Connectivity Guide

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Version 3.12



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1 Scope

This document aims to provide an overview of the various connectivity options available to firms wishing to connect to Aquis Exchange (Aquis). The intended audience of this document are system administrators and network engineers.

1.1 Version History

Version	Date	Comments
1.0	April 2013	First draft
1.1	May 2013	Updates to first draft
1.2	July 2013	Updates to IP addresses
1.3	August 2013	Update to identify Interxion as secondary datacentre
1.4	February 2014	Addition of FIX 4.2 DropCopy; Update to FTP file information
1.5	June 2014	Addition of market data feed splits
1.6	February 2015	Addition of SFTP connectivity details
1.7	March 2015	Updates to SFTP connectivity details
1.8	September 2015	Addition of Spanish securities to 'Others' market data split feed
1.9	December 2015	Addition of SFTP Internet TCP targets
1.10	October 2016	Document review
1.11	April 2017	Addition of Austrian securities to 'Others' market data split feed
2.0	September 2017	Addition of MiFID II MMT market data feeds – 20 Nov 2017 first day in Production
2.1	April 2018	Removal of non-MMT market data feeds; Addition of Market at Close data feeds
2.11	October 2018	Document review
3.0	February 2019	Added details for UK / EU connectivity
3.1	June 2019	MaC updates
3.2	September 2019	Brexit update and document review
3.3	December 2019	Update for AQSE
3.4	November 2020	MaC EU updates
3.5	February 2021	Updated file transfer details
3.6	August 2022	Addition of Czech market to AQXE (UK) split 4 and AQEU (EU) split 4
3.7	April 2023	Updated cross connect and lease line details
3.8	January 2024	Updated cross connect and lease line details
3.9	November 2024	Removal of FTP access
3.10	April 2025	Update secondary datacentre name to Digital Realty
3.11	August 2025	Remove PLC as Aquis is no longer public company.
3.12	November 2026	Remove MTF 100Mbps feeds and update MD Split names

1.2 Introduction

Aquis Exchange operates a number of markets within its UK datacentres including:

- Aquis Exchange (AQXE) an MTF regulated in the UK by the FCA.
- Aquis Exchange Europe (AQEU) an MTF regulated by the French AMF.
- Aquis Stock Exchange (AQSE) an RIE stock exchange regulated by the FCA.

Note that access to the above markets will require separate legal agreements in each case, depending on client type and intended use of the connection.

Connectivity to these markets is available through its UK POP's as well as via third parties like extranets or market data vendors. Each POP is equipped to provide access to all the above markets including their related test platforms, so for example a single pair of cross connects can be used to connect to all markets.

Charges may apply for cross connects depending on the customer type and number of cross connects required. Please see the Aquis Fee Schedule for details or contact our sales team at sales@aquis.eu.

2 Trading Services and Protocols

The following section will highlight the service types and message formats used when subscribing to market data feeds and when trading on the Aquis platform.

2.1 Market Data

The Aquis MTFs (AQXE and AQEU) as well as Aquis Stock Exchange (AQSE) markets all distribute market data in the multicast UDP format. Note that AQSE market data is also available over the FIX protocol.

Data is simultaneously broadcast on a number of feeds.

- **A Feed –** This is delivered as a primary production market data feed from the primary Aquis datacentre.
- **B Feed –** This is delivered from the same production datacentre as the 'A' feed but has a physically diverse primary path from the 'A' feed. Under normal conditions, both 'A' and 'B' feeds will be delivered with equal latency through separate infrastructure.
- **C Feed –** The 'C' feed is delivered from the Aquis DR facility. This data is delivered from an entirely different location to the production 'A' and 'B' feeds.

2.1.1 Market Data Splits

Each feed is split across a number of multicast IP addresses where each IP represents a market data split. Securities are allocated splits by market as follows:

Aquis Exchange MTF (AQXE)

Split	Market	Public	Legal Entity
MD UK split 1 (XLON / XSWX)	UK, Switzerland	Yes	Aquis UK (AQXE)
MD UK split 2 (XPAR / XBRU / XAMS / XLIS / XDUB)	Belgium, France, The Netherlands, Portugal, Ireland	Yes	Aquis UK (AQXE)
MD UK split 3 (XETR / XWBO / XPRA)	Germany, Austria, Czech	Yes	Aquis UK (AQXE)
MD UK split 4 (XCSE / XHEL / MTAA / XOSL / XMAD / XSTO)	Denmark, Finland, Italy, Norway, Spain, Sweden	Yes	Aquis UK (AQXE)

Aquis Exchange Europe MTF (AQEU)

Split	Market	Public	Legal Entity
MD EU split 2 (XPAR / XBRU / XAMS / XLIS / XDUB)	Belgium, France, The Netherlands, Portugal, Ireland	Yes	Aquis Europe (AQEU)
MD EU split 3 (XETR / XWBO / XPRA)	Germany, Austria, Czech	Yes	Aquis Europe (AQEU)
MD EU split 4 (XCSE / XHEL / MTAA / XOSL / XMAD / XSTO)	Denmark, Finland, Italy, Norway, Spain, Sweden	Yes	Aquis Europe (AQEU)

Aquis Stock Exchange (AQSE)

Split	Market	Public	Legal Entity
AQSE split 1	All AQSE	Yes	Aquis UK (AQSE)

All market data feeds carry Trade and Trade Bust messages with binary MMT flags included. This aligns the market data with the post-trade transparency flagging requirements of MiFIR.

