

Eurex Clearing C7

**FIXML Broker Failover Testing 2021
Scope Definition**

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1 Introduction

This document provides an overview of the testing for the Eurex C7 FIXML broker failover. It contains the required technical background information as well as functional objectives and limitations to enable participants to join the failover test appropriately once executed.

The broker failover to backup host will be performed on the FIXML Interface in the production environment. During this test clearing members will experience a broker outage which can last for several minutes.

Members should ensure that their applications can recognize/acknowledge the interrupted connection and can ideally automatically reconnect once the broker is available again. In order to detect a connection failure, member applications are advised to specify 'idle-timeout' which triggers a 'heart-beat' transmission on the established connection. In that context - if a connection has been lost - both, the client and the broker shall detect and react on the missing heartbeat appropriately.

More information on the failover and recovery mechanism (or even loss of a connection) can be found in the C7

- Eurex Clearing FIXML Interface Specification - Volume 1, chapter 7
- Eurex Clearing Messaging Interfaces - Connectivity B: AMQP Programming Guide V.2.1, chapter 7.2

Both available on Eurex Clearing website www.eurex.com/ec-en/ under the following path:

Support > Initiatives & Releases > C7 Releases > C7 Release 7.1 > System documentation > Interfaces

Participation in the C7 FIXML broker failover test exercise is strongly recommended by Eurex Clearing AG but not mandatory.

The execution of the C7 FIXML broker failover test in the production environment is scheduled for Saturday, Oct 23, 2021 at the same point in time when the FIA test is conducted.

For more information please refer to the 2021 FIA Disaster Recovery Exercise

<https://www.fia.org/events/2021-fia-disaster-recovery-exercise>

For a general overview of the C7 network and its connection alternatives, please refer to the document

"N7 Network Access Guide ", also available on the Eurex Clearing website www.eurex.com/ec-en/ under the following path:

Support > Initiatives & Releases > C7 Releases > C7 Release 7.1 > System documentation > Network Access

<https://www.eurex.com/resource/blob/2630862/388b727972b5122945eedf0e63c36920/data/N7-Network-Access-Guide-v2.0.59.pdf>

2 Infrastructure Design

2.1 Status Quo

The following drawing describes the connection alternatives to both of our data centres.

Two different types of customer installations shall be considered:

- Customer installations connecting to the Frankfurt Access Point (customers in Germany)
- Customer installations connecting to remote Access Points (London, Chicago, Paris, etc.)

