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Document History

Revision	Date	Author	Revision Comments
0.1	September 14, 2011	Ryan Pierce, CME Group	Initial revision.
0.2	September 19, 2011	Ryan Pierce, CME Group	Revisions following September 19, 2011 GExMC call: Changed TickRuleTypes Additional elaboration New business requirement: "Traded at Spread"
0.3	October 10, 2011	Ryan Pierce, CME Group	Updated data dictionary to account for enumerations assigned to previous EPs. Incorporated clarifications from comments received in Issues and Discussion Points section. Changed Traded as Spread to include words "(basis point spread)" to align with PriceType=6
0.4	December 8, 2011	Ryan Pierce, CME Group	Updated based on November 17, 2011 GTC Call: Revised glossary definition. Updated based on discussions to attempt to resolve the remaining open issue identified on the GTC call: Deprecate TickRuleType 4 = Settled as a Spread Leg Created new fields SettlPriceIncrement and SettlPriceSecondaryIncrement, both added to TickRules. Updated documentation to reflect this change.
ASBUILT	January 27, 2012	Jim N	Added tag numbers and enumeration values. Updated section on decisions made to represent settlement price increments. Quality improvements for fields whose enumeration values are being changed. Quality improvements for the TickRules component.
	February 3, 2012	Lisa T, Jim N	Clean up and edits – added example of the chosen resolution for settlement price increments.

1 Introduction

This Gap Analysis introduces new securities reference data used to define or describe derivatives, as follows:

- First and Last Notice Dates – This is used for deliverable futures.
- Tick Rule Types – This includes a new type of tick rule, and new fields for settlement price increments.
- Negative Settlement Price Indicator – This indicates if a contract can settle at a negative price.
- Negative Strike Price Indicator – This indicates if options can have negative strike prices.

This impacts the following FIX fields:

- EventType (865) – Used in the EvntGrp component
- InstrAttribType (871) – Used in AttrbGrp component
- TickRuleType (1209) – Used in TickRules component
- SettlPriceIncrement ([1830](#)) – New field, used in TickRules component
- SettlPriceSecondaryIncrement ([1831](#)) – New field, used in TickRules component

2 Business Workflow

2.1 First and Last Notice Dates

These terms are defined as follows, and included in the glossary:

- First Notice Date – The first day that a notice of intent to deliver a commodity can be made by a clearing house to a buyer in fulfillment of a given month's futures contract.
- Last Notice Date – The last day on which a clearing house may inform an investor that a seller intends to make delivery of a commodity that the investor previously bought in a futures contract. The date is governed by the rules of different exchanges and clearing houses, but may also be stated in the futures contract itself.

This proposal adds enumerations for “First Notice Date” and “Last Notice Date” to the EventType(865) field, which is used in the EvntGrp component within the Instrument component.

This functionality is important for contracts with physical settlement. Many contracts that are physically delivered must offer a relatively large window of time during which sellers can make delivery. E.g. the CME October 2011 Live Cattle contract's last trade date is October 31, 2011. Buyers will receive notice of intent to deliver between October 10, 2011 and November 3, 2011. The sellers make delivery between October 18, 2011 and November 9, 2011.

2.2 Tick Rule Types

One new TickRuleType(1209) enumeration is defined:

- Traded as [spread](#) (basis point spread) – This allows markets trade CDS instruments to accept trades in both normal (Percent of Par) terms and Spread terms, and to have different tick rules for each.

The enumeration [TickRuleType\(1209\)=0\(Regular-@\)](#) does exist, but it is not specific in its definition. This will be redefined as “Regular trading”.

The existing enumerations Variable (1) and Fixed (2) are ambiguous. The original intent of these enumerations were to describe tick rules for cabinet pricing, so they are changed to Variable Cabinet and Fixed Cabinet, respectively.

CDS generally trades and settles in Percent of Par, e.g. PriceType (423) = 1. However, it can also trade in Spread, e.g. PriceType = 6. Spread represents the premium rate, in percent, which the market believes is the appropriate rate

for this contract at this point in time. Spread may be less than, equal to, or higher than the actual coupon rate for the contract.

For example, a coupon rate might be 4.00%, whereas the spread is 4.23%. Premium will be paid at an ongoing rate of 4.00%, but the market is saying that it should have been 4.23%.

A price in Spread may be transformed into a price in Percent of Par:

- If the Spread is greater than the coupon rate, the Percent of Par will be less than 100%, and the contract is said to be trading at a **discount below par**.
- If the Spread is less than the coupon rate, the Percent of Par will be greater than 100%, and the contract is said to be trading at a **premium over par**.
- If the Spread is exactly equal to the coupon rate, the Percent of Par will be 100%, and the contract is trading **at par**.

