

As Easy as Pi

Printer Reduction Across the Enterprise

“...it’s as easy as Pi ...” Well I thought so too when I began this project at least. As I eventually learned, every project has so many unexpected factors coming into play my Pi became a stew.

Set The Stage

Let me clear up your confusion and describe my situation. A few years ago I was working at a world renowned museum looking to reduce costs in the hardware sector. After looking over things I realized that we needed to get better control of our printer deployment. The simple math of how many employees we had versus the TOTAL number of printers showed that we were looking at a ratio of 4 to 1. This math included everything that could print other than blueprint class professional plotters (and we even had plenty of those I must add). My count included local printers, networked printers, lasers, inkjets, dye sublimation units, and even dot matrix devices (because we still had people printing multipart carbon as well as units attached to lab equipment, and facilities stuff such as HVAC devices). The majority of our printers, as you can expect, were HP products but we had IBM, Epson, Okidata, Xerox, and everything in-between.

Step 1: Audit the Environment

Step one was to gather the total numbers of printers and make sense of what we owned. Luckily we had very good inventory management in place. This meant that I had excellent insight into what we owned. The reason I can make this claim is because we had recently completed a campus wide inventory of EVERYTHING we owned. Let me add that I was the project lead so I was intimately aware of both the process and data accuracy. Upon completion of this project we accomplished a 99.7% accuracy rate missing only 6 devices out of over 6000 inventory items (a future article will describe how I accomplished these figures). Finding the data was easy, categorizing and then using it was hard. The first split I used was whether the units were black & white or color. Then I split them into whether they were networked or local. Note that I used the criteria of whether they were actively USED as local or networked and not if they had that capability (however that factor would come into play later).

Eventually, I created an Excel matrix document indicating what was out there sorted into black & white and color tabs the sub categorized into network and local, then finally showing the type (laser, inkjet, dot matrix or other). Finally, I created a pivot table showing counts by category type. The final tab cross-referenced the models showing pricing for consumables and number of support calls so I could calculate extra savings. Let me add that we calculated the additional benefit in freeing up our warehouse space since we could remove ink that was no longer needed for obsolete units along with being able to reduce service issues in maintaining old products out of warranty.

Step 2: What Will This Accomplish

Step two was to show what a 10% reduction in our deployment would accomplish. I needed to show senior management what a conservative effort would deliver so I could get this project off the ground. This didn’t involve in-depth analysis but was a simple cut across the board for hardware and ink. This number was shown to senior management with the additional information that with a conditional go-ahead, I would be able to not only provides a much better reduction, but a significantly better cost savings. I got the green light to move on to the next step.

Step 3: Analyze and Take Action

Step three was to now seriously look at what we could remove. I obtained blueprints of every floor on our campus. I first had to get approval from plant security (as can be imagined) and then get access to the CAD server to work with online images. I literally walked through each building indicating what device type was in place and then where it was located. I knew each printer had been located (due to the campus wide project mentioned above) so I only needed to place the item on a map. I placed icons on the blueprints by both model and category (B/W, color, laser, inkjet, etc.).

It was now time to enjoy my Pi. Speaking for myself the last time I had to use this number, or play with a protractor, was in high school math. The industry standard for proximity to a printer is 30 feet of walking distance. Using 30 foot circles laid out on each floor plan I had to figure out how



many printers would be used. This had to take into account that some printers were hard attached (lab and plant management units for example were excluded). I also needed to factor in local and network units and color versus black and white. I drew circles with my protractor on a 1 inch to 1 foot scaled map. In doing it this way, I could visually examine where every printer was located as well as what type they were. It was immediately obvious where we could start our reduction efforts. We had printers that were literally side by side. Some were a combination of color and black and white. Others were networked printers 'belonging' to different departments. We had printers that were network models but were used by individuals. I discovered that there were printers allocated to individuals that were not considered senior staff or not staff printing sensitive documents (such as in H.R.). Ahh the joys of politics... I got the network guys to grant me access rights to the printer management software (HP and their Jetdirect product was a godsend). I was able to log into every networked printer and determine the name of every print queue and just as importantly, the numbers of pages that the printer handled. That gave me information not only about maintenance but also page counts per month. I could easily see units that had low usage as well as areas of major use.

Buy-In Strategy

It was now time to get buy-in from my senior staff. I spoke with my manager and we agreed that it would be easiest to accomplish this project using smaller steps and first grab the lowest hanging fruit. We wanted to replace old printers first and get rid of as many inkjets as we could. These had not only costly consumables but were prone to more support costs. The second round would remove excess printers within the 30 foot walking distances and produced overlap. I had access to a custom written program that allowed me to calculate exact walking distances but found that just looking at a map would suffice. As part of my plan I was able to determine that we could have people print black and white images on our newer color devices. When I contacted HP, they told me that the cost per page, using standard coverage rates, on these new units was comparable to a pure black and white printer. These new units do not create black by mixing all colors. They all have separate black toner cartridges and this keeps the costs down.

