Wireless in the Sky: Hearst Builds Tower of the Future

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Media icon Hearst has built a 46-story, 856,000-square-foot structure designed to utilize the latest wireless technology. Hearst's new tower, with its diamond-shaped windows and distinctive triangular frame, cuts a unique profile against the New York skyline, rising like a faceted apparition above its gray Columbus Circle neighbors.

Its uniqueness doesn't end with its outside appearance, however. The 46-story, 856,000-square-foot structure is also the city's first building designed from the beginning as an example of wireless enterprise convergence.

"We wanted to make a building that would last the test of time, something that looked beautiful but had the best in functionality," said Brian Schwagerl, Hearst's vice president of real estate and facilities and the executive ultimately responsible for the new headquarters building. "It was more than a corporate headquarters - it was our home."

Construction started in 2003, and soon after - in early 2004 - executives decided they wanted to have the most technologically advanced building possible. The last of the executives moved into the tower in October 2006.

Schwagerl said Hearst officials had several requirements when planning for the building. "We had to work with the base of the building, which was a historic landmark," he said, explaining that the company's original headquarters building would support the new one. "We used the original

1928 building as a pedestal."

But there was more than that.

"We had to honor the true commitment of - the Hearst family - to make this a world-class tower for a world-class company. The tower above had to incorporate the latest technology and innovation," Schwagerl said.

Hearst is a 119-year-old multimedia giant, owning more than 40 daily and weekly newspapers; almost 200 magazines; 29 television stations; joint interests in several cable networks; and other businesses that include informational services, Internet content, newspaper distribution, television production and real estate. It has almost 20,000 employees worldwide, several hundred of whom work in the Manhattan headquarters.

Schwagerl said the use of wireless technology was critical to the design of the Hearst Tower. "The third-floor atrium is now transformed into a piazza, or grand plaza, similar to what you'd find in most European cities. There is a theater, a cocktail lounge and a restaurant," he said. "You can take your laptop to this historic setting and work."

In fact, wireless access extends throughout the building. "Our vision was to make this as much a fully functional, first-rate office building as possible," Schwagerl said. "That meant looking at technology in a new way. It required true functionality that made sense for our employees so that they could have the latest tools to help them function more effectively."

The first thing Schwagerl and Hearst did was to ask for help with the technology. For the wireless and networking convergence, this meant bringing in Peter Filatov, president of KLCJ, in Pearl River, N.J. KLCJ is an independent wireless consulting company that has extensive

experience in convergence and in large installations.

Filatov's task was to work with Hearst's IT department and its other consultants, Constantin Walsh-Lowe and Heinz, to come up with a comprehensive converged wireless design.

"Hearst was in a position where they were doing a lot of IT designs," said Filatov. "They have a VOIP - voice over IP - solution - from Avaya - , and they have wireless VOIP. They had a big future-proof mentality, and they had aesthetic concerns."

Filatov said it was important that he start with the basics to get Hearst exactly what was needed for the new building. "I focused on a needs assessment, but first was education because some of their needs were so new," Filatov said.

Designing a wireless network for the tower proved challenging and complex, according to Filatov. "Hearst is a very large media corporation; they have a tremendous amount of wireless - hardware - and wireless technology," he said. "The noise floor in that building is high because of the technology they have."

Filatov said having a high noise floor - the amount of radio noise in the area - can make it hard to get a good-quality signal.

"There are three major categories of technology," Filatov said, describing the wireless infrastructure he designed for the tower. "There's a two-way radio system. It has a fiber backbone. It's for Hearst but allows first responders, EMS - emergency medical services - and public agencies to have access. Then there is the wireless-carrier world. We have Verizon Wireless, AT&T and T-Mobile - USA - . Then there is the Wi-Fi world."

In the Hearst building, Wi-Fi and wireless use a distributed antenna system that uses a central location for the Wi-Fi access points and for the in-building cell sites. Only the antennas are spread around the building. Basically, the antenna design uses a diplex approach in which signals from each type of wireless communication are joined at the wiring closets and sent together to a set of common antennas on each floor.

The company responsible for the distributed antenna system was MobileAccess Networks, of Vienna, Va. Filatov chose MobileAccess - after looking at a number of possibilities - for its ability to provide both the signal quality Hearst needed and a path for future growth.

"When Hearst said they wanted to be state of the art, they didn't want to just be state of the art when it went in, but five years in the future," MobileAccess president and CEO Cathy Zatloukal said.Zatloukal said the need to support a variety of wireless services now and in the future dictated a design that Hearst could use for new services that might emerge down the road.

