BOLTPLUS Connectivity

Manual

Version 1.0

Date: September 25, 2020

Contents

1 Introduction 4

2 Interactive Interfaces 4

2.1 BSE Enhanced Trading Interface (BSE ETI) 5

3 Market Data Streams 6

3.1 Low Bandwidth Interfaces 6

3.1.1 BSE Market Data Interface (MDI) 6

3.1.2 BSE Direct NFCAST 6

3.2 High Bandwidth Interfaces 6

3.2.1 BSE Enhanced Market Data Interface (EMDI) 6

3.2.2 BSE Enhanced Order Book Interface (EOBI) 7

3.3 Reference Data Interface 7

3.3.1 BSE Reference Data Interface (RDI) 7

3.4 Comparison Between market data streams: 7

4 Routes 8

4.1 Generic Routes 8

4.2 Specific Routes 8

4.3 Market Data Sources 9

5 Connection Parameters 10

5.1 Production: Equity and Equity Derivatives 10

5.2 Production: Currency Derivatives 12

5.3 Production: Commodities Derivatives 13

5.4 Disaster Recovery: Equity and Equity Derivatives 14

5.5 Disaster Recovery: Currency Derivatives 15

BSE - CONFIDENTIAL

5.6 Disaster Recovery: Commodities Derivatives 16

5.7 Simulation: Equity and Equity Derivatives 17

5.8 Simulation: Currency Derivatives 18

5.9 Simulation: Commodities Derivatives 19

6 Change Log 20

BSE - CONFIDENTIAL

1 Introduction

As an Exchange Participant, you have a range of alternatives to connect to our markets. BSE Exchange interfaces offer hardware independence, high levels of customization and flexibility. Our portfolio of connectivity alternatives is designed to meet the needs of a variety of users, from low-latency program trading users to cliental trading business models. With this broad offering, you can select which connectivity solution best suits your individual needs. Every business user has different needs, we designed a customized approach to ensure that you can choose the connectivity alternatives based on your unique business needs.

The sections below describe the Interactive interface and various market data interfaces that is offered to the market participants.

