

LMAX Group Connectivity Overview

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Purpose

This document is aimed at a technical audience and provides an overview of the various connectivity options available to connect to LMAX Exchange.

Definitions

Application Programming Interface (API)

An API is a set of routines, protocols and tools. A good API makes it easier to develop software by providing the building blocks which are then put together by the participants developer.

Cross connect

A length of cable ordered through the data center provider that enables interconnectivity within that data center. This connection is a point-to-point link that connects two parties directly together.

Extranet

A third party that provides many-to-many connectivity, such as connections to trading venues, brokers, and information providers.

Financial Information eXchange (FIX)

FIX has become the defacto protocol of the global financial markets. This non-proprietary, free and open standard is used to complete millions of transactions every day. The FIX 4.4 version contains fields for trade reports which are not present in version 4.2. Both protocol versions are used by LMAX trading venues.

LMAX Proximity, Proximity, LMAX Network

The access network to the LMAX Exchanges and Product set at any or all geographic locations to which the participant may have been granted access. The demarcation point is the LMAX interface which terminates the participants cross connect, or their Service Providers cross connect.

Participant, End User

The party or parties which hold LMAX Exchange accounts, irrespective of the method used to connect to the LMAX Network, and irrespective of whether they use the connection for trading or solely to access other services.

Service Provider

Any third party who provides services to the End User, for example Extranets, Co-location Providers, Network Service Providers

Contact

Please send an email to neteng@lmax.com should you require assistance. The LMAX Network team are based in the United Kingdom and work from *09:00 to 18:00* and will work alongside you to find a suitable solution that meets your requirements.

Access Methods

The Internet

Messages are transferred between LMAX and the participant via the FIX or HTTP protocol, running over an SSL (Secure Sockets Layer) TCP/IP connection.

For One-click trading, LMAX offers a trading UI. |

For automated trading strategies, LMAX offers the following access methods.

- **API:** Message formats include XML/JSON and participants can develop their own wrapper or use the customisable .NET and Java Client Libraries supplied by LMAX to simplify the integration.
- **FIX protocol:** The participant must have an assigned LMAX Username/CompID and Password combination. FIX connections to the LMAX Exchange use versions 4.2 or 4.4, depending on the service being used.

Connectivity via Internet VPN is available, however this is limited to the User Acceptance Test (UAT) Environment.

LMAX Proximity

LMAX Proximity is a resilient low latency private IP network managed by LMAX that enables direct cross-connects within specific data centres to connect to the LMAX Exchange and is aimed towards automated trading. Participants should co-locate their equipment within the same data centre to achieve the lowest latency possible. Encryption of data in transit is not required.

- **FIX protocol:** The participant must have an assigned LMAX Username/CompID and Password combination. FIX connections to the LMAX Exchange use versions 4.2 or 4.4, depending on the service being used.

In addition, all major Extranet and Service Providers are connected to LMAX Proximity which offer participants a choice of managed services such as hosting and connectivity. LMAX Exchange employs a neutral policy in regards to onboarding service providers, but does require the *LMAX Proximity Service Provider Agreement* to be completed.

Note

Multicast market data using the ITCH protocol is only available to participants who connect to LMAX Proximity. Within the same data center, an *A Feed* and *B Feed* can be delivered over physically diverse paths with equal latency.

LMAX Proximity Points Of Presence

Point Of Presence	Address	Media Types
Equinix LD4/LD5/LD6	Buckingham Avenue, Slough	1 Gig LX/SX
Interxion LON1/2	Hanbury Street, London	1 Gig LX
Equinix NY4	755 Secaucus Road, New York	1 Gig LX
Equinix TY1/2/3	Edagawa, Koto-ku, Tokyo	1 Gig LX
Telstra HKCS1	Chun Kwong Street, Tseung Kwan, Hong Kong	1 Gig Copper

