

EquityClear

Trade Source Interface – FIXML Messages

LCH The Markets'
Partner



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Abbreviations

Abbreviation	Explanation
BIC	Bank Identification Code
CCP	Central Counterparty
CFD	Contract for Difference
CSD	Central Securities Depository
ECL	EquityClear
ERA	Equity Risk Analysis
FIX	Financial Information Exchange
ICSD	International Central Securities Depository
ISD	Intended Settlement Date
ISIN	International Securities Identification Number
ISO	International Standardisation Organisation
LCH	LCH Ltd
MIC	ISO 10383 Market Identifier Code
MTF	Multilateral Trading Facility
UTC	Coordinated Universal Time

1 Introduction

The LCH EquityClear service has cleared cash equity and equivalent products since February 2001 and CFDs since 2010.

The EquityClear service continues to expand, clearing trades from additional trade sources (exchanges, MTFs and other platforms) and offering settlement in a wider choice of “Settlement Services” (CSDs and ICSDs - henceforth all termed CSDs).

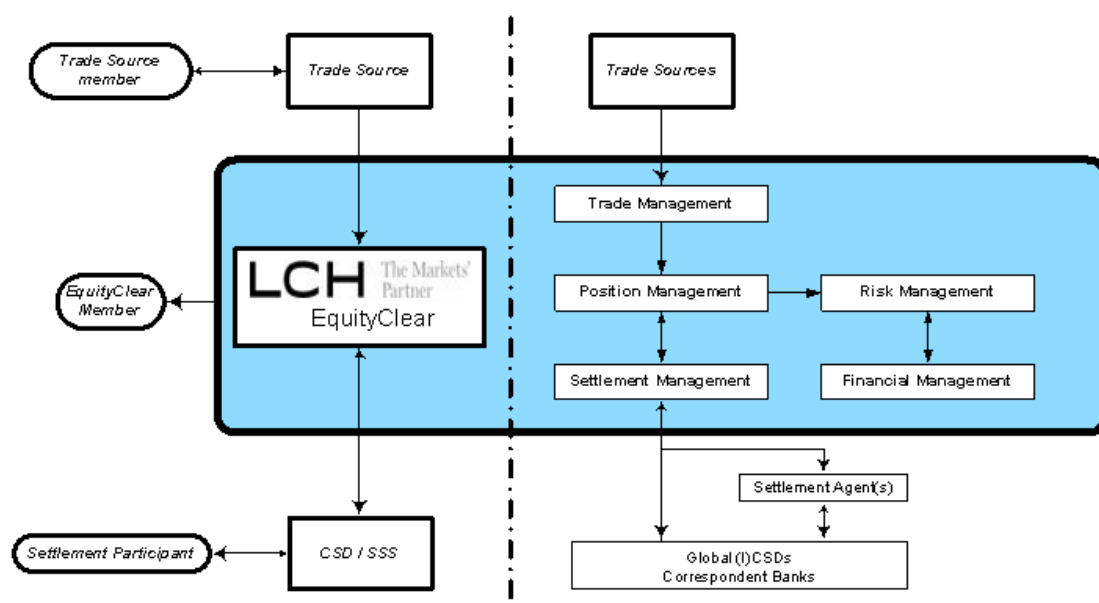
This document is provided exclusively to Trade Sources wishing to appoint LCH Ltd to clear or offer clearing of its matched trades. The purpose of the document is to:

01. Describe the current EquityClear service as it supports Trade Sources.
02. Describe the business interface between the Trade Source and LCH.
03. Describe the technical interface between the Trade Source and LCH.

2 EquityClear Service Overview

The clearing and settlement model of the EquityClear service is the standard hourglass model. That is, trades are sent by the trade source to LCH for clearing, with subsequent settlement in the appropriate Settlement Service.

The left hand side of the diagram below shows the high-level hourglass model. The right side shows a first level of detail.



2.1 Trade Management

All trades must be for standard conditions (no specials).

Both order book and off order book trades can be accepted.

2.2 Risk & Financial Management

LCH Risk Management approve eligible instruments for clearing.

Trades are risk managed using the LCH ERA algorithm.

LCH Ltd standard practices and procedures for collateral management and default management are used.

2.3 Settlement Management

Equity settlement is in CSDs with the associated cash movements either in the CSD or via separate correspondent banking arrangements.

