

# System Requirements

## SAS<sup>®</sup> Activity-Based Management 7.1 (w/ 64 bit Linux)

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 7.1 can be installed on multiple servers with Windows or UNIX operating systems. The following is a list of the most complex deployment.

- Server 1: Application 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 2003 32-bit Windows 2003 64-bit Windows 2008 32-bit Windows 2008 64-bit	Microsoft SQL Server	SAS OLAP	JBoss or WebLogic or WebSphere (64-bit Windows only)
		Microsoft SQL Server Analysis Services	
	Oracle	SAS OLAP	JBoss or WebLogic or WebSphere (64-bit Windows only)
		Microsoft SQL Server Analysis Services	
	MySQL	SAS OLAP	JBoss or WebLogic or WebSphere (64-bit Windows only)
	Solaris (SPARC)	Oracle	SAS OLAP
MySQL			
AIX (PowerPC)	Oracle	SAS OLAP	WebSphere
	MySQL		
Linux (x86) 64-bit	Oracle	SAS OLAP	WebSphere

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.

SAS Activity-Based Management was validated using Oracle 11g R1 (11.1.0.6). Oracle 11g R2 (11.2.0.1) was validated with the 7.1 Hot Fix (January 2011).

**Web Application Server Versions:**

- Oracle WebLogic 10.3 (10.3.x): OEM for SAS (when SAS moves the OEM version to 10.3) and the full commercial version from Oracle. If you plan to use WebLogic with Windows 2008 R2, please be aware that only 10.3.3 is supported on Windows 2008 R2 by both SAS and Oracle. SAS recommends a minimum of 12GB of RAM for use with WebLogic.
- IBM WebSphere 6.1 (6.1.0.21) and 7 (7.0.0.9): 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. However, for Linux, only IBM WebSphere 6.1 (6.1.0.21) is supported.
- JBoss 4.2, 4.2.3, and 4.3: The Community version from 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. However, for Linux, only R2 is supported.
- Microsoft SQL Server 2005 and 2008: Workgroup, Standard, and Enterprise editions are supported. The Developer 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/sqlserver/2008/en/us/editions.aspx>

- MySQL 5: Version 5.0.80 (32-bit) and 5.0.86 (64-bit) from <http://www.mysql.org>.

**Linux Versions:**

- NOTE: The Linux version of ABM on 7.1 on SAS 9.2 is a special release and only supports a subset of the normally supported platforms. Only Oracle and MySQL databases are supported and only IBM WebSphere 6.1 (6.1.0.21) is supported.
- Only Red Hat Linux 5.4 and higher is supported.

## SAS Metadata Server

The system requirements for the metadata server can be found in the host-appropriate SAS Foundation system requirements documents located here:

<http://support.sas.com/documentation/installcenter/922/index.html>.

## 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 2003 Server SP2 (32/64-bit) or IBM AIX 6.1 (Power PC) or Solaris 10 (SPARC) or Red Hat Linux x86 5.4 (64-bit )	Windows 2008 Server R1 SP2 (32/64-bit) or Windows 2008 Server R2 SP1 (32/64-bit) <sup>7</sup> or IBM AIX 7.1 (Power PC) or Solaris 10 (SPARC) or Red Hat Linux x86 5.4 (64-bit )
Citrix <sup>1</sup> (Optional)	Citrix Presentation Server 4	Citrix Presentation Server 4
Web Server	JBoss 4.2.3 <sup>3</sup> or Oracle WebLogic Server 10.3 or IBM WebSphere 7 <sup>3</sup>	JBoss 5.0 <sup>3</sup> or Oracle WebLogic Server 10.3 or IBM WebSphere 7 <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 2.0 SP2 or Microsoft .NET Framework 3.5 SP1	if using SSAS: Microsoft .NET Framework 2.0 SP2 or Microsoft .NET Framework 3.5 SP1
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 <b>MySQL Connector/J -5.0.8 or</b>	Microsoft SQL Server JDBC Driver version 2.0. and Microsoft SQL Server Client Connectivity Tools or MySQL Connector/J -5.0.8 or

