Horizon Trading Solutions — MARKET CONNECTIVITY

EMEA - CASH MARKETS

Regulated Markets

Abu Dhabi Securities Exchange - ADX	FIX, Nasdaq ME ITCH
Athens Stock Exchange	OASIS IDS - ODL, MDFS, FIX
Borsa Istanbul	Genium INET ITCH, OUCH, FIX
Borsa Italiana	Optiq OEG, MDG
Borsa Italiana ETFPlus	Optiq OEG, MDG
BX Swiss - Bern eXchange	Elasticia, FIX, FAST
Copenhagen Stock Exchange	NASDAQ OMX ITCH, OUCH, FIX
Dubai Financial Market - DFM	FIX, TSMR
Euronext Amsterdam Stock Exchange	Optiq OEG, MDG
Euronext Brussels Stock Exchange	Optiq OEG, MDG
Euronext Dublin Stock Exchange - ISE	Optiq OEG, MDG
Euronext Lisbon Stock Exchange	Optiq OEG, MDG
Euronext Oslo Stock Exchange	Optiq OEG, MDG
Euronext Paris Stock Exchange	Optiq OEG, MDG
Frankfurt Certificate Stock Exchange (ex-Scoach)	T7
London Stock Exchange	MillenniumIT
Moscow Exchange MICEX-RTS	MFIX, FIX/FAST
NASDAQ Baltic (Lithuania, Latvia, Estonia)	NASDAQ OMX ITCH, OUCH, FIX
NASDAQ Dubai Exchange	FIX, TSMR
NASDAQ Nordic (Sweden, Denmark, Finland, Iceland)	NASDAQ OMX ITCH, OUCH, FIX
Nordic Growth Market - NGM	Elasticia, FIX, FAST
Qatar Stock Exchange	Millennium FIX, MITCH
Riga Stock Exchange	NASDAQ OMX ITCH, OUCH, FIX
Saudi Stock Exchange - Tadawul	GBS FIX
SIX Structured Products Exchange (ex-Scoach Swiss)	IMI, OTI, QTI, RDI, STI
SIX Swiss Exchange - SWX	IMI, OTI, QTI, RDI, STI
Stockholm Stock Exchange	NASDAQ OMX ITCH, OUCH, FIX
Tabadul Exchange Hub (ADX, BHB, MSX)	MDF, FIX
Tadawul - Saudi Exchange	Genium INET FIX, TIP
Warsaw Stock Exchange	UTP, WATS
Xetra (Bonds, Warrants, Energy, Equities)	T7

Multilateral Trading Facilities

Cboe Europe Equities	FIX, PITCH, Multicast PITCH
Equiduct	FIX, ITCHMD
LSE Turquoise	MillenniumIT
NYSE Arca Europe	UTP MD, UTP Direct

EMEA - DERIVATIVES MARKETS

Abu Dhabi Securities Exchange - ADX	FIX, Nasdaq ME ITCH
Athens Stock Exchange	OASIS IDS - ODL
Borsa Istanbul	Genium INET ITCH, OUCH, FIX
Borsa Italiana SEDEX	MillenniumIT
CATS-LS / CATS Direct - CDX	FIX
CATS-OS	FIX
Eurex	T7 (RDI, ETI, EMDI, OEBI)
Euronext Derivatives (including ex-IDEM)	CCG, Optiq MDG
European Warrant Exchange - Euwax Stuttgart	FIX
ICE Futures Europe	FIX OS, iMpact
London Stock Exchange Derivatives	SAIL, HSVF
Madrid Futures Exchange - MEFF	MEFFGate Trading
Moscow Exchange Futures & Options Market - FORTS	Plaza-2
NASDAQ Dubai Exchange	FIX, TSMR

NASDAQ Nordic Derivatives	OMnet
Qatar Stock Exchange	Millennium FIX, MITCH
SIX Swiss Exchange - SWX	STI, QTI, MDI
Tadawul - Saudi Exchange	Genium INET FIX, TIP
Warsaw Stock Exchange	UTP, WATS

ASIA - CASH MARKETS

Australian Stock Exchange - ASX	OMX
Bursa Malaysia - KLSE	BDA
Hanoi Stock Exchange - HNX	Various(1)
Ho Chi Minh Stock Exchange - HOSE / HSX	Various(1)
Hong-Kong Stock Exchange - SEHK	CMG, OMD-C
Indonesia Stock Exchange - IDX	FIX, ITCH + GLIMPSE
Korea Exchange - KRX	Koscom NFS
National Stock Exchange - NSE	CTCL
Shanghai Stock Exchange - SSE	SBF, FAST
Shenzhen Stock Exchange - SZSE	SBF, FAST
Singapore Exchange - SGX	OMX OMNet
Thailand Stock Exchange - SET	ITCH, OUCH
Tokyo Stock Exchange / JPX Group - TSE	ArrowHead, TosTNet

