System Requirements

SAS® Cost and Profitability Management 8.4

This document provides the requirements for installing and running SAS Cost and Profitability Management 8.4. You must update your computer to meet the minimum requirements before installing SAS Cost and Profitability Management. The requirements listed in this document include software and hardware requirements. This document has been updated for the first maintenance release of SAS Cost and Profitability Management 8.4 (8.4M1), and for SAS 9.4M7 (TS1M7).

Note that the hardware requirements discussed in this document are only estimates. The number and size of models and their associated analysis cubes affect all aspects of hardware-related performance. The applicability of a specific server platform is primarily dependent on data volumes. For detailed hardware sizing and specific needs, a formal analysis is required. Contact your SAS account representative to request an official hardware sizing. If you need assistance in determining your SAS account representative, send an email to contactcenter@sas.com.

Deployment

SAS Cost and Profitability Management 8.4 supports Microsoft Windows and Linux operating systems. Some of the other SAS servers that are included with SAS Cost and Profitability Management can also be installed on other varieties of UNIX.

We strongly recommend that you avoid installing SAS in a mixed-architecture environment. The following list describes the most complex deployment that is supported:

- Server 1: Middle-Tier Server (Windows and Linux).
- Server 2: Database Server (Windows and UNIX).
- Server 3: OLAP Server and Workspace Server (Windows and UNIX).
- Server 4: Model Server (Windows and Linux).
- Server 5: Metadata Server. This may be an existing metadata server. (Windows and UNIX).
- Server 6: SAS Visual Analytics Server (Windows and Linux). This server is optional and is only applicable for the SAS Cost and Profitability Advanced package. For more information, refer to the SAS Visual Analytics System Requirements document.

The SAS Cost and Profitability Management client is only available for a Windows operating system.

This document describes the system requirements for each server and for the client. Requirements for a standalone installation are described last. The requirements are given in both minimum and preferred categories. A minimum installation of SAS Cost and Profitability Management would suffice for no more than 3 to 5 modelers. A preferred installation of SAS Cost and Profitability Management could adequately service 5 to 10 modelers. For larger installations, contact your SAS Support Consultant.

The following table describes the supported combinations of databases and OLAP servers, depending on the operating system:

Mid-Tier Architecture	Database	OLAP
Windows 64-bit	Microsoft SQL Server	SAS OLAP
		Microsoft SQL Server Analysis Services
	Oracle	SAS OLAP
		Microsoft SQL Server Analysis Services
	PostgreSQL	SAS OLAP
Linux (x86) 64-bit	Oracle	SAS OLAP
	PostgreSQL	

For a mixed-machine architecture, contact SAS Technical Support.

For Microsoft SQL Server Analysis Services, SAS Cost and Profitability Management only supports multidimensional mode. Microsoft SQL Server Analysis Services is **not** supported with the PostgreSQL database. However, Microsoft SQL Server Analysis Services is supported with the Oracle database. Note that future support is dependent on continued cooperation between Microsoft and Oracle and on their support for the drivers that they provide. This cooperation might end at any time in the future.

SAS Cost and Profitability Management supports SSL. It also supports Single Sign-On (SSO) for thin clients and Integrated Windows Authentication (IWA).

SAS Cost and Profitability Management includes the required ODBC driver for ODBC connectivity if you are connecting to Oracle or PostgreSQL from Linux. For example, if you have installed the Model Server on Linux, this driver is used to make an ODBC connection to the database. It is required to establish database connectivity for SAS Cost and Profitability Management. Contact SAS Technical Support for more information.

Supported Databases and Versions

Microsoft SQL Server
- SQL Server 2019 Standard, Enterprise editions
- SQL Server 2017 Standard, Enterprise editions
- SQL Server 2016 Express, Web, Standard and Enterprise, editions on Amazon RDS
- SQL Server 2016 Standard, Enterprise editions
- SQL Server 2014 Standard, Enterprise, Business Intelligence editions
- SQL Server 2012 (SP1 or later) Standard, Enterprise, Business Intelligence editions
- SQL MI - Microsoft SQL Azure (RTM) - 12.0.2000.8

SQL Server 2012, 2014, and 2016 Developer Edition are supported for non-production use only (that is, for testing and validation).