London Production Environment Services

LMAX Trading Venue

LMAX Broker Services

LMAX London	LMAX Proximity		Public Internet	
LMAX Broker Service	Target IP	Port	Target URL/IP	Port
FIX 4.4 Order placement	91.215.164.10	50000	fix.lmaxtrader.com	443
FIX 4.4 Market Data	91.215.164.11	50000	fix-md.lmaxtrader.com	443
Web based API	N/A		api.lmaxtrader.com	443
Web based trading UI	N/A		trade.lmaxtrader.com	443

LMAX Exchange Services

LMAX London	LMAX Proximity		Public Internet	
LMAX Exchange Service	Target IP	Port	Target URL/IP	Port
Prime Broker Portal	N/A		mtf-primebroker.lmax.com	443
FIX 4.2 Market Data	91.215.164.21	52000	N/A	
FIX 4.2 Order placement	91.215.164.23	50000	fix.lmax.com	443
FIX 4.4 Trade Reporting	91.215.164.24	50000	dropcopy.lmax.com	443
ITCH Feed A Snapshot	91.215.164.66	53000	N/A	
ITCH Feed B Snapshot	91.215.164.67	53000	N/A	
ITCH Security Defintions	91.215.164.70	80	N/A	

LMAX Interbank Trading Venue

LMAX Interbank Broker Services

London Interbank	LMAX Proximity		Public Internet	
LMAX Broker Service	Target IP	Port	Target URL/IP	Port
Web based trading UI	N/A		web-api.london-bank.lmax.com	443

LMAX Interbank Exchange Services

London Interbank	LMAX Proximity		Public Internet	
LMAX Exchange Service	Target IP	Port	Target URL/IP	Port
Prime Broker Portal	91.215.164.33	443	mtf-primebroker.london-bank.lmax.com	443
FIX 4.2 Market Data	91.215.164.6	52000	N/A	
FIX 4.2 Order placement	91.215.164.5	52000	N/A	
FIX 4.4 Trade Reporting	91.215.164.5	51000	mtf-dropcopy.london-bank.lmax.com	443
ITCH Feed A Snapshot	91.215.164.68	53000	N/A	
ITCH Feed B Snapshot	91.215.164.69	53000	N/A	
ITCH Security Defintions	91.215.164.65	80	N/A	

LMAX Digital Trading Venue

LMAX Digital Broker Services

LMAX Digital	LMAX Proximity		Public Internet	
LMAX Digital Broker Service	Target IP	Port	Target URL/IP	Port
FIX 4.4 Order placement	185.122.246.1	50000	fix-order.london-digital.lmax.com	443
FIX 4.4 Market Data	185.122.246.2	50000	fix-marketdata.london-digital.lmax.com	443
Web based API	185.122.246.5	443	web-api.london-digital.lmax.com	443
Web based trading UI	185.122.246.5	443	web-order.london-digital.lmax.com	443

LMAX Digital Exchange Services

London Professional	LMAX Proximity		Public Internet	
LMAX Digital Exchange Service	Target IP	Port	Target URL/IP	Port
Prime Broker Portal	N/A		mtf-primebroker.london-digital.lmax.com	443
FIX 4.2 Market Data	185.122.246.4	52000	mtf-marketdata.london-digital.lmax.com	443
FIX 4.2 Order placement	185.122.246.0	50000	mtf-order.london-digital.lmax.com	443
FIX 4.4 Trade Reporting	185.122.246.3	50000	mtf-droptcopy.london-digital.lmax.com	443

New York Production Environment Services

LMAX Trading Venue

LMAX Broker Services

LMAX New York	LMAX Proximity		Public Internet	
LMAX Broker Service	Target IP	Port	Target URL/IP	Port
FIX 4.4 Order placement	104.255.201.10	50000	fix-order.newyork-professional.lmax.com	443
FIX 4.4 Market Data	104.255.201.11	50000	fix-marketdata.newyork-professional.lmax.com	443
Web based API	N/A		web-api.newyork-professional.lmax.com	443
Web based trading UI	N/A		web-order.newyork-professional.lmax.com	443
Broker Portal	N/A		broker-portal.newyork-professional.lmax.com	443

