

Macintosh Development in the Enterprise

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Abstract

Developing and supporting business applications on the Macintosh platform is an incredible challenge in today's corporate environment. PC Bias, connecting to the corporate network and services, accessing databases, support issues, and dealing with corporate security policies all need to be overcome before starting a project. The success of new Macintosh systems in the home and graphics markets has yet to translate into the conservative business market.

[Ed. Note: This is a day in the life of Jay Weiss as he attempts to slay the corporate blue dragon, or at least find a way to live with it. Some will be tickled or horrified at the lengths that he went through to solve his problem. Names were omitted to prevent retaliation -- that is, to protect the guilty.]

Someone actually wants to do Macintosh development at a Large Corporation?

A department in a large company wanted to develop and deploy a client /server application using Macintoshes as the client machine. The response from the company's IT department was very predictable. It went something like this: "NO! That platform is not approved as part of our corporate standard." This was despite the fact that Macs were used elsewhere in the company. It was explained that those systems were necessary for previously developed "mission critical" functions.

It should be noted that this company [name omitted] had used Macintosh systems extensively until the mid-1990s. Even today there are applications used in the company which would be difficult to convert to the PC. The company tolerates these applications and systems because they are "mission-critical". Graphics arts and advertising departments of most large companies are still dominated by Macintosh systems.

The project was eventually approved with the authorization of the vice-president. The users of the existing "off-the-shelf" applications used to perform their jobs were ecstatic that a single application designed for their business was being implemented. Some of them were former Mac users who were amazed that a Macintosh solution was being considered.

A Little History (that you already know)

The mid-1990s marked the decline of the Macintosh computer at many large corporations. The introduction of Windows95 changed the way many companies looked at Macintosh systems since there was now a PC system that was "just the same." :(

The "new" Windows systems were more complex than their predecessors and required far more support. Companies with substantial investments in Macintosh systems decided, with the help of "Blue" IS Managers, that Wintel systems were much better for business than Macintosh system.

This was especially true in the Insurance industry, which relies very heavily on IBM mainframes and which were influenced (IMHO) to move to PCs.

Overcoming PC bias

The biggest problem with developing for Macintosh systems in the large corporations is that most companies have moved to a "standard" platform. They don't want to support multiple platforms. (In other words, they don't like Macs, so go away.)

The truth is that they were already supporting multiple platforms. Software platforms running on Intel hardware include MS-DOS, Windows 3.1, Windows95, Windows98, WindowsNT, Novell, and Unix.

Another factor for the lack of support of Macintosh systems in the corporation is that they require far less technical support than PCs. You would think this would make them more desirable, but recently members of these organizations indicated that moving to Macs would result in a reduction in required support staff. (Can you say "out of a job", I thought you could.)

The impact of adding Macintosh support to the workload of the average PC support person is minimal. It is only fiction that they could not support the Macintosh since in most cases the end user can diagnose and solve their own problems without even needing to contact the company technical support group at all.

[Ed. Note: But, when a Mac does go down, it **really** goes down!]

Connecting to the Enterprise network.

Connecting a Macintosh to the corporate network is very simple. All PowerMacs have had built-in Ethernet going back to the 6100. So connecting to the corporate Ethernet network is simple, just plug it in. Now it is time to configure the TCP/IP address, connect to database via ODBC, develop the application, and win the hearts of our adoring fans. (OK! Reality check! Let's take this one step at a time.)

Assigning a TCP/IP address is performed automatically via DHCP or manually via the TCP/IP control panel. Open Transport has made this process fairly painless. The fact that a new TCP/IP address is activated without even needing to reboot the system is a real time saver.

Connecting to the corporate file servers may prove to be a little more complicated. This assumes that the file servers used in the company are not AppleShare file servers. There are two ways to connect to a company file server.

- **Install AFP services** on the server so the file server appears as if it were an AppleShare server.
- **Install client side network software** to access file servers.

Installing AFP (AppleTalk Filing Protocol) on the server is the easiest for the large numbers of users. Support for Macintosh file names and the AppleTalk networking stack is installed and then the user selects the file server from the Chooser. However, many PC network administrators loathe installing additional services on "their" servers to support "those" users. If AFP is used then routers on the network must be able to route AppleTalk packets AND support AppleTalk Zones. (This is another reason PC network managers don't like Macs, too easy for the users to use.)

WindowsNT 4.0, Windows 2000, and Novell NetWare 3 & 4 have native support for AFP. NetWare 5, however, eliminated this support because of development resource limitations and rights were sold to a third party developer. If you want AFP support for NetWare 5 you must purchase it from Prosoft Engineering Inc.

The other method for connecting to a server is to install client software to

access file servers. This method is good when only a limited number of Mac users are accessing a server or network administration does not want to use server resources to support the Mac users.

