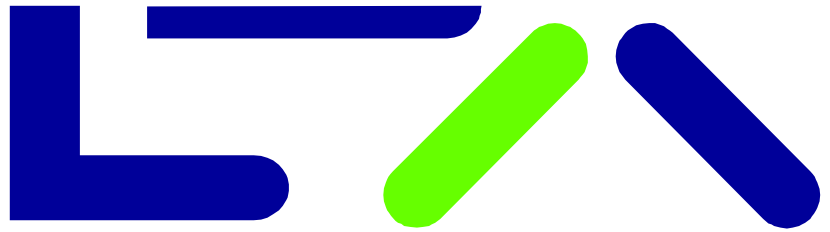


X-pand into the Future



eurex circular 122/17

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Recipients: All Trading Participants of Eurex Deutschland and Eurex Zürich and Vendors
Authorized by: Randolph Roth

T7 Release 6.0: Introduction timeline for partition-specific gateways

Related Eurex circular: 051/17

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Content may be most important for:

➡ All departments

Attachments:

none

Summary:

Shortly after the launch of T7 Release 6.0, Deutsche Börse will start the migration to partition-specific (PS) gateways. PS gateways will replace the existing high frequency gateways and will only allow transaction routing to a specific partition. Sessions may login to only one PS gateway at a time and have to specify the partition ID in their initial connection request to the connection gateway. Low frequency gateways will remain in place and allow routing to all partitions.

The circular gives a broad overview of the introduction of PS gateways in the scope of T7 Release 6.0.



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T7 Release 6.0: Introduction timeline for partition-specific gateways

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The assignment of products to partitions is part of the trading reference data.

High frequency gateways and PS gateways will initially be offered in parallel for the first two partitions, which will be migrated. Low frequency gateways will remain in place and allow routing to all partitions.

1. Motivation

Latency jitter on parallel inbound paths has incentivised multiplicity to reduce latency. This has led to higher system load at busy times and thus created higher, less predictable latencies. The introduction of a single low-latency point of entry will address these points.

Each partition will have only one active PS gateway assigned to it. This gateway will operate in a first-in first-out (FIFO) mode with the reception sequence of the PS gateway determining the sequence of matching (based on the timestamp of the first bit of the frame that completes an ETI message).

As there will only be one active low latency entry point per partition at any time, there will be no need or possibility to probe multiple gateways to achieve best matching priority. The PS gateway will be tuned for high throughput and will offer a lower base latency than the current high-frequency gateways. All partitions will remain accessible via the low-frequency gateways.

2. Timeline for the introduction of PS gateways

The PS gateways will be introduced in a stepwise approach in T7 Release 6.0 production.

T7 Release 6.0 simulation

- Since **10 October 2017**, the PS gateways have been available in the T7 Release 6.0 simulation for partitions 1 & 2 (derivatives) in parallel to the high-frequency gateways.

T7 Release 6.0 production

- Step 1 – Parallel setup of PS gateway for futures partition 4
11 December 2017: The first PS gateway will be enabled for Eurex partition 4 (hosting FGBM and FDXM) in parallel to the existing high frequency gateways.
- Step 2 – Disable HF gateways for futures partition 4
15 January 2018: Access to partition 4 via high-frequency gateways will be disabled.
- Step 3 – Parallel setup of PS gateway for options partition 9
22 January 2018: PS gateway will be enabled for Eurex partition 9 (hosting options) in parallel to the existing HF gateways.
- Step 4 – Disable HF gateways for options partition 9
29 January 2018: Access to partition 9 via HF gateways will be disabled.
- Step 5 – PS gateway only for the remaining Eurex partitions
5 February 2018: PS gateway only access will be enabled for all other Eurex partitions. PS gateways are the only low latency access to all partitions from this point forward.

