

# Technical Connection Information

## **Connections via MQ**

For clients of Clearstream Europe AG

## Technical Connection Information

### Connections via MQ

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# 1. Introduction

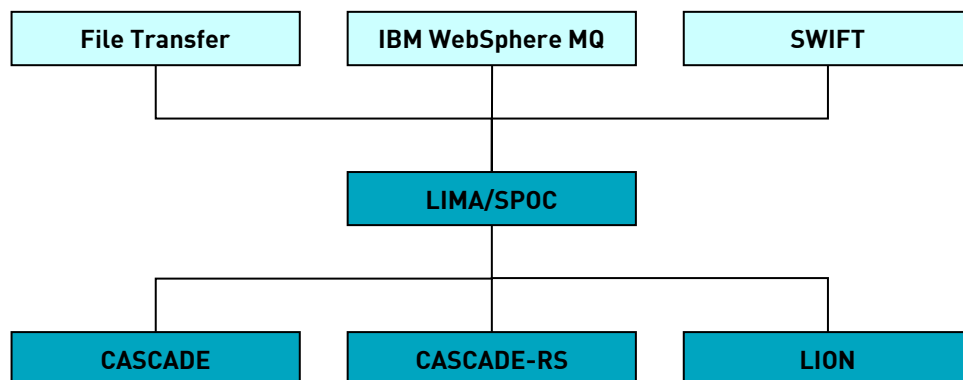
## 1 Introduction

Clients of Clearstream Europe AG (CEU) can use IBM WebSphere MQ (MQ) to exchange order-related data with the following CEU settlement systems in a TCP/IP environment:

- CASCADE
- CASCADE-RS
- Cash
- KADI
- LION
- LMS
- Vaults
- Xemac

In addition to the File Transfer and Swift interfaces, MQ can be used for the automated entry of instructions in ISO 15022 format and to receive Business Validation Feedback (BVF) for the above applications. MQ can also be used for the real-time transmission of event-related information such as matching information, settlement confirmation or other settlement reporting in the CASCADE application.

CEU clients can use MQ to connect to the CEU connectivity service LIMA /SPOC, which in turn communicate in real time with the relevant back-end applications:



LIMA/SPOC and CASCADE, CASCADE-RS and LION are Clearstream Europe applications which run on the Deutsche Börse AG mainframe. The CEU client's computer or that of the service provider is connected to the Deutsche Börse AG server with TCP/IP via MQ.

The technical information required for connection to CEU applications via MQ is described in detail below.

### 2 Hardware and Software

At Deutsche Börse AG the productive machine IBM z/Series hardware running with z/OS will be used. The relevant components for the connection are:

- TCP/IP
- MQ

Deutsche Börse AG also operates the connectivity applications LIMA/SPOC and the downstream back-end systems.

The CEU client or [the respective service](#) provider must have the following:

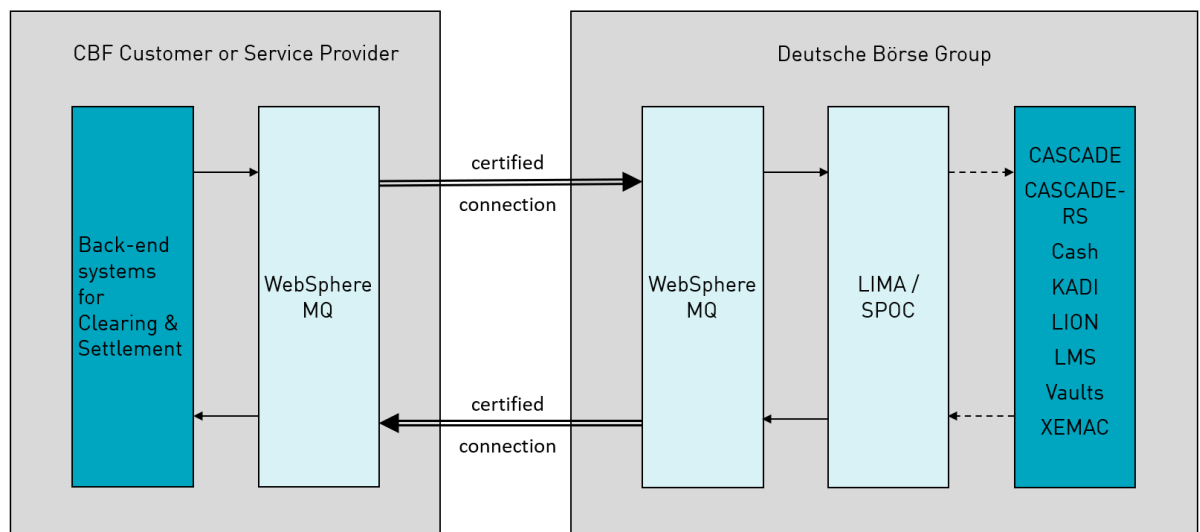
- TCP/IP
- IP-capable line connection to Deutsche Börse AG
- MQ [server](#)

The MQ [server](#) version used must be supported by IBM. Both hardware and operating system must be suitable for operation of MQ [server](#).

