FIRSTCLASS® White Paper

FirstClass Software Accessibility

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FIRSTCLASS®

Powering collaborative online communities.

Overview

Schools, colleges, universities, business enterprises, and other types of organizations are generally comprised of diverse groups of people, some of whom may have disabilities. It is incumbent upon organizations to provide to its constituents effective access to their physical and virtual resources. With computers and the Internet now an integral part of everyday life, software accessibility has become increasingly important.

Software accessibility means that the software's interfaces may be used by the widest possible audience of people, inclusive of those with visual, hearing, speech, mobility and cognitive impairments. This is maximized when the software application works in concert with both the accessibility features inherent in the operating system and hardware platform, and additional third party assistive technology.

This white paper discusses some of the challenges and solutions involved with making communication and collaboration software accessible. It also describes the FirstClass approach to accessibility, adherence to guidelines and standards, accessibility features, and ongoing testing and enhancement efforts.

Accessible Communication and Collaboration Software

Since communication and collaboration software is used to interact with others, including people with and without disabilities, it presents some unique challenges when it comes to accessibility, compared with other types of software such as office productivity applications.

Accessibility standards provide important guidelines to be observed during the software development process. The United States Government's Section 508 of the Rehabilitation Act of 1973 is one such standard. The Web Content Accessibility Guideline (WCAG), published by the World Wide Web Consortium's (W3C) Web Accessibility Initiative (WAI), is the other primary reference resource. These two standards are related, but they specify different requirements in a number of instances. Apart from technical differences, Section 508 requires that United States Federal Agencies' electronic and information technology be accessible to people with disabilities and is enforceable by law, whereas compliance to the WCAG is entirely voluntary.

Assistive Technology

In many cases, people with disabilities rely on assistive technology to facilitate the use of computers. Assistive technology can be additional hardware, software, or a combination of both that acts as a facilitator between the user and the application.

The most widespread example of assistive technology for the visually impaired is the screen reader. Screen reader software "detects" text displayed on a computer screen and "speaks" the text to the user using text-to-speech (TTS) synthesis. Screen readers also facilitate navigation and related operations (using menus, clicking buttons, filling out forms, switching applications, etc.). However, for screen readers to be effective software applications must be implemented in such a way that screen readers can effectively present the spoken text to the user in the proper context.

Text Readers differ from screen readers in that they are not intended for use by people that are totally without vision. With a text reader, the user highlights some text on the screen which is then read aloud. This can be very helpful for people with limited vision and for those with cognitive disabilities. In some cases, text readers will highlight each word on the screen as it is being spoken, which is helpful for individuals with learning disabilities that may require a multi-sensory interface.

Other forms of assistive technology include oversized/high resolution monitors, ergonomic/oversized keyboards, alternate pointing devices, foot mice, wireless headsets, amplified/hands free telephones, and alternative access methods such as the use of a telephone to retrieve text based information.

The FirstClass Approach to Accessibility

Open Text has done extensive work to make FirstClass broadly accessible for diverse user communities with varying accessibility challenges. We continually refine FirstClass based on customer feedback and accessibilities standards. Our goal is to make FirstClass equally accessible to all people.

The FirstClass Communication and Collaboration Solution

FirstClass is a complete communication and collaboration software solution. FirstClass includes email, voice messaging, instant messaging, collaborative discussion conferences, file sharing, web publishing, document management, and more. FirstClass is used by 8 million people around the world, in organizations both small and very large, for effective communication and collaboration.

FirstClass is built on a client-server architecture that is extremely efficient and highly scalable. FirstClass is designed to be accessed "anytime, anywhere" by a wide range of access methods. Since all user information is contained centrally in the collaborative Network Store, it can be accessed in many different ways including the desktop client, web browser, landline telephone, mobile phone, and personal digital assistant (PDA). Because the FirstClass architecture is based on providing user access in wide variety of ways, it is well suited to supporting effective interaction with screen readers and other forms of assistive technology.

FirstClass Interfaces and Accessibility Features

There are generally accepted techniques available to meet various accessibility guidelines. FirstClass user interfaces and their accessibility features will be described in this section, highlighting many of these principles.

FirstClass Screen Reader Web Interface

As the name of this fully featured web interface suggests, it is specifically designed to be used in conjunction with assistive technology. The Screen Reader web interface

- is primarily text-based,
- does not use images,
- does not use image maps,
- implements minimal style formatting without using style sheets, and
- does not rely on color to convey information.

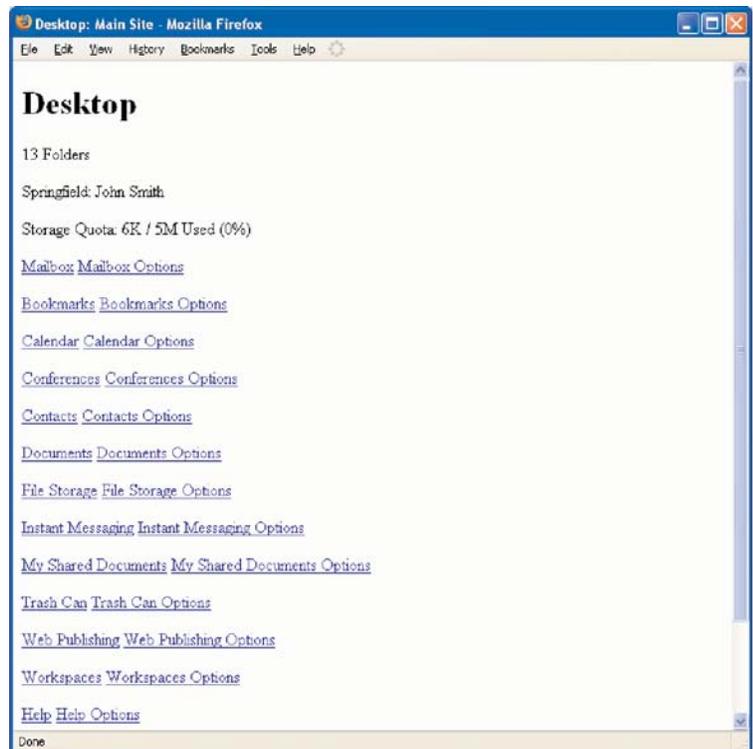This makes it easier for screen readers to parse and read the text to visually impaired users.

