

75Fahrenheit Harnesses IoT and Kinvey to Optimize Indoor Comfort

CASE STUDY



Challenge

CLIENT



INDUSTRY
Energy & Utilities

PRODUCTS
Progress® Kinvey™

SUMMARY

With Kinvey, 75Fahrenheit was able to develop and launch its energy management applications and devices without having to expand its in-house development team or learn new development skills.

From wasteful lighting to inefficient temperature control, energy efficiency in commercial buildings continues to be a costly problem. According to the California Air Resources Board (CARB), many companies and property owners could save up to 30% of their energy costs by making relatively simple and inexpensive changes to their energy usage habits.

75Fahrenheit aims to solve that problem. 75Fahrenheit transforms the thermostat's status from a 'dumb device on the wall' to a smart control system that goes beyond simply regulating temperature to providing comfort in every room using dynamic airflow balancing via smart vents.

Unlike a traditional zone control system that reacts to temperature errors after they occur, the 75Fahrenheit system acts proactively. Servers in the cloud run Smart Algorithms to model the thermal envelope of the building, predict heat loads based on the forecast weather and preemptively rebalance airflow to keep ahead of temperature drifts, eliminating backpressure and the need for bypass dampers.

The system controls temperatures within 1 degree Fahrenheit across all zones while saving up to 50% in energy costs. Wireless modules and patented dampers

combine to cut 80% on install labor and provide significant savings in less than three years.

Solution

At the heart of the 75Fahrenheit system are its Smart Algorithms and Progress® Kinvey™. Wireless zone controllers and air supply sensors continuously collect building and system parameters and send them to the Central Control Unit (CCU)—an Android mobile device and application. The CCU aggregates this minute-to-minute time series information and pushes it to the Kinvey serverless backend data store for processing.

Using APIs, the Kinvey data store pushes this data to a Node.js application running on-site in 75F's data center that processes all these inputs and creates the optimal control strategy. The optimal control strategy is sent back to the CCU, which then proactively commands the smart dampers to the required positions and turns on the HVAC equipment during the day.

By providing targeted, real-time control over the temperature zones within the building, this closed-loop feedback system allows the 75Fahrenheit system to provide optimal thermal comfort, while cutting energy usage.

The 75Fahrenheit application takes advantage of several Kinvey features, including:

- Kinvey Android client libraries for online/offline caching, push notifications and integration with business logic and engagement features



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Deepinder Singh, CEO,
75Fahrenheit

- User identity management, to support multiple levels of user types with different levels of access
- Kinvey Data Store, to manage time series data generated by smart devices
- Kinvey File Store, to backup device files and settings in case devices need to be rebooted or replaced
- Kinvey Business Logic, to integrate with the Node.js data analysis application
- Kinvey Push Notifications, to deliver real-time alerts, notifications and setting change information

Results

With Kinvey, 75Fahrenheit didn't have to worry about having in-house expertise in a wide range of areas like database management, custom web service APIs, user management, offline/online sync and messaging.

“While all of these are critical for our system as a whole, they are not core to our temperature control

application logic,” said Deepinder Singh, CEO of 75Fahrenheit. “By leveraging Kinvey’s ready-to-use frontend and backend services, as well as an extremely responsive team that resolves issues within hours, we were freed from having to use our resources to build in-house expertise in these areas.”

In addition to a serverless backend for its smart sensor data, Kinvey also provides 75Fahrenheit with backend data storage and delivers key system performance information in real time via web-based dashboards.

“Our aim from the very beginning was to pick pieces of technology that are already available and validated so that we didn’t have to reinvent the wheel,” said Pankaj Chawla, CTO, 75F. “While we developed the sensor devices and the smart algorithms internally, we picked Android as the platform to develop our Central Control Unit and Kinvey for all our data and we are glad that we made the right choices.”

About 75Fahrenheit

75F is a building automation system that improves commercial building comfort, indoor air quality (IAQ), energy efficiency (30-50% savings and <2yr ROI typical) and improved operations. Using Internet of Things (IoT) design, 75F harnesses the computing power of the cloud and packs it into smart commercial building management system with single-pane-of-glass management across HVAC equipment types and brands, plus lighting, with multi-site remote monitoring and management. Our vertically-integrated suite of wireless sensors, equipment controllers, smarter thermostats and cloud-based software deliver fast functionality and results out-of-the-box.

<https://www.75f.io/>



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About Progress

Progress (NASDAQ: PRGS) offers the leading platform for developing and deploying mission-critical business applications. Progress empowers enterprises and ISVs to build and deliver cognitive-first applications that harness big data to derive business insights and competitive advantage. Progress offers leading technologies for easily building powerful user interfaces across any type of device, a reliable, scalable and secure backend platform to deploy modern applications, leading data connectivity to all sources and award-winning predictive analytics that brings the power of machine learning to any organization. Over 1,700 independent software vendors, 100,000 enterprise customers and 2 million developers rely on Progress to power their applications. Learn about Progress at www.progress.com or +1-800-477-6473.

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