



RStudio Workbench VPAT

RStudio Workbench v1.4.1717

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Chapter 1

WCAG Edition¹

1.1 Name of Product/Version

RStudio Workbench (Version 1.4.1717)

1.2 Report Date

2021-06-17

1.3 Product Description

RStudio Workbench is a web-based data analysis and integrated development experience for professional R users and data science teams who use R and Python.

This VPAT is also applicable to open-source RStudio Server (Version 1.4.1717).

1.4 Contact Information

accessibility@rstudio.com

1.5 Notes

See the ITI Accessibility web page for more information on VPAT®.

¹“Voluntary Product Accessibility Template” and “VPAT” are registered service marks of the Information Technology Industry Council (ITI).

1.5.1 RStudio Workbench 1.4 Accessibility Improvements

Accessibility improvements in RStudio 1.4 (compared to RStudio 1.3) include:

- Semantic improvements to Workbench home page so screen reader users can discover and navigate the lists of sessions, projects, jobs, and recently published artifacts
- Command-palette for searching and executing commands via keyboard
- Improved keyboard shortcuts for main menu
- Move between panels with F6 and Shift+F6
- Return focus to previous location after using main menu and dialog boxes via keyboard
- Optional visual indicator around panel with keyboard focus
- ESC key only closes the current level of main menu instead of all levels
- Added commands to View menu for showing all pane types
- Simplify Accessibility Options dialog when invoked from Accessibility menu
- Option to turn off focus indicators for some user-interface elements
- Color-matched parentheses option in text editor
- Improvements in auto-activation of JAWS screen reader virtual cursor for Console pane
- Fix keyboard handling of Yes/No options in the screen-reader confirmation prompt
- Added command to menu for returning to Workbench home page from a session
- New option to display console error/warning output in normal console output color

1.5.2 RStudio Server Pro 1.3 Accessibility Improvements

Accessibility improvements in RStudio 1.3 (compared to RStudio 1.2) include:

- Sign-in screen provides live-announcement of error message (e.g. if wrong username or password is entered), changes page title to indicate error state
- Generate a live-warning when starting RStudio with screen-reader mode disabled, including announcement of keyboard shortcut to use to enable it
- Main menu is fully keyboard accessible (previously required use of pointing device) and annotated for screen readers
- Accessibility submenu on the Help menu with various commands for enabling screen reader, controlling Tab key behavior, displaying accessibility help, and triggering live announcements
- New accessibility section in the Global Options dialog for controlling behavior of accessibility features
- New option to disable user-interface animations (“reduce motion”)
- New option to control if Tab key moves out of text-editing areas or inserts a tab, to escape tab-traps such as the source editor, the console, and the terminal
- Present screen-reader friendly keyboard shortcut reference page when “Show Keyboard Shortcuts” command is invoked when screen-reader mode is on
- Provide command with keyboard shortcut to move focus to the Console output region for easier navigation of program output
- Provide command to read out information on the currently selected text editor line (current row and column, type of file, etc.)
- Commands for resizing panel splitters using the keyboard
- Modal dialogs annotated so screen readers recognize them as such
- Keep keyboard focus in modal dialogs when tabbing or shift+tabbing through the controls, wrapping around to the beginning or end of the dialog instead of escaping from the dialog to

- areas of the page that are “under” the modal dialog
- When a modal dialog is displayed, make the rest of the UI inert so tabbing into the page from the web browser goes to the dialog instead of to areas of the page that are “under” the modal dialog
 - Put keyboard focus on a control when modal dialogs are loaded
 - Provide accessible labels for all toolbar buttons[
 - Provide names for all toolbars and annotate them with the toolbar role, and indicate when a toolbar button displays a submenu
 - Annotation of page layout using regions, including named regions for the 4 quadrants
 - Annotation and keyboard support for tab controls used for the various feature tabs in the main user interface as well as tab controls used in several dialog boxes such as the global options dialog
 - Contrast improvements to reach WCAG AA standards in most areas of the UI using the default RStudio theme
 - Add keyboard support and screen-reader annotations to most common controls used throughout the product (buttons, checkboxes, help links, etc.)
 - Ensure controls in all dialog boxes have accessible labels
 - Annotate HTML tables used for visual layout purposes as having the presentation role so screen reader doesn’t present them as containing tabular data
 - Ensure images used in the user interface have meaningful alternate text or are marked as decorative so screen readers don’t read their underlying filenames
 - Eliminate duplicate HTML element IDs
 - Add focus rectangles to user interface elements when they receive focus via a keyboard gesture
 - Generate live announcements for several actions such as clearing the console, output generated in the console, change in session state, and some status announcements
 - Vastly reduced number of violations detected by tools such as Deque’s axe or Chrome Lighthouse when run against various IDE pages

1.6 Evaluation Methods Used

Accessibility evaluated using general product knowledge, source-code analysis, and runtime analysis using the axe browser plugin.