Figure 1   Screen Reader Web Interface Desktop Page

Accessible Navigation

The Screen Reader web interface provides for quick and simple navigation. Pages are laid out linearly in as logical a fashion as possible, rather than using frames or layout tables for formatting. The text for links has been chosen to make sense in the context of messaging and collaboration tasks.

Navigation menus may be at the located at the top or bottom of each page as determined by the default system settings (Figure 2), and can be easily overridden by the user's personal preference setting (Figure 3).
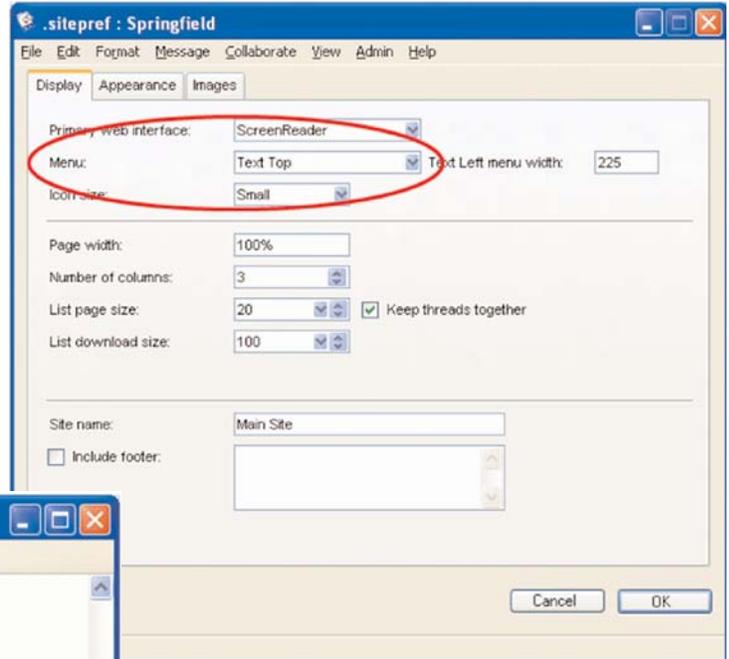

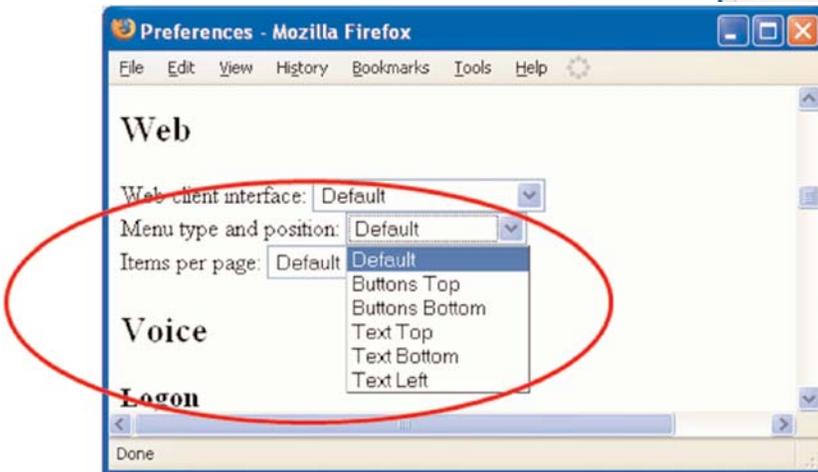Figure 2 Menu Position System Setting Preference

Figure 3 Menu Position Personal Preference

With the Menu preference set as Text Top in the system settings, the navigation menus are placed at the top of pages, preceded by a Skip Navigation link. Skip navigation links enable users to travel directly to the main content on the page, which in the case of Figure 4 is the list of messages in the user's mailbox.
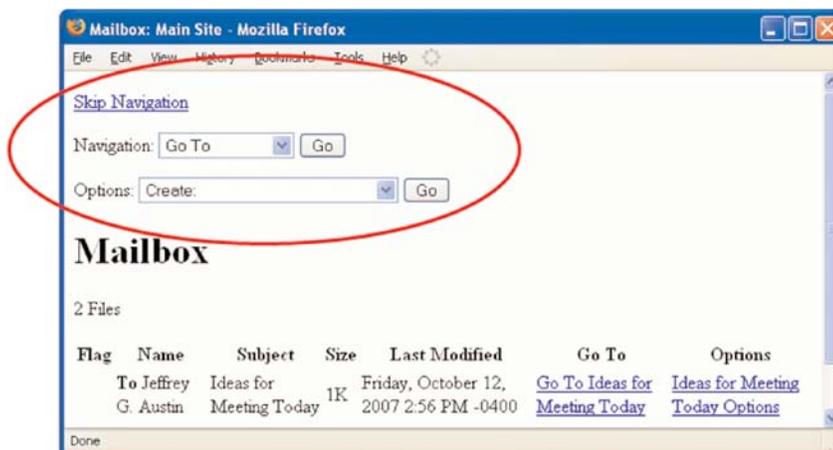

