



Financial Information Forum

Market Data Capacity Working Group Meeting

October 16, 2008

Location: Jordan & Jordan, 5 Hanover Sq. FL. 2, New York
Dial-In: 319-279-1000 ; Bridge #: 1071726

- FIF Members: For more information regarding these statistics, please contact fifinfo@fif.com.
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Agenda

- SIP/Exchange Updates
 - Options (OPRA, CBOT, ISE)
 - Equity SIP Feeds (CTA, UTP)
 - Nasdaq
 - NYSE Arca
 - CME
 - Deutsche Börse
 - LSE
 - Exchanges Methodology Discussion
- [Market Data Peaks Analysis](#)
- Automated Listed Equity Trading Impact
- Additional Event/Issues
- Next Meeting Date – November 21?

October 10, 2008 Record on MarketDataPeaks.Com



MarketDataPeaks

Planning for the Peaks

Market data peaks every minute for **October 10, 2008**

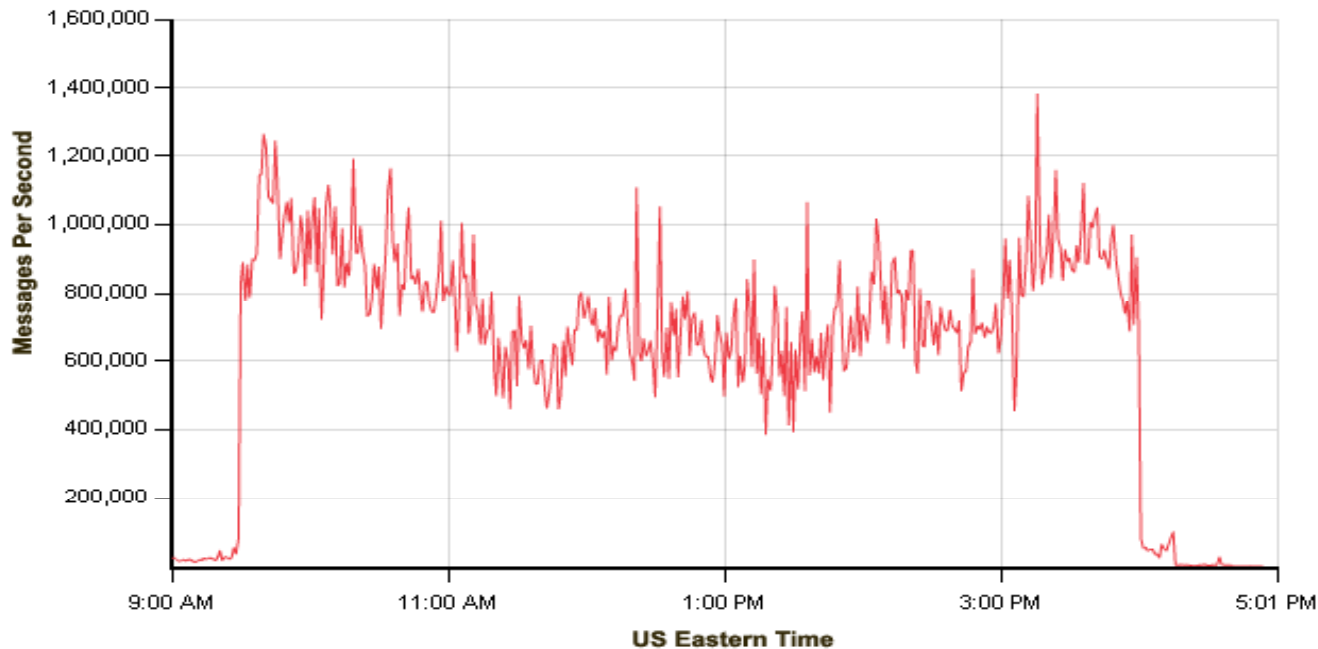
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Feedback

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US Market Data Rates



Peak Rates

Today	1,383,703 msg/sec	10/10/08 3:16 PM
Last Trading Day	1,199,228 msg/sec	10/09/08 11:02 AM
* Historic	1,383,703 msg/sec	10/10/08 3:16 PM (Since 4/1/08)

All data are processed and updated through a single **Exegy** Ticker Plant in **Xasax's** colocation facility in New York City. The data collected is the total number of messages that occur simultaneously in any given second across all live data feeds including NYSE/SIAC, NASDAQ, OPRA, ARCA, BATS and Direct Edge, both Level 1 and 2. The graph displays the highest one-second peak that occurs in each minute. The graph automatically updates every minute.

Sponsors:



Xasax Corporation



October 10, 2008 : MarketDataPeaks Analysis

Peak Time by Feed



Feeds sorted by Peak (mps)

Feed Name	Peak Messages per Second	Time
Consolidated Feeds	1,383,703	15:16
OPRA	666,803	12:23
ARCABOOK	161,668	9:46
BATS	153,395	9:46
CQS	124,380	12:23
Totalview	112,975	12:22
UQDF	28,333	12:23
DIRECTEDGE	11,260	16:00
CTS	9,756	15:40
Canada	8,116	12:23
CME	5,407	10:42
UTDF	3,653	16:00
OPENBOOK	2,456	12:22

Feeds sorted based on Time of Peak

Feed Name	Peak Messages per Second	Time
ARCABOOK	161,668	9:46
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CQS	124,380	12:23
UQDF	28,333	12:23
Canada	8,116	12:23
Consolidated Feeds	1,383,703	15:16
CTS	9,756	15:40
DIRECTEDGE	11,260	16:00
UTDF	3,653	16:00

Note: MarketDataPeaks Statistics differ from data provided by originators and reported in the FIF Consolidated Capacity Statistics Report.

October 2008 – SIAC Record Peaks: CTS, CQS, OPRA

■ CTS

- 5-minute: 5,836 MPS on 10/09/08 (previous 5,120 on 9/18/08)
- Transactions: 67.3 Million on 10/10/08 (previous 59.8 Million on 9/18/08)

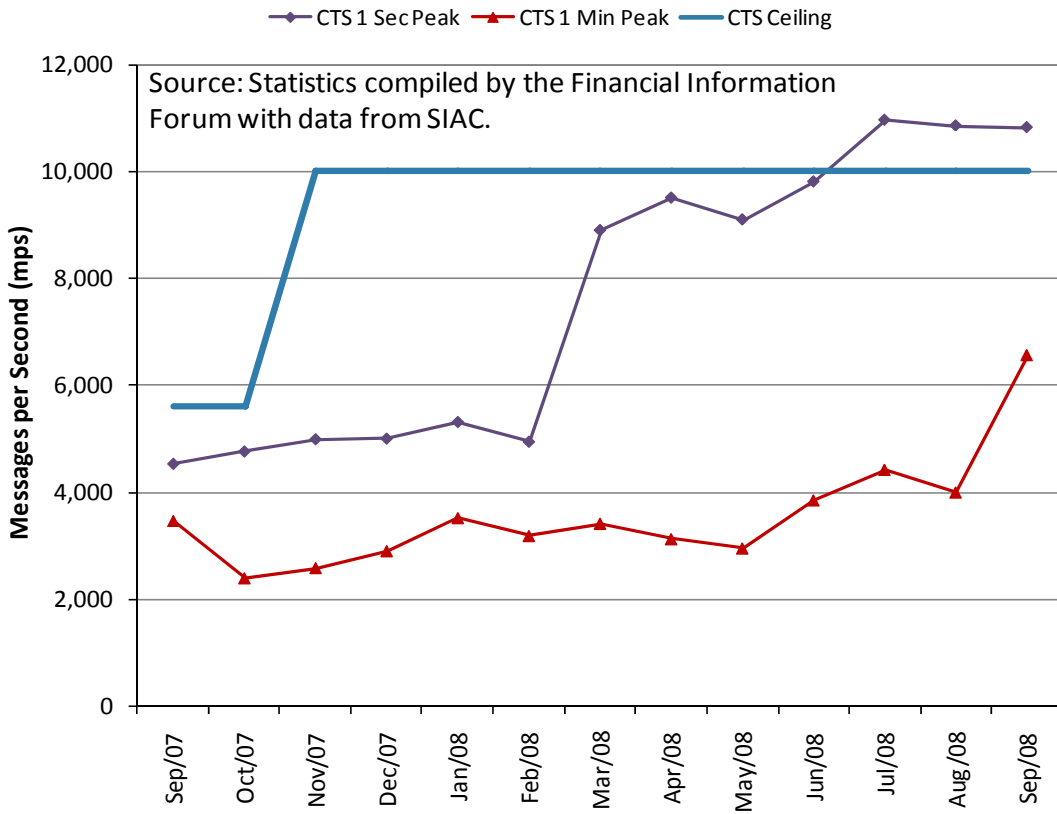
■ CQS

- 1-Second: 64,290 MPS on 10/10/08 (previous peak 62,907 on 10/9/08)
- 5-Seconds: 57,009 MPS on 10/3/08 (previous peak 55,702 on 9/18/08)
- 15-Seconds: 54,410 MPS on 10/10/08 (previous peak 54,239 on 10/3/08)
- 30-Seconds: 53,250 MPS on 10/10/08 (previous peak 54,239 on 10/3/08)
- 1-Minute: 52,450 MPS on 10/10/08 (previous peak 48,105 on 10/3/08)
- 5-Minute: 50,559 MPS on 10/10/08 (previous peak 44,088 on 10/9/08)
- Transactions: 838.1 Million on 10/10/08 (previous peak 734.8 Million on 10/8/08)