SQL Server 2012, 2014 and 2016 Express Edition are supported for non-production use (for testing and validation) and can be used with SAS OLAP Server only.

The SQL Server versions differ in the number of CPUs/cores they support, the amount of RAM that is supported, and in other ways. For more information about the differences, see:

https://msdn.microsoft.com/en-us/library/ms143760(v=sql.110).aspx and
http://msdn.microsoft.com/en-us/library/cc645993(v=SQL.110).aspx.

Oracle

- Oracle 19c (19.0.0.0.0 or later) Standard and Enterprise editions
- Oracle 19c RAC
- Oracle 12c (12.1.0.1 or later) Standard and Enterprise editions

PostgreSQL

PostgreSQL is available from your SAS installation media.

For more information about the PostgreSQL database used by SAS, see the *SAS 9.4 Intelligence Platform: Middle-Tier Administration Guide* at:
http://support.sas.com/documentation/cdl/en/bimtag/65039/PDF/default/bimtag.pdf

SAS Cost and Profitability Management supports TLS1.2 configuration for SQL Server, Oracle, and PostgreSQL.

Supported Operating Systems and Versions

Windows Server Operating Systems

- Microsoft Windows Server 2019 64-bit Standard, Datacenter, Essentials, and Foundation editions
- Microsoft Windows Server 2016 64-bit Standard, Datacenter, Essentials, and Foundation editions
- Microsoft Windows Server 2012 R2 64-bit Standard, Datacenter, Essentials, and Foundation
- Microsoft Windows Server 2012 64-bit Standard, Datacenter, Essentials, and Foundation

In general, SAS Cost and Profitability Management only supports 64-bit operating systems when used as a server. However, there is one situation in which a 32-bit operating system is supported:

When hosting Microsoft or Oracle 32-bit databases.

Windows Client Operating Systems

- Windows 10 Enterprise (32- and 64-bit)
- Windows 8 Pro and Enterprise (32- and 64-bit)

Linux Server Operating Systems

- Oracle Linux 6.x on x64
- Red Hat Enterprise Linux 6.x and later on x64
- Red Hat Enterprise Linux 7.x and later on x64
- Red Hat Enterprise Linux 8.x and later on x64
- SUSE Linux Enterprise Server 11, SP1 on x64 [1]
- SUSE Linux Enterprise Server 12, SP4 on x64 1
- SUSE Linux Enterprise Server 15, SP2 on x64 1

[1] For SUSE Linux, all functions are supported except for model backup and restore. Users must use export and import in place of backup and restore if they run on SUSE Linux.

Middle Tier (Web Application Server)

Software Requirements

This machine hosts the application for SAS Cost and Profitability Management. A separate machine is not required.

Item	Minimum Level	Preferred Level
Operating System	Windows Server or Linux Server	Windows Server or Linux Server
SAS	SAS Foundation 9.4M7	SAS Foundation 9.4M7
Web Server	SAS Web Application Server	SAS Web Application Server
JRE	A private JRE is provided by SAS and installed by the SAS Deployment Wizard.	A private JRE is provided by SAS and installed by the SAS Deployment Wizard.
Message Queuing	Java Message Services (Included in the SAS Web Application Server)	Java Message Services (Included in the SAS Web Application Server)
Citrix[1] (Optional)	Citrix Presentation Server 4	Citrix Presentation Server 4
Other Operating System Components	If using SSAS: Microsoft .NET Framework 4.8	If using SSAS: Microsoft .NET Framework 4.8
Data Access [2] Depending on the database type	Microsoft SQL Server JDBC Driver[3] and Microsoft SQL Server Client Connectivity Tools or Oracle Database 12c/19c JDBC Drivers and Oracle Database 12c/19c Client Connectivity Tools or PostgreSQL SAS ODBC Drivers for the Web Infrastructure Platform Data Server and SAS Web Infrastructure Data Base JDBC Drivers On Linux Server, the required ODBC driver is provided by SAS and installed by the SAS Deployment Wizard for ODBC connectivity.	Microsoft SQL Server JDBC Driver[3] and Microsoft SQL Server Client Connectivity Tools or Oracle Database 12c/19c JDBC Drivers and Oracle Database 12c/19c Client Connectivity Tools or PostgreSQL SAS ODBC Drivers for the Web Infrastructure Platform Data Server and SAS Web Infrastructure Data Base JDBC Drivers On Linux Server, the required ODBC driver is provided by SAS and installed by the SAS Deployment Wizard for ODBC connectivity.
Java Diagnostic Tool	JUnit 4.8.1	JUnit 4.8.1

[1] If desired, Citrix Presentation Server may be used to allow a zero-footprint client machine to access SAS Cost and Profitability Management functionality. Use of Citrix software is not required.

