

SECURITIES AND EXCHANGE COMMISSION
(Release No. 34-77070; File No. SR-NYSEArca-2015-102)

February 5, 2016

Self-Regulatory Organizations; NYSE Arca, Inc.; Notice of Filing of Amendment No. 2 and Order Granting Accelerated Approval of Proposed Rule Change, as Modified by Amendment No. 2, to Provide that the Co-location Services Offered by the Exchange include Three Time Feeds and Four Partial Cabinet Bundle Options

I. Introduction

On November 27, 2015 the NYSE Arca, Inc. (the “Exchange”) (“the Exchange”) filed with the Securities and Exchange Commission (“Commission”), pursuant to Section 19(b)(1) of the Securities Exchange Act of 1934 (“Act”)¹ and Rule 19b-4 thereunder,² a proposed rule change to provide that the co-location services offered by the Exchange include three time feeds and four bundles of co-location services (“Partial Cabinet Solution bundles”). The proposed rule change was published for comment in the Federal Register on December 16, 2015.³ The Commission received one comment letter on the proposed rule change.⁴ On January 28, 2016, the Exchange filed a response letter.⁵ On January 28, 2016, the Exchange filed Amendment No. 2 to the proposed rule change.⁶ The Commission is publishing this notice to solicit comments on

¹ 15 U.S.C. 78s(b)(1).

² 17 CFR 240.19b-4.

³ See Securities Exchange Act Release No. 34-76616 (December 10, 2015), 80 FR 78275 (“Notice”). On January 28, 2016, the Exchange consented to extending the time period for the Commission to either approve or disapprove the proposed rule change, or to institute proceedings to determine whether to approve or disapprove the proposed rule change, to February 5, 2016.

⁴ See letter from Kermit Kubitz to the Commission, dated January 6, 2016 (“Kubitz Letter”).

⁵ See letter from Martha Redding Senior Counsel & Assistant Secretary, NYSE to Brent J. Fields, Secretary of the Commission, dated January 28, 2016 (“Exchange Response Letter”).

⁶ On January 28, 2016, the Exchange filed Amendment No. 1 but withdrew it on the same

Amendment No. 2 from interested persons and is approving the proposed rule change, as modified by Amendment No. 2, on an accelerated basis.

II. Description of the Proposal, as Modified by Amendment No. 2

The Exchange proposes to change its rules to provide that the co-location services offered by the Exchange include three time feeds and four Partial Cabinet Solution bundles, and to establish fees for these services.

Time Feeds

The Exchange proposes to offer Users the option to purchase connectivity to one or more of three time feeds.⁷ Each proposed time feed provides a feed with the current time of day using one of three different time protocols: Global Positioning System (“GPS”) Time Source, the Network Time Protocol (“NTP”), and Precision Timing Protocol (“PTP”).⁸ GPS is a time and location system maintained by the United States government.⁹ The Exchange accesses the GPS Time Source feed through dedicated equipment and subscribing Users connect to the feed over

day, replacing it with Amendment No. 2. Amendment No. 2 (i) updates the proposal to specify that that Partial Cabinet Solution Bundles, originally proposed to be offered on January 1, 2016, instead will be offered on the date that is the later of February 1, 2016 and the date of any Commission approval of the proposal; and (ii) as further explained below, adds clarity to the proposal by specifying the differences in precision among the three time feeds.

⁷ For purposes of the Exchange’s co-location services, a “User” means any market participant that requests to receive co-location services directly from the Exchange, a “Hosting User” means a User that hosts a Hosted Customer in the User’s co-location space, and a “Hosted Customer” means a customer of a Hosting User that is hosted in a Hosting User’s co-location space. See Securities Exchange Act Release No. 76010 (September 29, 2015), 80 FR 60197 (October 5, 2015) (SR-NYSEArca-2015-82). As specified in the Fee Schedules, a User that incurs co-location fees for a particular co-location service pursuant thereto would not be subject to co-location fees for the same co-location service charged by the Exchange’s affiliates New York Stock Exchange LLC and NYSE MKT LLC. See Securities Exchange Act Release No. 70173 (August 13, 2013), 78 FR 50459 (August 19, 2013) (SR-NYSEArca-2013-80).

