

# System Requirements

## SAS<sup>®</sup> Activity-Based Management 7.2

This document provides the requirements for installing and running SAS Activity-Based Management. You must update your computer to meet the minimum requirements before installing SAS Activity-Based Management. The major requirements listed in the document are:

- software requirements
- hardware requirements

For additional information, contact SAS Institute 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 Institute office.

### Deployment

SAS Activity-Based Management 7.2 can be installed on multiple servers with Windows or UNIX operating systems. The following is a list of the most complex deployment.

- Server 1: Mid-Tier Server
- Server 2: Database Server
- Server 3: OLAP Server and Workspace Server
- Server 4: Calculation Server and Workspace Server
- Server 5: Metadata Server. This could be an existing metadata server.

This document describes the system requirements for each server and the client. A standalone installation is described last. The requirements are given in both minimum and preferred categories. A minimum installation of SAS Activity-Based Management would suffice for no more than 3 to 5 modelers. A preferred installation of SAS Activity-Based Management could adequately service 10 to 15 modelers. For larger installations, please contact your SAS Support Consultant.

The SAS Activity-Based Management client is only available on a Windows operating system. The following table displays the products available depending on the operating system of the SAS Activity-Based Management Mid-Tier.

Mid-Tier Architecture	Database	OLAP	Web Server
Windows 2012 64-bit Windows 2008 64-bit	Microsoft SQL Server	SAS OLAP	JBoss or WebLogic or WebSphere
		Microsoft SQL Server Analysis Services	
	Oracle	SAS OLAP	JBoss or WebLogic or WebSphere
		Microsoft SQL Server Analysis Services	
	MySQL	SAS OLAP	JBoss or WebLogic or WebSphere
	Solaris	Oracle	SAS OLAP
MySQL			
AIX	Oracle	SAS OLAP	WebSphere
	MySQL		
Linux (x86) 64-bit	Oracle	SAS OLAP	WebSphere or JBoss
	MySQL		

For mixed machine architecture, please contact SAS Technical Support.

If you are using Microsoft SQL Server or Microsoft SQL Server Analysis Services (SSAS), the Application Server and the Calculation Server must be on Windows.

Microsoft SQL Server Analysis Services is **not** supported with the MySQL database. Microsoft SQL Server Analysis Services is supported with the Oracle database. Please note that future support is dependent upon continued cooperation between Microsoft and Oracle and the drivers they provide. This cooperation may end at any time in the future.

#### Web Application Server Versions:

(Overview: <http://support.sas.com/resources/thirdpartysupport/v93/appservers> )

- Oracle WebLogic 10.3 (10.3.0 through 10.3.6), 12.1 : OEM for SAS and the full commercial version from Oracle. If you plan to use WebLogic with Windows 2008 R2, only 10.3.3 through .6 are supported on Windows 2008 R2 by both SAS and Oracle. SAS recommends a minimum of 12GB of RAM for use with WebLogic. Specific patches are required. See <http://support.sas.com/resources/thirdpartysupport/v93/appservers/weblogicsw.html> for additional details.
- IBM WebSphere 7 (7.0.0.13), 8 (8.0.0.2), 8.5 (8.5.0.1): OEM for SAS (when SAS moves the OEM version to 7) and the ND commercial version from IBM. SAS recommends a minimum of 12GB of RAM for use with WebSphere. Specific Fix Packs are required. See <http://support.sas.com/resources/thirdpartysupport/v93/appservers/webspheresw.html> for details.
- JBoss AS 4.2.3 GA, EAP 4.3, AS 5.1.0 GA, EAP 5.1.1, EAP 5.2.0, AS 7.1.1 FINAL: The Community version from [jboss.org](http://jboss.org) and the EAP version from Red Hat. Note that the Community version has SAS support limitations documented at <http://support.sas.com/resources/thirdpartysupport/jbossSupport.html>.

