

STUDY SERIES  
*(Survey Methodology #2007-21)*

**An Accessibility and Usability Evaluation  
of the 2007 Economic Census Electronic  
Reporting Software Application**

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*Disclaimer:* This report is released to inform interested parties of research and to encourage discussion. The views expressed are those of the author and not necessarily those of the U.S. Census Bureau.

**AN ACCESSIBILITY AND USABILITY EVALUATION  
OF THE 2007 ECONOMIC CENSUS ELECTRONIC  
REPORTING SOFTWARE APPLICATION**

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## **INTRODUCTION**

Since June 2001, Federal regulations have required that U. S. Government Web sites and other software developed by or for the U. S. Government provide comparable access to the information for all users<sup>1</sup>. Computer users who have visual and or other disabilities are entitled to have the same access as users who do not currently have any disabilities

Some practitioners consider accessibility to be a subset of usability, while others think of accessibility as related, but separate from usability. Accessibility guidelines have several checkpoints that address more general usability, such as a logical tab order, dividing large information blocks into more manageable groups, and using the clearest and simplest language appropriate. Even if the application complies with the regulation, it still may not be usable, as the Census Bureau's Usability Lab has found in other testing. Both usability and accessibility testing need to be done to identify problems that actual users may have.

## **BACKGROUND**

This accessibility evaluation was performed on Surveyor 2007. This application enables businesses to complete and submit their 2007 Economic Census forms electronically. The Economic Statistical Methods and Programming Division (ESMPD) requested that the Statistical Research Division (SRD) use its expertise to verify and/or identify accessibility problems in the SRD accessibility lab.

## **PURPOSE**

The purpose of this evaluation is to report and rate the severity of accessibility problems to the developer of the software so that the problems can be resolved. The priority for accessibility problems is rated high, medium, or low. An item flagged as high means that the user will not be able to perform the task at all because of one or more design flaws. An item flagged as medium means that the user will be able to perform the task, but with difficulty due to one or more design flaws. An item flagged as low priority means that the user is not presented the same information as the able-bodied user, but will still be able to perform the task.

## **SCOPE AND METHOD**

This evaluation is primarily focused on testing accessibility for computer users with visual disabilities. Accessibility testing is performed using the Job Access With Speech (JAWS) 8 screen-reader software<sup>2</sup>. For the purpose of this report, an item is judged to be accessible (compliant with the regulations) if its screen text is read out loud, in a coherent order by JAWS. Usability problems are detected by listening to the content vocalized by the screen-reader and visual inspection by a person with experience in usability. These problems are included in this report as issues to evaluate in formal usability testing if resources are available. Usability testing would bring in actual users with disabilities to perform tasks using the software. The present accessibility evaluation used testing tools

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<sup>1</sup> <http://www.section508.gov/index.cfm?FuseAction=Content&ID=3>

<sup>2</sup> <http://www.freedomscientific.com>

as substitutes for actual users.

## **FINDINGS**

Findings for the Surveyor 2007 application are detailed in Figures 1-7. This application has the following accessibility issues:

- Keyboard navigation does not function between panels.
- Data record tables are not accessible with JAWS table commands.
- Two pop-up windows contain inaccessible text.
- The “Welcome” message and instructions are not accessible.

During the process of accessibility testing, these usability problems were detected:

- Instructions to begin form completion are below the “fold” on the “Welcome” tab.
- The “Quick Search” field on the “Inbox” tab has gray text on a white background which is very difficult to read.
- “Previous Item” and “Next Item” buttons are not grayed out when the user is at the beginning or end of the listing of form components.

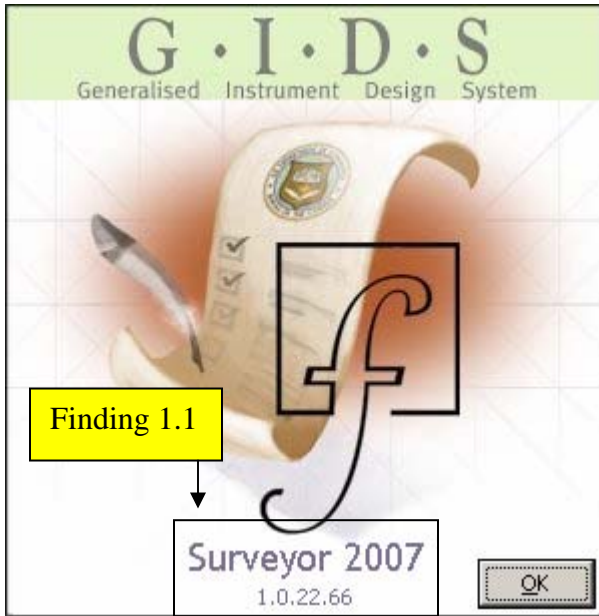


Figure 1. Information about Surveyor is inaccessible.