[2] If the database is installed on a different machine than the SAS Cost and Profitability Management Middle-Tier server, install the database Client Connectivity Tools package on the SAS Cost and Profitability Management application server. This package includes drivers and other components that

the SAS Cost and Profitability Management application server uses to access the database on the remote computer. For more information, refer to the Client Connectivity Tools installation documentation for your database. For an Oracle database, the administrator's version of the client tools is required to obtain all the necessary components.

[3] More information about the Microsoft JDBC support for SQL Server is available here: `https://docs.microsoft.com/en-us/sql/connect/jdbc/microsoft-jdbc-driver-for-sql-server-support-matrix`

Hardware Requirements

The following table summarizes hardware requirements for the web application server:

Item	Minimum Level	Preferred Level
Processor	Dual processor, 64-bit, 2.0 GHz	Quad-core processor, 64-bit, 3.0 GHz
Memory	12 GB. Refer to your operating system documentation for information about managing the size of the paging file.[1]	20 GB Refer to your operating system documentation for information about managing the size of the paging file.[1]
Disk Space	5 GB for installation and temporary file space. Additional disk space for model storage depends on the number, size, and complexity of models.	5 GB for installation and temporary file space. Additional disk space for model storage depends on the number, size, and complexity of models.
Network Bandwidth	128 kbps of available bandwidth per expected concurrent user	256 kbps of available bandwidth per expected concurrent user

[1] As an example, here is an article from Microsoft: `https://support.microsoft.com/en-us/kb/2860880`

Database Server

This server hosts the database for SAS Cost and Profitability Management. It does not need to be a separate computer from the servers listed. It can also be combined with the OLAP server if desired.

Software Requirements

The following table summarizes software requirements for the Database Server:

Item	Minimum Level	Preferred Level
Operating System [1,2]	Windows Server or IBM AIX 7.1 TL 0 (Power PC) or Solaris 10 Update 9 (SPARC) or Linux Server	Windows Server or IBM AIX 7.1 TL 0 (Power PC) or Solaris 11 All Updates (SPARC) or Linux Server

Item	Minimum Level	Preferred Level
Database [3]	Microsoft SQL Server (Windows only) Oracle PostgreSQL	Microsoft SQL Server (Windows only) Oracle PostgreSQL

[1] SAS might not have all possible combinations of databases, versions, and hardware configurations available for testing and troubleshooting in case software defects or other problems are encountered. In such cases, SAS fully supports the hardware/software configuration. However, SAS may need additional/close cooperation from the customer to resolve any problems if they cannot be reproduced on internally available configurations.

[2] Database drivers for Windows hosts are often distributed free of charge by database vendors. However, they are often provided at an additional charge for non-Windows hosts. This is especially true if the host for the database server is not the same as the host(s) for other SAS server software where these drivers are required. SAS does not provide or resell these database drivers. We recommend verifying driver availability and cost with your database vendor.

[3] SAS Cost and Profitability Management requires a JDBC driver on the middle-tier server. It also requires an ODBC driver on the Model Server and, if using SAS OLAP Server, possibly also on the OLAP server. The requirement depends on how the OLAP Server connects to the database. Often the requirement for the ODBC driver is met by installing the "Client Tools" utilities (which usually contains a suitable ODBC driver), which are available as part of the database installation package. Refer to the *SAS Cost and Profitability Management Installation Instructions* for more information.

Hardware Requirements

The following table summarizes hardware requirements for the Database Server:

Item	Minimum Level	Preferred Level
Processor	Dual processor, 32-bit, 2 GHz	Quad-core processor, 64-bit, 3.0 GHz
Memory	4 GB Refer to your operating system documentation for information about managing the size of the paging file.[1]	8 GB Refer to your operating system documentation for information about managing the size of the paging file.[1]
Disk Space	5 GB for installation and temporary file space. Additional disk space for model storage and fact tables depends on the number, size, and complexity of models.	5 GB for installation and temporary file space. Additional disk space for model storage and fact tables depends on the number, size, and complexity of models.