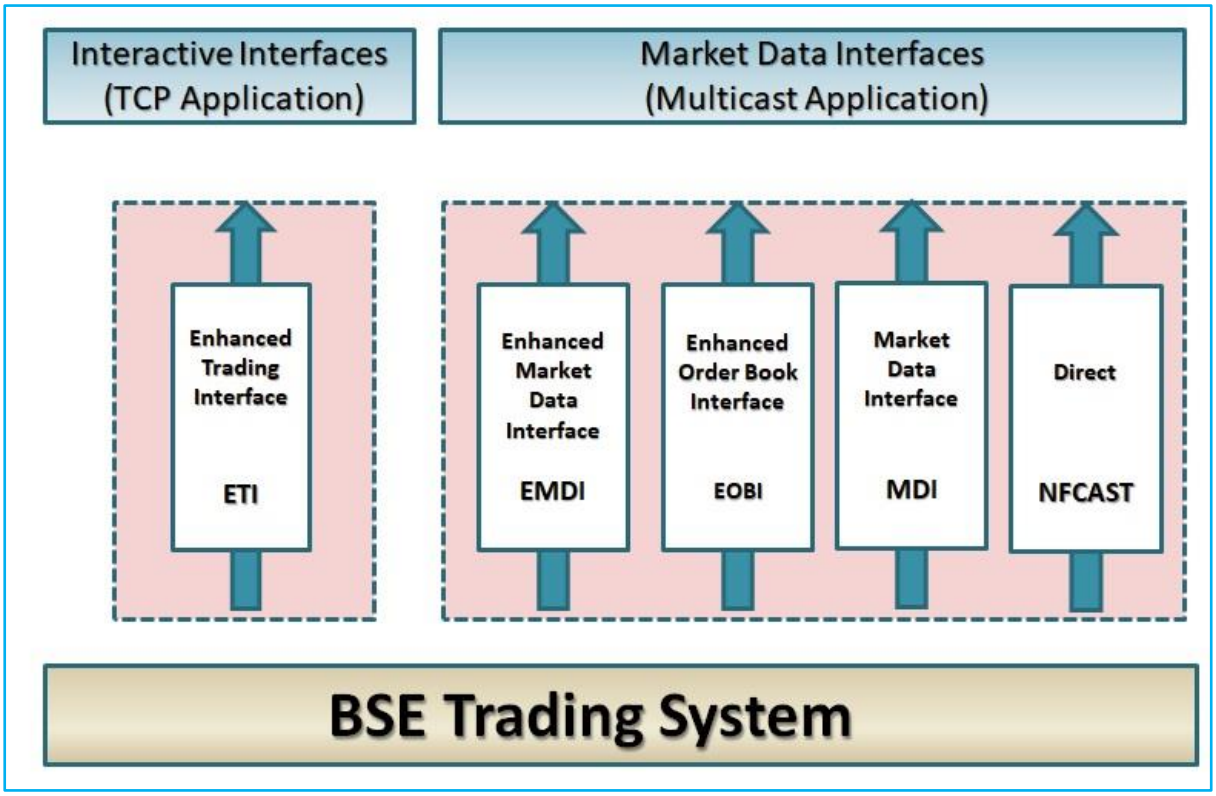

Figure 1: Trading Interface landscape

2 Interactive Interfaces

BSE offers only one interactive interface to connect to BOLTPLUS system. The interface is platform independent and offers wide flexibility in terms of implementation. **The legacy IML interface supported by exchange is discontinued**

BSE - CONFIDENTIAL

2.1 BSE Enhanced Trading Interface (BSE ETI)

The BSE ETI is the high-performance, low-latency trading interface designed for Participants that require optimal performance and customization. This interface supports full trading functionality, drop copy and risk alerts. The communication supported in this interface is in binary format.

The ETI is an asynchronous message-based interface. A connection between participants and exchange is established via a TCP/IP connection. The interface is session-oriented. A session is established between the participants' machine and ETI gateway.

In order to establish a session with a trading gateway, a TCP/IP connection to a connection gateway must be established first. The connection gateway provides the connection parameters for the assigned primary and secondary gateway to be used for trading purposes. The connectivity to exchange is a 3-step process and the process is described below