"The cabling is the first challenge," Zatloukal said. With older technology, there would be a cable, an access point and an antenna for each point where the building needed service,

Zatloukal said. With the MobileAccess approach of having many services served by one cable and one antenna, the installation is cleaner and better-looking.

"The main thing was making sure they didn't have an antenna farm, given all the investment that had gone into making it an aesthetically pleasing and green building," Zatloukal said.

With the distributed antenna system in place in the Hearst Tower, Zatloukal said the company will need to add only the necessary

electronics to support everything from WiMax to metropolitan and municipal wireless networking.

"From a design standpoint, it was a group effort in determining what coverage we wanted and what service we wanted," said Jim Bazzano, senior design engineer for Hearst. "We decided to focus on 802.11b and g for now."

The company also decided to make sure that the infrastructure was capable of supporting 802.11a if that was needed and that "802.11n is a possibility later," Bazzano said.

Bazzano said Hearst decided to use access points from Cisco Systems in conjunction with the distributed antenna system. Executives also decided to use eight antennas for each floor, even though they probably could have gotten by with fewer, he said. "We wanted to be able to locate things," Bazzano said. "We have over 280 access points, so it's a big advantage to have centralized management and access control."

The fact that all the access points, as well as the wireless controllers, network switches, servers and other equipment, are located in one place makes management easier. "It's definitely a cleaner solution," Bazzano said. "The access points are all in the closet, - and - they're all nested together in a centralized telecom room with the LAN switch. It makes repairs much easier."

"In this particular instance, the building was very open and very symmetrical, and - the - floor layout is almost identical," said Steve Moses, customer service manager for MobileAccess. "The design perspective is to place the antennas in the center of the floor, wrapping around the building."

Wireless capabilities were key in designing the new building, said Chuck

Montplaisir, Hearst's vice president of IT. "One of the design parameters we set was we wanted a ubiquitous wireless network for the building," Montplaisir said. "We have a very mobile work force. A lot of people in this building are laptop users.

"In many buildings, cellular service is very difficult because you're so high above the cell towers. We wanted people to have access wherever they are. We had to optimize that from the 44th floor down to the first. Signal strength is not a problem in Manhattan, but the quality of signal is," Montplaisir said.

Once construction began, Hearst officials decided to begin bringing the building to life, filling in the lower floors and moving upward as construction progressed. "We turned it on in stages because it was being built in stages," Moses said. "Once we had enough floors to turn on a service provider, we would walk the floors with the provider and verify it, and wireless LAN as well."

Moses said bringing cellular service up the entire building was a long process. "It was actually quite a while, probably over a six- or eight-month period," he said.

Still, getting all those floors to co-exist was a challenge. "Because of the complexity of the building, an RF - radio-frequency - frequency management plan needed to be administered," Filatov said. He said the plan included a spectral analysis throughout the building to measure propagation characteristics and to determine the noise floor.

"Everything adds to the noise," Filatov said, adding that the wireless technologies need to be 20 decibels above the noise floor to work properly.

"In the beginning of January - 2006 - , we were fitting out the data

center," said Montplaisir, describing the move-in timeline. "Then the IT group moved to the 10th floor of the tower."

He said it was critical that the IT department and the data center be implemented first because the rest of the staff would have to move without any interruptions.

Moses said that while there were some minor problems, those were very few. "Given the size of the building and the fact that it was turned on in stages, it was managed very well," Moses said. "They were very concerned about aesthetics in the building. I think it looks very good. They were looking for a very clean feeling."

For the most part, Hearst executives got their wish to have a building that's aesthetically pleasing. "The building has a very modern look," Schwagerl said. It's very sleek, very fashionable and very green in its approach with all natural light pouring in."

However, Schwagerl said Hearst couldn't work with just any building design.

"Because we're a communications company, it was very important that all the - audiovisual - , all the telephony, all the IT have a very clean approach and have a high degree of functionality that the old offices didn't have," Schwagerl said. "We've achieved that and have received high marks from our employees and how the offices are functioning for them."

He said a significant factor in the successful implementation was the extent to which the company planned nearly every detail before starting and then closely monitored every step.

"The response has been overwhelmingly positive to all of the amenities

we've been able to bring on the IT side, with the wireless and wired networks, the converged networks, - and - IPTV - IP Television - ," said Christopher Resch, associate director of technical services for Hearst.

He said the ability to have one network handle everything from VOIP to television has allowed the company the freedom to manage instead of being forced to spend all its time fixing things that break.

"We've had very little downtime. The network is faster and more resilient than anything we've had in the past," Resch said.

The use of converged networks means that the company has to devote less space to wiring and to network equipment, which means that there's more space available for people, Schwagerl said.

In addition, he said the clean, unobstructed look is pleasing to the employees.

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