**Finding 1.1.** Screen-reader software does not detect the version information about Surveyor 2007, which violates 1194.22 A of the Section 508 regulation.

**Priority:** High

**Recommendation:** Set alt = “Surveyor 2007 1.0.22.66” for the graphic on this pop-up screen.

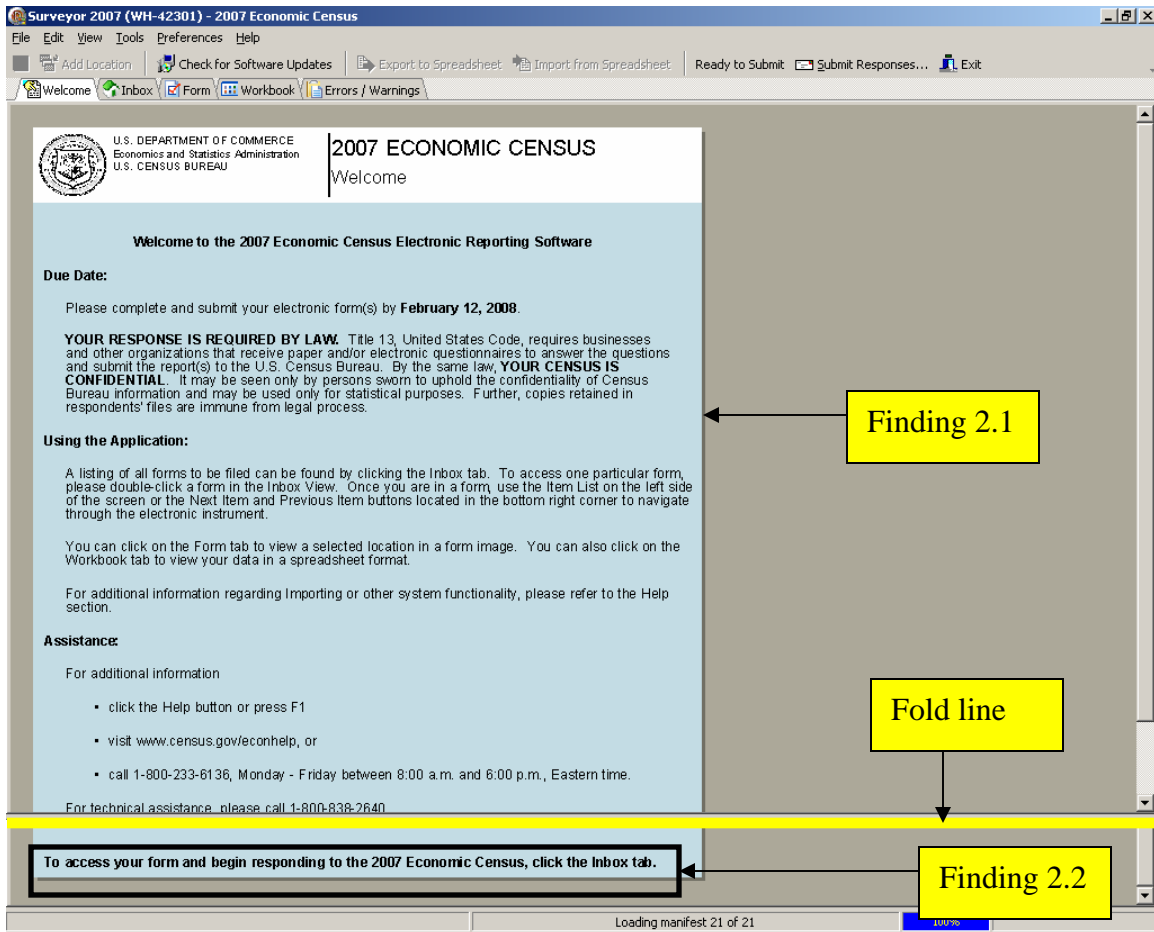


Figure 2. The welcome message is inaccessible and the most important instruction is below the fold.

