

# Microsoft Dynamics™ AX

Microsoft Dynamics™ AX version 3.0

## Suggested Hardware for Deployments up to 250 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 up to 250 users in a single deployment model\*.

*Review and understand the following before using this document:*

- 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 version 3.0.
- 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 250 concurrent users or 10,000 transactions lines per hour in a single module and a single instance of Microsoft Dynamics™ AX.
- All implementations using these guidelines should include a performance testing cycle in addition to 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 minimum requirements or installation document. For any technical deployment issues, use product documentation or contact local Microsoft Product Support Services.
  - Visit the following Web site to view the Microsoft Dynamics™ AX version 3.0 User's Guide:  
<https://mbs.microsoft.com/partnersource/products/axapta/documentation/userguides/enusaxapta30userguides.htm>
- 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 in addition to Microsoft Dynamics™ AX specific updates and enhancement instructions, such as Kernel Rollups (example: KR1).
  - 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 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 solution. This includes several different technologies and they are as follows:

- Microsoft Dynamics™ AX 3.0 Client
- Microsoft Dynamics™ AX 3.0 Object Server (AOS)
- Microsoft Dynamics™ AX 3.0 Application Server
- Microsoft Dynamics™ AX 3.0 Enterprise Portal Server
- Microsoft Dynamics™ AX 3.0 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 Environment Overview***

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

- Microsoft Dynamics™ AX Database Server
- Microsoft Dynamics™ AX Object Server (AOS)
- Microsoft Dynamics™ AX Application Server
- Microsoft Dynamics™ AX Enterprise Portal Server
- Microsoft Dynamics™ AX Batch Server

## **Microsoft Dynamics™ AX 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 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 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 Enterprise Portal Server**

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

## **Microsoft Dynamics™ AX 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 Database Server***

The Microsoft Dynamics™ AX Database Server can use either the Microsoft SQL Server database software or Oracle Database software.

## **Microsoft SQL Server**

Microsoft SQL Server 2000 Enterprise Edition and Microsoft SQL Server 2005 Standard/Enterprise are the typical versions of SQL Server recommended for Customers between 100 and 250 concurrent users. Notice that if a Customer has up 10,000 or more transaction line items per hour across more than one module in Microsoft Dynamics™ AX, 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.

The Microsoft Dynamics™ AX database can use different versions of the Microsoft SQL Server product suite. The recommended versions for the Microsoft Dynamics™ AX product line include the following:

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

General SQL Server requirements by edition for up to 175 concurrent Microsoft Dynamics™ AX users:

AMD Opteron or Intel Xeon EM64T (>4MB Cache)						
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 (32-bit)	SQL Server 2000 Enterprise Edition (32-bit); SQL Server 2005 Standard Edition (32-bit); SQL Server 2005 Enterprise Edition (32-bit)	<175	2-4	1-2	4-8	1
Windows Server 2003 Standard x64 Edition; Windows Server 2003 Enterprise x64 Edition	SQL Server 2000 Enterprise Edition (32-bit); SQL Server 2005 Standard Edition (64-bit); SQL Server 2005 Enterprise Edition (64-bit)	<175	2-4	1-2	4-8	1

General SQL Server requirements by edition for up to 250 concurrent Microsoft Dynamics™ AX users:

AMD Opteron or Intel Xeon EM64T (>4MB Cache)						
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 (32-bit)	SQL Server 2000 Enterprise Edition (32-bit); SQL Server 2005 Standard Edition (32-bit); SQL Server 2005 Enterprise Edition (32-bit)	175-250	4-8	2-4	8-16	1-2
Windows Server 2003 Standard x64 Edition; Windows Server 2003 Enterprise x64 Edition	SQL Server 2000 Enterprise Edition (32-bit); SQL Server 2005 Standard Edition (64-bit); SQL Server 2005 Enterprise Edition (64-bit)	175-250	4-8	2-4	8-16	1-2

Important information about the Microsoft Dynamics™ AX Database Server:

- For more information about SQL Server on a 64-bit Platform, visit <http://www.microsoft.com/sql/editions/64bit/default.mspx>.
- For more information about supported processors using 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 Object Server

A general Microsoft Dynamics™ AX Object Server (AOS) that supports 50 to 75 concurrent users (per AOS server) is as follows:

AMD Opteron or Intel Xeon (>1MB Cache)						
Microsoft Windows Edition	Number of Microsoft Dynamics™ AX concurrent users	Single Core Processors	Dual Core Processors	Operating System RAM (GB)	AOS Instance RAM (GB)	Network (GB)
Microsoft Windows Server 2003 Standard Edition (32-bit)	50-75	2	1	2	2	1
Windows Server 2003 Enterprise Edition (32-bit)	50-75	2	1	2	2	1

- Notice that the most up-to-date Kernel Rollup and other Microsoft Dynamics™ AX update information is available for download on PartnerSource or CustomerSource. Documentation for these updates will highlight supportability requirements. Refer to Kernel Release 1 documentation for registry key memory settings required for each Microsoft Dynamics™ AX AOS Server per instance (At the time of this white paper, Kernel Release 1 is the latest KR release).

## Microsoft Dynamics™ AX Application Server

A general Microsoft Dynamics™ AX Application Server is as follows:

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

## **Microsoft Dynamics™ AX Enterprise Portal Server**

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

- Each Microsoft Dynamics™ AX 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 Enterprise Portal Servers to deploy in any given deployment. To optimize performance, generally deploy a 1:1 server relationship between Microsoft Dynamics™ AX Enterprise Portal Servers and Microsoft Dynamics™ AX AOS Servers within each instance of Microsoft Dynamics™ AX.
  - 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 Enterprise Portal Server depends on – but without an optimized IIS environment, Microsoft Dynamics™ AX 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 Enterprise Portal Server deployment. Make sure that the latest service packs and updates for Microsoft Dynamics™ AX are applied as appropriate.
- To set up Microsoft Dynamics™ AX Enterprise Portal Server and for other Knowledgebase articles for Microsoft Dynamics™ AX, visit <https://mbs.microsoft.com/knowledgebase/search.aspx>.
  - Title: How to set up Enterprise Portal (Article ID : 870117)
- For supported configurations of Microsoft Dynamics™ AX Enterprise Portal, reference Microsoft Dynamics™ AX product documentation.

## **Microsoft Dynamics™ AX Batch Server**

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

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

Notice that if a Customer has up 10,000 or more transaction line items per hour across more than one module in Microsoft Dynamics™ AX, 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.

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>

### ***Microsoft Windows Server Terminal Services***

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

- Customer Microsoft Dynamics™ AX 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 3-tier clients is as follows:

AMD Opteron or Intel Xeon (>1MB Cache)					
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 environment is as follows:

Storage Solution	Technology	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 Performance Tuning 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](mailto: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://mbs.microsoft.com/partnersource/resources/services/services/business_systems_architecture.htm)

\*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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