

Microsoft Dynamics™ AX

Microsoft Dynamics™ AX 4.0 Service Pack 1 Suggested Hardware for Deployments up to 100 Concurrent Users

White Paper

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Introduction

The purpose of this document is to provide Customers and Partners with general hardware sizing information which will support Microsoft Dynamics™ AX 4.0 Service Pack 1 up to 100 users in a single deployment model*.

Review and understand the following before using this document for deployment:

- From this document, you are not authorized to make any warranties, guarantees or representations on behalf of Microsoft and Microsoft cannot certify, warrant, guarantee or otherwise validate that your customer deployment will be successful.
- This document is specific only to Microsoft Dynamics™ AX 4.0 Service Pack 1.
- The information provided and the recommendations made are based on existing Customer environments and lab-tested environmental designs. These designs do contain margins of error that can be reduced with additional testing and research of the specific Customer environment.
- Do not use this document when sizing environments that exceed 100 concurrent users or 15,000 transactions lines per hour in a single module and a single instance of Microsoft Dynamics™ AX 4.0 Service Pack 1.
- All implementations using these guidelines should include a performance testing cycle and also a Microsoft SQL Server tuning analysis before the production implementation.
- If the prospect has a high level of transaction volume or other factors exist which could hinder performance or introduce additional complexities, the recommendations in this document may be insufficient and should not be followed.
- This document is not a Microsoft Dynamics™ AX 4.0 Service Pack 1 minimum requirements or installation document. For any technical deployment issues, use product documentation or contact local Microsoft Product Support Services.
- Recommendations provided in this document assume the prospective deal has been reviewed by the Technical Presales Advisory Group (TPAG). For more information about TPAG, visit the following link on the Microsoft Partner Program site: <https://partner.microsoft.com/global/40023009>.
- Recommendations provided in this document assume the customer has applied the latest Microsoft software updates, service packs and so on to all Microsoft products supporting the Microsoft Dynamics AX product and Microsoft Dynamics AX specific updates and enhancement instructions, such as Kernel Rollups and so on.
 - For the most up-to-date information or to receive the latest on what's new, installation instructions, known issues, and so on, visit PartnerSource (<https://mbs.microsoft.com/PartnerSource>), CustomerSource (<https://mbs.microsoft.com/customersource>) or <http://support.microsoft.com> or contact the local Microsoft Product Support Services Team for any questions.
- *A single deployment model for Microsoft Dynamics™ AX 4.0 Service Pack 1 is defined as an installation that has the following components:

-
- A BackOffice - AOS server
 - A Microsoft SQL Server
 - An IIS (COM+) server, if applicable
 - An Application Server

Executive Overview

The purpose of this document is to provide customers and partners with the appropriate information to understand the infrastructure and hardware which supports the Microsoft Dynamics™ AX 4.0 Service Pack 1 solution. This includes several different technologies and they are as follows:

- Microsoft Dynamics™ AX 4.0 Service Pack 1 Client
- Microsoft Dynamics™ AX 4.0 Service Pack 1 Object Server (AOS)
- Microsoft Dynamics™ AX 4.0 Service Pack 1 Session Manager Server
- Microsoft Dynamics™ AX 4.0 Service Pack 1 Application Server (AOD)
- Microsoft Dynamics™ AX 4.0 Service Pack 1 Enterprise Portal Server
- Microsoft Dynamics™ AX 4.0 Service Pack 1 Batch Server
- Microsoft Windows Server 2003
- Microsoft Windows Server 2003 x64
- Microsoft SQL Server 2000
- Microsoft SQL Server 2005
- Microsoft Terminal Server 2003

Microsoft Dynamics™ AX 4.0 Service Pack 1 Environment Overview

The Microsoft Dynamics™ AX 4.0 Service Pack 1 environment is divided into five (5) parts, as follows:

- Microsoft Dynamics™ AX 4.0 Service Pack 1 Database Server
- Microsoft Dynamics™ AX 4.0 Service Pack 1 Object Server (AOS)
- Microsoft Dynamics™ AX 4.0 Service Pack 1 Session Manager Server
- Microsoft Dynamics™ AX 4.0 Service Pack 1 Application Server (AOD)
- Microsoft Dynamics™ AX 4.0 Service Pack 1 Enterprise Portal Server
- Microsoft Dynamics™ AX 4.0 Service Pack 1 Batch Server

Microsoft Dynamics™ AX 4.0 Service Pack 1 Database Server

The Microsoft Dynamics AX Database Server is primarily used for storing and processing data. This server is using either Microsoft SQL Server or Oracle database software.

Microsoft Dynamics™ AX 4.0 Service Pack 1 Object Server

The Microsoft Dynamics AX Application Object Server (AOS) is a middle layer server that is primarily used for business logic processing.