See 'Aquis Market Data Technical Specification' for further information on the MMT flag trade messages.

For further information on these requirements please contact compliance@aquis.eu.

2.1.2 Market at Close Market Data Splits

In addition to the real time continuous trading feeds above, the following additional feeds are available for the Market at Close order type on the MTF AQXE and AQEU market.

- Real time private feeds (authorised for MaC participants only)
- Public MaC feeds on a 15-minute delayed basis.

Aquis Exchange MTF MaC (AQXE)

For AQXE, real time data is provided by way of 4 MaC only private data splits:

Split	Market	Public	Legal Entity
MaC UK split 1 (XLON / XSWX)	UK, Switzerland	No	Aquis UK (AQXE)
MaC UK split 2 (XPAR / XBRU / XAMS / XLIS / XDUB)	Belgium, France, The Netherlands, Portugal, Ireland	No	Aquis UK (AQXE)
MaC UK split 3 (XETR / XWBO / XPRA)	Germany, Austria, Czech	No	Aquis UK (AQXE)
MaC UK split 4 (XCSE / XHEL / MTAA / XOSL / XMAD / XSTO)	Denmark, Finland, Italy, Norway, Spain, Sweden	No	Aquis UK (AQXE)

Public MaC data – single combined MaC only feed (15 min delayed)

Split	Market	Public	Legal Entity
MaC UK All markets (splits 1 - 4 combined) delayed	MaC UK splits 1-4 combined (15 min delayed)	Yes	Aquis UK (AQXE)

Aquis Exchange Europe MTF MaC (AQEU)

Real time data is provided by way of a single MaC only private feed containing data from all AQEU markets (splits as described above in Section 2.1.1).

Split	Market	Public	Legal Entity
MaC EU All markets (splits 2-4 combined) realtime	MaC EU splits 2 – 4 combined (realtime)	No	Aquis Europe (AQEU)

Public MaC data for Aquis Exchange Europe is also provided by way of a single MaC only feed containing data from all AQEU markets (splits as described above in Section 2.1.1).

Split	Market	Public	Legal Entity
MaC EU All markets (splits 2-4 combined) delayed	MaC EU splits 2-4 combined (15 min delayed)	Yes	Aquis Europe (AQEU)

Multicast IP addresses for feeds are available on request. Please email support@aquis.eu

See 'Aquis Market Data Technical Specification' for further information on the Market at Close messages or for further information please contact support@aquis.eu.

2.2 Trading Messages

2.2.1 FIX

Aquis supports FIX4.2 protocol trading sessions. The Aquis implementation conforms to the FIX standard with the additional use of a specific FIX 4.4 tag (851) to carry a trade liquidity indicator on trade reports. Please refer to the Aquis FIX Specification for more details.

2.2.2 Aquis Trading Protocol (ATP)

Aquis has developed its own binary trading protocol designed for speed and simplicity, which maps efficiently into the internal trading protocol used within the matching engine software. Use of fixed sizes and formats for the business messages allows efficient processing.

If your technology team is already familiar with the binary protocols used by other venues, they should easily be able to leverage this work to adapt to ATP.

Note ATP is not currently available for the AQSE market.

2.3 SFTP

Aquis makes end of day and reference data files available via SFTP service to directly connected Members. The latest security and tick reference data files are available from 03:00 every day as csv files (tab delimited). Trade files are available to Members each day, listing their executions, and are updated every hour from 08:00. These are provided in the form of text files.

3 On-Boarding

3.1 Development and Testing

Aquis provides a full test environment for prospective Members and vendors to test their software and platforms against.

3.2 Conformance

A conformance process is in place and must be completed successfully before any firm can become a Member and trade directly on the Aquis Exchange production platform. Firms that wish to carry out conformance testing should contact Aquis (see 'Contacts' section) for further details.

Technical on-boarding can take place in parallel with the legal on-boarding process so as not to delay production access.

3.3 Go-Live

Only after legal and technical compliance has been established can a Member be permitted to trade in the production environment. Production logins and unique port numbers will only be allocated to firms after full compliance has been established.

4 Connectivity

As well as direct connectivity via cross connects or circuits, Aquis can be accessed via a number of managed Financial Extranet service providers or Service Bureaus.

- The Aquis primary datacentre location is at Equinix LD4.
- The secondary location is at Digital Realty LON1.

4.1 Extranet

Aquis can be accessed via a number of managed Financial Extranet service providers. These providers deliver full connectivity to both Aquis datacentres including access to the test platform. A list of connected extranets will be published on the Aquis website as and when they become available. Firms should contact the extranet providers directly for connectivity terms.

4.2 Service Bureau

Service Bureau Connectivity enables an end user to participate via a third party who provides the physical connectivity and/or trading infrastructure. Aquis can accept orders from multiple Members via a single logical FIX connection. This is achieved using the *'OnBehalfOfCompID'* FIX tag (115).

5 Ethernet, Routing and IP Addressing

5.1 Cross-connect and Co-location

Aquis does not offer colocation within their own space, however direct cross-connect Ethernet connectivity is available in both primary and DR datacentres through a variety of methods (copper, fibre). Members who are located within the Equinix Slough campus but not in physically in LD4 may also be able to connect using this method

5.2 Circuits/Leased Lines

Any firms who do not have a physical presence in the Aquis datacentre locations can opt to have circuits presented. Circuits are then patched through to the same exchange PoPs (Point-of-Presence) as direct cross connect connections. Optimised WAN market data feeds are available for this type of connection.

