X-pand into the Future

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Eurex Exchange's T7 disaster recovery test

Related Eurex Circular: 183/11

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Content may be most important for:	**Attachment:**
Ü All departments	Disaster Recovery Concept - Interface Configuration Details

Summary:

Eurex Exchange has published a detailed disaster recovery concept outlining all prerequisites and network configuration details to ensure continuation of trading in the unlikely event of a disaster which leads to the inaccessibility of Eurex Exchange's T7 main data centre.

Later this year Eurex Exchange will announce a weekend date for a disaster recovery test allowing Participants to verify their network and interface configurations in a disaster recovery scenario.

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Eurex Exchange's T7 disaster recovery test

Disaster recovery concept

Eurex Exchange has published a detailed disaster recovery concept outlining all prerequisites and network configuration details to ensure continuation of trading in the unlikely event of a disaster which leads to the inaccessibility of Eurex Exchange's T7 main data centre.

Please refer to the attached document "Disaster Recovery Concept - Interface Configuration Details" for further aspects on the test scenario and all required network changes.

The document is also available on the Eurex website www.eurexchange.com under the link:

Technology > Eurex Exchange's T7 > System documentation > Release 2.0 > Network Access

Disaster recovery scenario test

Later this year Eurex Exchange will announce a weekend date for a disaster recovery test allowing Participants to verify their network and interface configurations in a disaster recovery scenario. The disaster recovery test is expected to take place in the first quarter of 2014. Participation will be optional but highly recommended for all Trading Participants and Clearing Members of Eurex Clearing AG to ensure easy transition in case of a real emergency.

If you have any questions or require further information on Eurex Exchange's T7 disaster recovery test, please contact the Markets Services team at tel. +49-69-211-1 31 18 or via e-mail to: technology.roadmap@eurexchange.com. Alternatively, please contact your Technical Key Account Manager using your VIP number or via e-mail to: cts@eurexchange.com.

8 October 2013

Eurex Exchange’s T7

Disaster Recovery Concept

Interface Configuration Details

Version	1.0.1
Date	27 September 2013

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Abstract

This document describes the general disaster recovery concept of Eurex Exchange's T7. All required IP addresses, multicast addresses and TCP/IP ports to be used for various interfaces in a DR scenario are listed.

Information about disaster recovery details for the Eurex classic system can be found in Eurex circular 183/11.

1. Disaster recovery scenario

The following description is relevant for installations connecting via redundant line WAN connection (Ethernet, E1/T1) outside of Equinix data center. Customer installations inside Equinix are considered to be defunct in a disaster recovery (DR) scenario which results in a complete outage of the Equinix data center.

A total of three types of customer installations have to be considered for the Eurex DR scenario:

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

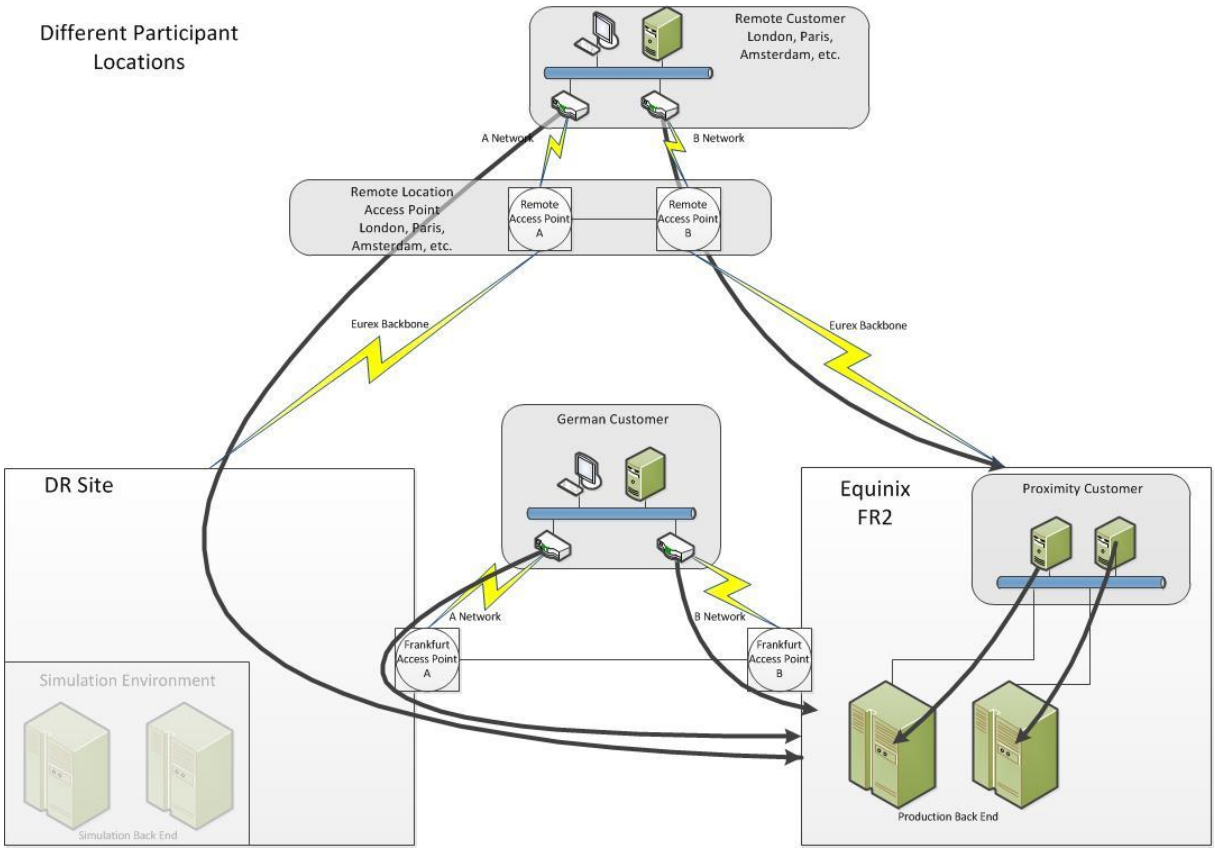


Figure 1, three location options for Eurex connectivity

Figure 1 depicts all three types of customer installations and their redundant connectivity to the Eurex production back end.

Figure 2 displays the result of a DR scenario which renders the whole facility of Equinix data center FR2 in Frankfurt Kruppstrasse inaccessible.