Generally, CCP's prefer to hold positions in Percent of Par terms, as profit/loss and valuation calculations are far more straightforward. As such, trades entered in Spread are often converted by the CCP into Percent of Par. Different tick rules may apply for Percent of Par (which are represented by TickRuleType = 0) and Spread. A new TickRuleType of Traded as Spread (basis point spread) (5) is necessary to convey this information.

Within derivatives markets, contracts may have rules for determining the price increment of trades, settlement, and final settlement, and all these can be different.

For example, a CME E-mini S&P 500 contract trades with a 0.25 tick. However, the E-mini settles daily at the S&P 500 contract's settlement price, which has a 0.10 tick. And when the contract reaches maturity, final settlement occurs at the price of the S&P 500 index, which itself has a 0.01 tick. Therefore:

For TickRuleType = Regular Trading (0), TickIncrement = 0.25, SettlPriceIncrement = 0.10, and SettlPriceSecondaryIncrement = 0.01

Note that the distinction of "Secondary" is left to bilateral agreement. In the example above, the exchange uses SettlPriceIncrement for daily settlement and SettlPriceSecondaryIncrement for final settlement.

Trading for derivatives may use different price increments if an order is entered as a spread. And the trading price increment does not necessarily equal the settlement price increment. Previously, TickIncrement held the trading price increment for spreads when TickRuleType = Traded as a spread leg (3), and TickIncrement held the settlement price increment for spreads when TickRuleType = Settled as a spread leg (4). This Gap Analysis proposes that TickRuleType = Settled as a spread leg (4) be deprecated. Instead, TickRuleType = Traded as a spread leg (3) will be used; TickIncrement will contain the trading price increment for spread legs, and SettlPriceIncrement will contain the settlement price increment for spread legs.

2.3 Negative Settlement Price Indicator

Some derivatives can settle with a negative price. Examples include spreads and swaps that trade at a differential, such as a soybean crush (soybeans vs. soybean meal and soybean oil) and a gasoline crack (gasoline vs. crude oil.) Calendar swaps likewise can settle at a negative price.

This Gap Analysis proposes indicating this via a new enumeration "Negative Settlement Price Eligibility" in the InstrAttribType(871) field. This field is part of the AttrbGrp component, which appears in the InstrumentExtension component. This attribute is considered Boolean; InstrAttribValue(872) is "Y" for products that can settle at a negative price, and "N" for products that cannot settle at a negative price.

Example:

A soybean crush consists of:

- Long 11 soybean meal contracts
- Long 9 soybean oil contracts
- Short 10 soybean contracts

It follows that if the price of 10 soybean contracts ever exceeds the price of 11 soybean meal contracts + 9 soybean oil contracts, then the value of the soybean crush must be negative.

2.4 Negative Strike Price Indicator

Options must settle at a price that is greater than or equal to 0, and, as such, options do not have a negative settlement price. However, if the underlying instrument can settle at a negative price, then the option series may support negative strike prices.

This Gap Analysis proposes indicating this via a new enumeration “Negative Strike Price Eligibility” in the InstrAttribType(871) field. This field is part of the AttrbGrp component, which appears in the InstrumentExtension component. This attribute is considered Boolean; InstrAttribValue(872) is “Y” for option series that support negative strike prices, and “N” for options series that cannot support negative strike prices.

Example:

A Dec-Dec corn spread consists of long 1 Dec 2011 contract and short 1 Dec 2012 contract. If Dec11 corn trades at \$6.94 / bushel and Dec12 corn trades at \$6.18 / bushel, the spread is worth \$0.76 / bushel. It follows that a \$0.70 call option on the spread would be in the money, and an \$0.80 call would be out of the money. And a \$0.70 put would be out of the money, while an \$0.80 put would be in the money.

Now if Dec12 corn trades higher, say, \$7.20 / bushel while Dec11 corn remains unchanged, then the value of the spread would be negative, e.g. -\$0.26 / bushel. If strike prices were limited to positive values, then every call option would be out of the money, and every put option would be in the money.

It follows that negative strike prices are necessary for such circumstances. In this example, a -\$0.30 call would be in the money, and a -\$0.20 call would be out of the money. A -\$0.30 put would be out of the money, and a -\$0.20 put would be in the money.

Exercising a -\$0.30 call would result in being long 1 Dec 11 corn, short 1 Dec 12 corn, with \$0.04 / bushel equity in the resulting position. Exercising a -\$0.20 put would result in being short 1 Dec 11 corn, long 1 Dec 12 corn, with \$0.06 / bushel equity in the resulting position.

3 Issues and Discussion Points

3.1 “Traded as” vs. “Settled as” TickRuleType

Questions were raised regarding the need for differentiating tick rules for trading and settlement. Specifically, the text in the component refers to “quoted and traded” and makes no reference to settlement.