Figure 4 Navigation Menus Positioned at Top of Page

With the Menu preference set to anything other than Text Top, the navigation menus are placed at the bottom of pages. Users have the freedom to decide which placement option best suits their needs.
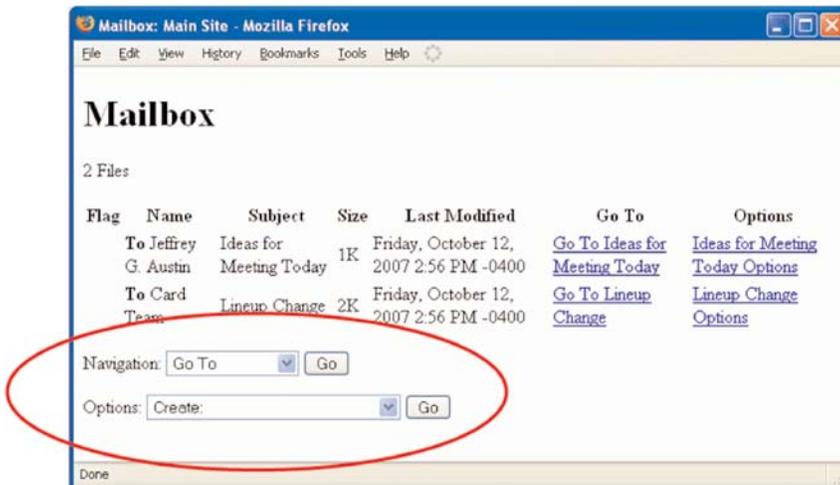

Figure 5 Navigation Menus Positioned at Bottom of Page

Accessible Forms

The Screen Reader web interface uses forms for inputting information such as composing a new message, adding a new contact, or inserting a calendar event. Like most forms, they are comprised of prompts such as Subject:, To:, and Cc: that describe what information is being requested, and the text field where the information is to be entered by the user.
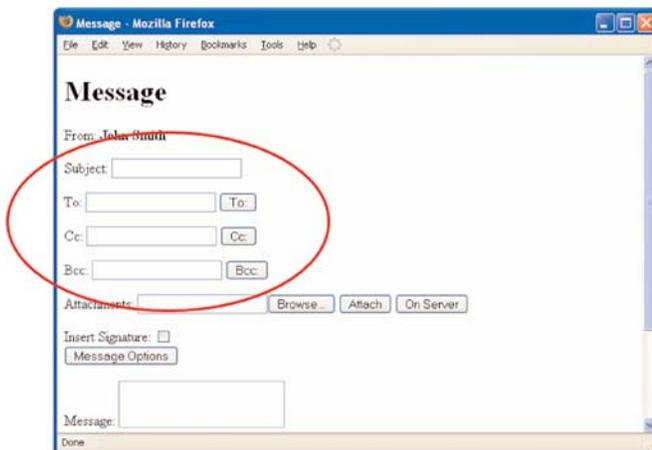

Figure 6 New Message Form

When sighted users fill out forms, they use the visual proximity of the prompt and the text field to associate the two. Referring to Figure 6 above as an example, the subject text field is directly to the right of the prompt "Subject:". It is understood that they are related. Due to the way in which web forms are often created and formatted, drawing this association can be difficult for screen readers and other forms of assistive technology. To avoid ambiguity, prompts can be tagged with the label element, and both the prompt and text field can be further tagged with a unique identifier. Tags are not visible when viewed in a web browser, but a screen reader will read them in the underlying HTML. The HTML code for the subject field shown in Figure 6 looks like this:

<label for="f7">Subject:</label> <input id="f7" name="Subject" type="text" value=""/>

Notice that the label and the text field (indicated by the input tag) both refer to identifier f7. Screen readers use these identifiers to prompt users to enter the correct information in each field of the form.

Select, or drop-down, menus are for accessibility similar to text entry fields. An advantage that select menus have over text entry fields is that the prompt can be easily placed in the select menu itself, without introducing extra keystroke side effects for the user. If the prompt is placed in the select menu as the default item (selected="selected") with a null value (value=""), then users will always encounter the prompt as they tab to the select menu. Text entry fields can also be coded to place the prompt directly in the field itself, but subsequently requires the user to first delete the default prompt text before entering the required information. The HTML code for the Navigation select menu shown in Figure 7 below looks like this:

```
<label for="Nav">Navigation:</label>
<select id="Nav" name="NavDD">
<option value="" selected="selected">Go To</option>
<option value="/Login/Open-Item/Mailbox/">Mail</option>
<option value="/Login/Open-Item/Contacts/">Contacts</option>
<option value="/Login/Open-Item/Calendar/">Calendar</option>
<option value="/Login/Directory">Directory</option>
....
```
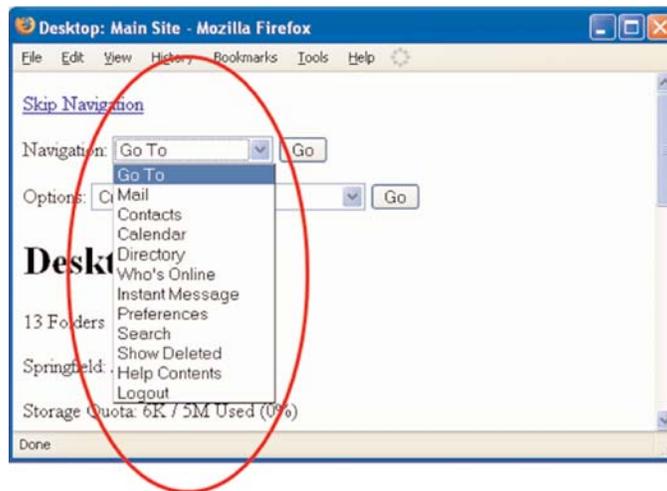

Figure 7   Navigation Select Menu

Push buttons are used to activate an action on, or submit a form. When a user tabs to a push button, it will get focus and assistive technology will announce the content of that button. The text that is available to assistive technology is contained in the value attribute. The HTML code for the Navigation menu Go push button shown in Figure 8 below looks like this:

```
<input type="submit" value="Go" title="Navigation"/>
```
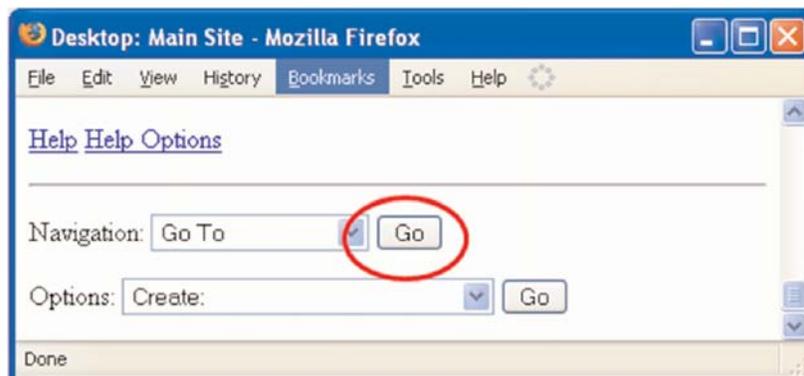

