Richard Carlton Consulting Inc.
1941 Rollingwood Drive, Fairfield, CA 94533
(707) 422-4053 • www.rcconsulting.com • www.GoFilemaker.com

Microsoft Access 97 vs. FileMaker Pro 4.1

Background

This document details some the differences between FileMaker Pro 4.1 and Microsoft Access 97. Advocates for both tools often claim one is better than the other, however, this document details the differences, not based on the opinion of the author, but based upon technical documents, or writings by accepted experts in the industry. Where possible, the source of the information is cited. Additionally, there is a bandwidth analysis document, showing the differences in bandwidth usage by the two tools.

If anyone has additional sources of information, such as magazine reviews, quotes from books, or quotes from Microsoft engineers, please email info ASAP to info@rcconsulting.com

Summary

Major differences exist between the capabilities of FileMaker Pro 4.1 and MS Access 97. Microsoft's own Solution Provider training, technical documentation, and third party books reveal significant scalability limitations of MS Access when compared to FileMaker Pro 4.1.

1. Heterogeneous Platform Compatibility
2. Graphic Support
3. Easier to Learn and Use
4. File Size Limits (limited scalability)
5. Built-in Web support
6. Client Server Support
7. Uncontrolled File Growth

Heterogeneous Platform Compatibility

The same version of MS Access will not run on Windows 3.1, Windows 95, and Windows NT (Access 97 will not run on Windows 3.x or Macintosh at all). FileMaker Pro can run the same files on all Windows versions without conversion, as well as Macintosh computers.

One example that illustrates the importance of cross platform compatibility is a solution deployed by a FileMaker developer for a state agency in California. The solution relied heavily on the use of two Macintosh computers for scanning and processing of graphics that were being fed into a database of "Missing and Unidentified Persons." Meanwhile the majority of the systems utilizing the database were Windows 3.1, Windows 95,and Windows NT. The FileMaker database ran simultaneously on all the systems, whereas a Microsoft Access solution would not have run on Win 3.1 or the Macintosh.

FileMaker does not require any rework or conversion to provide this capability. This enables each database user to utilize the best possible hardware that meets their needs, without forcing all users into a costly upgrade of hardware and software.

(MS Access is a 32 bit Windows-only component of Microsoft Office 97. Office 97 runs only on NT or 95. Check the box. Source: "Running Microsoft Access 97"; John L. Viescas; Microsoft Press)

Graphic Support

MS Access support for professional-quality graphics layout is clumsy and limited. Case in point: FileMaker Pro was used in 1996 to publish the California Subdirectory of High Risk Sex Offenders. FileMaker Pro was used after a catalog of sex offenders could not be developed to a satisfactory level by several senior MS Access engineers.

(This information is based upon the experience of several senior engineers who currently use Microsoft SQL Server, Access and FileMaker Pro.)

Easier to Learn and Use

While terms like "easy to learn" and "easier to use" are subjective in nature, it is clear that FileMaker Pro is market leader when considering ease of use, shortened development time, and minimal learning curve. In recognition of these exceptional features, FileMaker has won many awards over competing products, including Access, Paradox, Foxbase, and 4th Dimension.

File Size Limits (limited scalability)

FileMaker Pro is not crippled by the 1-gigabyte file size limitation of MS Access. FileMaker Pro supports a two gig file size limit. It is important to remember that unlike MS Access, each file in FileMaker Pro is considered to be a single table. A FileMaker Pro database project can run 50 simultaneous tables (i.e files), each with a two gigabyte limit, for a total of 100 gigabytes of data.

(Source: MS Access online help topic : "Data Base Specifications". Keep in mind that an Access database is an entire collection of tables, queries, forms, macros and code modules. It is possible to open one database from within another database using VBA code - an advanced technique which is useful but not recommended as a work around to accommodate file growth.)