Within derivatives markets, contracts may have different tick rules for determining the pricing of trades, settlement, and special (e.g. final) settlement, and these can be different.

For example, a CME E-mini S&P 500 contract trades with a 0.25 tick. However, the E-mini settles daily at the S&P 500 contract’s settlement price, which has a 0.10 tick. And when the contract reaches maturity, final settlement occurs at the price of the S&P 500 index, which itself has a 0.01 tick. Therefore:

- TickIncrement = 0.25 when TickRuleType = Regular Trading (0)
- TickIncrement = 0.10 when TickRuleType = Regular Settlement Price (TBD)
- TickIncrement = 0.01 when TickRuleType = Special Settlement Price (TBD)

It follows that a business need to differentiate these three types of tick rules clearly exists. However, updating the field definitions and component comments to reflect the expanded use for settlement may be warranted.

3.1.1 Proposed resolution: Concerns over approach and resolution

Concerns were voiced about using TickIncrement(1208) and TickRuleType(1209) for expressing settlement price increments. The Gap Analysis was approved for public comment at the November 17, 2011 GTC meeting, with the caveat that the GTC had not reached consensus on this issue.

Following the GTC meeting, the following compromise was suggested:

TickIncrement(1208) and TickRuleType(1209) would be used for trading only. TickRuleType(1209) = 4(="Settled as a spread leg") would be deprecated. A new TickRuleType(1209)=5(Traded as spread) to indicate a tick rule that applies to a spread. Instead Additionally, two fields would be added, SettlPriceIncrement(1830) and SettlPriceSecondaryIncrement(1831) to represent settlement price increments associated with a tick rule.

Example:

When TickRuleType(1209) = 5(Traded as spread):

- TickIncrement(1208) = 0.25
- SettlPriceIncrement(1830) = 0.10
- SettlPriceSecondaryIncrement(1831) = 0.01

3.2 Use of Spread for CDS

Questions were raised regarding use of the term Spread for CDS trading. In cash fixed income trading, spread pricing is a spread against a benchmark.

According to the Wikipedia article for Credit Default Swap:

The "spread" of a CDS is the annual amount the protection buyer must pay the protection seller over the length of the contract, expressed as a percentage of the notional amount. For example, if the CDS spread of Risky Corp is 50 basis points, or 0.5% (1 basis point = 0.01%), then an investor buying \$10 million worth of protection from AAA-Bank must pay the bank \$50,000 per year. These payments continue until either the CDS contract expires or Risky Corp defaults. Payments are usually made on a quarterly basis, in arrears.

4 Proposed Message Flow

This Gap Analysis makes no changes to existing message flows.

5 FIX component blocks

5.1 Component TickRules

To be completed at the time of the proposal	
Component Name	<i>TickRules</i>
Component Abbreviated Name (for FIXML)	<i>TickRules</i>
Component Type	<u>_X_</u> Block Repeating ___ Block
Category	
Component Synopsis	<u>The TickRules component specifies the rules for determining how a security ticks, i.e. the price increments at which it can be quoted, traded, and for certain cases settled, depending on the current price of the security..</u>
Component Elaboration	Unchanged.
To be finalized by FPL Technical Office	
Repository Component ID	

Component FIXML Abbreviation: <TickRules>					
Tag	FieldName	Req'd	Comments	Action	Mapping Usage and Comments
1205	NoTickRules	N	Number of tick rules. This block specifies the rules for determining how a security ticks, i.e. the price increments at which it can be quoted and traded, depending on the current price of the security.		Comments moved to Component synopsis.
→	1206 StartTickPriceRange	N	Required if NoTickRules(1205) > 0. Starting price range for specified tick increment		Conditional rule missing. Description duplicates definition
→	1207 EndTickPriceRange	N	Ending price range for the specified tick increment		Description duplicates definition
→	1208 TickIncrement	N	Tick increment for stated price range. Specifies the valid price increments at which a security can be quoted and traded		Description duplicates definition

→	1209	TickRuleType	N			<u>Description duplicates definition. Moved from below to be inline with Repository. o be consistent with guidelines that in general additions to a component should be placed at the end of the component. Also, SettlpriceIncrement fields are sparsely used in the TickRules components.</u>
→	1830	SettlPriceIncrement	N	Settlement price increment for stated price range.	NEW	<u>Description duplicates definition</u>
→	1831	SettlPriceSecondaryIncrement	N	Secondary settlement price increment for stated price range. The meaning of secondary is left to bilateral agreement, e.g. it may refer to final settlement for a contract.	NEW	<u>Description duplicates definition</u>
→	1209	TickRuleType	N	Specifies the type of tick rule which is being described		<u>Description duplicates definition</u>
</TickRules>						