Figure 8   Navigation Go Push Button

Checkboxes (for selecting any number of choices) and radio buttons (for selecting mutually exclusive options) should be programmatically linked to their respective prompts for accessible assistive technology rendering, in the same manner as text entry fields and select menus. The label tag is normally used to associate the prompt text with the checkbox or radio button control. The HTML code for the first checkbox shown in Figure 9 with the appropriate label tag included looks like this:

```
<input type="checkbox" id="f2203.0_0" name="P0R0"
onclick="tr(0,0x0001);" checked="checked"/><label for="f22030_0">Edit
permissions</label>
```
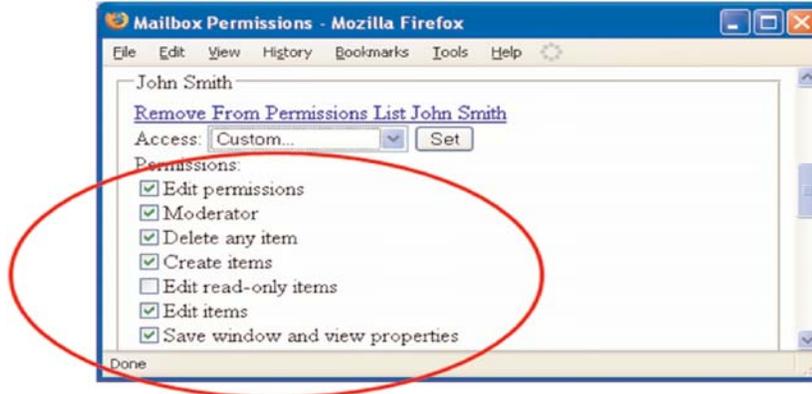

Figure 9 Mailbox Permissions Checkboxes

Other Design Optimizations

The Screen Reader web interface is designed not only to meet accessibility guidelines, but also to respect usability best practices. Examples of this are tab indexing that moves the focus from field to field, guide text that is unique in the fully labeled forms, no buttons that have different functions have the same name, and users are never launched to a new page without being first notified.

FirstClass Client Interface

The FirstClass client includes user preferences to assist people that can see with enlarged or high contrast type, and efficient keyboard operations and shortcuts for users with range of motion impairments.

Content Viewing Size

FirstClass objects, such as messages and documents, can be made more readable by using Zoom. Entering a value greater than 100% for Zoom will magnify the content being viewed. This preference only affects the size as you view it. The original size is used when the content is printed.
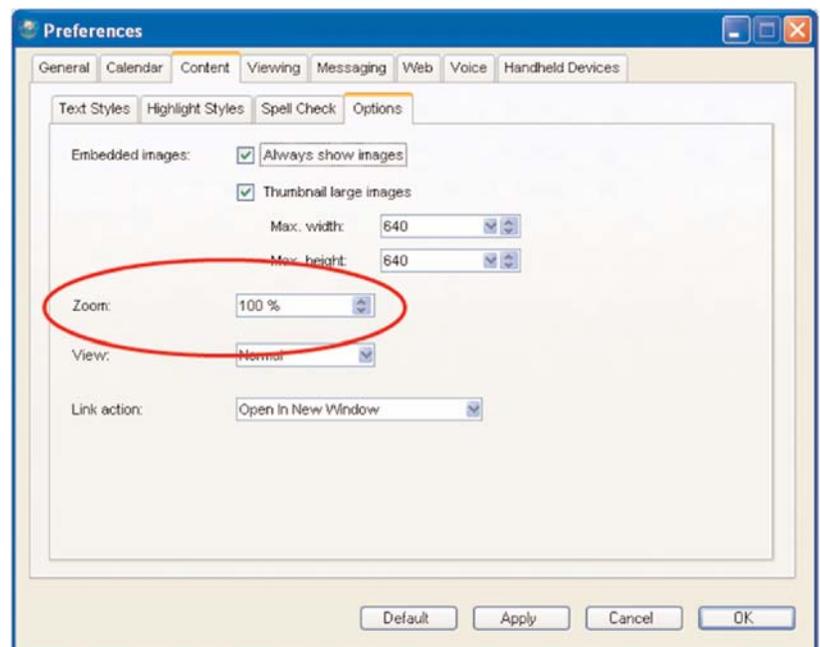

Figure 10 Zoom Personal Preference

To temporarily change the view magnification for a particular object, users choose or enter the magnification using the zoom control on the status bar of the object pane. The control is highlighted in Figure 11. The next time this object is opened, the display will revert back to the user's Zoom setting in their preferences.
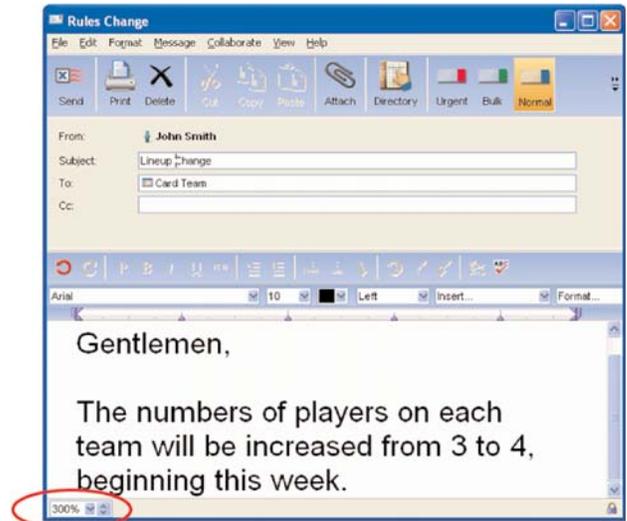