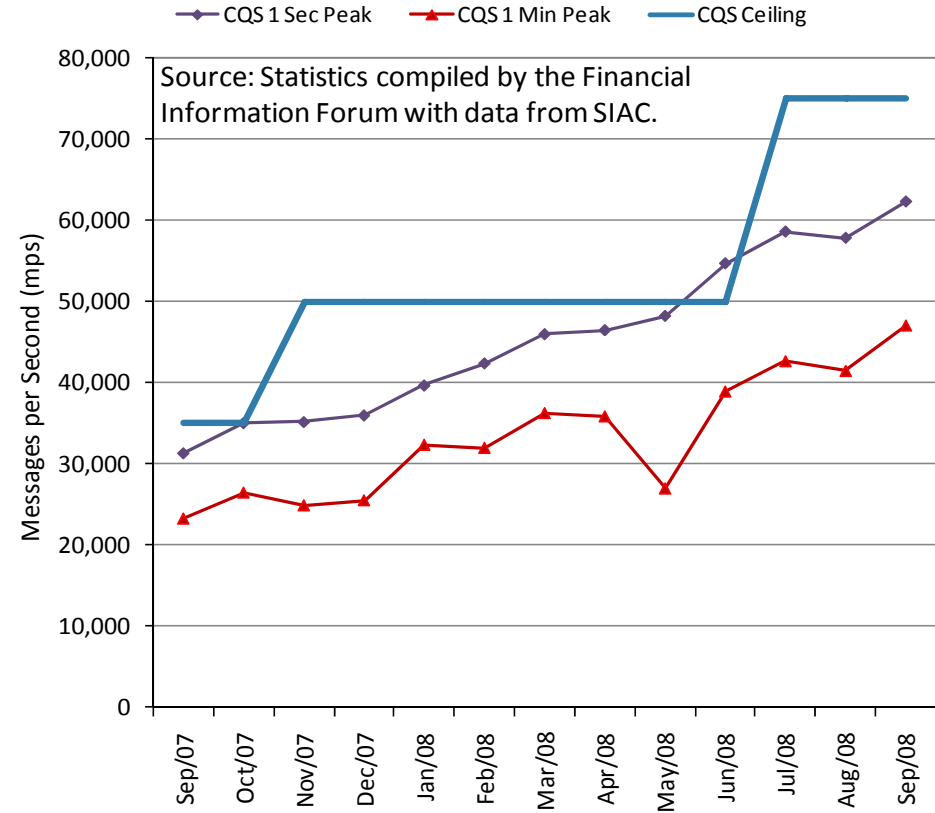
■ OPRA

- 1-Second: 695,055 MPS on 10/8/08 (previous peak 687,604 on 9/9/08)
- 5-Seconds: 650,287 MPS on 10/8/08 (previous peak 625,829 on 9/12/08)
- 15-Seconds: 582,760 MPS on 10/1/08 (previous peak 554,304 on 9/8/08)
- 30-Seconds: 557,726 MPS on 10/1/08 (previous peak 541,220 on 9/16/08)
- 5-Minute: 432,070 MPS on 10/10/08 (previous peak 419,560 on 9/29/08)
- Transactions: 5.9 Billion on 10/10/08 (previous peak 5.6 Billion on 10/8/08)

CTA Feed Peak Message Rates

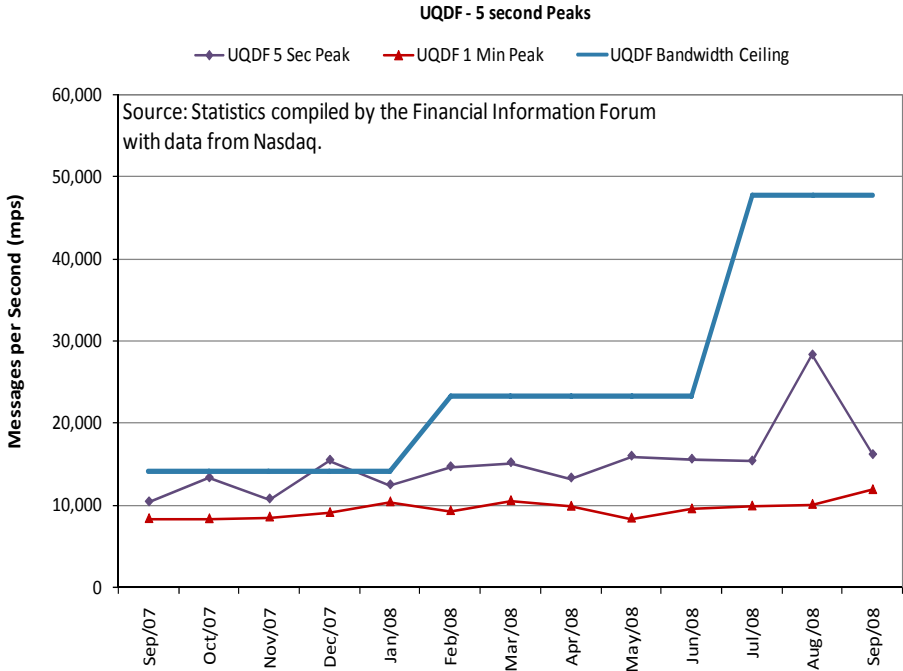


- Current Ceilings:
 - CTS: 10,000 mps (3.2 Mbps); October 15, 2008: 15,000 mps (3.55 Mbps)
- September peaks for CTS compared to August peaks
 - 1 Second Peak – down 0.3% to 10,820 mps
 - 1 Minute Peak – up 64% to 6,558 mps
 - Daily Messages Peak – up 98% to 59,767,528 messages



- Current Ceiling:
 - CQS: 75,000 mps (39.2 Mbps); Jan 2009: 100,000 mps (52.2 Mbps)
- September peaks for CQS compared to August peaks
 - 1 Second Peak - up 8% to 62,369 mps
 - 1 Minute Peak – up 13% to 47,076 mps
 - Daily Messages Peak – up 111% to 620,452,016 messages

Nasdaq UTP Feed Peak Message Rates

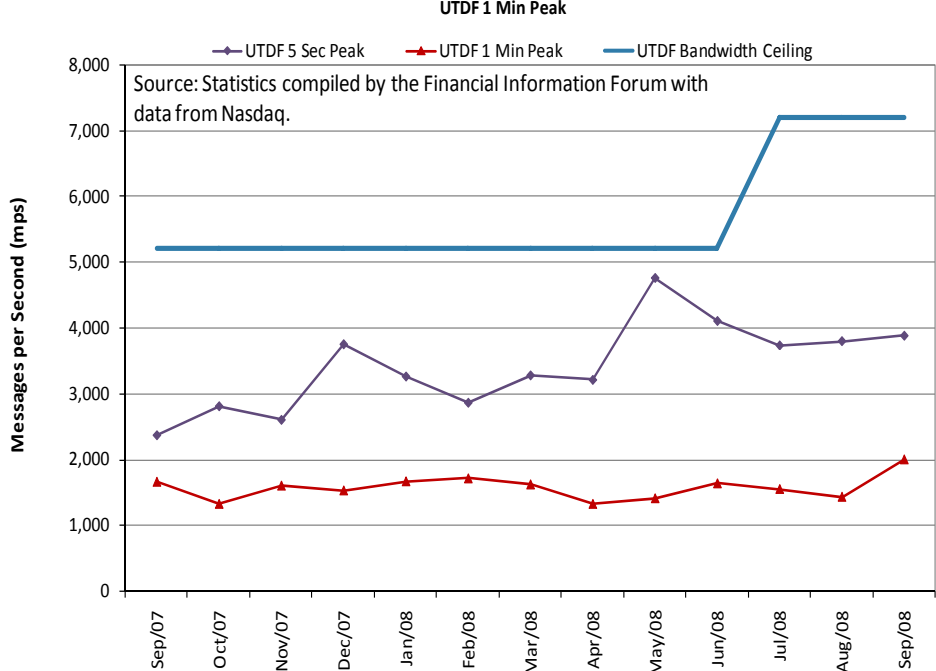


Current Ceilings:

- UQDF: 47,700 mps (28.0 Mbps)

Message Rates compared to August:

- 5 Second Peak – down 43% to 16,152 mps
- 1 Minute Peak – up 18% to 11,895 mps
- Daily Message Peak – up 70% to 143,700,399 msgs



Current Ceilings:

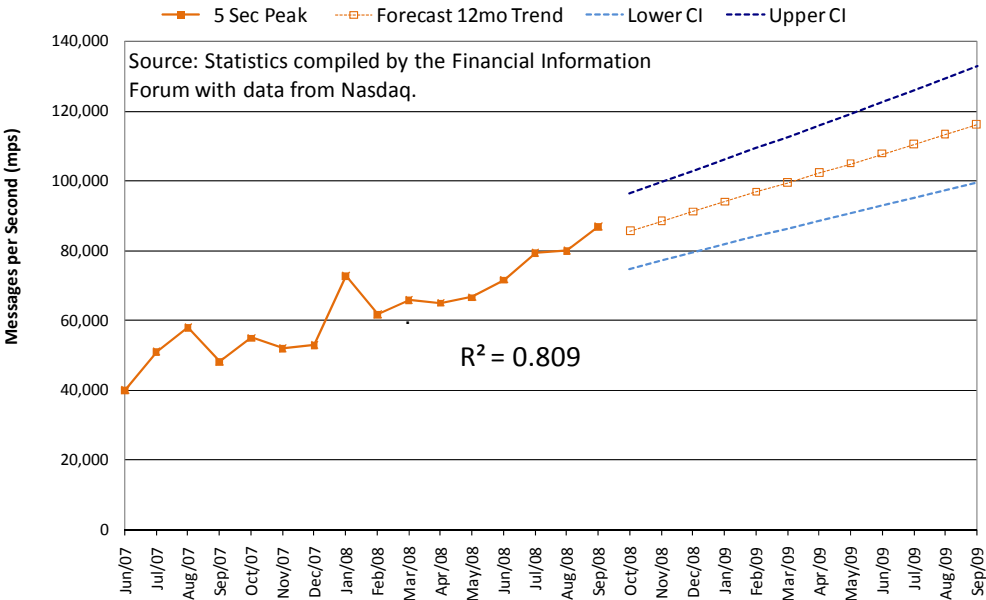
- UTDF: 7,200 mps (4.0 Mbps)

Message Rates compared to August:

- 5 Second Peak – up 2% to 3,876 mps
- 1 Minute Peak – down 40% to 2,001 mps
- Daily Message Peak – up 72% to 16,509,011 msgs

Nasdaq Proprietary Feeds Message Rates

TotalView – ITCH 3.0 - 5 Second Peaks



TotalView – ITCH 3.0

- Current Ceiling: 22 Mbps
- Message Rates compared to August
 - 5 Second Peak: up 9% to 86,841 mps
 - 1 Minute Peak: up 37% to 74,656 mps
 - Daily Message Peak: up 106% to 914,619,510 messages

TotalView – ITCH 2.0:

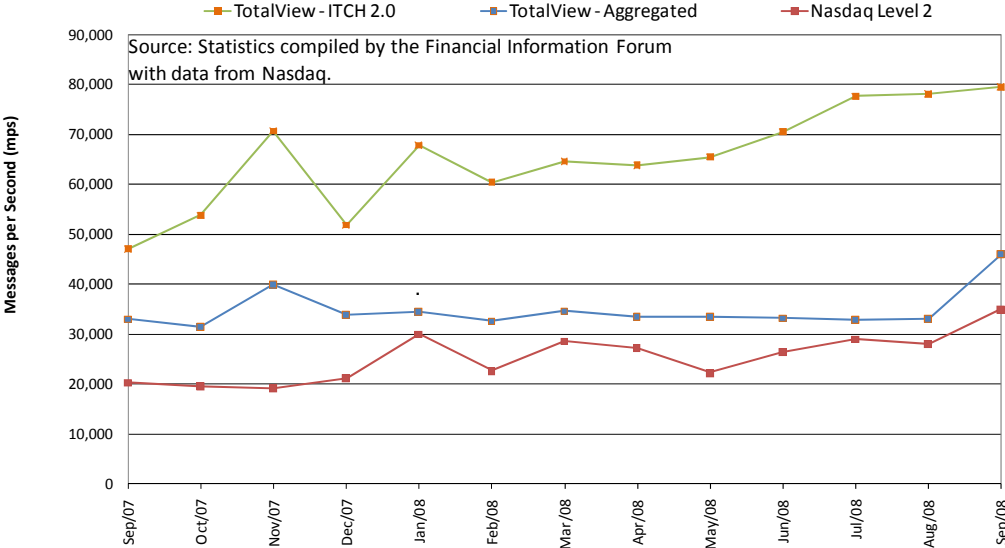
- Current Ceiling: 25 Mbps
- Message Rates compared to August
 - 5 Second Peak: up 2% to 79,617 mps
 - 1 Minute Peak: up 40% to 74,942 mps
 - Daily Message Peak: up 113% to 887,437,277 messages

TotalView – ITCH Aggregated

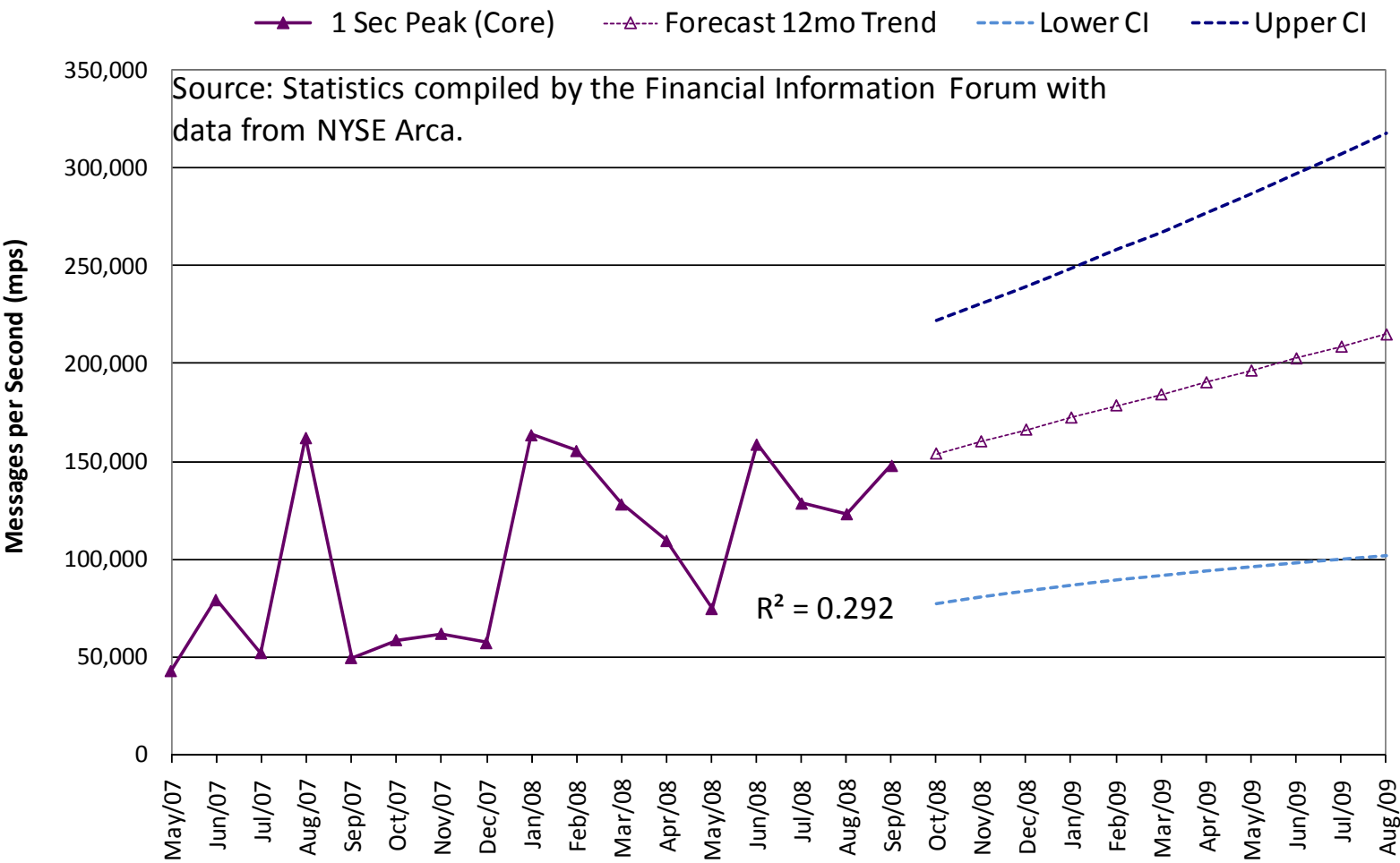
- Current Ceiling: 28 Mbps
- Message Rates compared to August
 - 5 Second Peak: up 39% to 46,115 mps
 - 1 Minute Peak: up 11% to 32,816 mps
 - Daily Message Peak: up 79% to 569,655,795 messages

