



After Hours Trading

INTERACTION DESIGN SPECIFICATIONS

CRS INTERACTIVE
VERSION 6
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CONFIDENTIAL TO CHARLES SCHWAB & Co., INC.



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After Hours Trading

1 Project Overview

1.1 Introduction

This document outlines the interaction design specifications for after hours trading in Velocity. After hours trading (AHT) will eventually allow users to trade on the New York Stock Exchange and Nasdaq when they offer extended hours in 2000. Until then Velocity users will be able to trade outside standard exchange hours through a connection with an electronic communications network (ECN). The initial business assumption is that the Velocity offering will leverage the existing infrastructure.

1.2 Scope of interaction design specification

In its initial offering, the AHT component of the Velocity Trading Desktop will have only a rudimentary impact on the interaction design. The main modification to the existing interface is the addition of a timer display which will indicate to the user how much time remains within a given session (either standard or after hours). Current AHT constraints are also reflected in the Quotes and Order Entry windows.

1.3 Deliverables

The release date for after hours functionality is TBD. The project requirements must be completed and approved by the Trading Desktop team.

Business Requirements – Jon Pedley
Interaction Design Specification – Jim Coughenour
Interaction Design – Darin Rock, Connie Amador
Usability Testing – Richard Mander, Jon Pedley
Functional Specification – Leticia Redwood
UI and Component Development – Brad McCarty
Quality Testing – Jeff Michael
Compliance Approval – Richard Barrow

Version and Push Date – Andrew Armstrong, Karen Tam
Project Sign-off – Karen Tam

2 Interaction Design

2.1 Overview

The main modifications to the existing interaction design for AHT include:

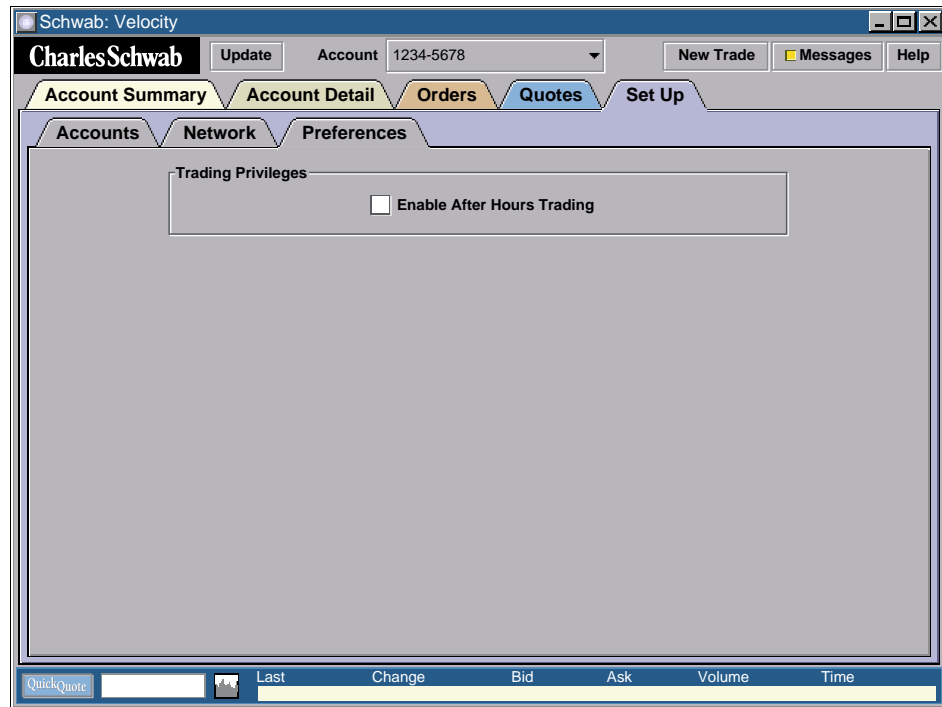
- The ENABLE feature in the Set Up/Preferences window
- The AHT Trading Agreement
- The AHT session timer
- A crescent moon icon indicating that the user is in AHT mode (the AHT icon)
- The display of Quotes data (for symbols available in AHT)
- The Order Entry and Verification display (to reflect AHT parameters)

2.2 Notification of AHT offering

At the commencement of the AHT offering, the first thing Velocity users will see is the standard notification message informing the user that AHT is now available. The notification will also include a brief explanation of what AHT is and how the user can enable it. The user will then be directed to the Set Up/Preferences window.

2.3 Setting up AHT preferences

The Preferences tab select within the Set Up container allows the customer to enable AHT.



When the user clicks the ENABLE AFTER HOURS TRADING check box, the After Hours Trading Agreement is invoked.

2.4 The After Hours Trading Agreement

The After Hours Trading Agreement informs the user of the risks associated with AHT. The user is required to indicate his or her acceptance of these risks before AHT component of Velocity is enabled.



If the user clicks the I DISAGREE button, Velocity returns the user to the Set Up/ Preferences window with the ENABLE button deselected. If the user clicks the I AGREE button, AHT is enabled.

