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### 2021-09-20 iMessage for Business

Given the sources of most of my readers, some of you may have seen this article about A/UX, Apple's failed earlier effort towards delivering an Apple user experience on a POSIX operating system. A/UX was driven primarily by demands for a "serious workstation," which was a difficult category to obtain at any kind of reasonable price in the 1980s. It is also an example of Apple putting a concerted effort into attracting large enterprise customers (e.g. universities), something that is not exactly part of the Apple brand identity today.

I wanted to, expand on A/UX by discussing some of Apple's other efforts to make serious inroads into the world of Big Business. In the 2000s and 2010s, Apple was frequently perceived as focusing on consumers and small organizations rather than large organizations. This was perhaps a result of Apple's particular nexus to the personal computing ethos; Apple believed that computers should be affordable and easy to use rather than massively integrated.

This doesn't seem to have been a choice made by intention, though: through the '90s Apple made many efforts to build a platform which would be attractive to large enterprises. Many major events in the company's history are related to these attempts, and they're formative to some aspects of Apple's modern products... but they were never really successful. There's a reason that our usual go-to for an integrated network computing environment is the much maligned Microsoft Active Directory, and not the even more maligned Apple Workgroup Manager.

Indeed, somewhere around 2010 Apple seems to have lost interest in enterprise environments entirely, and has been slowly retiring their products aimed at that type of customer. On the one hand, Apple probably claims that their iCloud offerings replace some of the functionality of their on-prem network products. On the other hand, I think a far larger factor is that they just never sold well, and Apple made a decision to cut their losses.

But that's starting at the end. Let's take a step back to the '80s, during the project that would become A/UX, to Apple's first major step into the world of networking.

I have previously mentioned the topic of network operating systems, or NOS. NOS can be tricky because, at different points in time, the term referred to two different things. During the '80s, an NOS was an operating system that was intended specifically to be used with a network. Keep in mind that at the time many operating systems had no support for networking at all, so NOS were for a while an exciting new category. NOS were expected to support file sharing, printer sharing, messaging, and other features we now take for granted [1].

Apple never released an NOS as such (stories about the 'i' in iMac standing for 'internet' aside), but they were not ignoring the increasing development of microcomputer networks. The Apple Lisa appears to have been the first Apple product to gain network support, although only in the most technical sense. Often referred to as AppleNet [2], this early Apple effort towards networking was directly based on Xerox XNS (which will be familiar to long-time readers, as many early PC network protocols were derived from XNS). AppleNet ran at 1mbps using coaxial cables, and failed to gain any meaningful traction. While Apple announced Lisa-based AppleNet file and print servers, I'm not sure whether they ever actually shipped a server product at all (at least the file server was vaporware).

Apple's second swing at networking took the form of AppleBus. AppleBus was fundamentally just a software expansion of the Macintosh serial controller into an RS-422 like multi-drop serial network scheme. Because AppleBus also served as the general-purpose peripheral interconnect for many Apple systems into the '90s, it could be seen as an unusually sophisticated interconnect in terms of its flexibility. On the other hand, consumers could find it confusing that a disk drive and the network could be plugged into the same port, a confusion that in my experience lasted into the '00s among some devoted Macintosh users.

Nonetheless, the idea that inter-computer networking was simply an evolution of the peripheral bus was a progressive one that would continue to appear in Apple-influenced interconnects like Firewire and to a lesser extent Thunderbolt, although it would basically never be successful. In a different world, the new iMac purchaser that thought USB and Ethernet were the same thing might have been correct. Like the proverbial mad prophet, they have a rare insight into a better way.

For all of my optimism about AppleBus, it was barely more successful than AppleNet. AppleBus, by that name, came and went with barely any actual computer inter-networking applications. AppleBus was short-lived to the extent that it is barely worth mentioning, except for the interesting fact that AppleBus development as a computer network was heavily motivated by the LaserWriter. One of the first laser printers on the market, the LaserWriter was formidably expensive. AppleBus was the obvious choice of interface since it was well supported by the Macintosh, but the ability to share the LaserWriter between multiple machines seemed a business imperative to sell them. Ipso facto, the peripheral interconnect had to become a network interconnect.

In 1985, Apple rebranded the AppleBus effort to AppleTalk, which will likely be familiar to many readers. Although AppleTalk was a fairly complete rebrand and significantly more successful than AppleBus, it was technically not much different. The main component of AppleTalk outside of the built-in serial controller was an external adapter box which performed some simple level conversions to allow for a longer range. Unfortunately this simple design lead to limitations, the major one being a speed of just 230kbps which was decidedly slow even for the time.

As early as the initial development of AppleBus, token ring seem to be the leading direction for microcomputer networking and, indeed, Apple had been involved in discussions with IBM over use of token ring for the Macintosh. Unfortunately for IBM, their delays in having token ring ready for market lead somewhat directly to Apple's shift towards ethernet. Since token ring was not an option for the LaserWriter, Apple pushed forward with serial AppleBus for several years, by which point it became clear that Ethernet would be the victor. In 1987, AppleTalk shifted to Ethernet as a long-range physical layer (called EtherTalk) and the formerly-AppleBus serial physical layer was rebranded as LocalTalk.

