



eurex circular 115/07

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Recipients: All Trading Members of Eurex Deutschland and Eurex Zürich and Vendors
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High priority

Eurex Technology Roadmap: Enhanced Broadcast Solution

Related Eurex Circulars: 193/06, 075/07

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Content may be most important for:

☞ All departments

Attachments:

1. Eurex Enhanced Broadcast Solution - Connection Prices
2. Eurex Enhanced Broadcast Solution: Access Form Order/ Cancellation
3. Eurex Enhanced Broadcast Solution - Simulation only: Access Form Order/ Cancellation

Summary:

As announced in Eurex circulars 193/06 and 075/07, Eurex will implement the next phase of the Eurex Technology Roadmap on **December 3, 2007** shortly after the introduction of Eurex Release 10.0 which will be introduced on **November 26, 2007**. The "Enhanced Broadcast Solution" is an optional interface which will introduce a new high-performance, functionally enhanced market information broadcast mechanism for the dissemination of un-netted public market data.

The Enhanced Broadcast Solution will be provided in parallel to the existing New Socket Data Feed which was initially introduced in December 2006 providing members with the opportunity to migrate to the new interface over a period of time. The exact date when the New Socket Data Feed will be withdrawn will be announced in a later circular.

In this circular Eurex provides more information concerning the following aspects of the new interface:

- Functional / Technical Overview
- Product Groups and Network Bandwidth Sizing Indications
- Network Bandwidth Portfolio
- Simulation Infrastructure

Eurex intends to make this enhanced information capability available to all of its Members, including those Eurex Members that trade from Eurex trading terminals located in the U.S. Members should keep in mind that this new information capability will not alter the products that can be traded from Eurex terminals located in the U.S.



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Eurex Technology Roadmap: Enhanced Broadcast Solution

A. Functional / Technical Overview

The Enhanced Broadcast Solution will offer a high-performance functionally enhanced market data broadcast mechanism for un-netted public market data. The Enhanced Broadcast Solution will initially be provided in parallel to the existing New Socket Data Feed originally introduced in December 2006. In this way members will have the opportunity to migrate to the new interface over a period of time. In future the dissemination of un-netted public market data will exclusively be provided by the Enhanced Broadcast Solution and the support for the current New Socket Data Feed will be withdrawn. Eurex will provide more information concerning the withdrawal of support for the New Socket Data Feed at a later date by means of a separate circular.

Similar to the existing New Socket Data Feed the Enhanced Broadcast Solution will also be provided as an optional service for un-netted public market data distribution. Distribution of netted price information via the existing MISS Architecture (Public Inside Market Broadcast) using the VALUES API (Virtual Access Link Using Exchange Services Application Programming Interface) connection will remain unchanged. Transaction data and Private Broadcast data will continue to be transmitted by means of this connection as before.

As a result of the fundamental change in the design concept between the New Socket Data Feed and the Enhanced Broadcast Solution, existing applications will have to be adapted to use the new interface.

1. Key functional features of the Enhanced Broadcast Solution

a. Order book depth for options products

Currently only the best bid and best ask prices are broadcast for options. The Enhanced Broadcast Solution will be able to distribute additional order book depth for options products.

b. Enhanced order book depth for futures products

Currently no more than ten price levels are maintained for selected futures products. The Enhanced Broadcast Solution will be able to provide the extended order book depth for all futures products.

c. Granular subscription model

Products will be grouped into product groups or “streams” (e.g. German Stock Options, Swiss Stock Options etc.) whereby individual products may occur in more than one product group. Unlike the existing New Socket Data Feed where members receive all data, the Enhanced Broadcast Solution will allow members to subscribe just to those product groups and the level of data which best meet their individual requirements. Currently approximately 40 product groups are planned. Please refer to Section B: Product Groups for more information regarding the respective grouping of products and the initial market depth which will be provided.

d. Flexible configuration

The setup of the Enhanced Broadcast Solution is flexible and can be easily configured according to changing market requirements. Eurex will be able to modify the following product, product group and configuration parameters on a daily basis:

- Addition of new product groups and association of products to product groups
- Market depth provided per product
- Number of market depth streams including the depth associated with them (e.g. 1; 2-10; 11-20)
- Multicast addresses of the individual streams
- The interval at which the snapshot broadcast is published

The additional flexibility provided by the Enhanced Broadcast Solution requires that member's in-house applications will also be capable of handling short-term configuration changes.