NOTE: Once AHT has been enabled, all the AHT user interface components described below become a permanent feature of the Velocity Trading Desktop interface design.

2.5 The AHT time button

The main modification to Velocity's interface design is the addition of the AHT button in the top row of the base container, indicated by the AHT icon.



When the user clicks the AHT button, Velocity launches a floating container that displays session and/or time data. What the user will see depends upon:

- whether the user has logged onto Velocity; and
- whether AHT is available.

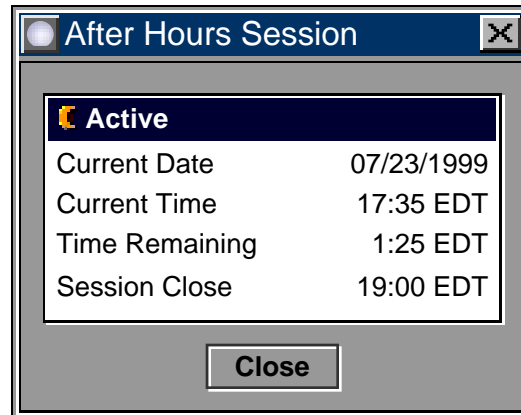
2.5.1 If the user is not logged on...

If the user is not logged on, clicking the AHT icon will bring up the log on dialog. The user must be in an active session in order to access AHT functionality.

NOTE: If the server detects that the user has not been active within the last 30 minutes, the user is logged off.

2.5.2 If AHT is available...

If the user clicks the AHT button within the time period that AHT is available, Velocity launches the AFTER HOURS SESSION floating container shown below.



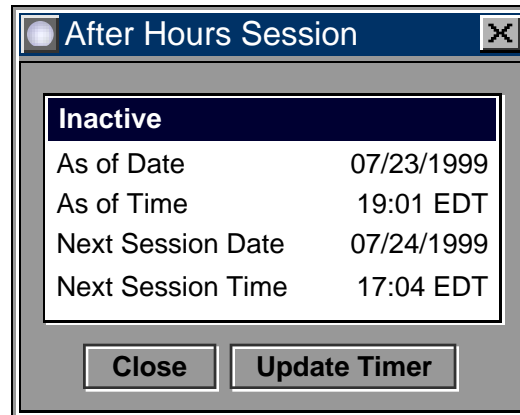
The “active” AFTER HOURS SESSION container informs the user that AHT is active, and displays the current date and time, the time remaining for AHT, and the time that the AHT session will close. All time data are calculated from the configuration file on the server. The AHT icon and midnight blue title bar background¹ reinforces the user experience of using the AHT function.

This display is a non-modal container. The user may close the container at any time by clicking the CLOSE button. If the session expires while this display is open, the container will redraw to display the “Inactive” time data (see “If AHT is not available...,” on p. 10).

1. “Midnight blue” RGB code: R=0, B=0, G=51. This color-coded background indicator appears in all AHT containers behind the AHT icon.

2.5.3 If AHT is not available...

If the user clicks the AHT button outside the time period that AHT is available, Velocity launches the AFTER HOURS SESSION floating container shown below.

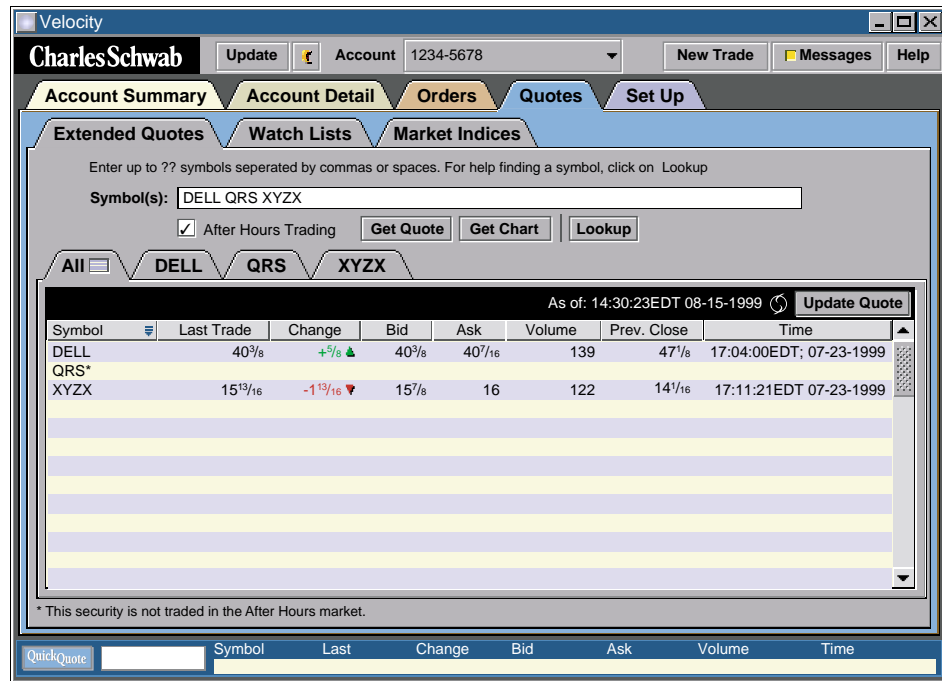


The “inactive” AFTER HOURS SESSION container informs the user that AHT is unavailable, and displays the current date and time, the date for the next AHT session, and the time that the AHT session opens. All time data are calculated from the configuration file on the server.