3. ETI connection process – high level summary

In order to establish a session with a trading gateway, a TCP/IP connection to a connection gateway must be established first. The connection gateway provides the connection parameters for the assigned primary/secondary HF/LF gateways or the active/standby PS gateways to be used for trading purposes. This process is described on a high level in the diagram below:

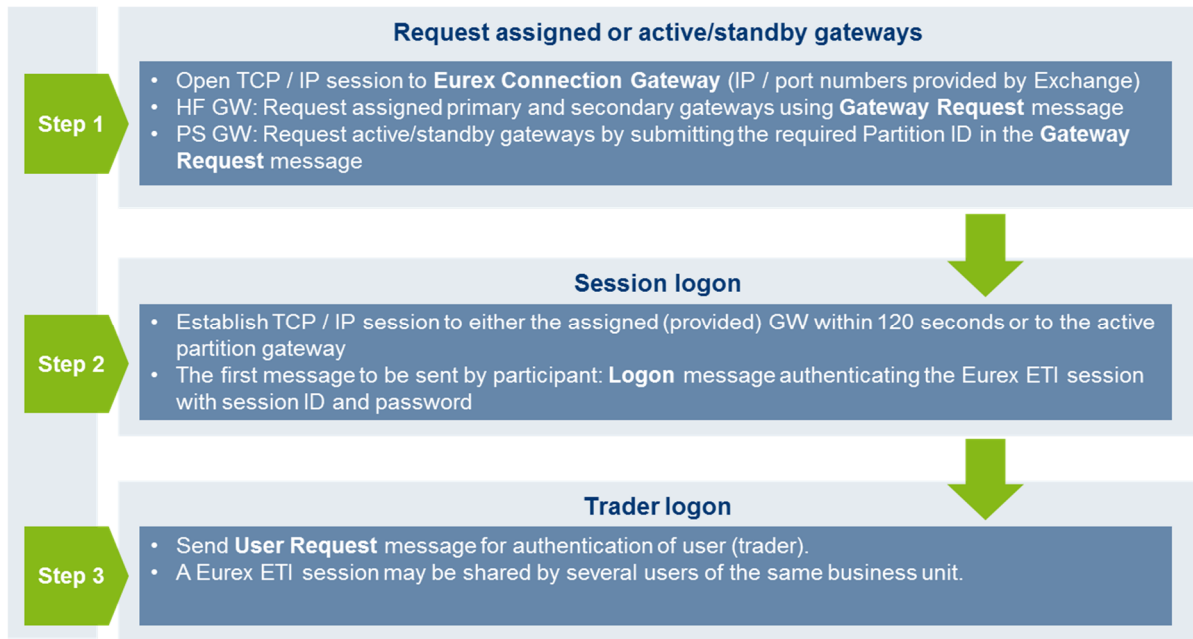


Figure 1: Eurex ETI session logon process

4. ETI gateway infrastructure

The T7 gateway infrastructure is built redundantly, as indicated in the diagram below. A set of gateways including a connection gateway, the low frequency trading gateways for low frequency (LF) sessions, high frequency trading gateways and PS gateways for high frequency (HF) sessions are primarily attached to one line connection of a Participant.

A redundancy link between side A and side B exists to ensure network failover for redundant two leased line installations and guarantees that all gateways are reachable via a single line in case of a failure. The redundancy link introduces additional latency of more than 50 μ s one way and should therefore be used in emergency situations only.

For this reason, Participants are advised to order a redundant leased line setup (connection option with two leased lines). If one leased line connection fails, the other connection gateway and the corresponding set of LF and HF trading gateways/PS gateways can still be accessed. Customers with a redundant network setup are advised to ensure that they route via the optimal path.

