

T7 Release 8.0

Derivatives and Cash Markets

Participant Simulation Guide

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Abstract

This document describes the timeline, new and changed features as well as Simulation focus days for the T7 Release 8.0 Simulation. Trading participants should use this document to plan and prepare their T7 Release 8.0 Simulation participation. This document should be read alongside the **T7 RELEASE 8.0 RELEASE NOTES**, all required technical interface descriptions, the regular **SIMULATION CALENDAR** and the regularly updated **IMPLEMENTATION NEWS** either on www.eurexchange.com > Technology for the derivatives market or on www.xetra.com > Technology for the cash market.

Keywords

T7 Enhanced Trading Interface, T7 Enhanced Market Data Interface, T7 Enhanced Order Book Interface, T7 Extended Market Data Service, T7 Reference Data Interface, T7 FIX Gateway, Common Report Engine, T7 Trader GUI, T7 Admin GUI, T7 Trade Entry Services

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1. Definitions and Abbreviations

Term	Explanation
BTRF	Basket Total Return Futures
CCP	Central Counter Party
CEF®	Deutsche Börse Group Real Time Data Feed
CRE	Common Report Engine
DBAG	Deutsche Börse AG
EEX	European Energy Exchange
EMDI	T7 Enhanced Market Data Interface (non-netted)
EMDS	T7 Extended Market Data Service
EOBI	T7 Enhanced Order Book Interface
ETI	T7 Enhanced Trading Interface
ETRF	Equity Total Return Futures
Eurex EnLight	Eurex EnLight is a price discovery service offered on the T7 platform to negotiate off-book transactions electronically
FIX	Financial Information eXchange protocol
FIXML	Financial Information Exchange Mark-up Language
FWB	Frankfurter Wertpapierbörse
GMC	Middleware Cluster for T7 Trader GUI, T7 Admin GUI, T7 Clearer GUI
GTC	Good-Till-Cancel
GUI	Graphical User Interface
IPS	Inter-Product Spreads
ISV	Independent Software Vendor
LF	Low Frequency
MDI	T7 Market Data Interface (netted)
MiFID II	Markets in Financial Instruments Directive
MiFIR	Markets in Financial Instruments Regulation
PS	Partition Specific
RDI	Reference Data Interface
RfQ	Request for Quotes
RDF	Reference Data File
TES	T7 Entry Services
T7	T7 trading system developed by Deutsche Börse Group

Term	Explanation
BTRF	Basket Total Return Futures
Xetra EnLight	With Xetra EnLight, Frankfurt Stock Exchange offers for the first time an on-exchange request-for-quote functionality for off-book trading in the cash market

2. Simulation Overview

2.1 Introduction

The purpose of T7 Release 8.0 Simulation is to provide an opportunity for participants and ISVs to become familiar with the new and enhanced functional and technical setup and features of T7 Release 8.0 and to prepare for production.

The key objectives of the T7 Release 8.0 Simulation:

- Provide high quality information and Simulation to support participant and ISV readiness.
- Familiarize participants with the new trading services functionality.
- Early identification of issues both from the Exchange and from the participants' side to minimize risk of T7 Release 8.0 launch and production operation.

The simulation period for T7 Release 8.0 is planned to start on 9 September 2019.

In addition to the T7 Release Simulation, Deutsche Börse AG offers a T7 Release 8.0 Cloud Simulation to allow trading participants and Independent Software Vendors (ISVs) to test against the current T7 production and Simulation software versions. In the Cloud Simulation, participants can initiate predefined market scenarios and test specific strategies more easily than in a shared environment. The Cloud Simulation is available around the clock for a fixed price per hour and started on 12 August 2019.

The production launch date for T7 Release 8.0 is planned for 18 November 2019.

The exchange offers several dedicated focus days during the Simulation phase to help participants become accustomed to new or changed features of T7. On those days, which are marked in the Simulation calendar, special testing scenarios will be provided. This document describes the different test scenarios for the T7 Simulation.

A description of the new/changed functionality and technical enhancements is communicated to the participants in the form of two T7 Release 8.0 Release Notes documents, directed at the Eurex- and Xetra customer base respectively:

Eurex:

[Eurexchange.com](#) > [Technology](#) > [T7 Trading Architecture](#) > [System documentation](#) > [Release 8.0](#) > [Overview and Functionality](#) > [T7 8.0 Release Notes](#)

Xetra:

[Xetra.com](#) > [Technology](#) > [T7 Trading Architecture](#) > [System documentation](#) > [Release 8.0](#) > [Overview and Functionality](#) > [T7 8.0 Release Notes](#)

2.2 Migration of Börse Frankfurt and Börse Frankfurt Zertifikate (XFRA) to T7

In order to ease the big bang migration of the trading venue Börse Frankfurt (i.e. including Börse Frankfurt Zertifikate, XFRA) to T7 on 9 March 2020, the dedicated production environment will be made available to participants starting 28 October 2019 as a pre-production environment. This will allow participants to set up and test their T7 Börse Frankfurt applications in a production like way, i.e. in the same way they will use them in production later.

The pre-production phase will continue until 28 February 2020 and with the migration in March 2020, the pre-production environment will become the production environment for T7 Börse Frankfurt. In order to offer participants the possibility to continue to test the T7 Börse Frankfurt applications, the dedicated simulation environment of T7 Börse Frankfurt will start on 17 February 2020.

Please note:

Besides the existing trading model 'Continuous Trading', T7 8.0 Release Simulation will offer trading model 'Continuous Auction' on the trading venue XETR to enable participants to early simulate with XFRA instruments and setups within the XETR simulation.

20 instruments per specialist / vendor will be available from 18 September 2019 in the T7 8.0 Release Simulation. The information will be available via the reference data interface, in the reference data file as well as in the 'All Tradable Instruments' file, available on the public website www.xetra.com. The respective instruments can be filtered using the 'Specialist' field.

The instruments will be tradable in the T7 8.0 Release Simulation until 5 November 2019. Subsequently, the tests for the trading model continuous auction should be continued in T7 8.0 Pre-Production.

DBAG will act as a specialist and enter matching quotes on request for the instruments mentioned in chapter [2.9.3](#)

Please contact the 'Functional Helpdesk Xetra' for your requests (contact details are listed in [10.1.3](#)).

2.3 Note on Interfaces

T7 Release 8.0 is a mandatory release and will **not** be backwards compatible to version 7.1. All interface versions of 7.1 will no longer be supported with the production launch of T7 Release 8.0.

2.4 Further Information

Please note and be aware of the following T7 Release 8.0 simulation condition:

The T7 Release Simulation is a shared Simulation environment with the purpose of providing participants the opportunity to test functional enhancements for the forthcoming T7 Release. Following a release, the environment will be available with the current software for further testing of all T7 related functionality. The T7 Simulation is not designed for very extensive or even performance testing. Participants who would like to test scenarios involving an unusually large amount of order and quote transactions and/or trades shall contact their TKAM. The TKAM will ask for the purpose of the test and a detailed description of the participants test scenario (including number of expected orders, quotes and trades). The TKAM together with the participant will evaluate the request and attempt to find a solution which can realistically be provided together with a potential date and time for the execution.

2.5 Intended audience

This document serves as the guide for all Simulation participants, i.e. current and future users of the T7 system. In particular, the following participants will be involved in the Simulation:

- Exchange trading participants
- ISVs (Front, Middle and Back office)

In order to achieve a common understanding of the responsibilities and tasks, the distribution of this Simulation Guide to the appropriate project teams and line organizations is recommended as soon as possible. All parties involved, e.g. central coordinators, system administrators, traders and ISV representatives, should be aware of their tasks before the start of the Simulation.

2.6 Timeline

Deutsche Börse AG is planning to launch Release 8.0 of T7 on 18 November 2019.

The following timeline gives an overview of the introduction schedule:

T7 8.0 Cloud Simulation Start	12 August 2019	T7 Simulation
T7 7.1 Simulation last batch	22 August 2019	T7 Simulation
T7 8.0 Simulation software installation and conversion	23 August - 6 September 2019	T7 Simulation
T7 8.0 Simulation execution	9 September 2019 - 17 November	T7 Simulation

	2019	
T7/FX 8.0 Simulation execution	9 September 2019 - 17 November 2019	T7 Simulation
Market model <i>continuous auction</i> on T7 8.0 Simulation	18 September - 5 November 2019	T7 Simulation
T7 8.0 Börse Frankfurt Pre-Production execution	28 October 2019 - 28 February 2020	T7 Börse Frankfurt Pre-Production
T7 8.0 Connection Test	16 November 2019	T7 Production
T7 8.0 Production Launch	18 November 2019	T7 Production
T7/FX 8.0 Production Launch	18 November 2019	T7 Production
T7 8.0 Börse Frankfurt Simulation Start	17 February 2020	T7 Börse Frankfurt Simulation
T7 8.0 Börse Frankfurt Production Migration	1 March - 8 March 2020	T7 Börse Frankfurt Production
T7 8.0 Börse Frankfurt Production Launch	9 March 2020	T7 Börse Frankfurt Production

