



MarketDataPeaks

A New Way to Measure the Markets

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Xasax Corporation



Financial Information Forum



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Patent Statement:

The Exegy Ticker Plant is protected in part by the following patents: US 6,711,558, US 7,139,743 and US 7,181,437. Other patents pending.

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## 1 Introduction

This paper describes [www.marketdatapeaks.com](http://www.marketdatapeaks.com) which is powered by Exegy's Ticker Plant at the Xasax hosting facility in New York City. The web site is sponsored by the Financial Information Forum in conjunction with Exegy and Xasax.

## 2 Market Data Capacity

In the age of the electronic trading, market data *is* the market. And consequently financial IT professionals are extremely interested in maintaining the integrity of the systems collecting, processing, distributing and storing market data.

Technologists running Wall Street today are extremely interested in the number of messages per second that stream through their electronic systems. This simple metric is a good indicator of how busy their data lines will be and therefore how much computer resource will be taxed for processing as well as storage. Tom Jordan, President and CEO of Jordan & Jordan and Advisory Committee Chair of the Financial Information Forum was first to recognize how important knowledge of market data capacity as a whole is to the functioning of the market. He believed that it was vital that market players co-operate to assure the smooth running of the overall system.

Even though the firms involved, from exchanges, to vendors and bulge bracket Wall Street banks are competitors, they have all understood the utility of sharing information. Indeed, an FIF working group has been keeping statistics on market data rates since 1997 when they formed the original market data planning committee with the exchanges.

The FIF data set is unique and available exclusively to FIF members. Historical data is updated monthly by the exchanges and securities industry processors.

The FIF's data on market peaks is particularly useful because each of the high points recorded by the exchanges on their respective outbound feeds are the definitive values recognized by the market. They are effectively digital high water marks left by the hyper-activity of the electronic markets. Planners inevitably look back at the historical data and the slope of the trend to calibrate systems and budgets into the future.

Market data peaks from each source are reported once a month to the FIF. There are some markets, such as the Canadian exchanges and Direct Edge that are not members of the FIF and therefore their data rates are not recorded in the FIF data set.

### 3 The Origins of MarketDataPeaks.com

Jeff Wells has been the chair of the FIF capacity group since September 2001. Wells joined Exegy in 2006. He could see that the Exegy Ticker Plant machine was uniquely capable of processing all of the world's exchange feeds simultaneously. Coincidentally, Xasax, an Exegy customer, began installing all the important market data feeds for the US and Canadian markets in its Metrotech data center in New York City. At Wells' suggestion, Xasax generously agreed to allow Exegy to calculate the message per second statistics for all the feeds connected to the single Exegy Ticker Plant and to publish the data on [www.marketdatapeaks.com](http://www.marketdatapeaks.com) as a free service under the auspices of the FIF.

### 4 Methodology

All data are processed and updated through a single Exegy Ticker Plant appliance in a Xasax co-location facility in New York.

In the case of multicast delivery, data enter from two separate data lines each carrying, ostensibly, identical (redundant) data. The data packets from each line are unpacked into individual messages and the messages from each exchange are arbitrated to ensure that only a single copy of each distinct message is passed through the system. In the case of TCP, a single copy is received.

The data flow through a transformation and normalization process to build a universal last value cache, global order book, and enable an Exegy Ticker Plant consumer to see a single data model for all market data.

The global peak graph on the MarketDataPeaks website is counting post-arbitrated messages per second. This is important to know because most large users of direct feeds take two copies of a feed when they are delivered via multi cast.

The data presented are the total amounts that occur simultaneously in any given second across all data feeds. If two exchanges exhibit maxima during different times, the results will not be combined. The graph on the 'Peaks site displays the highest one-second data point that occurs in each minute.

The Exegy Ticker Plant is dependent on network delivery from the various exchange systems so the data reported will not be exactly the same message count/data transmitted as those provided by exchanges at their various distribution points. It should also be noted that the 'Peaks web site collects statistics per line from the Exegy Ticker

Plant in a “round robin” fashion, and therefore there may be some temporal skew, albeit minimal.

Exegy will continue to fine-tune and improve the ‘Peaks site based on continued visitor observations, user inputs, and data verification.