### Database Versions:

- Oracle 11g (R1 and R2): Standard and Enterprise editions are supported.
- Microsoft SQL Server 2008 and 2012 are supported: Workgroup 2008, Standard 2008 and 2012, Business Intelligence 2012, and Enterprise 2008 and 2012 editions are supported. The Developer edition is supported for non-production use only (testing and validation). Finally, the Express edition is supported for non-production use (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, amount of RAM supported, etc. The differences are documented here: <http://www.microsoft.com/en-us/sqlserver/editions.aspx>
- MySQL 5: Version 5.1.55 from <http://www.mysql.org>.

## Application Server (Mid-Tier) Installation

### Software Requirements

This server hosts the application for SAS Activity-Based Management. It does not need to be a separate computer from the servers listed below.

	Minimum	Preferred
Operating System	Windows 2008 Server R1 SP2 (64-bit) or IBM AIX 6.1 TL4 (Power PC) or Solaris 10 (SPARC) Red Hat Linux x86 5.4 (64-bit) SuSE SLES Linux 10 SP3 (64-bit)	Windows 2008 Server R2 SP1 (64-bit) <sup>4</sup> or Windows 2012 Server (64-bit) <sup>4</sup> or IBM AIX 7.1 (Power PC) or Solaris 10 (SPARC) Red Hat Linux x86 6 (64-bit) SuSE SLES Linux 11 (64-bit)
Citrix <sup>1</sup> (Optional)	Citrix Presentation Server 4	Citrix Presentation Server 4
Web Server	JBoss 4.2.3 or Oracle WebLogic Server 10.3 or IBM WebSphere 7 <sup>3</sup>	JBoss 5.2 <sup>3</sup> or JBoss 7.1.1 Oracle WebLogic Server 12.1 or IBM WebSphere 8.5 <sup>3</sup>
Message Queuing	Java Message Services (Included in the web servers JBoss, WebLogic and WebSphere)	Java Message Services (Included in the web servers JBoss, WebLogic or WebSphere)
Other Operating System Components	if using SSAS: Microsoft .NET Framework 3.5 SP1	if using SSAS: Microsoft .NET Framework 3.5 SP1

		Minimum	Preferred
Data Access <sup>2</sup>  Depending upon the database type		Microsoft SQL Server JDBC Driver version 2.0. and Microsoft SQL Server Client Connectivity Tools or MySQL Connector/J -5.1.17 or Oracle Database 11g JDBC Drivers and Oracle Database 11g Client Connectivity Tools	Microsoft SQL Server JDBC Driver version 2.0. and Microsoft SQL Server Client Connectivity Tools or MySQL Connector/J -5.1.17 or Oracle Database 11g JDBC Drivers and Oracle Database 11g Client Connectivity Tools
JRE (for client software such as the SAS Management Console) <sup>3</sup>		Windows 64 bit - SUN Java 6 Update 24 or SUN Java 7 Update 15  AIX - IBM Java 6 SR8 FP1 + iFix IZ77436 or IBM Java 7.0.0.60 (Java 7.0 SR3)  Solaris – SUN Java 6 Update 21 or SUN Java 7 Update 15  Linux - SUN Java 6 Update 24 or SUN Java 7 Update 15	Windows 64 bit - SUN Java 6 Update 24 or SUN Java 7 Update 15  AIX - IBM Java 6 SR8 FP1 + iFix IZ77436 or IBM Java 7.0.0.60 (Java 7.0 SR3)  Solaris – SUN Java 6 Update 21 or SUN Java 7 Update 15  Linux - SUN Java 6 Update 24 or SUN Java 7 Update 15
Java JDK <sup>3</sup>	JBoss AS 4.2.3, EAP 4.3, AS 5.1 EAP 5.2	SUN Java JDK 6 Update 30	SUN Java JDK 6 Update 30
	JBoss EAP 5.2 AS 7.1.1	SUN Java JDK 7 Update 15	SUN Java JDK 7 Update 15
	WebLogic 10.3.x	(Win) SUN Java JDK 6 Update 30 (Solaris) SUN Java JDK 6 Update 30	(Win) SUN Java JDK 6 Update 30 (Solaris) SUN Java JDK 6 Update 30
	WebLogic 12.1	SUN Java JDK 7 Update 15	SUN Java JDK 7 Update 15
	WebSphere 7.0.0.13	WebSphere7 installs its own version of the Java JDK for application use.	WebSphere 7 installs its own version of the Java JDK for application use.
Java Diagnostic Tool		JUnit 4.0	JUnit 4.0