Figure 11 Object Zoom Preference

Text Size, Font, and Color

The Text Styles tab in the user Preferences settings, shown in Figure 12, is used to specify the appearance of default text in normal content and in presentations. The font type, size, and color may all be configured. Content can become being more accessible by changing these settings to best benefit the user.
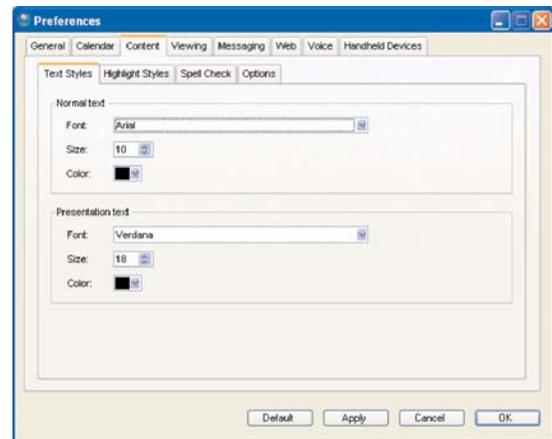
Figure 12 Text Styles Personal Preference

The Highlight Styles tab, shown in Figure 13, is used to specify the default appearance of quoted text in replied to messages, and link text.

Figure 13 Highlight Styles Personal Preference

Scalable Icons and Icon Titles

Icons representing objects can be dynamically resized to help make them more accessible. This feature is enabled by choosing View by Scaled Icon feature in the View menu (Figure 14), and using the slider bar in the Icons dialog (Figure 15) to increase the pixel size.
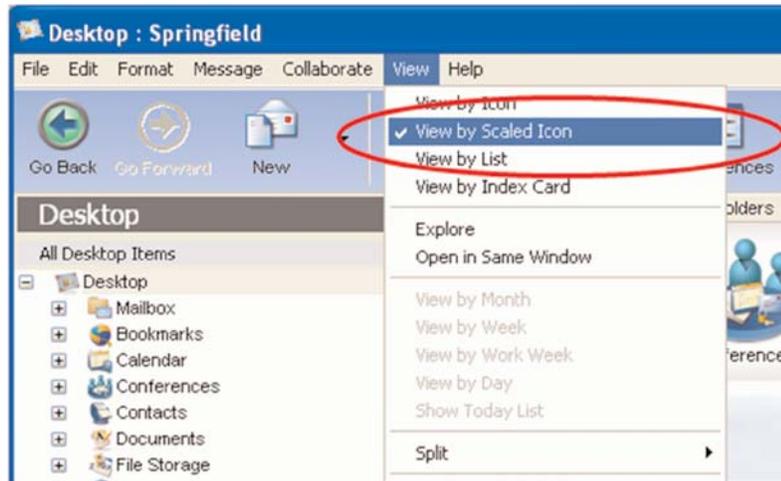
Figure 14 View Select Menu
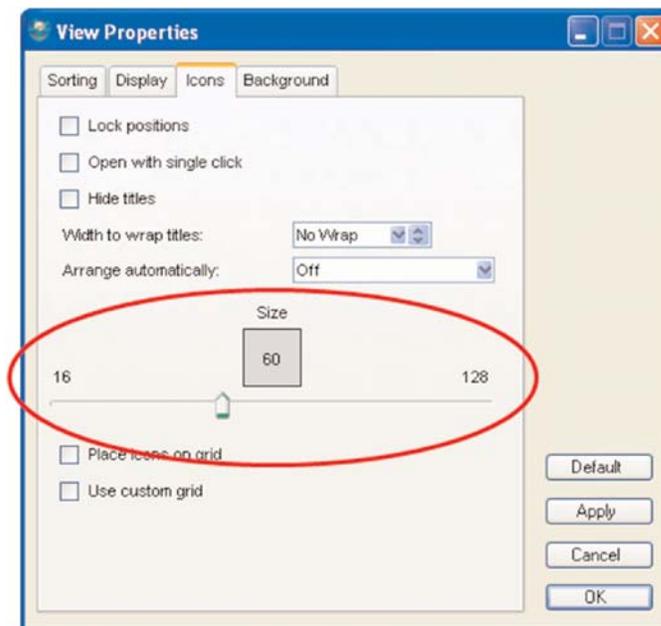
Figure 15 Icons View Property

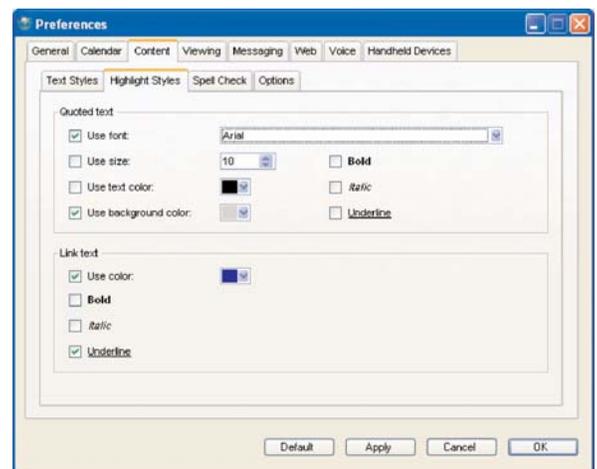If a background picture that is dark or busy is added to a pane, the readability of icon titles in that pane may suffer due to the resulting low contrast. Disabling the Transparent text feature in the Background dialog (Figure 16) results in icon titles being displayed against a high contrast white background (Figure 17).

