CFTC Part45 Entire Process

1. Complete List of CFTC Part 45 Report Fields

The CFTC Part 45 Transaction Report contains **128 fields** organized into the following categories:

Clearing Fields (1-12)

- 01 Cleared
- 02 Central Counterparty
- 03 Clearing Account Origin
- 04 Clearing Member
- 05 Clearing Swap USIs
- 06 Clearing Swap UTIs
- 07 Original Swap USI
- 08 Original Swap UTI
- 09 Original Swap SDR Identifier
- 10 Clearing Receipt Timestamp
- 11 Clearing Exceptions And Exemptions - Counterparty 1
- 12 Clearing Exceptions And Exemptions - Counterparty 2

Counterparty Fields (13-26)

- 13 Counterparty 1 (Reporting Counterparty)
- 14 Counterparty 2
- 15 Counterparty 2 Identifier Source
- 16 Counterparty 1 Financial Entity Indicator

- 17 Counterparty 2 Financial Entity Indicator
- 18 Buyer Identifier
- 19 Seller Identifier
- 20 Payer Identifier - Leg 1
- 21 Payer Identifier - Leg 2
- 22 Receiver Identifier - Leg 1
- 23 Receiver Identifier - Leg 2
- 24 Submitter Identifier
- 25 Counterparty 1 Federal Entity Indicator
- 26 Counterparty 2 Federal Entity Indicator

Common Data Fields (27-32)

- 27 Custom Basket Indicator
- 28 Action Type
- 29 Event Type
- 30 Amendment Indicator
- 31 Event Identifier
- 32 Event Timestamp

Notional and Quantity Fields (33-52)

- 33 Notional Amount - Leg 1
- 34 Notional Amount - Leg 2
- 35 Notional Currency - Leg 1
- 36 Notional Currency - Leg 2
- 37 Notional Amount Schedule - Leg 1
- 38 Notional Amount Schedule - Leg 2
- 39 Call Amount

- 40 Call Currency
- 41 Put Amount
- 42 Put Currency
- 43 Notional Quantity - Leg 1
- 44 Notional Quantity - Leg 2
- 45 Quantity Frequency - Leg 1
- 46 Quantity Frequency - Leg 2
- 47 Quantity Frequency Multiplier - Leg 1
- 48 Quantity Frequency Multiplier - Leg 2
- 49 Quantity Unit Of Measure - Leg 1
- 50 Quantity Unit Of Measure - Leg 2
- 51 Total Notional Quantity - Leg 1
- 52 Total Notional Quantity - Leg 2

Package Fields (53-60)

- 53 Package Indicator
- 54 Package Identifier
- 55 Package Transaction Price
- 56 Package Transaction Price Currency
- 57 Package Transaction Price Notation
- 58 Package Transaction Spread
- 59 Package Transaction Spread Currency
- 60 Package Transaction Spread Notation

Interest Rate Fields (61-79)

- 61 Fixed Rate Day Count Convention - Leg 1
- 62 Fixed Rate Day Count Convention - Leg 2

- 63 Floating Rate Day Count Convention - Leg 1
- 64 Floating Rate Day Count Convention - Leg 2
- 65 Fixing Date - Leg 1
- 66 Fixing Date - Leg 2
- 67-79 Various rate reset and payment frequency fields

Price and Valuation Fields (80-94)

- 80 Exchange Rate - Leg 1
- 81 Exchange Rate Basis
- 82 Fixed Rate - Leg 1
- 83 Fixed Rate - Leg 2
- 84 Post-priced Swap Indicator
- 85 Price
- 86 Price Currency
- 87 Price Notation
- 88 Price Unit Of Measure
- 89-94 Spread-related fields

Option Fields (95-101)

- 95 Strike Price
- 96 Strike Price Currency
- 97 Strike Price Notation
- 98 Option Premium Amount
- 99 Option Premium Currency
- 100 Option Premium Payment Date
- 101 First Exercise Date

Credit and Index Fields (102-105)

- 102 CDS Index Attachment Point
- 103 CDS Index Detachment Point
- 104 Index Factor
- 105 Embedded Option Type

Product and Settlement Fields (106-111)

- 106 Unique Product Identifier
- 107 Final Contractual Settlement Date
- 108-111 Settlement currency and location fields