<sup>1</sup> If desired, Citrix Presentation Server may be used to allow a zero-footprint client computer access to the SAS Activity-Based Management functionality. Use of Citrix software is not required.

<sup>2</sup> If the database is installed on a different computer than the SAS Activity-Based Management application server, then the database Client Connectivity Tools must be installed on the SAS Activity-Based Management application server. The Client Connectivity Tools package for the database installs drivers and other components used by the SAS Activity-Based Management application server to access the database on the remote computer. For more information, please refer to the Client Connectivity Tools installation documentation for your database.

<sup>3</sup> SAS Activity-Based Management’s Java requirements and JBoss/WebLogic/WebSphere requirements are identical to the SAS Enterprise BI Server platform requirements. Any discrepancies are in error and should be communicated to the SAS Activity-Based Management team.

<sup>4</sup> The middle tier is not supported on 32-bit versions of Windows. A 32-bit version of Windows 2008 Server R2 or Windows 2012 Server is not available from Microsoft.

## Hardware Requirements

The number and size of models and their associated analysis cubes 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 hardware must be upgraded to allow faster processing.

	Minimum	Preferred
Processor	Dual Processor 64-bit, 2.0 GHz	Quad Processor 64-bit, 3.0 GHz
Memory	8 GB – with a swap file size equal to twice physical memory if using JBoss 12 GB - with a swap file size equal to twice physical memory if using WebLogic or WebSphere	12 GB - with a swap file size equal to twice physical memory if using JBoss 20 GB - with a swap file size equal to twice physical memory if using WebLogic or WebSphere
Hard Disk	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	128k available bandwidth per expected concurrent user	128k available bandwidth per expected concurrent user

## Database Server

This server hosts the database for SAS Activity-Based 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

	Minimum	Preferred
Operating System <sup>1,2</sup>	Windows 2008 Server R1 SP2 (32/64-bit) or IBM AIX 6.1 TL 4 (Power PC) or Solaris 10 (SPARC) or Red Hat Linux x86 5.4 (64-bit) or SuSE SLES Linux 10 SP3 (64-bit)	Windows 2008 Server R2 SP1 (64-bit) or Windows 2012 Server (64-bit) or IBM AIX 7.1 (Power PC) or Solaris 10 (SPARC) or Red Hat Linux x86 6 (64-bit) or SuSE SLES Linux 11 (64-bit)

		Minimum	Preferred
Database	Microsoft Available only on Windows	SQL Server 2008 Standard or Enterprise Edition SP3 (32/64-bit)	SQL Server 2008 Standard or Enterprise Edition SP3 or newer (32/64-bit) or SQL Server 2012 Standard, Business Intelligence, or Enterprise Edition SP1 or newer (32/64-bit)
	Oracle <sup>3</sup>	Oracle 11g R1 (11.1.0.6) or newer Oracle 11g R2 (11.2.0.1) or newer	Oracle 11g R1 (11.1.0.6) or newer Oracle 11g R2 (11.2.0.1) or newer
	MySQL	MySQL Server 5.1.55	MySQL Server 5.1.55

<sup>1</sup> SAS may not have available all possible combinations of databases, versions, and hardware configurations 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 the problem if it cannot be reproduced on internally available configurations.