Built-in Web Support

FileMaker Pro can serve its own databases over the web without any other web - server or third party software. In addition, there currently are no less than four third party CGI "middleware" applications that connect FileMaker Pro to a Mac OS server (using WebStar) or an NT server (using IIS 4.0, Microsoft's Web Sever). MS Access support for the web is less extensive and difficult to implement in environments that are not purely Microsoft oriented (i.e.. Not Internet Explorer). One of the foremost leading weekly magazines had this to say about MS Access. "**Initially, Active Server Pages (i.e. Dynamic Content) work well with Microsoft Access as the database, but Access really isn't meant for multiuser applications, such as a busy web site. By avoiding Access altogether, you won't have to wonder whether the problems you encounter during development are your own fault or a symptom of Access' limited capabilities.**"

("Growing Your Web Site on an NT Platform" Window NT World, supplement to Network World Nov 30 1998 - PC Computing)

("FileMaker Pro 4.0 makes it easy for even a novice to set up a Web site." Review April 1998 - PC Computing)

Client/Server Support

FileMaker Pro is available in a Server version (FileMaker Pro Server) which enables FileMaker to support up to 100 simultaneous connections, improves speed by up to 60%, reduces network traffic by off-loading record indexing and other tasks to the server, and can concurrently support multiple network protocols, including TCP/IP and IPX. While MS Access does support file-sharing by locking records, it is not available in a client/server configuration. Each user that opens an MS Access file receives a significant portion of the database at their workstation. This greatly increases the demands for bandwidth and network traffic. In fact this situation is so sever, that additional test have been run which are showcased in Appendix A.

Both FileMaker and MS Access support ODBC connections, but again, this would entail the development and maintenance of both a client and server component for the application - one to house the data and one to connect to the server. This would unnecessarily complicate the solution and provide no advantages in functionality.

(A good explanation of client/server computing which refers to MS Access is available in the book "SQL Server Unleashed"; David Solomon; SAMS Publishing; pages 1032-1034, e.g. bottom of page 1032 "For example, it is a misconception that Microsoft Access alone can be used to create a client/server application.")

Uncontrolled File Growth

MS Access databases do not reclaim file space when records are deleted. Access databases continue to grow until the "Compact Database" utility is executed. This creates a problem when the Access database resides on a server and is used to process data which is subsequently deleted. No file space is reclaimed after the deletion. When new data is added, the Access file will grow. This growth continues until the I gigabyte limit is reached and the database shuts down.

While FileMaker Pro also has "Save a Compressed Copy" command, FileMaker continually reclaims space created by deleting records from the database. Since space is continually reclaimed, FileMaker Pro databases do not require extra administrative attention to ensure the database does not bloat beyond the maximum file size.

(Source: Microsoft explains the use of the "Compact Database" command in its help file. It does not advise the user that MS Access never reclaim space from deleted records. Despite this omission, we can easily demonstrate uncontrolled file growth by repeatedly adding and deleting records from an Access database.)

Where is Microsoft Access Useful?

While MS Access has deficiencies when compared with FileMaker Pro, MS Access does have it uses. As stated by one of our database engineers, Access works well as a "swiss army knife" for helping to move data in and out of Microsoft SQL Server. Built in support for Visual Basic greatly aides in its use on Windows NT Servers which host SQL databases.

It is important to note that any good developer uses the right tool for the job. Access does have its uses, but not as a Client Server tool for deployment of "workgroups" or "enterprise wide" solutions (i.e. not for use as a networked database). By definition, MS Access doesn't even support Client/Server methodology.

Compiled by:
Dennis O'Connell
Senior Microsoft SQL Server Engineer
Richard Carlton Consulting
rcconsult@aol.com

APPENDIX A

Microsoft Access 97 vs. FileMaker Pro 4.1
Bandwidth Analysis

Introduction

Richard Carlton Consulting engineers, after learning that Microsoft Access was not a Client/Server tool, decided to perform a bandwidth analysis on both database engines. Three engineers were on hand, one engineer who holds an MCSE rating, one who is an MS SQL Server MCP, and one engineer who has 8 years of FileMaker Pro experience, and who is a FileMaker Partner.

Summary

As the tests show, MS Access is unacceptable for multiple user access across a networked environment. Its aggressive use of bandwidth leads to significant slowdown on most "real world" networks, except those which have significant bandwidth reserves. FileMaker by contrast used little bandwidth, making it ideal for networks with remote connections as low as 56 Kbytes per second.

