Hardware Specs, Network Requirements and Best Practices

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The IT vendor and Adam customer should review this document carefully. The following includes a list of recommended best practices and network configuration requirements. Adhering to these requirements and recommendations will reduce the total cost of ownership for your computer system.

This document is subject to change without notification. For questions or the latest revision of this document call (800) 331-2326 or send an email to sales@adamdms.com. Upon review, we need both the hardware vendor and an authorized representative from the dealership to initial the bottom of each page and sign the last page.

Client Computers:

Client Operating Systems:

- Windows Vista Business
- Windows Vista Ultimate
- Windows 7 Professional
- Windows 7 Enterprise
- Windows 7 Ultimate

Anti-virus Solution: Some form of antivirus software must be installed and maintained on all client computers. Adam recommends Kaspersky Business Space Security. A number of other solutions are also available, such as Microsoft Security Essentials, Symantec, Trend Micro, and McAfee. The virus definitions should be set up to update nightly. A weekly virus scan should be scheduled to run on the clients during off peak hours.

Client Support: Computers must have a **high speed internet connection** in order for Adam support to connect to the clients to perform support functions for the customer.

Client Computer Specs		
Requirements	**(Minimum)**	**(Recommended)**
Operating System	Windows Vista Business	Windows 7 Professional
File System	NTFS	NTFS
Processor	1.8GHz Pentium 4	Intel Core 2 Duo Processor
Hard Drive	80GB	80GB or higher, 7200RPM
Memory	2GB RAM	4GB RAM (more is better)
Network Adapter	10/100MB Ethernet Adapter	10/100MB Ethernet Adapter
Optical Drive	48X CD-ROM	CD-RW/DVD Combo Drive
Monitor	17" LCD	22" LCD
Graphics Card	1024x768 Resolution	1920x1080 Resolution
Audio	Integrated	Integrated
Antivirus Software	Required	Kaspersky Business Space Security

Network Configuration - "Peer-to-Peer"

"Peer-to-Peer" configurations are for dealers with 5 or less workstations.

Hard Drive Configuration:
Adam requires a 80 GB hard drive on the computers in the peer-to-peer configuration. One of the computers will host the Adam Software. The hard drive on the computer hosting the Adam software **must be configured with at least two partitions**. The second partition in this configuration must have a drive letter of F: and should be at least 20 GB in size. This partition should be shared to all users with full permissions granted.

For maximum performance we recommend using a separate hard drive on the client computer that will host the software. The drive should be at least 40 GB and be assigned the drive letter F:\.

Computer Set up:
All computers that will utilize the Adam System must be mapped to the F:\ drive on the host computer. The mapped drive should be

assigned F:\. This task must be completed prior to the installation of the Adam Software.

Addition Information:
Also refer to the **"Client Computers"** section of this document.

Network Server

Adam's preferred server manufacturer is Dell. If a network package is purchased from Adam Systems, we will order the server for the dealer and stage it at our corporate office. In the event an Adam network package is not purchased, a Dell server can still be purchased for the customer at their request. Adam also offers a server staging service, so ask your sales representative for details. When Adam is staging the server, it must be delivered to our corporate office **four weeks** prior to the install. The server is staged and tested by an Adam certified installer. All monies for the server are required prior to ordering.

Network Configuration - Client/Server:

(Less than 10 users)

Adam recommends the Terminal Server set up for all dealerships over 5 users.

Adam DMS run over Terminal Services has numerous performance and administrative advantages compared to a client/server setup.

A Terminal Services set up is required for all franchised dealerships with more than 10 end users.

Hard Drive Configuration: Adam always recommends a Raid 5 configuration; however, we realize that cost constraints do not always allow for the most effective solution. Whatever hard drive configuration you use must meet the following requirements:

- Must have a minimum of 80 GB for the system partition (C:\ drive)
- Must have a minimum of 80 GB for the Adam System (F:\ drive)
- We strongly recommend a minimum of 80 GB for general storage (G:\ drive)
- **Each drive letter must be its own drive, partition, or volume.**
- The file system on each of these partitions must be NTFS.

The F:\ drive must be shared to everyone on the network. Full permissions to the F:\ drive must be granted to everyone who will access the Adam software.

Adam recommends that the Windows 2000/2003 Server paging file be moved from the system partition (C:\ drive) and placed on the G:\ drive for maximum performance.

Microsoft Windows Server 2003/2008: Adam recommends that you read and follow Microsoft's deployment guides for Windows server deployments if you are installing the servers' operating system. If purchasing a server already loaded with Windows 2000/2003 we recommend following Microsoft's white papers for performance tuning. Adam recommends that you deploy Active Directory and join the clients to the domain wherever applicable. Adam also recommends you use and deploy DHCP and DNS on your Windows server.