Below are some servers and the client side connectivity solutions:

- **WindowsNT server** - DAVE from Thursby Systems.
- **Novell File server** version 3 or 4 - Novell NetWare Client 3.21.
- **Novell NetWare 5 server** - NetWare Client for MacOS from Prosoft Engineering.
- **NFS File server** - MacNFS 3.0 from Thursby Systems and freeware/ shareware NFS clients.
- **FTP servers** - most web browsers and FTP clients

Macintosh email clients are available for most email systems. Both Lotus Notes and Microsoft Exchange have Macintosh clients. Other email systems can be used with one of the multitude of POP3 clients available as commercially, as shareware, or as freeware.

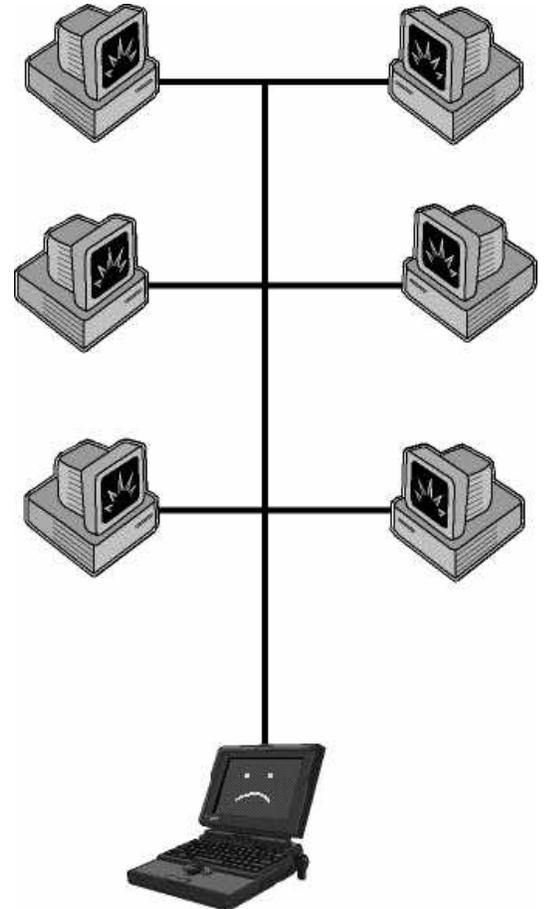
We used a WindowsNT server with AFP support installed and Microsoft Exchange and the Macintosh client.

Overcoming Concerns about Security

A few years ago I performed an evaluation between Macintosh and PC systems that showed that desktop and network security concerns are big issues with large companies. The Macintosh has basically had no desktop security without using third party products.

The company wanted to find the advantages of a 400MHz Pentium II system over a 300MHz G3 system that a

graphics artist wanted. The company was not only PC based, but had just converted desktop PCs to WindowsNT for **security** reasons.



Lonely Mac in a sea of PC's

Originally it was thought that the 400MHz PII machine would beat the 300 MHz G3 Macintosh hands-down on performance grounds. This turned out NOT to be the case and the only thing that gave the PC the edge was desktop security (that and no built in screen saver).

In the large corporate environment security is VERY important. Keeping information confidential is of the utmost importance. Until the advent of System 9.0 this was done by adding third party products to secure the desktop. Apple's inclusion of the Multiple-Users feature

provides a good level of desktop security and might have made the difference in that evaluation.

However, this points out the necessity for robust desktop level security like the security that is included in MacOS X.

Database Access from a Mac

Now that the Macintosh was attached to the network and could access various corporate services it was time to connect to a database server. So our client/server application could be developed.

The database used in this project was an existing SQL Server database running on a WindowsNT machine. The only method for accessing the database was using Open DataBase Connectivity (ODBC) drivers running over TCP/IP.

Microsoft supplies ODBC drivers for the Macintosh with Microsoft Office and Microsoft FoxPro for the Macintosh.

Our first attempt to connect to the database server didn't work. It turned out that the TCP/IP services were not enabled on the Database server. Once these were enabled we were able to create an ODBC connection to the server.

Using Microsoft Query (part of Microsoft Office) we were able to create a query and retrieve data from the database.

You can run PC DBMS tools on a Mac ?

Connecting to the database and executing queries was fairly simple. However, during development we found that we needed to occasionally modify the database and change some stored procedures.

The DBA working with us did not want us to use anything but Microsoft tools for working with the database. There was a single PC available to run this software, but it was also being used for

production work and email. Guess who got to use it?

Connectix Virtual PC (VPC) saved the day. We loaded VPC onto one of the Macs and then installed the Microsoft SQL Server tools. We were then able to access the database and make the changes needed whenever we wanted. (The DBA figured we would need him a lot more than we actually did.)