5.3 Network Connectivity Options

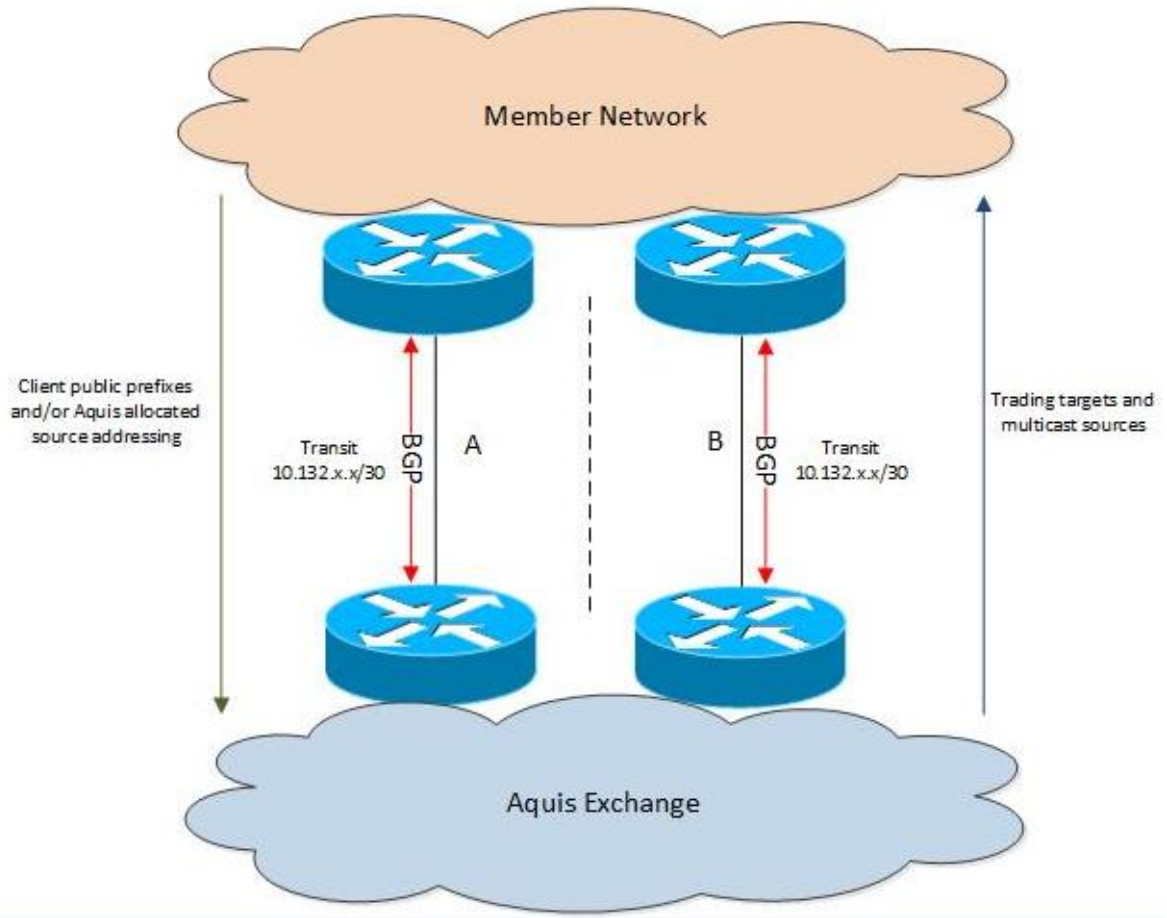
Various network options are available using both Layer-2 and Layer-3 connectivity. It is the firm's responsibility to provide adequate network switches/routers if they wish to connect directly to Aquis.

5.3.1 Routed Layer-3 BGP

Layer-3 devices should be capable of creating a BGP connection to the Aquis PoP. Exchange connectivity can be delivered into multiple client sites via separate BGP