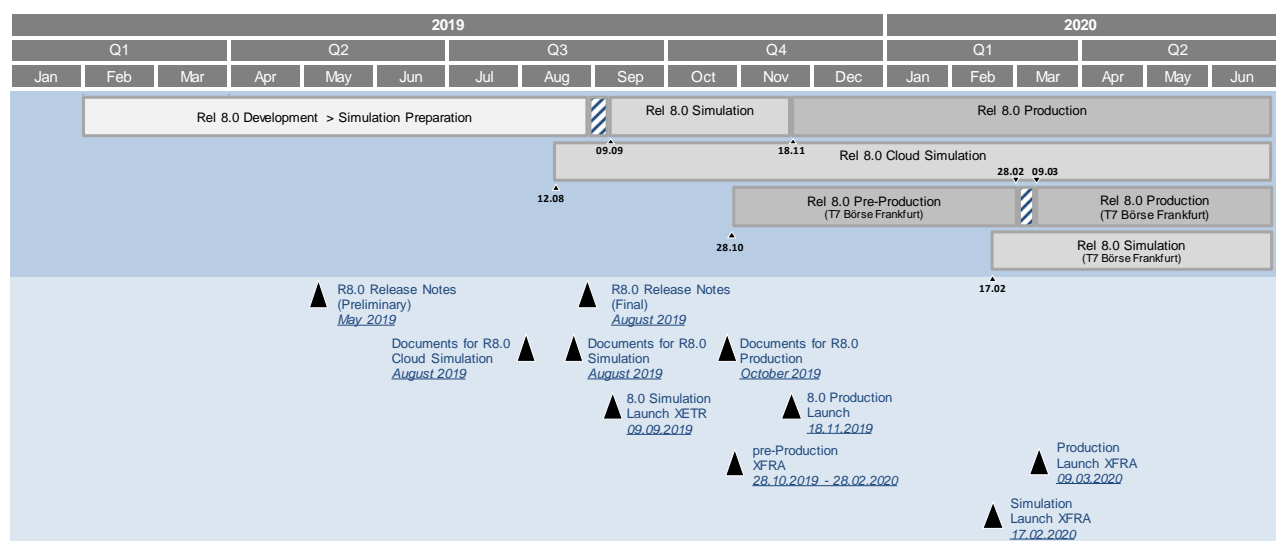


Figure 1: T7 Release 8.0 document publication and introduction timeline

2.7 T7 Cloud Simulation

In addition to T7's Release Simulation participants can also use the T7 Cloud Simulation which allows trading participants and ISVs to test against the current T7 production and Simulation software version. In this environment participants can initiate predefined market scenarios and test specific strategies more easily than in a shared environment. The T7 Cloud Simulation is available 24/7 for a fixed price per hour and is accessible using an SSL-encrypted internet connection. The T7 Cloud Simulation will make a pre-Simulation available for early adopters from 12 August 2019.

Please note: The T7 Cloud Simulation does not offer Specialist functionality in the continuous auction model

For more information on the T7 Cloud Simulation please refer to:

www.eurexchange.com -> Technology -> Eurex T7 Cloud Simulation

www.xetra.com -> Technology -> T7 Trading Architecture -> Cloud Simulation

2.8 Simulation Calendar

The Simulation Calendar for the derivatives market is available under the following path:

www.eurexchange.com -> Technology -> Simulation Calendar

Whereas the Simulation Calendar for the cash market can be found on the following link:

www.xetra.com -> Trading -> Trading calendar and trading hours

2.8.1 Guiding principles for Simulation calendar

- The Simulation will be set up and run from both a functional and technical perspective as production-like as possible to help simulate business processes under realistic conditions. In order to provide a production-like system environment, the different T7 components will be set up as an integrated Simulation environment. Nevertheless, system availability and technical performance will be scaled to Simulation requirements and will differ from production.
- T7 Release 7.1 permanent Simulation will terminate with the end of day processing on 22 August 2019. The T7 Simulation will not be available for participants and ISVs from 23 August 2019 to 6 September 2019 in order to prepare the T7 Release 8.0 Simulation. Participants are encouraged to use the T7 Cloud Simulation for testing purposes during this period.
- The T7 Release 8.0 Simulation is planned to start on 9 September 2019 and will last until 17 November 2019. All functional and technical preparations should be completed before the start of the Simulation.
- On batch days, calendar days correspond to actual business days. The following days until the next batch day have the business date of this forthcoming batch day. Here several calendar days (with 24 hours trading availability) constitute one business day.

- Weekends are generally open for Simulation, but no technical and functional support will be available.
- In order to provide those participants and ISVs not located in a European time zone with the maximum possible access to the Simulation environment, it is envisaged that the T7 Release 8.0 Simulation back-end systems and network will be re-opened as soon as the batch has been successfully completed.
- Quarterly and monthly last trading/maturity & expiration dates for standard products are planned throughout the T7 Release 8.0 Simulation. Details are listed in the Simulation Calendar.

2.9 Liquidity for selected products in the Simulation environment

2.9.1 Derivatives Market: Liquidity (bid/ask prices)

Liquidity (bid/ask prices) will be provided on each trading day throughout T7 Release 8.0 Simulation in the following products:

Options

- OESX and ALV: only best bid, best ask
- ODAX, OGBL, OGBM and DB1: only best bid and best ask
- OKS2: only best bid, best ask

Futures

- FGBL: Bid and ask prices with an order book depth up to 20
- FESX: Bid and ask prices with an order book depth up to 20
- EVAR: only best bid, best ask

Futures Calendar Spread Orders

- FESX: Bid and ask prices with an order book depth up to 20
- FGBL: Bid and ask prices with an order book depth up to 20

2.9.2 Cash Market: Liquidity (bid/ask prices)

For the duration of the member Release Simulation, the liquidity (bid / ask quantities in the order book) will be provided via automated scripts for the following instruments.

Instruments in XETR with liquidity providing scripts

- LU0937835576 (Bid and ask prices with an order book depth level up to 3)
- LU1306625283 (Bid and ask prices with an order book depth level up to 3)
- DE000A1E0HR8 (Bid and ask prices with an order book depth level up to 3)
- DE0005140008 (Bid and ask prices with an order book depth level up to 3)
- DE0005557508 (Bid and ask prices with an order book depth level up to 3)

ICEBERG

- AT0000730007 (Bid and ask prices with an order book depth level up to 3)
- DE0005200000 (Bid and ask prices with an order book depth level up to 3)

VDO

- AT0000730007 (Single bid VDO order)
- DE0005200000 (Single ask VDO order)

2.9.3 Cash Market/Börse Frankfurt: Matching quotes for selected instruments:

DBAG will act as a specialist and enter matching quotes on request for the following instruments. Please contact the Functional Helpdesk Xetra for your requests (contact details are listed in [10.1.3](#)).

#	ISIN	Instrument
1	DE0001142693	BUNDANL. KPS 4.1.36
2	DE0001102408	BUNDANL.V.16/26
3	DE0001104743	BUND SCHATZANW. 18/20
4	XS0205545840	ARGENTINA 05/33 DISC
5	XS0553728709	DT.TELEK.INTL F.10/30 MTN
6	SE0002829192	SWEDEN 09-39 1053
7	AU000000AUZ8	AUSTRALIAN MINES LTD.
8	CA25260V1031	DIAMOND FIELDS RES
9	USY384721251	HYUNDAI MOT.0,5N.VTG GDRS
10	AT00000VIE62	FLUGHAFEN WIEN AG
11	DE0007018509	WINDHOFF AG O.N.
12	DE000A1E8G88	VIVANCO GRUPPE AG
13	AU0000XCLWV6	AUSTRALIA 2030 CI
14	DE000DZ42N68	Memory Express GOB 17/22
15	DE000DF1TE75	DZ Bank ITV. 19/20CBK
16	DE000TR6P7K9	MINIL O.END BOEING
17	DE000VF1D5N7	VONTOBEL FI.ANL.19/20SIE
18	XS2028085731	CS INT. CALL26
19	DE000HVB3LY4	UC-HVB INDPRO 24 S500
20	DE000GB09C75	MINIL O.END NASD100 7375

3. Functional Enhancements – Derivatives Markets

The following new features and enhancements will be introduced with T7 Release 8.0:

- Enhancements to Options Volatility Strategies and Standard Options Strategies.
- Further Enhancements to Basket Trading of Equity Total Return Futures.
- Eurex E13nLight Straight-Through-Processing.
- Split Snapshot Cycles in MDI.

3.1 Enhancements to Standard Options Strategies and Options Volatility Strategies

Eurex introduces new ratios and combinations of Standard Options Strategies and Options Volatility Strategies with Release 8.0.

Various subtypes of Options Volatility Strategies and Standard Options Strategies are currently defined using a fixed rule for strike prices, thus defining a price gap strictly equal to a previous gap, although more freedom is sometimes desired. Eurex will relax equidistant price constraints for all strategies affected – this includes Butterflies, Condors and Ladders that will subsequently allow more flexibility in terms of individual strike price definition.

Eurex will further streamline strategy setup as well as long / short naming convention to allow for uniform adaption and distinct strategy differentiation. Therefore, some strategies will be duplicated with new names and definition (buy/sell) for a transitional period (i.e. Ratio Put/Call Spreads) to eliminate inconsistencies in the current setup.

3.2 Further Enhancements to ETRF and Basket Trading

The following enhancements for the trading of Equity Total Return Futures (ETFs) and Basket Total Return Futures (BTRFs) are introduced.

3.2.1 Introduction of Profiles for BTRF

For BTRF trading, the full support of registered BTRF Profiles will be added in ETI. It will be mandatory to use a registered BTRF Profile when entering a BTRF. However, note that T7 will not validate if the entered BTRF fits the profile definition.