2. Key technical features of the Enhanced Broadcast Solution

a. Low latency

The Enhanced Broadcast Solution will optimize the complete market data distribution and will minimize latency between an event occurring and the related market information broadcast being seen by members. The high-speed data distribution mechanism will be implemented using the state-of-the-art IP multicast protocol. The choice of dedicated Market Data Network Bandwidths, according to the sizing indications, will provide members with the ability to size their infrastructure according to their specific requirements for market data subscription. Please refer to Section C and Section D for further information.

b. Low "Foot Print" Solution

No front-end software will be provided by the exchange. Participants will be able to utilize the Enhanced Broadcast Solution independent of their operating system, compiler version and programming language. In addition, the Enhanced Broadcast solution does not impose any specific hardware requirements and therefore provides members with the opportunity to easily integrate the new interface into their existing IT infrastructure.

c. Close to Industry Standards

The Enhanced Broadcast solution uses a high performance protocol which is close to the FIX 5.0 protocol and can effectively be used by members or vendors in developing their own applications. The FAST protocol will be used for the data compression.

3. Market Data Dissemination Concept

The delivery mechanism for market data via the Enhanced Broadcast Solution is based on the subscription model principle. A reference data stream will distribute appropriate information concerning all products including mapping between product, book depth and the respective multicast address. Member applications can automatically process this information on a daily basis and make a manual reconfiguration unnecessary in the event of any changes.

Market data will be disseminated in the form of complete order book information broadcasts (Snapshot Broadcasts) which will be provided at periodic intervals and continuous order book updates (Delta Broadcasts) which will be broadcast in parallel.

a. Snapshot Broadcasts

- Contain the complete book information for a given product
- Broadcast at periodic intervals on a separate multicast address to the delta broadcasts of the same product group
- Provide the baseline against which delta broadcasts are applied
- Contain information regarding which delta broadcasts are incorporated in the snapshot

b. Delta Broadcasts

- Absolute values sent whenever a market-affecting event (such as an order or trade) occurs. Only changes (deltas) in the market will be broadcast
- Contain sequence numbers to indicate if a previous broadcast has been lost e.g. during failover or under extreme load conditions.

Synchronization of the broadcasts in the individual streams in order to display the complete order book needs to be performed by the receiving application.

Each broadcast will be sent to two different multicast addresses to minimize chances of packet loss (live-live principle) and to allow a very fast and smooth failover by the client application in case of any communications/line problems. Members will require two separate connections in order to be able to implement this concept on their side.

More detailed information regarding the Interface Specification for the Enhanced Broadcast Solution will be provided in a separate document which is scheduled to be published on June 12, 2007. For more details on the publication dates of further documentation please refer to the Eurex Release 10.0 Information Calendar published together with Eurex circular 075/07.

B. Product Groups and Network Bandwidth Sizing Indications

The following table provides an overview of the envisaged broadcast groups together with the associated Market Depth. In addition an indication of the bandwidth capacity is provided which will be required to distribute the data of the corresponding streams.

The sizing indication has been calculated based on order/quote activity of selected past business days. The indicated bandwidth shows the maximum bandwidth (rounded up to thresholds of 1, 2, 5, 10, 20 and 30 Mbit/s) that would have been used by the respective group in the peak second encountered during several business days.

Members should be aware of the following facts when calculating their own bandwidth requirements:

- The required bandwidth is mainly dependant on the order/quote activity in the products of the respective groups; if quoting activity increases, those values may also rise significantly.
- It is advisable to add additional headroom to the capacity requirement to reduce the probability of message loss, message queuing during peak times and to ensure that sufficient capacity is available for future market growth.
- As peak load in different product groups occurs at different points in time, it is not possible to calculate bandwidth requirements for subscribing to several groups by simply adding the values provided for them.

Supergroup	Product Group	Market Depth	Bandwidth Consumption
Interest Rate Futures	FGBL	20	5 Mbit/s
	FGBM	20	1 Mbit/s
	FGBS	20	1 Mbit/s
	other FI Futures	10	1 Mbit/s
Interest Rate Options	OGBL, OGBM, OGBS	10	2 Mbit/s
Money Market	Money Market Futures	10	2 Mbit/s
	Money Market Options	10	1 Mbit/s
Stock Options	German Stock Options	10	20 Mbit/s
	French Stock Options	10	10 Mbit/s
	Italian Stock Options	10	2 Mbit/s
	Scandinavian Stock Options	10	2 Mbit/s
	Dutch / Benelux Stock Options	10	5 Mbit/s
	Spanish Stock Options	10	1 Mbit/s
	Swiss Stock Options	10	10 Mbit/s
all other Stock Options	10	1 Mbit/s	
EXTF	Futures on ETFs	10	1 Mbit/s
	Options on ETFs	10	1 Mbit/s
SSFs	German	10	1 Mbit/s
	French	10	1 Mbit/s
	Italian	10	1 Mbit/s
	Scandinavian	10	1 Mbit/s
	Dutch / Benelux	10	1 Mbit/s
	Spanish	10	1 Mbit/s
	Swiss	10	1 Mbit/s
	UK	10	1 Mbit/s
all other SSF	10	1 Mbit/s	
Equity Index Futures	FDAX	20	1 Mbit/s
	FESX	20	2 Mbit/s
	FSMI	20	1 Mbit/s
	FSTX	20	1 Mbit/s
	other German Equity Index Futures	10	1 Mbit/s
	other Swiss Equity Index Futures	10	1 Mbit/s
	all other Sector Index Futures	10	1 Mbit/s
	all other Equity Index Futures	10	1 Mbit/s
Equity Index Options	ODAX	10	10 Mbit/s
	OESX	10	5 Mbit/s
	OSMI	10	2 Mbit/s
	OSTX	10	1 Mbit/s
	other German Equity Index Options	10	1 Mbit/s
	other Swiss Equity Index Options	10	1 Mbit/s

