system migration will be transparent to existing customers and will not require any configuration changes to existing customer equipment during transition. MIAX will continue to support, host and provide network connectivity from the existing NY2 and NY4 data center locations during transition of the Primary and Secondary MIAX Options Trading Systems to the newly expanded data center.

Upon relocation of the Primary MIAX Options Trading System, all MIAX Options participants will experience an equal decrease in application response times for both connection-oriented and non-connection oriented services due to the additional network latency incurred accessing the new MIAX NY4 Phase II data center location from the existing location. The MIAX Options Primary Trading System is expected to experience a round trip network latency increase in the 4.3 to 5.1 µs range. At the same time, a significant improvement in consistency between Primary and Secondary MIAX Options services is expected. For example, the "A" market data feeds (originally sourced from the former NY4 data center) and "B" market data feeds (originally sourced from the NY2 data center) will have closer alignment and exhibit less variance due to consolidation of the system footprints and latency reductions achieved through elimination of the fiber route between the original NY2 and NY4 data center locations.

Upon successful migration of the Primary and Secondary MIAX Options Trading Systems to the new NY4 Phase II data center location, MIAX will require firms to migrate connectivity to a new location within the NY4 Phase II data center that will provide **latency equalized** Ultra-Low Latency network transport and connectivity options (direct 1 Gigabit, 10 Gigabit and 10 Gigabit ULL) to both the MIAX Options and MIAX PEARL platforms. This equalized access is expected to be **available in September, 2016**. The latency equalized ULL network transport options will be engineered to a lower latency than the existing non-latency equalized options. Latency sensitive participants should plan to have latency equalized connectivity in place Day One of its availability. The existing non-latency equalized connectivity options will remain available until deprecated in November, 2016. All exchange participants will be **required to migrate to the latency equalized ULL network by mid-November, 2016**.



DATA CENTER NETWORK ACCESS, LATENCY EQUALIZATION

NY4 Primary & Secondary Data Center Latency Equalization

The cable plant of the new NY4 Phase II Data Center MIAX Express Network Interconnect will be enhanced with a MIAX engineered fiber optic premise distribution system, based on industry leading solutions in structured wiring, to provide latency equalization for all exchange participant handoffs regardless of the participant's location or proximity in the NY4 data center. Equalization is expected to account for 1.6 μ s of one-way latency overhead for non-connection oriented streaming traffic types and a round trip overhead of 3.2 μ s for connection oriented sessions.

NY4 Primary & Secondary Data Center Connectivity

Participants connecting to MIAX markets via the latency equalized network transport will be required to utilize Single Mode Fiber for establishing network connectivity. Participants with existing physical connections located at either MIAX POP location or the NY2 data center will need to establish new connections to either diverse MIAX facilities in the new MIAX NY4 Primary Data Center or the CH4 Disaster Recovery Data Center.

With the anticipated launch of MIAX PEARL in the **4**th **quarter of 2016**, pending SEC approval, the NY4 latency equalized MENI cable plant and network will provide initial access for test connectivity to the MIAX PEARL Test and Certification Systems in **September**, **2016**.

PARTICIPANT TRANSITION AND MIGRATION

Primary and Secondary MIAX Options and MIAX PEARL Trading Systems

MIAX Options customers must contact MIAX Trading Operations to request replacement LOA's in **July, 2016** to establish independent cross connect(s) to the new NY4 Phase II Data Center infrastructure to facilitate migration from the existing NY2 and NY4 data centers and NY1 and NY9 POPs by the end of **September, 2016**.

Customers intending to connect to the MIAX PEARL trading environment may request LOA's beginning in July, 2016 to establish cross connect(s) to the new NY4 Phase II Data Center infrastructure.

MIAX engineering will work with the customer's engineering counterparts to establish a new network environment with the necessary countermeasures to facilitate primary and secondary relationships for migration and fallback purposes.



MIAX Options and MIAX PEARL Disaster Recovery Trading Systems

MIAX Options customers may contact MIAX Trading Operations and request LOA's in **July, 2016** to establish independent cross connect(s) to the new CH4 Disaster Recovery Data Center infrastructure to facilitate direct dedicated DR connectivity by **September, 2016** to the MIAX Options Disaster Recovery Trading Systems.