3.2.2 New TES Basket Position View

Current start of day basket positions will be displayed in the TES Basket Position view of the T7 Trader GUI. Amendment operations can be triggered by selecting a row and thus opening a pre-filled TES Entry view.

3.2.3 Handling of Obsolete Products in Buckets

A BTRF Bucket defines the set of eligible products. The instruments of those products can be put together to form a BTRF. If the exchange removes a product from a BTRF Bucket, its instruments can no longer be used as components of a BTRF that is related to that bucket. But in order to allow the closing of existing BTRF positions in such instruments, it is still possible to add position reducing trades in basket amendment operations, provided they are flagged accordingly by setting the EffectOnBasket field to Remove volume.

3.3 Eurex EnLight Straight-Through-Processing

With Release 8.0, Eurex will introduce Straight Through Processing (STP) for Eurex EnLight. The motivation is to optimise the Eurex EnLight workflow such that SRQS Deal results in a legally binding TES Trade of type Eurex EnLight with minimum user interaction. The functionality will be MiFID compliant.

Therefore, Eurex EnLight will offer the following negotiation modes:

1. Straight-Through-Processing (STP) mode
 - a. STP will be the default method of Eurex EnLight in the Trader GUI since the STP flag will be checked by default when initiating the negotiation.
 - b. In ETI, the requester will have to provide the valid value 4 = Auto Trade / Eurex EnLight Straight-Through-Processing (STP) in the mandatory field QuoteQualifier.
2. Manual mode
 - a. The STP flag will need to be unchecked while initiating the negotiation in the Trader GUI.
 - b. In ETI, the requester will have to provide the valid value 0 = Manual Trade in the mandatory field QuoteQualifier.

For Eurex EnLight STP, it will be ensured that the applied checks are consistent with the corresponding TES checks. Eurex EnLight Trades will be published to the market via T7 Market Data streams based on the configured non-disclosure limits like the TES Trades.

3.4 Split Snapshot Cycles in MDI

Currently incremental messages are not sent during a snapshot cycle of a given product. For products with thousands of instruments, this means that no incremental messages are sent for a longer period of time in a MDI stream.

Snapshot Cycle Subset: With T7 Release 8.0, this behaviour will change. A snapshot cycle will no longer be sent contiguously for all instruments of a product, but in a disjunct subset of instruments of that product. In the worst case, a snapshot cycle subset may only contain one instrument. Incremental messages received any time in between snapshot cycles subsets may still belong to instruments of either previous snapshot cycle subsets or subsequent snapshot cycle subsets.

When receiving snapshots and incremental messages, the participant's applications have to ensure the proper mapping of incremental messages to the correct snapshot to build an initial baseline using the

message sequence number. Incremental messages have to be processed immediately before reception of all snapshot messages of a product.

3.5 Clearing Member Transaction Size Limits (TSL) and Assignment of Product Assignment Groups (PAG)

Product assignment groups are created and maintained by Eurex Exchange in T7.

With the new release 8.0, there is a change in PAG logic. All trading business units in T7 will automatically get all PAGs assigned (assignment is no longer taken from GCM settings in Eurex Classic).

The possibility to trade the products within the PAG is now controlled by the TSL setting. These TSL will no longer be set by the Clearing member in Eurex Classic, but by the Eurex Exchange (on levels On-Exchange on-book, TES and Calendar Spread) per product.

C7 changed their logic with their release 6.0 as well. They no longer send PAG information and member TSL to T7. Instead, they will send a "Product Assignment" to T7. Each clearing member can define which related Trading Participant is allowed to trade which product.

This information is now taken as trigger for the assignment of TSL on business unit level in T7:

- If the trading business unit has a product assignment, then T7 calculates the member TSL based on the above mentioned levels on product level.
- If the trading business unit has no product assignment, then T7 will remove the TSL.

Example:

ABCFR as GCM gives its Trading Participant DEFFR the assignment for product "ABCD". Eurex has set the TSL levels for "ABCD" to 999.999 for On-Exchange on-book Trading, 99.999 for TES and 9.999.999 for calendar spreads.

As a result, DEFFR will get the above mentioned TSL assigned.

The user settings for TSL remain unchanged.

It is planned that the C7 changes will be available in Simulation from 20 September 2019.

3.6 Further Functional Enhancements

- Enhancements of Quote Deletion Context
- Leg Price and Quantity Information in TES Trade to Initiator
- Valid Expiration field added to TES profile
- Vola Trade functionality for Flexible Options Trades
- Direct Market Access flagging for Orders (new flag "DMA")
- New Types of Security
- New role to view trades only
- TES Trading for SEC Approved Products
- Support of publish selection in text profile
- Split pre-trade risks between order book and TES
- New Product Type in RDI
- New Instrument Naming Convention (SARON Futures)

For more details, please refer to the T7 Release 8.0 Final Release Notes.

4. Functional enhancements – Cash Markets

The following new features and enhancements will be introduced with T7 Release 8.0:

- Trading Model Continuous Auction with Specialist (incl. Instrument Scope T7 Börse Frankfurt)
- Quote Request Solution in Continuous Auction with Specialist
- Bilateral Aggregation and Settlement Internalisation
- CCP and non-CCP Trading within one-market in Börse Frankfurt
- Split Snapshot Cycles in MDI

4.1 Trading Model Continuous Auction with Specialist (incl. Instrument Scope Börse Frankfurt)

With T7 Release 8.0, the trading model Continuous Auction with Specialist (CA with Specialist) will be introduced in order to support the complete migration of Börse Frankfurt including Börse Frankfurt Zertifikate from the Xetra trading system onto the T7 trading platform. The functionality of the trading model Continuous Auction with Specialist on T7 is mainly derived from the functionality in the Xetra trading system. Some enhancements have been introduced as well as further deviations for harmonization and optimization reasons motivated by the creation of synergies, resulting in a consolidated platform with consistent interfaces for T7 Xetra and T7 Börse Frankfurt.

For further information, please refer to the Release Notes for the Trading Venues Xetra and Börse Frankfurt.

4.2 Quote Request Solution in Continuous Auction with Specialist

During the main trading phase in continuous auction, the following will apply for the QRS:

- Market participants can ask the Specialist for an indicative private quote submitting the ISIN, the quantity they would like to trade and optionally the side (buy or sell) they intend to trade.
- The request is answered by the Specialist either with a quote response containing an adequate bid/ask with the available quantity or with an error message in case no current and adequate quote e.g. in terms of quantity is available. In case the Specialist does not answer, the market participant will also receive an error message indicating that the time period for a response is exceeded.
- Having received an adequate answer from the Specialist, the participant may submit an order based on the quote request response.
- All the messages, i.e. the quote request, the quote response, and the order upon a quote response refer to each other via a unique Quote ID that will be set by the participant and which has to be unique per business unit and instrument during the business day.
- The order upon the response can either be fully executed according to the matching rules of the market model or not at all. In case, the Specialist's matching quote would result in a partial execution of the QRS order, the quote will be rejected by T7.
- If not executed, the order upon a quote response will be deleted from the order book after the respective time period elapsed. This deletion is performed even if the order book is currently frozen.
- Any modification to the QRS order will be rejected and only deletions are allowed.

- The exchange will define a maximum number of QRS quote requests which can be sent per BU in a product during the trading day.
- The quote request, the quote request response, and the order upon a quote response will be marked with a timestamp and outdated after a certain time period.
- In case of unsupported ISINs (e.g. instruments in subscription, instruments with a single auction only), QRS quote requests may be rejected and returned with a respective error message.

Please note: The QRS will be provided via ETI and FIX interface only.

4.3 Bilateral Aggregation and Settlement Internalisation

The functionality of bilateral aggregation and settlement internalisation will be introduced with T7 Release 8.0 for non-CCP instruments.

Participants currently using bilateral aggregation and settlement internalisation in the Xetra trading system will be setup accordingly in T7. Participants who want to start using bilateral aggregation and/or settlement internalisation have to submit an application to be setup accordingly.

4.3.1 Settlement Internalisation

Participants can opt for settlement internalisation on Trading Capacity A and/or P per settlement account. Market Operations will apply the participant settings accordingly. Once a trade is generated, T7 will check whether both trade sides belong to the same business unit. If so, T7 will then check the settlement internalisation settings of the settlement accounts. In case settlement internalisation is selected for the settlement account of each trade side, the trade will be marked for settlement internalisation. If not, the checks for bilateral aggregation are performed. In case settlement internalisation is applied, contract notes will be generated, but delivery instructions will not be generated by DBAG.

4.3.2 Bilateral Aggregation

Participants can opt for bilateral aggregation on Trading Capacity A and/or P per settlement account. Market Operations will apply the Participant settings accordingly. Once a trade is generated, T7 will check the participant's settlement account settings of the business units of the trade and in case bilateral aggregation is selected for each settlement account of the trade side, the trade will be marked for bilateral aggregation.

In case bilateral aggregation is applied to a trade, the trade will be aggregated by the clearing system. Contract notes and delivery instructions will then be generated for the aggregated trades.

4.4 CCP and non-CCP Trading within one-market in Börse Frankfurt

With T7 Release 8.0, it will be possible to perform CCP and non-CCP trading in one market. Each instrument is flagged by the exchange whether it is CCP eligible or not. The information is available in the Reference Data Interface, in the Reference Data File and in the All Tradeable Instruments File.

As part of the migration of Börse Frankfurt, the T7 trade notifications will be enhanced to include the counterparty information of non-CCP trades.

