

Journal Squared: Case Study of an Intelligent Building

Residents of this new luxury high-rise in Jersey City appreciate the high-speed internet access and other technological amenities that fiber broadband enables. Behind the scenes, an intelligent building platform makes the building operate smoothly and efficiently.

By Masha Zager / *Broadband Communities*

Jersey City, home of the Statue of Liberty and directly across the Hudson River from lower Manhattan, has followed the cyclical path typical of many U.S. cities. Once a transportation hub and manufacturing center, this thriving blue-collar city fell on hard times in the 1970s and 1980s. Jobs and workers left, storefronts were boarded up and buildings were burned down for insurance money. The city's upward swing began in the 1990s with the development of a financial district and the revival of the light-rail system that crossed the Hudson. Artists moved in to occupy former light manufacturing spaces.

Today, Jersey City is in full gentrification mode, with new commercial and residential developments being built at a rapid pace. Real estate prices have skyrocketed, and the bar and restaurant scene is legendary. In 2017, the city was voted "neighborhood of the year" by a popular real estate blog.

Probably no development is more emblematic of Jersey City's renaissance than Journal Squared, a new luxury rental community being built by KRE Group. When completed in 2024, the project will contain 2,000 living units, along with office and retail space. The first of three planned towers opened in 2017; the second is under construction and will open in 2020.

The Journal Square neighborhood in which the community is located is the city's historic heart. The new towers dwarf the surrounding brownstones, government buildings and even the century-old commercial buildings that were once considered skyscrapers. Though Journal Squared seems destined to change the neighborhood's character, its owners tout the buildings' proximity to established small businesses that range from butcher shops to art galleries to denim design facilities.

TECHNOLOGY FRONT AND CENTER

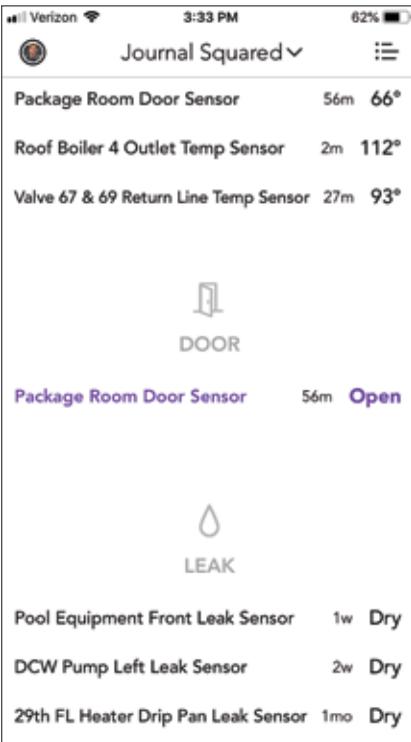
Journal Squared has far more going for it than location and stunning views. From the outset, its developers were keenly aware that they needed broadband to attract residents and operate the buildings efficiently, and they planned a technology infrastructure that would support both goals.

Renters will never have to worry about connectivity. All apartments are prewired for Fios, Verizon's fiber optic service, which offers near-gigabit symmetrical internet speeds. The 10,000-square-foot lounge, which includes a yoga studio, fitness center, catering kitchen, kids' playroom, pool and other amenities, is fully covered by Wi-Fi.

Communication between residents and building management is all internet-based.



The maintenance crew at Journal Squared reviews the daily SmartKit AI reports.



Journal Squared fitted all its building equipment with internet of things (IoT) sensors that detect temperature, motion, vibration, leaks, pressure, voltage and many other vital signs.

Residents can use the Journal Squared website to pay rent, schedule maintenance, sign up for fitness classes and even leave forwarding addresses when they move out.

Another technological amenity designed to make life easier for residents is Hello Alfred, a digital concierge. Journal Squared was the first residential community in New Jersey to offer Hello Alfred, whose app connects residents with in-building services such as package delivery and laundry and with pre-vetted, local providers of services that range from pet care to home cleaning to IT support. Residents can use Hello Alfred to schedule periodic tasks, such as grocery delivery, or request help with special needs, such as organizing a party.

SMART BUILDING OPERATIONS

Even though renters may not think much about the internal workings of the buildings they live in, they benefit from the broadband-enabled systems that keep the building running smoothly.

