

# Case Study:

## Starting over with a new data center

February 23, 2007 (CIO) -- In the not-too-distant past, when a company decided to relocate -- into either a new or retrofitted building -- technology concerns often took a back seat to issues such as cost, location and design. It was more or less assumed that technology was infinitely flexible and could be accommodated in just about any setting.

Today, however, as tech demands grow ever more complex and more important to the bottom line, CIOs are finding that it pays to be actively involved in corporate real estate decisions from the very beginning. By doing so, they not only have the opportunity to tailor the design of a new facility to meet their company's current and future technology needs, they also are able to do so at a time when it is relatively easy to make changes -- on paper and before construction has started.

Nowhere is this trend better demonstrated than at Kirkland & Ellis LLP, an international law firm that has its largest office in Chicago. Two years ago, Kirkland -- which has been located in the Aon Center in downtown Chicago for more than 30 years -- signed on to be the anchor tenant in a new 1.3-million-square-foot office tower being developed by Hines on LaSalle Street just north of the Chicago River.

Since then, Kirkland CIO Steve Novak has played a leading role in making sure the building conforms to the needs of the company's tech program.

"We recognized from the very beginning that tech needed to be at the table when decisions about the new building were being made," he says. "That's a key shift in thinking for us but also, I think, for nontechnology companies in general."

Novak first got involved at an earlier stage when the company was evaluating its options and, indeed, tech requirements proved to be a key factor in the ultimate decision to go into a new facility rather than renovate the existing one.

"Technology was an extremely significant part of our decision to move," says Gregg Kirchhoefer, a Kirkland partner and chairman of the company's tech committee, which assisted in the transition process. "Our current building, which dates from the 1970s, was fabulous for its period but obviously wasn't designed to accommodate the systems and technology we have today, and the costs of making it a world-class facility were prohibitive."

"We were literally running out of space to install cable," says Novak. "At one point, the riser rooms were full and we were running cable through mail chutes and any other space we could find." (Riser rooms, or riser closets, are small rooms -- about 80 square feet -- that house wiring and utility equipment.)

### IT-friendly design

Once the decision was made to move, says Novak, the first step was to understand the company's current and future tech needs. This led to an intensive multiyear program, when just about every aspect of the firm's tech operations was subjected to a rigorous analysis to establish optimum benchmarks for a new building.

"The aim," Novak says, "was to identify where we needed to go in terms of tech and what would be required to get us there. In the 1970s and '80s, mission-critical tech

systems -- that is, systems that are available anywhere in the world on a 24/7 basis -- weren't standard in the legal industry.

Today, they are."

Phase one of the analysis, which lasted about 18 months, involved developing algorithms for basic building components like power, cooling and square footage.

The second phase consisted of creating computer-generated mock-ups of the 24 floors Kirkland will occupy in the 57-story building and testing various scenarios for installing the different tech configurations being considered. This phase was completed last fall, just as the building was breaking ground.

The final phase, which is still under way, involves the actual programming of floors right down to where the secretaries will sit and what kind of telephone headsets they will be wearing. Kirkland expects to move into the building in the second quarter of 2009.

A critical consideration in all three phases was the human equation. "You have to know what your company culture is before you can choose the right technology," says Kirchhoefer.

For instance, a key question for most high-tech buildings is whether to install raised floors to accommodate the wiring for individual workstations. The upside is that it makes reconfiguring floors much easier. The downside is that it increases the total height of the building and thus the total cost.

"We studied the way we do business and realized we don't work in a bullpen environment where business units come and go and desks are being constantly rearranged," says Novak. "That's not part of our culture, so for us, there isn't a lot of value in spending the extra money it would take to raise the floors."

In all three phases, Novak has worked closely with Skidmore, Owings & Merrill, the architects designing Kirkland's floors, and with Baker Robbins & Co., a technology consultancy in Chicago. (Pickard Clinton designed the building.) Baker Robbins, says Novak, provided "base-level engineering" on IT-related mechanical, electrical and plumbing issues and also advised on future technology projections.

"Tech expectations are higher today for things like speed, availability and simplicity," says Richard Tomlinson, managing partner of Skidmore. "In the laptop age, people don't want to be attached to a wall. You have to work closely with IT people to design that kind of flexibility into the overall infrastructure of a building."