## 5 Direct Feeds for MarketDataPeaks

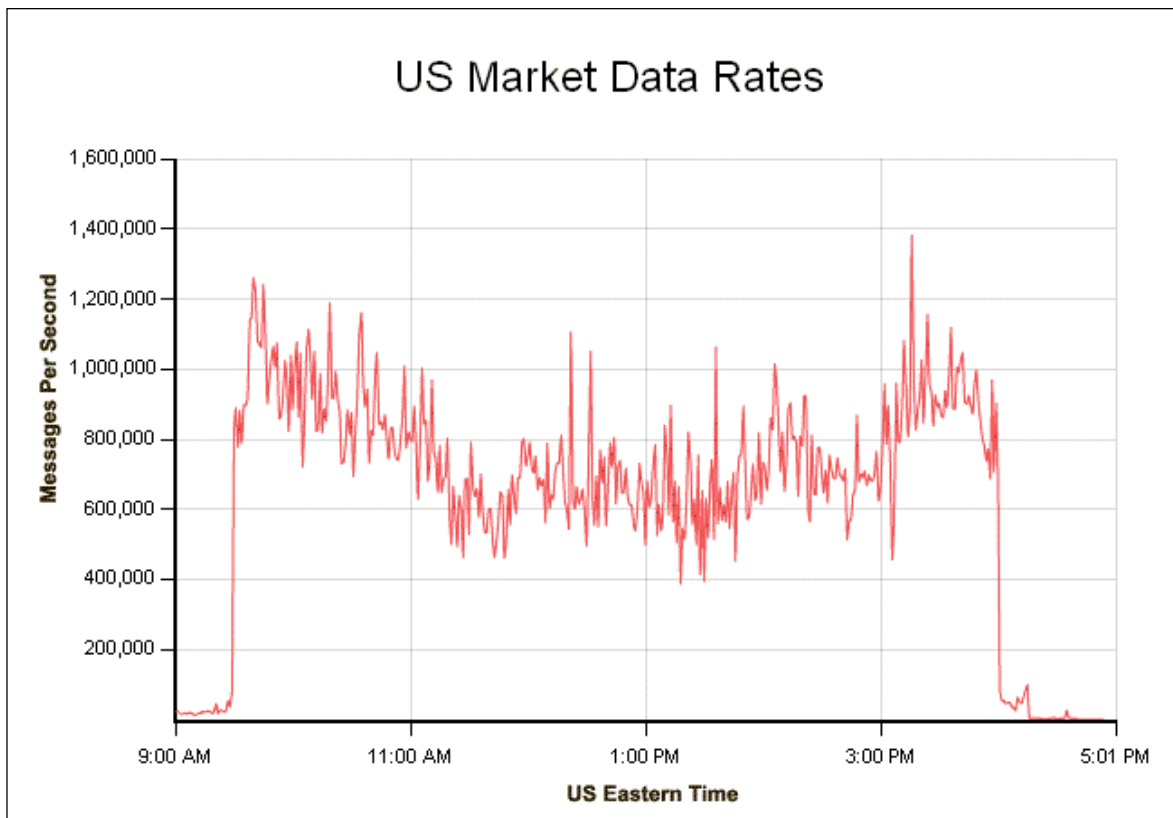
Exegy is using parallel processing techniques in reconfigurable hardware to consume and process all streaming data from the markets simultaneously in a single computing appliance. Xasax is subscribing to the following feeds and this data is reflected in MarketDataPeaks.com:

Exchange/Source	Feed Name
BATS Exchange	PITCH
CME Group	ITC 2.1
Direct Edge	SCRATCH (EDGX)
NASDAQ OMX	UTDF
NASDAQ OMX	UQDF
NASDAQ OMX	TotalView-ITCH 3.0
NYSE Euronext	ArcaBook
NYSE Euronext	OpenBook
Security Industry Automation Corp (SIAC)	OPRA
Security Industry Automation Corp (SIAC)	CTS
Security Industry Automation Corp (SIAC)	CQS
TMX	TL1
TMX	CL1

## 6 Taking the Pulse during the Financial Crisis

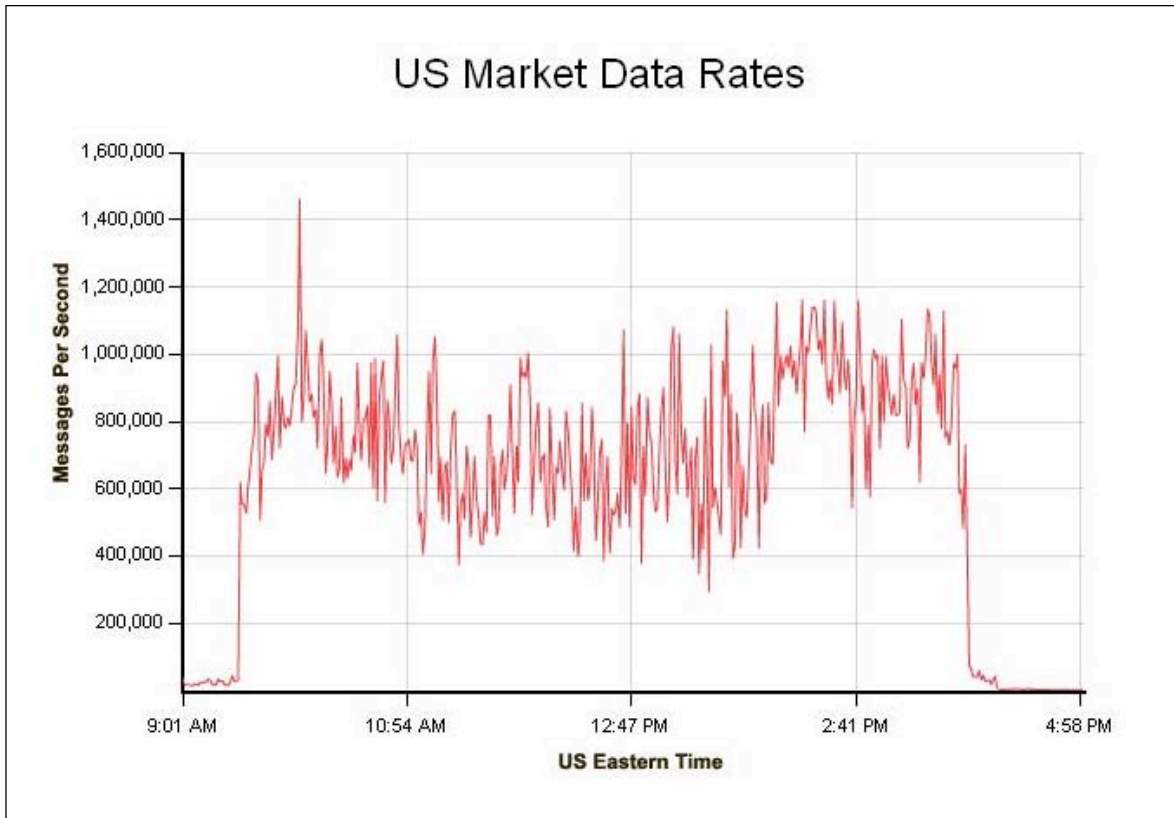
This chart shows US market data rates on 10 October 2008.