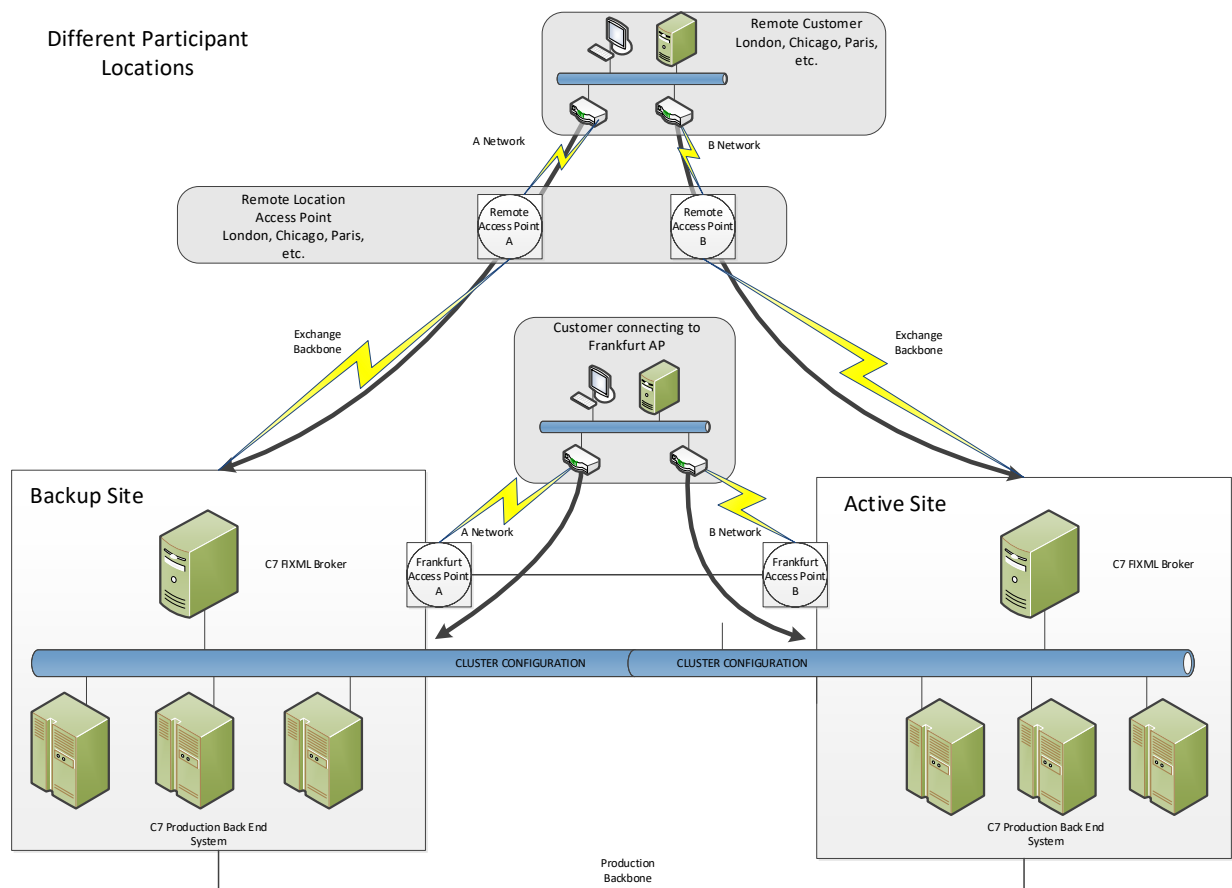


Figure 1: Both types of customer installations and their redundant connectivity to the C7 production back ends.