ASIA - DERIVATIVES MARKETS

Australian Stock Exchange - ASX	OMX
Australian Stock Exchange - ASX24	FIX
Bombay Stock Exchange	OMB
Bursa Malaysia - BMD	Market Data Platform 3, iLink, EP3 (Single Stock Futures)
China Financial Futures Exchange - CFFEX	CTP, Hundsun
Dalian Commodity Exchange - DCE	Feichuang, CTP, Hundsun
Dubai Gold & Commodities Exchange - DGCX	Cinnober
Dubai Mercantile Exchange	NEON/FIX.4.2 (NYMEX)
Hanoi Stock Exchange - HNX	Various(1)
Hong-Kong Futures Exchange	OMX, OMD-D
Korea Exchange	Koscom NFS
Osaka Securities Exchange / JPX Group	OMX
Shanghai Futures Exchange - SHFE	CTP, Hundsun
Shanghai Stock Exchange - SSE	FIX, Hundsun
Singapore Exchange - SGX	OMX
Thailand Futures Exchange - TFEX	ITCH, OUCH
Tokyo Financial Exchange - TFX	MM Quote System
Zhengzhou Commodity Exchange - ZCE / CZCE	eSunny, CTP, Hundsun

AMERICAS - CASH MARKETS

American Stock Exchange	FIX NYSE
BM&FBOVESPA - B3	PUMA
Boston Stock Exchange	NASDAQ OMX ITCH, OUCH, FIX
FXall	FIX
International Securities Exchange - ISE	FIX Gateway / ISE Depth of Market
New-York Stock Exchange - NYSE	FIX / ArcaBook, OpenBookRT, OpenBookUltra
Toronto Stock Exchange / TMX Group - TSX	FIX

AMERICAS - DERIVATIVES MARKETS

BM&FBOVESPA	PUMA
CBOE Futures Exchange	FIX / CFN
Chicago Mercantile Exchange - CME, CME Globex	Market Data Platform 3, iLink
International Securities Exchange - ISE	FIX Gateway / ISE Depth of Market
Montreal Exchange / TMX Group - MX	FIX / STAMP
New-York Mercantile Exchange - NYMEX	Market Data Platform 3, iLink

(1) Native exchange connectivity is usually not possible on these markets ; exchange connectivity is done via bank core systems and requires specific adaptations.

Horizon Trading Solutions

OUTBOUND BROKER FIX CONNECTIVITY[2]

Broker	Markets
ABN Amro	Worldwide markets - Cash Equity, Equity Derivatives / Possible from LD4
Apex Clearing	AMER markets - Cash Equity / Possible from LD4
Bank of America Merrill Lynch	Worldwide markets - Equity Derivatives
Barclays BARX	Worldwide markets - Cash Equity, Equity Derivatives
Bay Crest Partners	AMER markets - Cash Equity
BNP	ASIA markets - Cash Equity, Equity Derivatives
BNP FrontIERS	FIX
Calyon CLS	FIX
Calyon Frontiers	FIX
Canaccord	TSX - Cash Equity
CGS-CIMB	KLSE, KRX - Cash Equity
Citadel	AMER markets - Cash Equity / Possible from LD4
Citi	Worldwide markets - Cash Equity, Equity Derivatives
Citic Securities	Mainland China markets - Equity Derivatives
CLSA	FIX
Cowen	EU markets - Cash Equity
Credit Suisse	Worldwide markets - Cash Equity, Equity Derivatives
Daiwa	ASIA markets - Cash Equity
DASH Financial	US market - Equity Derivatives
Deutsche Bank	Worldwide markets - Equity Derivatives
EquitaSIM (Specialist)	Italy market - Cash Equity
Goldman Sachs	Worldwide markets - Cash Equity / Possible from LD4, ASIA markets - Equity Derivatives
ICF (Specialist)	Frankfurt Scoach exchange
Instinet	APAC markets - Cash Equity
Interactive Brokers	Worldwide markets - Cash Equity, Equity Derivatives / Possible from LD4 & FR2
J.P. Morgan	Worldwide markets - Cash Equity / Possible from LD4, CBOE - Options
Kepler Cheuvreux	EU markets - Cash Equity
Marex	Worldwide markets - Commodity Futures
Maybank	SGX, SET - Cash Equity
Morgan Stanley	Worldwide markets - Cash Equity, Equity Derivatives
ODDO BHF	EU markets - Cash Equity
Saxo Bank	Worldwide markets - Cash Equity / Possible from LD4, CME / ICE EU / Eurex - Derivatives
Shenyin & Wanguo Securities	FIX
Shinhan Securities	KRX - Cash Equity, Equity Derivatives
Société Générale NewEdge	Worldwide markets - Cash Equity, Equity Derivatives
SwissQuote	Spot Cryptocurrencies
Tick-TS (Specialist)	Bern exchange
UBS (including Swiskey)	Worldwide markets - Cash Equity, Equity Derivatives
Virtu - Knight Capital Group	AMER markets - Cash Equity / Possible from LD4
Vontobel	Worldwide markets - Cash Equity, Equity Derivatives