Data Available on other Nasdaq feeds including:

- Equity feeds: Nasdaq Level 2, NIIDS
- Options Feeds: BONO, ITTO, DAP



NYSE ArcaBook Message Rates

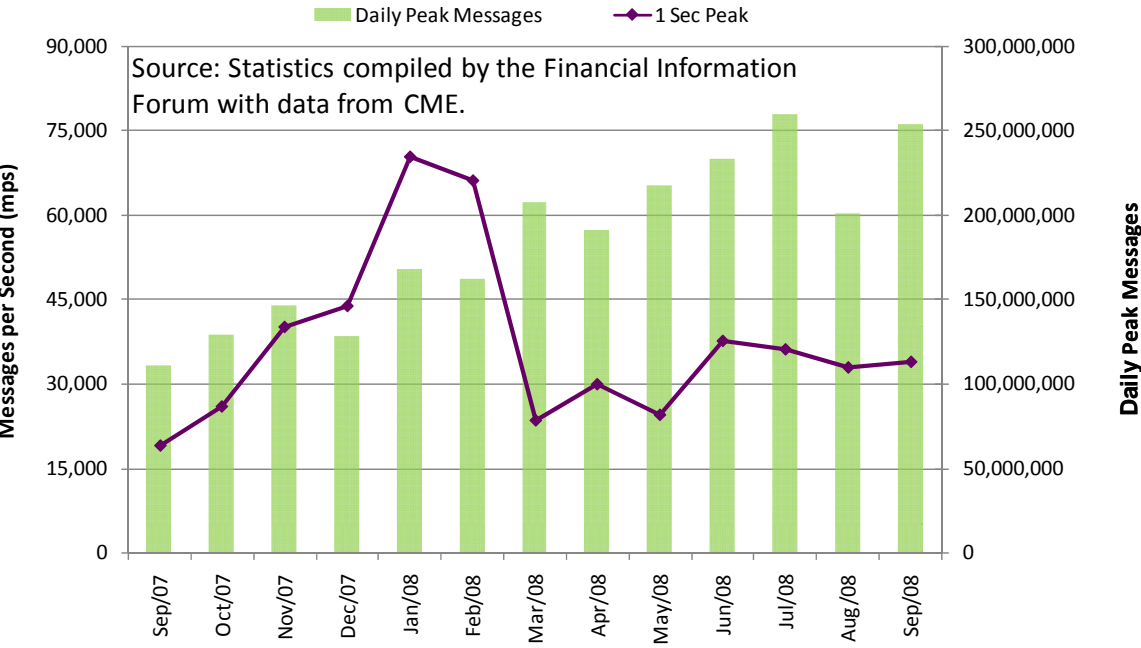


Actual 1 Second Peak (Core)	
Oct-07	58,544
Nov-07	61,790
Dec-07	57,020
Jan-08	163,679
Feb-08	155,609
Mar-08	128,177
Apr-08	109,440
May-08	74,494
Jun-08	158,873
Jul-08	128,640
Aug-08	123,175
Sep-08	147,974

Predicted 1 Second Peak (Core)	
Oct-08	153,915
Nov-08	160,166
Dec-08	166,216
Jan-09	172,468
Feb-09	178,720
Mar-09	184,366
Apr-09	190,618
May-09	196,668
Jun-09	202,920
Jul-09	208,970
Aug-09	215,221
Sep-09	221,473

- All message rates increased since August
 - 1 second peak was a 20% increase to 147,974 mps. Record peak of 163,679 mps in January
 - 1 minute peak - up 35% to 72,024 mps (new record peak)
 - Daily Messages Peak – up 76% to new record peak of 827,974,017
- ArcaBook Equities TCP/IP decommissioned on July 1, 2008. Current ArcaBook Ceiling: 38 Mbps FAST
November 2008: 43 Mbps FAST

CME RLC Peak Message Rates & Data



Notes

All customers utilizing the current RLC message format must convert to FIX/FAST by October 17, 2008. Thereafter, there will be increasing weekly surcharges.

RLC will be completely eliminated by year-end.

ITC 2.1 conversion targeted for early 2009.

Current CME Ceiling: 40Mbps

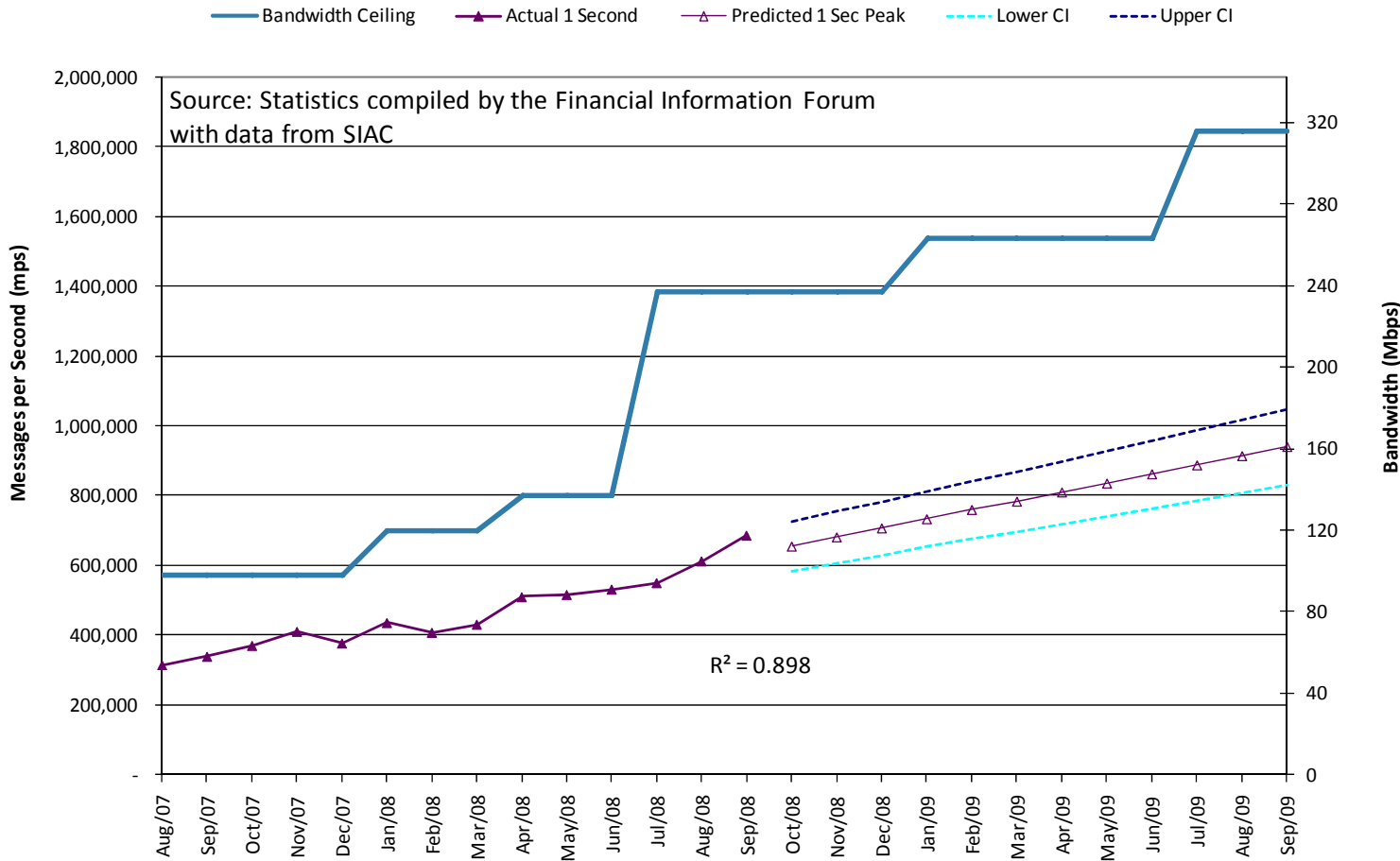
Peak Message Rates														
Rate Statistic	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Peak Date
1 Sec Peak	19,092	26,044	39,979	43,743	70,453	66,187	23,544	29,902	24,396	37,602	36,010	32,788	33,793	01/23/08
5 Sec Peak	11,532	13,231	26,223	26,082	40,489	41,505	17,467	21,299	20,460	23,272	27,047	27,903	27,252	02/06/08
10 Sec Peak	9,853	11,168	14,345	16,293	26,273	26,805	16,356	19,536	18,473	20,661	24,642	25,430	22,787	02/06/08
15 Sec Peak	9,343	10,241	10,984	11,004	17,778	18,806	15,463	19,164	18,251	19,615	23,392	23,449	21,137	08/06/08
1 Min Peak	7,900	8,420	9,414	8,302	10,687	11,680	12,849	14,525	16,664	18,071	19,616	18,337	17,785	07/23/08
Daily Peak Messages	110,653,327	128,631,668	146,141,764	128,242,529	168,136,278	161,979,220	207,842,843	190,545,508	217,281,682	233,392,817	259,617,459	200,706,777	254,053,514	07/17/08