4.5 Split Snapshot Cycles in MDI

Currently incremental messages are not sent during a snapshot cycle of a given product. For products with thousands of instruments, this means that no incremental messages are sent for a longer period of time in a MDI stream.

Snapshot Cycle Subset: With T7 Release 8.0, this behaviour will change. A snapshot cycle will no longer be sent contiguously for all instruments of a product, but in a disjunct subset of instruments of that product. In the worst case, a snapshot cycle subset may only contain one instrument. Incremental messages received any time in between snapshot cycles subsets may still belong to instruments of either previous snapshot cycle subsets or subsequent snapshot cycle subsets.

When receiving snapshots and incremental messages, the participant's applications have to ensure the proper mapping of incremental messages to the correct snapshot to build an initial baseline using the message sequence number. Incremental messages have to be processed immediately before reception of all snapshot messages of a product.

This means that a joining application which has just received snapshot messages for instruments 1,2,3 should process only the incremental instructions for instruments 1,2,3 and has to discard all incremental messages for instruments 4,5,6. The subsequent snapshot message for instrument 4,5,6 will already include the incremental message which has been discarded before.

4.6 Further functional Enhancements

- Direct Market Access Flagging for Orders
- Enhancements of Quote deletion context
- Resting Hidden Quantity in Execution Summary message
- New role to view trades only
- TES Trading with riskless principal
- Auto approval indicator in report TC545
- Delivery type in TES trade broadcast
- New Types of Security
- New Depository Type for NCSC-T Instruments
- Aggressive/Passive Information in TC540

For more details, please refer to the T7 Release 8.0 Final Release Notes.

5. Technical Enhancements

5.1 Topology Changes of Low Frequency Gateways

The partition specific (PS) gateway is the single low-latency order entry point. The low-frequency gateways (LF) are usually slower than the PS gateways. However, the PS gateway queues requests during high loads. When this happens, requests sent to LF gateways may overtake PS gateway requests.

With T7 Release 8.0, preparatory steps will be taken to remove this overtaking possibility in T7 Xetra. After activation of the new routing, all traffic requests entered via LF gateway will be routed through the PS gateway to fix the above-mentioned situation.

To keep the additional latency as low as possible, the network access to the LF gateways will be changed before the new routing will be activated. The LF gateways will be directly connected to the distribution switch of the Co-Location network and thus the access to the LF gateways will be the same as for the PS gateways. There will be an additional delay of approximately 50 μ s between LF and PS gateway if the route between LF and PS gateway involves a change of rooms, e.g. requests sent to an odd LF gateway target on an even partition.

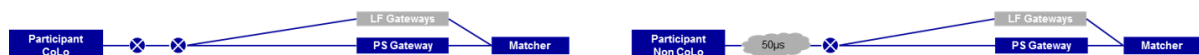
Note that the feature will not be activated with release start but is scheduled for early 2020. An appropriate communication about the activation of the new routing and the change in network access will be provided well in advance. For markets without PS gateways (e.g. Vienna, Malta) the routing via PS gateways will not be enabled.

The below diagram illustrates the planned changes.

Topology as of now



Move of LF gateway



Rerouting of LF gateway requests



Figure 1: Topology of PS and LF Gateways

The PS gateway entry timestamp will be available in the following protocols:

- The RequestTime field in the ETI responses will be filled with the PS Gateway In timestamp once routing is activated
- In EMDI and EOBI, all fields referencing the Matching Engine In timestamp will be referencing the PS Gateway In timestamp instead, with the exception of the AggressorTime in the EOBI Execution

Summary message. The number of existing LF gateways and the network access to the LF and PS gateways will remain unchanged.

For markets without PS gateways the RequestTime of the LF gateway will be used instead.

Please refer to the ETI manual and Incident Handling Guide for changes to the protocol.

Aspects of latency changes will be covered in an update of the Insights into trading system dynamics presentation available on xetra.com.

Special note for LF gateways customers: The incident handling for LF gateways will change because of the routing through PS gateways. Please be aware of the changes. DBAG will offer dedicated focus days in simulation for participants in order to familiarize themselves with PS gateway specific failover scenarios.

5.2 T7 GUI Launch Mechanism

Deutsche Börse offers a customized seamless solution to start and automatically receive updates of the T7 GUIs named “T7 GUI Launcher” independently of Oracle’s Java SE Java Web Start mechanism.

Additionally, Deutsche Börse will offer a Java SE 8 Runtime Environment without additional Java license charges to be used exclusively with the T7 GUI applications.

Both T7 GUI launch mechanisms (old - Java WebStart and new - T7 GUI Launcher) are offered in parallel. The new T7 GUI Launcher and the Java SE 8 Runtime Environment will be provided to the participants via the member section.

For additional information, please visit the Eurex website

<https://www.eurexchange.com/exchange-en/resources/initiatives/technical-changes/t7-gui-launcher>

or the Xetra website

<https://www.xetra.com/xetra-en/technology/t7/t7-gui-launcher>

6. Reports

The following reports will be introduced with T7 Release 8.0:

- CB142 - Fee Per Executed Order T7 Boerse Frankfurt
- CB150 - Fee Overall Summary T7 Boerse Frankfurt
- CB160 - Fee Statement T7 Boerse Frankfurt
- CB162 - Monthly Specialist Refund
- CB242 - Specialist Service Fee Per Executed Order
- CB243 - Specialist Service Fee XFS Per Executed Order
- CB250 - Specialist Service Fee Overall Summary
- CB253 - Specialist Service Fee XFS Overall Summary
- CB260 - Specialist Service Fee Statement
- CB263 - Specialist Service Fee XFS Statement
- RD170 User Transaction Size Limit Maintenance
- RD175 User Transaction Size Limit Status
- TD965 Specialist State Change
- TR103 - Eurex Daily OTR parameter
- TR104 - Eurex Daily ESU parameter
- TR105 - Minimum Quotation Requirement

The following reports will be enhanced with T7 Release 8.0:

- TA115 Total Return Futures Parameters
- TC540 - Daily Order Maintenance
- TC550 - Open Order Detail
- TC600 Eurex EnLight Maintenance
- TC610 Eurex EnLight Best Execution Summary
- TC810 - T7 Daily Trade Confirmation
- TD955- Building Block Liquidity Provider Measurement
- TD956 - Basis Building Block Liquidity Provider
- TD957 - Package Building Block Liquidity Provider Measurement and Advanced Designated Liquidity Provisioning
- TE540 - Daily Order Maintenance
- TE545 - Daily TES Maintenance
- TE546 - T7 Daily Basket TES Maintenance
- TE550 - Open Order Detail
- TE590 CLIP Trading Indication
- TE600 - Eurex EnLight Maintenance
- TE610 - Eurex EnLight Best Execution Summary
- TE810 - T7 Daily Trade Confirmation

7. Simulation preparation

Preparation activities should be completed prior to the start of T7 Release 8.0 Simulation.

7.1 Organisational preparation

Prior to the start of T7 Release 8.0 Simulation, the following organisational preparatory activities need to be completed by all participants to ensure readiness for the Simulation phase:

- All participants and ISVs will be asked to name a person acting as a single point of contact (SPoC) during the Simulation. This person shall coordinate all internal activities, functional as well as technical, and shall communicate with affiliated participants during Simulation, when collaboration is required. The SPoC maintenance is available to the participant via the web application under the following path:

www.eurexchange.com -> Member Section -> Contacts -> Release Contacts (-> New Entry -> Category "Simulation SPOC" -> Release "Eurex T7")

www.xetra.com -> Member Section -> Technical Service -> Release Contacts

- Documents will be made available in order to facilitate and support general Simulation needs. However, in order to simulate the individual requirements participants are encouraged to define specific Simulation objectives and scenarios on their own.
- Personnel for participation in Simulation on the focus days (specified in the Simulation calendar) should be identified and confirmed.
- Participants are encouraged to set up an internal issue management process.

7.2 Functional preparation

Participants and ISVs planning to participate in the Simulation should verify their individual setup/clearing-relationship and inform the exchange of any changes that may be required prior to the start of their Simulation testing activity.

The completion of functional preparations prior to production start is mandatory.

7.3 Technical preparation

In order to ensure technical readiness for Simulation, members/ISVs should consider the following topics:

- The changes for the following interfaces have to be implemented
 - T7 Enhanced Trading Interface ETI
 - T7 FIX Gateway
 - T7 Market and Reference Data Interfaces
 - Common Report Engine (new and changed reports)
- A technical connection to T7 systems needs to be established (if not existing).
- Internal resources for timely installation of Simulation software should be identified and confirmed.
- Related in-house systems should be set up to simulate subsequent processing.

7.3.1 Note on Interfaces

T7 Release 8.0 is a mandatory release and will **not** be backwards compatible to version 7.1. All interface versions of 7.1 will no longer be supported with the production launch of T7 Release 8.0.

8. Focus Day Overview

This chapter outlines which focus days will be offered. Focus days are planned and triggered by the Exchange. Specific actions have to be done by the Exchange to enable the scenario of the focus days. Focus days can be of technical nature (e.g. Market Data Service Failure), or of functional nature (e.g. Corporate Action). In either case participants cannot test without the Exchange taking action first.

Recommended test scenarios on the other hand can be done by the participants without any particular initiating action by the Exchange. Participants can run through these scenarios at their own discretion. These scenarios usually highlight new or changed features of the current release and participants are highly advised to perform these scenarios and verify their procedures and software used to be fit for these scenarios.