The sense of luxury at Journal Squared depends on the ambient temperature always being comfortable, the high-speed elevators always arriving promptly, the hot water never failing. To achieve these and similar goals, building staff must continuously monitor and adjust dozens of pieces of equipment, including heat pumps, condenser water loops, cooling towers, heat exchangers, modular boilers, hot water heaters, water pumps and, of course, the high-speed elevators. An automated platform with a strong data analytics capability is the only means of controlling all this equipment without employing armies of maintenance workers.

To achieve the required environmental control and efficiency, Journal Squared fitted all its building equipment with internet of things (IoT) sensors that detect temperature, motion, vibration, leaks, pressure, voltage and many other vital signs. These wireless sensors, which are secure and robust, use very little bandwidth.

Some equipment also has cameras and radios attached, in addition to

sensors. The sensors, cameras and radios all operate over networks separate from those the residents use. Building staff in the control room use the cameras and radios to view what's happening in the equipment room and talk with any maintenance crews there. The ability to use Wi-Fi communications obviated the need for expensive solutions to ensure cellular connections everywhere in the building.

The sensors, along with the interval meters, load control devices and software that Journal Squared uses to monitor and control its building systems, make up the SmartKit AI, a cloud-based building automation platform developed by Livingston, New Jersey-based Logical Buildings. Logical Buildings also supplies the training and support that enable the staff at Journal Squared (and more than 250 other buildings) to evaluate and act upon the real-time information the platform provides.

SmartKit AI can send alerts about equipment malfunctions to building staff, giving them the opportunity to respond quickly, long before residents notice any changes in the building environment. A SmartKit AI dashboard allows the building manager to keep tabs on staff activity and ensure that staff are addressing urgent issues appropriately.

Logical Buildings helped the Journal Squared staff identify strategic locations to place sensors and the best types of sensors

to attach to each type of equipment. It also recommended reliable off-the-shelf IoT and data backhaul products that use widely accepted protocols. This enabled Journal Squared to avoid being locked into closed, proprietary systems.

THE VIRTUAL POWER PLANT

One of the most important functions SmartKit AI performs – a function invisible to residents but critical for the building's finances – is to fine-tune Journal Squared's electricity usage. SmartKit AI analyzes weather conditions, energy prices, real-time energy demand and demand history, and uses this information to recommend adjustments to electricity use. For example, if the afternoon is forecast to be very hot, the building staff might pre-cool amenity spaces in the morning to avoid drawing too much electricity at the peak demand hours. These pre-cooled spaces act as an energy storage battery, making the building a "virtual power plant." Another strategy might be to raise temperatures a few degrees in parts of the building that are not widely used at that time. Through SmartKit AI, building staff can make these changes remotely and instantaneously.

By both reducing and time shifting peak electricity demand, SmartKit AI saves money for the property – as much as 10 to 20 percent of energy costs. At the same time, the demand shift reduces the need for the electric utility (and the electric grid as a whole) to invest in new, expensive plants just to meet peak load.

Abhay Ambati, senior vice president for technology services of Logical Buildings, elaborates on the concept of a virtual power plant: "In the context of MDUs, a virtual power plant is the aggregation of buildings (load) trained and ready to reduce load strategically at short notice, thereby helping the grid avoid building an all-new 'peaker' power plant to handle loads when the electric demand on the grid is exceptionally high. The buildings stand to gain in this deal as the grid offers financial incentives for its participants. A virtual power plant can be effective only when the building energy systems are communicating."

FIBER INFRASTRUCTURE IS KEY

Ambati adds that Journal Squared's fiber backbone is what makes SmartKit AI work. He compares the importance of connectivity to that of heat a century ago.

The fiber backbone doesn't only enable communication among the maintenance team anywhere in the building. It also supports monitoring, control, fault detection and diagnostics of all the building systems, including the energy systems.

In summary, Ambati explains, "The presence of open-access, ubiquitous, last-mile fiber to where critical building systems, amenities, and residents reside, while providing future-proof capacity, is key to creating a smart building that is responsive (and in some cases proactive) to its internal as well external conditions." ❖

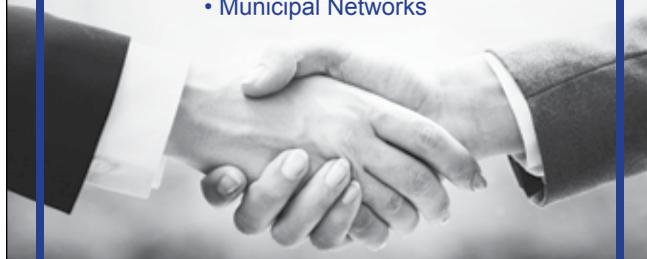
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