



Cboe Global Markets
Technology Integration
Customer Conference Call

January 9, 2018 at 12:30 p.m. Eastern

CORPORATE PARTICIPANTS

Chris Isaacson – *Executive Vice President and Chief Information Officer*

Andy Lowenthal – *Senior Vice President and Head of Global Derivatives*

Troy Yeazel – *Senior Vice President, U.S. Electronic Trading Operations*

Gary Compton – *Director of Corporate Communications*

PRESENTATION

Operator

Good day everyone and welcome to the fourth Cboe Global Markets technology integration customer conference call. All participants will be in a listen-only mode. Should you need assistance, please signal a conference specialist by pressing the star (*) key followed by zero (0). After today's presentation there will be an opportunity to ask questions. Q&A is intended for customers only. To ask a question you may press star (*) and then one (1) on your touchtone telephone. To withdraw your question you may press star (*) and then two (2). Those listening through the webcast may submit questions throughout the event by typing your question in the "Submit Question" box on your screen. Questions will be addressed after the prepared remarks have ended. Please note today's event is being recorded. And at this time I would like to turn the conference call over to Gary Compton, Director of Corporate Communications at Cboe Global Markets. Please go ahead.

Gary Compton

Thank you operator and good morning all and thank you for your time. Joining us for today's call are Chris Isaacson, Executive Vice President and Chief Information Officer and Andy Lowenthal, Senior Vice President and Head of Global Derivatives.

Following their prepared remarks, we will hold a Q&A session for customers only. Also joining us for the Q&A will be Eric Crampton, Senior Vice President, Global Head of Software Engineering; Troy Yeazel, Senior Vice President, U.S. Electronic Trading Operations; and Anthony Montesano, Head of Trading Floor Operations and TPH Services. Customers on the phone can queue up their questions by following the operator instructions at the end of today's remarks. If you are online you may submit a question via the box and "Submit Question" button on the right-hand side of your screen. If you are a journalist or analyst, please reach out to our Corporate Communications and Investor Relations teams and they will address any questions you may have separately.

As a preliminary note, you should be aware that this presentation contains forward-looking statements, which involve some risks and uncertainties. Actual results may vary. Additionally, the delivery and roll-out dates are tentative and subject to change. Please refer to our filings with the SEC for more detailed information about the risks and uncertainties.

Now, I would like to turn the call over to Chris Isaacson.

Chris Isaacson

Thank you, Gary. Happy New Year to all of you, and our best wishes for a happy and healthy 2018. Thank you all for joining us today for our fourth integration customer call and our first of 2018. Our team remains focused on executing a seamless technology and operational integration, and we are committed to ensuring you continue to enjoy the same great trading experience and customer service you've always had with Cboe Global Markets. Throughout this process, we've encouraged open lines of communication, and the feedback you've shared with us thus far has proved valuable. Please continue to share your opinions, ideas and questions with the Cboe team as we work through the integration.

The first half of 2018 is a critical phase in our technology integration. First, the launch of our new index platform will occur on January 22nd. Second, the migrations of the CFE and C2 exchanges to Bats technology are on target for February 25th and May 14th, respectively. Lastly, we are also planning to implement technology enhancements to the Cboe Options Exchange, or

C1, beginning in the second quarter.

On today's call, I will discuss final preparations for the new index platform launch, next month's migration of CFE to Bats technology, provide an update on the C2 Options Exchange migration and highlight the planned technology enhancements to C1 later this year. We will not be announcing the ultimate migration date of the Cboe Options Exchange to Bats technology on this call, as that will come in the near future. Our primary focus today is to ensure all customers are ready for the critical and imminent date for the index platform, CFE, C2 and the initial enhancements on C1.

As a vital first step to integration, on October 23, 2017, we successfully introduced new complex order book functionality on Cboe EDGX Options Exchange. We've been extremely pleased with both the initial customer participation and the significant volume growth since launch. Average daily complex order volume during December was over 95,000 contracts. On December 15th, we set a record of almost 160,000 contracts traded, accounting for 36 percent of Cboe EDGX Options volume.

Designed with the goal of creating the most efficient and flexible complex order book, which includes new order handling, risk management and trade-through protections, this functionality forms the foundation for all complex order handling by Cboe markets once migrated to Bats technology.