We knew that our final round would be the toughest nut to crack. We would need to get our individual printer counts reduced. Users that printed sensitive documentation we indicated as such and placed on a master list. We added to this a report, with data provided by the HR department, crossing referencing everyone with an individual printer against their title. Based on this matrix, senior management gave me a list of everyone that they determined was below a certain rank and thus a person from whom we could harvest their printer. To help solve the problem with HR and 'eyes-only' printing, I contacted vendors with solutions for printing

sensitive documentation. These included password protection, dedicated queue devices and other options. I finally had a master list of targets along with a project plan. The desktop team was notified of potential changes and what units they would claim. They would need to know queue names and changes and also units to harvest. I worked with the team lead to schedule their manpower hours and set them up for working either off hours or weekends. We arranged that there would be dedicated technicians assigned to this project and they would work a building at a time and a floor at a time. The plan was ready for green lighting.

Plan Rollout

Senior management gave final approval - this went all the way up to the CFO level! They were responsible for making contact with all the parties giving up their equipment. By now everyone in the affected departments knew what I was working on and why I was visiting their areas. I became the black hat. They would see me coming and beg not to have their printer removed. Talk about peer pressure. My boss loved it since she avoided being the target of all the slings and arrows LOL.

It was finally time to go hunting printers. Those critters don't come out at night but the techs did. Every night over a period of a couple of weeks our dedicated technicians would remove printers and adjust the queues for people to point to their new printer (leaving behind a note where it was located). Round one went off without a hitch. Old printers were a focus of our removal efforts and we were almost able to completely eliminate all of the ancient models. This brought our ratio up to slightly below six users per printer. Not a bad improvement but not were we wanted to be at the end.

Round two was essentially the same as round one. In this step we would be removing printers with overlapping coverage. We were able to juggle printers in this step keeping the newest models out on the floor and storing the older models as break/fix replacements and covering our expansion. We were in the process of expanding and some of these excess units went to the new site and allowed us to avoid spend on new product. This was a nice win that was not even factored in when we first started this project.

Resistance

Have you ever heard the saying, "... not unless you pry it from my cold dead hands..."? Well let me tell you that politics is an ugly thing when it comes to how office negotiations work. I am glad that the decision came from the CFO because there were some very unhappy campers walking around. We showed our secretaries who printed 'eyes only' stuff how to accomplish their tasks. Our security and network teams were satisfied and so was my team. Managers ... well not so much. A personal printer is a perk but we showed their senior managers the numbers and that they had two options. Middle management could keep those individual printers and print a page at an extraordinary cost per sheet or used a shared

device at a quarter of the cost. Multiply those numbers per year and per staffer (remember that I had usage numbers to back up my data) and I could show that it would exceed the cost of a small printer. I left the discussion to be between the user and his manager. We just needed a waiver in writing so that they would be seen as exclusions to our standards (and something that the CFO would definitely want to review).

The Results

We finally put this thing to bed and I reran the deployment numbers. We had approached a 12:1 ratio! This is at or above both the Gartner numbers and what HP suggests. We reduced our warehouse and ordering costs by standardizing consumables. We reduced per page costs and lowered service calls. HP warranty numbers went down since we needed to cover fewer units. The network guys were happy since they could piggyback on my maps and develop printer deployment maps. They could arrange roll over if a printer failed. When there was maintenance issues, including out of paper or ink, then that could be managed more efficiently. This map also led to an unexpected side benefit. I was able to import location data into our asset management system so a device could be shown in its' physical location.

Our hard savings were over \$100,000 but warehouse savings, reduced support, and improved vision to what we owned were somewhat harder to calculate. True there were

people who had to walk instead of leaning over to the printer on their desk but we told everyone that it would make them healthier and get to chat with someone down the hall.

As an aside a month later, I went to a Gartner conference and spoke with the HP representative about this project. They have a program where they come out to your organization and put together a plan on printer optimization and hand you a list of what you can remove. I explained to the HP guy what I had done. After I was done with my story he told me that the steps I had used were almost exactly the same as what they do and that I had saved my company tens of thousands of dollars, so I was rather happy.

As a second aside, a month after this project was completed; we had our usual IT staff meeting. My boss got up and wanted to welcome the most hated guy in the company, introduced me, and then handed me an award for leading this highly successful project.

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*IT Asset Manager and
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Where do your IT assets go when you dispose of them?

- Landfills in third world nations
- Evidence rooms awaiting litigation
- The grateful hands of identity thieves
- The water supply you drink from



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