

## Microsoft Jet Database Maintenance

MUSAC Classic uses Microsoft's Jet 4.0 database to store your information. The following is provided to assist with the maintenance of the databases to ensure the best possible performance and stability of Classic.

### Summary

- 1 Verify that you have installed the latest service packs for:
  - Microsoft Jet
  - Microsoft Office
  - Microsoft Windows (specific to your current operating system)
- 2 Verify that you are Defragmenting the server's hard disk drive on a regular basis
- 3 Verify that you are Compact-and-Repairing your databases on a regular basis
- 4 Verify that MUSAC is not used with WiFi, but over a reliable network

### Verify that the latest operating system service pack is installed

Install the latest operating system service pack. To verify that you have the latest service pack installed for your current operating system, visit the following Microsoft Web site:  
<http://windowsupdate.microsoft.com>.

If you are in a network environment, ensure that the network file server has the latest operating system service pack. This ensures that the network file server has the latest updates for the network redirector and for the file system.

### Verify that the latest Microsoft Jet service pack is installed

For more information about how to obtain the latest version of the Jet 4.0 Database Engine, click the following article number to view the article in the Microsoft Knowledge Base:

[239114](#) How to obtain the latest service pack for the Microsoft Jet 4.0 Database Engine

If you work in a network environment, you must install the latest Microsoft Jet service pack on all client computers. You do not have to install the Microsoft Jet service pack on the network file server unless the network file server also runs one or more applications which use Microsoft Jet.

### Periodically compact your Microsoft Jet database

If you make frequent changes to your database, parts of the database may become fragmented. Therefore, periodically run the Compact Database utility in Access. If you do not have a copy of Access, you can still compact the database by using the JetComp utility.

For more information about how to obtain the JetComp Utility for Microsoft Jet 4.0, click the following article number to view the article in the Microsoft Knowledge Base:

[295334](#) Jet compact utility available from the Microsoft Download Centre.

How frequently you compact your database depends on how much the data changes. If the data does not change frequently, you do not have to compact frequently. If there are frequent changes to your

database, compact your database more frequently. Although there is no formal rule for how frequently you compact your database, we recommend that you compact your database regularly.

The following paragraphs describe the process used by Microsoft Jet to compact your database.

For more information about compacting a database, click the following article number to view the article in the Microsoft Knowledge Base:

[288631](#) Defragment and compact database to improve performance

The Microsoft Jet Database Engine treats an Access database file as a series of 4096-byte blocks. This is similar to the way a typical file system treats data on your hard disk. The complete set of records in a Microsoft Jet table is stored by a series of these blocks. Each block points to the next block. Each block can hold one or more records, so how many records a block holds depends on how many fields and how much data is in each record. When records are added and deleted from the table, the table blocks become fragmented in the database file.

When you compact a Jet database, the blocks are de-fragmented, and each table is put in a contiguous range of blocks. This improves read performance and write performance to the table.

Indexes in an Access database are also stored in 4096-byte blocks. Indexes can become fragmented just as the table records can become fragmented.

When your Jet database is compacted, Jet updates table statistics that are stored in the database. One important table statistic is the number of records in a table. If the number of records in the table statistics differs greatly from the actual number of records in the table, performance may not be as good. For example, if the table statistics indicate there are a small number of records in the table, the Jet Database Engine optimizer does not use any indexes on the table when the Jet Database Engine performs seeks or joins. If there is a small number of records, this is actually more efficient. But if there many records, this can become very inefficient. Therefore, if your database has a large numbers of records that are added, deleted, and updated, compact the database more frequently.

Microsoft Jet also re-optimizes stored queries in the database when the database is compacted. This reflects the updated table statistics. Therefore, stored query performance can be improved when you compact your database.

To assist with the regular compact and repair of the Access Databases MUSAC has an AutoJeCT utility available, for more information please refer to the [MUSAC AutoJeCT Compacting Tool Installation Notes](#) in our Document Library.

### **Back up your Microsoft Jet database file regularly**

Define a backup schedule which corresponds to the data that you can afford to lose. For example, if you can afford to lose one day of data, back up daily. If you can afford to lose one week of data, back up weekly. A full database file backup is the best way to make sure that you can recover your Microsoft Jet database file if corruption occurs.

**Important:** If you are in a network environment, you must shut down all Microsoft Jet clients before you back up the Microsoft Access database file. If you do not do this, you may create a backup file with incomplete or inconsistent data. Test your backup files regularly to ensure your backup files are good.

## Verify that the latest service pack for your version of Office is installed

Microsoft periodically provides service packs and updates to Microsoft Office. Install the latest service pack or Office update for your version of Office to enhance performance and interoperability with other programs. Use the Microsoft Office Update website to automatically install all the latest service packs and updates. To have the Office Update website detect the updates to be installed on your computer, visit the following Microsoft website:

<http://office.microsoft.com/en-us/downloads/maincatalog.aspx>

After the Office Update website detects the latest updates that you require, you receive a list of recommended updates for your approval. Click Start Installation to install the updates.