<sup>2</sup> Database drivers for Windows hosts are often distributed “free of charge” by database vendors. However, they are often provided at an additional charge for UNIX 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 databases, nor does SAS provide or resell the database drivers. Please verify driver availability and cost with your database vendor.

<sup>3</sup> SAS Activity-Based Management requires a JDBC driver on the mid-tier server. It also requires an ODBC driver on the Calculation Server and, if using SAS OLAP Server, possibly also on the OLAP server depending 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 is available as part of the database installation package. Please refer to the *SAS Activity-Based Management 7.2 Installation Instructions* for more details.

## Hardware Requirements

	Minimum	Preferred
Processor	Dual Processor 32-bit, 2 GHz	Quad Processor 64-bit, 3.0 GHz
Memory	4 GB - with a swap file size equal to twice physical memory	8 GB - with a swap file size equal to twice physical memory. For large models with large cubes, additional memory may be needed.
Hard Disk	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.

## OLAP Server

This server hosts the OLAP Analysis for SAS Activity-Based Management. It does not need to be a separate computer from the servers listed. It can also be combined with the Database server for performance reasons. The SAS OLAP Server 9.3 should be installed as part of the SAS Enterprise BI Server 9.3.

### Software Requirements

		Minimum	Preferred
Operating System		Windows 2008 Server R1 SP2 (32/64-bit) or IBM AIX 6.1 TL4 (Power PC) or Solaris 10 (SPARC) Red Hat Linux x86 5.4 (64-bit) SuSE SLES Linux 10 SP3 (64-bit)	Windows 2008 Server R2 SP1 (64-bit) or Windows 2012 Server (64-bit) or IBM AIX 7.1 (Power PC) or Solaris 10 (SPARC) or Red Hat Linux x86 6 (64-bit) or SuSE SLES Linux 11 (64-bit)
OLAP <sup>1</sup>	SAS OLAP Server <sup>3</sup>	SAS Foundation 9.3 and SAS Workspace Server 9.3 and SAS OLAP Server 9.3 (32/64-bit) <sup>2</sup> Microsoft SQL Server Client Connectivity Tools or MySQL Connector/ODBC 5.1.8, or Oracle Database 11g Client Connectivity Tools	SAS Foundation 9.3 and SAS Workspace Server 9.3 and SAS OLAP Server 9.3 (32/64-bit) <sup>2</sup> Microsoft SQL Server Client Connectivity Tools or MySQL Connector/ODBC 5.1.8, or Oracle Database 11g Client Connectivity Tools
	Microsoft SQL Server Analysis Services <sup>3</sup>	Microsoft SQL Server Analysis Services 2008 (SSAS) SP3 (32/64-bit) <sup>2</sup> Microsoft SQL Server Client Connectivity Tools or Oracle Database 11g Client Connectivity Tools	Microsoft SQL Server Analysis Services 2008 (SSAS) SP3 or newer (32/ 64-bit) <sup>2</sup> Microsoft SQL Server Analysis Services 2012 (SSAS) SP1 or newer (32/ 64-bit) <sup>2</sup> Microsoft SQL Server Client Connectivity Tools or Oracle Database 11g Client Connectivity Tools

<sup>1</sup> SAS Activity-Based Management 7.2 can be configured without SAS OLAP Server or SSAS.

However, OLAP analysis within SAS Activity-Based Management will not function. OLAP analysis can be configured externally using SAS OLAP Server, SSAS, or a 3<sup>rd</sup> party OLAP server as required. The resulting cubes can be viewed with an external OLAP viewer such as SAS Enterprise Guide.

<sup>2</sup> HTTP access to OLAP is only available if using Microsoft SQL Server Analysis Services 2008. HTTP access to OLAP is not available when using SAS OLAP Server.