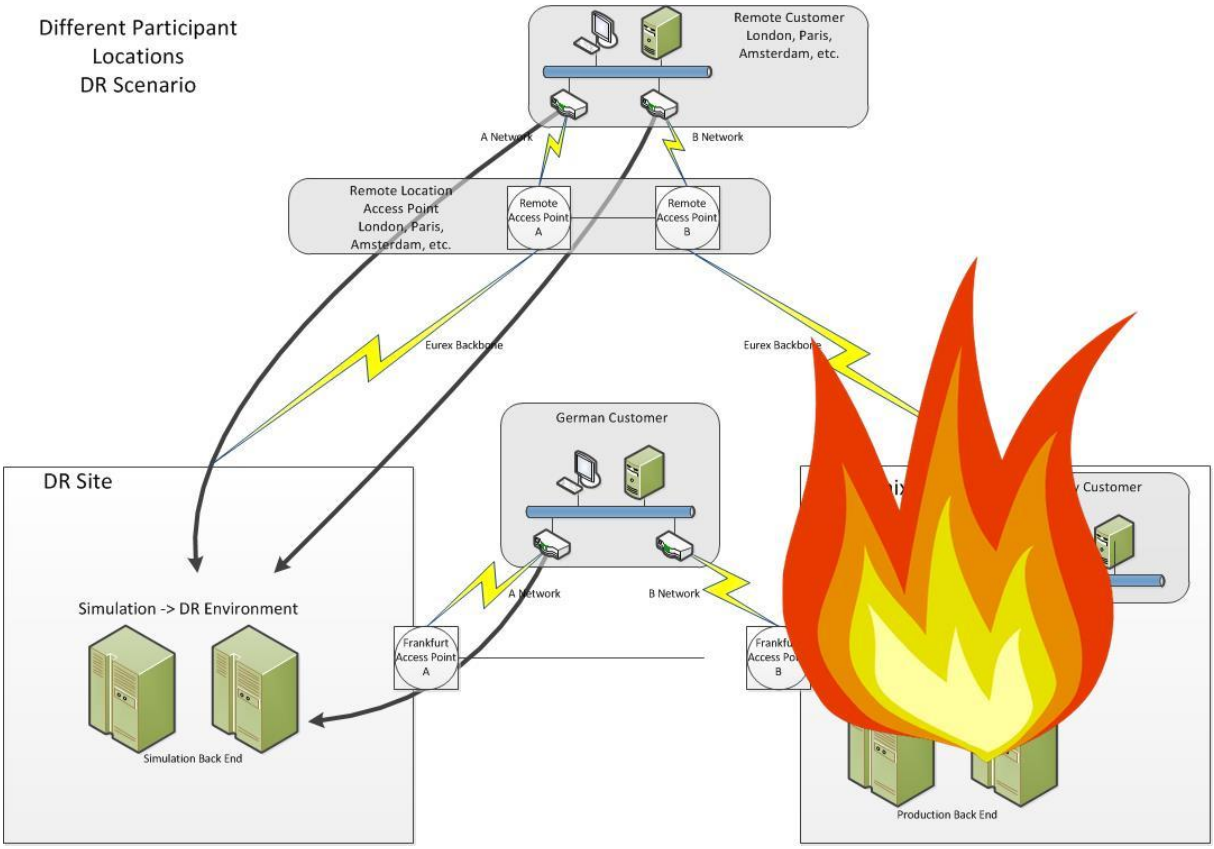


Figure 2, Disaster recovery scenario

In such a scenario customer installations connecting to remote access points (i.e. London, Paris, Amsterdam, Chicago, etc.) will continue to use both leased lines[1] connecting them to the local access point. The local access point continues to use back bones lines to Frankfurt which are terminating in the DR data center.

Customer installations connecting to the Frankfurt access point will be able to continue to use a single leased line connecting to the access point half located in the DR data center.

Customer installations within the Equinix data center (FR2) are considered to be non functional in this DR scenario.

[1] After the last mile redundancy network change has been activated.

2. General considerations

In a disaster recovery scenario some of the Eurex T7 infrastructure regularly used for Eurex T7 simulation will be re-used to serve as disaster recovery production infrastructure.

The switch of the back end and the transfer of reference data will not be instantaneous, but is expected to take up to four hours.

While most Eurex T7 interfaces will be available in the disaster recovery scenario a number of conceptual differences to regular production exist and have to be accounted for.

2.1 Functional

- Order books will be empty after switch to the DR environment.
- All keys and sequence numbers are reset and starting from 1 again.
- Trades of the current business day will not be transferred to T7 DR System (but can still be inquired from the Eurex legacy system).
- Only two partitions running in DR scenario (compared to ten partitions in regular production environment).
- The original RDF file from the production environment for that day has to be used as initial RDF file. Further intra day updates will be published by the DR back end onto the Common Report Engine as usual into directory for environment 90 (prod).
- The Eurex Enhanced Order Book Interface will not be available in a disaster recovery scenario at all.
- Eurex Extended Market Data Service will distribute ticker data, settlement prices and OTC market data provided the availability of the Eurex classic back end on regular IP production addresses.
- ETI sessions will have a throttle limit of 30 transactions per second in a DR scenario.

2.2 Network

- User IDs, ETI and FIX sessions will be used from production.
- All TCP and UDP Ports will be the same as for normal production.
- All Eurex A Stream MDI/EMDI/RDI multicast groups will be the same as for normal production.
- Eurex A Stream Rendezvous Point (RP) will be the same as for normal production.
- Eurex MDI/EMDI/RDI Source IP addresses will differ from regular production!
- Eurex ETI/Connection Gateway Subnets will differ from regular production!
- Eurex FIX Gateway A Side Subnet will be the same as for normal production.
- Eurex CRE A Side Subnet will be the same as for normal production.