[1] As an example, here is an article from Microsoft: https://support.microsoft.com/en-us/kb/2860880

OLAP Server

This server hosts OLAP Analysis for SAS Cost and Profitability Management. A separate host is not required. It can also be combined with the database server for performance reasons. SAS OLAP Server 9.4M7 should be installed as part of SAS Foundation 9.4M7.

Software Requirements

The following table summarizes software requirements for SAS OLAP Server:

Item		Minimum Level	Preferred Level
Operating System		Windows Server or IBM AIX 7.1 TL 0 (Power PC) or Solaris 10 Update 9 (SPARC) or Linux Server	Windows Server or IBM AIX 7.1 TL 0 (Power PC) or Solaris 10 Update 9 (SPARC) or Linux Server
OLAP[1]	SAS OLAP Server [3]	SAS Foundation 9.4M7 and SAS Workspace Server 9.4M7 and SAS OLAP Server 9.4M7 [2] Microsoft SQL Server Client Connectivity Tools or Oracle Database 12c/19c Client Connectivity Tools or PostgreSQL SAS ODBC Drivers for the Web Infrastructure Platform Data Server On Linux Server, the required ODBC driver is provided by SAS and installed by the SAS Deployment Wizard for ODBC connectivity.	SAS Foundation 9.4M7 and SAS Workspace Server 9.4M7 and SAS OLAP Server 9.4M7 [2] Microsoft SQL Server Client Connectivity Tools or Oracle Database 12c/19c Client Connectivity Tools or PostgreSQL SAS ODBC Drivers for the Web Infrastructure Platform Data Server On Linux servers, the required ODBC driver is provided by SAS and installed by the SAS Deployment Wizard for ODBC connectivity.
	Microsoft SQL Server Analysis Services (Windows Only) [3]	Microsoft SQL Server Analysis Services 2012(SSAS) SP1 (32/64-bit) [2] Microsoft SQL Server Client Connectivity Tools or Oracle Database 12c/19c Client Connectivity Tools	Microsoft SQL Server Analysis Services 2012 (SSAS) SP1 or later (32/64-bit)[2] Microsoft SQL Server Analysis Services 2014 (SSAS) (32/64-bit) [2] Microsoft SQL Server Analysis Services 2016 (SSAS) (32/64-bit) [2] Microsoft SQL Server Analysis Services 2017 (SSAS) (32/64-bit) [2] Microsoft SQL Server Analysis Services 2019 (SSAS) (32/64-bit) [2]Microsoft SQL Server Client Connectivity Tools or Oracle Database 12c/19c Client Connectivity Tools

[1] SAS Cost and Profitability Management 8.4 can be configured without SAS OLAP Server or SSAS. However, OLAP analysis will not function. OLAP analysis can be configured externally using SAS OLAP Server, SSAS, or a third-party OLAP server, as required. The resulting cubes can be viewed with an external OLAP viewer, such as SAS Enterprise Guide.

[2] HTTP access to OLAP is only available if using Microsoft SQL Server Analysis Services. HTTP access to OLAP is not available when using SAS OLAP Server.

[3] SAS Cost and Profitability Management 8.4 has the capability to build SAS OLAP and Microsoft SQL Server Analysis Services cubes incrementally. However, for cubes that are built using Microsoft Analysis Services, this incremental capability is only available when using SQL Server Enterprise Editions and SQL Server Developer Edition. Because of limitations imposed by Microsoft, it is not available using SQL Server Standard Edition. When using SQL Server Standard Edition, full OLAP support is provided, but all cubes will be built non-incrementally.