Setup

The tests were performed on closed 10-baseT ethernet networks, using TCP/IP protocol exclusively. There was no other traffic on the network. The databases were stored on a Pentium II 350 mhz system running with NT 4 Server, 98 megs of RAM, and an Intel 10/100 ethernet card. The client was a Gateway 2000 200mhz Pentium system with 80 megs of ram, NT 4.0 workstation, and a 3COM 10/100 ethernet card. The Hub was a LinksSys 10 megabit/16 port. All cabling was category 5.

The bandwidth measuring computer was a Macintosh G3 system, running Etherpeek 3.5 (from the AG group). Two identical databases were created (one table, 35 fields), one in Access and one in FileMaker 4.1. Both databases had 5500 records and were 17 megabytes in size.

Testing

Two tests were performed:
(1) Using the NT Workstation to open the Microsoft Access database from the NT Server.

(2) Running FileMaker Pro Server on the NT (hosting the database file), and then opening the database with FileMaker pro running on the NT Workstation.

We ran each test several times, each time quitting and restarting the associated application to prevent the applications from caching information and throwing off the results.

For the Access test, when opening the file for use, approximately 2.2 megabytes of data were pushed through the network to the NT Workstation, as can be seen on the chart. The maximum measured bandwidth was 450 Kbytes per second.

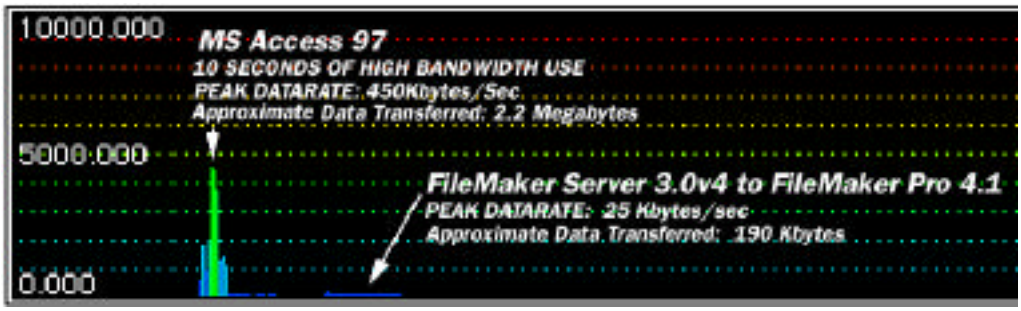

CHART NOTE: The Scale is 10,000 Kilo Bits per second, which converts to 1 Megabit per second, i.e 10Base-T ethernet. If a network reaches 80-90% of maximum, it is considered "saturated."

For the FileMaker Pro test, when opening the file for use, approximately 190 Kbytes of data were pushed through the network to the NT Workstation, as can be seen on the chart. The maximum measured bandwidth was 25 Kbytes per second.

Discussion

Clearly, the results speak for themselves. Microsoft Access, because it is not a client/server tool, is not "network friendly." Access "pushes" a large percentage of it databases through the network in order for the users to even access the information. If an organization has a various offices connected together with 56 kbytes per second technology (such as ISDN or Frame Relay) then opening a database like our test database could take upward of 6 minutes to complete (2.2 megabytes divided by a 56 Kbytes per second).

By contrast, FileMaker Pro opened the database by pushing 190 kbytes of data through the network, making it 11 times more efficient than Access. Clearly, any unbiased observer can see the huge difference in the technologies, with FileMaker Pro, in its client/server configuration providing vastly superior performance over most "real world" networks. (where real world is defined as a network which has various bandwidth sections, with some segments suffering from congestion.)

People who push Access do not understand these limitations or have never bothered to study them. That is analogous to buying a car because the manufacturer, such as General Motors, claims a particular car is “the best.” However, even this excuse is hollow, since our engineers have been to multiple presentations by Microsoft, where at the presentation, Microsoft paid employees stated that Access is not “network friendly” and is not a client/server tool.