	all other Sector Index Options	10	5 Mbit/s
	all other Equity Index Options	10	1 Mbit/s
Volatility Index	Volatility Index Futures	10	1 Mbit/s
Credit Derivatives	Credit Futures in EUR	10	1 Mbit/s
EEX	EEX	10	1 Mbit/s
Total Market	all products traded on Eurex	n.a.	30 Mbit/s

C. Network Bandwidth Portfolio

To provide members with the opportunity to freely select the appropriate bandwidth best suited to the depth of data required to meet individual business requirements, Eurex will offer members an extended connection portfolio for the Enhanced Broadcast Solution comprising of 10, 20, 30 and 50 Mbit/s connections.

For your convenience, a list of connection prices and an order form for the new optional Enhanced Broadcast solution are attached to this circular.

Please note: Members planning parallel operation of both the New Socket Data Feed and Enhanced Broadcast Solution in the production environment will require two separate line connections.

iAccess connections will not be offered as a connection alternative for the production environment.

D. Simulation Infrastructure

Eurex will provide members with two alternatives for connecting to the Enhanced Broadcast Solution simulation environment.

1. Joint use of existing New Socket Data Feed connections

In order to provide existing users of the New Socket Data Feed with a cost efficient opportunity to connect to the Enhanced Broadcast Solution simulation environment, an opportunity to use jointly an existing 10 Mbit connection will be provided. Together with this alternative member connections will be reconfigured so that 95 percent of bandwidth will be allocated to the existing New Socket Data Feed production environment and 5 percent to the new Enhanced Broadcast Solution simulation environment.

Priority of production traffic will always be guaranteed via use of the CBWFQ (Class-Based Weighted Fair Queuing) protocol. Both Socket Data Feeds will also be able to make use of each others free bandwidth capacity.

Simulation of the Enhanced Broadcast Solution will be provided during Eurex 10.0 Release Simulation which is planned to take place between September 17, 2007 and November 16, 2007. Details concerning specific simulation events related to the Enhanced Broadcast Solution (e.g. load tests, guided simulation scenarios etc.) will be provided together with the Eurex Release 10.0 Member Simulation Guide. For more information regarding the publication date for this document, please refer to the Eurex Release 10.0 Information Calendar which was published together with Circular 075/07.

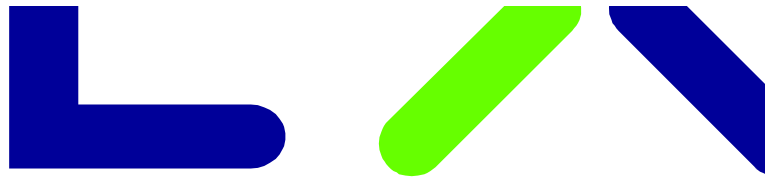
2. New Dedicated Connection

Members who are currently not connected to the existing New Socket Data Feed or who require a dedicated connection for the simulation of the Enhanced Broadcast Solution will be required to order the appropriate connection from the connection portfolio. The line order form for this purpose is attached to this circular (attachment 2)

Due to the number of different locations and the resultant dependency on different telecommunication providers, the delivery of new network connections can take in excess of sixteen weeks. Whilst every effort will be made to ensure that orders for new connections, which are placed in time, will be available by the start of simulation, members are requested to bear the appropriate lead-time in mind when placing their orders.

If you have any questions or request further information, please contact Andreas Pée at tel. +49-69-211-1 86 55 or Richard Allen at tel. +49-69-211-1 83 95.

