Streaming Support and Operations Policies and Procedures

FX|SpotStream ^{SM}

FXSpotStream LLC Streaming Support and Operations Policies and Procedures

I. Introduction

FXSpotStream LLC (the "Company" or "FSS") provides a multibank Spot FX, FX Forwards, Swaps, NDF, NDS, and Precious Metals price aggregation service (the "Service"). These Support and Operations Policies and Procedures (the "Operating Procedures") form a part of the legal agreement(s) entered into by and between the Company and its users and liquidity providers. In the event of any inconsistencies between these Operating Procedures and the legal agreement(s) the terms of the legal agreement(s) shall control.

II. Support Hours and Contacts

FSS provides a support help desk which is available from 2pm NYT on Sunday until 5pm NYT on Friday.

The email address for FSS support is:

- support@fxspotstream.com

The local support phone numbers for the FSS support desk are as follows:

- Tokyo : +81 3 6863 5370 / +81 3 4520 9264
- London : +44 (0) 20 3318 5020 / +44 (0) 20 3608 3081
- New York : +1 646 381 2035 / +1 646 616 7549

A local Tokyo support desk is also available for Japanese speaking clients. The Tokyo local support desk is staffed with individuals who are fluent in Japanese.

All support staff can be reached by using the above contact numbers.

Note that any ticket raised between the service closing Friday and opening on Sunday, unless an urgent production matter, will be reviewed on Sunday during trading hours.

III. Trading Hours of Operation

The FSS Service will be open for trading commencing every Monday at 7am NZST and will close for trading on Friday at 5pm EST.

IV. Daily LP Maintenance

Please note, as stated above, the FSS Service does not have daily maintenance during the week. Each LP, however, has their own specific schedule for daily maintenance. Please see the below list for time frames on how long each LP goes down for daily maintenance at 5pm New York:

Streaming Session Schedule			
LP	**Service**	**Sunday**	**Daily**
Bank of America Merrill Lynch	Streaming	Starts at 3:00PM NYT	Maintenance at 5PM-5:05PM NYT and closed 5:00PM on Friday
Bank of Tokyo-Mitsubishi	Streaming	Starts at 3:00PM NYT	Maintenance at 5PM-5:20PM NYT and closed 5:00PM on Friday
BNP Paribas	Streaming	Starts at 3:00PM NYT	Maintenance at 5PM-5:02PM NYT and closed 5:00pm on Friday
Citigroup	Streaming	Starts at 3:00PM NYT	Maintenance at 5PM-5:02PM NYT and closed 5:00PM on Friday
Commerzbank	Streaming	Up from 5:05PM NYT Sunday -> 5PM NYT Friday	
Credit Suisse	Streaming	Starts at 6:00PM NYT	Maintenance at 5PM-5:01PM NYT and closed 4:55PM on Friday
Goldman Sachs	Streaming	Starts at 3:00PM NYT	Maintenance at 5:00PM - 5:02PM NYT and closed 5:00PM on Friday
HSBC	Streaming	Starts at 3:00PM NYT	Maintenance at 5PM-5:02PM and closed 5:00PM on Friday
JP Morgan	Streaming	Starts at 3:00PM NYT	Maintenance at 5PM-5:06PM NYT and closed 05:00PM on Friday
Morgan Stanley	Streaming	Up from 3PM NYT Sunday - 5PM NYT Friday	
Standard Chartered Bank	Streaming	Starts at 05:55PM NYT	Maintenance at 5PM-5:05PM NYT and closed 5:00 PM on Friday
UBS	Streaming	Starts at 3:00PM NYT	Maintenance at 5PM-5:02PM and closed 5:00PM on Friday

V.   Service Maintenance

The Company shall use reasonable efforts to operate and maintain the Service during the trading hours of operation and promptly notify users and liquidity providers of any difficulties experienced by users and/or liquidity providers with respect to their access to or use of the Service. The Company in its sole discretion shall determine the need for and conduct any maintenance of the Service. To the extent practicable the Company shall notify users and liquidity providers in advance of any maintenance required of the Service. The Company does not have a standing maintenance window during the trading hours of operation.