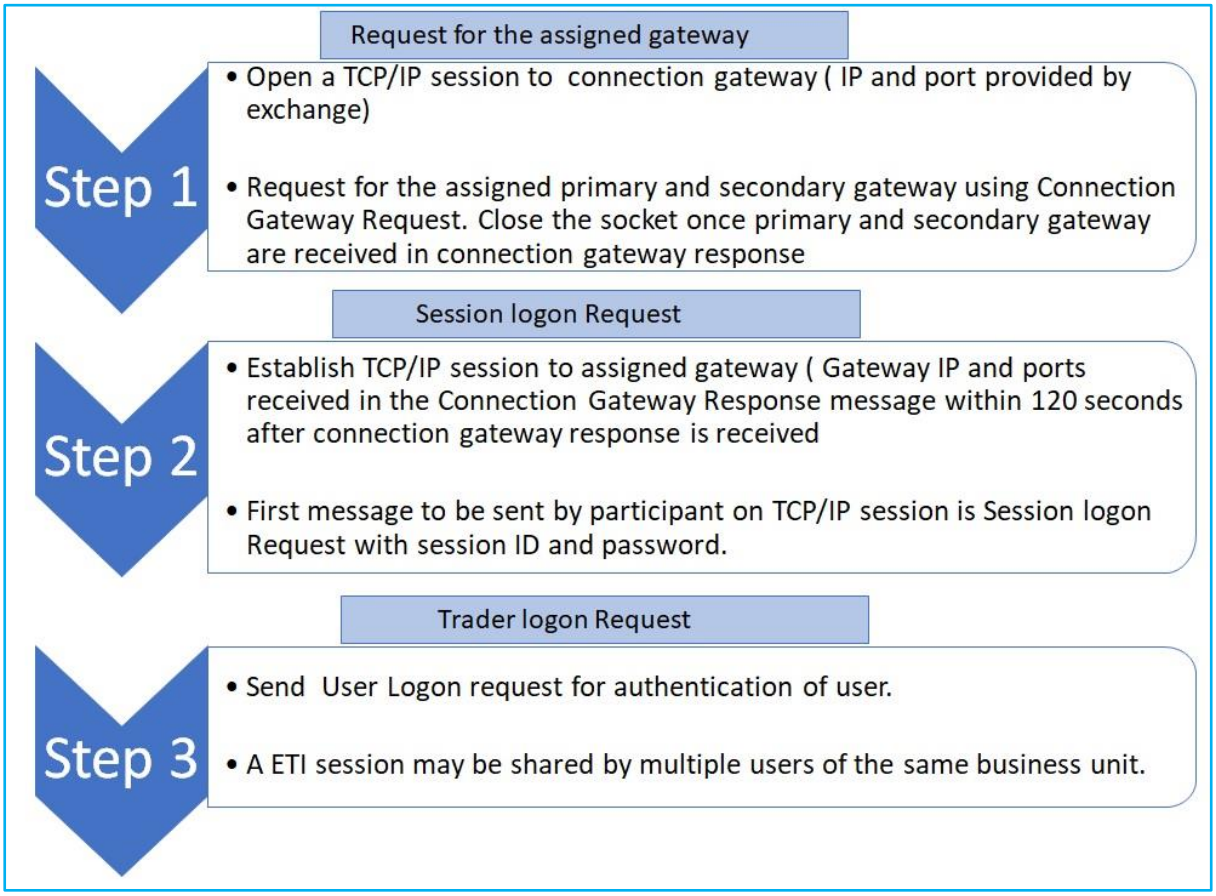

Figure 2: The TCP/IP connection flow of ETI connection

The gateway infrastructure of BSE is built redundantly with set of gateways including a connection gateway, trading gateways for low frequency (LF) sessions and trading gateways for high frequency (HF) sessions.

BSE - CONFIDENTIAL

For each Session ID a pair of primary and secondary gateway remains constant every day. The pair of gateways are provided to each session in the Connection Gateway Response message. Though the pair remains constant the member application cannot directly connect to primary or secondary gateway. The first connection is mandatorily required to be made to the connection gateway IP published by the exchange.

The pair of primary and secondary gateway may remain constant however periodically, exchange does redistribution of connections on gateways based on the load thus the pair of primary and secondary gateway may or may not change after redistribution.

It is highly recommended that the provision for all gateways are made in member network based on the routes provided in the range provided in the section Routes

3 Market Data Streams

BSE support broadly two category of market data interfaces which are designed for low bandwidth client and high bandwidth clients.

3.1 Low Bandwidth Interfaces

The low bandwidth interfaces include market data interfaces whose bandwidth consumption is capped by exchange to less than 2MBPS. These interfaces provide netted price level data only. They include the following interfaces

3.1.1 BSE Market Data Interface (MDI)

This interface provides netted price level aggregated market data using multicast technology. The data is in FAST FIX format. The data for all partitions are provided on same feed.

3.1.2 BSE Direct NFCAST

This interface provides netted price level aggregated market data using multicast technology. The data is in proprietary binary format. The data for all partitions are provided on same feed.

3.2 High Bandwidth Interfaces

The high bandwidth interfaces include market data interfaces whose bandwidth consumption is not capped by exchange and it varies from 10 MBPS to 200 MBPS. The feeds are provided partition wise. Each partition will be sent on one set of feed only. These interfaces provide un-netted price level data. They include the following interfaces

3.2.1 BSE Enhanced Market Data Interface (EMDI)

This interface provides un-netted price level aggregated market data using multicast technology. The un-netted data is for a defined price level only. The data is in FAST FIX format.

BSE - CONFIDENTIAL

3.2.2 BSE Enhanced Order Book Interface (EOBI)

This interface provides every visible order in the order book i.e. tick by tick update is sent in this stream of market data. Most of the functional concepts are like EMDI, however the data is sent in the proprietary binary format.

3.3 Reference Data Interface

3.3.1 BSE Reference Data Interface (RDI)

This interface provides reference data or the master through multicast channel. The data is continuously published on the channel throughout the day. The reference data is also provided through master data file at EOD.

