

System Requirements for Class Climate 7.1

This document contains the system requirements for the three ways in which you can install Class Climate 7.1: on a single PC, on a server, and on two servers, one of which is an online server.

NOTE: Scantron also offers a Scantron-hosted solution. The hosted solution:

- Does not require Web server software
- Is accessed from your browser
- Connects directly to your Email Server and/or scanning stations for paper processing.

For more information about Scantron-hosted solutions, contact your vendor.

Option 1: Workstation-based Installation

All major system components (Web server, Database and VividForms Reader) are installed on a single PC; the Scanstation is installed on a separate PC. Because workstation operating systems are not suitable for running web services, use this option only for low-volume, paper-based surveys. You can also use this installation type to run a test or development system for things like testing new software versions. Scantron offers special licenses for testing.

Hardware	<ul style="list-style-type: none"> • Intel® compatible processor with a minimum of 2.5 GHz • 100 GB or greater Hard Disk (HDD with 7200 rpm or SSD) • 4 GB Memory • 1 Gb/s Network
Operating System	Windows 8.x or Windows 10

Option 2: Server-based Installation

All major system components (Web server, Database and VividForms Reader) are installed on a server; *we strongly recommend a dedicated server*. Additional components like the Scanstation and, if licensed, VividForms Designer are installed on one or more workstations.

We also recommend a dedicated server for Class Climate. During installation, problems may arise with preinstalled software (Web server, Database server, etc.) that is running on the server that will host Class Climate. If you are not installing Class Climate on its own dedicated server, contact Scantron Support to discuss preinstalled software.

Class Climate 7.1 performance depends on the number of concurrent users and the capability of the web server and database system. The following table lays out parameter options when using Class Climate with an IIS web server and a MySQL database. The highest expected parameter determines the recommending parameter for your Class Climate installation.

Hardware Components		Usage			
		Low	Medium	High	Very High
Use Parameters*	Number of active users in 30 minutes***	0 – 10	11 – 40	41 -100	101 - 300
	Number of online survey participants per hour	0 – 500	501 – 1,000	1,001 – 5,000	5,001 – 10,000
	Number of returns in one minute	0 - 20	21 - 50	51 - 100	101 - 150
Recommended Performance Parameters	Number of CPU Cores	2	4	6	8
	RAM	4 GB	8 GB	10 GB	12 GB
	Hard Drive Capacity	100 GB		200 GB	

* The highest expected use parameter determines the recommended performance parameters for the Class Climate System.

** Active users include administrators, report creators, and instructors that have active accounts.

Example:
 Number of active users at the same time = Low (0-10)
 + Number of returns at the same time = Medium (21-50)
 + Number of online survey/examinees per hour = High (1,001-5000)
 = The recommended performance parameters = High (6 CPU Cores, 10 GB RAM, 200 GB Hard Drive)

Supported Server Systems*				
	Windows Server 2008 R2	Windows Server 2012	Windows Server 2012 R2	Windows Server 2016
Existing Installations	Yes	Yes	Yes	Yes**
New Installations	No	Yes	Yes	Yes

* Windows Server 2008 (64 bit) is not supported with Class Climate 7.1
 ** You must update existing installations to Class Climate 7.1 before you can migrate to Windows Server 2016.

Server Software Components	
Existing Microsoft IIS 7.5 Web Server, or later	
MySQL Database 5.7*	
Class Climate server software 7.1	
VividForms Reader 2.2	
Workstation Components	
Scanstation 3.6	Windows 8.x or Windows 10
VividForms Designer 1.4	

*Using MS SQL instead of MySQL Database is technically possible but not recommended because it can lead to a 20-25% decrease in performance under normal usage, and continues to decrease as the number of online surveys increases. If you plan on using MS SQL, please contact support.

Notes:

- Scanstations can be at the same location or at different locations. Data is generally transferred via HTTPS upload. In exceptional cases, data may also be transferred via FTP or by writing to a directory.
- Participants per hour are based on an even distribution within an hour. If you expect peaks, we recommend increasing the CPU cores and the RAM or switching to the Dual Server Option.
- At the end of each limit, such as 5,000 participants, 4 CPU cores and 8GB RAM, you may experience idles times of up to 30 seconds.
- CPUs and RAM can increase Class Climate system performance, depending on the use parameters. Monitor CPU and RAM usage and increase as necessary. The CPU to RAM ratio should be between 1:1.2, for larger systems, and 1:2, for smaller systems; larger systems do not necessarily require double the CPUs.
- To avoid peaks in the system, you can balance the load by staggering survey times when multiple classes are completing online surveys. In addition, subunit administrators should abstain from tasks such as importing data, creating reports, and running batch events. To avoid increasing data transfer per online participant, avoid large, high-resolution image files when creating online template and questionnaires.