Microsoft Dynamics™ AX 4.0 Service Pack 1 Session Manager Server

The Microsoft Dynamics AX Session Manager Server is primarily used for client session connection management and distribution amongst the Application Object Servers.

Microsoft Dynamics™ AX 4.0 Service Pack 1 Application Server

The Microsoft Dynamics AX Application Server is primarily used for storing forms and objects. These forms and objects can be called from either the Microsoft Dynamics AX Object Server or the Microsoft Dynamics AX Client.

Microsoft Dynamics™ AX 4.0 Service Pack 1 Enterprise Portal Server

The Microsoft Dynamics AX Enterprise Portal Server is primarily used for Web functionality.

Microsoft Dynamics™ AX 4.0 Service Pack 1 Batch Server

The Microsoft Dynamics AX Batch Server is primarily used for offloading the processing of business logic from either the Microsoft Dynamics AX Object Server or the Microsoft Dynamics AX Client.

Microsoft Dynamics™ AX 4.0 Service Pack 1 Database Server

Microsoft SQL Server

Microsoft SQL Server 2000 Standard/Enterprise Edition or Microsoft SQL Server 2005 Standard Edition are the typical versions of SQL Server that is used for Customers up to 100 concurrent users. Notice that if a Customer has up 15,000 or more transaction line items per hour across more than one module in Microsoft Dynamics™ AX 4.0 Service Pack 1, this could have a large affect on overall application performance. To minimize any adverse performance results, an in-depth testing cycle and Microsoft SQL Server tuning analysis are suggested before the production implementation.

The Microsoft Dynamics™ AX 4.0 Service Pack 1 Database can use different versions of the Microsoft SQL Server product suite. The following versions can be used for the Microsoft Dynamics™ AX 4.0 Service Pack 1 product line.

- Microsoft SQL Server 2000 Standard Edition
- Microsoft SQL Server 2000 Enterprise Edition
- Microsoft SQL Server 2005 Standard Edition (32-bit and x64)
- Microsoft SQL Server 2005 Standard Edition (32-bit and x64)

Microsoft SQL Server requirements by edition for up to 100 concurrent Microsoft Dynamics AX users:

AMD Opteron or Intel Xeon EM64T						
Microsoft Windows Edition	SQL Server Edition	Number of Microsoft Dynamics AX concurrent users	Single Core Processors	Dual Core Processors	RAM (GB)	Network (GB)
Microsoft Windows Server 2003 Enterprise Edition R2 (32-bit)	Microsoft SQL Server 2000 Standard Edition (32-bit); Microsoft SQL Server 2000 Enterprise Edition (32-bit); Microsoft SQL Server 2005 Standard Edition (32-bit)	100	2-4	1-2	4-12	1
Windows Server 2003 Standard x64 Edition R2; Windows Server 2003 Enterprise x64 Edition R2	Microsoft SQL Server 2000 Enterprise Edition (32-bit); Microsoft SQL Server 2005 Standard Edition (x64);	100	2-4	1-2	4-12	1

*Amount of memory or number or processors could vary depending on other databases on the SQL Server.

*it is important to remember that for data storage, the *number* of disks is far more important than the total *storage size* of the disks. Example: One big physical disk may hold all the data, but it still has only one arm to individually handle each request. When ordering hardware, request a specific number of disks rather than a specific amount of space. Having more small disks is better than having a fewer large disks. If you have external storage, we recommend going with the fastest array controller card and one that has multiple channels. If you have multiple spindles, you need to invest in a card that can support them. The performance you achieve will be directly proportionate to the quality of the controller and number of spindles supporting the database files.

Important information about the Microsoft Dynamics™ AX 4.0 Service Pack 1 Database Server:

- For more information about Microsoft SQL Server on a 64-bit Platform, visit <http://www.microsoft.com/sql/editions/64bit/default.mspx>.
- For more information about supported processors using Microsoft SQL Server on a 64-bit Platform, visit <http://www.amd.com> and <http://www.intel.com>.
- For more information about 64-bit Microsoft Windows Server operating systems, visit <http://www.microsoft.com/windowsserversystem/default.mspx>.
- For AMD chip information visit: <http://www.amdcompare.com/us%2Den/opteron/>
- For Intel chip information visit: <http://www.intel.com/products/processor/index.htm>

Oracle Database Server

Microsoft does not design server architecture for the Oracle Database Server. *Request this information from either your partner or hardware vendor.*

Microsoft Dynamics™ AX 4.0 Service Pack 1 Object Server

A typical Microsoft Dynamics™ AX 4.0 Service Pack 1 Object Server (AOS) that supports generally 75 to 100 concurrent users (per AOS server) is as follows:

AMD Opteron or Intel
Xeon EM64T

Microsoft Windows Edition	Number of Microsoft Dynamics AX concurrent users	Single Core Processors	Dual Core Processors	RAM (GB)	Network (GB)
Microsoft Windows Server 2003 Standard Edition R2 (32-bit or x64*)	75-100	2	1	4-8	1
Windows Server 2003 Enterprise Edition R2 (32-bit or x64*)	75-100	2	1	4-8	1

Notice that the most up-to-date Kernel Rollup and other Microsoft Dynamics™ AX 4.0 Service Pack 1 update information is available for download on PartnerSource or CustomerSource. Documentation for these updates will highlight supportability requirements.