The building will provide basic Wi-Fi service for Internet users in public areas and conference rooms, and Kirkland is installing its own Wi-Fi system for employee use. To facilitate the transmission of wireless signals, the firm has requested gypsum ceiling tiles throughout its space. Gypsum -- unlike metal -- is a neutral building material that doesn't interfere with electronic signals.

Steve Falkin, a principal at Baker Robbins, believes there has been a fundamental shift in the expectations of large companies and developers.

"To a great extent today, large tenants assume that they will be fairly self-sufficient in terms of tech and will have their own networks and systems. They're not going to be totally dependent on the tech buildout of the base building," he says. (Base building means the four exterior walls, any space that is not occupied by tenants, such as the lobby, plus whatever utilities are required by a given city's building code.) On the other

hand, Falkin says, large tenants also assume that the base building will not constrain what they want to do and may even support whatever program they're pursuing.

This includes the assumption of space for multiple service providers of Internet connectivity, phone service, cable TV and satellite communications. "Kirkland -- because they got in early -- was able to make sure that this did, in fact, happen," Falkin explains.

### **A plan for the future**

Indeed, to a remarkable degree, the building -- even the floors Kirkland is not occupying -- is being built to Kirkland's specifications.

"This baby is juiced up," says Aaron Bowman, Hines' construction manager for the base building, of Kirkland's tech requirements. Bowman isn't complaining, however. "If it wasn't for Kirkland, we wouldn't be doing the building at all, so obviously we want them to be happy with the results."

Novak acknowledges that Hines took some persuading in some areas, mainly because the company wasn't used to tenants arriving with such detailed tech requirements. "We got a lot of blank stares initially," says Novak. Ultimately, however, the developer realized the value of doing the building Kirkland's way. "As time went on," says Novak, "Hines saw that what we were designing into the building made sense and would be looked on favorably by other tenants."

The overall goal, he adds, is increased flexibility and reliability. For instance, power and electronic services enter most new office buildings through a single entryway in the basement. Kirkland, however, requested two such entryways with physical separation. "That way," says Novak, "if a backhoe in the street takes one out, it won't shut us down."

One area where the company had to compromise, however, was power sources. "We wanted the power to be delivered from two different grids," says Novak, "but it turns out that is a utility decision and not something you can specify in a lease."

There are numerous additional redundancies in everything from chilled water for cooling to riser closets that effectively create a building within the building. The base building, for example, has two riser closets per floor. On Kirkland's floors, however, the firm has requested an additional two closets to house equipment for its in-house networks and systems.

"They're totally segregated," says Novak. "We're going to run our tenant services through our space, and they're going to run the building's services through the base building closets."

Another goal is efficiency. To minimize the amount of wiring in the building and improve access to the system for maintenance technicians, Kirkland requested that these dedicated riser closets be stacked throughout its space.

The wiring itself is a mix of fiber optic and copper. "The backbone is fiber optic because of the flexibility it provides for present and future tech protocols, but out on the floor we're going to deliver service through copper," says Novak.

Kirkland is also anticipating the day when wireless and a number of other new technologies -- some not even on the current horizon -- will play a greater role. To accommodate that scenario, the company has built in excess capacity and flexibility in several areas.

"Tech projections tend to be relatively accurate over an 18-month to three-year cycle," says Novak.

"After that, the future becomes more fuzzy. But the way to accommodate future technologies is to build flexibility into the design. One of the ways you do that is by making sure you can increase your amperage over time. Even though individual devices are becoming more efficient in terms of power usage, the overall number of devices keeps increasing. The long-term trend is for more power. That means installing 12-gauge wire rather than 10-gauge, even if 10 is all you need today."

It also means increasing the size of the building's water pipes to allow for additional cooling capacity and making sure equipment is easily accessible, which is part of the reason for the already mentioned dedicated riser closets.

Another key factor is not basing your design on the requirements of any one vendor's equipment. "You don't want to design your space for Vendor A because Vendor A may not be around in three to five years," says Baker Robbins' Falkin. "You design it in a way so that it is flexible enough to accommodate a range of different vendors and technologies."