Anti-virus Solution: Some form of antivirus software must be installed and maintained on the server. Adam recommends Kaspersky Business Space Security. A number of other solutions are also available, such as Microsoft Security Essentials, Symantec, Trend Micro, and McAfee. The virus definitions should be setup to update nightly. A weekly virus scan should be scheduled to run on the server during off peak hours.

Computer Setup: All computers must be mapped to the F:\ drive on the server. The client computer's network drive must be mapped as F:\ to the shared volume (F:\) on the server. The drive mapping must be static. This task must be completed prior to the installation of the Adam Software.

Client/Server Specs (2-10 Users)		
Requirements	**(Minimum)**	**(Recommended)**
Operating System	Windows 2003 Server	Windows 2008 R2 Server
File System	NTFS	NTFS
System Volume Size	40GB	80GB
Processor(s)	Intel Xeon 2.0GHz	Dual Core Intel Xeon Series
Storage	(2)80GB Drives	SATA/SCSI Raid 5 (3)150 GB 7200 RPM Drives
Memory	4GB RAM	8GB RAM
Network Adapter	100/1000MB Ethernet Adapter	100/1000MB Ethernet Adapter
Optical Drive	48X CD-ROM	CD/DVD Combo Drive
Monitor	17" LCD	17" LCD
Graphics Card	1024x768 Resolution	1024x768 Resolution
Audio	Integrated	Integrated
Antivirus Software	Required	Kaspersky Business Space Security

Keyboard and Mouse	Required	Required
Backup System	Tape Drive or USB Drive	Tape Drive or USB Drive
Backup Software	SnapShot or Windows Backup	SnapShot or Windows Backup

Windows 2008 Terminal Server Network Configuration:

(Required if more than 10 users)

Adam recommends the Terminal Server set up for all dealerships over 5 users.

Adam DMS run over Terminal Services has numerous performance and administrative advantages compared to a client/server setup.

A Terminal Services set up is required for all franchised dealerships with more than 10 end users.

Does your dealership uses third party software that needs to run in the terminal services environment with your Adam DMS? If so, it is the responsibility of the customer to verify compatibility with the third party software vendors.

Microsoft Windows 2008: Adam sells Microsoft Windows 2008 R2 Servers with Terminal Services set up and configured. If you are purchasing one of these servers your Windows 2008 server will be staged and ready to install by one of our qualified Adam IT technicians. If a network package is not being purchased through Adam, it is essential that you choose a hardware vendor who is knowledgeable and has experience with Microsoft Terminal Services. Please have your hardware vendor contact a member of the Adam IT department to discuss your install at least six weeks prior to your scheduled Adam install. Adam and the vendor must work very closely to ensure a proper install that meets the customer's unique needs. Because all of these types of installs are unique they must be handled on a per case basis.

If Adam is not staging your Windows 2008 Terminal Server it is important that a hardware vendor with Microsoft Windows 2008 Terminal Services experience is chosen by the dealership. **Adam Software, when combined with Terminal Services, provides your business with the best performance and most flexibility.** In order to maximize your investment and user experience it is critical that your server and network be set up properly.

Adam recommends that you do not provide the server desktop to end users with Adam Software via Terminal Services. There are several different configuration options available to your hardware vendor that allow the end user's Terminal Server sessions to run Adam Software seamlessly without exposing the server's desktop. Using the Adam Sysmenu it is even possible to launch third party applications via Terminal Services without exposing the server's desktop.

You can find out more about Microsoft Terminal Services and Microsoft's recommended best practices on Microsoft's website, or by following the links below:

Windows 2008 R2 Terminal Services: http://www.microsoft.com/windowsserver2008/en/us/rds-product-home.aspx

Ask us about Windows 2008 R2 Foundation Server for dealerships with less than 15 users!

The proven and reliable technology of Windows Server Foundation provides you with a foundation to run most small-business applications. It's an affordable platform for the core portfolio of IT capabilities, including file and print sharing, remote access and security. A simple and familiar Windows experience makes it easy for organizations to get up and running.

Windows Foundation Server provides you with a dependable and affordable technology foundation for running your business applications and for sharing information and resources. Being based on Windows Server 2008 R2, you can run core infrastructure, remote desktop services, and identity management solutions for your business.

Windows Server Foundation an ideal product for a small business with less than 15 users, for businesses that are greater than 15 users we recommend the use of Windows Server Standard or Enterprise depending on their exact requirements.

Windows Server 2008 R2 Foundation Server is licensed by user accounts. Each license of Windows Server 2008 R2 Foundation is limited to a maximum of 15 user accounts. Moreover, a user account can be assigned to only one distinct user at a time. Because Windows Server 2008 R2 Foundation is licensed in this way, you do not require Windows Server client access licenses (CALs). This also makes Windows Server 2008 R2 Foundation much more cost effective for small businesses.