AppleTalk was a massive success. For fear of turning this entire post into a long discussion of Apple networking history, I will now omit most of the fate of AppleTalk, but LocalTalk remained in use to the late '90s even as IP over Ethernet became the norm. AppleTalk was for a time the most widely deployed microcomputer networking protocol, and a third-party accessory ecosystem flourished that included alternate physical media, protocol converters, switches, etc. Of course, this all inevitably fell out of use for inter-networking as IP proliferated.

The summation of this history is that Apple has offered networking for their computers from the mid-'80s to the present. But what of network applications?

One of the great selling points of AppleTalk was its low-setup, auto-configuring nature. As AppleTalk rose to prominence, Apple broke from conventional NOS vendors by keeping to more of a peer-to-peer logical architecture where basic services like file sharing could be hosted by any Macintosh. This seems to have been an early manifestation of Apple's dominance in zero-configuration network protocols, which is perhaps reduced today by their heavy reliance on iCloud but is still evident in the form of Bonjour.

This is not at all to say that Apple did not introduce a server product, although Apple was slow to the server market, and the first AppleTalk file and print servers were third-party. In 1987, Apple released their own effort: AppleShare. AppleShare started out as a file server (using the AFP protocol that Apple designed for this purpose), but it gained print and mail support, which put it roughly on par with the NOS landscape at the time.

But what of directory services? Apple lagged on development of their own directory system, but had inherited NetInfo from their acquisition of NeXT. I've had a hard time finding much about NetInfo, and apparently the one fact I used to state here was wrong. It seems to have been used in universities but not especially widely.

The story of Apple directory services becomes clearer with Apple Open Directory, an LDAP-based solution introduced in 2002. Open Directory is largely similar to competitors like MS AD and Red Hat IDM. As a result of the move to open standards, it has occasionally, with certain versions of the relevant operating systems, been possible to use OS X Server as an Active Directory domain controller or join OS X to an Active Directory domain. I have previously worked with OS X machines joined to an Oracle directory, which was fine except for all the Oracle parts and the one time that Apple introduced a bug where OS X didn't check user's passwords any more. Haha, wacky hijinx!

As I mentioned, Apple has been losing interest in the enterprise market. The primary tool for management of Apple directory environments, Workgroup Manager, was retired around 2016 and has not really received a replacement. It is still possible to use Open Directory, but no longer feels like a path that Apple intends to support.

That of course brings us naturally to the entire topic of OS X Server and the XServe hardware. Much like Windows Server, for many years OS X Server was a variant of the operating system that included a variety of pre-configured network services ranging from Open Directory to Apache. As of now, OS X Server is no longer a standalone product and is instead offered as a set of apps to be installed on OS X. This comes along with the end of the XServe hardware in 2011, meaning that it is no longer possible to obtain a rack-mount system which legitimately runs OS X.

The industry norm now appears to be affixing multiple Mac Minis to a 19" sheet of

plywood with plumber's tape. And that, right there, is a summary of Apple's place in the enterprise market. In actuality, Apple has come around somewhat and now offers an official rack ear kit for the Mac Pro. That said, it's 5U for specifications that other vendors fit in 1U (save the GPU which is not of interest to conventional NOS applications), and lacks conventional server usability features like IPMI or even a cable arm. In general, Apple continues to be uninterested in the server market, even to support their own workstations, and really offers the Mac Pro rack option only for media professionals who have one of the desks with 19" racks integrated [3].

I originally set out to write this post about Apple's partnership with IBM, which has delightful parallels to Microsoft's near simultaneous partnership with IBM as both were attempting to develop a new operating system for the business workstation market. I find great irony and amusement in the fact that both Microsoft, which positioned itself as Not IBM, and Apple, which positioned itself as even more Not IBM, both spent an appreciable portion of their corporate histories desperately attempting to court IBM. While neither was successful, Apple was even less successful than Microsoft. Let's take a look at that next time---although I am about to head out on a vacation and might either not write for a while or end up writing something strange related to said trip.

[1] Amusingly, despite many efforts by vendors, local file and printer sharing can still be a huge pain if there are heterogeneous product families involved. The more things change, the more they stay the same, which is to say that we are somehow *still* fighting with SMB and NFS.

[2] AppleBus, AppleNet, and AppleTalk all refer to somewhat different things, but for simplicity I am calling it AppleNet until the AppleTalk name was introduced. This is really just for convenience and because it matches the terminology I see other modern sources using. The relationship between AppleBus and AppleNet was as confusing at the time as it is now, and it is common for '80s articles to confuse and intermix the two.

[3] I would absolutely be using one of these if I had room for one.

Update: A reader sent me a correction. I had said that NetInfo functioned on AppleTalk, but it did not, it was IP only. The reader also raised questions about the capability of MacOS server to function as an Active Directory DC. Apple does state this in the sell sheet for OS X Server 10.4, but I agree that there are reasons to question how extensive that capability was, and it seems to have disappeared shortly thereafter. I'm going to do some more research into that aspect.