

Bandwidth Guidelines for SIAC-Hosted Services

AMEX Bandwidth Guidelines (see Note 1)

SERVICES	BANDWIDTH
IDCE (Terminal Server)	64 Kbps per user
MDDX	250 bytes per message (see Note 2)
Quote Entry and Market Data (ANTE)	20 Mbps (min)
AEMI Order Entry	64 kbps (session)
AEMI Quote Entry and Market Data	256 Kbps (session)
Amex Depth of Book	1.5 Mb
FTS	1Mbps

NYSE Bandwidth Guidelines

SERVICES	BANDWIDTH
Anonymous DOT <ul style="list-style-type: none"> - Order Entry - Administration - Trading Limit View - Action Log 	1 Kbps (see Note 3) 1 Kbits/relationship, every 20 sec 1 Kbits per message (see Note 4)
CMS via TCP/IP <ul style="list-style-type: none"> - FCS - FIX 	1 Kbps (see Note 3) 3 Kbps (see Note 3)
Customer Proprietary Services <ul style="list-style-type: none"> - Post & Booth Applications - WDS (Type IV/V) 	30 Kbps to 50 Kbps 3 Kbps per user
Dual Quotes	
FESC / Rules 123	5 Kbps per firm
Institutional XPress (Market Data)	65 Kbps per user
NYSE e-Broker (Market Looks)	3 Kbps per firm

NYSE Bandwidth Guidelines (Continued)

NYSE OpenBook - NYSE OpenBook™ - NYSE Real-time OpenBook™	500 Kbps peak (100 Kbps avg.) 1.2 Mbps/feed
Remote BBSS	56 Kbps per user
Remote DBK	56 Kbps per user
Remote SPF	25 Kbps per user
NYSE Info Tools ReTrac	.04 Mbps
NYSE Info Tools ProTrac	.39 Mbps
NYSE ARCA Book (Equities)	6 Mbps per user
NYSE ARCA Book (Options) – Top of Book	7.2 Mbps
NYSE ARCA Book (Options) – Depth of Book	18 Mbps
NYSE ARCA Gateway/FIX	1.5 Kbits *number of messages
NYSE ARCA Direct	0.2 Kbits *number of messages
NYSE ARCA FIX Drop Copy	1.3 Kbits *number of messages
NYSE ARCA Market Maker Quoting	.3 Kbits *number of messages
NYSE Alerts	100 Kbps
NYSE Quotes	2.4 Mbps

NMS Bandwidth Guidelines

Effective Date	Projected Peak One Minute (MPS)		Bandwidth (MPS)*		Bandwidth Plus 10% for Retransmissions (MPS)	
	CTS	CQS	CTS	CQS	CTS	CQS
July 3, 2007	5,600	35,000	1.80	18.27	1.98	20.01
October 29, 2007	10,000	50,000	3.23	26.10	3.55	28.71

- Two redundant streams of data are available from SIAC. These projections are for one stream only. For those data recipients who take in both streams, the bandwidth would be double.

OPRA Projections for 2008

Effective Date	Required Capacity (MPS)	Bandwidth (MPS)* ASCII/FAST	Bandwidth Plus 10% for Retransmissions ASCII/FAST	Total Messages Per Day
1/8/08	701,000	399.6/119.9	439.6/131.9	4.6 Billion
3/4/08	801,000	*/137.0	*/150.7	5.3 Billion
7/8/08	907,000	*/155.1	*/170.7	6.1 Billion

Two redundant streams are available. These projections are for one stream only.

* The ASCII network will not be available after January 25, 2008.

Please refer to the guidelines published by the OPRA and CTA Operating Committees. CTS/CQS and OPRA numbers are based on current maximum allowable rates, NOT actual rates.

SDCAN Bandwidth Guidelines

SERVICES	56 Kbps – 1.5 Mbps (See Note 5)
-----------------	---------------------------------

ArcaBook Bandwidth Guidelines

	Non-Compacted Session (all subscriptions)	OTC only Non-compact	LX only Non-compact	ETF only Non-compact	FIX Fast Compacted (all subscriptions)
Current	13 Mbps	7.33 Mbps	4.82 Mbps	.85 Mbps	4 Mbps
Year End 2007	20 Mbps	11.27 Mbps	7.42 Mbps	1.31 Mbps	6 Mbps
For Complete BCP Preparedness	40 Mbps	22.55 Mbps	14.84 Mbps	2.62 Mbps	12 Mbps

- Note 1:** Prior to ordering circuits from a common carrier or extranet provider, it is **STRONGLY RECOMMENDED** that the Customer first determines the total bandwidth required to support all of the anticipated services that will be requested. Using the table above as a guide, identify the desired services and the associated bandwidth demands. Calculate the total aggregate bandwidth required by adding up the bandwidth requirements of each of the individual services desired.
- Note 2:** To obtain the total bandwidth in Kbps for this service, multiply the expected message rate in messages per second by the message size. Then multiply the result by 0.008.
- Note 3:** CMS messages (Orders and Reports) are approximately equal to 1000 bits each. CMS messages in FIX format are approximately 2000 bits each. Customers will need to calculate their required bandwidth based on anticipated average, peak order, and report traffic.
- Note 4:** The number of Messages can range from “0” to maximum message order rate for each firm.
- Note 5:** Due to the large number of services available through the SDCAN, only a bandwidth range can be provided as a guideline. A more precise calculation of the required bandwidth can be determined at the Technical Implementation Meeting.

as of12/4/07