Monthly Change in Peak Message Rates													
Rate Statistic	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08	Annual Change
1 Sec Peak	36%	54%	9%	61%	-6%	-64%	27%	-18%	54%	-4%	-9%	3%	77%
5 Sec Peak	15%	98%	-1%	55%	3%	-58%	22%	-4%	14%	16%	3%	-2%	136%
10 Sec Peak	13%	28%	14%	61%	2%	-39%	19%	-5%	12%	19%	3%	-10%	131%
15 Sec Peak	10%	7%	0%	62%	6%	-18%	24%	-5%	7%	19%	0%	-10%	126%
1 Min Peak	7%	12%	-12%	29%	9%	10%	13%	15%	8%	9%	-7%	-3%	125%
Daily Peak Messages	16%	14%	-12%	31%	-4%	28%	-8%	14%	7%	11%	-23%	27%	130%

Additional CME peak data is available at - <http://www.cmegroup.com/market-data/distributor/market-data-platform.html>

FIF Projection Based on OPRA 1 Second Peak Rates

FAST feed



Actual 1 Sec Peak	
Oct-07	371,567
Nov-07	411,838
Dec-07	378,151
Jan-08	436,973
Feb-08	408,867
Mar-08	432,328
Apr-08	511,186
May-08	517,764
Jun-08	532,908
Jul-08	551,374
Aug-08	613,824
Sep-08	687,604
Predicted 1 Sec Peak	
Oct-08	656,049
Nov-08	682,358
Dec-08	707,819
Jan-09	734,129
Feb-09	760,438
Mar-09	784,202
Apr-09	810,511
May-09	835,972
Jun-09	862,282
Jul-09	887,743
Aug-09	914,052
Sep-09	940,362

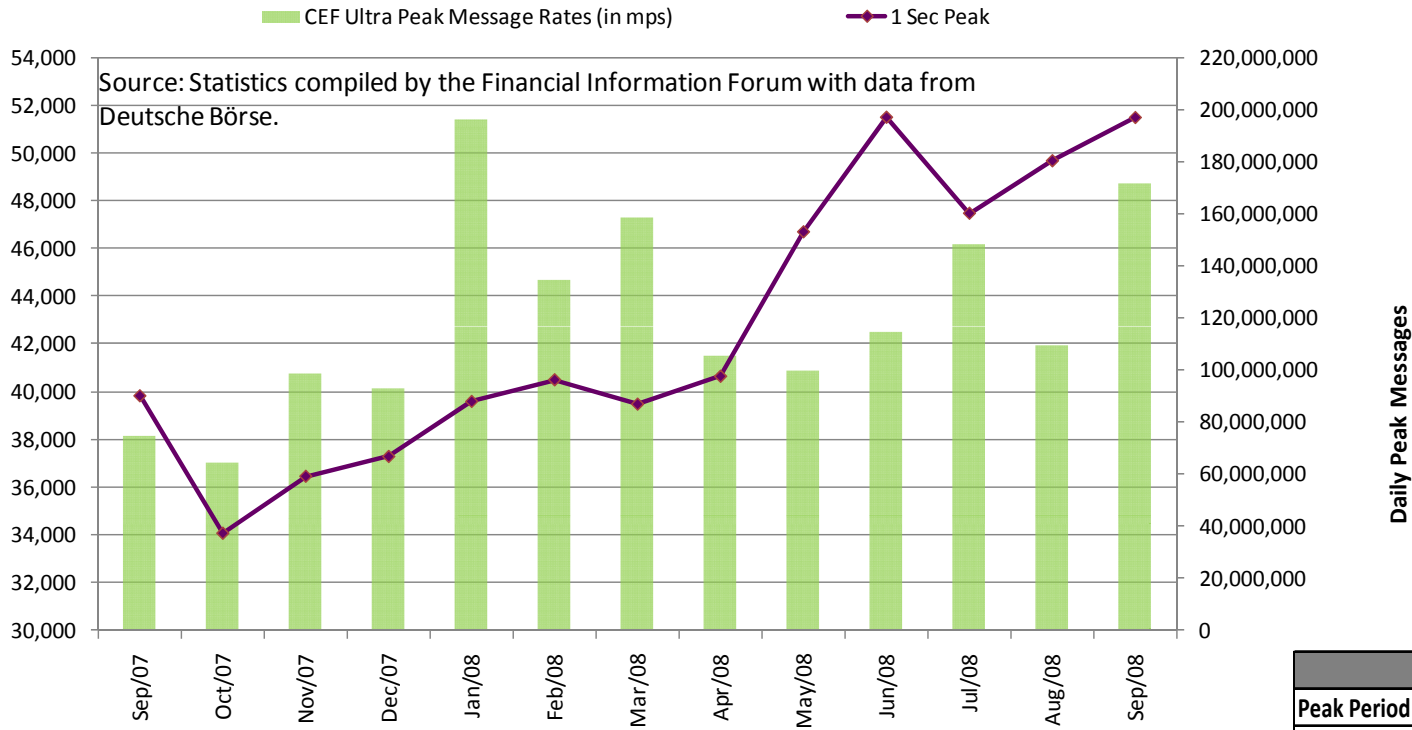
- While a good fit to historical data, OPRA ceilings indicate that other factors are driving bandwidth ceiling requirements.
- OPRA Ceiling: 1,387,000 mps (237.2 Mbps); Jan 6, 2009: 1,540,000 mps (263 Mbps); July 7, 2009: 1,846,000 mps (316 Mbps); Jan 5, 2010: 2,157,000 mps (369 Mbps).
- As of April 22, 2008, OPRA is disseminated using the FAST Protocol.
- All Data Recipients must be on the FAST for Symbology network - (SOD) by November 14th.

Accuracy of FIF OPRA 1 Second Peak Rate Projection

Month	OPRA - 1 Second Accuracy													
	Actual	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Jun-08	Jul-08	Aug-08
Sep-07	340,244	97.8%	-	-	-	-	-	-	-	-	-	-	-	-
Oct-07	371,567	93.0%	93.5%	-	-	-	-	-	-	-	-	-	-	-
Nov-07	411,838	87.1%	87.7%	89.2%	-	-	-	-	-	-	-	-	-	-
Dec-07	378,151	98.3%	99.0%	100.7%	104.1%	-	-	-	-	-	-	-	-	-
Jan-08	436,973	88.1%	88.7%	90.4%	93.6%	92.6%	-	-	-	-	-	-	-	-
Feb-08	408,867	97.4%	98.1%	100.1%	103.8%	102.6%	105.5%	-	-	-	-	-	-	-
Mar-08	432,328	95.0%	95.7%	97.7%	101.5%	100.2%	103.4%	101.8%	-	-	-	-	-	-
Apr-08	511,186	83.0%	83.6%	85.4%	88.8%	87.7%	90.6%	89.1%	89.9%	-	-	-	-	-
May-08	517,764	84.4%	85.1%	86.9%	90.6%	89.3%	92.5%	90.9%	91.9%	95.5%	-	-	-	-
Jun-08	532,908	84.5%	85.2%	87.1%	90.9%	89.6%	93.0%	91.3%	92.4%	96.4%	98.4%	-	-	-
Jul-08	551,374	84.0%	84.7%	86.6%	90.5%	89.2%	92.8%	91.0%	92.3%	96.5%	98.7%	99.5%	-	-
Aug-08	613,824	77.6%	78.3%	80.1%	83.8%	82.6%	86.0%	84.3%	85.6%	89.8%	92.0%	92.9%	92.9%	-
Sep-08	687,604	71.2%	71.9%	73.6%	77.1%	75.9%	79.2%	77.5%	78.9%	83.0%	85.2%	86.0%	86.0%	88.1%

- Percentages indicate how close the predicted value was to the actual 1 Second peak. For example, the prediction made based on August 2008 data for September 2008 was 88.1 % of the actual value of 687,604 mps
- Due to the variable nature of FIF predictions, firms may consider applying a multiplier to the projected values for internal capacity planning.
- Projections from the past twelve months for September have under-predicted by a maximum 29%.