Deutsche Börse AG provides no software to CEU clients or their [service](#) provider. The procurement and licensing of any components required such as MQ Server is the responsibility of each client.

### 3. Requirements for an MQ connection

## 3 Requirements for an MQ connection



Information and advice on the MQ connection options illustrated in the diagram above is given in this section. As a partner system to the IBM main frame of Deutsche Börse AG, the CEU client or [the respective service provider](#) must have a TCP/IP-capable computer system with MQ [server](#).

A TCP/IP protocol for the communication via MQ is requested. Therefore, the CEU client or its service provider must have installed a TCP/IP-capable connection to Deutsche Börse AG. A bi-directional certification is mandatory for the connection, i.e. both the sender and the recipient require a security certificate which must be exchanged with the respective counterparty. A certificate for sending and one for receiving messages is required for each account master with CEU. Deutsche Börse accepts all certificates issued by an official admission office.

The technical connection on each of the network/ MQ generation dates is defined in full by Deutsche Börse AG. The corresponding configurations should be entered into the system of the CEU clients or [the service provider](#).

The IP addresses and ports required to establish a connection are exchanged between the CEU clients or [the service provider](#) and Deutsche Börse AG each time a connection is made.

All of the activities required to set up a communication channel are described in detail in the [WebSphere MQ documentation](#) ([WebSphere MQ Intercommunication](#)).

The CEU client can connect directly to LIMA/SPOC or use the services of a third party, that is, a [service provider](#) or an external data centre, to send and receive messages. In this case he must provide the [service provider](#) with a power of attorney (POA) which is deposited in LIMA/SPOC and verified accordingly. In the sections which follow, only the term CEU client is used, regardless of whether the client connects to the Deutsche Börse AG server via a [service provider](#) or not.

## 4. MQ configuration

### 4 MQ configuration

#### 4.1 System environment

Messages are exchanged through a connection to the corresponding queue manager at Deutsche Börse AG. The following system environments are available:

- Production system (IMS12)
- Simulation system (IMS23)

#### 4.2 Naming conventions

The LIMA/SPOC conventions specify the names to be used for MQ objects (channels, queues etc.) and other parameters required. The CEU client is given the names in the form of input files for the relevant MQ administration program (runmqsc, CSQUTIL, ISPF, MQ-Commands).

#### 4.3 Queue manager parameters

The CEU client should use a dead letter queue which should be entered accordingly into the queue manager.

AdoptNewMCA and AdoptNewMCACheck should be enabled under queue manager properties.

More detailed information on the configuration of the various platforms is provided in the [WebSphere MQ documentation](#).

#### 4.4 Separation of technical and business information

Two separate queues are set up for the transmission of technical and business information from LIMA/SPOC to the CEU client:

##### LIMA/SPOC to CEU client

- Queue for technical information: Technical Validation Feedback (TVF) is sent via this queue as MT599. TVF describes whether a message sent by the CEU client has been accepted (ACK) or declined (NAK) by LIMA/SPOC for technical reasons.
- Queue for business information: In addition to Business Validation Feedback (BVF), this queue is used to send any information on business products ordered by the CEU client.

##### CEU client to LIMA/SPOC

As the CEU client can only send business information (for example, instructions, releases and deletions) to LIMA/SPOC, no queue for technical information is set up in this direction. Only the queue for business information is available.

## 4. MQ configuration

### 4.5 Object parameters

The MQ channel connection from the CEU client to Deutsche Börse AG is set up as a server-requester channel (CEU client = server, DBS = requester).

The opposite direction is set up as a sender-receiver channel (DBS = sender, CEU client = receiver).

The following channel parameters should be used:

- DISCONT(0)
- CONVERT(NO)
- BATCHINT(10)
- BATCHSZ(25)
- HBINT(60)
- NPMSPEED(NORMAL)

All messages should be persistent messages. No EXPIRY may be set.

The data content - particularly Swift control characters - of a message must correspond with the local code page values used by MQ (CODECHARSETID / CCSID for message content).

The message type used is DATAGRAM, and messages should always be entered with the format MQFMT\_STRING.

Received messages should be converted with the application programs when being read from the MQ queue (GET\_CONVERT option in MQGET).

Deutsche Börse AG will inform the CEU client of the specific MQ configurations before a connection is set up.