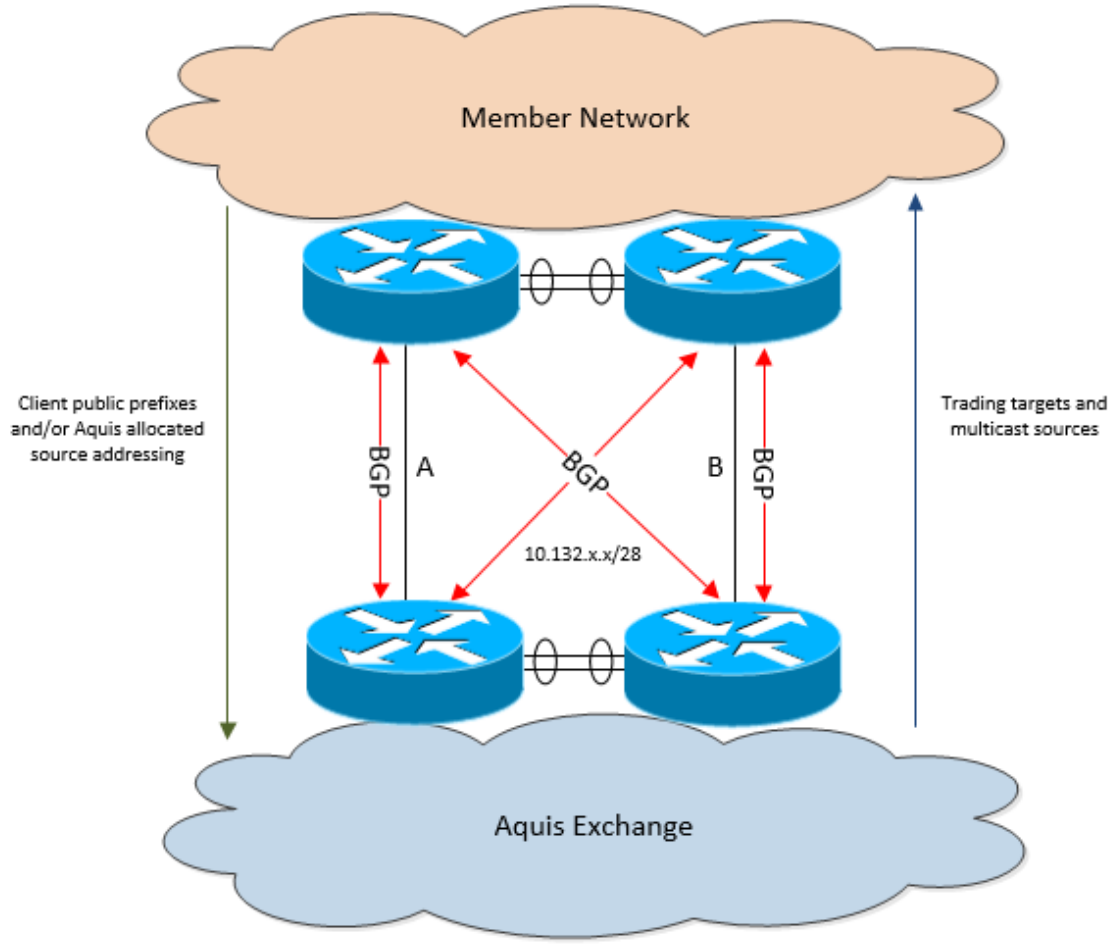
connections. This enables complete separation of infrastructure for the delivery of ‘A’, ‘B’ and ‘C’ feeds and diverse trading connectivity. A single cross connect, or circuit can also be used to deliver trading and market data feeds if required, although this would offer no protection against a failure. Aquis can accept any publicly routable Member prefix and/or Aquis-allocated source addressing. See diagram below:

BGP Cross Connects/Circuits into separate Member sites/infrastructure:



A meshed BGP option is also available where both connections for ‘A’ and ‘B’ feeds are delivered to the same client infrastructure. See diagram below:

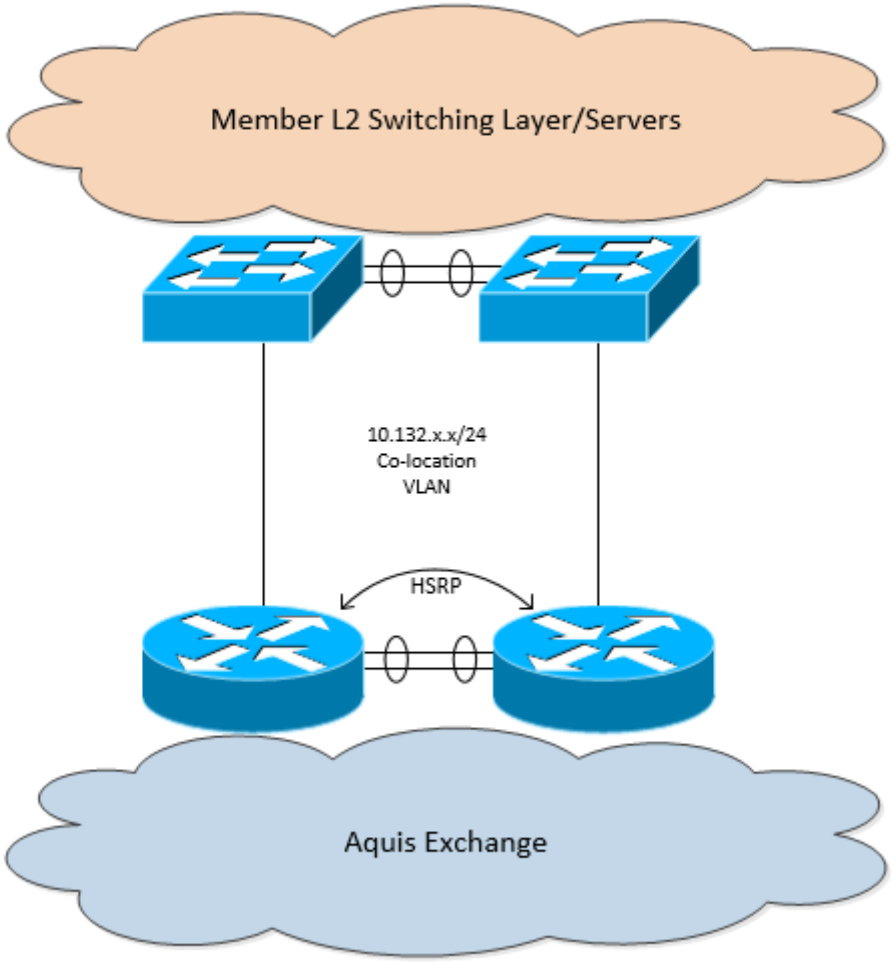
Meshed BGP Cross Connects/Circuits:



5.3.2 Directly Connected Servers

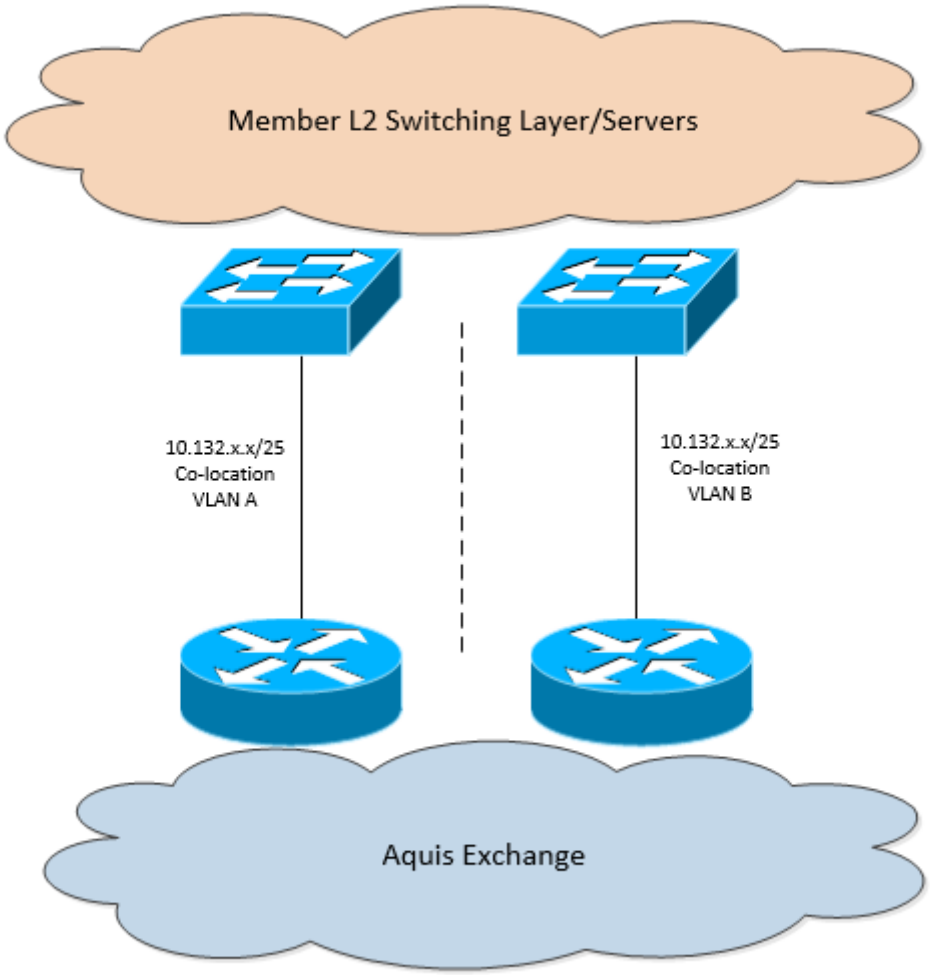
Where Members wish to place servers directly behind a cross connect (co-located) or circuit at Layer-2, Aquis will provide the L3 handoff in the form of a HSRP/VRRP gateway. See diagram below:

Directly Attached Servers Layer-2 Cross-connect/Circuit:



Directly connected servers can also be connected back to separate Member sites/infrastructure. See diagram below:

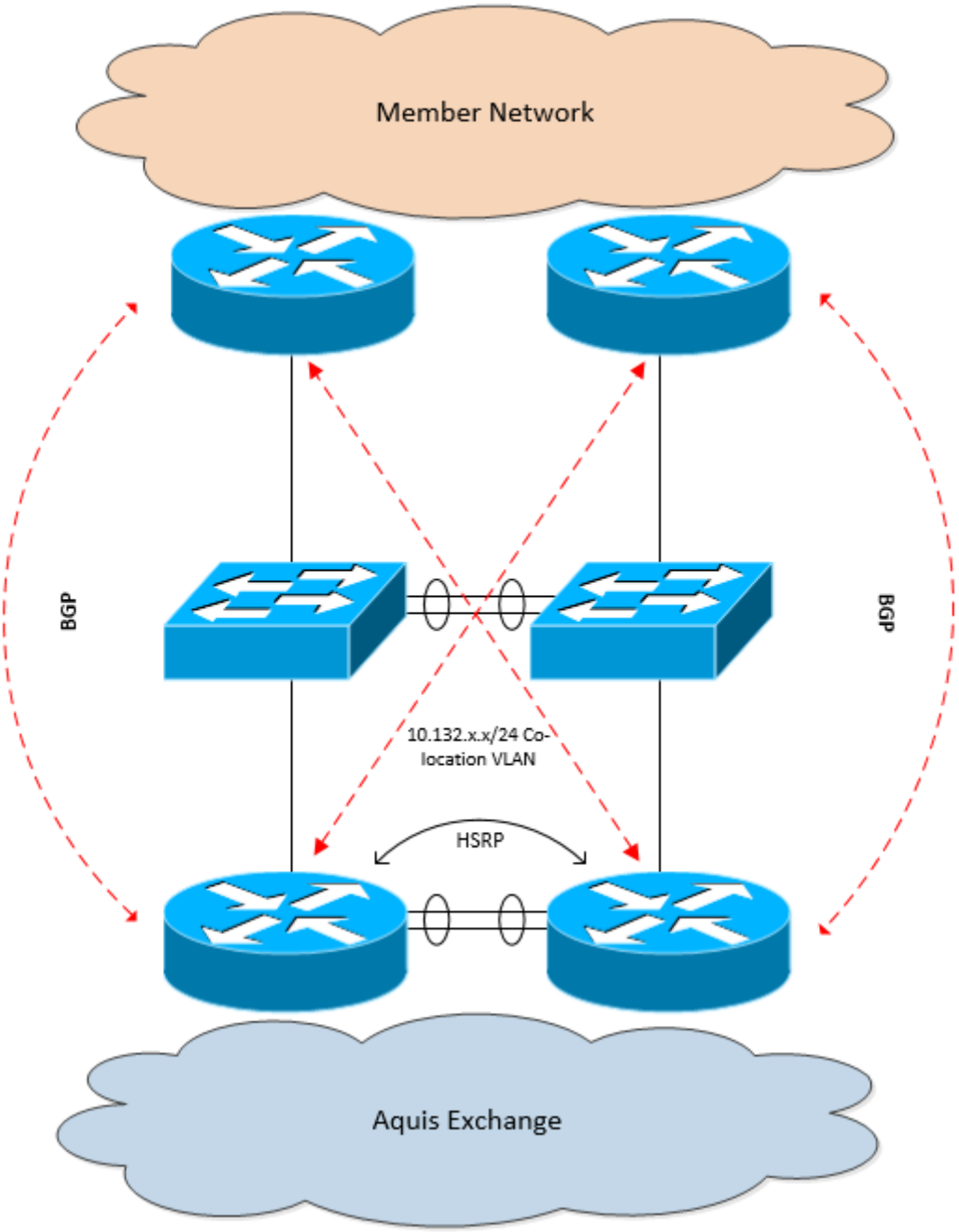
Directly Attached Servers Layer-2 Cross-connect/Circuits to Separate sites/infrastructure:



5.3.3 Directly Connected Servers and BGP

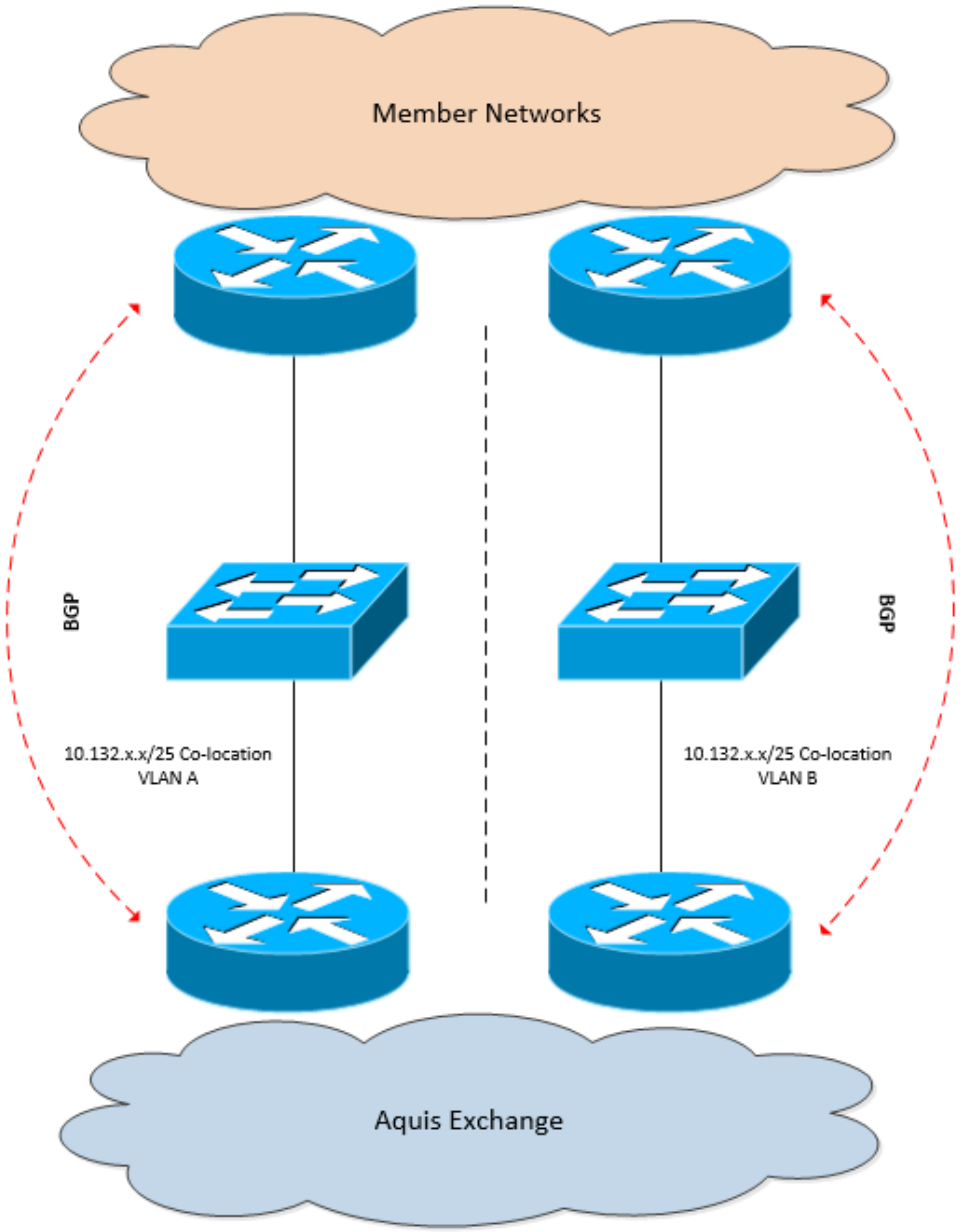
Members may also wish to create BGP connections through the Layer-2 segment where servers are located. This enables greater flexibility allowing the cross-connect or circuit to function as a Layer-2 segment for directly connected servers and as a Layer-3 transit network back to Member sites. See diagram below:

Directly connected servers and BGP Cross Connects/Circuits:



Directly connected servers with BGP connectivity are also offered with the option of connecting two VLANs and BGP connections back to separate Member sites/infrastructure. See diagram below:

Directly connected servers and BGP Cross Connects/Circuits back to separate locations/infrastructure:



A brief design phase will take place between prospective Members and an Aquis network engineer in order to ascertain the firm's individual requirement. Diagrams will also be drawn up so that Aquis and the connecting Member both understand what is to be delivered.

Please contact networks@aquis.eu for a more detailed BGP connectivity guide.

5.3.4 NAT

Members wishing to NAT/overload their source addressing to a single address can do so against their directly connected BGP interface IP address. Aquis can also allocate a separate Member NAT pool if required.

5.3.5 Multicast

Sparse-mode PIM (for L3 connected devices) or IGMP (for L2 connected servers) is required to subscribe to multicast feeds.

5.4 IP Addressing

5.4.1 Source IP Addressing

Aquis can provide private source address space to Members. This is normally provided in /24 blocks which can be broken up into subnets. Multiple /24 address blocks can also be aggregated into larger subnets if required.

The first ten addresses in any allocated range will be reserved for interfaces and networking equipment.

Aquis can also accept any publicly routable address prefix from Member BGP connections.

5.4.2 Transit IP Addressing

For straight forward point-to-point BGP connectivity Members will be allocated /30 Transit networks as well as the client source ranges. Meshed BGP connections will be allocated a /28 Transit space for all peers.

Where a Member also wishes to co-locate servers with the Transit segment, a single /24 can be used for servers and BGP peering.

5.4.3 TCP Targets for AQXE and AQEU MTF

TCP Prefixes (Trading, SFTP and Replay)

Production	Test	DR
185.23.**232**.0/27	185.23.**233**.0/27	185.23.**234**.0/27

All Members will be allocated a unique range of port numbers for trading. These are used to connect to the following TCP targets for trading, SFTP, and market data replay services.:

Service	Primary	DR	Test
FIX (AQXE)	185.23.**232**.1	185.23.**234**.1	185.23.**233**.1
FIX (AQEU)	185.23.**232**.11	185.23.**234**.11	185.23.**233**.11
ATP (AQXE)	185.23.**232**.2	185.23.**234**.2	185.23.**233**.2
ATP (AQEU)	185.23.**232**.12	185.23.**234**.12	185.23.**233**.12
MD REPLAY (AQXE)	185.23.**232**.4	185.23.**234**.4	185.23.**233**.4
MD REPLAY (AQEU)	185.23.**232**.14	185.23.**234**.14	185.23.**233**.14
FIX DropCopy (AQXE)	185.23.**232**.5	185.23.**234**.5	185.23.**233**.5
FIX DropCopy (AQEU)	185.23.**232**.15	185.23.**234**.15	185.23.**233**.15
SFTP (Direct connect)	185.23.**232**.3	185.23.**234**.3	185.23.**233**.3
SFTP (Internet only)	sftp1.aquis.eu (185.23.**233**.129)	sftp2.aquis.eu (185.23.**235**.129)	sftp-ct.aquis.eu (185.23.**233**.3)

5.4.4 TCP Targets for the Aquis Stock Exchange AQSE market

TCP Prefixes (Trading, SFTP and Replay)

Production	Test	DR
185.23.**232**.0/27 185.23.**232**.48/28	185.23.**233**.0/27 185.23.**233**.160/28	185.23.**234**.0/27 185.23.**234**.48/28

All Members will be allocated a unique range of port numbers for trading. These are used to connect to the following TCP targets for trading, SFTP, and market data replay services:

Service	Primary	DR	Test
FIX (AQSE)	185.23.**232**.55	185.23.**234**.55	185.23.**233**.165
MD REPLAY (AQSE)	185.23.**232**.58	185.23.**234**.58	185.23.233.168
SFTP (Direct connect)	185.23.**232**.3	185.23.**234**.3	185.23.**233**.3
SFTP (Internet only)	sftp1.aquis.eu (185.23.**233**.129)	sftp2.aquis.eu (185.23.**235**.129)	sftp-ct.aquis.eu (185.23.**233**.3)

5.4.5 File Transfer

File transfer is via the SFTP protocol.

Secure FTP (SFTP) is allowed via the Internet as well as over a direct connection.

- SFTP access over the Internet is restricted and members will need to provide their Internet facing public IP(s) to be added to the Aquis Firewalls.
- SFTP passwordless access is supported if members provide their public keys. Please indicate where they should be added (reference data or private account, test or production).