**Finding 2.1.** The entire welcome message is a scanned image of a text document. The screen-reader software does not detect any text on this screen, which violates 1194.22 A of the Section 508 regulation.

**Priority:** High

**Recommendation:** Remove this text image and paste in the text from the original source document.

**Finding 2.2.** The instruction to start Surveyor 2007 is below the fold.

**Priority:** Medium

**Recommendation:** In order for users to see the instruction below the fold, the legal and confidentiality messages should be in a pop-up window that appears when the application is first opened so they will be noticed by users. Putting these messages in a pop-up will

shorten the welcome screen text by six lines, making the instruction below the fold visible.

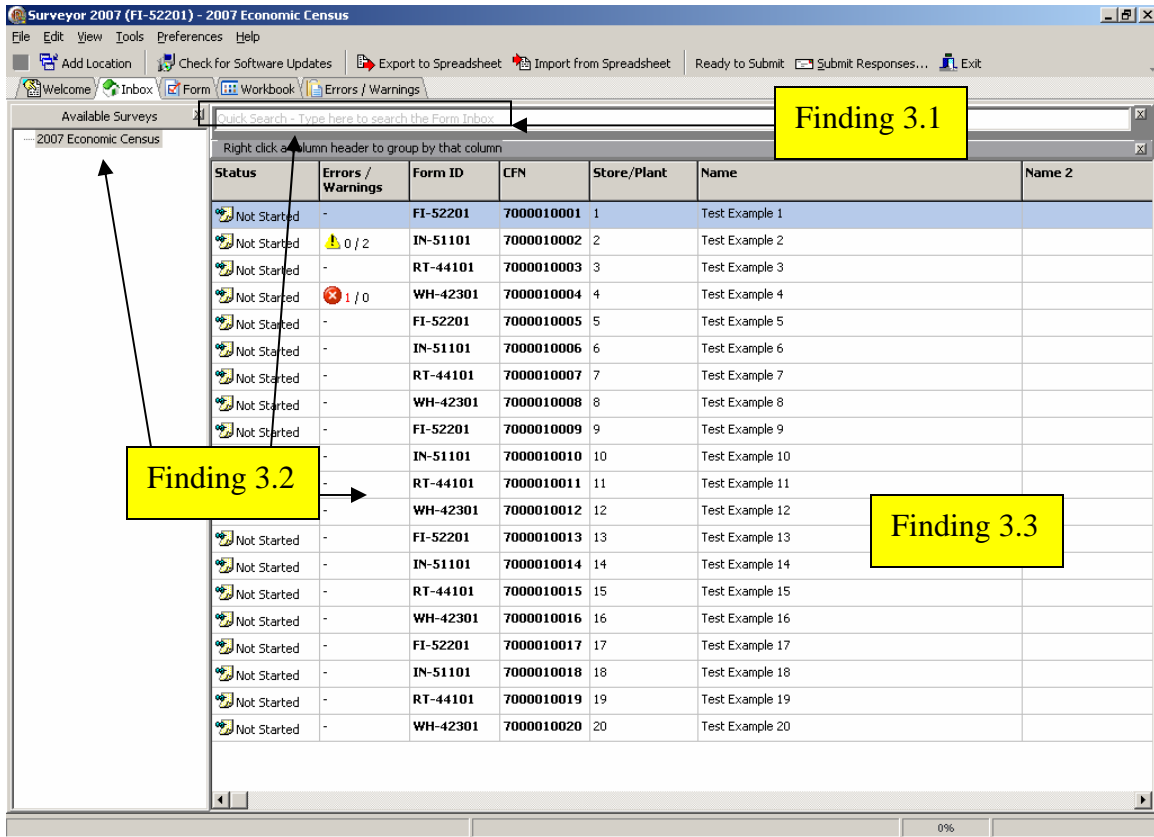


Figure 3. Text within the search window is difficult to see, and the user cannot access the Available Surveys panel and Survey Status table by entering keyboard commands.