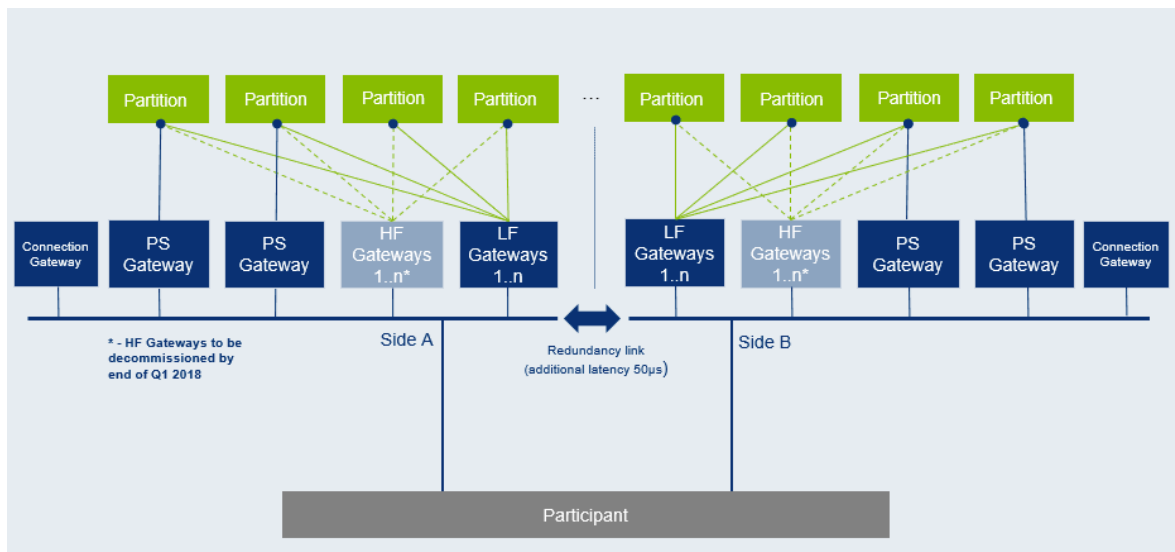


Figure 2: Eurex ETI gateway infrastructure

The IP addresses of the trading gateway and the connection gateway assigned per session are to be obtained as follows:

- The IP address of the connection gateway is provided during the ordering process for a Eurex ETI session (in addition to other connection parameters, such as the session password). Alternatively, the IP addresses of the connection gateways can be found in the “N7 Network Access Guide” available on the Eurex website (see section 6).
- Depending on the type of gateway to be accessed, the IP address of the gateway to be used for a trading session is provided by the connection gateway during the logon process (as described above).
- The IP addresses and the TCP ports of the PS gateways are documented in the “N7 Network Access Guide”. Please note that the IP subnets for HF/PS trading gateways are different from the IP subnets of the other gateways. The TCP ports for the PS gateway will be different from the port used by the HF gateways. The port numbers are 19043 in production and 19543 in simulation.

5. Limits

The following limits will become effective from 11 December 2017:

- 1) A Trading Participant (or a Multi-Member Service Provider) cannot order/own more than 32 10Gbit/s ETI connections.
- 2) A Trading Participant (or a Multi-Member Service Provider) cannot order/own more than 32 10Gbit/s Eurex market data connections.
- 3) A Trading Participant (Member/Legal Entity) cannot order/own more than 400 high frequency ETI trading sessions.
- 4) A maximum use of 80 high frequency trading sessions per Eurex PS gateway.
This limit can be set on a partition level and maybe lower than 80. The precise and actual limit per PS gateway can be found in the “N7 Network Access Guide” (see section 6). The PS gateway will reject any session that is above the limit set for that particular gateway (i.e. the 81st session which attempts to establish a connection to a PS gateway will receive a connection rejection).

6. Further reading

For details on gateway IP addresses and gateway location (side A/side B), please consult chapters 6.1.1 and 9.1.1 of the document “N7 Network Access Guide”, which can be found on the Eurex website www.eurexchange.com under this link:

Technology > T7 Trading architecture > System documentation > Release 6.0 > Network Access

The “Eurex T7 Incident Handling Guide” document has been updated and now also provides a detailed description of the reaction of Eurex Exchange’s T7 trading system to technical incidents involving PS gateways and provides best practices for handling them. In addition, the document provides references to the respective focus days in the T7 simulation environment which are intended to simulate such incidents. It can be downloaded from the Eurex website under this link:

Technology > T7 Trading architecture > System documentation > Release 6.0 > Production

A more detailed discussion of the PS gateways can be found from page 20 onwards in the document “Insights into trading system dynamics“, which can be found on the Eurex website under the link:

Technology > High-frequency trading

If you have any questions regarding the changes, please contact your Technical Key Account Manager via your VIP number or send an e-mail to: cts@deutsche-boerse.com.

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