Before I touch on all the key dates and what you need to do to ensure that you are ready, let me turn it over to Andy to share a brief Cboe Global Markets business update.

Andy Lowenthal

Thank you Chris, and welcome to everybody on the call today. I hope you all had an enjoyable holiday season, and I'd like to echo Chris's sentiments in wishing you all the best in 2018.

As Chris mentioned, we plan to announce the migration date of Cboe Options Exchange in the near future. Although we have not yet announced that date, our business development and trading operations teams have already been meeting with customers to discuss the migrations. The dialog has been constructive as we make preparations for C1's migration and we will continue to work closely with all of you as we undertake this critical initiative.

Shifting gears, I thought I'd provide an update on Cboe bitcoin futures, given the tremendous attention their launch on Sunday, December 10th received. Frankly, the customer interest and media coverage of our launch, the first in the U.S., was unlike any we've ever seen. Kudos to Chris and the tech team for bringing bitcoin futures to market on our existing Command system in a condensed timeframe while in the midst of continuing their work on all of our other technology migrations.

I'm happy to report it was a solid debut for our Cboe bitcoin futures, ticker symbol XBT. Our systems operated flawlessly, trading was orderly and market participation was strong. Over 4,000 contracts traded on the first day. Over the remaining 14 trading days in December, a total of more than 56,000 contracts traded and daily volume averaged approximately 4,000 contracts. Interestingly, we observed that almost half of the trading volume was coming from outside of the U.S.

Participation is steadily building. We currently have three lead market-makers and as of last week, there were 10 FCMs and 29 TPHs actively trading. At yesterday's close, open interest in

XBT futures stood at roughly 4,500 contracts.

On December 14th, we began disseminating values for the Cboe Gemini Bitcoin Futures Index, ticker symbol XBTX, a new strategy performance benchmark index designed to replicate a constant one-month position in Cboe bitcoin futures. Values for the XBTX Index are available through your quote vendors.

Additionally, our Cboe DataShop is now offering a complete history of market data for bitcoin traded on the Gemini Exchange since its inception and Cboe bitcoin's historical futures data. You can learn more at <http://datashop.cboe.com>.

So, one month in, we're very encouraged by the early activity and interest in XBT futures and look forward to further growing our cryptocurrency market and product line this year.

As always, we continue in 2018 to look for ways to better serve your needs through cutting edge trading technology, dedicated customer service, advanced trading solutions and innovative products. Our entire team is hard at work delivering on this mission each and every day. We look forward to continuing to engage with you throughout the integration process. I encourage you to reach out to Bryan Harkins, Chris, or me or to your business development or operations liaisons or to e-mail integrations@cboe.com. I'll be happy to take any questions at the conclusion of our prepared remarks, but for now, I'll hand it back to you, Chris.

Chris Isaacson

Thanks Andy. Now to the platform migrations. Let's begin with the new index platform that will go live in less than two weeks, on January 22nd.

The CSMI data feed is migrating to a new best-in-class platform in the NY5 data center as part of the technology integration. It is important to note that this is strictly a platform change and the format of the CSMI data feed remains the same. The migration requires IP configuration updates and preparation for splitting multicast data channels from a two-channel to a five-channel configuration.

This new index technology platform serves as the foundation for our growing index business, and enables us to better calculate and disseminate data for new and existing indices going forward.

New IPs for both the certification and production environments are required to access the CSMI data feed and the NY5 data center, and since December 11th, the new feed has been disseminated in parallel with the existing feed in production to allow recipients to compare the two feeds side by side.

There are two connectivity options for connecting to the new CSMI NY5 data feed. One, you may use existing CFE connectivity with a slight latency disadvantage, or two, you may order cross-connects to NY4 or NY5 connecting directly to the new CFE platform on Bats technology in NY5. Connecting via existing Cboe Options Exchange cross-connects will not be supported to the new CSMI platform.

On Monday January 22nd, the NY5 production feed becomes the primary. February 2nd will be the final date of the legacy NY4 platform availability, and on March 26th, the CSMI feed will split from two to five channels. For more information you can refer to our index platform microsite at batsintegration.cboe.com/index-integration.