This display is a non-modal container. The user may close the container at any time by clicking the CLOSE button. If the user clicks the UPDATE TIMER button, the display will redraw according to the availability of AHT: if unavailable, the inactive container will refresh; if available, the container will redraw to display the active container (see “If AHT is available...,” on p. 9).

2.6 The Extended Quotes container during AHT

The Extended Quotes user interface is modified in two respects: (i) an AFTER HOURS checkbox is added in the GET QUOTE row; and (ii) Velocity tags any symbols unavailable in AHT in the composite quote.



AHT QUOTE DATA. If the user checks the AFTER HOURS TRADING checkbox, then clicks any of the other buttons in the row, Velocity displays AHT data for the following fields: Last Trade, Change, Bid, Ask, Volume, Previous Close, and Time.

NON-AHT QUOTE DATA. If the user has entered a symbol for a stock unavailable in AHT, Velocity tags the symbol with an asterisk which references the explanatory footnote at the bottom of the display grid: "This security is not traded in the After Hours market."

2.7 Quote Detail display during AHT

For any legitimate stock symbol entered in the SYMBOL(s) text field, the user may view quote detail by clicking the tab select for that symbol. In the example below, the quote detail for “Dell” is illustrated.

The screenshot shows the Charles Schwab Velocity trading interface. The 'Quotes' tab is selected, and the 'DELL' symbol is chosen. The quote details for DELL Computer Corp. are displayed, comparing the 'After Hours Quote' (as of 17:20:15EDT 07-23-1999) with the 'Last Standard Session' (as of 14:01:12EDT 07-23-1999). The 'After Hours Quote' shows a last trade of 40 3/8, a net change of +5/8, and a total volume of 139. The 'Last Standard Session' shows a last trade of 40 3/8, a net change of +7/8, and a total volume of 21,552,100. A note at the bottom states: '* This security is not traded in the After Hours market.'

| After Hours Quote | | Last Standard Session | |
|-------------------|---------------------------|-----------------------|---------------------------|
| As of | 17:20:15EDT 07-23-1999 | As of | 14:01:12EDT 07-23-1999 |
| Last Trade | 40 3/8 | Last Trade | 40 3/8 |
| Net Change | +5/8 ▲ | Net Change | +7/8 ▲ |
| % Change | 1.37 | % Change | 1.50 |
| Bid Price | ----- | Bid Price | 40 3/8 |
| Ask Price | 40 7/16 | Ask Price | 39 7/16 |
| Bid Size | 0 | Bid Size | 27 |
| Ask Size | 27 | Ask Size | 28 |
| Total Volume | 139 | Total Volume | 21,552,100 |

During AHT, the nested quote detail container provides the quote supplied by the ECN during AHT as well as the quote from the last standard session for a side-by-side comparison. The first row in the grid display provides specific “as of” time data. Again, the AHT icon/header display reinforces the user experience of being in an after hours trading session.

If the user requests quote detail for a stock which is not available during AHT, the “N/A” acronym will appear in the left display fields, but the quote from the last standard session will still appear in the right display.

2.8 The Order Entry container during AHT

If the user has enabled AHT, the design for the Order Entry window (launched by the NEW TRADE button in the base container) is modified in the following ways:

WHAT'S NEW

- The pull-down next to **Trade Type** displays the AFTER HOURS EQUITY option.
- If the AFTER HOURS option is selected from the Trade Type menu, the pull-down menu next to **Order Type** disappears and is replaced with the text “Limit Orders Only.”
- If the AFTER HOURS option is selected from the Trade Type menu, the pull-down menu next to **Timing** disappears and is replaced with the text “After Hours Only.”
- If the AFTER HOURS option is selected from the **Trade Type** menu, the user sees the “After Hours Trading Notes” (within a header row displaying the AHT icon/midnight blue background) which explain the special considerations operative in AHT.

WHAT'S GONE

- The “Special Conditions” selections disappear.
- The SAVE TRADE button disappears.

2.9 Order Submission during AHT

The Order Submission container design is identical to the standard verification dialog with two exceptions:

- The message at the top of the window reads: “Verify and place your after hours order for account # xxxx” and includes the AHT icon.
- The Time Limit field will read “After Hours Trading.”



3 Future Enhancements

4 Help & FAQ



5 Revision History

Main change from version 5: the separate container for Quote Detail disappears and is replaced by a nested container. (See “Quote Detail display during AHT” on p. 12.)