*AOS servers can run the x64 version of the Operating System as long as there is not client activity involving AIF / Bus Connector on the same server.

Microsoft Dynamics™ AX 4.0 Service Pack 1 Session Manager Server

A typical Microsoft Dynamics™ AX 4.0 Service Pack 1 Session Manager Server is as follows:

AMD Opteron or Intel Xeon EM64T				
Microsoft Windows Edition	Single Core Processors	Dual Core Processors	RAM (GB)	Network (GB)
Microsoft Windows Server 2003 Standard Edition R2 (32-bit)	2	1	4	1
Windows Server 2003 Enterprise Edition R2 (32-bit)	2	1	4	1

*It's important to note that the Session Manager is not required to be on a dedicated physical machine.

Microsoft Dynamics™ AX 4.0 Service Pack 1 Application Server

A typical Microsoft Dynamics™ AX 4.0 Service Pack 1 Application Server is as follows:

AMD Opteron or Intel Xeon EM64T				
Microsoft Windows Edition	Single Core Processors	Dual Core Processors	RAM (GB)	Network (GB)
Microsoft Windows Server 2003 Standard Edition R2 (32-bit or x64*)	2	1	4	1
Windows Server 2003 Enterprise Edition R2 (32-bit or x64*)	2	1	4	1

* As long as the AOD Server is being used as only an application share resource, either 32-bit or x64 Operating Systems could be used.

Microsoft Dynamics™ AX 4.0 Service Pack 1 Enterprise Portal Server

A general Microsoft Dynamics™ AX 4.0 Service Pack 1 Enterprise Portal Server is as follows:

AMD Opteron or Intel Xeon EM64T				
Microsoft Windows Edition	Single Core Processors	Dual Core Processors	RAM (GB)	Network (GB)
Microsoft Windows Server 2003 Standard R2 Edition (32-bit)	2	1	4	1
Windows Server 2003 Enterprise Edition R2 (32-bit)	2	1	4	1

For the most consistent method of deploying Microsoft Dynamics™ AX 4.0 Service Pack 1 Enterprise Portal (EP) Server, consider the following points:

- Each Microsoft Dynamics™ AX 4.0 Service Pack 1 Enterprise Portal Server deployment will be different, based on specific customer details and business requirements. Therefore, it is difficult to provide prescriptive guidance for how many Microsoft Dynamics™ AX 4.0 Service Pack 1 Enterprise Portal Servers to deploy in any given deployment. To optimize performance, generally deploy a 1:1 server relationship between Microsoft Dynamics™ AX 4.0 Service Pack 1 Enterprise Portal Servers and Microsoft Dynamics™ AX 4.0 Service Pack 1 AOS Servers within each instance of Microsoft Dynamics™ AX 4.0 Service Pack 1.
 - Example: 'EP Server 1' should point to 'AOS Server 1'; 'EP Server 2' should point to 'AOS Server 2', and so on.
 - For environments requiring load balancing, we recommend deploying Network Load Balancing (NLB) of the Internet Information Services (IIS) Server(s)/EP server(s) and dedicate a single AOS Server per IIS node.
- Make sure that IIS is deployed and optimized for performance. IIS is a technology which Microsoft Dynamics™ AX 4.0 Service Pack 1 Enterprise Portal Server depends on – but without an optimized IIS environment, Microsoft Dynamics™ AX 4.0 Service Pack 1 Enterprise Portal Server performance could be adversely affected.
 - For supported IIS configurations, see IIS Online Help or <http://support.microsoft.com> for more information.
 - For more information about IIS, visit the following sites:
 - <http://www.microsoft.com/WindowsServer2003/iis/default.mspx>
 - <http://technet2.microsoft.com/windowsserver/en/technologies/featured/iis/default.mspx>
- Microsoft Windows Server updates which have been released could adversely affect a Microsoft Dynamics™ AX 4.0 Service Pack 1 Enterprise Portal Server deployment. Make sure that the latest

service packs and updates for Microsoft Dynamics™ AX 4.0 Service Pack 1 are applied as appropriate after thorough testing.

