DATA FEED

Technical Specifications

Version 3.0.5

Any questions regarding this document or others should be forwarded to:

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Revisions

Document Version	Data	Modified by	Description
1.0	19/10/2004	Iulia Iercosan	Create document
2.0	08/12/2004	Iulia Iercosan	Specification for both Arena and Horizon DATA FEED
2.0.1	07/07/2005	Iulia Iercosan	Bandwidth Requirements is changed to 64 kbps
3.0.0	01/07/2006	Iulia Iercosan	Changes in comms specification
3.0.1	11/05/2010	Iulia Iercosan	Bandwidth Requirements is changed to 128 kbps
			Details about application requirement
3.0.2	10/06/2014		Update communication provider list
			Update bandwidth requirement to 256 kbps
3.0.3	13/11/2014		Update connection parameters for test environment
3.0.4	11/12/2017		Bandwidth recommendation
3.0.4.01	02/12/2020		Revision for bandwidth requirements. Keep previous recommendations
3.0.4.02	31.10.2022		Update Communication providers list
3.0.5	23.02.2022		Update Definition And Abbrevations
			Paragraph 3.1- add details about two trading platform operated by BSE
			Remove Paragraph 3.2 Data vendor act like a listener [Deprecated]
			Reindex paragraph
			Update Paragraph 5 Test Environment with connectivity detail for DATAFEED FBSE

Summary

1   Introduction

1.1 Purpose

This document details the technical information for Data Vendors and other users to interface with DATA FEED.
The document details:
- How connections are established and maintained between DATA FEED and Data Vendor
- How Data Vendor received from DATA FEED
- How Data Vendor recover data from DATA FEED

1.2 Definition and Abbreviations

Term	Description
DATA FEED	Generic name for real time data dissemination software application
BVB/BSE	Bucharest Stock Exchange
Data Vendor	External party which takes and disseminates to his clients information transmitted from DATA FEED
Arena	Electronic platform for trading, registry and clearing operations. It is the property of Bucharest Stock Exchange
Arena Trading	Electronic platform for trading equity, debt and futures instruments
Arena Trading Energy	Electronic platform for trading power futures instruments
FBSE	Identifier for Arena Trading Energy System
XBSE	Identifier for Arena Trading System
DATA FEED XBSE	Software dissemination of market data sourced by Arena Trading (XBSE)
DATA FEED FBSE	Software dissemination of market data sourced by Arena Trading Energy (FBSE)

2   Network Connection

This section describes how the connection is established between Data Vendor and DATA FEED.
DATA FEED transmits data via TCP/IP. Data vendors are required to setup appropriate TCP/IP communication equipment on their side.

There are three instances of DATAFEED: production instance, stand-by disaster recovery instance and test instance.

Data vendors are required to connect to Bucharest Stock Exchange main site, as well as DR site using a secured channel for data transfer run by one of the communication providers agreed by BSE.
For testing and development purpose, , data vendor could connect to BSE test server from any plain internet IP address. In this case, access is permissioned throw BSE firewall for IP addresses specified by data vendor.
Also, we recommend maintaining a **stand-by connection** to our disaster-recovery site.

We strongly recommend to the data vendors to use physical connections already installed in BSE location which are provided by an agreed BSE network provider.

Contact detail of communication providers are listed below:

2.1 Communication providers

A list of communication provides agree by BSE:

Network provider	IP class	Web site	Conectivity to BSE Main site	Conectivity to BSE Disaster-recovery site
Orange Business Romania (S.C. Equant Romania S.A.)	195.214.x.x	http://www.orange-business.com/en	ACTIVE	ACTIVE
EuroWeb Romania	10.200.x.x	www.euroweb.ro	ACTIVE	ACTIVE
GTS Telecom	212.146.76.x; 172.18.x.x	www.gtstelecom.ro	ACTIVE	ACTIVE
Cloudsys Telecom	10.70.x.x	www.cloudsys.ro	ACTIVE	ACTIVE
INES	10.60.x.x	www.ines.ro	ACTIVE	ACTIVE
MediaSAT	85.204.226.x 10.80.x.x	www.mediasat.ro	ACTIVE	ACTIVE
Prime Telecom	10.130.x.x	www.primetelecom.ro	ACTIVE	ACTIVE
Radiocom	172.16.1.x 10.90.x.x	www.radiocom.ro	ACTIVE	ACTIVE
RCS-RDS (Romania Data Systems)	10.50.x.x	www.rcs-rds.ro	ACTIVE	ACTIVE
Orange Romania Communications	10.120.x.x	www.fix.orange.ro	ACTIVE	ACTIVE
Transaction Network Services (TNS)	10.110.x.x	www.tnsi.com	ACTIVE	ACTIVE
Vodafone	10.140.x.x	www.vodafone.ro	ACTIVE	ACTIVE

