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*Market Data Simulator*  
*Users Guide*

*Version 1.00*  
*October 19, 2010*

## Revision History

The table below records the revision history of this document:

Revision	Date	Changes Made
1.00	October 19, 2010	Initial Document

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# 1. Introduction

This document describes Lightspeed's Market Data Simulator. It is intended to give the reader an understanding of the following topics:

- Market Data background
- What is a Market Data Simulator
- How the Market Data Simulator can be used in the development of a Blackbox Trading System
- How to get access to the Market Data Simulator
- How to install and run the Market Data Simulator

## 1.1. Background

Lightspeed provides two types of Market Data Servers. One market data server is called the Quotes Server. The Quotes Server provides top of book data from Exchanges, ECNs and Alternative Trading Systems. The Quotes Server also provides trade data, Liquidity Replenishment Points (LRP), and Imbalance information.

The second market data server is called the Book Server. The Book Server provides the full depth of book for the following Exchanges and ECNs.

Exchange/ECN	Participant ID
NYSE – ARCA	ARCA
Bats	BATS
Direct Edge	EDGX
Direct Edge	EDGA
Nasdaq	INET

Blackbox Trading Systems (clients) make TCP connections to the Market Data Servers and a proprietary communication protocol is used to exchange information between the client and the servers. Refer the Lightspeed Quotes Engine Specification and the Lightspeed Book Engine Specification for details regarding the communication protocol. Both specifications are available on Lightspeed's website.

## 1.2. What is a Market Data Simulator

The Market Data Simulator is a software application that “simulates” the behavior of the real market data servers. From the clients perspective the Market Data Simulator looks like the real server. Clients make TCP connections to the simulator, make request for market data, and receive market data from the simulator.

The Market Data Simulator is a single application that accepts TCP connections on six ports. Each port number identifies a Quote Server or a Book Server. The following port numbers have been defined.

Port Number	Data Feed Description
11001	INET Book Server
11002	ARCA Book Server.
11005	BATS Book Server.
11006	EDGX Book Server
11007	EDGA Book Server
21001	Quote Server

The Market Data Simulator reads market data from a data file and disseminates the data to clients who have established connections with the Simulator using the port numbers described above. For example, INET data will be disseminated to clients who have made connections to port 11001.

Since the data is read from a file, the Market Data Simulator can be run 24 hours a day, 7 days a week.

### 1.2.1. Basic Operation of the Market Data Simulator

When the Market Data Simulator starts, it will create listen sockets for the port number listed above. It will open the data file and read market data from the file. The Market Data Simulator will accept connections from clients on the port numbers listed above. The Market Data Simulator will disseminate data to clients as defined in the Quote Server Specification and the Book Server Specification.

When the Market Data Simulator reaches the end of the data file, it will drop all client connections. It will close the data file, reopen the data file, and start the process over. When the client connections are dropped as the Market Data Simulator prepares to start processing the data from the beginning of the file, clients will not be able to connect for 30 to 60 seconds. .

## 1.3. Testing Blackbox Trading Systems

Customers who are developing Blackbox Trading System find it useful to have access to make data whenever they desire. The Market Data Simulator allows the developer to test their code at their convenience. There are three ways to obtain access to a Market Data Simulator.

**Co-Location:** Lightspeed provides a Market Data Simulator that is located in Lightspeed's data center. This Market Data Simulator runs 24 hours a day, 7 days a week. Customers who have computers co-located in Lightspeed's data center can access the Market Data Simulator.

**VPN:** Customers who have not yet co-located their computer in Lightspeed's data center can still access the Market Data Simulator that is located in Lightspeed's data center. However, the customer will need to establish a VPN between their computer and Lightspeed's data center. The Lightspeed support team will create a VPN account for the customer and will assist the customer in setting up the VPN. Once the VPN is set up, the customer's Blackbox Trading System can access the Market Data Simulator.