**Finding 3.1.** The search window contains gray text with a white background. The text is difficult to see because the contrast is too low.

**Priority:** High

**Recommendation:** Change the text color to black and highlight the default input string in blue showing that data can be entered into the search data-entry field.

**Finding 3.2.** The user cannot put focus on any field with keyboard commands without first using the mouse, which violates 1194.21 A of the Section 508 regulation.

**Priority:** High

**Recommendation:** One method to make this screen accessible would be to make the two panels tabs, which can be navigated by screen-reader users with control-tab. Elements within a panel can be accessed by the F6 key, then the tab or arrow keys.

**Finding 3.3.** The screen-reader user cannot access row stub and column header information in the table of forms, which violates 1194.22 G of the Section 508 regulation.

**Priority:** High

**Recommendation:** Use the development software to make this change. The column for “Form ID” should be in column 1 to uniquely identify each row stub entry as the user navigates the table with the screen-reader software. Refer to <http://www.jimthatcher.com/webcourse9.htm> for help.



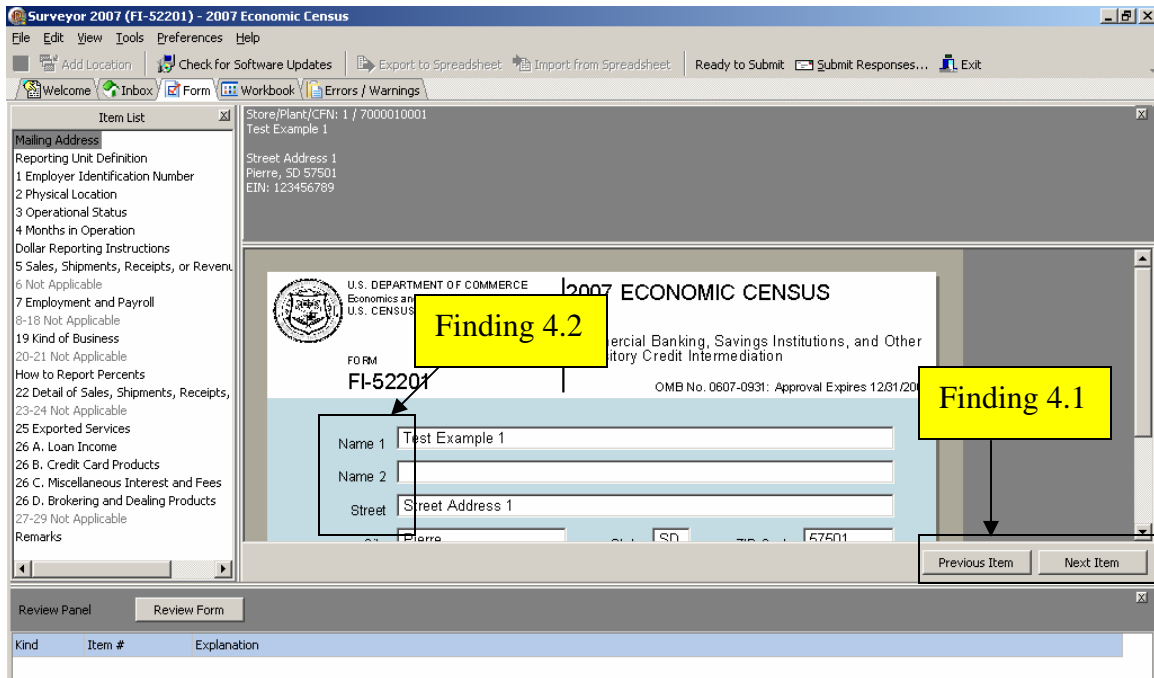


Figure 4. Users cannot move between panels on the Form tab with keyboard commands and labels on the form are not detected by the screen-reader software.

**Finding 4.1.** The appearance, placement, and the performance of the “Previous Item” and “Next Item” buttons could be improved to make the application easier to use.

**Priority:** Medium

**Recommendation:** Changing the buttons to left and right arrows will give the user the mental model of moving forwards and backwards through the form elements. Placing these labeled arrows in the middle of the panel will increase their visibility. If there is no Previous (or Next) item, then the option should be grayed out to show it is unavailable.