2.2 Bandwidth Requirements

Our recommendation is based on data analysis on historical data based on the average number of feed messages generated on 1 second interval.
Analyses reveal that are moments when the bandwidth is significantly higher than the average bandwidth recommendation, as detailed in next table:

Time Interval –(EET +0200 UTC)	Event description	Bandwidth needed to deliver messages with 1 second latency (Kbps)
10:00:00 - 10:00:01	Opening fixing	3000
10:00:01 - 10:00:02	Opening fixing	3000
10:15:00 - 10:15:01	Open structured product market	2500
17:55:00 - 17:55:01	Preclose markets	2600
18:00:00 - 18:00:01	Closing fixing	3500
16:30:00 - 16:31:59	Open external market (NYSE)	100
09:45:00 - 18:30:00	All trading day	32

Based on above consideration, the bandwidth recommendation is:
- minimum 256 kbps for 1 second latency during 90% time
- minimum 2 Mbps for 1 second latency during 99% time
- minimum 4 Mbps for 1 second latency during 99.99% time

The bandwidth recommendation is specified per only one client connection. If there are two or more connections to data feed server, bandwidth should be proportionally increased.

3   Application requirements

3.1   General description

BSE operate two trading system, each matching distinct instrument:
- Arena Trading System with identifier XBSE, used for trading equities, debt instruments, exchange-traded funds, futures instruments.
- Arena Trading Energy with identifier FBSE is designed for trading power derivative products like future contract and forward contract on power.

Both trading systems have their own market data, running independently.
Trading system identifier is provided in tag 14 (ExchangeCode) in all outgoing market data messages as follows:
- Market data messages from Arena Trading have Exchange code(tag14) = XBSE
- Market data messages from Arena Trading Energy have Exchange code(tag14) = FBSE

Messages are sequenced. Sequence messages start from 1 every day for every market data source.

Data vendor needs a software application which communicates with the both source of market data DATA FEED XBSE and DATA FEED FBSE on the basis of the TCP/IP, receive data, parse data, stores and disseminates information to his clients.

3.2   Message flow when Data vendor act like an initiator of TCP connection

TCP connection is initiated by data vendor at begin of day.
As soon connection is established DATFEED send HeartBeat messages (tag 12=A; tag 13=H) at fixed interval. Default interval or HeartBeat Message is 60s

Once a connection is established, data vendor software must send a Sequence Message (tag 12=A; tag 13=R) in order to instruct DATAFEED from what sequence number to start sending messages. After receiving Sequence Message, DATAFEED start delivering market-data in sequential mode, until end of day or until the connection is broken
Sequence Message (tag 12=A; tag 13=R) send by data vendor has two functions:
- Authentication based on user/password provided in tags 503 and 504
- Request market-data base on start and end sequence number (tags 501 and 502)

