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Moving The Server Room Case Study

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Our information systems department was charged with the objective of combining two offices—totaling 110 people—and relocating both offices, their server rooms, and their entire IT infrastructure to a completely renovated building. And we were supposed to do it all in three and a half months.

As soon as we got word of the move, we scoured the Internet looking for advice on how to perform such a task. We came up with precious few tips. Mostly, we discovered a lot of generalities, such as “plan, plan, plan” and “make contingency plans because things will not go as planned” and “communications will be the most critical and difficult aspect of the move.” Obviously, most of these “tips” are self-evident and not very helpful.

Thus, now that our move is successfully completed, we decided to put together some documentation on how we did it so that our experience may help others in a similar situation. These are the highlights of the move and the things we in the IS department felt we did right, as well as what could have been improved upon.

Preparations

Appoint a project manager and assemble a relocation committee

Key people from each department must be in on the move, and appointing a project manager to oversee the operation can ensure that this happens. Naturally, IS/IT will be a key department during the move and can make or break the project depending on how things go. Communication between the groups is critical for planning and executing the move efficiently.

Do not procrastinate

Like us, most IS departments are probably barely keeping up with their general day-to-day tasks and when it comes to the relocation project, it would be easy to keep saying, “We’ll start next week.” Don’t put it off. Start planning as soon as you know about the move. The time goes by very fast, and you will be depending on a number of departments, vendors, and other partners to help you. They may require some significant lead time.

Give yourself a cushion

When negotiating with your general contractor (if you are building or expanding), make sure you give yourself a cushion from the time the contractors finish working to the time you move in. Our project manager agreed to a contract with the firm renovating the building that called for the contractors and subcontractors to be out by 5:00 P.M. on the last Friday of the month. That was the same time the movers would start moving things in. This turned out to be one of the most critical mistakes that occurred, and it came close to derailing the whole move. Movers were shoveling furniture in while contractors completed their painting, wiring, and odds and ends. Part of the problem was that we did not build in a tough enough penalty for the contractors not finishing on time, and the general contractor took full advantage of it.

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Inventory and document your current systems

Conduct a thorough hardware inventory and get a complete understanding of how your current system works and how it will be transformed when it moves to the new building. Until a few months before our move, our documentation was rather slim on what machines we had and how the LAN and WAN were laid out. We had a pretty good concept in our heads of how everything worked, but when we laid it all out on paper, we found we were mistaken on a number of key points.

To create an inventory of all our machines, we used Blue Ocean's TrackIT (www.trackit.com) software, which allowed us to remotely retrieve all the hardware and software making up each computer in the company. Once this was done, we could assign asset numbers to everything and use the reports TrackIT generated to make sure that all the machines were properly accounted for and positioned during the move.

Documentation of the WAN and phone circuits took a fair amount of time, and we discovered that we had a number of data circuits we were still paying for but no longer using. We photographed all our installations and put these, along with Visio drawings of all the equipment and their connections, into a communications binder. This binder helped tremendously when we met with various vendors to explain what we were proposing. Shortly before the move, we made a detailed inventory of the critical servers using Ecora (www.ecora.com) in case we had problems with them after the move.

Start a project binder

On the first day of the project, we put together a project binder. At the front of the binder, we put a zip-lock pouch for our pens, keys, and other odds and ends we needed. Next came a couple of pages stapled with all the business cards we collected during the project. We used these pages a lot. The rest of the binder was divided into four parts: Data, Phones, Move, and Configuration. In the back of the binder, we stored our large floor plans.

As time went on, the binder became unmanageable with all the information we added, so we created further subdivisions. The binder was our bible, and it went with us whenever we went to the new building. In addition to the binder, we kept a running log of all the conversations we had with various people, along with the action items that came out of those conversations. This turned out to be useful for reminding vendors of things they promised to do and then conveniently forgot as work progressed.