3.4 Comparison Between market data streams:

Attributes	EOBI	EMDI	MDI	Direct NFCAST
Price Level	Full depth	Depth up to configured level (5 Level)	Depth up to configured level (5 Level)	5 level
Price level Aggregation	Every tick is sent as individual update	Unnetted but price level aggregated	Netted Price level aggregated	Netted Price level aggregated
Format	Binary	FAST	FAST	Binary
Bandwidth	High	High	Low	Low
Usage	Algorithmic trading	Algorithmic trading	Used for Terminal based trading application	Used for Terminal based trading application
Recovery	The current pending order book is replayed & should be read again to build the book	The current snapshot up to the configured level is replayed in a separate stream and should be used in case of missed packets	The current snapshot up to the configured level is replayed at regular interval and should be used in case of missed packets	Every update sent is a complete snapshot of 5 level order book, so no separate recovery is required
Availability	Only in BSE Colocation	All networks	All networks	All networks
Composition	Partition wise feed	Partition wise feed	Single feed for all partitions	Single feed for all partitions.

BSE - CONFIDENTIAL

4 Routes

In order to have network reachability to each of the connectivity described in the document, necessary routes need to be configured in the client network. Below the routes recommended by exchange to be configured in the client network.

4.1 Generic Routes

	Primary Site	DR site	Simulation
Interactive Interfaces	10.255.0.0 10.1.101.0	10.255.0.0 10.1.101.0	10.255.0.0 10.1.101.0
Market Data Interfaces	137.0.0.0	138.0.0.0	137.0.0.0

It is highly recommended that the client should allow the above-mentioned routes in their network. The subnet is kept wide enough to provision any new server in future that will be incorporated in the exchange farm **without impacting the settings done at client side. Also note that the exchange may add a new server in the defined range without prior intimation as well.**

However, **if certain client still needs specific Ip address** to be configured in the network then following are the list of IP address that are currently in use.

4.2 Specific Routes

Interactive Interfaces	Primary Site	DR site	Simulation
EQUITY & EQ. DERIVATIVES	10.255.255.1/26 Port: 12906 to 12920 Port: 15906 to 15920 10.1.101.36 Port: 1001	10.255.241.1/26 Port: 12906 to 12920 10.1.101.194 Port:1001	10.255.254.1/26 Port: 12406 to 12420 10.1.101.105 Port:1000
CURRENCY DERIVATIVES	10.255.255.1/26 Port: 10906 to 10920	10.255.241.1/26 Port: 10906 to 10920	10.255.254.1/26 Port: 10406 to 10420
COMMODITY DERIVATIVES	10.255.255.1/26 Port: 14906 to 14920	10.255.241.1/26 Port: 14906 to 14920	10.255.254.1/26 Port: 15406 to 15420

BSE - CONFIDENTIAL

Additional Route for members having servers in BSE Colocation	10.255.253.1/26 Port: 15906 to 15920 Port: 10906 to 10920 Port: 14906 to 14920	Not applicable	Not applicable

4.3 Market Data Sources

Market Data Interfaces	Primary Site	DR site	Simulation
EQUITY & EQ. DERIVATIVES	Source: 137.75.9.1 137.75.7.1 137.75.8.3 137.75.21.1 137.75.11.10 137.75.11.11 137.75.11.12 137.75.11.13 10.255.225.15 10.255.225.16 10.255.225.17 10.255.225.18	Source: 138.75.131.5 138.75.131.6 138.75.131.7 138.75.131.8 138.75.131.9 138.75.131.10 138.75.131.11 138.75.131.12	Source: 137.74.11.100 137.74.11.101 137.74.11.1 137.74.11.2
CURRENCY DERIVATIVES	Source: 137.75.11.17 137.75.11.18 10.255.225.11 10.255.225.12 137.75.6.12 137.75.9.1	Source: 138.75.131.5 138.75.131.6 138.75.131.7 138.75.131.8	Source: 137.74.11.100 137.74.11.101 137.74.11.1 137.74.11.2
COMMODITY DERIVATIVES	Source: 137.75.7.1 137.75.6.1 137.75.11.17 137.75.11.18 10.255.225.12 10.255.225.11	Source: 138.75.131.5 138.75.131.6 138.75.131.7 138.75.131.8	Source: 137.74.11.100 137.74.11.101 137.74.11.1 137.74.11.2