<sup>3</sup> SAS Activity-Based Management 7.2 introduces the capability to build SAS OLAP and Microsoft SQL Server Analysis Services cubes incrementally. However, for cubes built using Microsoft Analysis Services, this incremental capability is only available when using SQL Server Enterprise Editions and SQL Server Developer Edition. Due to 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 as they were in previous versions of SAS Activity-Based Management.

## Hardware Requirements

	Minimum	Preferred
Processor	Dual Processor 32-bit, 2 GHz	Quad Processor 64-bit, 3.0 GHz
Memory	4 GB - with a swap file size equal to twice physical memory	8 GB - with a swap file size equal to twice physical memory. For large models, with large cubes additional memory may be needed.
Hard Disk	5 GB for installation and temporary file space. Additional disk space for cubes depend on the number, size and complexity of models. <i>Note: Calculating OLAP cubes may require hundreds of gigabytes of additional disk space in some cases. Please consult your sales exec or technical support for more information.</i>	5 GB for installation and temporary file space. Additional disk space for cubes depend on the number, size and complexity of models. <i>Note: Calculating OLAP cubes may require hundreds of gigabytes of additional disk space in some cases. Please consult your sales exec or technical support for more information.</i>

## Calculation Server

This server hosts the calculation engine for SAS Activity-Based Management. It does not need to be a separate computer from the servers listed above.

## Software Requirements

	Minimum	Preferred
Operating System	Windows 2008 Server R1 SP2 (32/64-bit) or IBM AIX 6.1 TL4 (Power PC) or Solaris 10 (SPARC) Red Hat Linux x86 5.4 (64-bit) SuSE SLES Linux 10 SP3 (64-bit)	Windows 2008 Server R2 SP1 (64-bit) or Windows 2012 Server (64-bit) or IBM AIX 7.1 (Power PC) or Solaris 10 (SPARC) or Red Hat Linux x86 6 (64-bit) or SuSE SLES Linux 11 (64-bit)
SAS Components	SAS Foundation 9.3 and SAS Workspace Server 9.3 and SAS/ACCESS Interface to ODBC and SAS/GRAPH and SAS/ACCESS Interface to Oracle (if using Oracle)	SAS Foundation 9.3 and SAS Workspace Server 9.3 and SAS/ACCESS Interface to ODBC and SAS/GRAPH and SAS/ACCESS Interface to Oracle (if using Oracle)
Data Access	Microsoft SQL Server Client Connectivity Tools or MySQL Connector/ODBC 5.1.8 or Oracle Database 11g Client Connectivity Tools	Microsoft SQL Server Client Connectivity Tools or MySQL Connector/ODBC 5.1.8 or Oracle Database 11g Client Connectivity Tools



## 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.

	Minimum	Preferred
Processor	Single Processor 32-bit, 2 GHz	Dual Processor 64-bit, 3.0 GHz
Memory	4 GB - with a swap file size equal to twice physical memory	8 GB - with a swap file size equal to twice physical memory. For large models, additional memory may be needed.
Hard Disk	5 GB for installation and temporary file space.	5 GB for installation and temporary file space.

## Client

### Software Requirements

	Minimum	Preferred
Operating System	Windows XP Professional SP3 (32-bit)	Windows XP Professional SP3 (32-bit) or Windows Vista SP2 Enterprise, Business or Ultimate (32/64-bit) or Windows 7 SP 1 Enterprise, Ultimate, or Professional (32/64-bit) Windows 8 Enterprise, Ultimate, or Professional (32/64 bit)
SAS Enterprise Guide (Optional) <sup>1</sup>	SAS Activity-Based Management plug-in for 32-bit SAS Enterprise Guide	SAS Activity-Based Management plug-in for 32-bit SAS Enterprise Guide
Other Operating System Components	Microsoft .NET Framework 3.5 SP1 & 4.0 and Microsoft XML Parser 6.0 <sup>2</sup> and Microsoft OLEDB for OLAP 10.0 (for SSAS 2008) or Microsoft OLEDB for OLAP 11.0 (for SSAS 2012), or SAS OLEDB for OLAP 9.3 (for SAS OLAP Server) <sup>3</sup>	Microsoft .NET Framework 3.5 SP1 & 4.0 and Microsoft XML Parser 6.0 <sup>2</sup> and Microsoft OLEDB for OLAP 10.0 (for SSAS 2008) or Microsoft OLEDB for OLAP 11.0 (for SSAS 2012), or SAS OLEDB for OLAP 9.3 (for SAS OLAP Server) <sup>3</sup>
JRE <sup>4</sup>	Windows 32and 64 bit - SUN Java 6 Update 24	Windows 32and 64 bit - SUN Java 6 Update 24
Web Browser	Microsoft Internet Explorer 7.0	Microsoft Internet Explorer 10.0