Appendix A - Data Dictionary

Tag	Field Name	Action	Data type	Description	FIXML Abbreviation	Add to / Deprecate from Message type or Component block
865	EventType	CHANGE	int [Reserved 100Plus]	Code to represent the type of event Valid Values: 1 - Put 2 - Call 3 - Tender 4 - Sinking Fund-fund Callcall 5 - Activation 6 - Inactivation 7 - Last Eligible-eligible Trade-trade Datedate 8 - Swap Start-start Datedate 9 - Swap End-end Datedate 10 - Swap Roll-roll Datedate 11 - Swap Next-next Start-start Datedate 12 - Swap Next-next Roll-roll Datedate 13 - First Delivery-delivery Datedate 14 - Last Delivery-delivery Datedate 15 - Initial Inventory-inventory Due-due Datedate 16 - Final Inventory-inventory Due-due Datedate 17 - First Intent-intent Datedate 18 - Last Intent-intent Datedate 19 - Position Removal-removal Datedate 20 - Minimum notice 21 - Delivery start time 22 - Delivery end time Add New Values: 23 – First notice date Add Elaboration: The first day that a notice of intent to deliver a commodity can be made by a clearing house to a buyer in fulfillment of a given month's futures contract.	EventType	Updated existing enumerations to comply with guidelines

Tag	Field Name	Action	Data type	Description	FIXML Abbreviation	Add to / Deprecate from Message type or Component block
				<p><u>24 – Last notice date</u> Add elaboration: The last day on which a clearing house may inform an investor that a seller intends to make delivery of a commodity that the investor previously bought in a futures contract. The date is governed by the rules of different exchanges and clearing houses, but may also be stated in the futures contract itself. 99 - Other</p>		
871	InstrAttribType	CHANGE	int [Reserved 100Plus]	<p>Code to represent the type of instrument attribute</p> <p>Valid Values: 1 - Flat (securities pay interest on a current basis but are traded without interest) 2 - Zero coupon ... 8 - Coupon period (if not semi-annual)- Move following text to elaboration: Supply redemption date in the InstrAttribValue (872) field. ... 13 - Escrowed to redemption date - callable- Move following text to elaboration: Supply redemption date in the InstrAttribValue (872) field ... 20 - Original issue discount price- Move following text to elaboration: -Supply price in the InstrAttribValue (872) field 23 – Price tick rules for security- 24 – Trade type eligibility details for security- 25 – Instrument Denominatordenominator 26 – Instrument Numeratornumerator</p>	Typ	Update enumerations to comply with guidelines

Tag	Field Name	Action	Data type	Description	FIXML Abbreviation	Add to / Deprecate from Message type or Component block
				27 – Instrument Price-price Precision precision 28 – Instrument Strike-strike Price price 29 – Tradeable Indicator indicator 31 – Minimum Guaranteed-guaranteed Fill-fill Volume volume 32 - Minimum Guaranteed-guaranteed Fill-fill Status status 33 - Trade at Settlement-settlement (TAS) Eligibility eligibility 34 - Test Instrument instrument 35 - Dummy Instrument instrument 99 – Text Move to elaboration: . Supply the text of the attribute or disclaimer value in the InstrAttribValue (872) field . Add New Values: 36 – Negative settlement price eligibility 37 – Negative strike price eligibility		
1209	TickRuleType	CHANGE	int	Specifies the type of tick rule which is being described Valid Values: 0 - Regular Regular trading 1 - Variable Variable cabinet 2 - Fixed Fixed cabinet 3 - Traded as a spread leg 4 - Settled as a spread leg [Deprecate] 5- Traded as Spread-spread Add Elaboration: Elaboration: (basis points spread)	TickRuleTyp	Changes to existing enumerations were done not for quality improvements, but to clarify meaning as part of the review of this gap analysis.
1830	SettlPriceIncrement	NEW	Price	Settlement price increment for stated price range.	SettlPxIncr	Add to TickRules

Tag	Field Name	Action	Data type	Description	FIXML Abbreviation	Add to / Deprecate from Message type or Component block
1831	SettlPriceSecondaryIncrement	NEW	Price	Secondary settlement price increment for stated price range. The meaning of secondary is left to bilateral agreement, e.g. it may refer to final settlement for a contract.	SettlPxIncr2	Add to TickRules

Appendix B - Glossary Entries

Term	Definition	Field where used
First Notice Date	The first day that a notice of intent to deliver a commodity can be made by a clearing house to a buyer in fulfillment of a given month's futures contract.	EventType
Last Notice Date	The last day on which a clearing house may inform an investor that it a seller intends to make delivery of a commodity that the investor previously bought in a futures contract. The date is governed by the rules of different exchanges and clearing houses, but may also be stated in the futures contract itself. It occurs in the delivery month in which the contract expires.	EventType

Appendix C – Abbreviations

Term	Proposed Abbreviation	Proposed Messages, Components, Fields where used

Appendix D - Usage Examples