3 Business Interface

3.1 Trade Submission

The trade source must submit matched trades, that is, a single message with both sides of the match.

All order book trades (under open offer) must be submitted to LCH such that they will be received within ten minutes. Any disruption of the normal operation of the feed over ten minutes must be notified to LCH Risk Management and Business Operations. If the feed is lost for over an hour, Risk Management will be looking for alternate methods of sourcing the trade positions from the trade source. In extremis, LCH will no longer accept order book trades on an open offer basis.

There is more flexibility for clearing off order book [OTC] trades as contract formation is by novation.

The following table shows the business data content to be sent in the trade feed for new trades, including contras.

Data Item	Description	Required ¹	Note (see below)	Business Data Item ID ²
Trade Source ID	Unique reference for the “trade source”	Y	1	A
Trade ID	Trade source generated trade reference	Y	2	B
Trade Date/Time	Date and time on which the trade was executed	Y	3	C
ISD	Intended Settlement Date	N	4	D
Instrument	Identifier of the traded instrument	Y	5	E
Reference Market	Identifier of the reference market	N	6	F
Quantity	Quantity of instrument traded	Y	7	G
Trade Price	Price and currency at which the trade was executed	Y	8	H
Trade Type	Trade type - used for trade processing	Y	9	I
Contra Reference	For a contra trade the Trade ID of the original trade	N	10	J
Dealing Firm ID (Buy)	Dealing Firm identifier in “trade source”	Y	11	K
Dealing Capacity (Buy)	Legal capacity in which the dealing firm has executed the trade. (Agency, Matched Principal or Principal)	Y	12	L

¹ Required: Yes, No

² This is used to cross-reference these business items to the fields in the message specification tables in the subsequent sections.

Data Item	Description	Required ¹	Note (see below)	Business Data Item ID ²
Dealing Firm Order Reference (Buy)	Reference attached to the order on input.	N	13	M
House/Client Indicator (Buy)	LCH sub-account denomination through which to clear the trade.	N	14	N
Dealing Firm ID (Sell)	Dealing Firm identifier in “trade source”	Y	11	O
Dealing Capacity (Sell)	Legal capacity in which dealing firm ID has executed the trade. (Agency, Matched Principal or Principal)	Y	12	P
Dealing Firm Order Reference (Sell)	Reference attached to the order on input.	N	13	Q
House/Client Indicator (Sell)	LCH sub-account denomination through which to clear the trade.	N	14	R

Notes

01. Usually the ISO Market Identification Code of the trade source. It may be beneficial or necessary to have more than one code per trade source to segment the business appropriately and such details can be agreed.
02. The minimum requirement is for the trade reference to be unique per trade date per Trade Source ID. A trade source must fully describe its trade reference policy, including the format.
03. Two values are accepted and processed.
 - a. The ‘trade date’ being the reference date for corporate action processing. Trades should not be sent later than the day after trade date (T+1). Trades received later than this (i.e. > T+1) will be rejected.
 - b. The ‘transaction date/time’ used solely for reporting purposes.
04. LCH calculates an ISD from the trade date and the standard settlement lag for the equity.
 - a. If no ISD is provided the calculated date is used.
 - b. If an ISD is provided on an OTC trade where standard ISD lags are not mandated then the provided ISD will be used. This ISD must be later than the day the trade is received by LCH.
 - c. If an ISD is provided where standard ISD lags are mandated the value is validated against the LCH calculated value. Any mismatch will cause the trade to go pending for further investigation. The probable cause is a mistake by one party in setting up bank holidays.
05. The ISIN of the equity instrument.
06. Some equity instruments are traded on more than one reference market and settled in a different CSD in each case. These are sometimes referred to as ‘dual listed ISINs’. Where an alternate market, such as an MTF, offers trading to match both reference markets a method is required to differentiate the

instruments as they will have the same ISIN and often the same currency. This is the MIC (market identification code) of the reference market.