	Minimum	Preferred
Other Web Components		DHTML Editing Control for Applications if using Windows Vista or Windows 7
Adobe Reader	Adobe Reader 8	Adobe Reader 11
Adobe Flash Player (if using Surveys)	Adobe Flash Player 10.1	Adobe Flash Player 10.1

<sup>1</sup> If desired, the client computer can also have a 32-bit SAS Enterprise Guide installed. The SAS Activity-Based Management software package includes a “SAS Enterprise Guide Plug-In” that simplifies accessing SAS Activity-Based Management public tables and information maps from within SAS Enterprise Guide. The 64-bit version of SAS Enterprise Guide is not supported by the Activity-Based Management plug-in.

<sup>2</sup> The Microsoft XML Parser 6.0 is installed as part of Internet Explorer and does not typically need to be installed separately.

<sup>3</sup> SAS OLEDB for OLAP 9.3 is installed as part of the SAS Activity-Based Management client and does not typically need to be installed separately.

<sup>4</sup> It is not needed directly by SAS Activity-Based Management, but is required for other SAS client software such as the SAS Management Console.

## Hardware Requirements

	Minimum	Preferred
Processor	1.0 GHz	3.0 GHz
Memory	2GB	3 GB
Hard Disk	2 GB available disk space / with 1 GB available on system drive. Additional disk space for imported or exported model xml files depends on the number, size and complexity of models.	2 GB available disk space / with 1 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 x 1024 pixels screen area and True-Color 32-bit) display.
Network Bandwidth	128k available bandwidth per expected concurrent user	128k available bandwidth per expected concurrent user

## “Thin” Client (For using Surveys only)

### Software Requirements

	Minimum	Preferred
Operating System	Windows XP Professional SP3 (32-bit)	Windows XP Professional SP3 (32-bit) or Windows Vista SP2 Enterprise, Business or Ultimate (32/64-bit) or Windows 7 SP 1 Enterprise, Ultimate, or Professional (32/64-bit) or Windows 8 Enterprise, Ultimate, or Professional (32/64 bit) or Windows Server 2008 (32/64-bit) or Windows Server 2012 (32/64-bit)
Adobe Flash Player	Adobe Flash Player 10.1	Adobe Flash Player 10.1
Web Browser	Microsoft Internet Explorer 7.0 Firefox 3.6	Microsoft Internet Explorer 10.0 Firefox 3.6 or newer

## Standalone Installation

Standalone installation is only available for a single Windows machine using Microsoft SQL Server or MySQL databases and a JBoss web application server.

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 will be substantially slower than on a dedicated server.

These hardware and software requirements reflect the needs of the SAS Activity-Based Management software and its required components only. SAS does not recommend installing the entire SAS Enterprise Business Intelligence (EBI) suite on a single computer.

