

How to Talk to Yourself Without Moving Your Lips and Other Secrets of Successful Cross Platform System Migration.

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ABSTRACT

This is not a how to paper, the market place is full of people whose motto is "Tell us what you want, we will sell you what we got, and you are too stupid to know the difference". This paper will delve into the actual real world experience of a small IS department that took on the task of migrating all their proprietary applications to the SAS system and then changed hardware platforms, with the final transition being so smooth that it was "like this incredibly smooth thing."

I don't know much, but I don't know much

It might be helpful to have an understanding of the environment in which we work. We work for a small Joint Action Agency, where the number of duties for which we are responsible cause us to panic every time we try to list them, so we don't. The area of responsibility on which we spend the least time is perhaps the most important, that of System Management and Migration. We have been blessed with extremely reliable hardware, and as long as we don't upgrade the Operating System, we have availability of 100.0 %. The organization for which we work makes use of part-time employees, and we cannot tolerate a system which is not available when needed. Our goal has long been to not keep our system on the bleeding edge of technology, but rather avoid serial number 1 of anything, and concentrate on products which have been on the market for a long enough time to have gotten the really large, hairy, venomous bugs eliminated. We aren't a Beta site for anything (except SAS). We standardize on the most advanced stable technology to eliminate the need to upgrade due to hardware obsolescence.

If we were to have a departmental mission statement or Motto it might be "We are here to drag the ungrateful little snots (users) kicking and screaming into the twenty-first century." A more eloquent way to state that might be to say, "We are here to provide information services and analysis tools that would have never been dreamed of, but are now considered to be fundamental to the way our business is conducted, all without our users ever seeing a DOS, PRIMOS or Unix system prompt or having to write a single line of SAS code."

When the tough get going, its not much fun

Having confessed to being a coward, afraid of bleeding edge technology, and basically lazy, as being characterized by wanting to take the time to do things right, rather than fix them constantly, we can tell you what little we do know about systems, and how it is that we come to know it.

We initially had SAS installed on a PRIME computer (see Edsel), and using SAS we developed our Member Billing and Statistics system -- all was right with the world. As things are want to go with the world, whose Motto is "if things are going right it's time for a left turn", PRIME was the target of a hostile takeover with only the employees and users the ultimate losers. Preferring to be pro-active rather than

reactive we started migrating all of our PRIME specific systems to a transportable environment (SAS).

If you knew what we knew, you wouldn't need us

Once migration of our applications was successfully underway we, like any good party waiting to happen, began the search for the perfect host. After ruling out Bob Barker (too old) Alex Trebeck (too superior), Bert Parks (just too) we decided that maybe a host system might be more well suited to the task at hand. We then turned our attention to evaluating Local Area Network (LAN) solutions. During the spring and fall of 1990 we were preparing to install a LAN. At that time, the way it appeared to us was that LANs were not an operating system, and no matter how you looked at it, what you had was a system where there was another operating system with hooks to DOS. We were also very concerned about the perceived lack of stability; networks did not appear to have the 100% availability that we have come to require from our system. Further it appeared that there would be a much more significant investment in system management & maintenance, possibly requiring as much as a half-time position. The more we learned about LANs the more concerned we became about whether a LAN was the best fit for our organization. But if not a LAN then what? Certainly not a proprietary solution (The opinions expressed do not necessarily represent those of major league baseball).

We were dazed and confused. We had more questions than answers and we were fast approaching a time when we feared that our computer system might become orphaned. At that time, we were fortunate enough to have an IBM RS/6000® catalogue come into our possession and it looked like it might be a solution to our problem. We contacted the SAS institute and asked tech support how well SAS worked on the RS/6000. We were informed that not only did SAS work well in the UNIX environment, it was the platform upon which the Institute was standardizing all their development work. As a SAS user on the Prime system we were always left with the feeling that we were the red-headed step-children of the computer world. To hear that the software upon which our whole computing solution is based, is going to be developed on a platform that we can not only afford, but are actually considering was like hitting a bottom of the ninth, two-outs, behind by three, bases-loaded, grand-slam home run.

We arranged for a demonstration from the local IBM office, Motto "don't ask us if we knew we would have real jobs." To test the system, we PROC CPORTED a catalogue, data set, SAS/Screen Control Language® (SCL) programs, and the other necessary ancillary files like MACROS and PROC FORMATS from our PRIME to diskette. Once at IBM we PROC CIMPORTED our files, changed the pathnames from PRIMOS convention to UNIX convention, and ran our little test system. Well to say we ran it might be understated, if we assume the thing ran on the PRIME, then it was done before it started on the RS/6000. It was so fast we could not benchmark it. On the PRIME the application took 45 seconds

to do its thing, on the RS/6000 it was done in a half a second, if the numbers had not changed we would not have known anything happened. Armed with our results and buoyed by what we had witnessed we returned to our office, and sold our management on the new direction in which we were proceeding.