Figure 16 Background View Properties
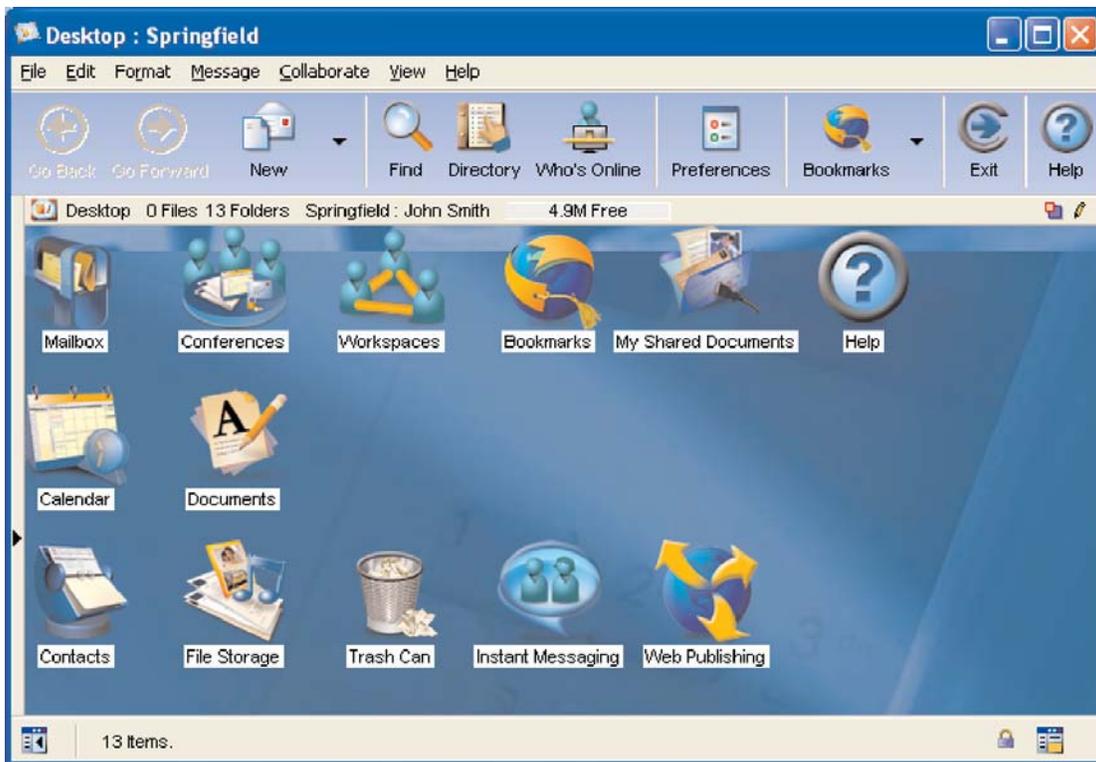
Figure 17 Desktop View With Transparent Text Background Turned Off

Addressing Messages using the Directory Auto-Fill

All user and conference names known to the FirstClass server, including personal contacts and mail lists, are stored in the directory. When addressing a message to any user or conference in the directory, only a partial name needs be entered. The whole name is automatically filled in if it is unique in the directory, saving keyb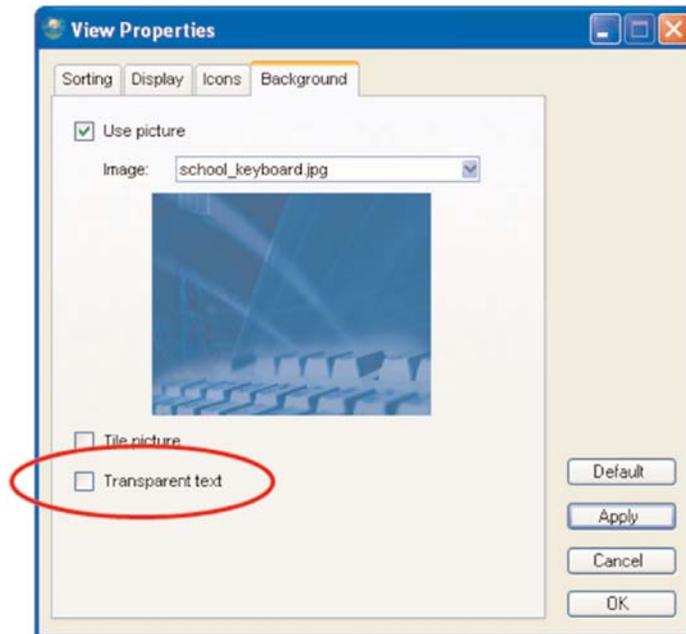oard strokes. Otherwise, a list of all names that match is presented in a select menu. Simply pressing the Enter/Return key on a highlighted name chooses it.
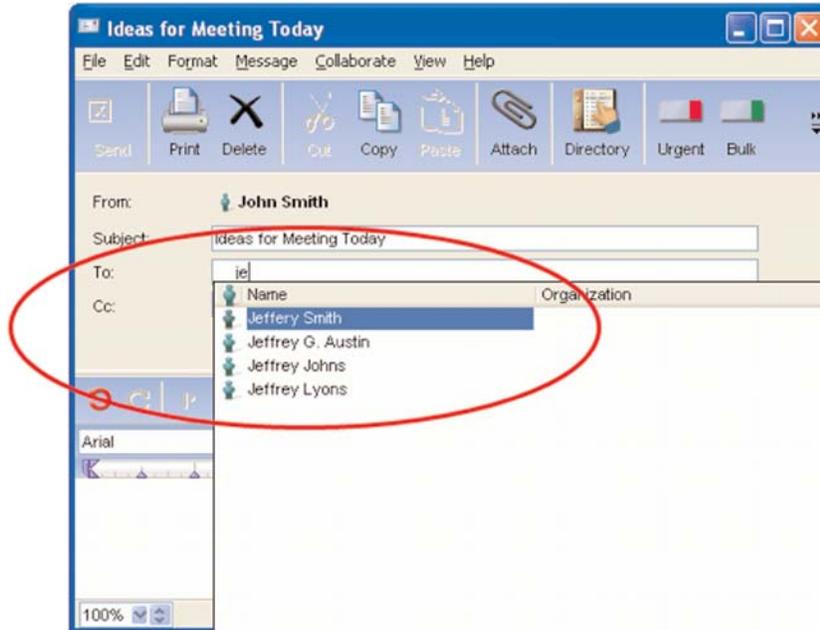
Figure 18 Directory Match Select Menu