Next, let's cover the critical CFE migration, which is on schedule for February 25th, which is just weeks away. Over the past few months, our technology operations and CFE teams have been meeting with customers to conduct technical reviews and discuss readiness for the migration and key platform changes. We will continue to meet with you in advance of CFE's cut-over as necessary and stand ready to assist you to ensure you are prepared for day one. To this end, since the last customer call, we have conducted two Saturday tests, on November 18th and December 9th respectively, and have three more Saturday tests scheduled.

Further, most firms should have completed or should be near completion of the following steps:

- performing their certification in the certification/UAT environment;
- receiving from Cboe their completed certification script;
- requesting and connecting to production FIX and BOE sessions created in the NY5 data center with the certified functionality enabled;
- specifying any desired non-default settings for the new production sessions;
- establishing new logical order entry ports on the new production trading platform, requesting that unnecessary logical ports be deleted within the new production environment;
- auditing production sessions to ensure you have a desirable number prior to migration;
- critically establishing risk settings at the TPH and clearing firm levels;
- testing through any and all ISVs or service bureaus that are used for trading, if indeed you use an ISV;
- and finally, successfully trading test symbols in production in the new CFE NY5 production environment.

If you have not yet completed your certification, you must do so now or you will not be able to trade on CFE come February 25th. You may certify using either the conformance app that is available within the Customer Web Portal, or by scheduling certification testing directly with the CFE Trade Desk. Certifications with the CFE Trade Desk may be conducted any time during CFE trading hours, which is effectively 24x5.

As a reminder, legacy CFE certification sessions are being decommissioned and cannot be used to certify to the new platform. There will be no automatic transfer of these legacy sessions, so you need new certification ports in order to certify.

Last month, basic connectivity testing for the new CFE disaster recovery logical ports at 400 South LaSalle Street were made available. If you have not tested your DR logical ports, we advise you to do so as soon as possible.

Daily trading of test symbols in production is currently available in the new CFE NY5 production environment. In addition, we have three upcoming Saturday tests in the new CFE production environment: January 20th, February 10th and the Saturday before migration on February 24th. We advise all customers to participate in as many of these daily and Saturday tests as possible before the go-live of CFE in NY5 on February 25th.

Lastly, I'd like to remind you to refer to the CFE integration website at batsintegration.cboe.com/CFE where you can find all the resources related to CFE's migration. And a final note on CFE, I want to reiterate that the CFE migration is on schedule for February 25th, so now is the time to certify and test in production to ensure you are 100 percent ready for this critical migration.

While work is nearing completion on CFE's migration, we are simultaneously preparing for the migration of C2 Options Exchange to Bats technology, which is planned for May 14th.

Firms must establish physical connectivity to the new C2 latency equalization network infrastructure within NY4 or NY5 or by using their existing connectivity, albeit at a slight latency disadvantage. Going forward, C2 will share outside customer connectivity infrastructure with the legacy Bats markets in NY4 and NY5 so that customers can use their existing physical connectivity to the legacy Bats markets to access C2.

As is the case with CFE, all existing C2 certification sessions are being decommissioned and cannot be used to certify to the new platform. There will be no automatic transfer of these legacy sessions from the legacy platform to the new. Also as is the case with CFE, firms may request new certification sessions for C2 via the Logical Port Request Form within the Customer Web Portal.

All firms are required to certify for basic functionality, including establishing and maintaining connectivity, order entry, disconnect recovery, quote risk management and linkage. TPHs are expected to certify for all functionality they intend to use in production.

Last month, all functional testing, including order entry, market data and drop of the new C2 trading platform within the certification environment was made available. You may complete your certification by using the conformance app that's available in the Customer Web Portal or by scheduling certification testing with the Cboe Trade Desk.

Beginning February 5th, logical order entry ports will be created on the new C2 production trading platform for every login that exists on the current legacy platform that are available on that date. A single FIX drop port will be created for every firm, as well. C2 TPHs may begin ordering additional logical ports or requesting unnecessary ports be deleted within the new production environment. TPHs will be required to audit their production sessions to ensure they have a desirable number prior to the migration to the new production platform.