Reference data files are available via SFTP. For SFTP, the username and password is "anonsftp" if passwordless authentication is not in use. Files are updated daily at 3am for AQXE and AQEU and at 4.15am for the AQSE market.

Members will additionally be provided with private accounts for retrieval of member specific data. These private accounts can also be used to upload Short Code Mapping Files to Aquis into the /uploads directory. For further information on Short Code Mapping Files please see the 'Aquis Short Code Upload Specification'.

Requests for file access should be made to support@aquis.eu

5.4.6 Multicast

Market data is delivered using multicast (UDP). Multicast is delivered to firms when they join multicast groups from the Aquis IANA registered multicast blocks (224.0.121.0/24 and 224.0.184.0/24). IGMP and Sparse Mode PIM are required. Multicast recovery is provided through a either a separate multicast snapshot feed, or via a TCP replay service.

A detailed multicast scheme is available. The public address multicast source networks and group ranges are shown below:

Production Multicast Source Addressing

Market	Prod 'A' Feed	Prod 'B' Feed	DR 'C' Feed
Aquis MTF AQXE / AQEU	185.23.**232**.64/26	185.23.**232**.128/26	185.23.**234**.64/26
Aquis Stock Exchange AQSE	185.23.**232**.224/28	185.23.**232**.240/28	185.23.**234**.192/28

Customer Test Multicast Source Addressing

Market	Test 'A' Feed	Test 'B' Feed
Aquis MTF AQXE / AQEU	185.23.**233**.32/27	185.23.**233**.64/27
Aquis Stock Exchange AQSE	185.23.**233**.176/28	185.23.**233**.192/28

Production Multicast Group Addressing and Rendezvous Points (RP)

Market	Prod 'A' Feed	Prod 'B' Feed	DR 'C' Feed
Aquis MTF AQXE / AQEU	224.0.121.64-127	224.0.121.128-191	224.0.121.192-255
RP	185.23.232.192	185.23.232.193	185.23.234.32

Aquis Stock Exchange AQSE	224.0.184.16-23	224.0.184.24-31	224.0.184.32-40
RP	185.23.232.196	185.23.232.197	185.23.234.35

Individual specific multicast IP addresses are available on request. Please email networks@aquis.eu

Customer Test Multicast Group Addressing and Rendezvous Points (RP)

Market	Test 'A' Feed	Test 'B' Feed
Aquis MTF AQXE / AQEU	224.0.121.0-31	224.0.121.32-63
RP	185.23.233.96	185.23.233.97

Aquis Stock Exchange AQSE	224.0.184.0-7	224.0.184.8-15
RP	185.23.233.131	185.23.233.132

5.5 Network Interface and Bandwidth

5.5.1 Interface Speeds and Settings:

Aquis offers 10G and 1G cross connections and circuit connectivity directly into primary and DR Exchange PoPs. All connectivity types provide direct connectivity to the low latency trading backbone. Member ports should be hard set to either 10G or 1G Full Duplex.

5.5.2 Bandwidth

Aquis MTF (AQXE and AQEU)

Aquis MTF offers the following market data feeds, shaped to best serve Member requirements and bandwidth constraints. These feeds are available via direct cross connects, circuits or extranet connections. Members should subscribe to the correct feed based on the speed of their connection.

- **10G –** This is the fastest connectivity available from Aquis and offers a completely raw, unshaped 10G market data feed. 10G direct connections are available from only the primary datacentre in LD4. Members will need to provide suitable 10G interfaces with which to connect to Aquis.
- **1G –** This level of connectivity will be served out of both datacentres. 1G market data is shaped to make sure all packets are received in order and in time.

Aquis Stock Exchange (AQSE)

Aquis Stock Exchange offers a multicast market data feed in addition to a standard FIX feed. This multicast feed is currently available shaped at 100Mbps only.

5.5.3 Supported Handoffs:

Direct connect LD4 / LON1:

- 1G cross connects can be terminated with Single-Mode (SM) fibre at LD4 and LON1.
- 10G cross connects (LD4 only) can be terminated with Single-Mode (SM) fibre.

Leased Lines LD4 / LON1:

- 1G terminated with Single-Mode (SM) fibre at LD4 and LON1.
- 10G leased lines (LD4 only) can be accepted with Single-Mode (SM) fibre but please contact networks@aquis.eu first to make sure the optics provided by the carrier are supported by Aquis.

Extranet:

- Aquis Exchange extranet availability can be found online at our website www.aquis.eu including all major providers.

Internet:

- Secure SFTP access is available via the Internet for file transfer. Connectivity is supported to both the test and production SFTP servers, see above section 5.4.3 for IP details. Members wishing to connect via the Internet should contact support@aquis.eu with their source IP address so this can be permissioned.

5.6 Demarcation

5.6.1 Direct connect

Aquis will provide a demarcation within the local datacentre. Members are responsible for ordering cross connects from their own equipment to the provided demark.

5.6.2 Leased Lines

Members should contact networks@aquis.eu before ordering leased lines to ensure the correct termination points are used since both LD4 and LON1 have multiple carrier rooms.

Members will be required to provide Aquis with the circuit ID and demark assigned to them by the carrier in question. Aquis will then run a cross connect directly into the trading POP.

6 Contacts

For general connectivity questions please contact support@aquis.eu

For more specific network related questions please contact networks@aquis.eu