The Toolbar

Each type of FirstClass container has its own toolbar. Toolbar buttons provide easy to reach shortcuts to a number of common commands. These buttons are quick alternatives to choosing commands from menus. Users can specify the size of toolbar buttons, which buttons are on a toolbar, the order in which they appear, and whether they include text (Figure 19). The toolbar may be displayed or hidden, to best suit the needs of the user.
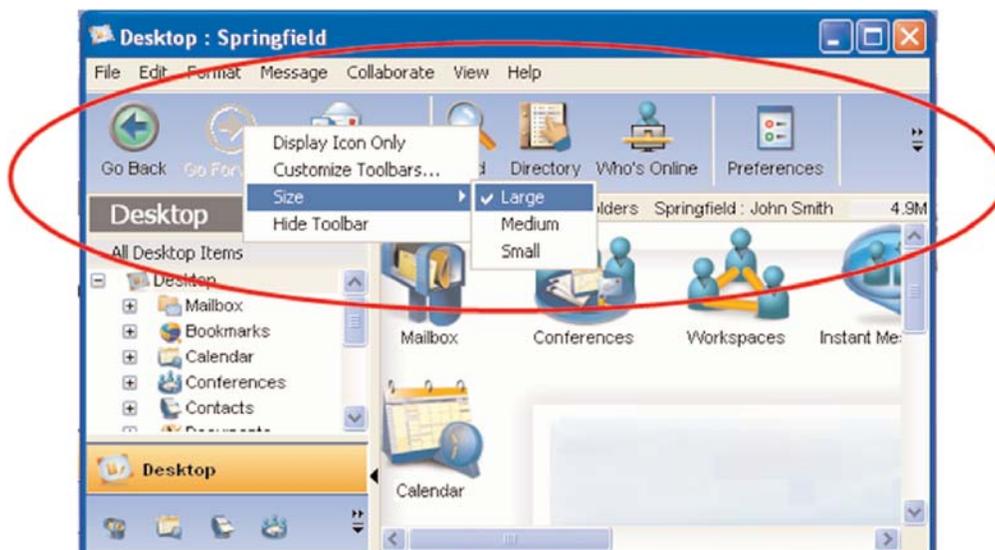
Figure 19 Toolbar Select Menus

Keyboard Shortcuts

People that have difficulty using the mouse may find it easier to use keyboard shortcuts (also known as accelerator keys, shortcut keys, or hotkeys). These are a set of keyboard keys that when pressed simultaneously, perform a predefined task. Keyboard shortcuts are used to navigate through menus and toolbars, and save the user time.

FirstClass supports an extensive number of keyboard shortcuts. The table below summarizes them.

| Shortcut	Windows	Mac	Linux
Approve	Ctrl `	Cmd `	Ctrl `
Attach	Ctrl T	Cmd T	Ctrl T
Black		Option Cmd K	
Blue		Option Cmd B	
Bold	Ctrl Shift B	Shift Cmd B	Ctrl Shift B
Brown		Option Cmd W	
Check Spelling	Ctrl Shift L	Shift Cmd L	Ctrl Shift L
Close	Ctrl W	Cmd W	Ctrl W
Collapse and deselect (thread)	Shift-left arrow	Shift-left arrow	Shift-left arrow
Collapse (thread)	left arrow or spacebar	left arrow or spacebar	left arrow or spacebar
Collapse (tree view)	left arrow	left arrow	left arrow
Connect	Ctrl K	Cmd K	Ctrl K
Copy	Ctrl C	Cmd C	Ctrl C
Cut	Ctrl X	Cmd X	Ctrl X
Delete	Ctrl D	Cmd D	Ctrl D
Delete the next word	Ctrl Delete	Option Forward Del	Ctrl Delete
Delete the previous word	Ctrl Backspace	Option Delete	Ctrl Backspace
Deselect last (icon view)	Shift-left arrow	Shift-left arrow	Shift-left arrow
Directory	Ctrl L	Cmd L	Ctrl L
Disconnect	Ctrl K	Cmd K	Ctrl K
Exit	Alt Shift F4		
Expand and select (thread)	Shift-right arrow	Shift-right arrow	Shift-right arrow
Expand (thread)	right arrow or spacebar	right arrow or spacebar	right arrow or spacebar
Expand (tree view)	right arrow	right arrow	right arrow
Filter view cycling	Insert		
Find	Ctrl F	Cmd F	Ctrl F
Find Next	F3 or Ctrl G	Cmd G	Ctrl G
Find Previous	Shift F3	Shift Cmd G	
Format Paragraphs	Ctrl Shift M	Shift Cmd M	Ctrl Shift M
Format selection	Ctrl M	Cmd M	Ctrl M

Shortcut	Windows	Mac	Linux
Forward	Ctrl Shift =	Shift Cmd =	Ctrl Shift =
Get Info		Cmd I	
Gray		Option Cmd E	
Green		Option Cmd G	
Help	F1		
Help Contents	Shift F1		
Hide Bcc	Ctrl B	Cmd B	Ctrl B
Hide client		Cmd H	
History	Ctrl H	Shift Cmd H	Ctrl H
Insert File	Ctrl Shift T	Shift Cmd T	Ctrl Shift T
Insert Page Break	Shift Enter	Shift Return	Shift Enter
Insert Signature	Ctrl Shift S	Shift Cmd S	Ctrl Shift S
Italic	Ctrl Shift I	Shift Cmd I	Ctrl Shift I
Larger	Ctrl]	Cmd]	Ctrl]
Magenta		Option Cmd M	
Mark as Read/Unread	Ctrl -	Cmd -	Ctrl -
Move between panes	Ctrl up or down arrow	Cmd up or down arrow	Ctrl up or down arrow
New Message	Ctrl N	Cmd N	Ctrl N
Next in Thread	F2	Cmd /	Ctrl /
Next Unread	Ctrl U	Cmd U	Ctrl U
Open Bookmarks	Ctrl 3	Cmd 3	Ctrl 3
Open Calendar	Ctrl 6	Cmd 6	Ctrl 6
Open Contacts	Ctrl 2	Cmd 2	Ctrl 2
Open Desktop	Ctrl 0	Cmd 0	Ctrl 0
Open from navigation bar in a new window	Shift-click button	Shift-click button	Shift-click button
Open Mail	Ctrl 1	Cmd 1	Ctrl 1
Open Memos	Ctrl 8	Cmd 8	Ctrl 8
Open My Shared Documents	Ctrl 9	Cmd 9	Ctrl 9
Open Résumé	Ctrl 5	Cmd 5	Ctrl 5
Open Selected	Ctrl O	Cmd O	Ctrl O
Open Voice Greetings	Ctrl 7	Cmd 7	Ctrl 7
Open Web Publishing	Ctrl 4	Cmd 4	Ctrl 4