There will be four upcoming weekend test opportunities in the new C2 production environment: February 24th, March 17th, April 14th and May 12th, the Saturday before the switch-over. It's also important to note, starting March 5th, we will allow customers to trade test symbols or securities in the new C2 production environment on a daily basis. We strongly encourage customers to use these daily testing opportunities in addition to the weekend tests to ensure their preparedness for the C2 migration.

As we mentioned on our call in September, we are unifying our options functionality as much as possible across the BZX, EDGX and C2 options exchanges. To achieve this goal, two major releases on BZX and EDGX have been implemented that will facilitate the C2 migration.

The first release in October included the introduction of ContraBroker, ContraTrader information and Stop and Stop Limit Orders, as well as changes to Open/Close tagging and Post-Only behavior. The second release last Friday, January 5th, included a set of risk enhancements. To finish up on C2, please refer to the integration website, where you can find all of the resources related to the migration, including the timeline, an FAQ and other materials. You can find the website at batsintegration.cboe.com/C2.

Finally, turning to Cboe Options Exchange, we anticipate announcing the ultimate date of the C1 migration to Bats technology once we have completed the CFE migration.

In the meantime, we are planning to implement two technology enhancements to the C1 marketplace in 2018. First, the migration of SPX to Hybrid planned for the second quarter, and second, the introduction of new floor terminals planned for the second half of 2018.

As mentioned on the September call, though the Hybrid market model will be built into Bats technology, the current market model for the AM-settled SPX options, referred to as Hybrid 3.0, will not be replicated as part of that effort. The Hybrid 3.0 model allows for quotes to be provided only by approved lead market-makers. Those quotes reflect the interest of the trading crowd but are not directly accessible.

As part of the roadmap leading toward the full C1 migration, Cboe will retire the Hybrid 3.0 model and transition the AM-settled SPX options onto the Command system's Hybrid platform. What this means is that SPX market-makers will be able to stream their own electronically-accessible quotes. SPX is the last trading symbol to transition onto Hybrid, though the PM-settled SPX Weeklys, which trade under symbol SPXW, have successfully traded on the Hybrid platform since their introduction. We recognize that the users of the AM contract tend to be more institutional, trading larger and more complex strategies, while the users of SPXW tend to be more, but not exclusively, retail.

We will continue to work with our customers, TPHs and advisory groups to define the details of the final Hybrid configuration for SPX, such as matching algorithm, quoting requirements and other functionality that make the most sense for all users of this very important product.

Additionally, as part of the migration of Cboe's Hybrid market model onto Bats technology, Cboe will revamp its floor systems, including the PAR workstation, which is used by floor brokers to manage and execute orders. The new PAR tool will initially interface with the legacy Command system and eventually connect to Bats technology once the full migration is completed.

PAR functionality allows floor brokers to trade in open-outcry with other in-crowd participants with simultaneous access to bids and offers contained in the electronic matching engine. As part of the migration effort, Bats technology is being modified to incorporate the concepts of a Hybrid market model with floor brokers interfacing via PAR, and several new integrated and modernized features which will be available to our floor brokers.

We will continue to seek customer feedback on the new PAR workstation as we continue its development. We will have much more detailed information on SPX to Hybrid and PAR in the near future.

As usual, we've covered a lot today, so while the operator prepares for questions, I'd like to recap some of the key dates and points. As we start the New Year, our migrations are quickly approaching.

On January 22nd, the CSMI Index data feed will migrate to the NY5 data center. The migration requires IP configuration updates and preparation for splitting multicast data channels from a two-channel configuration to a five-channel configuration. On Monday January 22nd, the NY5 production feed becomes primary and February 2nd will be the final date of the legacy NY4 platform. Visit our index platform microsite at batsintegration.cboe.com/index-integration for the details.

The critical CFE migration to Bats technology is planned for February 25th. If you have not yet done so, you must complete your certification using either the conformance app that is available

from the Customer Web Portal, or schedule certification testing directly with the CFE Trade Desk. Please refer to the CFE migration microsite at batsintegration.cboe.com/CFE for more information.