Deutsche Börse Feeds: CEF Ultra & Scoach Peak Message Rates & Data



CEF Ultra includes un-netted Eurex data. This service is offered as an option or alternative to the Eurex data within "CEF classic".

Customers may subscribe to CEF classic without Eurex and take CEF ultra in parallel.

Scoach - Peak Message Rates (in mps)			
Peak Period	Aug-08	Sep-08	Peak Date
1 Sec Peak	45,142	52,026	09/10/08
10 Sec Peak	27,227	32,253	09/19/08
15 Sec Peak	24,432	27,911	09/30/08
1 Min Peak	18,896	20,595	09/18/08
Daily Peak Messages	402,471,739	564,676,908	09/04/08

CEF Ultra Peak Message Rates (in mps)													
Peak Period	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08
1 Sec Peak	39,847	34,092	36,477	37,305	39,609	40,517	39,496	40,664	46,713	51,510	47,490	49,689	51,500
Daily Peak Messages	74,823,503	64,412,887	99,050,750	93,322,547	196,336,681	134,990,744	158,905,530	105,821,849	100,133,901	114,889,621	148,409,227	109,492,380	172,220,542

CEF Ultra Peak Message Rates (Monthly % Change)												
Peak Period	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08
1 Sec Peak	-14%	7%	2%	6%	2%	-3%	3%	15%	10%	-8%	5%	4%
Daily Peak Messages	-14%	54%	-6%	110%	-31%	18%	-33%	-5%	15%	29%	-26%	57%

Level 1

Offers real-time best prices and other market data.

Level 1 Plus

In addition to best bid and offer and data, Level 1 Plus includes more data about the underlying market depth and liquidity of securities.

Level 2

Level 2 is Full depth of book feed

	Level 2	Level 1 Plus	Level 1
UK orders & quotes	Y		
International orders & quotes	Y		
Enhanced best price	Y	Y	
Buy/sell percentages	Y	Y	
Money flow per security	Y	Y	
Time-weighted average spread (TWAS)	Y	Y	
Opening Price	Y	Y	Y
Mid, best-bid and offer	Y	Y	Y
Trade high and low	Y	Y	Y
Individual trades	Y	Y	Y
Closing prices	Y	Y	Y
Order book VWAP	Y	Y	Y
All trades VWAP	Y	Y	Y
Cumulative volumes	Y	Y	Y
Uncrossing price and volume	Y	Y	Y
Daily official list prices	Y	Y	Y

Exchange Peak Message Rate Methodology

■ SIAC (OPRA, CQS, CTS)

- Measuring Timeframe: 00:00:00 to 23:59:59 ET.
- The message rates are measured in rolling second fixed-window intervals. For example, the first 5-second window will begin at 00:00:00 and terminate at 00:00:04, the second will begin one second later at 00:00:01 and terminate at 00:00:05 and so on.
- The maximum message rate for each fixed-window interval is provided to FIF.

■ NYSE Arca:

- Measuring Timeframe: 09:30:00 to 15:59:59 ET.
- The message rates are measured in rolling second fixed-window intervals.
- The maximum rate for each 1, 5, 10, 15 and 60 window is provided to FIF.

■ CME

- Measuring Timeframe: Full trading day.
- The message rates are measured in rolling second fixed-window intervals.
- The number of messages in each time range are counted and calculations of the max peak are made off of a metric database.
- The RLC feed will be discontinued and replaced by a FAST/FIX feed.

■ NASDAQ OMX (SIP & Proprietary)

- Measuring Timeframe - Market Open to Market Close 9:30:00 AM to 4:00:00 PM ET. Spins outside market hours are not used in the determination of a peak
- Base windows of 5 seconds used. Rolling 5 second measurements are taken. (i.e. 09:30:00, 09:30:05, ...)
- All other windows (15-sec, 1-min, and 5-min) are also tied to even boundaries, and do not use rolling 5-seconds. For example, 15-second intervals would include 09:30:00, 09:30:15, 09:30:30, etc.
- Calculations are based on aggregate messages for all three channels. (Each channel is not individually calculated.)
- **NOTE:** NASDAQ SIP is moving over to a new process for calculation the message peaks as they relate to the UTP data feeds (UQDF / UTDF). Methodology slide will be updated when new process is in place.

■ Deutsche Börse (CEF Total, Eurex, SCOACH)

- Measuring Timeframe: Full trading day.
- The message rates are measured in rolling second fixed-window intervals.
- For each source and for CEF total we extract the maximum value per day (1 second peak, 10 second peak, 15 second peak, 1 min peak) together with the time when each peak occurred.

MarketDataPeaks.com Message Rate Methodology

- 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 global peak graph on the MarketDataPeaks website is counting post-arbitrated messages per second.
- 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 may 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.

Automated Trading Equity Analysis

Objective



In order to understand the impact of automated equity trading as a result of Reg NMS, NYSE Hybrid and the emergence of new equity exchanges, FIF analyzes the following:

- CTA/UTP Data feed comparisons based on SIAC and NASDAQ SIP market data capacity statistics
 - Growth and forecasts of peak messages
 - Comparison of quote to trade ratios

- Average Trade Size based on NYSE and NASDAQ Volume Statistics

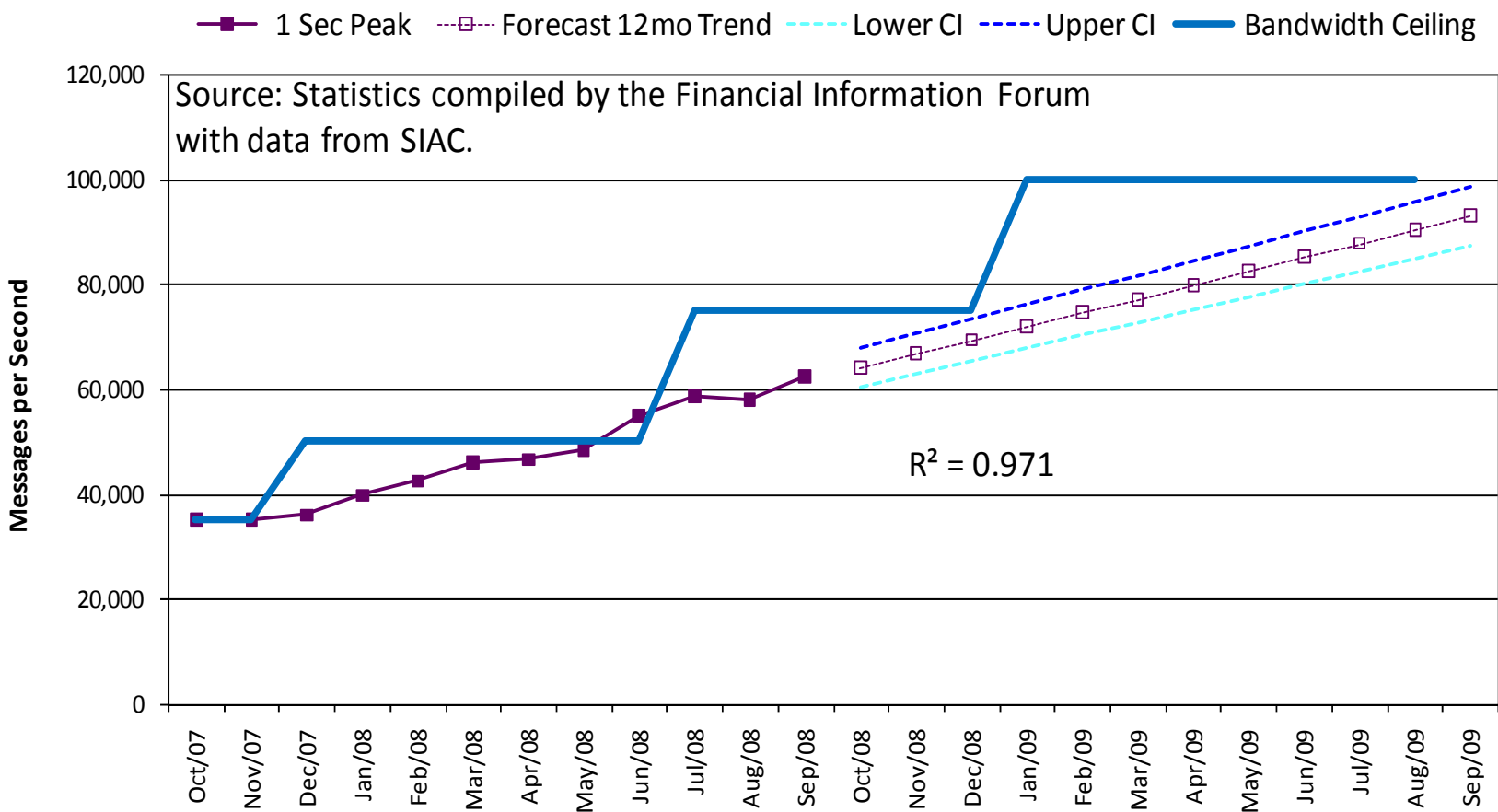
- Cross-Venue Share Volume based on BATS Market Volume data