Transaction Fields (112-120)

- 112 Allocation Indicator
- 113 Non-Standardized Term Indicator
- 114 Block Trade Election Indicator
- 115 Effective Date
- 116 Expiration Date
- 117 Execution Timestamp
- 118 Reporting Timestamp
- 119 Platform Identifier
- 120 Prime Brokerage Transaction Indicator

Identifier Fields (121-124)

- 121 Prior USI
- 122 Prior UTI
- 123 Unique Swap Identifier (USI)
- 124 Unique Transaction Identifier (UTI)

Reporting Fields (125-128)

- 125 Jurisdiction
- 126 New SDR Identifier
- 127 Initial Margin Collateral Portfolio Code
- 128 Variation Margin Collateral Portfolio Code

2. Where to Find This Information in DRR Workspace

The CFTC Part 45 field information is located in these key files in DRR workspace:

Primary Definition Files:

1. `rosetta-source/src/main/rosetta/regulation-cftc-rewrite-type.rosetta` (lines 813-1262)
   - Contains the complete `CFTCPart45TransactionReport` type definition
   - Lists all 128+ field names with their data types and cardinalities
2. `rosetta-source/src/main/rosetta/regulation-cftc-rewrite-rule.rosetta`
   - Contains all the reporting rules that map from CDM business events to CFTC fields
   - Each rule includes regulatory references to the official CFTC documentation
   - Shows the exact data element numbers (e.g., "01 Cleared", "02 Central Counterparty")

Implementation Files:

1. `examples/src/main/java/com/regnosys/drr/examples/CFTCPart45ExampleReport.java`
   - Shows how to generate CFTC Part 45 reports from ReportableEvents
   - Demonstrates the API usage
2. `examples/src/main/java/com/regnosys/drr/examples/CreateReportableEventAndRunReportExample.java` (your current file)
   - Shows end-to-end example of creating reports

Test Data and Configuration:

1. `rosetta-source/src/main/resources/regulatory-reporting/input/`
   - Contains sample input data for testing
2. `rosetta-source/src/main/resources/regulatory-reporting/output/`
   - Contains sample output reports

Generated Java Classes:

The Rosetta definitions generate Java classes that you can find in:

- `rosetta-source/src/generated/` (after building)
- Look for `drr.regulation.cftc.rewrite.CFTCPart45TransactionReport.java`

Key Path to Remember:

```
📁 rosetta-source/src/main/rosetta/
├── regulation-cftc-rewrite-type.rosetta    ← Field definitions
└── regulation-cftc-rewrite-rule.rosetta   ← Field mapping rules
```

These files contain the authoritative source for all CFTC Part 45 fields and their mapping rules, complete with regulatory references to the official CFTC documentation.

CFTC Part 45 JSON Output Structure

The CFTC Part 45 outgoing message is structured as a **single JSON object** with a flat structure containing all the regulatory fields. Here's the complete structure:

JSON Structure Overview

```
{
  // Core Transaction Fields
  "actionType": "NEWT|MODI|CORR|TERM|EROR|VALU|MARU|PRTO|COLC",
  "eventType": "TRAD|CLRG|NOVA|COMP|EXER|etc",
  "eventTimestamp": "2018-04-01T14:15:36Z",
  "executionTimestamp": "2018-04-01T14:15:36Z",
  "reportingTimestamp": "2024-04-29T00:00:00Z",
```

```
// Clearing Information
"cleared": "Y|N|I",
"centralCounterparty": "LEI_identifier",
"clearingAccountOrigin": "HOUS|CLIE",
"clearingMember": "LEI_identifier",

// Counterparty Information
"counterparty1": "LEI_identifier",
"counterparty2": "LEI_identifier",
"counterparty2IdentifierSource": "LEID",
"counterparty1FinancialEntityIndicator": true|false,
"counterparty2FinancialEntityIndicator": true|false,
"counterparty1FederalEntityIndicator": true|false,
"counterparty2FederalEntityIndicator": true|false,
"submitterIdentifier": "LEI_identifier",

// Product and Trade Details
"notionalAmountLeg1": 10000000.0,
"notionalAmountLeg2": 10000000.0,
"notionalCurrencyLeg1": "USD",
"notionalCurrencyLeg2": "USD",
"effectiveDate": "2018-04-03",
"expirationDate": "2026-02-08",
"finalContractualSettlementDate": "2026-02-08",

// Identifiers
"uniqueSwapIdentifier": "USI_value",
"uniqueTransactionIdentifier": "UTI_value",
"eventIdentifier": "event_id",
"jurisdiction": "MIXX|CFTC|etc",

// Additional Fields based on product type
"fixedRateLeg1": 0.0253,
"fixedRateDayCountConventionLeg1": "A011",
"floatingRateDayCountConventionLeg2": "A004",
```

```
  // Boolean Indicators
  "customBasketIndicator": false,
  "blockTradeElectionIndicator": false,
  "packageIndicator": false,
  "postPricedSwapIndicator": false,
  "nonStandardizedTermIndicator": false,
  "primeBrokerageTransactionIndicator": false,

  // DRR Specific Fields
  "cftcGuidebook": {
    "assetClass": "InterestRate|Credit|Equity|ForeignExchange|Commodity",
    "messageType": "Trade State",
    "physicalCommodityIndicator": false,
    "sefOrDcmIndicator": true,
    "sefOrDcmAnonymousExecutionIndicator": false,
    "mandatoryClearingIndicator": false,
    "largeNotionalOffFacilitySwapElectionIndicator": false
  },

  // Non-reportable metadata
  "nonReportable": {
    "counterparty1Format": "Lei",
    "counterparty2Format": "Lei",
    "buyerIdentifierFormat": "Lei",
    "sellerIdentifierFormat": "Lei"
  },

  // Not yet modeled fields
  "initialMarginCollateralPortfolioCode": "Not Modelled",
  "variationMarginCollateralPortfolioCode": "Not Modelled",
  "newSDRIdentifier": "Not Modelled"
}
```

Key Characteristics of the JSON Structure:

1. **Flat Structure**: All 128+ CFTC fields are at the root level of the JSON object
2. **Field Naming**: Uses camelCase (e.g., `counterparty1`, `notionalAmountLeg1`)
3. **Data Types**:
    - Strings for identifiers and codes
    - Numbers for amounts and rates
    - Booleans for indicators
    - ISO dates for date fields
    - ISO timestamps for datetime fields
4. **Conditional Fields**: Many fields are only populated based on:
    - Product type (e.g., option fields only for options)
    - Asset class (e.g., commodity fields only for commodities)
    - Clearing status (e.g., clearing fields only when cleared)
5. **Special Objects**:
    - `cftcGuidebook`: Contains DRR-specific metadata about the trade
    - `nonReportable`: Contains formatting information for validation
    - Arrays for repeatable fields (e.g., `clearingSwapUTIs`, `otherPayment`)

Real Example from Your Workspace:

Here's an actual CFTC Part 45 JSON from your test data:


```
{
  "actionType": "NEWT",
  "allocationIndicator": "UNAL",
  "blockTradeElectionIndicator": false,
  "cleared": "N",
  "counterparty1": "DUMMY0000000000LEI01",
  "counterparty1FederalEntityIndicator": false,
  "counterparty1FinancialEntityIndicator": false,
  "counterparty2": "DUMMY0000000000LEI02",
```

```
"counterparty2FederalEntityIndicator": false,
"counterparty2FinancialEntityIndicator": false,
"counterparty2IdentifierSource": "LEID",
"customBasketIndicator": false,
"effectiveDate": "2018-04-03",
"eventIdentifier": "SEF123",
"eventTimestamp": "2018-04-01T14:15:36Z",
"eventType": "TRAD",
"executionTimestamp": "2018-04-01T14:15:36Z",
"expirationDate": "2026-02-08",
"finalContractualSettlementDate": "2026-02-08",
"fixedRateDayCountConventionLeg1": "A011",
"fixedRateLeg1": 0.0253,
"fixedRatePaymentFrequencyPeriodLeg1": "MNTH",
"fixedRatePaymentFrequencyPeriodMultiplierLeg1": 6,
"floatingRateDayCountConventionLeg2": "A004",
"floatingRatePaymentFrequencyPeriodLeg2": "MNTH",
"floatingRatePaymentFrequencyPeriodMultiplierLeg2": 3,
"floatingRateResetFrequencyPeriodLeg2": "MNTH",
"floatingRateResetFrequencyPeriodMultiplierLeg2": 3,
"initialMarginCollateralPortfolioCode": "Not Modelled",
"jurisdiction": "MIXX",
"newSDRIdentifier": "Not Modelled",
"notionalAmountLeg1": 10000000,
"notionalAmountLeg2": 10000000,
"notionalCurrencyLeg1": "USD",
"notionalCurrencyLeg2": "USD",
"packageIndicator": false,
"postPricedSwapIndicator": false,
"primeBrokerageTransactionIndicator": false,
"reportingTimestamp": "2024-04-29T00:00:00Z",
"submitterIdentifier": "DUMMY0000000000LEI01",
"uniqueSwapIdentifier": "DEMO6543210987654321",
"variationMarginCollateralPortfolioCode": "Not Modelled",
"cftcGuidebook": {
  "assetClass": "InterestRate",
```

```
    "largeNotionalOffFacilitySwapElectionIndicator": false,
    "mandatoryClearingIndicator": false,
    "messageType": "Trade State",
    "physicalCommodityIndicator": false,
    "sefOrDcmAnonymousExecutionIndicator": false,
    "sefOrDcmIndicator": true
  }
}
```