The migration of C2 will follow CFE with a migration date of May 14th. All C2 customers are required to certify to the new platform and can do so immediately. Beginning next month, logical order entry ports will be created on the new production platform for every login that exists on the current platform for C2 and weekend test opportunities will begin. Refer to the C2 migration microsite at batsintegration.cboe.com/C2 for an overview.

For C1, we plan to announce the ultimate migration date to Bats technology once we have completed the CFE migration. In the meantime, we will be introducing two technology enhancements to the C1 trading environment. First, the conversion of SPX options to the Hybrid platform in the second quarter; and second, the introduction of new floor terminals in the second half of 2018.

Our team remains focused on executing a seamless technical and operational integration. We remain committed to ensuring you continue to enjoy the same great trading experience and customer service you have always experienced with Cboe Global Markets, so please do not hesitate to contact our business development or operations teams with any questions you may have on the integration or any of these key initiatives. With that, I'll hand the call over to our operator to begin the Q&A session.

QUESTIONS AND ANSWERS

Operator

Ladies and gentlemen, we will now begin the question-and-answer session. To ask a question you may press star (*) and then one (1) on your touchtone phones. If you are using a speakerphone, we do ask that you please pick up your handset before pressing the keys to ensure the best sound quality. To withdraw your questions you may press star (*) and two (2). You can also submit questions through the webcast by typing your question in the Submit Question box on your screen. At this time we will pause momentarily to assemble the roster.

Chris Isaacson

Operator, do you have any questions on the phone?

Operator

Sir, at this time I am showing no questions.

Chris Isaacson

I have a few questions online that I'll call out the name and the question and then answer it. The first question comes from Sebastian at Clover Light. What is the certification cutoff date?

As I mentioned during the call, the certification cutoff and the cutover date is February 25th. We have been allowing firms to certify since the beginning of October, and we strongly encourage everyone to certify immediately so they can participate in the Saturday tests. We will be allowing firms to certify up until the migration date. However, we can't guarantee that we'll have full capacity of enough people on the Trade Desk to certify you if you wait until the last minute. So my advice to you is certify now to ensure that you'll be ready for February 25th. Do not wait any longer.

And there was a similar question from Rajiv at Morning Capital – is there a deadline? I'd just say now is the time. That's really the purpose of this call. Now is the time for you to certify. I know many of you have had year-end deadlines and milestones to achieve and preparations for MiFID II and the like, but now we ask you earnestly to turn your focus toward CFE.

The next question comes from Rahul at Intercontinental Exchange. Is there a parallel period planned for the CFE migration where the existing and new platform will be available and when will the old platform be decommissioned?

The answer is no. There is no parallel period. February 25th is a hard cut-over date. The legacy platform will be shut off. The final trading date will be February 23rd, and then Sunday, February 25th, the new trading platform will be the only CFE trading platform. So, there will be no parallel period and if you're entering orders or taking market data, you need to ensure that you've configured your systems, certified order entry and can take the market data.

The next question comes also from Intercontinental Exchange. Where can we find documentation describing the change to data feeds for the data vendors? All of that information is on the batsintegration.cboe.com integration microsite. On the top right, you can scroll down and see there are tabs for the index, CFE and C2 migration microsities. There are technical specifications on every single one of those microsities for the different integrations.

The next question comes from Mariano at Rival Systems. Where do we get the list of daily test symbols in the NY5 production environment? I'm going to ask Troy Yeazel, who heads up our operations, to answer this question.

Troy Yeazel

Those should be available on the public site; the microsite, as well. Additionally, you can reach out to CFEtradedesk@cboe.com and they can help direct you to that list or you can feel free to give them a call, as well. The number for that is 312-786-8700.

Chris Isaacson

Thanks Troy. The next question comes from Malgorzata at SIX Financial Information. Do you have any details regarding the CSMI phase 2 split from two to five feeds scheduled for March? Are you planning to migrate any index data currently available on the CSMI channels to the new channels, or the new feeds, or will they just be for new data?

The details regarding the split from two to five channels are available on that index integration microsite, and in the specifications you can see the multicast addresses and ports. And yes, we will be moving around some indices, existing indices, to use those channels.

The next question comes from Richi at JP Morgan. Are the logical ports for C2 options certification environment that were requested via Bats portal in NY4 or NY5?