Please note: T7 Release 8.0 Simulation will not offer focus days related to the specialist model (e.g. locked stock scenarios, QRS...). This will be covered in the T7 8.0 Börse Frankfurt Pre-Production environment.

In the overview below, all focus days offered and recommended test scenarios for this release Simulation are listed and described:

Technical Focus Days – Triggered by the Exchange (Derivatives and Cash):

- Partition specific Gateway Failover
- FIX Gateway Failover
- Matching Engine Failover and Failure, EOBI Failure
 - Matching Engine Failover
 - Matching Engine Failure
 - T7 Enhanced Order Book Interface (EOBI) Failure
- Market Data Services Failure
- T7 RDI Failure (*derivatives markets only*)
- Matching Engine Processing Delay
- GUI (forced user log out)
- Move products from one partition to another (emergency procedure)
- WBAG Technical “Halt” and re-start
- Low Frequency Gateway failures based on PS tunnelling effects

Functional Focus Days – Triggered by the Exchange (Derivatives and Cash):

- Xetra EnLight
- Stressed market conditions / exceptional circumstances (on request only)
- Corporate Actions
- Market Halt (on request only)
- Product Halt (on request only)
- Instrument Suspend (*cash market only; on request only*)

Recommended Test Scenarios to be executed by participants – Derivatives:

- Full Spread Matrix
- New Strategy Setup – complex instruments
- Trade Traceability
- Risk Events

8.1 Technical Focus Days – Triggered by the Exchange

Technical focus days will be offered on several occasions during the Simulation and will be triggered by the Exchange. Participants should use this opportunity to test the behaviour of the T7 trading and market data interfaces in conjunction with their own front office applications as well as their order book- and session management systems. Technical focus days will be provided simultaneously across multiple partitions (Cash & Derivatives).

8.1.1 Matching Engine Failover and Failure, EOBI Failure

The T7 Simulation system runs on separate partitions. Every process in the partition has a standby partner process that can take over in case the primary process fails. During Simulation, a failover and a failure of a matching engine will be simulated.

Matching Engine Failover

As a precondition, participants are advised to enter non-persistent orders and quotes in the Simulation environment before the matching engine failover takes place.

In this test scenario, the existing matcher processes in the partition will be terminated and the standby partner process will take over. Shortly after the takeover, participants will receive a 'Market Reset Event' message, stating the technical problem and including the message key which is the last reproducible order message.

Because of the failover, the products from the failed partition will still be tradable. A Market Reset Event message will be triggered. Non-persistent orders and quotes which were inserted earlier will be deleted after the restore of the order book.

There is a "failover time parameter" defined per product. If the failover happens within that timeframe or the product did NOT have a continuous trading status prior to the corruption, the product will change to product state "halt", after the failover is finished.

Afterwards an order book replay will be sent including the persistent orders, which were recoverable. Participants with low frequency sessions will receive an extra end of replay message on a product level. Participants with high frequency sessions will only receive the previously mentioned Market Reset Event Message. Hence, there are no extra deletion messages.

The Matching Engine failover triggers automatically an EOBI failover.

Matching Engine Failure

For the execution of a matching engine failure both matcher processes will be crashed for a partition in Simulation. The test case will have an impact on all products available on this partition in permanent Simulation. As long as the partition is not available, i.e. not restarted by the exchange, participants will neither be able to receive public market data for products linked to that partition, nor will they be able to enter orders.

A Market ResetEvent message will be sent out to participants, when the matching engine has been restarted. Additionally, the market data service will still be available but will send only unchanged data to participants. The Matching Engine failure triggers automatically an EOBI failure as well.

T7 Enhanced Order Book Interface (EOBI) Failure

Prior to the focus day, participants should check whether they are able to receive market data from the T7 Enhanced Order Book Interface (EOBI), i.e. they should try to send some orders on benchmark futures products and equities which are available in the T7 permanent Simulation. Public market data information from T7 EOBI will be provided in packages/UDP datagrams marked with a MarketSegmentID, i.e., product identifier; PartitionID; ApplSeqNum (continuous numbering format); Packages are sent over redundant multicast address and port combinations. Each package is uniquely identified by its MarketSegmentID and ApplSeqNum combination. In addition to the packet sequence numbering, individual messages are sequenced by MsgSeqNum, which is contiguous per MarketSegmentID.

In case of an EOBI Failure, both the ApplSeqNum and the MsgSeqNum for a specific MarketSegmentID will restart from 1.

An EOBI Failure is triggered together with a matching engine failure. Participant applications should notice this, whenever an ApplSeqNum is received which is smaller than one which has already been received for a specific MarketSegmentID and multicast address:port combination. Whenever a participant application detects a restart of the MsgSeqNum as well, it must rebuild all order books for this MarketSegmentID again from the T7 EOBI snapshot channel.

All non-persistent orders entered prior to the failover will be deleted. The receiving application needs to invalidate its view of the order book and refresh once an explicit message has been received containing new information.

➔ The Matching Engine and EOBI Failover / Failure scenario will be offered between 15:00-16:00 CET.

8.1.2 FIX Gateway Failover

In case of a FIX Gateway Application Failover, all FIX sessions connected to this FIX Gateway will be disconnected and the corresponding port will be closed.

Customers should then activate the connection to the secondary FIX Gateway. The first FIX session logon to the secondary FIX Gateway may take some seconds. So, if a connection or a session logon fails or is not

responded to immediately, a second attempt should only be made after a few seconds (30 seconds recommended).

Schedule :

- 15:00 CEST: Application Failover FIX Gateway
(IP address: 90.150.253.32 becomes unavailable for Derivatives
IP address: 90.152.253.42 becomes unavailable for Cash)
- 15:15 CEST: Restart of FIX Gateway
(IP address: 90.150.253.32 available again for Derivatives
IP address: 90.152.253.42 available again for Cash)
- 15:30 CEST: Application Failover FIX Gateway
(IP address: 90.151.253.32 becomes unavailable for Derivatives
IP address: 90.153.253.42 becomes unavailable for Cash)
- 15:45 CEST: Restart of FIX Gateway
(IP address: 90.151.253.32 available again for Derivatives
IP address: 90.153.253.42 available again for Cash)

These tests are recommended for all T7 participants (Members/Vendors) using the T7 FIX Interface.

In the event of a FIX Gateway failure, active FIX sessions will be disconnected. FIX sessions may be resumed for the same SenderCompID (49) on the secondary FIX Gateway, using the secondary IP address and port number.

Recovery notes:

In the event that the disconnection was due to an outage on the FIX Gateway side, members should consider the following recovery mechanisms:

- After reconnection of the FIX session, the FIX Gateway may receive a sequence number higher than the one expected and sends a Resend Request (2) message to the member.
- The member should resend all potentially missing messages with PossDupFlag (43) = "Y", to indicate that a message may have been previously transmitted with the same MsgSeqNum (34).
- **Please note:** No Gap Fill messages should be sent by the member during the resend series for application messages. Application messages should always be re-transmitted since the T7 FIX Gateway requires all missing application messages for reconciliation with T7 Exchange's T7 trading system fall-back.
- If a participant sends Gap Fill messages during the resend series for application messages the related orders might not be accessible any more via the FIX Gateway and related order specific information will not be forwarded to the FIX session.

➔ The FIX Failover / Failure scenario will be offered between 15:00-16:00 CET

8.1.3 Partition Specific Gateway Failover with Effects on LF Sessions and Gateways

The concept with two partition specific gateways per partition requires participant applications to be able to fail-over from one to the other gateway in case of a gateway failure. This focus day will shut down both partition specific gateways belonging to one partition consecutively allowing participants to verify the failover mechanisms in their applications. Prior to the gateway failure, participants are advised to insert several non-persistent vs. persistent and standard vs. lean orders and quotes in the simulation environment. The exchange will cut gateway connections twice. Participants affected will therefore be able to check their internal failover processes.

Please note: The application must establish a TCP/IP connection to an available Trading Gateway in case the connection gets lost. There will be no automatic Gateway Failover if a connection is lost since the decommissioning of the Connection Gateways (release 7.0).

All previously inserted non-persistent orders and quotes will be deleted, and users are logged out. There will be no (active) subscription to broadcast streams any longer. Participants will receive messages for all products where the matching engine deleted non-persistent orders (either lean or standard orders) and/or quotes of the lost session.

Please note: In case of a session loss / session logout the following (re-transmittable) messages will be generated for all products where the matching engine deleted non-persistent standard orders of the lost session:

- 10122 - (via listener and session data) for deleted orders:

follow-up information will be provided with 10112 for each element (order) of

<NotAffectedOrdersGrp> of 1012

Please note: The Partition Specific Gateway Failover automatically triggers the first scenario listed below.

➔ The Partition specific Gateway Failover scenario will be offered between 15:00-16:00 CET.

Effects on LF Gateways and Sessions (LF Gateway Tunnelling), Scenario I

The introduction of the Partition Specific (PS) gateway in Q1 2018 increased the determinism of T7 as it significantly lowered the variability in latency on multiple entry paths to the matching engine. Since then T7 offers only one low latency point for order entry.

The latency for the other entry point – via one of four low frequency (LF) gateways – is around 70 to 80 micro-seconds slower in usual circumstances. In high load scenarios (i.e. microbursts of requests) queuing

in the PS Gateway may still lead to overtaking between messages sent to the low frequency and PS gateways, i.e. a message sent to the LF gateway may overtake a request sent to the PS gateway at the same time.