Shortcut	Windows	Mac	Linux
Orange		Option Cmd O	
Paste	Ctrl V	Cmd V	Ctrl V
Paste Special	Ctrl Shift V	Option Cmd V	Ctrl Shift V
Path display	Ctrl-click title bar	Cmd-click title bar	Ctrl-click title bar
Permissions	Ctrl ;	Cmd ;	Ctrl ;
Plain	Ctrl Shift P	Shift Cmd P	Ctrl Shift P
Previous in Thread	Shift F2	Cmd Option /	Ctrl Alt /
Print	Ctrl P	Cmd P	Ctrl P
Properties	Alt Enter		Alt Enter
Quit		Cmd Q	Ctrl Q
Quoted	Ctrl Shift '	Shift Cmd '	Ctrl Shift '
Red		Option Cmd R	
Redo	Ctrl Y	Cmd Y	Ctrl Y
Replace	Ctrl Shift F	Shift Cmd F	Ctrl Shift F
Reply	Ctrl R	Cmd R	Ctrl R
Reply with Quote	Ctrl '	Cmd '	Ctrl '
Save	Ctrl S	Cmd S	Ctrl S
Scroll one screen at a time (one page at a time in presentation view)	Page Up/Page Down	Page Up/Page Down	Page Up/Page Down
Select All	Ctrl A	Cmd A	Ctrl A
Select all items with a common value	Ctrl Shift-click	Shift Cmd-click	Ctrl Shift-click
Select next (icon view)	Shift-right arrow	Shift-right arrow	Shift-right arrow
Send	Ctrl E	Cmd E	Ctrl E
Send and Close	Ctrl Shift E	Shift Cmd E	Ctrl Shift E
Show Bcc	Ctrl B	Cmd B	Ctrl B
Show Presentation	F5	Option Cmd P	Ctrl Alt P
Smaller	Ctrl [	Cmd [	Ctrl [
Smart Zoom	Ctrl =		
Snap to grid		Cmd drag	
Stop activities	Ctrl Break	Cmd .	Ctrl Break
Underline	Ctrl Shift U	Shift Cmd U	Ctrl Shift U
Undo	Ctrl Z	Cmd Z	Ctrl Z
Upload	Ctrl T	Cmd T	Ctrl T
Window cycling		Shift Cmd ~	
Yellow		Option Cmd Y	
Zoom In (viewer window)	Shift up arrow	Shift up arrow	Shift up arrow
Zoom Out (viewer window)	Shift down arrow	Shift down arrow	Shift down arrow
Zoom Window		Cmd =	

FirstClass Telephone User Interface (TUI)

Part of the optional FirstClass Voice/Fax solution, the FirstClass Telephone User Interface provides access to FirstClass information via any landline telephone or mobile phone. While primarily used to check messages, schedules, and contacts when users are not close to a connected computer, the FirstClass TUI is also useful for users with visual impairments.

Users can retrieve email text messages, voice messages, contact information, calendar appointments, and memos by listening to voice menus and pressing keys on the telephone keypad to navigate. Messages, contacts, and calendar items are played to the user using text-to-speech synthesis. The TUI interface can even be used to search for contacts and place calls directly, without having to enter the phone number. This interface can also be used by visually impaired users on the go, or in cases where a computer with screen reader software and Braille keyboard are not readily available. In addition to the benefits of this interface for visually impaired individuals, the interface can be used by people with mobility or range of motion disabilities that prevent them from using a keyboard but who can still use a telephone.

Accessibility Testing and Customer Feedback

In order to ensure that we are meeting our goal of making FirstClass equally accessible to people with disabilities, accessibility testing is conducted during the software development phase. A number of testing methodologies are employed. The Watchfire® Bobby™ web accessibility testing tool is used to confirm that there are no outstanding applicable Priority 1 checkpoints. Bobby Priority 1 checkpoints reference the U.S. Government's Section 508 and the World Wide Web Consortium's (W3C) Web Content Accessibility Guidelines (WCAG). The JAWS® screen reader is used as the reference instrument for screen reader interoperability testing. More importantly, for real world validation FirstClass is tested by people with disabilities, including those who use screen readers on a daily basis.

By refining the FirstClass interfaces based on user feedback, we are continually improving the accessibility and usability of FirstClass, in a way that goes beyond standards and guidelines. After releasing software, we work closely with our customers who have users with disabilities, engaging them in an iterative process of feedback and software enhancement.

Conclusion

Providing accessibility for communications and collaboration software presents some unique challenges, due to the highly interactive nature of the applications. For more than 15 years, FirstClass has been designed to facilitate the communication of diverse groups of people. Recognizing that everyone is different, FirstClass continues to support new access methods to meet the needs of users in different environments. The architecture of FirstClass is well-suited to supporting new access methods, including methods specifically designed to work well with assistive technology.

Open Text is committed to continually improving the accessibility of FirstClass, making the power of FirstClass equally accessible to all. We welcome and encourage feedback of the accessibility of FirstClass, and we will continue to enhance FirstClass as a result of such feedback.

To provide feedback, or to request more information, please contact us at accessibility@firstclass.com.