



# RStudio Cloud VPAT

*RStudio Cloud v2020.08.14*

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# Chapter 1

## WCAG Edition<sup>1</sup>

### 1.1 Name of Product/Version

RStudio Cloud (Version 2020.08.14)

### 1.2 Report Date

2020-08-14

### 1.3 Product Description

RStudio Cloud is a lightweight, cloud-based solution that allows anyone to do, share, teach and learn data science online.

### 1.4 Contact Information

accessibility@rstudio.com

### 1.5 Notes

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

RStudio Cloud embeds RStudio Server Pro 1.3 in an iframe. Thus this report is a blend of the RStudio Server 1.3 VPAT, with additional evaluation of the RStudio Cloud-specific user interface elements.

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

### 1.5.1 Accessibility improvements in RStudio Server Pro 1.3 (compared to RStudio Server Pro 1.2) include:

- 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 RSP pages

### 1.5.2 Accessibility improvements in RStudio Cloud August 2020 Release

- This is the initial accessibility evaluation of RStudio Cloud.

## 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:

- “Cloud” is used as shorthand for the product “RStudio Cloud”
- “RSP” is used as an abbreviation of the product, “RStudio Server Pro”
- Some aspects of the Cloud 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 Cloud itself for the purposes of this report
- The UI flow for purchasing a subscription has not been evaluated

Criteria	Conformance Level	Remarks and Explanations
1.1.1 Non-text Content	Partially Supports	Some controls on the Cloud pages are lacking textual labels, and training materials contain embedded images without textual labels
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	Does not support	The Cloud interface does not contain landmarks nor does it use named and annotated lists for various visually-presented lists
1.3.2 Meaningful Sequence	Partially Supports	Some aspects of user interface are displayed in an order different than the underlying DOM
1.3.3 Sensory Characteristics	Does Not Support	Much of the instructional material refers to regions of the page only discoverable via visual characteristics
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	Some controls in the Cloud interface, and some in the RSP interface, are not usable via keyboard

Criteria	Conformance Level	Remarks and Explanations
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	Does Not Support	No mechanism to move focus to the embedded RSP
2.4.2 Page Titled	Does Not Support	The page title is not updated to provide information on current context
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)	Partially Supports	Some links have insufficient descriptive text
2.5.1 Pointer Gestures	Not Applicable	
2.5.2 Pointer Cancellation	Supports	
2.5.3 Label in Name	Partially Supports	Several essential controls in the Cloud interface have no labels
2.5.4 Motion Actuation	Not Applicable	
3.1.1 Language of Page	Supports	
3.2.1 On Focus	Supports	
3.2.2 On Input	Supports	
3.3.1 Error Identification	Partially Supports	Some input errors in RSP not fully associated with offending form controls
3.3.2 Labels or Instructions	Partially Supports	
4.1.1 Parsing	Supports	
4.1.2 Name, Role, Value	Does Not Support	Some RSP controls still not properly annotated, most controls in the Cloud interface not correctly annotated

## 1.9.2 Table 2: Success Criteria, Level AA

Notes:

- “Cloud” is used as shorthand for the product “RStudio Cloud”
- “RSP” is used as an abbreviation of the product, “RStudio Server Pro”
- Some aspects of the Cloud 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 Cloud itself for the purposes of this report
- The UI flow for purchasing a subscription has not been evaluated

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)	Does Not Support	Many elements with contrast below AA threshold
1.4.4 Resize text	Supports	
1.4.5 Images of Text	Supports	
1.4.10 Reflow	Supports	
1.4.11 Non-text Contrast	Partially Supports	Some icons and graphical elements have contrast below AA threshold
1.4.12 Text Spacing	Supports	
1.4.13 Content on Hover or Focus	Supports	
2.4.5 Multiple Ways	Partially Supports	Some page sets (such as Learn) don’t provide an obvious way to return to the main page from within the primary content
2.4.6 Headings and Labels	Does Not Support	The Cloud UI contains visual headings that are not implemented as headings, and section labels that are not associated with their content
2.4.7 Focus Visible	Supports	
3.1.2 Language of Parts	Supports	English-only user-interface; embedded content language behavior is beyond control of RSP



Criteria	Conformance Level	Remarks and Explanations
3.2.3 Consistent Navigation	Supports	
3.2.4 Consistent Identification	Partially Supports	Some components in the Cloud UI are annotated differently (or not at all) compared to similar components in RSP
3.3.3 Error Suggestion	Partially Supports	
3.3.4 Error Prevention (Legal, Financial, Data)	Not Evaluated	Purchase flow not yet evaluated
4.1.3 Status Messages	Does Not Support	No feedback given to screen-reader users during lengthy operations such as creating a new project

### 1.9.3 Table 3: Success Criteria, Level AAA

Notes:

- “Cloud” is used as shorthand for the product “RStudio Cloud”
- “RSP” is used as an abbreviation of the product, “RStudio Server Pro”
- Some aspects of the Cloud 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 Cloud itself for the purposes of this report
- The UI flow for purchasing a subscription has not been evaluated

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	Does Not Support	Some controls in RSP and most controls in Cloud are not properly annotated

Criteria	Conformance Level	Remarks and Explanations
1.4.6 Contrast (Enhanced)	Does Not Support	The default theme in RSP does not meet WCAG AAA contrast levels, though it may be achievable with custom themes, and the Cloud UI does not meet AAA contrast levels
1.4.7 Low or No Background Audio	Not Applicable	
1.4.8 Visual Presentation	Partially Supports	Textual regions can be resized and colors within RSP can be changed via custom themes, but specific color selection for foreground and background is not available and Cloud does not support themes
1.4.9 Images of Text (No Exception)	Supports	
2.1.3 Keyboard (No Exception)	Does Not Support	Some operations in RSP, such as moving dialog boxes and dragging tabs between panels are mouse-only, and several key aspects of the Cloud UI cannot be operated via the keyboard
2.2.3 No Timing	Supports	
2.2.4 Interruptions	Supports	
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 RSP or Cloud
2.3.3 Animation from Interactions	Partially Supports	RSP has an option to turn disable UI animations but animations within Cloud's UI cannot be disabled
2.4.8 Location	Not Applicable	
2.4.9 Link Purpose (Link Only)	Supports	
2.4.10 Section Headings	Does Not Support	The Guide page and others do not contain actual headings despite containing many visually formatted blocks of text that look like headings
2.5.5 Target Size	Not Evaluated	

Criteria	Conformance Level	Remarks and Explanations
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	