### 4.6 Establishing a connection

The connection from the CEU client to LIMA/SPOC and vice versa is established by the sender.

- The sender channels from LIMA/SPOC to the CEU client are initiated by Deutsche Börse AG. The CEU client is responsible for ensuring that the corresponding receiver channels have been initiated. The channel status should always be set to *running* during service hours, during which channel initiation should be possible at any time. This also means that receiver channels may not be stopped by the user.
- The server channels to LIMA/SPOC must be initiated by the CEU client. The channels should be set to either always enabled or triggered.

It is the responsibility of the CEU client to monitor operation of MQ [within the client systems](#).



## 4. MQ configuration

### 4.7 Service hours

MQ is generally operated by Deutsche Börse AG (DB AG) from 01:00 on Monday to 06:00 on Saturday (except on German public holidays). The MQ transmission and receiving channels will be stopped outside of these times on the part of DB AG to assure that from the CEU client no messages will be transferred to DB AG.

Please direct any technical problems within service hours to:

Deutsche Börse AG Hotline: Tel: +49 – (0) 69 – 211 - 1 1000

Email [technical.support@deutsche-boerse.com](mailto:technical.support@deutsche-boerse.com)

### 4.8 Back-up options

LIMA/SPOC is always addressed by MQ the same way as far as the CEU client is concerned. On the other hand, the CEU client has the option of installing a second computer as a back-up to the primary environment. The same MQ definitions must be set in this back-up environment as in the primary environment. Deutsche Börse AG must be informed of the IP addresses for this computer and they must be defined in the firewalls.

Switching from the primary to the backup environment and vice versa is associated with manual activities such as alteration of the active IP address and channel reset and will only be carried out in an emergency if so requested by the CEU client.

It should be noted that only one environment (primary or backup) may be active at any one time.

## 5. Configuration of messages from and to LIMA/SPOC

### 5 Configuration of messages from and to LIMA/SPOC

Messages between the CEU client and LIMA/SPOC via MQ may currently only be exchanged in ISO 15022 format. The exact configuration depends on factors such as the business being transacted, the back-end application affected and the function of the message. An exact description of the message layout is available in the [Connectivity Handbook](#) at our website [www.clearstream.com](http://www.clearstream.com) under Securities Services / Connectivity and Data solutions / CASCADE / CASCADE via MQ.

For further information please contact:

Client Services Connectivity

#### **CSD**

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Email: [connect@clearstream.com](mailto:connect@clearstream.com)

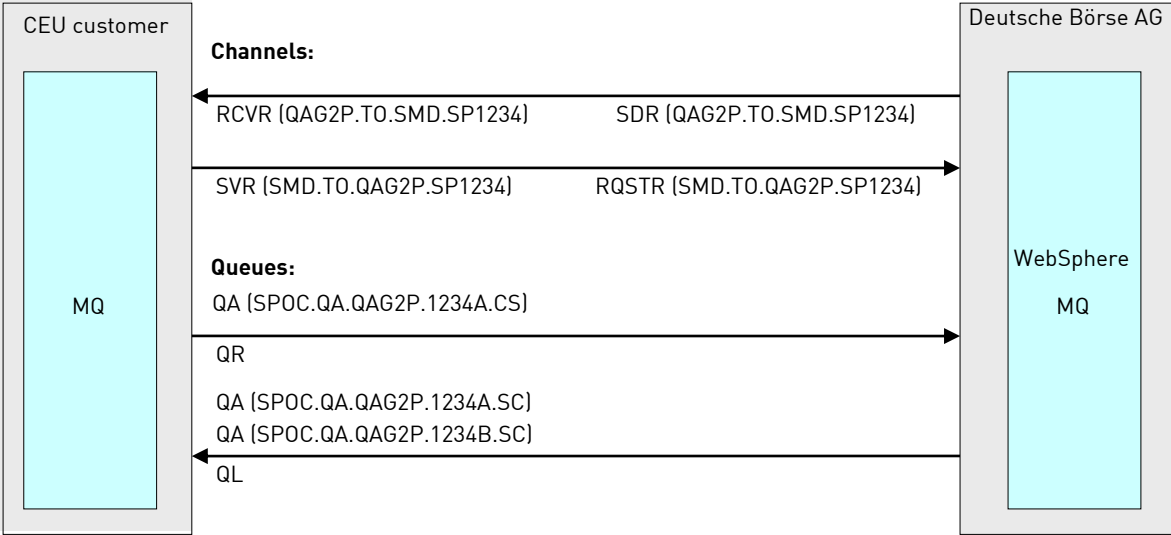
#### **ICSD**

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6 Appendix

Please find below an example of channel and queue definitions in the production environment for the CEU client and Deutsche Börse AG (for fictitious CEU client 1234):



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