Screen-reader testing performed on Windows-10 using JAWS 2020 and NVDA 2020.2 with latest versions of Chrome and Firefox, and on macOS 10.15 using Safari and VoiceOver.

1.7 Applicable Standards/Guidelines

This report covers the degree of conformance for the following accessibility standard/guidelines:

Standard/Guideline	Included In Report
Web Content Accessibility Guidelines 2.1	Level A, AA, AAA

1.8 Terms

The terms used in the Conformance Level information are defined as follows:

- **Supports:** The functionality of the product has at least one method that meets the criterion without known defects or meets with equivalent facilitation.
- **Partially Supports:** Some functionality of the product does not meet the criterion.
- **Does Not Support:** The majority of product functionality does not meet the criterion.
- **Not Applicable:** The criterion is not relevant to the product.
- **Not Evaluated:** The product has not been evaluated against the criterion. This can be used only in WCAG 2.1 Level AAA.

1.9 WCAG 2.1 Report

Note: When reporting on conformance with the WCAG 2.1 Success Criteria, they are scoped for full pages, complete processes, and accessibility-supported ways of using technology as documented in the WCAG 2.1 Conformance Requirements.

1.9.1 Table 1: Success Criteria, Level A

Notes:

- “RSP” is used as an abbreviation of the product, “RStudio Server Pro”
- “RSW” is used as an abbreviation of the product, “RStudio Workbench”
- Some aspects of the RSP user interface display output generated by R code (e.g. graphical plots, Shiny Applications) or loaded from external locations (e.g. R package help); such content is not considered part of RSP itself for the purposes of this report
- The administrative portal pages have not been evaluated, only the end-user-facing pages

Criteria	Conformance Level	Remarks and Explanations
1.1.1 Non-text Content	Supports	Dramatically improved over RSP 1.2
1.2.1 Audio-only and Video-only (Prerecorded)	Not Applicable	
1.2.2 Captions (Prerecorded)	Not Applicable	
1.2.3 Audio Description or Media Alternative (Prerecorded)	Not Applicable	
1.3.1 Info and Relationships	Partially Supports	Significantly improved over RSP 1.2 but work remains to be done in some areas

Criteria	Conformance Level	Remarks and Explanations
1.3.2 Meaningful Sequence	Partially Supports	Significantly improved over RSP 1.2 but some aspects of user interface are displayed in an order different than the underlying DOM and some tabular data such as the Files list is presented with improper relationship between headings and content
1.3.3 Sensory Characteristics	Supports	
1.4.1 Use of Color	Partially Supports	Minimal reliance on color but errors and warnings in the Console are only distinguished via color differences
1.4.2 Audio Control	Not Applicable	
2.1.1 Keyboard	Partially Supports	Significantly improved over RSP 1.2 but some areas such as grid controls still have limited keyboard operability
2.1.2 No Keyboard Trap	Supports	Option added to permit Tab key to move focus out of regions that normally use it for indentation
2.1.4 Character Key Shortcuts	Supports	
2.2.1 Timing Adjustable	Supports	
2.2.2 Pause, Stop, Hide	Supports	
2.3.1 Three Flashes or Below Threshold	Supports	
2.4.1 Bypass Blocks	Supports	
2.4.2 Page Titled	Supports	
2.4.3 Focus Order	Partially Supports	Some aspects of the main window have visual presentation order that differs from the underlying DOM order
2.4.4 Link Purpose (In Context)	Supports	Dramatically improved over RSP 1.2
2.5.1 Pointer Gestures	Supports	
2.5.2 Pointer Cancellation	Supports	

Criteria	Conformance Level	Remarks and Explanations
2.5.3 Label in Name	Supports	Dramatically improved over RSP 1.2
2.5.4 Motion Actuation	Supports	
3.1.1 Language of Page	Supports	Some uncommonly seen error pages were fixed in RSP 1.3
3.2.1 On Focus	Supports	
3.2.2 On Input	Supports	
3.3.1 Error Identification	Partially Supports	Improved over RSP 1.2, some input errors still not fully associated with offending form controls
3.3.2 Labels or Instructions	Partially Supports	Significantly improved over RSP 1.2
4.1.1 Parsing	Supports	
4.1.2 Name, Role, Value	Partially Supports	Significantly improved over RSP 1.2, some controls still need additional work

1.9.2 Table 2: Success Criteria, Level AA

Notes:

- “RSP” is used as an abbreviation of the product, “RStudio Server Pro”
- Some aspects of the RSP user interface display output generated by R code (e.g. graphical plots, Shiny Applications) or loaded from external locations (e.g. R package help); such content is not considered part of RSP itself for the purposes of this report
- The administrative portal pages have not been evaluated, only the end-user-facing pages

Criteria	Conformance Level	Remarks and Explanations
1.2.4 Captions (Live)	Not Applicable	
1.2.5 Audio Description (Prerecorded)	Not Applicable	
1.3.4 Orientation	Supports	
1.3.5 Identify Input Purpose	Supports	
1.4.3 Contrast (Minimum)	Partially Supports	Significantly improved over RSP 1.2
1.4.4 Resize text	Supports	
1.4.5 Images of Text	Supports	
1.4.10 Reflow	Supports	

Criteria	Conformance Level	Remarks and Explanations
1.4.11 Non-text Contrast	Partially Supports	Improved over RSP 1.2 but some icons and graphical elements have low contrast in default UI theme
1.4.12 Text Spacing	Supports	
1.4.13 Content on Hover or Focus	Supports	
2.4.5 Multiple Ways	Supports	
2.4.6 Headings and Labels	Supports	
2.4.7 Focus Visible	Supports	Dramatically improved in RSP 1.3
3.1.2 Language of Parts	Supports	RSP UI is English-only; embedded content language behavior is beyond control of RSP
3.2.3 Consistent Navigation	Supports	
3.2.4 Consistent Identification	Supports	
3.3.3 Error Suggestion	Partially Supports	
3.3.4 Error Prevention (Legal, Financial, Data)	Not Applicable	
4.1.3 Status Messages	Partially Supports	Improvements over RSP 1.2, but additional work remains

1.9.3 Table 3: Success Criteria, Level AAA

Notes:

- “RSP” is used as an abbreviation of the product, “RStudio Server Pro”
- Some aspects of the RSP user interface display output generated by R code (e.g. graphical plots, Shiny Applications) or loaded from external locations (e.g. R package help); such content is not considered part of RSP itself for the purposes of this report
- The administrative portal pages have not been evaluated, only the end-user-facing pages

Criteria	Conformance Level	Remarks and Explanations
1.2.6 Sign Language (Prerecorded)	Not Applicable	
1.2.7 Extended Audio Description (Prerecorded)	Not Applicable	
1.2.8 Media Alternative (Prerecorded)	Not Applicable	
1.2.9 Audio-only (Live)	Not Applicable	
1.3.6 Identify Purpose	Partially Supports	Significantly improved over RSP 1.2, but some areas of the UI require additional work
1.4.6 Contrast (Enhanced)	Does Not Support	The default theme does not meet WCAG AAA contrast levels, though it may be achievable with custom themes
1.4.7 Low or No Background Audio	Not Applicable	
1.4.8 Visual Presentation	Partially Supports	Textual regions can be resized and colors changed via custom themes, but specific color selection for foreground and background is not available in the UI
1.4.9 Images of Text (No Exception)	Supports	
2.1.3 Keyboard (No Exception)	Partially Supports	Some operations such as moving dialog boxes and dragging tabs between panels are mouse-only, though overall keyboard support is dramatically improved in RSP 1.3
2.2.3 No Timing	Supports	
2.2.4 Interruptions	Supports	Timing such as session suspension timeout can be configured or disabled, and specific live-alerts can be disabled as well
2.2.5 Re-authenticating	Supports	Sessions can be resumed as they were after reauthenticating
2.2.6 Timeouts	Not Applicable	
2.3.2 Three Flashes	Partially Supports	It is possible that the output from a running program or application could cause flashing, though this is not under the direct control of the IDE itself

Criteria	Conformance Level	Remarks and Explanations
2.3.3 Animation from Interactions	Supports	RSP 1.3 added an option to turn disable UI animations
2.4.8 Location	Not Applicable	
2.4.9 Link Purpose (Link Only)	Supports	
2.4.10 Section Headings	Supports	
2.5.5 Target Size	Not Evaluated	Most actions have alternative activation techniques (buttons, menu commands, keyboard shortcuts) but is it possible there are some only available via very small clickable regions
2.5.6 Concurrent Input Mechanisms	Partially Supports	Known issues with using touch to resize panes (must use mouse or keyboard)
3.1.3 Unusual Words	Not Evaluated	
3.1.4 Abbreviations	Not Evaluated	
3.1.5 Reading Level	Not Evaluated	
3.1.6 Pronunciation	Not Evaluated	
3.2.5 Change on Request	Partially Supports	Some actions trigger side-effects in the UI that are difficult to anticipate without prior knowledge and/or visual cues
3.3.5 Help	Does Not Support	
3.3.6 Error Prevention (All)	Does Not Support	