BSE - CONFIDENTIAL

5 Connection Parameters

5.1 Production: Equity and Equity Derivatives

BSE - CONFIDENTIAL

Interactive Interfaces

Connection Gateway		Host IP	Port
	Primary	10.255.255.6	12908
	Secondary	10.255.255.7	12908

Reference Data Interface

RDI	Incremental		Snapshot	
	227.0.0.11	227.0.0.12	227.0.0.13	227.0.0.14
	12984	12985	12986	12987

Market Data Interfaces (Low Bandwidth)

MDI	Service A	Service B
	227.0.0.19	227.0.0.20
	12994	12995

NFCAST	Equity	Equity Derv
	227.0.0.21	227.0.0.22
	12996	12997

Market Data Interfaces (High Bandwidth)

EMDI		Incremental		Snapshot	
		Service A	Service B	Service A	Service B
	Partition 1	227.0.0.23	227.0.0.24	227.0.0.25	227.0.0.26
		12923	12924	12925	12926
	Partition 2	227.0.0.27	227.0.0.28	227.0.0.29	227.0.0.30
		12927	12928	12929	12930
	Partition 3	227.0.0.31	227.0.0.32	227.0.0.33	227.0.0.34
		12931	12932	12933	12934
	Partition 4	227.0.0.35	227.0.0.36	227.0.0.37	227.0.0.38
		12935	12936	12937	12938
	Indices	227.0.0.15	227.0.0.16	--	--
		12915	12916	--	--

EOBI		Incremental		Snapshot	
		Service A	Service B	Service A	Service B
	Partition 1	237.0.0.1	237.0.0.2	237.0.0.3	237.0.0.4
		12901	12902	12903	12904
	Partition 2	237.0.0.5	237.0.0.6	237.0.0.7	237.0.0.8
		12905	12906	12907	12908
	Partition 3	237.0.0.9	237.0.0.10	237.0.0.11	237.0.0.12
		12909	12910	12911	12912
	Partition 4	237.0.0.13	237.0.0.14	237.0.0.15	237.0.0.16
		12913	12914	12915	12916

BSE - CONFIDENTIAL

5.2 Production: Currency Derivatives

Interactive Interfaces

Connection Gateway		Host IP	Port
	Primary	10.255.255.13	10908
	Secondary	10.255.255.12	10908

Reference Data Interface

RDI	Incremental		Snapshot	
	229.0.0.11	229.0.0.12	229.0.0.13	229.0.0.14
	10984	10985	10986	10987

Market Data Interfaces (Low Bandwidth)

MDI	Service A	Service B
	229.0.0.19	229.0.0.20
	10994	10995

NFCAST	Currency
	229.0.0.21
	10996

Market Data Interfaces (High Bandwidth)

EMDI		Incremental		Snapshot	
		Service A	Service B	Service A	Service B
	Partition 1	229.0.0.23	229.0.0.24	229.0.0.25	229.0.0.26
		10923	10924	10925	10926

EOBI		Incremental		Snapshot	
		Service A	Service B	Service A	Service B
	Partition 1	236.0.0.1	236.0.0.2	236.0.0.3	236.0.0.4
		10901	10902	10903	10904

BSE - CONFIDENTIAL

5.3 Production: Commodities Derivatives

Interactive Interfaces

Connection Gateway		Host IP	Port
	Primary	10.255.255.12	14908
	Secondary	10.255.255.13	14908

Reference Data Interface

RDI	Incremental		Snapshot	
	228.0.0.11	228.0.0.12	228.0.0.13	228.0.0.14
	14984	14985	14986	14987

Market Data Interfaces (Low Bandwidth)

MDI	Service A	Service B
	228.0.0.19	228.0.0.20
	14994	14995

NFCAST	Commodity
	228.0.0.22
	14996

Market Data Interfaces (High Bandwidth)