- Self-Help Declarations based on NASDAQ system status messages (See Automated Equity Trading Analysis for data and charts)

Automated Trading Equity Analysis

CQS 1 Second Peak Forecasts

CQS - 1 Second Peaks

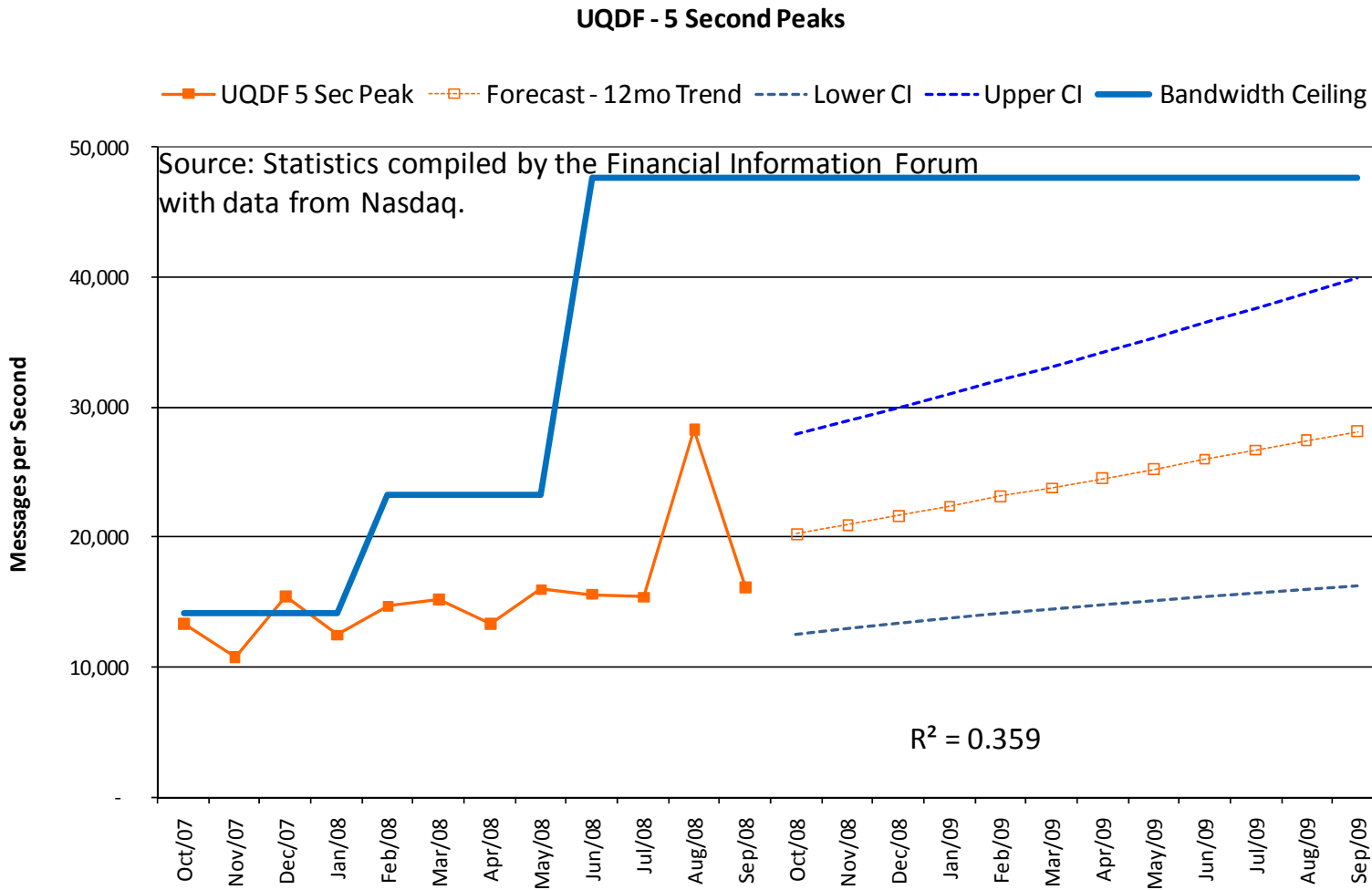


Actual 1 Second Peak	
Oct-07	35,113
Nov-07	35,241
Dec-07	36,055
Jan-08	39,734
Feb-08	42,460
Mar-08	46,048
Apr-08	46,540
May-08	48,298
Jun-08	54,766
Jul-08	58,670
Aug-08	57,899
Sep-08	62,369
Predicted 1 Second Peak	
Oct-08	64,106
Nov-08	66,793
Dec-08	69,393
Jan-09	72,079
Feb-09	74,766
Mar-09	77,192
Apr-09	79,879
May-09	82,478
Jun-09	85,252
Jul-09	87,765
Aug-09	90,451
Sep-09	93,138

- Forecasts since Jan 2008 have consistently under-predicted the September peak by a maximum of 8% and over predicted by maximum of 8%
- CQS Ceilings - 75,000 mps; Jan 2009: 100,000 mps
- CQS 1 Second Peak Annual Growth rate – 83.31%; Six Month Forecast 23.77% increase

Automated Trading Equity Analysis

UQDF 5 Second Peak Forecasts



Actual 5 Second Peak	
Oct-07	13,328
Nov-07	10,750
Dec-07	15,471
Jan-08	12,470
Feb-08	14,671
Mar-08	15,171
Apr-08	13,301
May-08	15,967
Jun-08	15,598
Jul-08	15,377
Aug-08	28,305
Sep-08	16,152
Predicted 5 Second Peak	
Oct-08	20,231
Nov-08	20,964
Dec-08	21,673
Jan-09	22,406
Feb-09	23,138
Mar-09	23,800
Apr-09	24,533
May-09	25,242
Jun-09	25,998
Jul-09	26,684
Aug-09	27,417
Sep-09	28,149

- Since Jul07, linear regression does not accurately predict UQDF 5 Second Peaks – low R-squared
- Current UQDF Ceiling: 47,700 mps
- UQDF 5 Second Peak Annual Growth Rate : 22%; Six Month Forecast 47% increase. Due to dramatic increase in UQDF 5 Second peak in August, the current six month forecast may not reflect actual trends; we will monitor the data and projections in the coming months.