Meet with the vendors

As early as possible in the project, identify all the contractors and vendors you will need to help you and come up with a list of questions you will need to ask. At the beginning of the project, we used some mind-mapping software and a couple sessions of brainstorming to come up with an overview of the move and to identify which vendors were needed to help us. This early brainstorming showed us that there would be a considerable change in our LAN, WAN, and phone configurations and that if these were not handled properly, it would cause immense problems.

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As soon as we could, we called in the main vendors. The phone guys would take care of our internal phone circuits and voice mail, while the telco would handle the external phone and WAN circuits. The ISP (in conjunction with the telco) would switch over our Internet service, and finally, the consultant—an individual from a company we had just hired to look at our current IT situation—would help us with the logistics of the move. One of the chief praises we heard from all concerned was the amount of lead time we had given them. Everyone told us horror stories of people leaving the phone, WAN, and ISP connections to the last minute and paying the price for doing so. Still, even with the long lead time, we experienced trouble with some of the vendors.

Meet with the builders

Schedule time with the architect (if necessary), the general contractor, and subcontractors as soon as possible. If there are previous tenants of the building, try to meet with their IS/IT people as well. In our case, the previous IS group left us server racks, custom patch cables, and Krone patch panels, which ended up saving us a huge amount of time when we moved—not to mention a considerable amount of money.

With the vast changes taking place within the building, it was not feasible to use the current LAN and phone wiring. Our consultant and the LAN subcontractor both recommended we proceed with all new Cat 5e wiring, which we did. In our opinion, to use any of the current wiring would be asking for trouble. The meeting with the contractors allowed us to get our ideas on the table early. We determined that we would come up with the room-numbering system, the number and placement of LAN/phone drops, the layout of patch panels, etc. The contractors then gave recommendations on the best way to accomplish what we wanted.

Plan the physical room layout

One of our first objectives was to lay out the room-numbering system and determine what equipment would go in each room. We broke the floor plan for the building into logical suites that could fit on four single 8.5" x 11" pages. We then made up two floor plans, one that showed where each computer, fax, printer, and modem went, the other showing the layout of the individual drops in each room. Copies went into the project binder and were given out to all contractors and move committee members to ensure that we were all on the same page when it came to what happened in each room. This turned out to be a never-ending task because the floor plan changed numerous times, as hard as we tried to keep it nailed down. We had to redo our numbering scheme on more than one occasion.

We also made schematics of the LAN and phone patch panels showing where each connection terminated and gave them to the wiring subcontractor. This documentation proved to be tremendously useful and allowed us to switch phones and computers between rooms with the greatest of ease, unlike in our previous poorly documented building.

Plan the new network

We had a fair idea of how we wanted our new network to look. After sketching it on a white board with the help of our consultant, we transferred it to Visio and added it to our project binder. We set up the network so that each switch would have a logical part of the organization attached to it. That way, if there was a problem, we could instantly spot which switch/circuit it was on, and traffic would be localized to specific switches for specific areas. We adjusted the IP subnet arrangement we had for our current system.

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Plan the power consumption and server setup

This would be the first time that all our servers would be together in one room, and a quick look at the power consumption showed us that our current UPS setup would not be able to keep all the servers, switches, and routers up for any length of time if the power went out. This led us to find out all the volt ampere statistics for the equipment that would be plugged in to the UPS units and showed us that we would have to purchase an additional UPS.

Plan the server room layout

Our current room was a narrow corridor with the backs of the servers and equipment racks right up against the wall. Behind the racks was a tangle of wire that was almost impossible to get through to see the connections at the back. Our new room would be different. The servers would be mounted on mobile server racks that had ample room for books, tapes, tape drives, and other devices. The racks would stand off from the wall by a couple of feet so that we could get behind the rack to the connections on the back of the servers. The switches would be mounted in an adjoining room on racks left by the previous occupant. These stood away from the wall, giving us lots of room to get behind when we needed to.