How It's Generated:

1. **Input**: CDM `ReportableEvent` + `ReportingSide`
2. **Processing**: DRR applies all the reporting rules from `regulation-cftc-rewrite-rule.rosetta`
3. **Output**: `CFTCPart45TransactionReport` object
4. **Serialization**: Jackson serializes to pretty-printed JSON using `RosettaObjectMapper`

The JSON output is ready to be sent to CFTC-registered Swap Data Repositories (SDRs) for regulatory reporting compliance.

CFTC Part 45 Mandatory Fields by Category

🔴 ALWAYS MANDATORY (All Asset Classes, All Events, All Products)

Core Transaction Fields:

- `cleared` (1..1) - Y/N/I (Yes/No/Intent to clear)
- `counterparty1` (1..1) - Reporting counterparty identifier
- `counterparty2` (1..1) - Non-reporting counterparty identifier
- `counterparty2IdentifierSource` (1..1) - Source of counterparty 2 ID
- `counterparty2FinancialEntityIndicator` (1..1) - Boolean
- `submitterIdentifier` (1..1) - LEI of submitter
- `counterparty1FederalEntityIndicator` (1..1) - Boolean

- `counterparty2FederalEntityIndicator` (1..1) - Boolean
- `customBasketIndicator` (1..1) - Boolean
- `actionType` (1..1) - NEWT/MODI/CORR/TERM/EROR/VALU/MARU/PRTO
- `eventTimestamp` (1..1) - Date/time of event
- `packageIndicator` (1..1) - Boolean
- `postPricedSwapIndicator` (1..1) - Boolean
- `allocationIndicator` (1..1) - UNAL/PRAL/POAL
- `blockTradeElectionIndicator` (1..1) - Boolean
- `effectiveDate` (1..1) - Trade effective date
- `executionTimestamp` (1..1) - Date/time of execution
- `reportingTimestamp` (1..1) - Date/time of report submission
- `jurisdiction` (1..1) - Reporting jurisdiction
- `cftcGuidebook` (1..1) - DRR metadata object

🟡 CONDITIONALLY MANDATORY (Based on Asset Class)

📊 INTEREST RATE Products

Mandatory Fields:

- **Day Count Convention:** `fixedRateDayCountConventionLeg1` OR `floatingRateDayCountConventionLeg1` (AND same for Leg2)
- **Rate Information:** `fixedRateLeg1/2` OR `spreadLeg1/2` (if not post-priced and not option)
- **Payment Frequency**: Required for swaps (when UPI available)

💳 CREDIT Products

Mandatory Fields:

- **Day Count Convention:** `fixedRateDayCountConventionLeg1` OR `floatingRateDayCountConventionLeg1` (AND same for Leg2)

- **Rate Information**: At least one of:
  - `fixedRateLeg1/2` OR
  - `spreadLeg1/2` OR
  - `otherPayment` with type "UFRO"
- **Payment Frequency**: Mandatory for all credit products

🌍 FOREIGN EXCHANGE Products

Mandatory Fields:

- `exchangeRateLeg1` - Exchange rate
- `exchangeRateBasis` - Currency pair notation (e.g., "USD/EUR")
- **Optional**: Day count conventions

📈 EQUITY Products

Mandatory Fields:

- `quantityUnitOfMeasureLeg1` OR `quantityUnitOfMeasureLeg2` - Unit of measure
- `totalNotionalQuantityLeg1` OR `totalNotionalQuantityLeg2` - Total quantity
- **Price Information:** `price` OR `spreadLeg1/2` (if not post-priced and not option)

🛢️ COMMODITY Products

Mandatory Fields:

- `quantityUnitOfMeasureLeg1` OR `quantityUnitOfMeasureLeg2` - Unit of measure
- `totalNotionalQuantityLeg1` OR `totalNotionalQuantityLeg2` - Total quantity
- `physicalCommodityIndicator` - Boolean (mandatory in guidebook)
- **If Quantity Used**:
  - `quantityFrequencyLeg1/2` (conditional on notional quantity)
  - `quantityFrequencyMultiplierLeg1/2` (if frequency ≠ ONDE/ADHO)
- **Price Information:** `price` OR `fixedRateLeg1/2` OR `spreadLeg1/2`

🟠 CONDITIONALLY MANDATORY (Based on Product Type)

🎯 OPTIONS (All Asset Classes)

When `optionStyle` exists:

- `callAmount` OR `putAmount` - At least one required
- `callCurrency` (if callAmount populated)
- `putCurrency` (if putAmount populated)
- `strikePrice` (if not post-priced)
- `strikePriceNotation` (if strike price populated)
- `strikePriceCurrency` (if strike price notation = "1")
- `optionPremiumAmount` - Mandatory
- `optionPremiumCurrency` (if premium amount > 0)
- `firstExerciseDate`

🔵 CONDITIONALLY MANDATORY (Based on Clearing Status)

✅ CLEARED TRADES (`cleared` = "Y")

- `centralCounterparty` - Must match counterparty1
- `clearingAccountOrigin` - HOUS/CLIE
- `clearingMember` - LEI identifier

🔄 CLEARING EVENTS (`eventType` = "CLRG")

- `clearingSwapUSIs` OR `clearingSwapUTIs` (one required)
- `originalSwapSDRIdentifier`
- `clearingReceiptTimestamp`
- For NEWT+CLRG: `originalSwapUSI` OR `originalSwapUTI`

❌ UNCLEARED TRADES (`cleared` = "N" or "I")

- `counterparty1FinancialEntityIndicator` - Required

- **Direction Fields**: Either:
  - `buyerIdentifier` AND `sellerIdentifier` OR
  - `payerIdentifierLeg1/2` AND `receiverIdentifierLeg1/2`

🟣 CONDITIONALLY MANDATORY (Based on Event Type)

📝 MODIFICATIONS (`actionType` = "MODI")

- `amendmentIndicator` - Must be populated

🔄 EVENTS (COMP/CREV)

- `eventIdentifier` - Required for compression/credit events

📦 PACKAGES (`packageIndicator` = true)

- `packageIdentifier` - Required
- `packageTransactionPrice` OR `packageTransactionSpread` - One required
- Related currency/notation fields as needed

📋 SUMMARY BY ASSET CLASS

Asset Class	Always Required	Conditional Requirements
Interest Rate	Core fields	Day count conventions, Fixed/Floating rates
Credit	Core fields	Day count conventions, Rates/Spreads, Payment frequency
FX	Core fields	Exchange rate, Exchange rate basis
Equity	Core fields	Quantity units, Total quantity, Price/Spreads
Commodity	Core fields	Quantity units, Total quantity, Physical indicator, Price/Rates

📍 Key Validation Rules

1. **Event Timestamp** ≥ Execution Timestamp
2. **Counterparty Identifiers** must be valid LEI format

3. **Currency Dependencies**: Currency required when notation = "1"
4. **Mutually Exclusive**: Can't have both Buyer/Seller AND Payer/Receiver
5. **Asset Class Restrictions**: Many fields only apply to specific asset classes

The DRR automatically handles these validation rules and will populate only the appropriate fields based on your CDM Business Event input, ensuring regulatory compliance across all scenarios.