- To set up Microsoft Dynamics™ AX 4.0 Service Pack 1 Enterprise Portal Server and for other Knowledgebase articles for Microsoft Dynamics™ AX 4.0 Service Pack 1, visit <https://mbs.microsoft.com/knowledgebase/search.aspx>.
- For supported configurations of Microsoft Dynamics™ AX 4.0 Service Pack 1 Enterprise Portal, reference Microsoft Dynamics™ AX 4.0 Service Pack 1 product documentation.

Microsoft Dynamics™ AX 4.0 Service Pack 1 Batch Server

A general Microsoft Dynamics™ AX 4.0 Service Pack 1 Batch Server which supports the transaction volume outlined in this white paper is as follows:

AMD Opteron or Intel Xeon EM64T				
Microsoft Windows Edition	Single Core Processors	Dual Core Processors	RAM (GB)	Network (GB)
Microsoft Windows Server 2003 Standard Edition R2 (32-bit or x64*)	2	1	4	1
Windows Server 2003 Enterprise Edition R2 (32-bit) (32-bit or x64*)	2	1	4	1

* If the only function of the Batch Server is to process standard AX batches without dependencies on AIF or BC, x64 Operating Systems can be used.

Notice that if a Customer has up 15,000 or more transaction line items per hour across more than one module in Microsoft Dynamics™ AX 4.0 Service Pack 1, this could have a large affect on overall application performance. To minimize any adverse performance results, an-depth testing cycle and Microsoft SQL Server tuning analysis are suggested before the production implementation.

Microsoft Windows Server Terminal Services

Microsoft Windows Server Terminal Services is recommended if the following scenarios are true:

- Customer Microsoft Dynamics™ AX 4.0 Service Pack 1 client access is across a WAN (wide area network).
- Round-trip client/server latency does not meet Customer expectations.

The following is based on 100 clients per Terminal Server. If performance is not acceptable for this many users, reduce the number of users per Terminal Server. A general Microsoft Windows Terminal Server that supports 100 or less concurrent Microsoft Dynamics™ AX 4.0 Service Pack 1 clients is as follows:

AMD Opteron or Intel Xeon EM64T					
Microsoft Windows Edition	Concurrent users	Single Core Processors	Dual Core Processors	RAM (GB)	Network (GB)
Microsoft Windows Server 2003 Standard Edition (32-bit)	<100	2	1	4	1
Windows Server 2003 Enterprise Edition (32-bit)	<100	2	1	4	1

For more information about Microsoft Windows Server Terminal Services, visit: <http://www.microsoft.com/windowsserver2003/technologies/terminalservices/default.mspx>

Storage

A general storage configuration of a Storage Area Network (SAN) or Direct Attached Storage for a Microsoft Dynamics™ AX 4.0 Service Pack 1 environment is as follows:

Storage Solution	Technologies	Concurrent Number of Users	Number of Disks for SQL Server and Tempdb	Number of Disks for SQL Server Log	Total Number of Disks for SQL Server
Direct Attached Storage (DAS)	SCSI	100-175	12-16 (RAID 10)	2 (RAID 1)	14-18
Storage Area Network (SAN)	Fiber/SCSI	100-175	12-16 (RAID 10)	2 (RAID 1)	14-18
Storage Area Network (SAN)	Fiber/Fiber	100-175	12-16 (RAID 10)	2 (RAID 1)	14-18
Storage Area Network (SAN)	Fiber/SCSI	175-250	16-20 (RAID 10)	2 (RAID 1)	18-22
Storage Area Network (SAN)	Fiber/Fiber	175-250	16-20 (RAID 10)	2 (RAID 1)	18-22

Additional Services – Microsoft Dynamics Business Systems Architecture Services (North America only)

The Business Systems Architecture Team is a North America group which provides prescriptive guidance on deployment infrastructure and hardware to Partners and Customers for Microsoft Dynamics deployments. Specific packaged services include Business Systems Architecture Assessments (includes hardware sizing), Health Checks and Onsite System Performance Workshops. Notice that these types of services are outside the scope of the Technical Presales Advisory Group (TPAG) resource.

*See later in this white paper for more detail on these services outside North America.

For pricing information and availability, contact MBSPProfessionalServices@microsoft.com today.

Visit PartnerSource to learn more about the services provided by the Microsoft Dynamics Business Systems Architecture Team:

https://mbs.microsoft.com/partnersource/resources/services/services/business_systems_architecture.htm

<https://partner.microsoft.com/US/40029785?PS=95000124>

*Microsoft Dynamics Business Systems Architecture Services are North America specific services. To engage this team from other regions may require special conditions from the local Regional Operations Center (ROC). In the requesting region, we recommend that you contact either the Microsoft Dynamics Support Team or Microsoft Consulting Services (MCS) to request hardware sizing or architecture services (Availability may vary).

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