See [www.marketdatapeaks.com](http://www.marketdatapeaks.com) for further information.



The Dow Jones Industrials Index finished down 128 points, after twice reaching down 700 points and below 8000 on the index.

This chart shows US market data rates on 25 February 2009.



On Wednesday 25<sup>th</sup> February 2009, the market was reacting to the speech to US Congress by President Obama the night before and then at 10 am to the release of the economic statistic “new home sales”. The market was disappointed by the economic data and adjusted prices at the rate of 1,433,038 messages per second.

It is possible to view the data feeding into MarketDataPeaks broken down by feed. Historical data is saved by the Financial Information Forum and available to FIF members on request.

Time	ARCA	TotalView	Canada	CME	UQDF	UTDF	OpenBook	OPRA	CQS	CTS	D'Edge	BATS
10:00:01	207107	167425	5015	11517	36249	4275	1833	646883	136880	22881	8455	184518
14:29:36	163764	152311	5220	7373	28599	2424	1602	593911	91779	9928	10791	76727
14:41:28	141432	144791	5045	7403	27550	3205	1435	565807	95637	12162	10860	125985
14:13:22	155167	154966	4642	9517	31509	4182	1404	508623	106520	12483	11629	140121
14:24:34	154013	157041	4284	10611	27989	2861	1583	548885	79786	14514	14914	122901
14:00:20	143646	152033	5088	8046	28191	2878	1532	570451	78342	13648	15132	118174
14:19:23	143444	145758	5491	8719	26715	1780	1872	581074	74852	9554	20848	104670
14:19:04	157070	146159	4653	7720	26353	2042	1521	510578	106988	10916	10611	135514
13:35:06	143202	156879	4824	6871	29311	3846	1262	531282	97991	12433	4219	124667
15:40:31	137910	134877	5391	6634	27175	2759	1493	574000	75059	11409	7603	131972

This table shows the ten busiest seconds on 25<sup>th</sup> February 2009 as recorded on the Exegy Ticker Plant at Xasax.

## 7 Exegy – The Company

Exegy offers hardware-accelerated appliances for the Financial Services community, facilitating the delivery and normalization of market data at very high data rates, without sacrificing latency or useful functionality. Because Exegy appliances are based on non-traditional hardware-acceleration technologies, more market data can be delivered faster without increasing operating costs, space or management time.

[Exegy](#) is a privately-held corporation headquartered in St. Louis, Missouri.

## 8 Xasax – The Company

[Xasax Corporation](#) provides an ultra-low latency financial network called the Xasax Financial Backbone built by lighting diverse dark fiber paths. The XFB encompasses the majority of available liquidity in the US with dark fiber interconnections. Xasax services include proximity hosting / co-location; raw and consolidated market data; order routing and execution management systems; Vendor of Record/entitlement solutions, and historical data warehousing. This infrastructure facilitates high-frequency traders, hedge funds, and financial service providers.

Xasax is a privately-held corporation headquartered in Naples, Florida.

## 9 FIF – The Financial Information Forum

FIF was founded in 1996 by Jordan & Jordan to address the issues that impact financial technology operations and development in light of rapid changes occurring in technology, regulation and market structure. Through committees and active working groups, FIF provides members with resources and analysis to guide their internal business and technology initiatives.

[FIF members](#) include industry-leading broker dealers, vendors, and exchanges. Firms active in the U.S. securities industry are encouraged to [join FIF](#).