VI.   Client Connectivity

Clients have multiple options to connect the Service:

- Xconnect: Available in Equinix Datacenters, clients can choose between 1g or 10g Xconnects and are able to use Single Mode Fiber (SMF) or Multi-Mode Fiber (MMF)

- Extranet: Clients can establish a connection via TNS, BT Radianz or TMX Atrium

- VPN – Clients can connect using a secured tunnel vis the internet. VPN connections with Microsoft Server devices are not supported

- Public Internet (NY2 Only) – Connections over Public Internet must be secured using SSL/TLS version 1.2 or better. SSL v1 and v2 are not supported. Clients can use a self-signed certificate and FSS does not have a restriction on key length

For client connections FSS can only accept public IPs. If needed, FSS can allocate a private IP to the client for non-Public Internet connections.

VII.   Disaster Recovery

A single site, NY4, will support disaster recovery for all three colocation sites (NY2, LD4 and TY3). The disaster recovery procedure is a manual cold start event in which NY4 will assume the role of the lost site. Separate connectivity needs to be established by the client to the DR site NY4.

The DR procedure is depicted below:
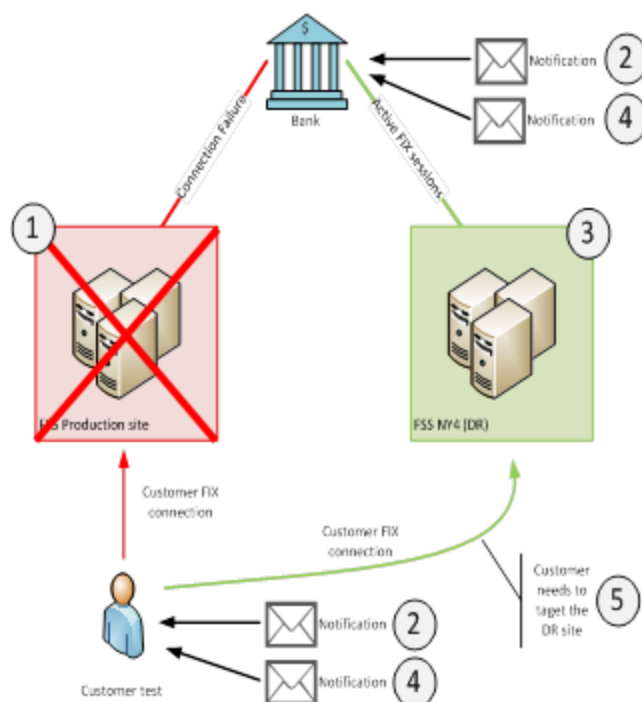
1)   Primary site failure

2)   Notification of the DR event

3)   DR is activated

4)   Notification that the Service is ready from the DR site (NY4)

5)   Client is connected to the DR site

Additionally, in the event that FSS email becomes unavailable, the entire business and support team can be reached by emailing: clientservices@liquiditymatchllc.com.

VIII.   FIX Session Sequence Number Reset Window

FIX implementation supports sequence number processing which is used to ensure message delivery and is used for message recovery purposes. FSS will reset this sequence number to zero once per week at the end of the weekly trading session (e.g., after 5pm EST Friday).

IX.   User Profile

The FSS Service provides a mechanism for a liquidity provider ("LP") to approve and configure a user for trading with the liquidity provider. During the configuration phase, the liquidity provider sets

up an appropriate trading profile for each user which determines the eligible currency or precious metal pairs, execution sizes, aggregation rules and price streams associated with the user. FSS does not set up the user profile and assumes no responsibility for any errors in the configuration of the profile by the liquidity provider

X. Order Types

FXSpotStream supports fill-or-kill, IOC/Partials, VWAP and "slippage", orders.

- Fill-or-kill orders allows for an order to be filled in its entirety or not at all
- IOC/Partial orders allow for a partial and immediate fill of less than the entire quoted notional amount
- VWAP allows a client to aggress on multiple quotes by only sending 1 order message to the bank, with a VWAP calculated price
- Slippage allows a client to set a worse price acceptable to the client to be filled at by the bank if the original price on the quote is not available. When adding slippage on the price originally quoted, the client is informing the bank(s) that it is authorizing the bank to fill the order at a worse price as specified by the client versus having the bank reject the order. Before sending an order with slippage, clients should speak directly to the bank to understand and agree on how orders with slippage are handled by the bank. FSS is not involved in any way in the determination of the price at which an order is filled by the bank

Please find below the order types supported by each LP:

- Order Types

ORDER TYPES				
LP's	FOK	IOC[4]	Slippage	VWAP
BAML	✓		✓	
BNP	✓			
BTMU	✓			
CITI	✓			✓
COBA	✓			✓
CS	✓			
GS	✓			
HSBC	✓		✓	✓
JPMC	✓			✓
MS	✓	✓	✓	✓
SCB	✓			
UBS	✓	✓		✓

- Limit Orders

LIMIT ORDERS		
LP's	LMT	DMA
BAML	✓	
BNP	✓	
BTMU	✓	
CITI	✓	
COBA	✓	
CS	✓	
GS	✓	
HSBC	✓	
JPMC	✓	✓
MS	✓	
SCB	✓	
UBS	✓	

XI.   Aggregation Rules (Spot and Forward FX Streaming)

Users interact bilaterally with one or more liquidity providers based on one of two aggregation rules configured by the liquidity provider:

- Option 1 – Best bid/ask for full

- Option 2 – Fully disclosed, depth of book

XII.   Forwards/Swaps RFS Rules

All content and rules in this document apply to Forward/ Swap RFS trading unless explicitly mentioned. In addition, below are specific rules concerning the RFS service:

- Quote Request:
    - Following a quote request, the LP will start streaming prices for such quote request and absent any action the quote request will be cancelled after 2 minutes
    - If an order is placed, the same timeout rules apply as detailed in section IX below
    - Once an order is placed with a specific LP, streams from all other LPs on the same RFS will be cancelled immediately
- A mid-price will only be sent to a client if it is provided by the LP
- UTI:
    - If a client provides a UTI on the order, FSS will pass this value on to the LP
    - In the event that a UTI is not provided, FSS will generate its own UTI to send to the LP. The LP, however, will be able to reject the FSS generated UTI and generate its own UTI to share with the client and FSS

XIII.   NDF/NDS

FSS supports NDF (non-deliverable forwards) and NDS (non-deliverable swaps) currently out of the New York co-lo site, only. NDFs and NDSs are available for all of our streaming liquidity options (eg. Passthrough, Full Amount, Limit Orders, etc.), as well as RFS and in our GUI. Outside of the additional fields required for NDFs (e.g., fixing date), the underlying functionality of the liquidity options remain unchanged.

FSS does not take a position on or assume responsibility for fixing source information expected, requested or required by the LP or the client. The client should always discuss in advance of sending an order to a given LP and agree with the LP what the 'default' fixing source to be used will be. Agreeing on the fixing source in advance will ensure agreement on the terms of the transaction and will also avoid any issues in the downstream booking process. For those LPs that do support dynamic selection of fixing sources for workflow supported on FSS, please refer to the ROE for details on how to select the reference desired. In all events, FSS merely transmits prices and orders between the parties and any trading or booking questions or issues should take place directly between the client and LP. FXSpotStream assumes no responsibility for the fixing source or any errors or disagreements between the client and LP related to the fixing source.

XIV. Order Timeouts/Trading Notifications

FSS shall use reasonable efforts to monitor pending orders from a client to a liquidity provider and send notifications as applicable. If an order placed by a client has not been acknowledged by a liquidity provider within 4 seconds the Service **WILL CANCEL THE ORDER** and generate a cancel on the execution report to the client, with a reason "Order Timeout". This will prompt an email notification to be sent to both the liquidity provider and the client to notify them of the time out and subsequent cancelation of the order.

If following the order time out, the liquidity provider sends to FSS an order cancellation or reject in the execution report, FSS will suppress this message from being sent to the client to prevent duplication.

To the extent that following the 4 second order time out the liquidity provider sends FSS an order filled execution report, FSS will perform two actions:

- Suppress this execution report from being sent to the client (as the client knows the deal as a timed out trade that has been cancelled)
- Send an email notification to the liquidity provider and client to inform the liquidity provider that a fill execution report was received for a timed out trade that the client knows as cancelled

In this scenario we also recommend the LP to monitor any STP/post-trade feeds to ensure there are no issues or discrepancies.

It is the responsibility of the client and liquidity provider to at all times independently monitor all trading conducted or attempted to be conducted through the Service. If the client and liquidity provider disagree with any action taken by FSS, it is the responsibility of the client and liquidity provider to immediately contact each other to address the status of the order and to notify FSS regarding any mutually agreed changes to the status of the order.