Automated Trading Equity Analysis

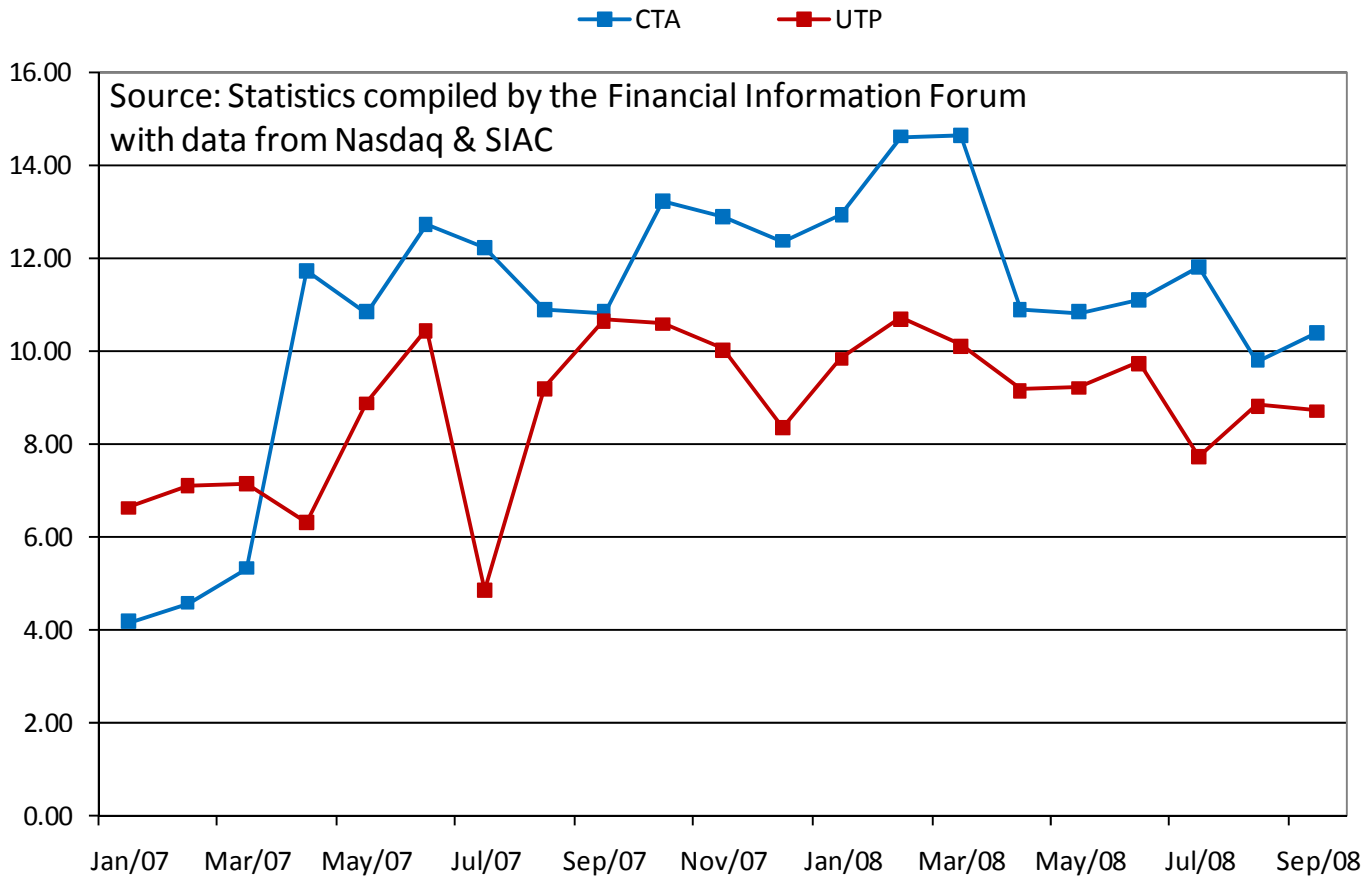
Accuracy Charts

Month	CQS - 1 Second Accuracy											Jun-08	Jul-08	Aug-08
	Actual	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08				
Oct-07	35,113	123.6%	-	-	-	-	-	-	-	-	-	-	-	-
Nov-07	35,241	107.7%	109.9%	-	-	-	-	-	-	-	-	-	-	-
Dec-07	36,055	112.7%	115.3%	113.5%	-	-	-	-	-	-	-	-	-	-
Jan-08	39,734	109.2%	112.0%	110.3%	107.3%	-	-	-	-	-	-	-	-	-
Feb-08	42,460	108.7%	111.7%	110.1%	107.0%	104.0%	-	-	-	-	-	-	-	-
Mar-08	46,048	105.9%	109.0%	107.4%	104.4%	101.3%	98.7%	-	-	-	-	-	-	-
Apr-08	46,540	110.7%	114.1%	112.5%	109.3%	105.9%	102.9%	102.0%	-	-	-	-	-	-
May-08	48,298	112.2%	115.8%	114.2%	110.9%	107.3%	104.0%	103.0%	100.9%	-	-	-	-	-
Jun-08	54,766	104.0%	107.5%	106.1%	103.0%	99.4%	96.2%	95.0%	92.9%	92.0%	-	-	-	-
Jul-08	58,670	101.6%	105.2%	103.8%	100.8%	97.2%	93.8%	92.6%	90.2%	89.3%	91.0%	-	-	-
Aug-08	57,899	107.8%	111.7%	110.2%	107.0%	103.0%	99.2%	97.8%	95.1%	94.0%	95.9%	99.9%	-	-
Sep-08	62,369	104.5%	108.4%	107.0%	103.8%	99.9%	96.0%	94.5%	91.7%	90.6%	92.4%	96.7%	97.7%	-

Month	UQDF - 5 Second Accuracy											Jun-08	Jul-08	Aug-08
	Actual	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08				
Oct-07	13,328	98.7%	-	-	-	-	-	-	-	-	-	-	-	-
Nov-07	10,750	124.6%	132.9%	-	-	-	-	-	-	-	-	-	-	-
Dec-07	15,471	95.0%	97.7%	92.0%	-	-	-	-	-	-	-	-	-	-
Jan-08	12,470	124.1%	128.0%	120.4%	124.7%	-	-	-	-	-	-	-	-	-
Feb-08	14,671	110.7%	114.6%	107.6%	111.8%	105.6%	-	-	-	-	-	-	-	-
Mar-08	15,171	111.9%	116.0%	108.9%	113.3%	106.8%	104.5%	-	-	-	-	-	-	-
Apr-08	13,301	133.5%	138.7%	130.0%	135.7%	127.5%	124.5%	120.9%	-	-	-	-	-	-
May-08	15,967	115.9%	120.7%	113.0%	118.2%	110.8%	108.0%	104.5%	96.2%	-	-	-	-	-
Jun-08	15,598	123.6%	129.0%	120.7%	126.4%	118.2%	115.1%	111.0%	101.2%	97.8%	-	-	-	-
Jul-08	15,377	130.3%	136.2%	127.3%	133.6%	124.7%	121.2%	116.5%	105.3%	101.1%	100.1%	-	-	-
Aug-08	28,305	73.5%	77.0%	71.9%	75.6%	70.4%	68.4%	65.5%	58.7%	56.0%	55.3%	56.0%	-	-
Sep-08	16,152	133.7%	140.1%	130.8%	137.7%	128.1%	124.2%	118.6%	105.6%	99.9%	98.4%	99.9%	129.3%	-

Automated Trading Equity Analysis

CTA and UTP Quote to Trade Ratio



Date	CTA Q/T Ratio	UTP Q/T Ratio	CTA as % of UTP Q/T Ratio
Jan-07	4.16	6.62	62.76%
Feb-07	4.56	7.09	64.25%
Mar-07	5.30	7.14	74.26%
Apr-07	11.70	6.32	185.26%
May-07	10.82	8.87	122.01%
Jun-07	12.70	10.45	121.59%
Jul-07	12.21	4.84	252.22%
Aug-07	10.88	9.20	118.25%
Sep-07	10.82	10.65	101.64%
Oct-07	13.21	10.59	124.77%
Nov-07	12.86	10.03	128.24%
Dec-07	12.36	8.34	148.10%
Jan-08	12.91	9.83	131.28%
Feb-08	14.60	10.70	136.48%
Mar-08	14.63	10.11	144.67%
Apr-08	10.89	9.16	118.83%
May-08	10.83	9.21	117.61%
Jun-08	11.09	9.73	113.98%
Jul-08	11.79	7.73	152.64%
Aug-08	9.78	8.82	110.86%
Sep-08	10.38	8.70	119.26%

- From January 2008, CTA Quote to Trade Ratio averaged 10:1
- From January 2008, UTP Quote to Trade Ratio averaged 9:1
- Quote to Cancel Ratio for equities estimated at 90%

Automated Equity Trading

Additional Statistics Available

- Market Data Peak Rates
 - CQS (1 Minute and Daily Message Peaks, Projections, Accuracy)
 - UQDF (1 Minute and Daily Message Peaks , Projections, Accuracy)
- Cross-Venue Share Volume
 - Total Share Volume (Tape A, Tape B and Tape C)
 - Tape A (NYSE Listed Securities)
 - Tape B (AMEX and Regional Listed Securities)
 - Tape C (NASDAQ Listed Securities)
- Average Trade Size
- Self-Help Declarations (Duration & Number of Instances)
- See full report at [FIF Market Data Capacity](#) site.