Hardware Requirements

The following table summarizes hardware requirements for SAS OLAP Server:

Item	Minimum Level	Preferred Level
Processor [1]	Dual Processor 32-bit, 2 GHz Dual Processor 64-bit, 2 GHz	Quad-core processor, 64-bit, 3.0 GHz
Memory	4 GB 8 GB Refer to your operating system documentation for information about managing the size of the paging file.[2]	16 GB Refer to your operating system documentation for information about managing the size of the paging file.[2]
Hard Disk	5 GB for installation and temporary file space. Additional disk space for cubes depends on the number, size, and complexity of models. *Note: Calculating OLAP cubes may require hundreds of gigabytes of additional disk space in some cases. Consult your sales representative or Technical Support for more information.*	5 GB for installation and temporary file space. Additional disk space for cubes depends on the number, size, and complexity of models. *Note: Calculating OLAP cubes may require hundreds of gigabytes of additional disk space in some cases. Consult your sales representative or Technical Support for more information.*

[1] Although a 32-bit server is supported for OLAP cube processing using Microsoft SSAS, a 32-bit server should be used only for relatively small cubes. A 64-bit server with 8 GB of RAM should be considered the minimum.

[2] As an example, here is an article from Microsoft: https://support.microsoft.com/en-us/kb/2860880

Model Server

This machine hosts the Model Server for SAS Cost and Profitability Management. This server performs model calculation, fact table creation, and data retrieval from models to be displayed in the SAS Cost and Profitability Management client. A separate computer from the servers listed above is not required.

Software Requirements

The following table summarizes software requirements for the Model Server:

Item	Minimum Level	Preferred Level
Operating System	Windows Server or Linux Server	Windows Server or Linux Server
SAS Components	SAS Foundation 9.4M7 SAS/ACCESS Interface to ODBC 9.4M7 (if using SQL Server database) [1] SAS/ACCESS Interface to Oracle (if using an Oracle database) SAS/ACCESS Interface to PostgreSQL (if using a PostgreSQL database) SAS Workspace Server 9.4M7	SAS Foundation 9.4M7 SAS/ACCESS Interface to ODBC 9.4M7 (if using SQL Server database) [1] SAS/ACCESS Interface to Oracle (if using an Oracle database) SAS/ACCESS Interface to PostgreSQL (if using a PostgreSQL database) SAS Workspace Server 9.4M7
Data Access	Microsoft SQL Server Client Connectivity Tools or Oracle Database 12c/19c Client Connectivity Tools or PostgreSQL SAS ODBC Drivers for the Web Infrastructure Platform Data Server On Linux Server, the required ODBC driver is provided by SAS and installed by the SAS Deployment Wizard for ODBC connectivity.	Microsoft SQL Server Client Connectivity Tools or Oracle Database 12c/19c Client Connectivity Tools or PostgreSQL SAS ODBC Drivers for the Web Infrastructure Platform Data Server On Linux Server, the required ODBC driver is provided by SAS and installed by the SAS Deployment Wizard for ODBC connectivity.

[1] When you are using Microsoft SQL Server as the database, SAS/ACCESS to SQL Server is included. It is an optional component.

Hardware Requirements

The number and size of models affects all factors of hardware-related performance. The applicability of a specific server platform is primarily dependent on data volumes. The minimum and preferred hardware platforms are estimations only. The minimum server configuration is required to operate the software. As data volumes increase, the processing times will increase as well. There may come a point where the server hardware must be upgraded to allow for faster processing.

The following table summarizes hardware requirements for the Model Server:

Item	Minimum Level	Preferred Level
Processor	Quad-core processor, 64-bit, 2 GHz	8-way processor, 64-bit, 3.0 GHz
Memory	64 GB Refer to your operating system documentation for information about managing the size of the paging file.[1]	128 GB Refer to your operating system documentation for information about managing the size of the paging file.[1]
Hard Disk [2]	5 GB for installation and temporary file space.	5 GB for installation and temporary file space.

[1] As an example, here is an article from Microsoft: `https://support.microsoft.com/en-us/kb/2860880`

[2] The Model Server stores the model data for all SAS Cost and Profitability Management models. The amount of required disk space depends on several factors, including the size and complexity of each model (the number of accounts, assignments, user attributes, and the number of periods or scenarios) and the number of models on the server. The actual recommended amount of disk space for the models can vary from 100 GB to several TB.

Metadata Server

The *Metadata Server* is usually not tied to a single SAS product and is used by SAS solutions. It typically has a very small footprint and does not require a dedicated host.