With T7 Release 8.0, all traffic sent to the LF gateway is therefore tunneled through the PS gateway to fix this situation. Obviously, this tunneling creates a dependency on the PS gateway availability for the LF gateways and the LF sessions. Two focus days scenarios simulate those effects.

The first part of the focus day simulates the effect of a PS Gateway failover on the LF sessions tunneling.

The failure and failover of a PS gateway affects all LF gateways in the same way. The partition to which the PS gateway belongs will be unavailable for all LF gateways in the moment of the failover.

Once the LF gateways notice the PS gateways failure they will connect automatically to secondary PS gateway of the partition, resuming normal operations and making the partition available again.

- Customers should monitor Service Availability for the partition the PS gateways belong to.
- The "MatchingEngineStatus" will switch from "Available" (1) to "Unavailable" (0) and back to "Available" (1) on all LF sessions.
- While service availability for the partition is unavailable, order management transactions will be rejected on all LF sessions.
- Once the MatchingEngineStatus becomes available again, order management transactions will be possible again on all LF sessions.
- In the moment of the failover DelAllOrder/Quote broadcasts will be disseminated for all non-persistent orders entered by the LF sessions on the affected partition.
- All non-persistent orders for the affected partition of the LF sessions which are connected to any LF-GW will be deleted.
- The sessions will receive the corresponding DelAllOrder/Quotes broadcasts with ETI field MassActionReason(28721): „100 = Internal connection loss“.

Effects on LF Gateways and Sessions (LF Gateway Tunnelling), Scenario II

The second part of the focus day simulates the effect of the tunnel connection between one specific LF gateway and one specific PS gateway failing.

This scenario differs from the one described above, as it affects only one LF gateway and leaves full functionality on all other LF gateways.

Only the connection between one LF gateway and one PS gateway is affected.

All other LF gateways will be able to continue communication with the (all) PS gateways.

- Customers should monitor Service Availability for the partition the PS gateways belong to.

- The "MatchingEngineStatus" will switch from "Available" (1) to "Unavailable" (0) and back to "Available" (1) on LF sessions connected to the affected LF gateway.
- The "MatchingEngineStatus" will remain unchanged for all other ETI sessions (connected to other LF gateways).
- While service availability for the partition is unavailable, order management transactions will be rejected on LF sessions connected to the affected LF gateway.
- Order management transactions to the same partition will be possible via the other LF gateways.
- Once the MatchingEngineStatus becomes available again, order management transactions will be possible again on LF sessions connected to the affected LF gateway.
- In the moment of the tunnel loss DelAllOrder/Quote broadcasts will be disseminated for all non-persistent orders entered by LF sessions connected to the affected LF gateway
- All non-persistent orders for the affected partition of the LF sessions which are connected to the affected LF-GW will be deleted.
- These sessions will receive the corresponding DelAllOrder/Quotes broadcasts with ETI field MassActionReason(28721): „100 = Internal connection loss“.

8.1.4 Market Data Services Failure

Prior to the focus day participants should check whether they receive market data from T7, i.e. they should try to send some orders on products which are available in permanent Simulation. Market data information will be provided in packages marked with a SenderCompID; PartitionID; PacketSeqNum (continuous numbering format); the MessageSeqNum (continuous per SenderCompID multicast address and port combination) and a MarketSegmentID. The SenderCompID always remains constant for a product during the whole business day, if there is no failover.

When the market data failure is initiated by DBAG, a crash will be simulated within the partition for market data services. During this time participants can try to insert new orders and quotes for that product. As a result, they will receive a message that the associated partition is not available. As long as the partition is not available, i.e. not restarted by the exchange, participants will neither be able to receive market data for products linked to that partition, nor be able to enter orders. In this test scenario, all partitions in Simulation will be affected and therefore the test will refer to all products, which are available at that time in the permanent Simulation.

Participants can identify this failover scenario by comparing the SenderCompID value with the previous value. A new SenderCompID, which is available in the packet header and in each data message for incremental and snapshots, indicates the partition failure. Additionally, the PacketSeqNum will be reset to 1.

Once this condition is observed, it can be assumed that a fail-over scenario took place and the rebuild of the order book can be started. All non-persistent orders entered prior to the failover will be deleted. The receiving application needs to invalidate its view of the order book until an explicit message has been received containing new information.

➔ The Market Data Services Failure scenario will be offered between 15:00-16:00 CET.

8.1.5 T7 RDI Failure (Only for derivatives market)

In this test scenario both the failover and the restart of the T7 RDI will be simulated (EEX RDI is independent of T7 RDI and will not be affected by the T7 RDI Failure). As a precondition for the tests, participants are advised to create some complex instruments in the Simulation environment before the failover and restart of the RDI are performed.

In the first part of the test scenario when the T7 RDI fails over, a new initial reference file will be generated with a new file set identifier. This file will contain any complex instruments, already created and deleted during the day, i.e. the entire history.

In the second part of the test scenario, when the T7 RDI is restarted, a new initial reference file will be generated with a new file set identifier. This file contains the existing complex instruments but not the entire history of creations and deletions.

➔ The RDI Failure scenario will be offered between 15:00-16:00 CET.

8.1.6 Matching Engine Processing Delay

This focus day scenario is provided to assist participants in testing the very rare event where massive processing delays occur on a partition. In this scenario the following events will be triggered:

All non-persistent Orders and Quotes might be deleted for the affected partitions and deletion notification will be triggered. Product-specific DeleteAllOrderQuoteEventBroadcast messages will be sent to all ETI and FIX sessions with MassActionReason set to (111) Product_temporarily_not_tradable.

For a minimum time period of 10 seconds or until the slow processing is resolved, all transactions except order deletions will be rejected with SessionRejectReason set to (102) Service_Temporarily_Not_Available and VarText 'TRANSACTION REJECTED DUE TO SLOW PARTITION'

In the event that a product is temporarily not tradable, participants will be informed when the matching engine will accept transactions again by a TradingSessionStatus message (MsgType (tag 35) = "h") specifying TradSesEvent (tag 1368) = 105 ("Service Resumed").

Please note: Participants will still be able to send deletion requests for any persistent orders which they would like to remove.

This focus day scenario is performed for the following markets and products:

- XEUR: Partition 3 (triggered in AFR)

- XETR: Partition 30 (triggered in DE0006599905)
- XVIE: Partition 50 (triggered in AT0000644505)
- XBUD: Partition 85 (triggered in HU0000074844)
- XLJU: Partition 86 (triggered in SI0031101346)
- XPRA: Partition 87 (triggered in LU0275164910)
- XZAG: Partition 88 (triggered in HRHT00RA0005)

Participants are requested to check that their applications can correctly handle order / quote deletions and transaction rejections due to the slow partition state.

➔ The Matching Engine Processing Delay scenario will be offered between 15:00-16:00 CET.

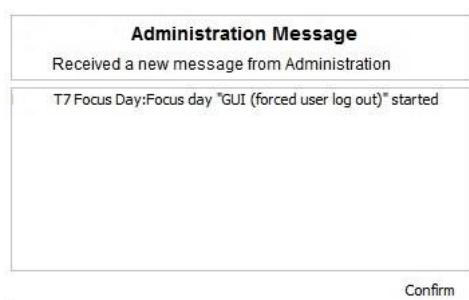
8.1.7 GUI (forced user log out)

The GUI Focus Day scenario is provided primarily to make participants aware of a function within T7 whereby in an emergency/exceptional situation T7 Operations can not only send messages directly to the user's screen but also force the termination of the GUI itself. In addition, the focus day is also provided to make participants aware of the effects of a full GUI environment restart. The GUI (forced user log out) focus day will be subdivided into three parts:

- Send Admin Message only
- Admin Message + Forced Trader GUI Shutdown
- Full GUI environment restart

Send Admin Message only

All GUI instances (both Admin and Trading) logged in at the point when the focus day is initiated will receive a message "T7 Focus Day: Focus day "GUI (forced user log out)" started". This message will appear in a new popup window.



This window can be closed by pressing the Confirm button.

Admin Message + Forced Trader GUI Shutdown

After this first message the following message will be sent 10 minutes prior to the GUI environment shutdown: "T7 GUI Focus Day: Automatic GUI shutdown has been triggered and the GUI environment will be restarted". On the Trader and Admin GUI the following pop-up windows will be displayed:



The colour of this pop-up window will turn to yellow 15 seconds prior to the forced shutdown and turns red for the last 5 seconds.

Full GUI environment restart

Following a full restart of the GUI environment in Simulation will be performed. On the scheduled focus day participants will be encouraged to suspend orders so that the effect on suspended orders caused by a GUI restart can be observed. Suspended orders will all be deleted, the rest of the order book will remain unchanged after a restart.

➔ The GUI (forced user log out) focus day scenario will be offered between 15:00-15:30 CET.

8.1.8 Move products from one partition to another (emergency procedure)

This focus day scenario is intended to simulate the unlikely event that products need to be moved from one partition to another before the start of trading.

Under normal circumstances, the assignment of products to a partition will not change on a day-to-day basis but either as a result of hardware failure or due to a re-configuration, the assignment of products can and will change.

In this focus day scenario all products / Product assignment groups outlined below will be moved from one partition to another prior to the start of the trading phase (closed & pre-trading) in the T7 Simulation environment.