⁸ See Notice, 80 FR at 78276.

⁹ See id.

dedicated cables.¹⁰ For the NTP and PTP time feeds, the Exchange routes the GPS data through dedicated equipment that reformats the GPS data into NTP and PTP.¹¹ Subscribing Users connect to PTP over dedicated cables and NTP over the Liquidity Center Network (“LCN”), a local area network available in the data center.¹² According to the Exchange, the GPS Time Source feed is a sub-microsecond time feed, providing the highest level of accuracy of the three time feeds.¹³ PTP has an accuracy of less than 10 microseconds, while the accuracy of NTP can be greater than 10 milliseconds.¹⁴ The Exchange states that a User does not require connectivity to a time feed to trade on the Exchange.¹⁵ The proposed connectivity to time feeds would provide Users a convenient way to access time protocols.¹⁶ According to the Exchange, Users make use of time feeds to receive time and to synchronize clocks between computer systems or throughout a computer network, and time feeds assist Users in other functions, including record keeping or measuring response times.¹⁷

Currently, Users have the option of either renting a dedicated cabinet or a partial cabinet to house their servers and other equipment in the data center.¹⁸ Under the proposal, only the NTP and PTP time feeds will be available to partial cabinet Users, whereas dedicated cabinet

¹⁰ See id.

¹¹ See id.

¹² See id.

¹³ See Amendment No. 2, at 4.

¹⁴ See id.

¹⁵ See Notice, 80 FR at 78276, n.6.

¹⁶ See id. at 78276.

¹⁷ See id. For example, a User may connect to a time feed for record keeping purposes if it uses that specific time protocol for all its activities, both inside and out of the data center. See id. at n.7.

¹⁸ See id. at 78276.

Users will have access to all three time feeds.¹⁹ According to the Exchange, connectivity to the GPS time feed is not available for partial cabinets because the proximity of the GPS and power connections into a partial cabinet would expose the GPS to interference from the cable power connections, interfering with the delivery of the GPS data.²⁰ The Exchange states that if a partial cabinet User is in need of the GPS feed, it could either purchase a dedicated cabinet or become a Hosted Customer of a Hosting User that has the GPS feed.²¹ In addition, the Exchange states that the NTP time feed is offered only over the LCN due to a lack of demand for the NTP over the IP network, and notes that a User that requires connectivity to the NTP could connect to the LCN.²²

The Exchange proposes to charge a non-recurring fee of \$300, \$1000, and \$3000 for connectivity to the NTP, PTP, and GPS time feeds, respectively.²³ The Exchange will also charge a monthly recurring fee of \$100, \$250, and \$400 for the NTP, PTP, and GPS time feeds, respectively.²⁴ Subscribing Users that order the proposed time feed services will be subject to a 12-month minimum commitment, after which they are subject to a 60-day rolling commitment.²⁵

Partial Cabinet Solution Bundles

The Exchange also proposes to offer four Partial Cabinet Solution bundles and establish fees therefor.²⁶ As more fully described in the Notice, each Partial Cabinet Solution bundle

¹⁹ See id.

²⁰ See id. at n.10.

²¹ See id. at 78279.

²² See id.

²³ See id. at 78276.

²⁴ See id.

²⁵ See id.

²⁶ See id.

option would include network access, two fiber cross connections, and connectivity to either the NTP or PTP time feed.²⁷ Subscribing Users would be assessed a non-recurring fee and monthly charge for each bundle option as set forth below.²⁸

Type of Service	Description	Amount of Charge
<p>Partial Cabinet Solution bundles</p> <p>Note: A User and its Affiliates are limited to one Partial Cabinet Solution bundle at a time. A User and its Affiliates must have an aggregate cabinet footprint of 2 kW or less to qualify for a Partial Cabinet Solution bundle.</p>	<p>Option A: 1 kW partial cabinet, 1 LCN connection (1 Gb), 1 IP network connection (1 Gb), 2 fiber cross connections and either the Network Time Protocol Feed or Precision Timing Protocol</p>	<p>\$7,500 initial charge per bundle plus monthly charge per bundle as follows:</p> <ul style="list-style-type: none"> • For Users that order on or before December 31, 2016: \$3,000 monthly for first 12 months of service, and \$6,000 monthly thereafter • For Users that order after December 31, 2016: \$6,000 monthly
	<p>Option B: 2 kW partial cabinet, 1 LCN connection (1 Gb), 1 IP network connection (1 Gb), 2 fiber cross connections and either the Network Time Protocol Feed or Precision Timing Protocol</p>	<p>\$7,500 initial charge per bundle plus monthly charge per bundle as follows:</p> <ul style="list-style-type: none"> • For Users that order on or before December 31, 2016: \$3,500 monthly for first 12 months of service, and \$7,000 monthly thereafter • For Users that order after December 31, 2016: \$7,000 monthly