Clients and liquidity providers who use the Service agree to abide by FSS' stated policy and protocol. Irrespective of cancellations or notifications generated by the Service, the liquidity provider and client acknowledge and agree that any order transmitted by the Service from the client will be deemed cancelled if not acknowledged by the liquidity provider in 4 seconds whether or not FSS sends or does not a send a cancelation due to a technical or other reason. Further, the liquidity provider and client acknowledge that an order once cancelled will be deemed cancelled even if the liquidity provider subsequently attempts to fill the previously cancelled order.

FSS does not take a view on whether an order should be accepted, cancelled, or rejected and is not and will at no time be a party to any transaction between the client and liquidity provider. FSS shall use reasonable efforts to address order timeouts in accordance with the above stated protocol.

In addition to the order timeout condition (detailed above), FSS will issue an email notification in the event that a bank sends FSS an execution report that results in one of the following conditions or contains an unsupported execution type:

- Order over-fill
- Order under-fill
- Unexpected execution type (i.e., other than a fill, reject or cancel)

Again, upon this email notification it is the responsibility of the client and bank to immediately contact each other to address the order/trade in question. Details of the order/trade will be included in the body of the email generated by FSS.

XV.   Order Management

The user is responsible for managing all orders sent via FSS. All orders are active and may be acted on by the applicable liquidity provider until they are executed or cancelled. If the user's connection terminates or disconnects with active orders still pending, the user is still responsible for honoring the orders placed via FSS should they be executed on by the liquidity provider.

If an event occurs in which the user is unable to manage orders placed via FSS because of technical or other issues on the user's side and the user would like those orders to be cancelled or removed, it is the responsibility of the user to contact the liquidity provider regarding the problem and the associated pending orders. FSS will assist in the communication once initiated between the user and the liquidity provider.

FSS will not take any action with respect to any pending orders that have not been acknowledged. It is the responsibility of the user and liquidity provider to resolve all trading matters and pending orders.

It is the responsibility of the user and liquidity provider to at all times independently monitor all trading conducted or attempted to be conducted through the Service.

XVI.   Liquidity Provider and User Contact Details

During the course of the onboarding process FSS will request and gather contact details of the user and liquidity provider. FSS will use the contact details to generate email communications and to otherwise contact the user and liquidity provider. Communications include, but are not limited to, status changes during the on boarding process, order submission timeout notifications and other important communications related to the Service. The user and liquidity provider must ensure that the contact details provided are accurate and promptly notify FSS of any changes to the contact details provided.

Schedule A to these Operating Procedures contains the current support telephone and email contacts of the FSS liquidity providers ("Liquidity Provider Contacts"). Users should ensure that they maintain their own current list of contact emails and telephone numbers supplied to the user by each liquidity provider.

XVII. LP Product Support

Below are the products supported by each Liquidity Provider over FSS. Please note these are subject to change based on changes made by the Liquidity Providers.

- Forwards

FORWARDS		
LP's	FWD ESP	FWD RFS
BAML	Yes	Yes
BNP	Yes	Yes
BTMU	No	No
CITI	No	Yes
COBA	Yes	Yes
CS	No	Yes
GS	Yes	Yes
HSBC	Yes	Yes
JPM	Yes	Yes
MS	Yes	Yes
SCB	Yes	Yes
UBS	Yes	Yes

- Swaps

SWAPS	
LP's	RFS
BAML	Yes
BNP	Yes
BTMU	No
CITI	Yes
COBA	Yes
CS	Yes
GS	Yes
HSBC	Yes
JPM	Yes
MS	Yes
SCB	Yes
UBS	Yes

- Precious Metals

PRECIOUS METALS	
LP's	ESP
BAML	No
BNP	Yes (NY only)
BTMU	No
CITI	Yes
COBA	No
CS	Yes
GS	Yes
HSBC	Yes
JPM	Yes
MS	Yes
SCB	Yes
UBS	Yes

- NDFs

NDFs			
LP's	ESP	RFS NDF	RFS NDS
BAML	Yes	Yes	Yes
BNP	No	No	No
BTMU	No	No	No
CITI	Yes	Yes	No
COBA	No	Yes	No
CS	No	Yes	No
GS	Yes	Yes	Yes
HSBC	Yes	Yes	Yes
JPMC	Yes	Yes	Yes
MS	No	No	No
SCB	Yes	Yes	No
UBS	Yes	Yes	No