### Software Requirements

	Minimum	Preferred
Operating System	Windows 7 (64-bit) or Windows 2008 Server R1 SP2 (64-bit)	Windows 7 (64-bit) or Windows 2008 Server R2 SP1 (64-bit) or Windows 2012 Server (64-bit)
SAS Components	SAS Foundation 9.3 and SAS Metadata Server 9.3 and SAS Workspace Server 9.3 and SAS/GRAPH 9.3 and SAS/ACCESS Interface to ODBC 9.3	SAS Foundation 9.3 and SAS Metadata Server 9.3 and SAS Workspace Server 9.3 and SAS/GRAPH 9.3 and SAS/ACCESS Interface to ODBC 9.3
SAS Enterprise Guide (Optional) <sup>9</sup>	SAS Activity-Based Management plug-in for 32-bit SAS Enterprise Guide	SAS Activity-Based Management plug-in for 32-bit SAS Enterprise Guide

		<b>Minimum</b>	<b>Preferred</b>
Web Server		JBoss 4.2.3	JBoss 5.2
Database		SQL Server 2008 Express Edition with Advanced Services SP3 <sup>1</sup> (32/64-bit) SQL Server 2008 Standard Edition SP3 (32/64-bit) <sup>2</sup> SQL Server 2008 Developer Edition SP3 (32/64-bit) MySQL Server 5.1.55 (32-bit) <sup>3</sup>	SQL Server 2008 Express Edition with Advanced Services SP3 or newer <sup>1</sup> (32/64-bit) SQL Server 2008 Standard Edition SP3 or newer (32/64-bit) <sup>2</sup> SQL Server 2008 Developer Edition SP3 or newer (32/64-bit) SQL Server 2012 Express Edition with Advanced Services SP1 or newer <sup>1</sup> (32/64-bit) SQL Server 2012 Standard Edition SP1 or newer (32/64-bit) <sup>2</sup>
Data Access		If using a MySQL database: MySQL Connector/ODBC 5.1.8 and MySQL Connector/J -5.1.17 If using SQL Server database: Microsoft SQL Server JDBC Driver version 2.0. and Microsoft SQL Server Client Connectivity Tools	If using a MySQL database: MySQL Connector/ODBC 5.1.8 and MySQL Connector/J -5.1.17 If using SQL Server database: Microsoft SQL Server JDBC Driver version 2.0. and Microsoft SQL Server Client Connectivity Tools
Message Queuing		Java Message Services (Included as part of JBoss)	Java Message Services (Included as part of JBoss)
Other Operating System Components		Microsoft .NET 3.5 SP1 & 4.0 and Microsoft XML Parser 6.0 <sup>8</sup> and Microsoft OLEDB for OLAP 10.0 (for SSAS 2008), or Microsoft OLEDB for OLAP 11.0 (for SSAS 2012), or SAS OLEDB for OLAP 9.3 (for SAS OLAP Server) <sup>5</sup>	Microsoft .NET 3.5 SP1 & 4.0 and Microsoft XML Parser 6.0 <sup>8</sup> and Microsoft OLEDB for OLAP 10.0 (for SSAS 2008), or Microsoft OLEDB for OLAP 11.0 (for SSAS 2012), or SAS OLEDB for OLAP 9.3 (for SAS OLAP Server) <sup>5</sup>
JRE <sup>4,6</sup>		SUN Java 6 Update 24 SUN Java 7 Update 15	SUN Java 6 Update 24 SUN Java 7 Update 15
OLAP <sup>7</sup>	SAS	SAS OLAP Server 9.3	SAS OLAP Server 9.3
	Microsoft	Microsoft SQL Server Analysis Services 2008 (SSAS) SP1 or Microsoft SQL Server Analysis Services 2012 (SSAS)	Microsoft SQL Server Analysis Services 2008 (SSAS) SP1 or newer or Microsoft SQL Server Analysis Services 2012 (SSAS)
JDK <sup>4</sup>	JBoss AS 4.2.3, EAP 4.3, AS 5.1 EAP 5.2	SUN Java JDK 6 Update 24	SUN Java JDK 6 Update 24
	JBoss EAP 5.2 AS 7.1.1	SUN Java JDK 7 Update 15	SUN Java JDK 7 Update 15
Java Diagnostic Tool		JUnit 4.0	JUnit 4.0