		Oracle Database 11g JDBC Drivers and Oracle Database 11g Client Connectivity Tools	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 32 bit - SUN Java 5 Update 12 Windows 64 bit - SUN Java 5 Update 12 AIX - IBM Java 5 SR5 (5.0.0.125 fileset, pap32dev-20070511) Solaris – SUN Java 5 Update 12 Red Hat Linux 64 bit - SUN Java 5 Update 12	Windows 32 bit - SUN Java 6 Update 14 Windows 64 bit - SUN Java 6 Update 14 AIX - IBM Java 6 SR3 (6.0.0.75 fileset, pap3260sr3-20081106_07) Solaris – SUN Java 6 Update 14 Red Hat Linux 64 bit – SUN Java 6 Update 24
Java JDK <sup>4</sup>	JBoss 4.2	SUN Java JDK 5 Update 15 <sup>4</sup>	SUN Java JDK 5 Update 15 <sup>4</sup>
	JBoss 4.2.3	SUN Java JDK 5 Update 15 <sup>4</sup>	SUN Java JDK 6 Update 16
	JBoss 4.3	SUN Java JDK 5 Update 15 <sup>4</sup>	SUN Java JDK 6 Update 16
	WebLogic 10.3 <sup>5</sup>	SUN Java JDK 6 Update 16 <sup>6</sup>	SUN Java JDK 6 Update 16 <sup>6</sup>
	WebSphere 6.1.0.21 <sup>7</sup>	WebSphere 6.1 installs its own version of the Java JDK for application use.	WebSphere 6.1 installs its own version of the Java JDK for application use.
	WebSphere 7.0.0.9 <sup>4</sup>	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	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> Java 5 is not supported on Windows 7 nor is it supported on Windows 2008 R2. You must use either JRE/JDK 6 or use an operating system that supports JRE/JDK 5. When installing SAS software using the SAS Deployment Wizard on Windows 7 or Windows 2008 R2, do not select the "Use the recommended Java Runtime Environment". You must manually install Java 6.

<sup>5</sup> If you plan to use WebLogic with Windows 2008 R2, please be aware that only 10.3.3 is supported on Windows 2008 R2 by both SAS and Oracle.

<sup>6</sup> Oracle recommends SUN Java JDK 6 Update 18 for use with WebLogic 10.3.3.

<sup>7</sup> This is the only application server supported by the Linux platforms in SAS Activity-Based Management 7.1.

## 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 for faster processing.

	Minimum	Preferred
Processor	Dual Processor 32-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>1,2,3</sup>		Windows 2003 Server SP2 (32/64-bit) or IBM AIX 6.1 (Power PC) or Solaris 10 (SPARC) or Red Hat Linux 5 (32/64 bit x86)	Windows 2008 Server R1 SP2 (32/64-bit) or Windows 2008 Server R2 SP1 (32/64-bit) or IBM AIX 7.1 (Power PC) or Solaris 10 (SPARC) or Red Hat Linux 5 (32/64 bit x86)
Database	Microsoft Available only on Windows	SQL Server 2005 Standard Edition SP3 (32/64 bit) or SQL Server 2005 Enterprise Edition SP3 (32/64 bit)	SQL Server 2008 Standard Edition SP1 or newer (32/64 bit) or SQL Server 2008 Enterprise Edition SP1 or newer (32/64 bit)
	Oracle <sup>4</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 5.0.80 (32-bit) MySQL Server 5.0.86 (64-bit)	MySQL Server 5.0.80 (32-bit) MySQL Server 5.0.86 (64-bit)

<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>SAS Activity-Based Management 7.1 was validated using Oracle 11g R1 (11.1.0.6). Oracle 11g R2 (11.2.0.1) was validated with the 7.1 Hot Fix (released January 2011).

<sup>3</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 resale these databases. Nor does SAS provide or resale the database drivers. Please verify driver availability and cost with your database vendor.

<sup>4</sup> SAS Activity-Based Management requires a JDBC driver on the application 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 connection to the database is performed. 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 7.1 Installation Instructions” for more details.

## **Hardware Requirements**

	<b>Minimum</b>	<b>Preferred</b>
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 server listed. It can also be combined with the Database server for performance reasons. The SAS OLAP Server 9.2 should be installed as part of the SAS Enterprise BI Server 9.2 M3.

### Software Requirements

		Minimum	Preferred
Operating System		Windows 2003 Server SP2 (32/64-bit) or IBM AIX 6.1 (Power PC) or Solaris 10 (SPARC) or Red Hat Linux x86 5.4 (64-bit )	Windows 2008 Server R1 SP2 (32/64-bit) or Windows 2008 Server R2 SP1 (32/64-bit) or IBM AIX 7.1 (Power PC) or Solaris 10 (SPARC) or Red Hat Linux x86 5.4 (64-bit )
OLAP <sup>1</sup>	SAS OLAP Server	SAS Foundation 9.2 M3 and SAS Workspace Server 9.2 M3 and SAS OLAP Server 9.2 M3 (32/64-bit) <sup>2</sup> Microsoft SQL Server Client Connectivity Tools or MySQL Connector/ODBC 5.1, or Oracle Database 11g Client Connectivity Tools	SAS Foundation 9.2 M3 and SAS Workspace Server 9.2 M3 and SAS OLAP Server 9.2 M3 (32/64-bit) <sup>2</sup> Microsoft SQL Server Client Connectivity Tools or MySQL Connector/ODBC 5.1, or Oracle Database 11g Client Connectivity Tools
	Microsoft SQL Server Analysis Services	Microsoft SQL Server Analysis Services 2005 (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) 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 7.1 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 2005 or 2008. HTTP access to OLAP is not available when using SAS OLAP Server.