²⁷ See id. 78276-78277.

²⁸ See id. at 78278.

	<p>Option C: 1 kW partial cabinet, 1 LCN connection (10 Gb), 1 IP network connection (10 Gb), 2 fiber cross connections and either the Network Time Protocol Feed or Precision Timing Protocol</p>	<p>\$10,000 initial charge per bundle plus monthly charge per bundle as follows:</p> <ul style="list-style-type: none"> • For Users that order on or before December 31, 2016: \$7,000 monthly for first 12 months of service, and \$14,000 monthly thereafter • For Users that order after December 31, 2016: \$14,000 monthly
	<p>Option D: 2 kW partial cabinet, 1 LCN connection (10 Gb), 1 IP network connection (10 Gb), 2 fiber cross connections and either the Network Time Protocol Feed or Precision Timing Protocol</p>	<p>\$10,000 initial charge per bundle plus monthly charge per bundle as follows:</p> <ul style="list-style-type: none"> • For Users that order on or before December 31, 2016: \$7,500 monthly for first 12 months of service, and \$15,000 monthly thereafter • For Users that order after December 31, 2016: \$15,000 monthly

Additionally, a User purchasing a Partial Cabinet Solution bundle would be subject to a 90-day minimum commitment, after which period it would be subject to the 60-day rolling time period.²⁹

As more fully described in the Notice, the Exchange states that the purpose of offering four Partial Cabinet Solution bundles is to attract smaller Users, including those with minimal

²⁹ See *id.* The Exchange proposes to have a reduced minimum commitment period for the Partial Cabinet Solution bundle to further reduce the cost commitment for such Users. The Exchange acknowledges that the proposal may also attract some entities that are currently Hosted Customers or would have become Hosted Customers.

power or cabinet space demands or those for which the costs attendant with having a dedicated cabinet or greater network connection bandwidth are too burdensome.³⁰ The Exchange proposes that the Partial Cabinet Solution bundles would be available to Users provided: (1) the subscribing User purchases only one Partial Cabinet Solution bundle; (2) the subscribing User and its Affiliates must not currently have a Partial Cabinet Solution bundle; and (3) after the purchase of the Partial Cabinet Solution bundle, the subscribing User, together with its Affiliates, has an Aggregate Cabinet Footprint of no more than 2 kW.³¹ The Exchange proposes that for purposes of the Partial Cabinet Solution bundles, an “Affiliate” of a User would be any other User or a Hosted Customer that is under 50% or greater common ownership or control of the first User.³² Further, the term “Aggregate Cabinet Footprint” of a User or Hosted Customer is proposed to be defined as: (a) for a User, the total kW of the User’s cabinets, including both partial and dedicated cabinets, and (b), for a Hosted Customer, the total kW of the portion of the Hosting User’s cabinet, whether partial or dedicated, allocated to such Hosted Customer.³³

A User would be required to inform the Exchange immediately of any event that causes the User or a Hosted Customer to become ineligible for a Partial Cabinet Solution bundle, including an event that causes another User or Hosted Customer to become an Affiliate as this can make the subscribing User ineligible for the bundle.³⁴ If a subscribing User ceases to meet

³⁰ See id.

³¹ See id. at 78277.

³² See id. at n.15.

³³ See id. at 78277. For example, a User with a 4 kW dedicated cabinet would not be eligible for a Partial Cabinet Solution bundle, as its aggregate cabinet footprint would be either 5 kW or 6 kW once a Partial Cabinet Solution bundle was added.