XVIII. FSS Territories

The user may access the FSS Service from any of the jurisdictions listed below:

Jurisdiction	SpotFX/PM	Forwards/Swaps	NDF/NDS
Australia	✓	✓	✓
Belgium	✓	✓	✓
Canada	✓	✓	
Cayman Islands	✓		
Cyprus	✓		
Denmark	✓		
Dubai International Financial Centre	✓		
France	✓	✓	✓
Hong Kong	✓	✓	
Ireland	✓	✓	
Israel	✓		
Italy	✓	✓	✓
Japan	✓	✓	✓
Malta	✓	✓	✓
Mexico	✓	✓	
Netherlands	✓	✓	
Norway	✓	✓	✓
Russia	✓	✓	
Singapore	✓	✓	✓
South Africa	✓	✓	
South Korea	✓		
Spain	✓	✓	✓
Sweden	✓		
Switzerland	✓	✓	✓
Turkey	✓	✓	
United Arab Emirates	✓		
United Kingdom	✓	✓	✓
United States	✓	✓	✓

SCHEDULE A

Bank of America Merrill Lynch

Support Group	Phone Number	Email Address
eFX Client Services Team – Americas *	+1 855-290-5502	Efx.csg@baml.com
eFX Client Services Team – EMEA *	+44 808-234-0295	Efx.csg@baml.com
eFX Client Services Team – APAC **	800-1206150	Efx.csg@baml.com
eFX Client Services Team – Japan**	0120 959 974	Efx.csg@baml.com
eFX Client Services Team –Singapore**	800-1206150	Efx.csg@baml.com
eFX Client Services Team -Taiwan	00801-13-6465	Efx.csg@baml.com
* available 24 hours ** local toll free only		

Bank of Tokyo-Mitsubishi

Support Group	Phone Number	Email Address
Foreign Exchange Trading Department	+81-3-6268-1340	btmutky_efx_PF@mufg.jp

BNP Paribas

Support Group	Phone Number	Email Address
Cortex Client Serviced - PROD Issues and Trade Support Global	Americas: +1 212 841 3838 EMEA: +44 207 595 8886 APAC: +65 6210 1828	cortex.client.services@bnpparibas.com

Citigroup

Support Group	Phone Number	Email Address
CitiFX Helpdesk	+1 212 723 3500 +44 207 500 1832 +65 67868000	eteam@citi.com fifx.support@citi.com
FX Trading, Sales and Technology - Global	+1 212 723 3037 +81 362709188	efxsales@citi.com

Commerzbank

Support Group	Phone Number	Email Address
Production and Technology Support Issues - Global	+44 207 47 54500	esupport@commerzbank.com
FIX Support Issues - Global	+44 20 7475 5542	FIXSupport@commerzbank.com

Credit Suisse

Support Group	Phone Number	Email Address
EFX Support	Singapore: +65 6212 3313 London: +44 207 883 2213 NY: +1 212 538 4339 |	list.efx-support@credit-suisse.com
EFX business contact/Trade issues	NY - 212-538-1404 London - 44-(20)7-883-7697 Asia - 65-6212-4399	list.gfx-efx-bus-mgt@credit-suisse.com

Goldman Sachs

Support Group	Phone Number	Email Address
Production and Technology Support Issues Americas	+1 646 446 0033	efx@gs.com
Production and Technology Support Issues EMEA	+44 207 051 1930	efx@gs.com
Production and Technology Support Issues APAC	+813 6437 7988	efx@gs.com
Precious Metals Prod and Tech Support Issues	+1 646 446 0033 +44 207 051 1930 +813 6437 7988	ecommod@gs.com gs-ecommod-urgent@gs.com
Onboarding Americas	+1 646 446 0033	gs-efx-ecnsetup@gs.com
Onboarding EMEA	+44 207 051 1930	gs-efx-ecnsetup@gs.com
Onboarding APAC	+813 6437 7988	gs-efx-ecnsetup@gs.com
Global Sales (customer set ups/none technology) Americas	+1 212 902 7334	gs-efx-global@gs.com
Global Sales (customer set ups/none technology) EMEA	+44 207 051 1514	gs-efx-global@gs.com
Global Sales (customer set ups/none technology) APAC	+81 3 6437 9555	gs-efx-global@gs.com
Global Sales (customer set ups/none technology)	+852 2978 2258	gs-efx-global@gs.com