07. The quantity of the instrument traded as defined by the contract.
08. The trade price in the currency units specified, the later being an ISO currency code or an agreed minor unit currency code. Therefore for sterling, GBP (pounds) and GBp (pence) are accepted and similarly for US dollars, USD (dollars) and USc (cents) are accepted.
09. An LCH defined trade type used by EquityClear to appropriately process the trade. Trade types include:
 - a. A standard 'on book' equity trade
 - b. An off order book or post recorded equity trade
10. A contra trade is submitted as a new trade. For information purposes, the original Trade ID may be submitted on a contra trade.
11. A unique identifier of the trading party. This is generally a SWIFT BIC but can be other values. This can also represent a CCP in the case of interoperability, where one of the trading parties does not clear through LCH.
12. The legal capacity in which the dealing firm has executed the trade, either as agent, matched principal or principal. **Where the dealing firm represents a CCP this field must be set to principal.**
13. This is intended to be a reference entered by the dealing party on their order or trade side to be used by them or their clearer for post trade processing.
14. A clearing member can segregate their business between House and Client clearing accounts. The account can be specified directly on the trade. If not supplied the value will be derived by LCH from pre-defined static data.

3.2 Trade Cancellation

Where a trade source sends a trade with details which do not reflect the true contractual nature of the trade the trade source must send LCH either a cancellation of the errant trade or a contra.

Where a trade is made between two parties and sent through for clearing and one party subsequently requests a trade cancellation via the trade source, say for a 'fat-finger' problem, and their counterparty agrees, then the trade source must send through a contra trade for clearing and not a cancellation.

3.3 Trade Acknowledgements

A trade source can request to be set up in EquityClear to receive an acknowledgement message for each trade accepted for clearing.

A trade source can request to be set up in EquityClear to receive a message for each trade which has gone pending and has not yet been accepted or rejected for clearing.

A rejection message will always be sent when a trade is not accepted for clearing.

A reason will be provided on pending and rejection messages as a comprehensible description and not a code. Reasons for a trade failing validation include, but are not limited to, the following:

- Incorrect trading capacity;
- No clearing relationship for the trading participant;
- ISIN not an Eligible CCP security for the trade source;
- Invalid trade type;

- The currency on the trade is not a currency cleared.

The basis of operation at LCH is that formally rejecting a trade is only done when the trade cannot be accepted for clearing and hence should be extremely rare. Trades are put to pending where they fail validation and Business Operations monitor for these and work to resolve the issue both internally and in conjunction with interested parties with the objective of accepting the trade where possible. The issues must be resolved on trade date for the trade to be accepted.

Where a trade message is received for a trade that has already been processed the new message is discarded and no acknowledgements will be sent.

The above describes the process for the business processing of valid FIX messages. Where technical problems prevent the proper business processing of a trade message an alternative exception process will be implemented and followed.

3.4 Trade Feed Reconciliation

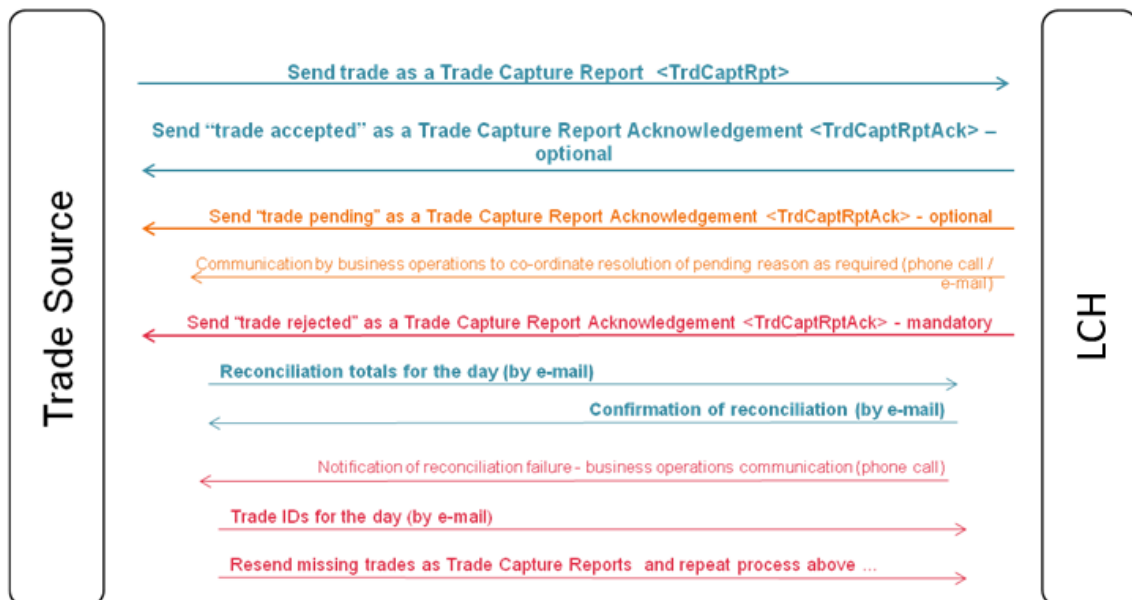
To allow LCH to reconcile its outstanding trading obligations, the trade source must notify³ LCH of the number of trades submitted for clearing, broken down by:

- New trades (including contras).
- Cancellations (trade source errors),.
- LCH rejections (as returned by LCH).

If the figures reconcile, as will normally be the case, a quick confirmation⁴ will be sent back to the trade source.

If there is a mismatch, LCH Business Operations will contact the trade source operations team to co-ordinate the investigation and resolution of the problem. The objective is to complete this on trade day. Details will be agreed in bilateral operational procedures.

3.5 Session, Message and Operational Information Flow



³ Via an agreed interface.

⁴ Using the same interface method as for the incoming information.

4 FIXML 4.4 Message Specification

FIXML 4.4 messages are supported for the interface between the trade source system and EquityClear. The specification of these messages is detailed in this section. The data items in these messages correspond to the business data previously specified in this document.

No start-of-day or end-of-day messages are required.

4.1 Trade Capture Report (AE)

This message type is used by the Trade Source to send trade details to LCH for clearing.

Tag or Component	Tag	Field Name	Req	Data Type	Content	BDI
Start of FIXml message <FIXML>						
v	n/a	FIX Version Number	M	int	'4.4'	
xsi:schemaLocation	n/a	Schema Location	M	String	'../..../schema/fixml-main-4-4.xsd'	
xmlns	n/a	XML Namespace	M	String	'http://www.fixprotocol.org/FIXML-4-4'	
xmlns:xsi	n/a	Schema Namespace	M	String	'http://www.w3.org/2001/XMLSchema-instance'	
TradeCaptureReport <TrdCaptRpt>						
StandardHeader <Hdr>			M			
SID	49	SenderCompID	M	String	'XXXX_LCH'	
TID	56	TargetCompID	M	String	'LCH_ECL_XXXX'	
SeqNum	34	MsgSeqNum	M	SeqNum (int)		
SSub	50	SenderSubID	M	String	'CERT' or 'PROD'	
TSub	57	TargetSubID	M	String	'ECL_XXXX'	
Snt	52	SendingTime	M	UTCTimestamp (String - YYYYMMDD-HH:MM:SS)		
End StandardHeader <Hdr>			M			
RptID	571	TradeReportID	M	String	Maximum 16 characters	

Tag or Component	Tag	Field Name	Req	Data Type	Content	BDI
TransTyp	487	TradeReportTransType	M	int	0, 1 or 4	I
TrdTyp	828	TrdType	M	int	0 or 1	I
ExecId	17	ExecID	M	String	Maximum 16 characters	B
ExecID2	527	SecondaryExecID	C	String	Maximum 16 characters	J
PrevlyRpted	570	PreviouslyReported	M	Boolean	'N'	
Instrument <Instrmt>			M			
Sym	55	Symbol	M	String	ISIN. Maximum 20 characters	E
Exch	207	SecurityExchange	O	String	MIC. Maximum 4 characters	F
End Instrument <Instrmt>			M			
LastQty	32	LastQty	M	Qty (float)		G
LastPx	31	LastPX	M	Price (float)		H
LastMkt	30	LastMkt	M	String	Maximum 30 characters	A
TrdDt	75	TradeDate	M	LocalMktDate		C
TxnTm	60	TransactTime	M	UTCTimestamp (String - YYYYMMDD-HH:MM:SS)		C
SettIDt	64	SettlDate	O	LocalMktDate	Intended settlement date of the cash equity delivery.	D
TrdCapRptSideGrp <RptSide> (<i>Buy Side</i>)			M			
Side	54	Side	M	Char	1	
OrdID	37	OrderId	M	String		
ClOrdID	11	ClOrdId	O	String	Maximum 35 characters	M
Parties <Pty>			M			