Apache web server and MySQL database (not recommended)

Class Climate can also be installed on an Apache web server as an alternative to an existing MS IIS 7.5 (or higher) web server, but we do not recommend it because you will experience decreased performance and technical limitations. Please contact support before installing Class Climate on an Apache web server.

Hardware Components		Usage			
		Low	Medium	High	Very High
Use Parameters*	Number of active users in 30 minutes***	0 – 10	11 – 40	41 -100	101 - 300
	Number of online survey participants per hour	0 – 500	500 – 1,000	1,001 – 5,000	5,001 – 10,000
	Number of returns in one minute	0 - 20	21 - 50	51 - 100	101 - 150
Recommended Performance Parameters	Number of CPU Cores	2	4	8	Not supported
	RAM	4 GB	8 GB	10 GB	Not supported
	Hard Drive Capacity	100 GB		200 GB	Not supported
<p>* The highest expected use parameter determines the recommended performance parameters for the Class Climate System.</p> <p>** Active users include admins, report creators, and instructors that have active accounts.</p> <p>Example, if: Number of active users at the same time = Low (0-10) Number of returns at the same time = Medium (21-50) Number of online survey/examinees per hour = High (1,001-5000) Then, the recommended performance parameters = High (8 CPU Cores, 10 GB RAM, 200 GB Hard Drive)</p>					

Apache web server / IIS and MS SQL database (not recommended)

Using an MS SQL database with an Apache web server will further decrease performance. The overall performance depends on the database server specifications and the latency between the two servers. The values in the table below include safety buffers.

Hardware Components		Usage			
		Low	Medium	High	Very High
Use Parameters*	Number of active users in 30 minutes***	0 – 10	11 – 40	41 -100	101 - 300
	Number of online survey participants per hour	0 – 500	500 – 1,000	1,001 – 5,000	5,001 – 10,000
	Number of returns in one minute	0 - 20	21 - 50	51 - 100	101 - 150
Recommended Performance Parameters	Number of CPU Cores	2	4	Not supported	Not supported
	RAM	4 GB	8 GB	Not supported	Not supported
	Hard Drive Capacity	100 GB		200 GB	Not supported

* The highest expected use parameter determines the recommended performance parameters for the Class Climate System.

** Active users include admins, report creators, and instructors that have active accounts.

Example, if:

Number of active users = Low (0-10)

Number of returns per minute = Medium (21-50)

Number of online survey/examiners = Medium (501-1000)

Then, the recommended performance parameters = Medium (4 CPU Cores, 8 GB RAM, 100 GB Hard Drive)

Option 3: Dual Servers

All central system components (Web server, Database and VividForms Reader) are installed on one server, and a second server is used for online surveys in order to divide the load between online survey participants and administrative users. If you conduct large-scale online surveys, we recommend using an additional web server to insure high performance and extended access load. Option 3 is also required if the Class Climate server can only be accessed from an internal network. You can make the second server accessible to the internet for internal and external users.

Hardware Components		Usage			
		Low	Medium	High	Very High
Use Parameters*	Number of active users in 30 minutes***	0 – 10	11 – 40	41 -100	101 - 300
	Number of online survey participants per hour	0 – 500	500 – 1,000	1,001 – 5,000	5,001 – 10,000
	Number of returns in one minute	0 - 20	21 - 50	51 - 100	101 - 150
Main Server: Recommended Performance Parameters	Number of CPU Cores	2	4	4	4
	RAM	4 GB	8 GB	8 GB	8 GB
	Usage for online surveys	Yes		No	
	Hard Drive Capacity	100 GB		200 GB	
Dual Server: Recommended Performance Parameters	Number of CPU Cores	NA	NA	4	6
	RAM	NA	NA	8 GB	10 GB
	Hard Drive Capacity	NA	NA	50 GB	

* The highest expected use parameter determines the recommended performance parameters for the Class Climate System.

** Active users include admins, report creators, and instructors that have active accounts.

Example, if:

Number of active users = Low (0-10)

Number of returns per minute = Medium (21-50)

Number of online survey/examiners = Medium (501-1000)

Then, the recommended performance parameters = Medium (4 CPU Cores, 8 GB RAM, 100 GB Hard Drive)

Supported Server Systems*				
	Windows Server 2008 R2	Windows Server 2012	Windows Server 2012 R2	Windows Server 2016
Existing Installations	Yes	Yes	Yes	Yes**
New Installations	No	Yes	Yes	Yes
* Windows Server 2008 (64 bit) is not supported with Class Climate 7.1				
** You must update existing installations to Class Climate 7.1 before you can migrate to Windows Server 2016.				
Software Components				
Existing Microsoft IIS 7.5 Web Server, or later	Windows Server 2012, Windows Server 2012 R2, Windows Server 2016			
MySQL 5.7				
Class Climate server software 7.1				
VividForms Reader 2.2				
Workstation components				
Scanstation 3.6	Windows 8.x or Windows 10			
VividForms Designer 1.4				

Virtual Servers

Class Climate 7.1 supports virtual environments such as ESXi, Hyper-V and XenServer. Virtual environments must comply with the system requirements listed above.