Terminal Server (2-14 Users) Dell T110 Foundation Server		
Requirements	**(Minimum)**	**(Recommended)**
Server Model	Dell PowerEdge T110	Dell PowerEdge T110
Operating System	Windows 2008 Foundation Server	Windows 2008 Foundation Server
File System	NTFS	NTFS
System Volume Size	80GB	80GB

Processor(s)	Xeon 2.8GHz	Xeon 2.8GHz
Storage	Raid 5 ATA (3)250GB 7200 RPM Drives	Raid 5 ATA (3)250GB 7200 RPM Drives
Memory	8GB RAM	8GB RAM
Network Adapter	100/1000 MB Ethernet Adapter	100/1000 MB Ethernet Adapter
Optical Drive	DVD-ROM	DVD-ROM
Monitor	17" LCD	19" LCD
Graphics Card	1024x768 Resolution	1920x1080 Resolution
Audio	Integrated	Integrated
Antivirus Software	Required	Kaspersky Business Space Security
Keyboard and mouse	Required	Required
Backup System	Tape Drive or USB Drive	Tape Drive or USB Drive
Backup Software	SnapShot or Windows Backup	SnapShot or Windows Backup

Terminal Server (15-25 Users)		
Requirements	**(Minimum)**	**(Recommended)**
Operating System	Windows 2008 Server	Windows 2008 R2 Server
File System	NTFS	NTFS
System Volume Size	80GB	100GB
Processor(s)	Dual Intel Xeon 2.4GHz	(2) Intel Xeon E5502 or faster
Storage	SATA/SCSI Raid 5 (3)150GB 7200 RPM Drives	SATA/SCSI Raid 5 (3)150GB 15K RPM Drives
Memory	4GB RAM	8GB RAM
Network Adapter	100/1000MB Ethernet Adapter	100/1000MB Ethernet Adapter
Optical Drive	CD/DVD Combo Drive	CD/DVD Combo Drive
Monitor	17" LCD	19" LCD
Graphics Card	1024x768 Resolution	1920x1080 Resolution
Audio	Integrated	Integrated
Antivirus Software	Required	Kaspersky Business Space Security
Keyboard and Mouse	Required	Required
Backup System	Tape Drive or USB Drive	Tape Drive or USB Drive
Backup Software	SnapShot or Windows Backup	SnapShot or Windows Backup

Terminal Server (26-40 Users)		
Requirements	**(Minimum)**	**(Recommended)**
Operating System	Windows 2008 R2 Server	Windows 2008 R2 Server
File System	NTFS	NTFS
System Volume Size	100GB	100GB
Processor(s)	(2)Dual Intel Xeon E5520	(2)Dual Intel Xeon E5520 or faster
Storage	SATA/SCSI Raid 5 (3)150GB 15K RPM Drives	SATA/SCSI Raid 5 (3)150GB 15K RPM Drives
Memory	8GB RAM	12GB RAM
Network Adapter	Dual Gigabit Ethernet Adapter	Dual Gigabit Ethernet Adapter
Optical Drive	CD/DVD Combo Drive	CD/DVD Combo Drive
Monitor	17" LCD	19" LCD
Graphics Card	1024x768 Resolution	1920x1080 Resolution
Audio	Integrated	Integrated
Antivirus Software	Required	Kaspersky Business Space Security
Keyboard and Mouse	Required	Required
Backup System	Tape Drive or USB Drive	Tape Drive or USB Drive
Backup Software	SnapShot or Windows Backup	SnapShot or Windows Backup

Printers

All printers to be used with Adam software are REQUIRED to have an internal network card or an HP, Lexmark, Linksys, or Intel external print server. An internal or external print server MUST be attached to each printer on the network. Printers will not be installed on the Adam server without a print server. The only exception will be the F&I form(s) printer(s). Only the F&I Okidata form(s) printer(s) can be attached to a computer's local LPT port. **Okidata Microline 321 or 421 Turbo models are the only printers acceptable for F&I form(s) printing.** Inkjet printers will **NOT** be installed on the Adam server. Inkjet printers may be used for desktop printing but will not be supported in any form by Adam Systems. Make certain that all dot matrix printers utilized for service work orders, parts and service invoices, and checks have the "short tear-off" feature. Check printers utilized for Accounting and Accounts Payable modules require the use of laser printers. The use of dot matrix printers for printing checks is not applicable in the Accounting and Accounts Payable application modules.

Certified Hardware/Network Provider

We recommend using an IT vendor that is a Microsoft Partner with Microsoft certified Engineers on staff. An Adam recommended vendor may be supplied upon request. It is best to shop around for your IT vendor. Always ask for and call their references. We also recommend that you get at least two quotes. A good IT vendor is essential to the process of setting up a stable, reliable, and trouble free computer system. You shopped for a DMS system thoroughly; you should shop just as thoroughly for an IT vendor.