As a consequence of the product move from one to another partition the entire T7 system will be restarted. All non-persistent orders, quotes entered and recoverable broadcast streams disseminated before restart will be deleted. Please be aware that persistent orders will be moved to the other partition too and are part of the orderbook restatement. The PartitionID in the reference data, product snapshot and packet header for EMDI and EOBI for the affected product(s) will change. When the T7 RDI is restarted, a new initial reference file will be generated with a new file set identifier. Reference Data via RDI and RDF must be reprocessed by

client applications following the restart. The SenderCompID in the Market Data for the product will change following the restart. The service on which the market data is published first for EMDI / EOBI may change (even to odd or vice versa). The multicast addresses on which the market data is disseminated will not change.

Participants must ensure that their applications support the automatic reassignment of products. Hardcoding of product to partition assignments may lead to the inability to identify or trade these products.

This focus day scenario is performed for the following markets and products:

- XEUR products: CONF, FBON, FBTM, FBTP, FBTS, FGBL, FGBM, FGBS, FGBX, FOAM, FOAT, FSWL, GEO2, GEO5 & GE30
- XETR product assignment groups: GER1, MDX1, SDX1, STX6 & TDX1.

➔ The Move products from one partition to another one (emergency procedure) focus day scenario will be performed in the morning after a batch run and should be completed before 11am (CET/CEST).

Please note: The products which have been moved from one partition to another, will remain on the “new” partition until this focus day scenario is repeated.

8.1.9 WBAG Technical “Halt” and re-start

This focus day scenario simulates a technically required “Halt” of the WBAG market (Xetra Vienna) and the respective Partner Exchanges (Budapest XBUD, Ljubljana XLJU, Prague XPRA and Zagreb XZAG).

Trigger for the focus day start is a formal call by an authorized WBAG employee calling Deutsche Börse’s Xetra/Eurex Operating and ordering the Market Halt.

Following the call and verification, Deutsche Börse’s Xetra/Eurex Operating is setting the partition for Xetra Vienna and Partner Exchanges to status “Halt”.

The market will remain in status “Halt” for 15 minutes.

After this time Market Supervision WBAG will switch all products through the various trading phases until reaching phase “Trade” again.

8.2 Functional Focus Days – Triggered by the Exchange

The exact dates for the functional focus days triggered by the exchange are displayed in the Simulation calendar available on the websites

www.eurexchange.com -> Technology -> Simulation Calendar

www.xetra.com -> Trading -> Trading calendar and trading hours

8.2.1 Xetra EnLight

As a possibility to test the selective RFQ platform Xetra EnLight, DBAG offers Xetra EnLight Simulation Days (please refer to the simulation calendar for the exact dates).

The following products will be available in Simulation for negotiation via Xetra EnLight:

LU0378435803
NL0000009165
DE0007231326
FR0000120503
DE0007472060

On Xetra EnLight Simulation Days, market participants can simulate the work-flow of sending out or responding to an RFQ via the Xetra GUI or ETI.

Market participants have to include Trader IDs in their RFQs to receive responses. The Trader ID can be stored in the GUI preferences. On Xetra EnLight Simulation Days, Xetra offers market participants the possibility to include the Trader IDs SIM01TRD001, SIM02TRD001, SIM03TRD001 and SIM04TRD001 (Xetra internal Trader IDs) in their RFQs to receive responses.

To simulate the work-flow of Xetra EnLight Smart RfQ, participants are requested to enable Smart RfQ via a dedicated flag in the RfQ.

In addition, members can contact Xetra via e-mail to xetrahelpdesk@deutsche-boerse.com to be setup as a Xetra EnLight or Xetra EnLight Smart RfQ respondent in T7 8.0 Release Simulation and to indicate that they are interested to receive RFQs from the above Xetra trader IDs on these focus days.

8.2.2 Corporate Actions

Derivatives Market:

Participants will have the opportunity to test Corporate Action processing. On the first focus day, i.e. before end-of-day processing starts, participants are requested to generate positions in T7 in the defined products to check the system behaviour on the effective focus day (second business day).

Cash Market:

Simulation Business Day 1:

DBAG maintains the Cum-Indicator, Ex date and the dividend amount of the instruments.

Simulation Business Day 2:

The Cum-Indicator is set and visible for participants. The participants should now have open orders in POSTR. These orders will be deleted during the following batch run. Furthermore, the deletion messages including the order deletion reasons will be sent.

Simulation Business Day 3 (Ex-day): The participants see the Ex indicator and the reference price is reduced accordingly by the dividend amount.

The exact dates and products of the Corporate Actions scenario are displayed in the current Simulation calendar available on either www.eurexchange.com or www.xetra.com.

8.2.3 Stressed market conditions / exceptional circumstances (On request only)

The regulatory relevant states of market conditions for market making will be normal market conditions, stressed market conditions and exceptional circumstances. Stressed market conditions will be established on product level for the derivatives market and instrument level for the cash market, whereas exceptional circumstances will typically affect the whole market. The product will be in normal market conditions, when neither stressed nor exceptional market conditions apply. There are no market making obligations during exceptional circumstances.

Automatically triggered stressed market conditions will have a fixed duration (e.g. 10 minutes). Ongoing automatically set stressed market conditions will be prolonged by this time period, when the trigger conditions are detected again. The following trigger events for automatically set stressed market conditions will be supported, depending on the type of the affected product:

- **Derivatives Market:**
 - Simultaneous significant change of price and volume – applies to equity index futures, single stock futures and ETF futures.

- End of a volatility interruption – applies to equity index futures, single stock futures and ETF futures.
- Stressed Market Signals in a related futures product – in case a futures product is in stressed market conditions and there is a corresponding options product with the same underlying, the options product will be automatically set in stressed market conditions. Note that a volatility interruption in such a futures product is considered as a stressed market signal. Corresponding options products are ETF options, equity options and equity index options.

During stressed market conditions, the maximum quote spread for quotes and Request for Quote requests is widened and the minimum quote quantity for quotes can be changed.

- **Cash Market:**

- significant short-term change in price, i.e. the cash market instrument is in an extended volatility interruption on T7,
- significant short-term change in volume, i.e. significantly above-average traded volume in the price determination after an extended volatility interruption.

According to the regulatory technical requirements, T7 has to support the state of exceptional circumstances under the following triggering conditions:

- Extreme volatility – a state of extreme volatility is established when the majority of products, which are subject to market making regulation is in stressed market conditions or in a volatility interruption. The state of extreme volatility is set for the whole market.
- War, industrial action, civil unrest or cyber sabotage – this state is declared by the Exchange Management Board with simultaneous effect for the whole market.
- Disorderly trading conditions at the exchange – this state is declared when there is either a significant increase of processing times, or multiple erroneous executions of transactions, or loss of connectivity for many Participants. The state of disorderly trading conditions is declared by the Exchange Management Board with simultaneous effect for the whole market.
- Suspension of pre-trade transparency obligation – the declaration of this state rests upon the decision of the responsible regulator. This condition applies per product.

Exceptional circumstances will be declared for a period of one hour and will end as soon as the triggering conditions are no longer met. The state of exceptional circumstances may be extended until the end of the business day, if the criteria are repeatedly breached. Exceptional circumstances will end automatically at the end of the business day. In case the triggering conditions remain in effect, they will be declared again on the next business day.

T7 will publish exceptional circumstances only via news messages (Eurex webpage, Xetra webpage, T7 GUI and ETI). Exceptional circumstances will not be communicated via the T7 market data interfaces. Thus, there might be situations where stressed market conditions in a product are set during a state of exceptional circumstances. In this case, exceptional circumstances always trump stressed market conditions, regardless of the sequence of setting the regulatory trading conditions.

On the Focus Day “Stressed market conditions / exceptional circumstances” first “Stressed market conditions” will be triggered by the exchange for 3 products for a defined time period of 10 minutes.

Afterwards Exceptional circumstances will be declared for the period of one hour for the whole market.

8.2.4 Market Halt (On request only)

As a possibility to reflect a market halt in T7, DBAG offers to schedule the Simulation of the market halt scenario on request.

Test scenario and expected result:

Prior to the planned Market Halt participants are recommended to enter non-persistent orders and quotes and persistent orders in any products in the affected market. As a result of the market halt, products will not be tradable between the given times. In this scenario all non-persistent orders and quotes will be deleted after the market reset and participants must re-enter those orders and quotes. Persistent orders will stay in the system.

Additionally, the following message will be sent:

10308 - (ETI: Mass Cancellation Event)

The exact dates of the Market Halt scenario are displayed in the current Simulation calendar available on the websites :

www.eurexchange.com -> Technology -> Simulation Calendar

www.xetra.com -> Trading -> Trading calendar and trading hours

8.2.5 Product Halt (On request only)

As a possibility to reflect a product halt in T7, DBAG offers to schedule the Simulation of the product halt scenario on request.

Test scenario and expected result:

Prior to the planned Product Halt participants are recommended to enter non-persistent- and persistent orders and quotes in the affected products. With the transition of the trading phase to HALT, this product will not be tradable between the given times in T7. In this scenario, all non-persistent orders and quotes will be deleted after the market reset and participants must re-enter them. Persistent orders for the affected product will stay in the system. Additionally, the following message occurs:

10308 - (ETI: Mass Cancellation Event aka DeleteAllOrderQuoteEventBroadcast aka BC CleanupOQ)

OrderMassActionReport (UBZ) messages will be sent to all FIX sessions.

8.2.6 Instrument Suspend (Cash Market; On request only)

As a possibility to reflect an instrument suspend in T7, DBAG offers the Simulation of the following focus day on request.