Frankfurt, June 8, 2007

X-pand into the Future

Eurex Frankfurt AG Enhanced Broadcast Solution - Connection Prices

Connection: 10, 20, 30 and 50 Mbit/s

Member Location	Price per month			
	10 Mbit/s	20 Mbit/s	30 Mbit/s	50 Mbit/s
Amsterdam Chicago Dublin Frankfurt London Mailand New York Paris Zurich	€ 3,500	€ 4,250	€ 4,750	€ 5,500
Other Locations	Upon request			

Proximity Services: Price per proximity connection € 2,000 per month

All prices are valid as of June 8, 2007.



Router und Leitungsabschluss befinden sich im selben Raum
Router and point of line termination are located in the same room

Router und Leitungsabschluss befinden sich in unterschiedlichen Räumen
Router and point of line termination are located in different rooms

Ihre Anbindung wird mit einer Ethernet-Schnittstelle 100BASETX (Kupfer) geliefert. / *Your connection will be delivered with Ethernet interface 100BASETX (copper).*

Lokation der Hauseinführung (Bezeichnung durch den lokalen Netzwerk-Provider)
Location of building entry (description by local network provider)

Beschreibung der Hauseinführung / *Description of building entry*

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Technischer Ansprechpartner vor Ort / Technical contact person at location

Vorname und Name / *First name and family name*

Vertreter: Vorname und Name / *Deputy: first name and family name*

Telefon / *Phone*

Fax

Telefon / *Phone*

Fax

E-Mail / *E-mail*

E-Mail / *E-mail*

Lokation für eine zweite Anbindung, falls nicht identisch mit der oben genannten Lokation / *Location for a second connection if not identical with location mentioned above*

Standort des Leitungsabschlusses / *Point of line termination*

Leitungsinstallation außerhalb der Geschäftszeiten
Connection installation outside of business hours

Name des Unternehmens / *Company name*

Straße / *Street*

Land, Postleitzahl und Ort / *Country, zip code and town*

Gebäudeteil <i>Part of building</i>	Etage <i>floor</i>	Raum-Nr. <i>room no.</i>	Rack-Nr. <i>rack no.</i>	Provider oder Kundenkabinett <i>carrier or customer cabinet</i>

NPA/NXX Nummer (nur für Lokationen in den USA) / *NPA/NXX Number (only applicable for locations in the U.S.)*

Router und Leitungsabschluss befinden sich im selben Raum
Router and point of line termination are located in the same room

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Location of building entry (Description by local network provider)

Beschreibung der Hauseinführung / *Description of building entry*

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Falls nicht identisch: Technischer Ansprechpartner vor Ort / If not the same: Technical Contact Person at location

Vorname und Name / *First name and name*

Vertreter: Vorname und Name / *Deputy: First name and name*

Telefon / *Phone*

Fax

Telefon / *Phone*

Fax

E-Mail / *E-mail*

E-Mail / *E-mail*



Mit Unterzeichnung dieses Zugangsformulars verpflichtet sich der Auftraggeber, sämtliche Kosten für die Installation und Bereitstellung der Anbindung zu tragen. Dies gilt auch für den Fall, dass

- die Bestellung vom Antragsteller zurückgezogen wird
- die Anbindung trotz Bereitstellung nicht vom Auftraggeber in Betrieb genommen wird.

Anbindungskosten werden mit der Bereitstellung der Anbindung durch die Eurex Frankfurt AG fällig. Die Kosten sind der jeweils gültigen Preisliste der Eurex Frankfurt AG zu entnehmen. Preise zzgl. gesetzlicher Mehrwertsteuer.

Bei Kündigung der Zulassung bzw. Anbindung werden die Kosten bis einschließlich des Kündigungsmonats erhoben.

Die Eurex Frankfurt AG stellt das neue und optionale Marktdatenangebot allen Handelsteilnehmern der Eurex zur Verfügung. Zu beachten ist, dass die Nutzung des neuen Informationsangebots keine Auswirkungen auf den Umfang der Eurex-Produkte hat, die von in den USA ansässigen Eurex-Handelsteilnehmern gehandelt werden dürfen.

By signing this access order form the applicant is committed to bear all costs for installation and provision of the connection.

This also applies if

- *an order is withdrawn by the applicant*
- *a connection provided is not put into operation by the applicant*

Connection costs are due after Eurex Frankfurt AG has provided the connection. The costs can be deducted from the Eurex Frankfurt AG price list valid at this time. Fees are exclusive of VAT.

Upon cancellation of a connection or admission, fees will be charged until and including the month when the cancellation was made.

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Ort, Datum / Place, date

Firmenstempel, Unterschrift des Auftraggebers, Name in Druckbuchstaben
Company stamp, signature of applicant, name in capitals