Tag or Component	Tag	Field Name	Req	Data Type	Content	BDI
NoPtyIDs	453	NoPartyIDs	M	Int	1	
ID	448	PartyID	M	String	Maximum 34 characters	K
Src	447	PartyIDSource	M	Char	'B' or 'D'	
R	452	PartyRole	M	Int	1	
End Parties <Pty>			M			
AcctTyp	581	AccountType	O	Int	1 or 3	N
Ccy	15	Currency	M	Currency		G
Cpcty	528	OrderCapacity	M	Char	'A' or 'P'	L
End TrdCapRptSideGrp <RptSide> (<i>Buy Side</i>)			M			
TrdCapRptSideGrp <RptSide> (<i>Sell Side</i>)			M			
Side	54	Side	M	Int	2	
OrdID	37	OrderId	M	String		
ClOrdID	11	ClOrdId	O	String	Maximum 35 characters	Q
Parties <Pty>			M			
NoPtyIDs	453	NoPartyIDs	M	Int	1	
ID	448	PartyID	M	String	Maximum 34 characters	O
Src	447	PartyIDSource	M	Char	'B' or 'D'	
R	452	PartyRole	M	Int	1	
End Parties <Pty>			M			
AcctTyp	581	AccountType	O	Int	1 or 3	R
Ccy	15	Currency	M	Currency		G

Tag or Component	Tag	Field Name	Req	Data Type	Content	BDI
Cpcty	528	OrderCapacity	M	Char	'A' or 'P'	P
End TrdCapRptSideGrp <RptSide> (<i>Sell Side</i>)			M			
End TradeCaptureReport </TrdCaptRpt>						
End FIXml Message </FIXML>						

4.1.1 Component and Tag notes:

The 'Required' codes used in the table above are as follows:

M (bold)	FIX mandatory
M	LCH mandatory
C	conditional (see additional notes)
O	optional

Required	Tag or Component	Field Name	Notes
M	SID	SenderCompID	'XXXX' is the trade source identifier in @LastMkt. This is usually the four character MIC (market identification code) of the trade source but may be longer. The SenderCompID value of XXXX_LCH is a suggested value and a change may be agreed with the trade source.
M	TID	TargetCompID	
M	TSub	TargetSubID	
O	SSub	SenderSubID	CERT – test system/data PROD – production system/data
M	RptID	TradeReportID	Unique message reference. As a minimum this must be unique for the trade date.
M	TransTyp	TradeReportTransType	0 – New trade 1 – Trade cancellation 4 – Contra trade (reversal)
M	TrdTyp	TrdType	0 – Regular trade 1 – Limit checking required – generally used for OTC trades. Please check with LCH if this value needs to be used. (Not FIX standard).

Required	Tag or Component	Field Name	Notes
M	ExecID	ExecID	Unique trade reference for the matched trade. Except for cancellations this must be unique for the trade date.
C	ExecID2	SecondaryExecID	Where this trade message is a contra or a cancellation, this is the Trade ID (@ExecID) of the original trade.
M	PrevlyRpted	PreviouslyReported	Not used by EquityClear.
O	Exch	SecurityExchange	Reference market MIC
M	LastPx	LastPx	Value in the currency units specified in @Ccy.
M	Ccy	Currency	The FIX standard is for ISO currency only. However, specified codes for minor currency units are accepted.
M	TrdDt	TradeDate	The reference date used for corporate action processing.
M	TxnTm	TransactTime	Using UTC/GMT as per FIX standard.
M	OrdID	OrderID	Not used by EquityClear but mandatory in FIX standard. Any value can be supplied, e.g. 'N' or Trade ID (@ExecID).
O	ClOrdID	ClOrdID	Maximum 35 characters
M	Src	PartyIDSource	B – BIC code D – Proprietary code
M	R	PartyRole	1 – Executing Firm
O	AcctTyp	AccountType	1 – Client 3 – House
M	Cpcty	OrderCapacity	The dealing capacity of the party identified by the PartyID. Therefore where this is a CCP the value must be 'P' even if the PartyID on the original execution which is being cleared by the identified CCP is acting as agent. A – Agent R – Matched Principal P – Principal

