

## 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"> <li>- Order Entry</li> <li>- Administration</li> <li>- Trading Limit View</li> <li>- Action Log</li> </ul> | 1 Kbps (see Note 3)<br>1 Kbits/relationship, every 20 sec<br>1 Kbits per message (see Note 4) |
| CMS via TCP/IP <ul style="list-style-type: none"> <li>- FCS</li> <li>- FIX</li> </ul>   | 1 Kbps (see Note 3)<br>3 Kbps (see Note 3)  |
| Customer Proprietary Services <ul style="list-style-type: none"> <li>- Post &amp; Booth Applications</li> <li>- WDS (Type IV/V)</li> </ul>                  | 30 Kbps to 50 Kbps<br>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<br>- NYSE OpenBook™<br>- NYSE Real-time OpenBook™ | 500 Kbps peak (100 Kbps avg.)<br>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 2007

| 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

|                 |                                 |
|-----------------|---------------------------------|
| <b>SERVICES</b> | 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.