Preinstalled software (Web server, Database server, etc.) running on the server that will host Class Climate may cause problems during installation. We recommend a dedicated server for Class Climate. If you are not installing Class Climate on its own dedicated server, contact Scantron Support to discuss preinstalled software.

Supported Browsers

You must install Acrobat Reader® on PCs to open the questionnaires and PDF reports. Do not use browser plug-ins to open PDFs. Browser plug-ins cause issues when printing questionnaires. To install Acrobat Reader®, go to www.adobe.com/products/reader. Class Climate 7.1 supports the browsers listed in the table below.

Browser	Class Climate User (Backend)	Online Survey Participants (Frontend)
Internet Explorer 7	Not Supported	Not Supported
Internet Explorer 8	With limitations	Supported
Internet Explorer 9	Supported	Supported
Internet Explorer 10	Supported	Supported
Internet Explorer 11	Supported	Supported
Edge 20	With limitations	Supported
Chrome 56*	With limitations	Supported
Firefox 51*	Supported	Supported
Safari 10	With limitations	Supported
Opera	Not Supported	Not Supported

With limitations: The browser is currently being tested with Class Climate; there may be optical limitations and a decrease in system performance.

Supported: You will experience no functional limitations using the browser.

*The most recent version of these browsers are tested. Their manufacturers regularly update these browsers. Scantron cannot guarantee compatibility of newer versions.

System Security

Class Climate is a web based application that can be accessed by external users taking online surveys via the internet. If you do not use a separate online server, as outlined in Option 3 above, the server operating system must be configured to meet current internet server security standards. If your organization's IT department does not provide network security guidelines for server operating systems, review the Class Climate Data Security Paper and adhere to the following practices:

- Always implement current security updates.
- Do not run unnecessary services on the server; additional services could pose additional risks.
- Separate network cards for internal and external network connections; do not route the NT kernel.
- Use an external mail server/relay for mail service.
- Additional information is available in the *Class Climate Data Security Paper*.

Recommended Firewall settings

- Block all ports except 80 and 443
- Where applicable, use NAT or Reverse Proxying

Printer and Scanner Requirements

Printer Requirements:

- Laser Printer
- Plain White Paper
- Paper weight (24 to 39# Bond)
- We recommend printing the PDF document direct to the printer
- Making photocopies may result in non-scannable forms
- Do not use printer economy modes; they produce gray values
- Duplex printing preferred

For additional information, see the Scanstation manual.

Scanner (TWAIN) Requirements:

Class Climate 7.1 requires a scanner with a document feeder; flatbed scanners are not supported. The following scanners are certified with VividForms Reader.

- Scantron iNSIGHT 20, iNSIGHT 30, and iNSIGHT 4
- Canon DR 3080CII, DR 3080C, DR 3060, DR 9080, DR 5080, DR 5010
- Panasonic KV-S2055, KV-S2065, KV-S3065
- Fujitsu 4120 (5120 is not supported)
- Kodak i40 (special configuration of driver is required)
- Avision AV 220

To test TWAIN devices not listed here, scan images at 200 DPI, and Black & White, and ensure the devices offer multipage TIFF files with group IV compression.

Minimum System Requirements for Scanning Stations

- Intel® compatible processor with a minimum of 1.5 GHz
- 40 GB Hard Disk
- 2 GB Memory
- 100 MBit/s Network
- USB port

Multiple Function Printer Devices are not recommended

While it is possible to use multifunction devices to scan paper questionnaires, we highly recommend using a document scanner connected to the Scanstation. If you choose to use a multifunction device, please note the following:

- Multifunction devices must be able to create flawless multi-page TIF files and automatically write them to a predefined directory, from which the Scanstation automatically triggers further processing and passes the documents to the VividForms Reader.
- These devices must be tested prior to use to ensure quality control, brightness, contrast, color depth and resolution.
- MFP devices are not recommended since these devices do not have TWAIN drivers that are required and cannot be operated directly with the Scanstation.
- Test all MFPs prior to using them to print or scan forms.

Contact Scantron before attempting to use a multifunction device to scan paper questionnaires to ensure successful operation.