4.1.2 Example FIXML 4.4 Trade Capture Report

```
<FIXML
v="4.4" xsi:schemaLocation="../../../schema/fixml-main-4-4.xsd" xmlns="http://www.fixprotocol.org/FIXML-4-4"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
<TrdCaptRpt RptID="000033" TransTyp="0" TrdTyp="0" ExecID="000033" PrevlyRpted="N" LastQty="12800"
LastPx="433.00" LastMkt="XXXX" TrdDt="2011-05-13" TxnTm="2011-05-13T10:07:56">
<Hdr SID="XXX_LCH" TID="LCH_ECL_XXXX" SeqNum="968" SSub="CERT" TSub="ECL_XXXX" Snt="2011-05-
13T10:07:57"/>
<Instrmt Sym="GB0007980591"/>
<RptSide Side="1" OrdID="000033-1" Ccy="GBP" Cpcty="P"><Pty ID="CPARTY1" Src="D" R="1"/></RptSide>
<RptSide Side="2" OrdID="000033-2" Ccy="GBP" Cpcty="P"><Pty ID="PARTYGB33XX" Src="B"
R="1"/></RptSide>
</TrdCaptRpt>
</FIXML>
```

4.2 Trade Capture Report Acknowledgement (AR)

This message type is used by LCH to report back to the Trade Source trade acknowledgements, rejections and pending notifications.

Tag or Component	Tag	Field Name	Req	Data Type	Content	BDI
Start of FIXml message <FIXML>						
r	n/a	FIX version release date	M	Date	'20030618'	
s	n/a	Schema release date	M	Date	'20040109'	
v	n/a	FIX Version	M	String	'4.4'	
xmlns	n/a	XML Namespace	M	String	'http://www.fixprotocol.org/FIXML-4-4'	
xmlns:xsi	n/a	Schema Namespace	M	String	'http://www.w3.org/2001/XMLSchema-instance'	
TradeCaptureReportAck <TrdCaptRptAck>						
StandardHeader <Hdr>			M			
TID	56	TargetCompID	M	String	'XXXX_LCH'	
End StandardHeader <Hdr>			M			
RptID	571	TradeReportID	M	String		
ExecTyp	150	ExecType	M	char	'F' or 'H'	

Tag or Component	Tag	Field Name	Req	Data Type	Content	BDI
TrdRptStat	939	TrdRptStatus	M	int	0 or 1	
ExecID	17	ExecID	M	String		
Instrument <Instrmt>			M			
Prod	460	Product	M	int	5	
End Instrument <Instrmt>			M			
Txt	58	Text	M	String		
End TradeCaptureReportAck </TrdCaptRptAck>						
End FIXML message </FIXML>						

4.2.1 Component and Tag notes:

The 'Required' codes used in the table above are as follows:

M (bold)	FIX mandatory
M	LCH mandatory

Required	Tag or Component	Field Name	Notes
M	TID	TargetCompID	The TargetCompID value of XXXX_LCH is a suggested value and a change may be agreed with the trade source.
M	RptID	TradeReportID	Trade source inbound message reference.
M	ExecTyp	ExecType	'F' – Trade 'H' – TradeCancel
M	TrdRptStat	TrdRptStatus	0 – Accepted or Pending 1 – Rejected
M	ExecID	ExecID	Trade source trade reference.
M	Prod	Product	5 – Equity

Required	Tag or Component	Field Name	Notes
M	Txt	Text	<p>Set to 'ACK' if a trade has been accepted. Set to 'OK' if a trade cancellation has been accepted.</p> <p>Set to a meaningful description of the reason for the trade going pending or being rejected, or a trade cancellation being rejected.</p>

4.2.2 Example FIXML 4.4 Trade Capture Report Acknowledgement

```

<FIXML
r="20030618" s="20040109" v="4.4" xmlns="http://www.fixprotocol.org/FIXML-4-4"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
<TrdCaptRptAck RptID="000033" ExecTyp="F" TrdRptStat="0" ExecID="000033" Txt="ACK">
<Hdr TID="XXXX_LCH"/>
<Instrmt Prod="5"/>
</TrdCaptRptAck>
</FIXML>

```

5 Network, Transport, etc

Details as required – TBA.

Potential topics:

- MQ
- Security
 - SSL encryption
- Network configuration
 - Primary flows
 - Alternate flows
 - IP Address Scheme
- Middleware
- Non Functional Tests (Disaster Recovery)

6 Document History

19 Dec 2017	First issue of new document format
29 Jul 2019	Document review. No changes required.
16 Mar 2020	Document review. No changes required.