The IT (hardware) provider must be present the first day of the software installation for any necessary modifications. **They must be generally available throughout the entire software installation.**

Network

Cabling: Twisted Pair CAT-5, Cat-5 Enhanced, or Cat-6

Network Switch: 10/100/1000 Ethernet Switch. Adam recommends Dell Power Connect switches.

Wireless: Adam Software does not support running the software across a wireless network. The performance of wireless is just not reliable enough to support constant access of the system. If you are using Terminal Services to access Adam Software then wireless may be an option for a small numbers of clients (5 or less). However, Adam does not recommend wireless in any configuration due to its unreliability and speed.

Firewall: A firewall is a must in today's hostile computer world. Adam recommends a hardware firewall solution. Firewalls must be configured for full time access by ADAM support.

TCP/IP Port List: Here is a list of ports that must be open in order for the correlating services to work.

Port List	
Service/Product	Port
Terminal Services	3389
GM RIM (Oxlo)	6080
Hyundai DCS (Oxlo)	3428
FTP (outbound)	21

Internet Connection: A dedicated broadband connection is required. Adam Systems recommends as least a 5MB internet connection. A static IP address is preferred if available from your ISP. (Frame Relay, DSL, Cable Modem, PPP)

If the dealership's network requires multiple IP sub-nets (i.e., communicating with multiple manufacturers), **IT IS THE RESPONSIBILITY OF THE IT PROVIDER TO HANDLE ROUTING FOR THE SUBNETS**. The use of a router is required.

NOTE: A VPN with NetBIOS over TCP/IP is required if connecting a remote store to the main facility. The use of Windows 2008 Terminal Services with a VPN solution is strongly recommended when accessing the Adam Software from a remote location.

Backup Solution: All Adam customers should do nightly backups of all relevant data, such as the Adam System, operating system, and business related documents. Backups are the most critical part of any good computer administration routine. Adam recommends its customers maintain at least a week's worth of backups. At least one backup, no older than one week, should be kept offsite. A tape backup system of any kind is acceptable. External USB drives may also be utilized for a backup system. Adam recommends external USB drives. Two external USB hard drives make an excellent cost effective backup system. Most customers find that a week's worth of backups can be performed on one drive. After a week the drives should be swapped out. Adam recommends keeping one drive offsite. A very good backup software solution that we highly recommend is SnapShot, however any backup software is acceptable. The Windows 2008 server comes with a very capable backup software suite.

Ford and GM Franchised Dealers: Internet Services which are provided through Ford and GM satellites will not allow inbound connectivity through the Internet. For this reason we are unable to use these Internet connections to meet your support needs. An alternate high speed connection must be provided for support needs.

Microcat Parts Imager Software & ADAM Microcat Interface: If you are using the Microcat Parts Imager software & ADAM Microcat Interface, a DVD drive is required. If you are using a Terminal Server the DVD drive must be attached to the server. In the client/server configuration the DVD drive can be attached to the clients or the server. **NOTE: Microcat Parts Imager Software currently does not support 64 bit computing. Please contact Microcat for more information.**

DCS (Dealer Communication System) Connectivity and Integration: Depending on the manufacturer, additional configuration requirements may be necessary (i.e., licensing upgrades, cabling, IP addressing, routing, etc.) Contact your Adam representative or call the number on Page 1 for more information.

Other Information:

- Adam recommends keeping dealership computers free of any programs not necessary to conduct business and meet the needs of your customers.

- Spyware, Adware and Advertising Trojans are a serious problem and potential disruption on your client computers. This distractive software is an annoyance in its mildest form and often causes loss of productivity and damages your computer's ability to function. Like viruses, these menaces must be dealt with on a consistent basis. There are several free programs which will scan your systems and remove these threats. We recommend you use the latest version of Microsoft Defender. Like anti-virus software, this software must be maintained and used regularly to be effective. Adam recommends updating and running this software at least once a week. There are many other software packages that combat these threats; whatever solution you decide upon, please refer to the manufacturer for best practice, support, and how-to's.

- At least once a month, your computer's hard drive should be defragmented using the Window's disk defragmenter or some other third party tool.

- Your operating system should be updated at least once a month. Use the Windows updater to download important patches, fixes, and updates to keep your computer running trouble free.

- A password policy is often overlooked. Adam recommends following Microsoft's password complexity requirements. Your security polices are only as strong as your weakest password. Please read Microsoft's recommendations here (under the security section of the Windows 2003 Deployment Guide).

- Adam will not provide access to your server or software to any third parties without a written request on company letterhead that is signed by the office manager or dealer.

The undersigned acknowledge they have read and understand this document.

_____   _____
Dealership Represenative   Date

_____   _____
Hardware Vendor   Date