EMDI		Incremental		Snapshot	
		Service A	Service B	Service A	Service B
	Partition 1	228.0.0.23	228.0.0.24	228.0.0.25	228.0.0.26
		14923	14924	14925	14926

BSE - CONFIDENTIAL

5.4 Disaster Recovery: Equity and Equity Derivatives

Interactive Interfaces

Connection Gateway		Host IP	Port
	Primary	10.255.241.10	12908
	Secondary	10.255.241.11	12908

Reference Data Interface

RDI	Incremental		Snapshot	
	227.0.0.11	227.0.0.12	227.0.0.13	227.0.0.14
	12984	12985	12986	12987

Market Data Interfaces (Low Bandwidth

MDI	Service A	Service B
	227.0.0.19	227.0.0.20
	12994	12995

NFCAST	Equity	Equity Derv
	227.0.0.21	227.0.0.22
	12996	12997

Market Data Interfaces (High Bandwidth)

EMDI		Incremental		Snapshot	
		Service A	Service B	Service A	Service B
	Partition 1	227.0.0.23	227.0.0.24	227.0.0.25	237.0.0.26
		12923	12924	12925	12926
	Partition 2	227.0.0.27	227.0.0.28	227.0.0.29	227.0.0.30
		12927	12928	12929	12930
	Partition 3	227.0.0.31	227.0.0.32	227.0.0.33	227.0.0.34
		12931	12932	12933	12934
	Partition 4	227.0.0.35	227.0.0.36	227.0.0.37	227.0.0.38
		12935	12936	12937	12938

EOBI		Incremental		Snapshot	
		Service A	Service B	Service A	Service B
	Partition 1	237.0.0.1	237.0.0.2	237.0.0.3	237.0.0.4
		12901	12902	12903	12904
	Partition 2	237.0.0.5	237.0.0.6	237.0.0.7	237.0.0.8
		12905	12906	12907	12908
	Partition 3	237.0.0.9	237.0.0.10	237.0.0.11	237.0.0.12
		12909	12910	12911	12912
	Partition 4	237.0.0.13	237.0.0.14	237.0.0.15	237.0.0.16
		12913	12914	12915	12916

BSE - CONFIDENTIAL

5.5 Disaster Recovery: Currency Derivatives

Interactive Interfaces

Connection Gateway		Host IP	Port
	Primary	10.255.241.11	10908
	Secondary	10.255.241.10	10908

Reference Data Interface

RDI	Incremental		Snapshot	
	229.0.0.11	229.0.0.12	229.0.0.13	229.0.0.14
	10984	10985	10986	10987

Market Data Interfaces (Low Bandwidth)

MDI	Service A	Service B
	229.0.0.19	229.0.0.20
	10994	10995

NFCAST	Currency
	229.0.0.21
	10996

Market Data Interfaces (High Bandwidth)

EMDI		Incremental		Snapshot	
		Service A	Service B	Service A	Service B
	Partition 1	229.0.0.23	229.0.0.24	229.0.0.25	229.0.0.26
		10923	10924	10925	10926

EOBI		Incremental		Snapshot	
		Service A	Service B	Service A	Service B
	Partition 1	236.0.0.1	236.0.0.2	236.0.0.3	236.0.0.4
		10901	10902	10903	10904

BSE - CONFIDENTIAL

5.6 Disaster Recovery: Commodities Derivatives

Interactive Interfaces

Connection Gateway		Host IP	Port
	Primary	10.255.241.11	14908
	Secondary	10.255.241.10	14908

Reference Data Interface

RDI	Incremental		Snapshot	
	228.0.0.11	228.0.0.12	228.0.0.13	228.0.0.14
	14984	14985	14986	14987

Market Data Interfaces (Low Bandwidth)

MDI	Service A	Service B
	228.0.0.19	228.0.0.20
	14994	14995

NFCAST	Commodity
	228.0.0.22
	14996

Market Data Interfaces (High Bandwidth)

EMDI		Incremental		Snapshot	
		Service A	Service B	Service A	Service B
	Partition 1	228.0.0.23	228.0.0.24	228.0.0.25	228.0.0.26
		14923	14924	14925	14926