Driving nails with jello

As with most tasks, they are only difficult the first time. Fortunately, we know what we do not know and will immediately seek the help of those that do. One of the many benefits of selecting the RS/6000 over a LAN was that we would be able to use our imbedded base of PCs, communicating over serial lines, much like we had done with the Prime. During our benchmark visit to our local IBM office we spoke with an IBM business partner about using our existing 6 wire data lines, which were installed in our building when it was constructed only two years earlier. The response was, "No problem, we do it all the time." When the time came to attach the serial lines to the IBM supplied terminals and printers we contacted IBM and asked their people how to do it. After being told that the person to whom we had initially spoken was no longer an IBM business partner and there was nobody locally that knew how to do it, we received an 8 page fax, 2 of which were the standard disclaimer, detailing exactly how to make the connections. After the connections were made, devices 100 feet away did not work. IBM was contacted and said that the distances were too great, even though the old Prime had not had any difficulty, and the whole building would have to be re-wired. After careers had been staked on this platform migration, and detailed budgets and implementation plans had been carefully crafted, we were told that we would need to spend more on wiring and routers and Ethernet backbone than we were spending on our whole system. Our first reaction was to panic, next we updated resumes, then we went into denial, (a long slow moving river, infested with data processing department consuming crocodiles, flowing through our computer room). Until we could be completely sure that we had somebody else to blame, we could not proceed. We decided to investigate the problem on our own and moved a PC into the computer room and with a five foot run from the RS/6000 the serial communication lines were still inoperative. Since we had sucked all the fun out of this we decided to play with something else for a while, remaining ever vigilant in our quest for a serial communication solution.

Since our main focus was SAS, we wanted a terminal emulator which worked well with the SAS system. We contacted Technical Support at the Institute and they sent us a Technical Publication which listed some of the many asynchronous terminal emulators and how they operated under SAS. The receipt of this document marked a turning point for us in this project, something had finally gone right. We were quickly able to make a short list of vendors that supported full screen SAS Display Manager and high resolution color graphics on a DOS platform talking to a Unix host. We contacted all three of the vendors and obtained evaluation copies of their software, and an Ethernet card.

Go long, and I will punt it down the third base line

We tested all the emulators and the one with which we were most impressed was the Walker Richie and Quinn (WRQ)

Reflections 4 software®. Reflections 4 worked extremely well, and their Technical Support was on par with that of SAS. We were amazed at how well the PC worked using Ethernet. Upon further investigation, (that translates to we read the manual) we discovered some jumpers which had been omitted from the IBM fax of several months prior. Upon installing the jumpers in the DB25 cable terminator (that is hardware talk) we could communicate using the serial lines. Understandably the Ethernet was much faster, but the RS/6000 was so much faster than the Prime, which it replaced, we were afraid that if our users suddenly had so much speed, it might be harmful.

Customer..Engineer...Customer Engineering

The detail in all this that is still quite disturbing is that IBM never once questioned the "facts of their fax." They always steadfastly maintained that it was our wiring, and they would be happy to help us spend another fortune. PMPA also has some PCs with DB9 connectors. We contacted IBM to see if they had pin outs for those. The fax we received regarding the DB9s was also wrong, but having recently acquired a working knowledge of serial communications and pin outs this was an easy fix. When we were all done we faxed IBM the correct pin outs for use with DB25 and DB9 serial connectors, so now you know what IBM means by Customer Engineering.

We like stuff that works...and this stuff worked

With the nightmare of making our devices communicate over, we turned our attention to getting our applications migrated, we picked a date, and froze development of all systems. We then began the process of PROC CPORTing our catalogues and data that would not change to a PC, copied them to a diskette, and loaded them onto the RS/6000. Once on the RS/6000 we merely had to PROC CIMPORT and change the pathnames from Primos to Unix, and convert any Prime CPLs to Unix Scripts. That worked well for the smaller systems but there were many larger systems that were in constant use and could not fit on a diskette. For those we moved a PC into the computer room and connected it to both computers. We copied the converted files to the harddrive of the PC and then copied them from the harddrive to the RS/6000. After one long weekend we successfully completed the migration effort. On Monday morning, the staff came to work and to them nothing had changed, their menus, logins, and passwords were identical. The only way they knew something had happened was, because things that used to take 3.5 minutes now were done in 15 seconds, things that used to take seconds now happened so fast it was hard to tell if they had worked at all.

SAS catches on

When we went from the Prime to the RS/6000 our annual SAS license fee was cut in half. If we would have gone to a LAN it would have tripled. The Institute has finally taken steps to correct those inequities and we are now paying about what we were three years ago for maintenance.

Within a week of our migration to the RS/6000 we got a notice from the Institute telling us that they would no longer be supporting the PRIMOS environment, and would we mind getting off.

The main thing

If this paper were to have a point it, would be that in the process of migrating from one platform to another you have to rely on your in-house resources or you get out-house results. Vendors come and vendors go but the systems that are created will be around long after. It is vital to begin the process with a firmly established goal, not only in mind, but accepted and endorsed by upper management and end-users alike. Without that commitment the project is marked for failure.

A Blatant Plug for SAS Technical Support

Good technical support is the hallmark of a good product. SAS has excellent Technical Support. When they do not have the answer they will get someone who does. Most other technical support we have encountered has been useless, but SAS and WRQ have both been excellent values.

All the Legal trademarks and other meaningless things that give meaning to lawyers lives

SAS is the trademark of a real smart guy named Jim.

IBM is the trademark of a consortium of idiots employed by an alien intelligence to thwart productivity on earth.

RS/6000 is a real cool computer that nobody understands, and is therefore in therapy.

WRQ is the trademark of a radio station in Cincinnati.

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