Software Requirements

The following table summarizes software requirements for the Metadata Server:

Item	Minimum Level	Preferred Level
Operating System	Windows Server or IBM AIX 7.1 TL 0 (Power PC) or Solaris 10 Update 9 (SPARC) or Linux Server	Windows Server or IBM AIX 7.1 TL 0 (Power PC) or Solaris 10 Update 9 (SPARC) or Linux Server
SAS	SAS Foundation 9.4M7	SAS Foundation 9.4M7
JRE	A private JRE is provided by SAS and installed by the SAS Deployment Wizard.	A private JRE is provided by SAS and installed by the SAS Deployment Wizard.

Hardware Requirements

The following table summarizes hardware requirements for the Metadata Server:

Item	Minimum Level	Preferred Level
Processor	Dual processor, 32-bit, 2 GHz Dual processor, 64-bit, 2 GHz	Quad-core processor, 64-bit, 3.0 GHz
Memory	8 GB Refer to your operating system documentation for information about managing the size of the paging file.[1]	16 GB Refer to your operating system documentation for information about managing the size of the paging file.[1]
Hard Disk	5 GB for installation and temporary file space.	5 GB for installation and temporary file space.

[1] Here is an example of such documentation: `https://support.microsoft.com/en-us/kb/2860880`.

Client

Software Requirements

The following table summarizes software requirements for the client:

Item	Minimum Level	Preferred Level
Operating System	Windows Client	Windows Client
Other Operating System Components	Microsoft .NET Framework 4.8 and Microsoft XML Parser 6.0 [1] and Microsoft OLEDB for OLAP 11.0 (for SSAS 2012), or Microsoft OLEDB for OLAP 12.0 (for SSAS 2014), or Microsoft OLEDB for OLAP 13.0 (for SSAS 2016), or Microsoft OLEDB for OLAP 14.0 (for SSAS 2017), or Microsoft OLEDB for OLAP 15.0 (for SSAS 2019), or SAS OLEDB for OLAP 9.4M7 (for SAS OLAP Server) [2]	Microsoft .NET Framework 4.8 and Microsoft XML Parser 6.0,[1] and Microsoft OLEDB for OLAP 11.0 (for SSAS 2012), or Microsoft OLEDB for OLAP 12.0 (for SSAS 2014), or Microsoft OLEDB for OLAP 13.0 (for SSAS 2016), or Microsoft OLEDB for OLAP 14.0 (for SSAS 2017), or Microsoft OLEDB for OLAP 15.0 (for SSAS 2019), or SAS OLEDB for OLAP 9.4M7 (for SAS OLAP Server) [2]
JRE [3]	A private JRE is provided by SAS and installed by the SAS Deployment Wizard.	A private JRE is provided by SAS and installed by the SAS Deployment Wizard.

Item	Minimum Level	Preferred Level
Web Browser	https://support.sas.com/en/documentation/third-party-software-reference/9-4/support-for-9-4-web-browsers.html	https://support.sas.com/en/documentation/third-party-software-reference/9-4/support-for-9-4-web-browsers.html
Other Web Components	DHTML Editing Control for Applications	DHTML Editing Control for Applications
Adobe Reader	Adobe Reader 9	Adobe Reader 11

[1] The Microsoft XML Parser 6.0 is installed as part of Internet Explorer and typically does not need to be installed separately.

[2] SAS OLEDB for OLAP 9.4M7 is installed as part of the SAS Cost and Profitability Management client and typically does not need to be installed separately.

[3] The JRE is not used directly by SAS Cost and Profitability Management, but it is required for other SAS client software, such as the SAS Management Console.

Hardware Requirements

The following table summarizes hardware requirements for the client:

Item	Minimum Level	Preferred Level
Processor	1.5 GHz	3.0 GHz
Memory	3 GB	4 GB
Disk Space	5 GB of available disk space, with 2 GB available on system drive. Additional disk space for imported or exported model XML files depends on the number, size, and complexity of models.	5 GB available disk space, with 2 GB available on system drive. Additional disk space for imported or exported model XML files depends on the number, size, and complexity of models.
Screen Resolution	1024 x 768 pixels screen area and High Color (16-bit) display.	1280 × 1024 pixels screen area and True Color (32-bit) display.
Network Bandwidth	128 kbps available bandwidth per expected concurrent user	256 kbps available bandwidth per expected concurrent user

Standalone Installation

Standalone installation is only available for a single Windows machine using Microsoft SQL Server or PostgreSQL databases.