BSE - CONFIDENTIAL

5.7 Simulation: Equity and Equity Derivatives

Interactive Interfaces

Connection Gateway		Host IP	Port
	Primary	10.255.254.6	12408
	Secondary	10.255.254.7	12408

Reference Data Interface

RDI	Incremental		Snapshot	
	226.1.0.5	226.1.0.6	226.1.0.7	226.1.0.8
	12405	12406	12407	12408

Market Data Interfaces (Low Bandwidth)

MDI	Service A	Service B
	226.1.0.2	226.1.0.3
	12402	12403

NFCAST	Equity	Equity Derv
	226.1.0.1	226.1.1.1
	12401	11401

Market Data Interfaces (High Bandwidth)

EMDI		Incremental		Snapshot	
		Service A	Service B	Service A	Service B
	Partition 1	226.1.0.13	226.1.0.14	226.1.0.15	226.1.0.16
		12413	12414	12415	12416
	Partition 2	226.1.0.17	226.1.0.18	226.1.0.19	226.1.0.20
		12417	12418	12419	12420
	Partition 3	226.1.0.21	226.1.0.22	226.1.0.23	226.1.0.24
		12421	12422	12423	12424
	Partition 4	226.1.0.25	226.1.0.26	226.1.0.27	226.1.0.28
		12425	12426	12427	12428

EOBI		Incremental		Snapshot	
		Service A	Service B	Service A	Service B
	Partition 1	226.1.0.45	226.1.0.46	226.1.0.47	226.1.0.48
		12445	12446	12447	12448
	Partition 2	226.1.0.49	226.1.0.50	226.1.0.51	226.1.0.52
		12449	12450	12451	12452
	Partition 3	226.1.0.53	226.1.0.54	226.1.0.55	226.1.0.56
		12453	12454	12455	12456
	Partition 4	226.1.0.57	226.1.0.58	226.1.0.59	226.1.0.60
		12457	12458	12459	12460

BSE - CONFIDENTIAL

5.8 Simulation: Currency Derivatives

Interactive Interfaces

Connection Gateway		Host IP	Port
	Primary	10.255.254.6	10408
	Secondary	10.255.254.7	10408

Reference Data Interface

RDI	Incremental		Snapshot	
	226.1.3.5	226.1.3.6	226.1.3.7	226.1.3.8
	10405	10406	10407	10408

Market Data Interfaces (Low Bandwidth)

MDI	Service A	Service B
	226.1.3.2	226.1.3.3
	10402	10403

NFCAST	Currency
	226.1.3.1
	10401

Market Data Interfaces (High Bandwidth)

EMDI		Incremental		Snapshot	
		Service A	Service B	Service A	Service B
	Partition 1	226.1.3.13	226.1.3.14	226.1.3.15	226.1.3.16
		10413	10414	10415	10416

EOBI		Incremental		Snapshot	
		Service A	Service B	Service A	Service B
	Partition 1	226.1.3.33	226.1.3.34	226.1.3.35	226.1.3.36
		10433	10434	10435	10436

BSE - CONFIDENTIAL

5.9 Simulation: Commodities Derivatives

Interactive Interfaces

Connection Gateway		Host IP	Port
	Primary	10.255.254.6	15408
	Secondary	10.255.254.7	15408

Reference Data Interface

RDI	Incremental		Snapshot	
	226.1.2.5	226.1.2.6	226.1.2.7	226.1.2.8
	15405	15406	15407	15408

Market Data Interfaces (Low Bandwidth)

MDI	Service A	Service B
	226.1.2.3	226.1.2.4
	15403	15404

NFCAST	Commodity
	226.1.2.1
	15401

Market Data Interfaces (High Bandwidth)

EMDI		Incremental		Snapshot	
		Service A	Service B	Service A	Service B
	Partition 1	226.1.2.9	226.1.2.10	226.1.2.11	226.1.2.12
		15409	15410	15411	15412

BSE - CONFIDENTIAL

6 Change Log

Sr. No.	Version	Date	Description
1	1.0	25th September 2020	Original Document

BSE - CONFIDENTIAL