**Remote Market Data Simulator:** Customers can obtain the Market Data Simulator application from Lightspeed and run it on a computer at their location. The Lightspeed support team will provide the customer with the Market Data Simulator application and the required data files. The Market Data Simulator application is available for both Linux and Windows platforms. Instructions for running the Market Data Simulator are provided below.

## 2. Running The Market Data Simulator

### 2.1. Linux Platform

To run the Market Data Simulator on a Linux platform, the customer must obtain the following files from the Lightspeed support team.

**mktsim:** The Market Data Simulator application.

**mktsimDataFile:** This file contains the market data.

**symbolList:** This file contains the list of symbols that are supported by the Market Data Simulator.

To run the Market Data Simulator from a Linux command prompt, enter the following command:

➤ `./mktsim mktsimDataFile symbolList &`

The above command will run the Market Data Simulator as a background process.

### 2.2. Windows Platform

To run the Market Data Simulator on a Windows platform, the customer must obtain the following files from the Lightspeed support team.

**mktsim.exe:** The Market Data Simulator application.

**mktsimDataFile:** This file contains the market data.

**symbolList:** This file contains the list of symbols that are supported by the Market Data Simulator.

To run the Market Data Simulator from a Windows command prompt, enter the following command:

➤ `mktsim.exe mktsimDataFile symbolList`

## Appendix A – Available Symbols

AA	BAC	CSX	EP	HES	LOW	NEON	REGN	TEL	VIV
AAPL	BBBY	CUTR	EWJ	HOTT	LSI	NOK	RELL	TGT	VLO
ABFS	BBY	CVGI	EWT	HPOL	LUV	NYX	RICK	THC	VOLT
ABMD	BEBE	CVLT	EWZ	HPQ	M	OFIX	RIGL	TJX	VRTX
ABT	BMY	CVS	EXAR	HRBN	MANT	OIIM	RIMM	TTMI	VZ
ABX	BRKS	CVX	EXBD	IART	MASI	OMAB	S	TUES	WAG
ACXM	BSX	CY	F	IBKR	MATK	OMNI	SEIC	TUNE	WFC
ADBE	BTUI	DBO	FACE	IBM	MATW	ORCT	SFUN	TWMC	WINN
ADM	BUCY	DDSS	FALC	IGT	MAXY	OREX	SGEN	TWTC	WIRE
AEO	BUD	DELL	FAST	INTC	MBLX	OXY	SGMS	TWX	WLDN
ALU	BX	DFS	FBCM	IWB	MCCC	PCBC	SHLM	TXN	WM
AMAT	CALD	DHI	GE	IWM	MCD	PEP	SLAB	TXRH	WMAR
AMCC	CAT	DIA	GFI	IWV	MCGC	PFE	SLB	TYC	WMB
AMD	CBRL	DIS	GG	IYR	MDT	PG	SLE	UCTT	WMGI
AMED	CBRX	DMAN	GLD	JBL	MELI	PGR	SLGN	UDRL	WMT
AMGN	CBS	DOW	GLW	JNJ	MO	POWI	SLV	UIS	WOLF
AMR	CCRT	DTO	GNTX	JOYG	MOT	PRGN	SMCI	UMC	WSBC
AMX	CDE	DTV	GOOG	JWN	MRK	PRTS	SMDI	UNH	WSFS
AMZN	COCO	DUK	GPS	KBH	MRO	PRVT	SONC	USO	WU
ATI	COP	DYN	GS	KFT	MS	PTSI	SPY	UTSI	XOM
AUY	COV	EEM	HAFC	KNSY	MU	Q	STMP	UTX	XRX
AXP	CPKI	EFA	HAIN	KO	NANO	QQQQ	STNR	V	YTEC
AZPN	CPRX	ELON	HAL	KR	NARA	RAD	SUSQ	VDSI	ZION
BA	CRUS	EMC	HALO	KSS	NBR	RECN	SUSS	VECO	ZOLL
BABY	CSCO	EMIS	HD	LOOK	NEM	REDF	T	VICL	ZOLT