We made sure that we had plenty of cabinet space, but we had to give up some workbench area. It turned out to be a good tradeoff. We installed a separate HVAC unit to keep the room cool, as the building A/C was switched off during the night. We worked closely with the office manager who was in charge of moving the furniture for each office. She gave us layout diagrams for each room so that we knew which jacks to make hot well before the move.

Manage the phone company

Our first meeting with our telco allowed us to hammer out what we would need for the move: new phone numbers for our direct-dial numbers, new fax numbers, new frame relay, and point-to-point WAN connections. The most critical need was for the new phone and fax numbers. Keeping our old phone numbers would have been very expensive, but we were able to secure a block of numbers that allowed us to keep our last four digits. Only the prefix would change. The fax numbers would all change too. We had to keep nipping at the telco to get the information to us as soon as possible since new stationery, letterheads, business cards, and other items had to be purchased, and letters with address changes had to be mailed out to customers and vendors.

None of this could go out until we had a firm commitment from the telco that the numbers were written in stone. It took a few weeks for this to happen. Telephone companies definitely move at their own pace—a snail's pace, in most cases. We also started working on the ISP cutover. This seemed as if it would be straightforward, except for the fact that the telco had to install the line that our ISP would connect over. (For a while, this situation seemed as if had disaster written all over it, as we will see shortly.)

After the phone and fax numbers were nailed down, we had to assign them. We built an Excel spreadsheet that could be sorted by name, room number, four-digit extension, old number, and new number. This made life a lot easier when the inevitable changes came about. We gave the spreadsheet to the phone guys early on, and they were able to make sure that we had all the equipment necessary to support the required amount of people.

Build a time/task matrix

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Early in the project, we used Project 2000 to start building a timeline for the project using our own swags and those of the various contractors. The problem was that none of us was really an expert with Project, and we had a hard time showing who was doing what at various times. We eventually abandoned Project 2000 and went to a simple Excel matrix that had all our vendors and support organizations along the top and the days leading up to the move down the left side. We printed this out on a wide carriage plotter and taped it to our door. We then filled in who was doing what on any given day and put any extra comments out on the right side of the sheet. It was very easy to use and see what was going on at all times.

We entered critical events into our Outlook 2000 calendars with reminders set. This setup allowed us to see how the project was progressing at a single glance. As the time approached for the move, we broke out the tasks and put them on a checklist. We then printed the list and checked off the tasks as jobs were completed. It turned out that there were a number of details we did not see when we first started making our plans. We added these items to the checklist as we came across them. Writing down tasks became increasingly supremely important as the day of the move got nearer and life got more hectic. At the beginning of each month during the life of the project, we got together and made sure everything was still on track as we saw it.

Problem, problems, problems

As much as we tried to avoid problems through careful planning, they still reared their ugly heads. Most of the problems had to do with lack of communication, either between our vendors and us or internally, within the vendors themselves. The worst offender was our telco. We had been warned by many people to keep an eye on it and to not believe what it told us. This turned out to be true.

Our first hint of trouble came when a voice mail message from the telco installer told us that he had installed four new Network Interface Units (NIUs) in the new demarcation room. We wanted a PRI, a frame, and a point-to-point connection, so what the heck was the fourth? We took a look and found three NIUs but no indication as to what they were. By this time, we were figuring that NIU stood for Nonexistent Interface Unit. We tried to call the tech back on the number he left, but that turned out to be a wrong number. All this took place on a Friday.

The following Monday, the ISP told us that we were to have someone on site so that the telco could install the ISP connection and that it would not do it unless somebody was present. So we kept someone on site all day at the demarcation room—and nobody showed up.irate e-mails went to the ISP, but they were directed in the wrong direction. It turned out that the telco had installed the circuit on Friday by accident and did not install the frame circuit we requested. A few days later, we got a call from a telco tech saying he was installing the frame circuit. Unfortunately, he was installing it in the wrong facility. Apparently, there was a mix-up in the paperwork, he said. No kidding! Eventually we got it all sorted out, or so we thought. The telco was not finished with us yet.