## Additional best practices for network environments

Microsoft Jet is a file-sharing database system. A file-sharing database system means that the processing of the file occurs at the client. When a file-sharing database, such as Microsoft Jet, is used in a multi-user environment, multiple client processes use file read, file write, and file locking operations on the same shared file across a network. If a process cannot be completed, the file may be left in an incomplete state or in a corrupted state. A process may not be completed for either of the following reasons:

- When a client is stopped unexpectedly
- When a network connection to a server is dropped

## Do not use folder redirection on Windows Vista

There is a known problem in which a Jet database may become corrupted when the Jet database is saved in a folder that uses the Windows Vista folder-redirection feature in the original release version of Windows Vista.

To avoid this problem, you must update to Windows Vista Service Pack 1, or avoid saving a Jet database in a folder using the Windows Vista folder-redirection feature. To obtain the latest Windows service pack, visit the following Microsoft website:

<http://windowsupdate.microsoft.com>

We have not seen this problem with the folder-redirection features of Windows Server 2003, of Windows XP, or of Windows 2000. For more information about folder redirection, click the following article number to view the article in the Microsoft Knowledge Base:

[232692](#) Folder redirection feature in Windows

For more information about folder redirection, visit <http://technet.microsoft.com/en-us/sms/bb676760.aspx>.

## Opportunistic locking, also known as oplocks, on the network file server

Opportunistic locking may increase the risk of Jet database corruption when a file is shared by two or more clients on a network file server. This problem applies to Microsoft Windows NT 4.0, Microsoft Windows 2000, and Novell file servers that support opportunistic locking. This problem also applies to clients that are running Microsoft Windows NT 4.0, Microsoft Windows 2000, or Microsoft Windows XP and that connect to a file server that supports opportunistic locking.

Note: Clients running Microsoft Office Access 2003 must have Windows 2000 SP3 or later or Windows XP or later operating system.

To avoid this problem, you must install Windows 2000 Service Pack 3 (SP3) or later on the Windows 2000 file server where the Access database file is located. Then install the latest Windows service pack on each Windows client computer that connects to the Windows 2000 file server.

To obtain the latest Windows service pack, visit the following Microsoft website:

<http://windowsupdate.microsoft.com>

If you are using Windows NT 4.0 or if you do not want to install Windows 2000 SP3 or later, you can disable opportunistic locking to avoid the problem.

**Important:** If you disable opportunistic locking, this may adversely affect the performance of other applications. If you have questions about this, contact Microsoft Windows technical support.

For more information about disabling opportunistic locking on:

- Windows NT 4.0, click the following article number to view the article in the Microsoft Knowledge Base:  
[129202](#) Explanation of opportunistic locking on Windows NT
- Windows 2000, click the following article number to view the article in the Microsoft Knowledge Base:  
[296264](#) Configuring opportunistic locking in Windows
- a Novell file server, we recommend that you contact Novell technical support. For information about your hardware manufacturer, visit the following website:  
<http://support.microsoft.com/>

Microsoft provides third-party contact information to help you find technical support. This contact information may change without notice. Microsoft does not guarantee the accuracy of this third-party contact information.

### Issues to consider when you share a Microsoft Jet database

We do not recommend that you share a Microsoft Jet database file that is stored on a Microsoft Windows 95 file share, a Microsoft Windows 98 file share, or a Microsoft Windows Millennium Edition (Me) file share with Windows NT clients or with Windows 2000 clients.

If you have an environment with a mixture of computers on a network with some computers running Windows 95; Windows 98, or Windows Millennium Edition; and some computers running Windows NT or Windows 2000, and you share the database with other network users - we recommend you store the database file, and that you share the database file on a Windows NT server or on Windows 2000 server with opportunistic locking disabled.

Corruption may occur if you have Windows NT client computers or Windows 2000 client computers that share a file stored on a Windows 95 file share; a Windows 98 file share; or a Windows Millennium Edition file share. This problem may occur even if the Windows NT client or the Windows 2000 client has opportunistic locking disabled. This issue is still under investigation. We will post more information to this article when that information becomes available.

Note: Clients running Microsoft Office Access 2003 must have Windows 2000 SP3 or later or Windows XP or later operating system.

### Use a robust file server

Ensure you have a robust file server which can handle the number of users and requests being made to the Microsoft Jet database file. Additionally, make sure that the file server is not overtaxed with handling other processes, eg. acting as a Windows domain controller, an Exchange server, or a SQL Server.

A problem also occurs if you restart the server to fix a problem with another important service, such as the mail service. Problems also occur when you restart the server after you apply new software, or you apply a service pack or a hotfix; and you forget that the Microsoft Jet database is currently shared on the server. When the file server is restarted, unexpected interruption of the client connections to the database occur. This may cause database corruption. To prevent interrupted client connection, all clients must close the database before the file server is restarted or before software updates to the file server are applied.

A file server must also be put in a secured location where the file server cannot be accidentally switched off. The server must have an uninterrupted power supply (UPS) to help protect from intermittent power outages or from power fluctuations. The network file server must also have the following:

- High-performance hard drives
- A high-quality network card
- Lots of RAM to make sure that the server can handle the load

### Verify network connectivity

Make sure that you have a stable network and a fast network with stable network connectivity to the network file server. We recommend you do not use Microsoft Jet over a Wifi, over WAN, over a modem connection, or over FTP; or any other less-than-reliable network transport. Because Microsoft Jet is a file-sharing database system, any less-than-reliable network transport increases the chances of a dropped client. This can increase the chance of database corruption.



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