³⁴ See id. The Exchange would review available information regarding the entities and may request additional information to verify the Affiliate status of a User or Hosted Customer. The Exchange would approve a request for a Partial Cabinet Solution bundle unless it determines that the certification is not accurate.

the conditions for access to the Partial Cabinet Solution bundle, it would be charged for each of the services individually, at the price for each such service set out in the Price List and Fee Schedule.³⁵ Such price change would be effective as of the date that the subscribing User ceased to meet the conditions.³⁶

Further, if a subscribing User purchased each of the components of a Partial Cabinet Solution bundle, whether over several purchases or in one order, and met the conditions described above for access to the Partial Cabinet Solution bundle, the Exchange would automatically treat that User's services as a Partial Cabinet Solution bundle and, effective the date of installation of the final component, reduce the User's recurring fee to the recurring fee for the relevant bundle.³⁷ In addition, a User that changes its Partial Cabinet Solution bundle from one option to another will not be subject to a second initial charge, but will be required to pay the difference, if any, between the bundles' initial charges.³⁸

Finally, the Exchange proposes to make non-substantive changes to the Price List and Fee Schedule to add subheadings under "Co-Location Fees" for "Definitions" and "General Notes."³⁹

III. Summary of Comment Letter and Exchange Response

As noted above, the Commission received one comment letter on the proposed rule change,⁴⁰ and a response from the Exchange.⁴¹ The commenter expressed concern about the

³⁵ See id.

³⁶ See id.

³⁷ See id. at 78278.

³⁸ See id. at 78277, n.19.

³⁹ See id. at 78278.

⁴⁰ See Kubitiz Letter, supra note 4.

⁴¹ See Exchange Response Letter, supra note 5.

potential for “GPS spoofing” (intentional interference with GPS feeds from a distance) if GPS data are from an unsecured source.⁴² According to the commenter, a successful GPS spoofing attack could cause time feed data to become corrupted, which could cause Users, such as High Frequency Trading (“HFT”) firms that represent substantial market volume, to withdraw from the market and lead to market disruption.⁴³ The commenter asked particularly whether purchasers of Partial Cabinet Solution bundles that have access to the PTP and NTP feeds, but not the dedicated GPS time feed, would have any “special vulnerability to some sort of feed failure” as a result of “GPS spoofing” or otherwise.⁴⁴

The Exchange responded that “[t]o the best of the Exchange’s knowledge, Users that connect to the NTP or the PTP, rather than the GPS Time Source, do not have a special vulnerability to feed failure, irrespective of whether they utilize a partial or dedicated cabinet.”⁴⁵ The Exchange stated that it uses the same GPS time feed equipment for its production environment and to provide time feeds to Users;⁴⁶ and that Users purchasing time feeds from the Exchange (whether GPS, PTP, or NTP) benefit from the same protections that the Exchange has implemented for its own GPS antennas and receivers.⁴⁷ The Exchange also stated that GPS is the source information for all three time feeds and that the Exchange routes the GPS data through

⁴² See Kubitz Letter, supra note 4.

⁴³ See id.

⁴⁴ See id. The commenter further requested that the Commission more broadly investigate and report on any risks associated with time feeds, and measures to protect these and other data feeds. See id. The Commission notes that this suggestion is beyond the scope of the proposed rule change.

⁴⁵ See Exchange Response Letter, supra note 5, at 3.

⁴⁶ See id. at 4.

⁴⁷ See id. The Exchange added that that discussion of these protections in a proposed rule change would impair their effectiveness. See id. at 5.

dedicated equipment that reformats the GPS data to propagate the NTP and PTP.⁴⁸ The Exchange further stated that any disruption to the GPS time feed would impact the NTP and PTP time feeds in the same way as the GPS feed; and that the Exchange has no knowledge of any other method to “spoof” the NTP or PTP feeds if the GPS feed were not compromised.⁴⁹

IV. Discussion and Commission Findings

After careful review and consideration of the Exchange’s proposal, the comment letter and the Exchange’s response, the Commission finds that the proposed rule change, as modified by Amendment No. 2, is consistent with the requirements of the Act and the rules and regulations thereunder applicable to a national securities exchange.⁵⁰ In particular, the Commission finds that the proposed rule change, as modified by Amendment No. 2, is consistent with Section 6(b)(4) of the Act,⁵¹ which requires that the rules of a national securities exchange provide for the equitable allocation of reasonable dues, fees and other charges among its members and issuers and other persons using its facilities, and with Section 6(b)(5) of the Act,⁵² which requires, among other things, that the rules of a national securities exchange be designed to promote just and equitable principles of trade, to remove impediments to and perfect the

⁴⁸ See id. at 3.