	Minimum	Preferred
Web Browser	Microsoft Internet Explorer 7.0	Microsoft Internet Explorer 10.0
Adobe Reader	Adobe Reader 8	Adobe Reader 11

- <sup>1</sup> 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.
- <sup>2</sup> SQL Server Standard Edition requires a server operating system.
- <sup>3</sup> MySQL database will perform more slowly on large models than Microsoft SQL Server. This happens because MySQL does not have a "bulk load" interface that is optimized for loading large amounts of data. Also, Microsoft SQL Server Analysis Services is not supported with MySQL.
- <sup>4</sup> SAS Activity-Based Management's Java requirements and JBoss requirements are identical to the SAS Enterprise BI Server platform requirements. Any discrepancies are in error and should be communicated to the SAS Activity-Based Management team.
- <sup>5</sup> SAS OLEDB for OLAP 9.3 is installed as part of the SAS Activity-Based Management client and does not typically need to be installed separately.
- <sup>6</sup> It is not needed directly by SAS Activity-Based Management, but is required for other SAS client software such as the SAS Management Console.
- <sup>7</sup> SAS Activity-Based Management 7.2 can be configured without SAS OLAP Server or SSAS. However, OLAP analysis within SAS Activity-Based Management will not function. OLAP analysis can be configured externally using SAS OLAP Server, SSAS, or a 3<sup>rd</sup> party OLAP server as required. The resulting cubes can be viewed with an external OLAP viewer such as SAS Enterprise Guide.
- <sup>8</sup> The Microsoft XML Parser 6.0 is installed as part of Internet Explorer and does not typically need to be installed separately.
- <sup>9</sup> If desired, the client computer can also have a 32-bit SAS Enterprise Guide installed. The SAS Activity-Based Management software package includes a "SAS Enterprise Guide Plug-In" that simplifies accessing SAS Activity-Based Management public tables and information maps from within SAS Enterprise Guide. The 64-bit version of SAS Enterprise Guide is not supported by the Activity-Based Management plug-in.

## Hardware Requirements

The number and size of models and their associated cubes affects all factors 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 1 or 2 users. As data volumes increase, the processing times increase as well. There will come a point where the hardware must be upgraded to allow for faster processing and/or 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.*

	Minimum	Preferred
Processor	Dual Processor, 2.0 GHz <sup>1</sup>	Quad Processor, 64-bit 3.0 GHz <sup>2</sup>
Memory	<p>3 GB - with a swap file size equal to twice physical memory for models up demonstration models and models up to 1000 accounts (32bit or 64bit operating system)</p> <p>4 GB - with a swap file size equal to twice physical memory for models with fewer than 2,500 accounts (64bit operating system required)</p> <p>8 GB - with a swap file size equal to physical memory for models up to 25,000 accounts (64bit operating system required)</p>	16 GB - with a swap file size equal to the physical memory
Hard Disk	<p>30 GB for installation and temporary file space.</p> <p>Additional disk space for model storage depends on the number, size and complexity of models.</p> <p><i>Note: Calculating OLAP fact tables and cubes may require hundreds of gigabytes of additional disk space in some cases. Please consult your sales exec or technical support for more information.</i></p>	<p>30 GB for installation and temporary file space.</p> <p>Additional disk space for model storage depends on the number, size and complexity of models.</p> <p><i>Note: Calculating OLAP fact tables and cubes may require hundreds of gigabytes of additional disk space in some cases. Please consult your sales exec or technical support for more information.</i></p>

<sup>1</sup> These configurations as a standalone server support only 1 or 2 users.

<sup>2</sup> This configuration as a standalone server supports only 2 to 4 users. This hardware can typically support 4 users with small and medium size models or 2 users with large models.

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