**Finding 4.2.** Labels on the data-entry form are not accessible to the screen-reader software, which violates 1194.22 N of the Section 508 regulation.

**Priority:** High

**Recommendation:** If the screen-reader user cannot hear the labels for the data-entry fields, she cannot perform any data entry. Use the development software to associate the text of the displayed label to the data-entry field.

**Note:** Finding 3.2 of Figure 3 applies to Figure 4.

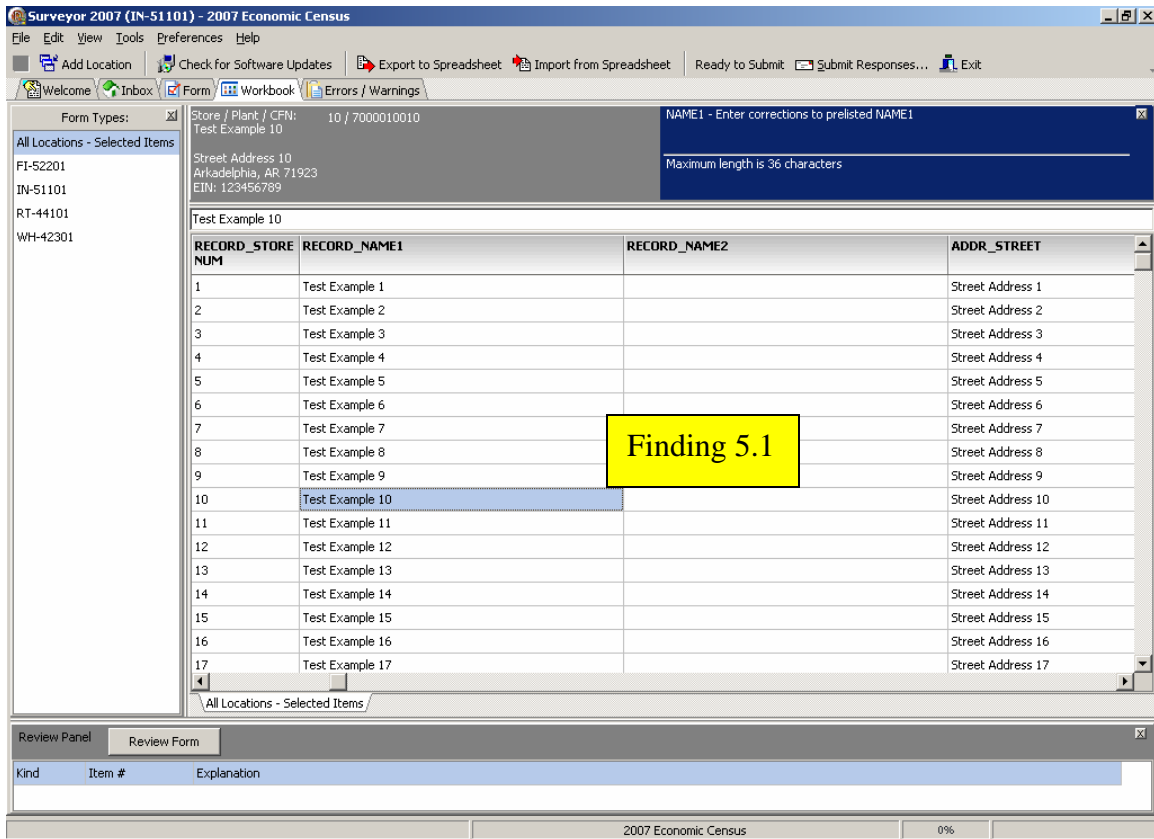


Figure 5. Users cannot switch between panels with keyboard commands on the Workbook tab and the record table is not accessible.

**Finding 5.1.** The screen-reader user cannot access row stub and column header information when focus is on a data element in the record table, which violates 1194.22 G of the Section 508 regulation.

**Priority:** High

**Recommendation:** Use the development software to make this change. Refer to <http://www.jimthatcher.com/webcourse9.htm> for help.