2.2 Failover scenario – loss of primary/active C7 FIXML broker

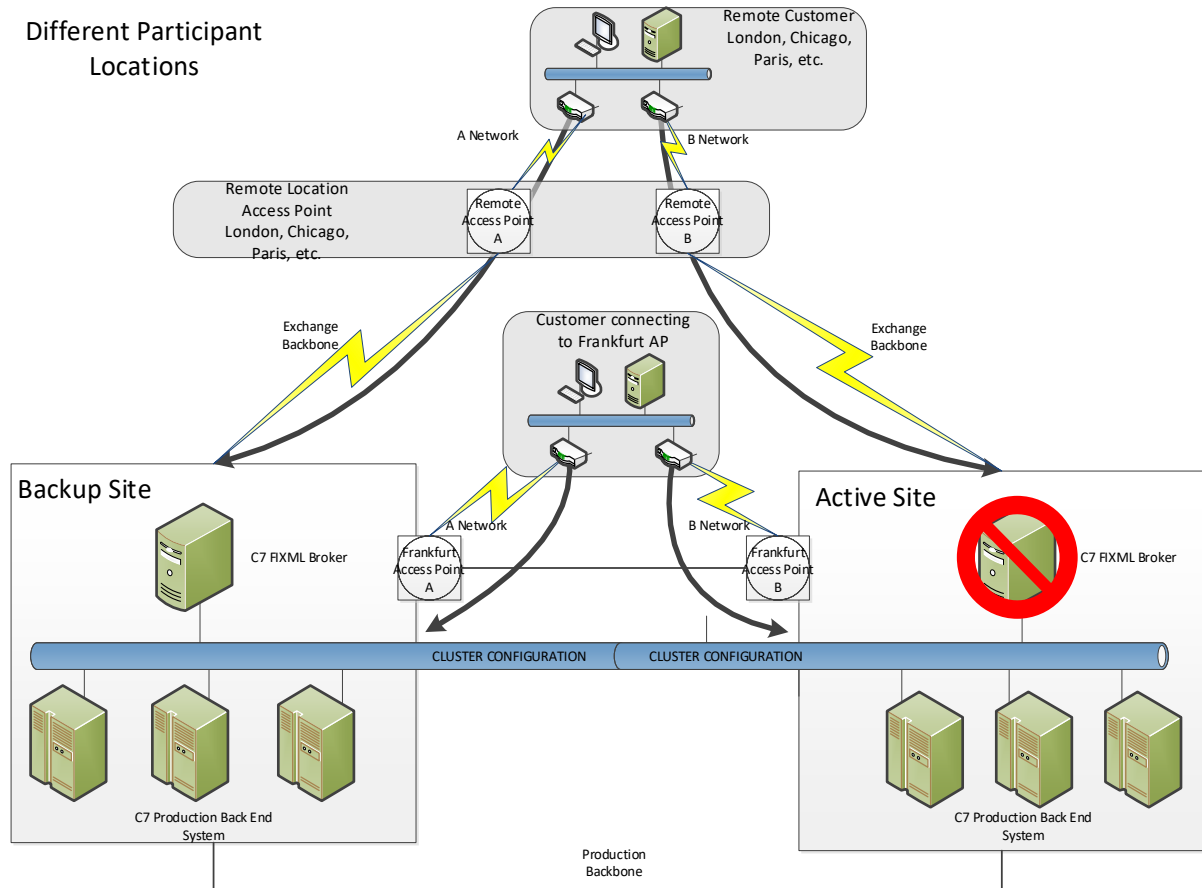


Figure 2: Displays the loss of the primary/active C7 FIXML broker

The failover test scenario will simulate an outage of the C7 FIXML broker service which is hosted in the active data centre facility.

In such a scenario, customer installations connecting to remote or local access points (i.e. London, Chicago, Paris, Frankfurt, etc.) will continue to use both leased lines pointing them to their local access point. The local access point continues to use backbone lines to Frankfurt which are terminating in both data centres.

The switch to the backup site using the backup C7 FIXML broker shall work ideally automatically and seamless for customers as both FIXML server devices are running in a cluster setup and no manual configuration change is needed.

3 General considerations

The Eurex Clearing FIXML Interface provides a highly flexible, standard-compliant and cost-effective interface that allows Eurex participants to perform post-trade modifications and allows Eurex Clearing members to perform their clearing duties.

The switch to the backup site using the backup C7 FIXML broker shall work ideally automatically and seamless for customers as both FIXML server devices are running in a cluster setup, hence no manual configuration change is needed.

After the failover is triggered by the exchange, customer's application might lose its initial connection to the C7 FIXML broker and shall reconnect to the same IP address and Port (as described in chapter 3.1) once the backup C7 FIXML broker becomes available.

3.1 Technical objectives

Current active FIXML accounts and corresponding certificates from production shall be used.

Network protocol, IP address and TCP port will not change and must be used for the connection to the Eurex Clearing FIXML Interface:

Environment	IP addresses	IP subnets	Ports	Protocol
Production	90.162.253.100	90.162.253.0/24	10070	TCP/IP

A dedicated ping test prior to the failover test exercise is not necessary and therefore not offered.

3.2 Functional objectives

- T7 test trades which have been entered during the DR test will not be transferred into the Clearing system, hence a backout of those transactions is not necessary
- Other clearing activities such as transaction adjustments or Give-up / Take-up will not be supported as all products remain in START phase
- Transaction adjustments via the FIXML interface can be executed to check the end-to-end connectivity. Those requests however will be rejected with the respective transaction adjustment reject message as described in the Eurex Clearing FIXML Interface Specification Volume 4, chapter 3
- Inquiries via the C7 GUI will be supported

3.3 Schedule of the failover test exercise

Date: October 23, 2021

Start of failover test (shutdown of primary FIXML broker/failover to backup FIXML broker):
~15:00h CET

Accepting new customer connections once full message recovery on backup FIXML broker
is completed (depending on load from previous business day): ~15:30h CET

End of failover test (no further action will be triggered): ~16:00h CET

During this time frame the switch/failover to the partner C7 FIXML broker will be executed, at least once.

3.4 Success criteria of the failover test exercise

The failover test exercise can be proven as successful when customer's application can reconnect successfully without manual intervention.

3.5 Support

The Technical Key Account Managers will be available for supporting the failover test exercise via your individual VIP number from 14:00h CET until 18:00h CET.

4 Change log

The change log describes on a higher level, what changed in the latest version of the document over older versions.

No	Chapter	Date	Change
1.0		9 August 2021	Initial version the Eurex C7 FIXML Broker Failover Testing 2021