A standalone installation is intended for individual users on a laptop or for a few users on an appropriately sized server. Be aware that laptop computers have very slow hard disk drives, at least by server standards, so performance may be substantially slower than on a dedicated server.

These hardware and software requirements reflect the needs of the SAS Cost and Profitability Management software and its required components only. SAS does not recommend installing the entire SAS Business Intelligence suite on a single computer.

Software Requirements

The following table summarizes software requirements for a standalone installation:

Item	Minimum Level	Preferred Level
Operating System	Windows Client (64-bit only) [7] Windows Server (64-bit only)	Windows Client (64-bit only) Windows Server (64-bit only)
SAS Components	SAS Foundation 9.4M7 and SAS Metadata Server 9.4M7 and SAS Workspace Server 9.4M7 and SAS/ACCESS Interface to ODBC 9.4M7	SAS Foundation 9.4M7 and SAS Metadata Server 9.4M7 and SAS Workspace Server 9.4M7 and SAS/ACCESS Interface to ODBC 9.4M7
Web Server	SAS Web Application Server	SAS Web Application Server
JRE	A private JRE is provided by SAS and installed by the SAS Deployment Wizard.	A private JRE is provided by SAS and installed by the SAS Deployment Wizard.
Message Queuing	Java Message Services (included in the SAS Web Application Server)	Java Message Services (included in the SAS Web Application Server)
Database[1, 2]	Microsoft SQL Server (Windows only) PostgreSQL	Microsoft SQL Server (Windows only) PostgreSQL
Data Access Depending on the database type	SQL Server database: Microsoft SQL Server JDBC Driver [6] and Microsoft SQL Server Client Connectivity Tools or PostgreSQL: SAS ODBC Drivers for the Web Infrastructure Platform Data Server and SAS Web Infrastructure Data Base JDBC Drivers	SQL Server database: Microsoft SQL Server JDBC Driver [6] and Microsoft SQL Server Client Connectivity Tools or PostgreSQL: SAS ODBC Drivers for the Web Infrastructure Platform Data Server and SAS Web Infrastructure Data Base JDBC Drivers

Item		Minimum Level	Preferred Level
Other Operating System Components		Microsoft .NET 4.8 and Microsoft XML Parser 6.0, [5] and Microsoft OLEDB for OLAP 14.0 (for SSAS 2017), or Microsoft OLEDB for OLAP 15.0 (for SSAS 2019), or Microsoft OLEDB for OLAP 13.0 (for SSAS 2016), or Microsoft OLEDB for OLAP 12.0 (for SSAS 2014), or Microsoft OLEDB for OLAP 11.0 (for SSAS 2012) or SAS OLEDB for OLAP 9.4M7 (for SAS OLAP Server) [3]	Microsoft .NET 4.8 and Microsoft XML Parser 6.0, [5] and Microsoft OLEDB for OLAP 14.0 (for SSAS 2017), or Microsoft OLEDB for OLAP 15.0 (for SSAS 2019), or Microsoft OLEDB for OLAP 13.0 (for SSAS 2016), or Microsoft OLEDB for OLAP 12.0 (for SSAS 2014), or Microsoft OLEDB for OLAP 11.0 (for SSAS 2012) or SAS OLEDB for OLAP 9.4M7 (for SAS OLAP Server) [3]
OLAP [4]	SAS	SAS OLAP Server 9.4M7	SAS OLAP Server 9.4M7
	Microsoft	Microsoft SQL Server Analysis Services 2019 (SSAS) or Microsoft SQL Server Analysis Services 2017 (SSAS) or Microsoft SQL Server Analysis Services 2016 (SSAS) or Microsoft SQL Server Analysis Services 2014 (SSAS) or Microsoft SQL Server Analysis Services 2012 SP1 (SSAS)	Microsoft SQL Server Analysis Services 2019 (SSAS) or Microsoft SQL Server Analysis Services 2017 (SSAS) or Microsoft SQL Server Analysis Services 2016 (SSAS) or Microsoft SQL Server Analysis Services 2014 (SSAS) or Microsoft SQL Server Analysis Services 2012 SP1 (SSAS)
Java Diagnostic Tool		JUnit 4.9.1	JUnit 4.9.1
Web Browser		https://support.sas.com/en/documentation/third-party-software-reference/9-4/support-for-9-4-web-browsers.html	https://support.sas.com/en/documentation/third-party-software-reference/9-4/support-for-9-4-web-browsers.html
Other Web Components		DHTML Editing Control for Applications	DHTML Editing Control for Applications
Adobe Reader		Adobe Reader 9	Adobe Reader 11