Test scenario and expected result:

Prior to the planned Instrument Suspend participants are recommended to enter non-persistent- and persistent orders and quotes in the affected instrument. As a result, this instrument will not be tradable between the given times in T7. In this scenario all orders (persistent and all non-persistent) and all quotes will be deleted after the market reset and participants must re-enter them. Additionally, the following message occurs:

10308 - (ETI: Mass Cancellation Event aka DeleteAllOrderQuoteEventBroadcast aka BC CleanupOQ)

8.3 Recommended test scenarios executed by participants – Derivatives

The following test scenarios should be executed anytime by participants in Simulation. There are no special tasks to be performed by the exchange.

8.3.1 Inter Product Spreads

Eurex Deutschland introduced an initial set of Inter-Product Spreads for Fixed Income Futures as a standardised futures inter-product spread strategy (e.g. Bund-Buxl spread) in T7 7.1 Simulation. Production launch is planned for 16 September 2019.

Inter-Product Spread Strategies will be available for all members and traders that are set up to trade both futures products from which a given IPS draws its leg instruments.

Maximum order size restrictions maintained on a clearer, member and trader level for the futures contracts that comprise leg instruments of an Inter-Product Spread apply under consideration of IPS ratios of leg instruments.

8.3.2 TES Trading for SEC Approved Products

With T7 release 8.0, TES trading including Eurex EnLight trading for SEC approved products will become available for users located in the US (`isUSLocated = true`) when the product is defined as SEC approved in the field `USApproval` distributed via RDI/RDF.

A SEC approved product will be available prior to production launch in order to test this feature.

8.3.3 Enhancements of Quote Deletion Context

Eurex can define whether single-sided quotes or double-sided quotes are allowed at a product level. For this reason, the parameter `QuoteSideIndicator` with three valid values (`NotSSQAllowed`, `SSQOnEntryAllowed`, `SSQSupported`) was introduced with T7 Release 7.0.

Currently the value `SSQOnEntryAllowed` is set for all Eurex markets implying that single sided quote entry is supported but quote deletions (e.g. because of failed price non-reasonability check or because of violation of BOC criterion) are affecting both quote sides (i.e. double-sided quote deletion context).

After the launch of T7 Release 8.0, Eurex plans to switch to the configuration `SSQSupported` which means that the single-sided quote will be supported as well and a rejection of one quote side of a double-sided quote may lead to a situation that only the other quote side remains in the book.

"Single quote side" quote deletion context can be configured by the exchange for some selected options products in the Simulation Environment to provide test opportunities for market makers.

8.3.4 Independent Operation of Pre-trade Risk Limits regarding On-book versus Off-book Trading

Eurex is supporting the possibility to use pre-trade risk limits for on-book and off-book trading independent from each other. It is planned to support the pre-trade risk limits for off-book trading in all products but to configure pre-trade risk limits for on-book trading only for selected products primarily associated with the extended trading hours. Thus, a derivative product can be set up to support pre-trade risk limits for off-book trading but not for on-book trading. As a result, transactions from traders violating the off-book pre-trade risk limits are rejected but there is no pre-trade risk restriction regarding on-book trading. Customers are advised to setup their pre-trade risk limits in Simulation to specifically get familiar with this scenario.

8.3.5 Full Spread Matrix

In T7 it is possible to set up and trade products with up to 20 different calendar spreads.

The exchange can configure which calendar spreads of a futures product are considered for synthetic matching; a synthetically linked full spread matrix is achieved by considering all calendar spreads of a futures product.

The following products are configured with a synthetically linked full spread matrix in the permanent Simulation:

Group	Product	Currency	Product Name
FINT	FEU3	EUR	THREE-MONTH-EURIBOR FUT. (ACI)
FINX	FEXD	EUR	FUT ON EURO STOXX 50 INDEX DIV
FVOL	FVS	EUR	FUT ON MINI VSTOXX

8.3.6 New Strategy Setup – complex instruments

Typically, complex instruments are requested by traders, however, some futures spreads are created by the exchange by default. Complex instruments requested by traders with open orders valid beyond the current trading day will be available the next day.

It is possible to have different trading parameters per instrument type, for example allocation schemes and price validations. Therefore, different instruments of the same product can vary in their trading behaviour.

Please note: Strategies are always created on a temporary basis and are cancelled during the end of day processing if their order book is empty.

Traders may request complex instruments from T7 at any time during the Simulation. If the requested complex instrument matches a predefined standard option strategy, then the matching engine will create a standard option strategy.

8.3.7 Trade Traceability

T7 provides improved trade traceability, allowing orders to be linked to executions, trade confirmations, and trades in clearing for simple and complex instruments.

While sending a new order, participants can provide a client order ID and up to three free text fields, which are optional for Eurex ETI. For each new order received by Eurex Exchange a separate order ID by the exchange is assigned which is unique and returned to the participant on all private messages.

For every match event T7 assigns identifiers unique within product and business day, to each aggregated price level, every order execution and every trade.

For the matching of a complex order in addition to the order leg, the execution ID and order leg execution ID is provided for each leg of the complex instrument match.

8.3.8 Risk Events

Risk parameters will be triggered due to defined trading volume or quantity limits. Limits can be set by Clearing Members for their Non-Clearing Members (Exchange Participants) or by Non-Clearing Members themselves on an intraday basis. There are three levels of limitation which can be defined by participants and is the same for all business units.

1. Alert message

The user receives a popup message which informs him that he has exceeded a predefined limit, no further actions happen.

2. Threshold message

The user is informed that he has exceeded the second limit and therefore a throttle mechanism is implemented for trading. For traders it is not possible to trade in a general way and volume as the trade volume is limited as per the threshold limitation given by the clearing members.

3. Blocking message

With this scenario, trading is disabled for the respective trading user if he exceeds his trading limits or any other given quantity limits for trading. User entitlements are independent of those extra limitations.

9. Documentation

T7 Release 8.0	Eurex	Xetra	Combined	Q2 2019			Q3 2019			Q4 2019		
				Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
T7 Release 8.0 – Release Notes	X	X			◆			●				
T7 Functional Reference			X					●				
T7 Functional and Interface Overview			X					●				
T7 Participant Simulation Guide			X					●				
T7 Cross System Traceability			X					●				
T7 Incident Handling Guide			X					●				
T7 Participant and User Maintenance Manual	X	X						●				
Contract Notes Description		X							●			
T7 Known Limitations			X						■		●	
T7 Trader, Admin and Clearer GUI – User Manual	X	X						■			●	
T7 Trader, Admin and Clearer GUI – Installation Manual			X					●				
T7 Enhanced Trading Interface – Manual incl. Repository and Header files			X					◆	■		●	
T7 Enhanced Trading Interface – XML Representation			X					◆	■		●	
T7 FIX Gateway – FIX 4.2 and 4.4 Manual incl. Fixmate and Repository			X					◆	■		●	
T7 Market-, Enhanced Order Book- and Reference Data Interfaces, Manual incl. Fast Message Template, Repository & FIXML Schema Files			X					◆	■		●	
T7 Extended Market Data Services – Manual incl. Fast Message Template and Underlying Ticker Data			X					■			●	
Xetra Instrument Reference Data Guide		X						●				
T7 XML Reports – Reference Manual	X	X							■	●		
Common Report Engine User Guide			X					●				
N7 Network Access Guide			X					●				
Xetra Rules & Regulations		X							●			
Market Model		X									●	

◆ Preliminary Version ■ Simulation Version ● Final Version

The documents will be available on the websites

www.eurexchange.com > Technology > Eurex Exchange's T7 > System Documentation > Release 8.0

www.xetra.com > Technology > T7 trading architecture > System Documentation > Release 8.0

10. Support

The standard support times of the Exchange will be in effect during the Simulation phases. The helpdesk departments and further information sources are provided in the following section.

10.1 Contacts and support hours

The following helpdesks provide first level support for specific topics from Monday till Friday:

10.1.1 Group Client Key Account Management

Phone: individual number to your Group Client Key Account Manager (09:00 - 18:00 CET)

- Participants readiness activities
- Participant preparation requirements
- Participant setup questions for Simulation and production
- Participant data changes for Simulation and production
- ISV related queries

10.1.2 Functional Helpdesk Eurex

Phone: +49-69-211-1 12 10 (24 hours, Monday - Friday)

- Functional trading related issues for trading
- Functional focus days
- Product data management
- Market Control
- Simulation participation and execution

10.1.3 Functional Helpdesk Xetra

Phone: +49-69-211-1 14 00 (07:00 – 20:30 CET)

- Functional trading related issues
- Functional focus days
- Product data management
- Market Control
- Simulation participation and execution

10.1.4 Helpdesk Clearing Data Control

Phone: +49-69-211-1 24 53

(08:00 - 20:00 CET)

- Clearing functionality
- Entitlement Management
- Participant- and user data management

10.1.5 Customer Technical Support

Phone: individual VIP number

(24 hours, Monday - Friday)

- All Technical issues related to the Simulation environment (e.g. connectivity issues)
- Technical focus days

10.2 Further sources of information

Changes and further information regarding the T7 Simulation will be provided via the following channels:

- Circulars
- Info-Mail
- Implementation News on Eurex Exchange's and Xetra website for T7 under following path:

www.eurexchange.com -> Technology -> Eurex Exchange's T7 -> Implementation News

www.xetra.com -> Technology -> Implementation News