### 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	<p>5 GB for installation and temporary file space.</p> <p>Additional disk space for cubes depend on the number, size and complexity of models.</p> <p><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></p>	<p>5 GB for installation and temporary file space.</p> <p>Additional disk space for cubes depend on the number, size and complexity of models.</p> <p><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></p>
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## 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 2003 Server SP2 (32/64-bit) or IBM AIX 6.1 (Power PC) or Solaris 10 (SPARC) or Red Hat Linux x86 5.4 (64-bit )	Windows 2008 Server R1 SP2 (32/64-bit) or Windows 2008 Server R2 SP1 (32/64-bit) or IBM AIX 7.1 (Power PC) or Solaris 10 (SPARC) or Red Hat Linux x86 5.4 (64-bit )
SAS Components	SAS Foundation 9.2 M3 and SAS Workspace Server 9.2 M3 and SAS/ACCESS to ODBC 9.2 M3 and SAS/GRAPH 9.2 M3 and SAS/Access to Oracle (if using Oracle) or SAS/Access to MySQL (if using MySQL)	SAS Foundation 9.2 M3 and SAS Workspace Server 9.2 M3 and SAS/ACCESS to ODBC 9.2 M3 and SAS/GRAPH 9.2 M3and SAS/Access to Oracle (if using Oracle) or SAS/Access to MySQL (if using MySQL)
Data Access	Microsoft SQL Server Client Connectivity Tools or MySQL Connector/ODBC 5.1 or Oracle Database 11g Client Connectivity Tools	Microsoft SQL Server Client Connectivity Tools or MySQL Connector/ODBC 5.1 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 (Enterprise, Ultimate, or Professional (32/64-bit) <sup>5</sup>
SAS Enterprise Guide (Optional) <sup>1</sup>	ABM plug-in for SAS Enterprise Guide	ABM plug-in for SAS Enterprise Guide
Other Operating System Components	Microsoft NET Framework 2.0 and Microsoft XML Parser 6.0 <sup>2</sup> and One of: Microsoft OLEDB for OLAP 9.0 (for SSAS 2005) or Microsoft OLEDB for OLAP 10.0 (for SSAS 2008) or SAS OLEDB for OLAP 9.2 M3(for SAS OLAP Server) <sup>3</sup>	Microsoft NET Framework 2.0 or 3.5 and Microsoft XML Parser 6.0 <sup>2</sup> and One of Microsoft OLEDB for OLAP 9.0 (for SSAS 2005) or Microsoft OLEDB for OLAP 10.0 (for SSAS 2008) or SAS OLEDB for OLAP 9.2 M3 (for SAS OLAP Server) <sup>3</sup>
JRE <sup>4</sup>	Windows 32 and 64 bit - SUN Java 5 Update 12 <sup>5</sup>	Windows 32and 64 bit - SUN Java 6 Update 14
Web Browser	Microsoft Internet Explorer 6.0 SP3	Microsoft Internet Explorer 8.0
Other Web Components		DHTML Editing Control for Applications if using Windows Vista or Windows 7
Adobe Reader	Adobe Reader 8	Adobe Reader 9

<sup>1</sup> If desired, the client computer can also have 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.

<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 9.2 is installed as part of the SAS Activity-Based Management client and does not typically need to be installed separately.

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

<sup>5</sup>Java 5 is not supported on Windows 7 nor is it supported on Windows 2008 R2. You must use either JRE/JDK 6 or use an operating system that supports JRE/JDK 5. When installing SAS software using the SAS Deployment Wizard on Windows 7 or Windows 2008 R2, do not select the "Use the recommended Java Runtime Environment". You must manually install Java 6.

## 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

## 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 XP Professional SP3 (32-bit) or Windows 2003 Server R1 SP2 (32/64-bit)	Windows XP Professional SP3 (32-bit) or Windows 2008 Server R1 SP2 (32/64-bit) or Windows 2008 Server R2 SP1 (32/64-bit) <sup>1</sup> or Windows 7 (32/64-bit) <sup>1</sup>
SAS Components	SAS Foundation 9.2 M3 and	SAS Foundation 9.2 M3 and

	SAS Metadata Server 9.2 M3 and SAS Workspace Server 9.2 M3and SAS/GRAPH 9.2 M3 and SAS/ACCESS to ODBC 9.2 M3	SAS Metadata Server 9.2 M3and SAS Workspace Server 9.2 M3and SAS/GRAPH 9.2 M3 and SAS/ACCESS to ODBC 9.2 M3
Web Server	JBoss 4.2	JBoss 4.2, 4.2.3 or JBoss 4.3 <sup>2</sup>