⁴⁹ See id. Regarding the commenter’s concern about the potential for GPS spoofing to lead to market disruption, the Exchange stated that it could not comment on the behavior of HFT Users during a “spoofing event” regardless of whether the HFT User received its time feed from the Exchange or a third party vendor. The Exchange noted, however, that the proposal was limited to time feeds provided by the Exchange and that Users purchasing time feeds from the Exchange benefit from the same protections that the Exchange has implemented for its own GPS antennas and receivers. See id. at 5.

⁵⁰ In approving this proposed rule change, as modified by Amendment No. 2, the Commission has considered the proposed rule’s impact on efficiency, competition, and capital formation. See 15 U.S.C. 78c(f).

⁵¹ 15 U.S.C. 78f(b)(4).

⁵² 15 U.S.C. 78f(b)(5).

mechanism of a free and open market and a national market system and, in general, to protect investors and the public interest, and not be designed to permit unfair discrimination between customers, issuers, brokers, or dealers.

The Commission believes that the proposed rule change is consistent with Section 6(b)(4) of the Act. The Commission notes the Exchange's representation that the proposed fees for the time feed connectivity and Partial Cabinet Solution bundles are reasonable because the Exchange proposes to offer the services as a convenience to Users, but in doing so will incur certain costs, including costs related to the data center facility, hardware and equipment and costs related to personnel required for the initial installation, monitoring, support and maintenance of such services.⁵³ The Exchange states that the higher fee in connection with the GPS time feed reflects the greater costs for its equipment, installation and maintenance in comparison with the other time feeds.⁵⁴ In addition, all Users that voluntarily select connectivity to one or more of the proposed time feeds would be charged the same amount for the same services. With respect to the proposed Partial Cabinet Solution bundles in particular, the Commission also notes that all Users are subject to the same conditions and fees for the service selected; all Users are subject to the same limits on the number of Partial Cabinet Solution bundles and aggregate cabinet footprint; all Users that order a bundle on or before December 31, 2016 would have their monthly charges reduced by 50 percent for the first 12 months; and all Users that change their Partial Cabinet Solution bundles would not be charged a second initial charge but instead charged the difference, if any, between the initial charges.

The Commission further believes that the Exchange's proposal to offer Users optional connectivity to the GPS, PTP, and NTP time feeds is consistent with the requirements of Section

⁵³ See Notice, 80 FR at 78279.

⁵⁴ See id.

6(b)(5) of the Act. The proposal to offer connectivity to different time feed options allows a User to select the time protocol that best suits it needs, helping to tailor its data center operations to the requirements of its business operations, and to operate more efficiently. As set forth in the Exchange Response Letter, the Exchange states that whether a User purchases access to the GPS, NTP, or PTP time feed, it benefits from the same precautions as the Exchange's production environment, as the Exchange uses the same GPS time feed equipment, including antennas and receivers, to provide time feeds to Users.⁵⁵ The Commission therefore believes that the proposed time feeds, would remove impediments to, and perfect the mechanisms of, a free and open market and a national market system and, in general, protect investors and the public interest. The Exchange represents that connectivity to the GPS time feed is not available for partial cabinets because the proximity of the GPS and power connections into a partial cabinet would expose the GPS to interference from the cable power connections, interfering with the delivery of the GPS data.⁵⁶ The Exchange also represents that connectivity to the NTP time feed is not proposed to be offered over the IP network due to lack of demand.⁵⁷ For these reasons, the Commission believes that providing connectivity to the GPS Time Source for dedicated cabinets but not partial cabinets, and to the NTP time feed through the LCN but not the IP network, is not designed to permit unfair discrimination between customers, issuers, brokers, or dealers.