(2) Please note these outbound broker connectivity have been built outside a routing network, hence usually requires a re-certification in the client's scope. Also, this list is not exhaustive and new FIX brokers can be added upon demand, following a FIX connectivity certification process.

ORDER ROUTING NETWORKS

OUTBOUND	
Bloomberg EMSX FIX for OMS Staging	FIX-Out
Bloomberg EMSX FIX Network	FIX-Out
LSEG Autex Trade Route	FIX-Out

INBOUND	
Bloomberg EMSX FIX Network	FIX-In
Charles River CRD	FIX-In
ITG Virtu Financial Net GATE / Triton OMS	FIX-In
LSEG Autex Trade Route	FIX-In
NYFIX	FIX-In

REALTIME MARKET DATA VENDORS

ActivFinancial	ActivContentGateway API
Bloomberg	Managed Bpipe (including Zero Footprint), Server API
Chi-Tech MarketPrizm	MarketPrizm API
Exegy (former Vela Trading Technologies)	MAMA and MAMDA
GTN Global Trading Network	REST
ICE Data Service - Interactive Data Corporation	CTF, MDG
IRESS - QuantHouse	FeedOS Java API
Lightstreamer	REST, WebSocket, gRPC
LSEG - Reuters	TREP JRFA (OMM and MD), RTO (EMA API)
Yeonhap Infomax	Global Data Feed

CRYPTOCURRENCIES DIGITAL ASSETS

SPOT MARKETS	
ADDX / iSTOX	FIX
Binance	REST / HTTP + WebSocket
Bitstamp	REST / HTTP + WebSocket
Bittrex	REST / HTTP + WebSocket
GDAX / Coinbase Pro	REST / HTTP + WebSocket
Kraken	REST / HTTP + WebSocket

DERIVATIVES MARKETS	
Binance	REST / HTTP + WebSocket
CBOE	REST / HTTP + WebSocket
Chicago Mercantile Exchange	Market Data Platform 3, iLink

Horizon Trading Solutions — THIRD PARTIES INTEGRATION

Aquariux	FIX In (referential, orders and market data), REST
Arqa QUIK	FIX Out (orders and market data)
Bclear	SOAP/axis
Beacon	FIX (Drop Copy)
BigXYT	Java SDK (referential and historical data)
Bloomberg	Multi Product Feed, FIX-In, BTCA
Corise Technology	Gemizip
Cscreen	SOAP/axis
CSE - Computer & Systems Engineering Company	IOMSS FIX Out
DirectFN Mubasher	WebSocket Market Data, FIX Out
Feichuang	Xspeed API
Fidessa (ION)	EMMA/OpenAccess, OMAR, FIX Out, MDAPI
FinIQ	Equity Connect FIX (RFQ)
FIS - SunGard GL TRADE	GL API, FIX In, FIX Out
GBS	FIX Out
Hundsun	TCP2 UFX API
IG	OTC FIX Market data
Integral FXCloud	FIX Out
LSEG - Reuters	Datascope Select, Tick History, EMA Interactive Provider
Misys Sophis	FIX (Drop Copy)
Murex	FIX (Drop Copy)
Rapid Addition	FIX In, FIX Out
RFQ-hub (Virtu)	FIX Out (orders as buy-side)
RootNet	FIX Out
S&P Global - IHS Markit	Markit SOLA API
SFIT	Comprehensive Transaction Platform (CTP)
SmartTrade	FIX Out (orders and market data)
Terranoha	API
Trading Technologies	FIX Out (orders and market data)
TS Imagine	REST (pricing)
Ullink (Broadridge Itiviti)	FIX In, FIX Out
Ultumus	API
Vectalis	UTS Direct access

Note: The list of market data vendor integrated with Horizon is available page 4.