More problems down the stretch

As time got closer to the move, other problems arose. Some last-minute room changes caused the wiring subcontractor to mess up his LAN terminations. We had sent the changes to the electrical contractor, but somehow they never got to the LAN guys. For some reason, instead of swapping out the mismatched wires, they pulled all the wiring out and started punching them down again. Something was suspicious here, but we were never able to figure out what went on.

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For a while, there was no activity at all, and the days ticked by. We had to start rattling cages for things to start moving. But by then, the project was in trouble. We could see it, the subs could see it, but the general contractor refused to see it. We would not be done by move day. We wanted the server room to be the first room finished so we could move our infrastructure in and have everything set up and ready for the day of the move. It was not to be. It turned out that the server room was actually the last room finished, which caused us a great deal more work than we bargained for. Having a week of cushion between the time the contract ended and when we moved in would have been of great benefit to all.

Where is the consultant?

As the move got closer, it became harder for us to find our consultant. We think he had another project that was taking up his time, and we were small potatoes to him. To help us with our routed environment we called on a router guy, another independent contractor we had worked with before who knew our setup well. Even though he came in at a late stage of the project, he turned out to be the most reliable of our vendors and bent over backward to see that our routed environment worked. In truth, we did not need our original consultant since our plans were sound and we were well prepared.

Advance configuration pays off

We made some major changes to the WAN environment involving frame relay and point-to-point connections to other facilities on circuits provided by the telco. Since our distrust of the telco was growing rapidly by this time, we started putting routers in place and configuring them to test the circuits. Naturally, there were problems, and the router guy grew to be on intimate terms with the telco's tech support. But we were able to take care of the problems well before the move day. We now knew we had good connectivity to all our facilities, which was a good thing since the telco was about to let us down again. If we hadn't set up connectivity before the move, it would have increased our stress level many times and probably caused us to miss being up on Monday.

The final week

During the final week, we had conference calls with all our vendors to make sure that we were all on the same page. Even though the telco sounded like it knew what it was saying, it was to drop the ball yet again. Our telco account manager was heading out on vacation, but we got the phone and pager numbers of all the other reps we could find. As it turned out, we needed them. We packed up everything in boxes and labeled them with the room numbers they were bound for. It was a far less hectic week than we imagined it would be; however, the weekend would make up for it.

The movers

We can't say enough about the moving guys. And believe it or not, it is almost all good. They were fantastic to work with and had moving down to a science. We had it in our heads that large, sweaty, gorilla-like individuals manhandling furniture and equipment over the space of five or six days would move everything individually. Not these guys. They told us we would be completely moved and basically set up over a single weekend.

One of the major barriers we had to a conventional move was that the two buildings we were leaving had no elevators. This was not a problem for these guys! They removed fire escape doors and railings on the second and third floors and brought in a high-lift forklift to get all the furniture down from the upper stories. Computers did not move with the furniture. All the computer



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equipment from each room was picked up, bubble wrapped, and placed in what looked like a cupboard on wheels, which they called a gondola. When the gondola was full, it was covered in plastic shrink-wrap. All the gondolas were moved in a single truck. Every piece of furniture, every phone, every computer was tagged with the room number it was destined for. It did not work out perfectly, of course, but we could fault the movers for very little. They had great attitudes and they played a huge part in making the move as successful as it was.

The floor plans

Make sure the new building has large floor plans posted on the walls in as many places as possible. Ours were a bit confusing and caused things to move more than once after they were placed the first time. In addition, every room had a furniture position diagram and room number on it taped on the wall outside. The movers were able to place the furniture in the correct position immediately and had very few re-moves later on.

Making the move

When it's time for the IS/IT department to physically tear down the equipment, get some help. Our IS group consists of three network/systems people and one database programmer: not enough to handle the move. We hired an intern who worked with us the previous year and hunted down a user who was pretty savvy with computers and had him help us as well. Everybody was busy during the teardown. Unfortunately, a number of users simply walked away from their machines and did little to prepare them, ignoring our instructions. To avoid this, you should send out a memo instructing them on how to prepare their desks for the move and follow up a few days prior to make sure that everyone understands the importance of this.