The Commission also finds the Exchange's proposal to offer Partial Cabinet Solution bundles consistent with Section 6(b)(5) of the Act. As noted, all Users seeking to purchase a Partial Cabinet Solution bundle would be subject to the same conditions. The Commission believes that the proposed Partial Cabinet Solution bundles are reasonably designed to make it

⁵⁵ See Exchange Response Letter, *supra* note 5, at 4.

⁵⁶ See *supra*, notes 20 and 21 and accompanying text.

⁵⁷ See *supra*, note 22 and accompanying text.

more cost effective for Users with minimal power or cabinet space demands to take advantage of the option for co-location services, and therefore that they are designed to promote just and equitable principles of trade, to remove impediments to and perfect the mechanism of a free and open market and a national market system and, in general, to protect investors and the public interest, and are not designed to permit unfair discrimination between customers, issuers, brokers, or dealers.

For the foregoing reasons, the Commission also finds that, the proposed rule change, as modified by Amendment No. 2, is consistent with the Act.

V. Solicitation of Comments on Amendment No. 2

Interested persons are invited to submit written data, views, and arguments concerning the foregoing, including whether this filing, as modified by Amendment No. 2, is consistent with the Act. Comments may be submitted by any of the following methods:

Electronic comments:

- Use the Commission's Internet comment form (<http://www.sec.gov/rules/sro.shtml>); or
- Send an e-mail to rule-comments@sec.gov. Please include File No. SR-NYSEArca-2015-102 on the subject line.

Paper comments:

- Send paper comments in triplicate to Secretary, Securities and Exchange Commission, 100 F Street, NE, Washington, DC 20549-1090.

All submissions should refer to File No. SR-NYSEArca-2015-102. This file number should be included on the subject line if e-mail is used. To help the Commission process and review your comments more efficiently, please use only one method. The Commission will post all comments on the Commission's Internet website (<http://www.sec.gov/rules/sro.shtml>). Copies

of the submission, all subsequent amendments, all written statements with respect to the proposed rule change that are filed with the Commission, and all written communications relating to the proposed rule change between the Commission and any person, other than those that may be withheld from the public in accordance with the provisions of 5 U.S.C. 552, will be available for website viewing and printing in the Commission's Public Reference Room, 100 F Street, NE, Washington, DC 20549 on official business days between the hours of 10:00 a.m. and 3:00 p.m. Copies of such filing also will be available for inspection and copying at the principal office of the Exchange. All comments received will be posted without change; the Commission does not edit personal identifying information from submissions. You should submit only information that you wish to make available publicly. All submissions should refer to File No. SR-NYSEArca-2015-102, and should be submitted on or before [insert date 21 days from publication in the Federal Register].

VI. Accelerated Approval of Proposed Rule Change, as Modified by Amendment No. 2

The Commission finds good cause, pursuant to Section 19(b)(2) of the Act, to approve the proposed rule change, as modified by Amendment No. 2, prior to the 30th day after the date of publication of Amendment No. 2 in the Federal Register. As discussed above, Amendment No. 2 updates dates in the original proposed rule change and adds clarity on the differences between the three time feeds in terms of their precision.⁵⁸ The Commission believes that these revisions provide clarity on when partial cabinet bundle discounts will apply along with additional information on the differences between the various time feeds. Furthermore, the Commission believes it is appropriate to have these changes incorporated into the rules of the Exchange concurrently with those changes discussed in the original filing.

⁵⁸ See supra, note 6.

Accordingly, the Commission finds good cause for approving the proposed rule change, as modified by Amendment No. 2, on an accelerated basis, pursuant to Section 19(b)(2) of the Act.⁵⁹

VII. Conclusion

IT IS THEREFORE ORDERED, pursuant to Section 19(b)(2) of the Act,⁶⁰ that the proposed rule change, as modified by Amendment No.2, (SR-NYSEArca-2015-102) be, and hereby is, approved on an accelerated basis.

For the Commission, by the Division of Trading and Markets, pursuant to delegated authority.⁶¹

Brent J. Fields
Secretary

⁵⁹ 15 U.S.C. 78s(b)(2).

⁶⁰ See id.

⁶¹ 17 CFR 200.30-3(a)(12).