LMAX Exchange Services

LMAX New York	LMAX Proximity		Public Internet	
LMAX Exchange Service	Target IP	Port	Target URL/IP	Port
Prime Broker Portal	N/A		mtf-primebroker.newyork-professional.lmax.com	443
FIX 4.2 Market Data	104.255.201.21	52000	mtf-marketdata.newyork-professional.lmax.com	443
FIX 4.2 Order placement	104.255.201.23	50000	mtf-order.newyork-professional.lmax.com	443
FIX 4.4 Trade Reporting	104.255.201.24	50000	mtf-dropcopy.newyork-professional.lmax.com	443
ITCH Feed A Snapshot	104.255.201.66	53000	N/A	
ITCH Feed B Snapshot	104.255.201.67	53000	N/A	
ITCH Security Definitions	104.255.201.70	80	N/A	

Tokyo Production Environment Services

LMAX Trading Venue

LMAX Broker Services

LMAX Tokyo	LMAX Proximity		Public Internet	
LMAX Broker Service	Target IP	Port	Target URL/IP	Port
FIX 4.4 Order placement	103.219.174.10	50000	fix-order.tokyo-professional.lmax.com	443
FIX 4.4 Market Data	103.219.174.11	50000	fix-marketdata.tokyo-professional.lmax.com	443
Web based API	N/A		web-api.tokyo-professional.lmax.com	443
Web based trading UI	N/A		web-order.tokyo-professional.lmax.com	443
Broker Portal	N/A		broker-portal.tokyo-professional.lmax.com	443

LMAX Exchange Services

LMAX Tokyo	LMAX Proximity		Public Internet	
LMAX Exchange Service	Target IP	Port	Target URL/IP	Port
Prime Broker Portal	N/A		mtf-primebroker.tokyo-professional.lmax.com	443
FIX 4.2 Market Data	103.219.174.21	52000	mtf-marketdata.tokyo-professional.lmax.com	443
FIX 4.2 Order placement	103.219.174.23	50000	mtf-order.tokyo-professional.lmax.com	443
FIX 4.4 Trade Reporting	103.219.174.24	50000	mtf-dropcopy.tokyo-professional.lmax.com	443
ITCH Feed A Snapshot	103.219.174.66	53000	N/A	
ITCH Feed B Snapshot	103.219.174.67	53000	N/A	
ITCH Security Definitions	103.219.174.70	80	N/A	

Test Environment Services

Two separate testing environments are available for participants wishing to complete conformance testing the **Demo** and **UAT** venues. The relevant venue for testing depends on the service being tested.

ITCH market data is available in the **UAT** venue only. All ITCH market data testing is performed over the Internet via an IPSEC VPN with inner GRE encapsulation.

DEMO Test Venue

Demo Test Venue	LMAX Proximity		Public Internet	
LMAX Broker Service	Target IP	Port	Target URL/IP	Port
Web based UI	N/A		web-order.london-demo.lmax.com	443
Web based API	N/A		web-api.london-demo.lmax.com	443
FIX 4.2 Market Data	N/A		fix-marketdata.london-demo.lmax.com	443
FIX 4.2 Order placement	N/A		fix-order.london-demo.lmax.com	443
Broker Portal	N/A		broker-portal.london-demo.lmax.com	443

User Acceptance Test (UAT) Venue

User Acceptance Test/UAT	LMAX Proximity		Public Internet	
LMAX Exchange Service	Target IP	Port	Target URL/IP	Port
Prime Broker Portal	N/A		mtf-primebroker.london-uat.lmax.com	443
Web based API & UI	91.215.164.156	443	web-order.london-uat.lmax.com	443
FIX 4.2 Market Data	91.215.164.155	52000	mtf-marketdata.london-uat.lmax.com	443
FIX 4.2 Order placement	91.215.164.153	50000	mtf-order.london-uat.lmax.com	443
FIX 4.4 Trade Reporting	91.215.164.154	50000	mtf-dropcopy.london-uat.lmax.com	443
ITCH Feed A Snapshot	91.215.164.158	53000	N/A	
ITCH Feed B Snapshot	91.215.164.159	53000	N/A	
ITCH Security Definitions	91.215.164.157	80	N/A	