[1] The SQL Server Express Editions are free, reduced-capability versions of Microsoft SQL Server. They do not support OLAP analysis. Hence, integrated OLAP analysis using SSAS is not possible. However, integrated OLAP analysis can be configured using SAS OLAP Server.

[2] SQL Server Standard Edition requires a server operating system.

[3] SAS OLE DB for OLAP 9.4M7 is installed as part of the SAS Cost and Profitability Management client and typically does not require a separate installation.

[4] SAS Cost and Profitability Management 8.4 can be configured without SAS OLAP Server or SSAS. However, OLAP analysis will not function. OLAP analysis can be configured externally using SAS OLAP Server, SSAS, or a third-party OLAP server as preferred. The resulting cubes can be viewed with an external OLAP viewer, such as SAS Enterprise Guide.

[5] The Microsoft XML Parser 6.0 is installed as part of Internet Explorer and typically does not require a separate installation.

[6] For more information about the Microsoft JDBC support for SQL server, see the following website: https://docs.microsoft.com/en-us/sql/connect/jdbc/microsoft-jdbc-driver-for-sql-server-support-matrix

[7] Windows 10 (64-bit) is a supported platform.

Hardware Requirements

The number and size of models and their associated cubes affect all aspects of hardware-related performance. The applicability of a specific deployment is primarily dependent on data volumes. The minimum and preferred hardware platforms are estimations only.

The minimum server configuration is required to operate the software with one or two users. As data volumes increase, the processing times increase as well. At some point, the hardware must be upgraded to allow for faster processing and to allow processing to complete. *Due to the relative power of desktop PCs and server PCs, and because a desktop installation must service both client software and the server software, in most cases a desktop installation will not perform as well as a client/server installation.*

The following table summarizes hardware requirements for a standalone installation:

Item	Minimum Level	Preferred Level
Processor	Dual processor, 64-bit, 2.0 GHz [1]	Quad-core processor, 64-bit, 3.0 GHz [1]
Memory	16 GB Refer to your operating system documentation for information about managing the size of the paging file. [2]	32 GB Refer to your operating system documentation for information about managing the size of the paging file. [2]
Disk Space	30 GB for installation and temporary file space. Additional disk space for model storage depends on the number, size, and complexity of models. [3] *Note: Calculating OLAP fact tables and cubes may require hundreds of gigabytes of additional disk space in some cases. Consult SAS Technical Support for more information.*	30 GB for installation and temporary file space. Additional disk space for model storage depends on the number, size, and complexity of models. [3] *Note: Calculating OLAP fact tables and cubes may require hundreds of gigabytes of additional disk space in some cases. Consult SAS Technical Support for more information.*

[1] These configurations as a standalone server support only one or two users.

[2] Here is an example document from Microsoft: https://support.microsoft.com/en-us/kb/2860880

[3] The Model Server stores the model data for all SAS Cost and Profitability Management models. The amount of disk space depends on several factors, including the size of each model (the number of accounts, assignments, user attributes, and the number of periods or scenarios) and the number of models on the server. The actual recommended amount of disk space for the models can vary from 100 GB to several TB.

References

SAS Install Center (for documentation related to deployment):

http://support.sas.com/documentation/installcenter/

Third-Party Software Requirements:

https://support.sas.com/en/documentation/third-party-software-reference/baseline-and-higher.html

https://support.sas.com/en/documentation/third-party-software-reference/9-4.html

For additional information, contact SAS Technical Support. Sites in the U.S. and Canada may call (919) 677-8008. Other sites should contact their SAS Installation Representative or SAS Support Consultant for the nearest SAS office.