3. Disaster recovery network details

Due to the nature of the distributed Eurex T7 architecture, different interfaces will be configured in varying ways.

Eurex T7 interfaces whose production infrastructure is solely located in the Equinix data center FR2 will switch to the simulation infrastructure and need to be accessed via simulation network addresses.

Other Eurex T7 interfaces whose production infrastructure is distributed across both data centers will be able to continue to use the existing production infrastructure in the DR data center.

In some cases further changes need to be done by Eurex for example to re-balance the number of ETI HF gateways with the number of ETI LF gateways, according to different requirements by a DR scenario compared to regular simulation.

The following table summarizes all available interface connection details in a disaster recovery scenario.

Interface	Connection option	URL / IP addresses		Ports	Protocol
GUI Landingpage	Internet	http://webgui.eurexchange.com/emergency/index.html		80	TCP/IP
	Leased line	http://193.29.93.173/emergency/index.html		80 / 8089	TCP/IP
		http://webgui.vpn.eurexchange.com/emergency/fqdn.html			
Java WebStart	Internet	193.29.90.190	n/a	80 / (443)	TCP/IP
	Leased line	193.29.93.173	193.29.93.160/28	80 / (443)	TCP/IP
GUI (Crypto)Proxies	Internet	193.29.90.235	193.29.90.224/27	80	TCP/IP
		192.29.90.236			
	Leased line - side A	193.29.89.225	193.29.89.224/28	80 / 8089	TCP/IP
	Leased line - side B	193.29.95.225	193.29.95.224/28		
Eurex ETI	**Gateway type**	**IP subnets Side A**	**Side B**	**Ports**	**Protocol**
	HF trading gateways	193.29.89.129, 192.29.89.130	193.29.89.161, 193.29.89.162	19006	TCP/IP
	LF trading gateways	193.29.89.65, 193.29.89.66, 193.29.89.67, 193.29.89.68	193.29.89.97, 193.29.89.98, 193.29.89.99, 193.29.89.100		
	Connection gateways	193.29.89.65	193.29.89.97	19008	TCP/IP
Eurex FIX Gateway	**Connection option**	**IP addresses**	**IP subnets**	**Ports**	**Protocol**
	Leased line - side A	90.150.253.31	90.150.253.0/24	Individually assigned	TCP/IP

Table 1, Network details in DR scenario, part 1/2

Eurex MDI	**Description**	**Multicast groups Service A**	**Ports**	
			US-allowed products	**US-restricted products**
	Multicast groups	224.0.50.64 - 74	59000	59032
	Source networks	193.29.89.192/28	-	-
	Rendezvous point Service A only	193.29.91.252/32	-	-
	Technical heartbeat Service A only	-	59086	-
Eurex EMDI	**Description**	**Multicast groups Service A**	**Ports**	
			US-allowed products	**US-restricted products**
	Multicast groups	224.0.50.2 - 63	Snapshot: 59000	Snapshot: 59032
			Incremental: 59001	Incremental: 59033
	Source networks	193.29.89.0/27	-	
Eurex RDI	**Description**	**Multicast groups Service A**	**Ports**	
	Multicast groups Snapshot data	224.0.50.0	59098	
	Multicast groups Incremental data	224.0.50.1	59099	
	Source networks	193.29.89.192/28	-	
Common Report Engine	**Connection option**	**Gateway IP addresses**	**IP subnets**	**Ports**
				Public / **Particip.**
	Internet	193.29.90.129	n/a	2221 / 2222
	Leased line - side A	193.29.90.65	193.29.90.64/27	
Eurex EOBI	**Connection option**	**IP addresses**	**IP subnets**	**Ports** / **Protocol**
	not available	none	none	none / -

Table 2, Network details in DR scenario, part 2/2

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, page	Date	Change
1.0.1	Initial version	27 Sept. 2013	Initial version for publication