Our move took place over the last weekend in March. The accounting department shut down on Thursday evening. They were not getting new cubicles, so their current cubes were going to be removed and reassembled over Thursday evening and into Friday before the main move took place. The last thing we needed would be more contractors stumbling over each other on Friday. Before the accountants started shutting down computers, we had them perform a few tasks for us so we would not be so busy running around helping them come back up on Monday. (These instructions applied to everybody, not just the accountants.) They had to delete all their printers since the printing environment and printer names would be changing. They also had to clean up any junk they had on the servers and on their own machines. Finally, they had to release their IP addresses, as many computers would be switching subnets. The teardown of server equipment was pretty straightforward. Everything was marked, and we knew where they would be positioned once they moved.

The ISP cutover took place in the morning. We had a spare router with a built-in CSU/DSU and a laptop with all the necessary IP addresses in place, so all we had to do was take it to the new demarcation room, plug it in, and get online with the ISP. After some confusion on the ISP's part, the link came up, and one of our biggest worries vanished: E-mail and Internet access would be available on Monday.

Once we arrived at the new building, the mayhem started. Our server room was still not ready; the wiring contractor was still punching down and testing the LAN wiring. The fiber-optic backbone had the wrong connectors, the electricians were wiring the UPS in place, and the phone guys were muscling their equipment in. There were four people wedged into the telco closet, where the fairly dim light made it a pain to work. We should have had some fluorescent

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lamps installed before we moved; it would have made life a lot easier. As we did not have a chance to set up our room before the move, it was piled high with boxes crammed with books, cables, tools, etc. If we had had a chance to set up the room beforehand, we could have had power strips, extension cables, patch cords, and handset cables all ready to go. As it was, we had to go scrambling through boxes to find these things.

By the end of Friday evening, all the servers, switches, and routers were in place and communicating. Saturday was spent hooking up and testing each patch cord as it was plugged into the patch panel. Doing this helped us catch a couple of bad cords and crossed wires. So much for the LAN wiring certification! The patch panels were all marked with the room number and socket number that corresponded to the faceplates in each room. This made it really easy for us to switch room layouts when users found their rooms were not set up as they wanted.

We had numerous problems with the telco and the local phone guys getting things going between them. For the most part, we left them to deal with each other, as we had enough on our plates.

Sunday continued with bringing the system up and hooking up workstations and phones. Even though the phone guys said everything was okay when they left, we found numerous problems that took a couple of weeks to fix. By that time, the individuals who set up our system were long gone on other jobs, and we had to make do with our regular tech, who appeared a bit lost at first. It took him awhile to get all the bugs ironed out. The battle with our telco took a lot longer. It put in an extra frame relay circuit we did not need in another facility, then took awhile to set things up the way we wanted. We thought we'd made what we wanted clear to the telco. There was probably more confusion within the telco than anything else.

Post-move activities

When Monday rolled around, users came in to find their computers and phones ready to use. However, it still took about two weeks for things to settle down enough for us to finally get our office set up. Our documentation paid off in spades. We were able to make a spreadsheet with the phone port numbers, phone numbers, and room numbers. This, along with clear markings on the phone patch panels, allowed us to fix phone wiring problems in a fraction of the time it would have taken us in the old building, and we did not even have to tone the lines.

The server racks on casters worked beautifully, and we were immediately able to move them about the room while the contractors finished working. It was easy to get behind the racks to plug in wires and plug other equipment into the power strips. We also pasted the names of the servers on the back of the racks so that we could figure out which was which from the back.

Final word

It was finally over. The project had been quite a pain because of the additional work we had to do over the last three months, but it was well worth it. We learned a tremendous amount about setting up an office from scratch, and we were able to come out with a better, more organized information systems structure in the end. We hope that our experiences documented here can help others have a successful and less stressful move.

If you require additional information or assistance with this item, please give us a call.