Message flows are presented in next diagrams:

```
        DATAVENDOR                   │              DATAFEED XBSE/FBSE
                                     │
              Connect  to host:port  │
        ─────────────────────────────────────────────────────────►
                                     │
                           Heartbeat Message
                                     │
        ◄─────────────────────────────────────────────────────────
                                     │
            Sequence Message (from seq X to seq. Y)
        ─────────────────────────────────────────────────────────►
                                     │
                              Data ( seq X)
        ◄─────────────────────────────────────────────────────────
                             Data ( seq X+1)
        ◄─────────────────────────────────────────────────────────
                                     .
                                     .
                                     .
                           Heartbeat Message
        ◄─────────────────────────────────────────────────────────
                              Data ( seq Y)
        ◄─────────────────────────────────────────────────────────
                                     │
                           Heartbeat Message
        ◄─────────────────────────────────────────────────────────
                           Heartbeat Message
        ◄─────────────────────────────────────────────────────────
                                     │
                           ◄─────────┴─────────►
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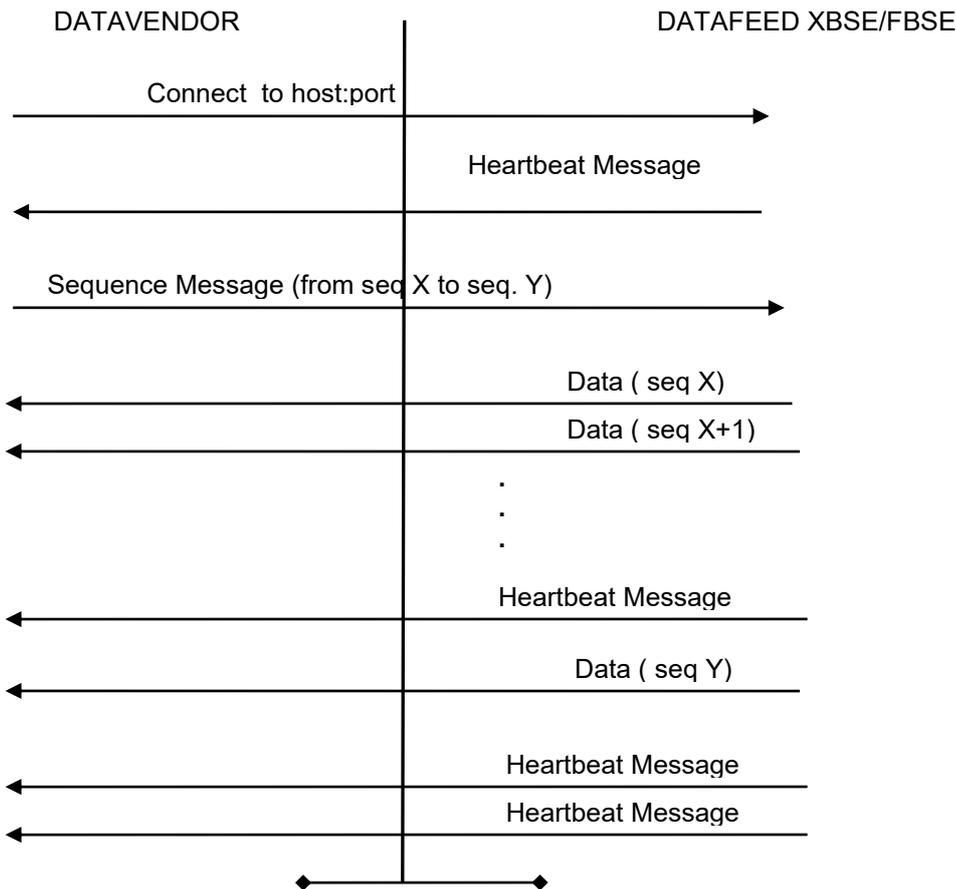
3.3 IP Address and Port Number

In order to connect and receive data from DATA FEED, Data Vendor has to instruct security system to allow TCP packets from the IP address of DATA FEED.

The IP address for both central sites and disaster site depends of communication provider and will be communicated at properly times.

Exchange shall provide connectivity details for both main site and DR site and for both DATAFEED XBSE and DATAFEED FBSE
  • Host and port where DATAFEED run and listen connection from data vendor.
  • Username and Password – needed to be set in tags 503 and 504 in Sequence Message

4   Recovery and Retransmission

DATAFEED supports retransmission of all messages it transmits within a current trading day.
Data Vendor, who misses messages due to unexpected error in processing or a communication breakdown, may request a retransmission sending a Sequence Message. Once the Sequence Message is received by the DATAFEED, DATAFEED will stop current transmission and start sending requested messages sequentially (from the lowest sequence number specified, up to the higher sequence number specified)
The retransmission response is sent on the same connection.

5   Test environment

Technical specification for test environment is the same as real environment. For internet access, to DATA FEED Test environment, you need to request a firewall permission for a specific IP address.

Connection parameter for DATAFEED XBSE:
Host: 195.28.177.83
Port: 5555

Username (for tag 503): will be communicated by Exchange
Password (for tag 504): will be communicated by Exchange

Connection parameter for DATAFEED FBSE
Host: 195.28.177.83
Port: 5533
Username (for tag 503): will be communicated by Exchange
Password (for tag 504): will be communicated by Exchange