All of the Cboe markets, all of the legacy Bats markets and the new Cboe markets that will operate on Bats technology are housed within NY5. However, we will allow customers to connect from NY4 or NY5 using the latency equalization infrastructure. So, you don't have to put your equipment in NY5 to be closest to us. You can still remain NY4, but the matching engines themselves, including for C2, are in NY5.

The next question comes from Prasad at Rithmic. Is certification required for both market data and orders, or just for orders? Troy, would you like this one?

Troy Yeazel

Yes, certainly. So certification is only required for order entry, FIX and BOE. However, if you need help or any assistance with interpretation of any of the market data, you can certainly utilize the certification environment. All the market data feeds are available in that environment and you can work with the CFE Trade Desk at the e-mail and contact number I previously provided.

Chris Isaacson

Thanks Troy. Sorry for those on the phone if that was breaking up for you. Just to reiterate what Troy said, you only need to certify for orders, but if you have any questions regarding market data, the CFE Trade Desk stands ready to answer those.

We just have a few more questions online, but are there any questions on the phone?

Operator

Once again, if you would like to ask a question, please press star (*) and one (1).

Sir, at this time I am showing no questions.

Chris Isaacson

Okay. The next question online, from Yung-Sang at Optiver, will the presentation be available for download?

Yes, as with all the rest of the integration customer calls, we will make that available, the presentation as well as the script and the audio.

The next question we've already answered regarding the need to certify for orders but make sure you're ready for market data.

The final question online I see -- is CFE certification mandatory for data vendors?

Further to what we've already said, data vendors are not required to certify; however, we strongly encourage you to be taking that data out of both the certification environment and the production environment and self-certifying on your end to make sure that you can process the data correctly.

I will make a mention here that the format of the data for CFE is changing materially from what had been an aggregated depth price feed or basically aggregation of size at a single price or at multiple prices, to an order-by-order feed called PITCH, which many of you have connected to and used in the past, those that have connected to Bats platforms. So it's going to an order-by-order feed. If you have not connected to Bats technology before, you'll need to make some changes. And it's also worth noting on the CFE page specifically, there is an implementation guide. If you have connected to Bats technology in the past, there is an implementation guide about what you need to change if you're using FIX order entry, BOE order entry or receiving PITCH market data. We have gone through the extra effort to make it very clear what changes and the small amount of change we think you have to make in order to be ready for this migration. And those are in the implementation guides.

One last check for questions on the phone, operator?

Operator

And once again, if you would like to ask a question please press star (*) and one (1).

Chris Isaacson

We've had a couple of questions come in while you were speaking, operator. The question is where can I find the customer web portal for certification, and how do I get login information, for the logging into the customer web portal?

Please reach out to the CFE Trade Desk, which is simply CFEtradedesk@cboe.com. All of the details are found on the microsite as well, but CFEtradedesk@cboe.com will get you a login to the Customer Web Portal.

The final question online I see is are there details available for setting up connectivity in NY5 for C2 Options?

Yes. Please go to the C2 integration website, which is batsintegration.cboe.com/C2 and there is a connectivity manual there that you can use. As I mentioned in the script, you can use if you are already connected to the legacy Bats markets -- the four equity markets and two options markets. You can use that legacy connectivity to connect to the new C2 platform.

Troy Yeazel

Chris, I'd also encourage anyone that has any questions regarding physical connectivity to reach out to the Cboe NOC. That e-mail address is noc@cboe.com and the phone number is 913-815-7005.

Chris Isaacson

Good point. Thank you, Troy. If there are any other questions on the phone, I'm looking around the team here, I don't think there is anything else. I just want to thank you all for taking time out of your busy schedules as the year starts. I know you're doing much planning and preparation, as we are. We're very excited about 2018 and delivering on these migrations in a very successful and seamless way for you, but that can only happen if you're prepared and you do the work that's required. So thank you in advance for doing that work, and we stand ready to help you in any way possible. Please let us know how we can help and what questions we can answer. We are on the ready 24x5 to get you ready for these migrations. And with that, I think I'll close up the call and thank you again. Have a good day.

Operator

Ladies and gentlemen, the conference has now concluded. We do thank you for attending today's presentation. You may now disconnect your lines.