HSBC		
Support Group	**Phone Number**	**Email Address**
Any Issue – Hours: 24 hours a day 6 days a week		
Production Support Issues - EMEA	+44 (0) 207 991 1342	gfx.eclientservices.global@hsbc.com; erisk.quant.group@hsbcib.com
Production Support Issues - Americas	+1 212 525 3048	gfx.eclientservices.global@hsbc.com; erisk.quant.group@hsbcib.com
Production Support Issues - Asia Pac	+852 3071 4888	gfx.eclientservices.global@hsbc.com; erisk.quant.group@hsbcib.com
Production Support Issues – Toll Free	00800 8090 8000	GFX.eClientServices.global@hsbc.com erisk.quant.group@hsbcib.com
Onboarding		
Onboarding - HK	+861 392 501 0146	globalefxsales@hsbc.com; efxsalesemea@hsbc.com
Production & Fix Support – Hours: Local office hours only		
FIX SUPPORT - HK	+861 392 501 0146	fix.support@hsbcib.com
UAT Support		
UAT Support		fxclientonboarding@hsbc.com.hk fxc lientonboarding@hsbc.com.hk

The following is a link to disclosure that HSBC has asked FSS to make available to HSBC's clients using the Service: http://www.hsbcnet.com/dodd-frank-ebc.

FSS is providing this link as a courtesy to HSBC, and the fact that FSS is providing such link should not be interpreted to imply or suggest that FSS is in any manner subject to the rules and regulations described therein. FSS makes no representations or warranties concerning, and has no responsibility for, the content of such disclosure, including without limitation the accuracy thereof, and FSS has no responsibility to keep such disclosure updated. In the event such disclosure conflicts with the provisions of a client's User Agreement with FSS or a Liquidity Provider Agreement between a Liquidity Provider and FSS, the terms of such User Agreement or Liquidity Provider Agreement, as the case may be, shall control.

JP Morgan		
Support Group	**Phone Number**	**Email Address**
Production and Technology Support Issues - North America	+1 877 339 5762	JPMorgan_FXEcom_Urgent@jpmorgan.com
Production and Technology Support Issues - EMEA	+44 20 7777 4422	JPMorgan_FXEcom_Urgent@jpmorgan.com
Production and Technology Support Issues - Asia	+65 0066-33-813 293	JPMorgan_FXEcom_Urgent@jpmorgan.com
Onboarding/Set up – Globally	+1 877 339 5762 +44 20 7777 4422 +61 1300 576 0 +65 6882 7222 +81 3 6736 7888	MDAPI_Onboarding_Team@jpmorgan.com; fxc.ecs@jpmorgan.com

Morgan Stanley

Support Group	Phone Number	Email Address
Available 24 Hours		
FXASG - Global Production Support	+1 212 762 2090	fxasg@morganstanley.com
FXACCTMGT - Global Trading Support	+1 888 777 5784	fxacctmgt@morganstanley.com

Standard Chartered Bank

Support Group	Phone Number	Email Address
Client Services Team	Singapore: +65 6622 7192 Hong Kong: +852 3013 4426 Bahrain: +973 1654 8913 London: +44 203 564 6553 New York: +1 917 4217 292	eclientservices@sc.com
Production Support Team		FMeCommercePSS@sc.com

UBS

Support Group	Phone Number	Email Address
Available 24 Hours		
FX Support	+1 877-814-6707	fxehelp@ubs.com
Trade Issues Americas	+1 866-910-8751	fxecommerce@ubs.com
Trade Issues EMEA	+800 80 80 80 88	fxecommerce@ubs.com
Trade Issues APAC	+65 649 586 51	fxecommerce@ubs.com

FXSpotStream

Support Group	Phone Number	Email Address
Sales Americas	+ 1 201 217 8074 + 1 201 217 8075	sales@fxspotstream.com
Sales EMEA	+ 44 (0)20 7856 2520	sales@fxspotstream.com
Sales APAC	+81 (0)3 4580 1263	sales@fxspotstream.com
Support	Tokyo : +81 3 6863 5370 London : +44 (0) 20 3318 5020 New York : +1 646 381 2035	support@fxspotstream.com