As data centers become more densely packed with equipment, he adds, "the difficult issues here aren't necessarily about space but about things like power, cooling and cabling. From a future standpoint, it's all about designing these core systems in a manner that allows you to grow or shrink as your needs change."

The heart of any big company's tech program, of course, is the data center. Kirkland will share space on the fourth floor with the base building's mechanical operations, a relatively unusual arrangement but advantageous from a cost point of view because such spaces, like data centers, are typically built with heavier floors. "We were able to benefit from the standard engineering that comes into play on mechanical floors," says Novak.

Kirkland's 8,000-square-foot data center will contain four 625 KVA uninterruptible power supply (UPS) systems, 240 tons of cooling capacity and a 2,000-kilowatt generator.

The firm's top-to-bottom approach also included demands for prime space on the roof for its satellite communications equipment. The roof, says Novak, is something that needs to be addressed very early in the process because it affects the aesthetics or look of the facade. He added that Kirkland hasn't fully defined what it will use the space for, but an antenna to boost wireless signals within the building is likely.

### **A CIO-landlord partnership**

Kirkland, which has a substantial in-house real estate practice, also devised a unique 100-plus-page lease that includes a 20-page subsection devoted to tech requirements.

"We've never seen anything like that lease," says Hines' Bowman.

"We originally started down the traditional path where tech requirements are scattered throughout the lease but it just became too cumbersome to manage all the information," says Novak. "You have a sentence here and a clause there, and it's difficult to keep track of all of it, especially because we had a far more detailed program than is customary. Also, what started to be a challenge was we found that we would add elements to the lease and then somewhere along the way they would get changed during some other conversation or negotiation. The solution was to make the tech portion of the lease a discrete document.

It's harder to change that."

Novak adds, "I think this is probably a good foreshadowing of what the future will be like in tech lease negotiations."

The lease is infinitely detailed. Among the clauses is one that requires Hines to insulate Kirkland's systems from electromagnetic flux interference -- that is, interference from other electronic systems in a certain area of the base building.

"If any of their riser rooms are adjacent to elevator control rooms," says Bowman, "we're required to steel-plate the wall that separates them."

The financial pluses of this approach should be obvious. Whatever becomes part of the base building is the developer's responsibility. "Whatever is in the lease is our responsibility, so 90% of the buildout is on our nickel," says Bowman.

Ultimately, Novak believes Hines acquiesced because even the most elaborate tech program doesn't involve much additional cost -- especially when it's addressed in the early design stages. "It's almost like working with a clean slate," he says. "It's very easy to make changes on paper. I really believe that half the battle is knowing what you want and asking for it."

Sidebar: When moving isn't an option

Not everyone, of course, has the opportunity to move into a new, custom-designed skyscraper. Retrofitting remains the norm for many companies, for reasons that include cost, location and convenience.

In addition to supervising the technological aspects of Kirkland & Ellis LLP's new office building in Chicago, CIO Steve Novak has also overseen numerous renovations and retrofittings at the company's half-dozen other offices in cities, including New York, London and Munich.

"Retrofits are harder to manage in some ways because they're usually about trade-offs," he says. "You have to accept that there are going to be some limitations, and the challenge is to work within those limitations."

The key, he says, is to make sure management understands what's possible in a given space and makes decisions with those facts in mind. For instance, physical limits on things like load (the amount of weight a floor will support) and cooling also limit the kinds and amount of technology that can be installed in a given space. And unless a landlord is willing to make fairly substantial infrastructure improvements, there isn't a lot that can be done to change the situation with the existing space.

A common problem in many older buildings is dead cabling -- that is, the miles of unused cable installed in a building over the years by long-gone tenants -- that continues to clog riser closets and passageways. This problem, like many retrofitting problems, is correctable but at a price.

"I think generally it's more expensive to retrofit because of the ongoing possibility of business interruption and also because you're always working around an existing problem or situation," says Novak. "You have to carefully weigh the cost benefit as you move through the process."

Time also becomes key. "Time estimates are harder with retrofits because you never know what you're going to find when you open up a ceiling or wall," says Novak. "It's a discovery process for everyone, and you have to account for that in the plan."