**Note:** Finding 3.2 of Figure 3 applies to Figure 5.

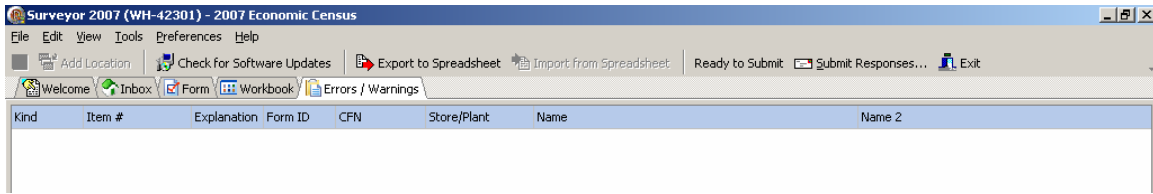


Figure 6. Standard JAWS table commands do not function on the Errors/Warnings tab.

**Note:** Finding 5.1 of Figure 5 applies to Figure 6.

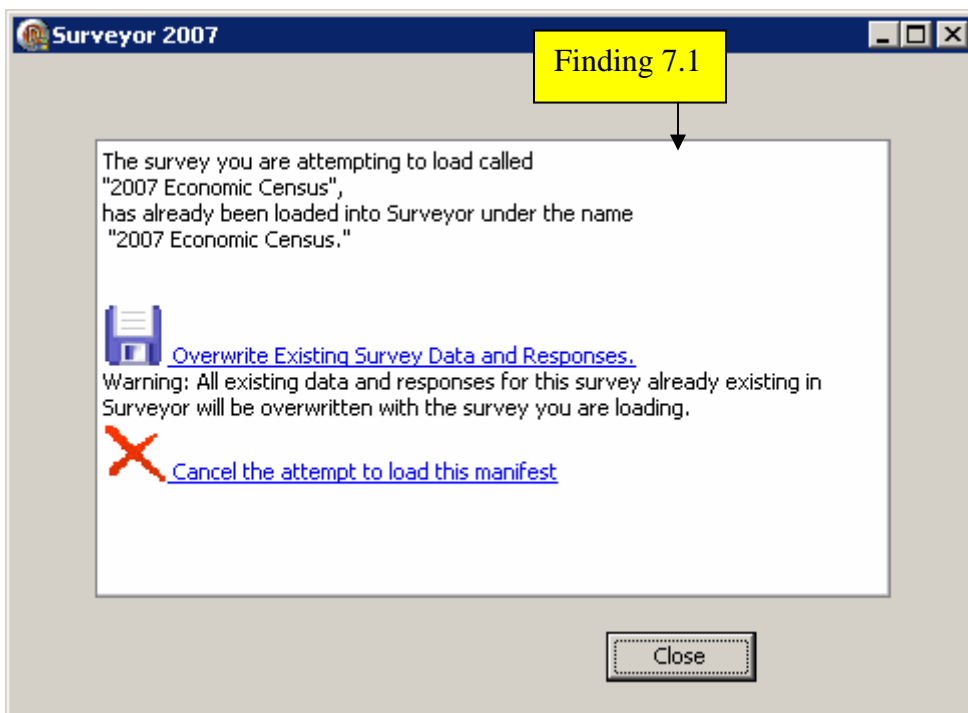


Figure 7. Except for the "Close" button, no text is accessible on this pop-up window.

**Finding 7.1.** Screen-reader software does not detect the file loading information about the 2007 Economic Census, which violates 1194.22 A of the Section 508 regulation.

**Priority:** High

**Recommendation:** Replace the image of the text on this pop-up window with text pasted from the source file using the development software.

## **SUMMARY**

### **Accessibility**

This evaluation revealed keyboard navigation does not function between panels on the input screens. Keyboard navigation must function for an application to be compliant with accessibility regulations. Row stub and column header information is not accessible using JAWS table commands when focus is on a table record cell. Two pop-up windows contain inaccessible text: only the button labels are accessible. The “Welcome” message is an image of a scanned form, so none of the instructions are accessible.

### **Usability**

During the process of accessibility testing, some usability problems were detected. Instructions to begin form completion are below the “fold” on the “Welcome” tab. The “Quick Search” field on the “Inbox” tab has gray text on a white background which is accessible but very difficult to read. “Previous Item” and “Next Item” buttons are not grayed out when the user is at the beginning or end of the listing of form topics.

If accessibility and usability recommendations are followed for Surveyor 2007, completion of the 2007 Economic Census could be carried out efficiently and quickly and with greater satisfaction by all system users.