It was also helpful to be able to switch between the original "applications" running under Virtual PC and the new one being developed to validate functionality and results.

Which development tools to use?

Today, I would probably use RealBasic 2.1 from Real Software for a project like this. I've done a lot of VB and Access work and like Visual Basic. However, at the time of the project RealBasic 2.1 didn't exist so...

It was decided to use Visual FoxPro for the Macintosh 3.0 since Visual FoxPro was a corporate standard and connectivity via ODBC was possible. Several PC applications had been developed using this combination and it meant "they" could support it after "we" completed it.

Visual FoxPro 3.0 provided a good development environment supported the use of stored procedures both locally and on the server, and had ODBC connectivity support. In some cases we had to use pass-through queries because of the complexity of the query or because the SQL was SQL Server specific.

A very valuable tool was Microsoft Query. This tool is one of the most under-rated features of the Microsoft Office suite. It helped us to develop SQL queries without the overhead of Visual FoxPro. We were using several fairly "under-powered" machines.

Unfortunately, Microsoft has discontinued support for Visual FoxPro for the Macintosh and it is no longer listed as a product for sale.

(You folks can chastise me, but I sometimes wish there was a Macintosh version of Microsoft Access. You'd be surprised at the amount of Access development I've done over the last several years.)

This is supposed to be easy. Right?

Our connectivity issues were solved, we had a development tool, we had started development and life was good. This can't be, you say? You guessed it; something changed. Suddenly we couldn't connect to the database server.

We tried to connect using Microsoft Query and that failed too. The database server was working and could be connected to by the PC we had and even from VPC. What had changed? Did our license for the ODBC driver run out? Had the planets aligned and zapped our systems. Were the gods of the PC world against us?

We called the DBA for help. Nothing was wrong. The database was working. The PCs using it were working fine. See you Macintosh people are doomed!!! Then he restated the database server. Viola it worked again. Then it didn't. Then it did. Then it didn't. Need I go on? Again the DBA intoned - "You Mac guys are doomed".

It turned out that the SQL Server database software had not been updated and it was causing the TCP/IP stack on the NT server to fail. Since we were the only ones using the TCP/IP connection we became disconnected. The PC users were connecting via Named Pipes (whatever those are) it didn't affect them. The database software was updated and Voila the problem was solved.

HELP!! I can't change share rights on that server.

The last little bugaboo that we had was the time when we were moved to a Novell server for a few days and we found that we could no longer share any files nor could multiple users access the test application.

The Novell server was not configured with the Shared attribute set on by default. This meant that any file we accessed could only be used by a single user. We could not alter these preferences from the Macintosh and finally found out how to change the shared attribute using the Novell Filer utility running DOS.

I never thought I'd say this, but I was glad when we were put back on the WindowsNT server shortly thereafter.

Putting it all together.

Finally, the work was all done and the application was ready. The testing was done and the application had passed muster in the company QA group. We were in Nerd-vana., ah... Nirvana.

[Ed. Note: "Nerdvana", was coined by Dilbert on 9/28/91.

<http://www.zdnet.com/yil/comics/dilbert.html>]

We had had a number of major problems and overcame them. The users were pleased, productive, and we had given them a reason to rejoice.

Developing applications for the Macintosh in a large company is a challenge, but worth it. Seeing people use a system that actually makes their lives simpler is a great joy for any developer.

I couldn't go into every little detail about developing for the Macintosh in the corporate environment or I'd have written a book.

<Name undefined> to the rescue.

This project occurred in early 1998 and the application is still being used. The Macintosh is now better supported along with its PC brethren especially since Microsoft Office98 came out.

Microsoft Office98 has allowed the Macintosh to survive in many corporations since it is basically the same as Microsoft Office97 and allows the exchange of Word, Excel, and PowerPoint documents with no changes between platforms. The issue of support Macintosh office productivity tools has been reduced to nothing because of this.

The success of the iMac, G4, and PowerBook G3 Series has rekindled interest for Macintosh in the corporate world. Apple must now court the business community since those new Macintosh systems have re-energized the Consumer and Graphics markets.

Is it time for MacHack YET?

Now it is time for MacHack and I look forward to seeing all of you and being immersed in the IN-SANITY of people who love what they do. All of this occurs on a platform that usually makes life simpler; that is until the hacks from the conference are shown.

SPECIAL THANKS: I want to thank my wife Janice for helping me with this paper, for being a fantastic Mother, and the most wonderful Wife in the world.

[Ed. Note: Two things: First, this paper illustrates the necessity of keeping Microsoft tools for the Macintosh. Second, Jay labored through the repainting and recarpeting of his house as he, at the very last minute, produced this document for MacHack. His wife featured prominently in that process.]