Database	SQL Server 2005 Express Edition with Advanced Services SP2 <sup>3</sup> (32/64-bit) SQL Server 2005 Standard Edition SP2 (32/64-bit) SQL Server 2005 Developer Edition SP2 (32/64-bit) MySQL Server 5.0.80 (32-bit) <sup>5</sup> MySQL Server 5.0.86 (64-bit) <sup>5</sup>	SQL Server 2008 Express Edition with Advanced Services SP1 or newer <sup>3</sup> (32/64-bit) SQL Server 2008 Standard Edition SP1 or newer (32/64-bit) <sup>4</sup> SQL Server 2008 Developer Edition SP1 or newer (32/64-bit)	
Data Access	If using a MySQL database: MySQL Connector/ODBC 5.1 and MySQL Connector/J -5.0.8	If using a MySQL database: MySQL Connector/ODBC 5.1 and MySQL Connector/J -5.0.8	
Message Queuing	Java Message Services (Included as part of JBoss)	Java Message Services (Included as part of JBoss)	
Other Operating System Components	Microsoft .NET Framework 2.0 SP2 or Microsoft .NET Framework 3.5 SP1 and Microsoft XML Parser 6.0 <sup>6</sup> and Either: Microsoft OLEDB for OLAP 9.0 (for SSAS 2005), or Microsoft OLEDB for OLAP 10.0 (for SSAS 2008), or SAS OLEDB for OLAP 9.2 M3(for SAS OLAP Server) <sup>7</sup>	Microsoft .NET Framework 2.0 SP2 or Microsoft .NET Framework 3.5 SP1 and Microsoft XML Parser 6.0 <sup>6</sup> and Either: Microsoft OLEDB for OLAP 9.0 (for SSAS 2005), or Microsoft OLEDB for OLAP 10.0 (for SSAS 2008), or SAS OLEDB for OLAP 9.2 M3(for SAS OLAP Server) <sup>5</sup>	
JRE <sup>8</sup>	Windows 32 and 64 bit - SUN Java 5 Update 12	Windows 32and 64 bit - SUN Java 6 Update 14	
OLAP <sup>9</sup>	SAS	SAS OLAP Server 9.2 M3	SAS OLAP Server 9.2 M3
	Microsoft	Microsoft SQL Server Analysis Services 2005 (SSAS) SP2	Microsoft SQL Server Analysis Services 2008 (SSAS) SP2 or newer
JDK <sup>10</sup>	JBoss 4.2	SUN Java JDK 5 Update 15 <sup>1</sup>	SUN Java JDK 5 Update 15 <sup>10</sup>
	JBoss 4.2.3	SUN Java JDK 5 Update 15 <sup>1</sup>	SUN Java JDK 6 Update 16
	JBoss 4.3 <sup>2</sup>	SUN Java JDK 5 Update 15 <sup>1</sup>	SUN Java JDK 6 Update 16
Java Diagnostic Tool	JUnit 4.0	JUnit 4.0	
Web Browser	Microsoft Internet Explorer 6.0 SP3	Microsoft Internet Explorer 8.0	
Adobe Reader	Adobe Reader 8	Adobe Reader 9	
Data Access	Microsoft SQL Server JDBC Driver version 2.0. and Microsoft SQL Server Client Connectivity Tools	Microsoft SQL Server JDBC Driver version 2.0. and Microsoft SQL Server Client Connectivity Tools	

<sup>1</sup>Java 5 is not supported on Windows 7 nor is it supported on Windows 2008 R2. You must use either JRE/JDK 6 or use an operating system that supports JRE/JDK 5. When installing SAS software using the SAS Deployment Wizard on Windows 7 or Windows 2008 R2, do not select the "Use the recommended Java Runtime Environment". You must manually install Java 6.

<sup>2</sup>Requires the SAS Business Intelligence Clients 4.3 (due to be released in October 2010).

- <sup>3</sup> The SQL Server 2005 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>4</sup> SQL Server Standard Edition requires a server operating system.
- <sup>5</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>6</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 Activity-Based Management team.
- <sup>7</sup> SAS OLEDB for OLAP 9.2 is installed as part of the SAS Activity-Based Management client and does not typically need to be installed separately.
- <sup>8</sup> Not needed directly by SAS Activity-Based Management. Needed for other SAS client software such as the SAS Management Console.
- <sup>9</sup> SAS Activity-Based Management 7.1 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>10</sup> The Microsoft XML Parser 6.0 is installed as part of Internet Explorer and does not typically need to be installed separately.

## 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><b>Note:</b> 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><b>Note:</b> 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>
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<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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