Customers intending to connect to the MIAX PEARL Disaster Recovery environment may request LOA's beginning in July, 2016 to establish cross connect(s) to the CH4 Data Center infrastructure.

MIAX engineering will work with the customer's engineering counterparts to establish a DR network environment with the necessary countermeasures to facilitate predictable behavior with existing primary and/or secondary connections.

DATA CENTER EXIT & POP SHUTDOWN

Shutdown of Existing Network Services

MIAX POPs located at NY1 in Newark, NJ and NY9 in New York, NY will become inactive **October**, **2016**. The existing NY2 and NY4 data center network access currently provided by MENI will become inactive **November**, **2016**.



KEY DATA CENTER MIGRATION AND CONNECTIVITY MILESTONE TARGETS

This table summarizes the major events to occur throughout the remainder of the 2016 calendar year. Exchange participants should review this carefully as there are mandatory connectivity changes required later in the year. MIAX will communicate specific dates and details via Trader Alerts as they become available.

TARGET MO.	DATA CENTER MIGRATION AND CONNECTIVITY MILESTONES	CLIENT ACTION REQUIRED
MAY	Migration of Secondary MIAX Options Trading System from NY2 to NY4 (new primary data center)	
JULY	 Existing MIAX Options Participants Initiate Connectivity Migration Requests for new NY4 location & CH4 (new primary & DR data centers) Mandatory MIAX Options NY4 connectivity migration from "current" space to new NY4 primary data center Mandatory MIAX Options NY2 connectivity migration to diverse NY4 or CH4 connection (new primary or DR data center) Mandatory MIAX Options POP connectivity migration to diverse NY4 or CH4 connection (new primary or DR data center) 	YES
JULY	New MIAX Options or MIAX PEARL Participants Initiate Connectivity Requests for NY4 & CH4 (new primary & DR data centers) • NY4 Primary or Secondary connectivity • CH4 connectivity	YES
JULY	Commence LOA Issuance for new NY4/CH4 Related Cross Connect Requests	
AUGUST	Migration of Primary MIAX Options Trading System from existing NY4 Phase III to NY4 Phase II and Launch No connectivity changes will be required for this migration	
AUGUST	Commence Acceptance of CH4 Participant Issued Cross Connects	
AUGUST	Commence Link Verification and Base Network Connectivity Tests - CH4 (Per Cross Connect)	YES
SEPTEMBER	Launch MIAX Options Disaster Recovery Trading System in CH4	
SEPTEMBER	 Confirm Access to MIAX Options CH4 Disaster Recovery Trading System Mandatory for Disaster Recovery designated Participants under MIAX rules 	YES
SEPTEMBER	Activate MIAX PEARL Test & Certification Systems and Access	
SEPTEMBER	Confirm Access to MIAX PEARL Test & Certification Systems	YES



TARGET MO.	DATA CENTER MIGRATION AND CONNECTIVITY MILESTONES	CLIENT ACTION REQUIRED
SEPTEMBER	Commence Acceptance of new NY4 Participant Issued Cross Connects	
SEPTEMBER	Commence Link Verification and Base Network Connectivity Test – new NY4 (Per Cross Connect)	YES
SEPTEMBER	Commence MIAX Options Participant connectivity migration to NY4 (new data center) • Latency sensitive participants should be prepared to cutover on this launch date	YES
OCTOBER	POP Network Service Shutdown	
NOVEMBER	Complete MIAX Options participant connectivity migration to NY4 (new data center)	YES
NOVEMBER	NY2 and NY4 (existing data center space) MENI Network Shutdown	

GET CONNECTED

MIAX Options' connectivity costs are competitively priced. Data centers will be located in NY4 and CH4. For more information such as (but not limited to) membership, rules, fees, support, connectivity and provisioning please send an email to Trading Operations (<u>tradingoperations@miaxoptions.com</u>) or visit the MIAX website http://www.miaxoptions.com.