



Business challenge

To save the lives of patients with cardiovascular disorders, COPCAR needs its real-time monitoring solution to be online 24 hours a day. How could it deliver high availability without breaking the bank?

Transformation

COPCAR migrated its innovative monitoring platform to IBM® Cloud™ Virtual Servers—delivering dependable availability and seamless scalability with no up-front capital investment.



Carlos Jimenez Muñoz
 Chief Executive Officer
 and Co-Founder
 Control de Pacientes de
 Alto Riesgo

Business benefits:

Helps

ensure COPCAR's monitoring solution is online 24 hours a day, safeguarding patients

Delivers

effortless scalability, facilitating COPCAR's international expansion

Supports

machine learning, laying the foundation for fully automated monitoring

Control de Pacientes de Alto Riesgo (COPCAR)

Responding 87 percent faster to cardiac events with real-time monitoring

Based in Murcia, Spain, Control de Pacientes de Alto Riesgo S.L. (COPCAR), (Monitoring for High-Risk Patients), is an innovative electrocardiogram (ECG) monitoring service that uses wearable sensors to detect and react to potential cardiovascular events in real time. Designed for people who have suffered from or who are at risk of cardiovascular events, COPCAR can proactively diagnose potential health risks and alert the emergency services 24 hours a day.

"Our cardiac monitoring solution is already saving lives—and by hosting it in the IBM Cloud, we know our patients are protected 24 hours a day."

Carlos Jimenez Muñoz
 CEO and Co-Founder
 Control de Pacientes de Alto Riesgo

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Beating the clock to save lives

Heart disease and strokes are [two of the world's biggest killers](#), and every minute that passes before a patient receives treatment for a cardiovascular event cuts their chances of survival.

Enter Control de Pacientes de Alto Riesgo S.L. (COPCAR), a healthcare startup based in Murcia, Spain. Carlos Jimenez Muñoz, COPCAR's Chief Executive Officer and Co-Founder, and Dr. Tomás Vicente Vera, Co-Founder, explain: "On average, it takes around 139 minutes for patients suffering a cardiovascular event to be admitted to hospital in Spain. We saw an opportunity to harness advances in telemedical technology to deliver round-the-clock monitoring for high-risk patients in an unobtrusive and cost-efficient way—enabling faster, lifesaving responses to cardiac events."

COPCAR developed a real-time cardiac monitoring solution based on a wearable sensor vest. Connected through Bluetooth to an app running on patients' mobile phones, the solution sends real-time electrocardiographic (ECG) telemetry to COPCAR's analytics platform. If the system detects abnormal ECG activity, it alerts a healthcare specialist at the organization's 24/7 monitoring center, who can in turn call the emergency services if necessary.



Muñoz continues: "If a high-risk patient is incapacitated by a cardiac event, we can use global-positioning system [GPS] data to help emergency responders to get to them fast. On average, our solution helps patients receive care within just 17 minutes—87 percent faster than the national average."

As COPCAR began clinical trials of its solution, it realized that it needed a server platform that could scale quickly and cost-effectively as its user-base grew.

Muñoz recalls: "We have been carrying out validation studies with patients at several hospitals across Spain. In parallel, we've also validated the algorithms for our analytics engine using databases of ECG readings for various cardiovascular conditions from leading research institutions around the world. With our number of patients set to expand rapidly, we looked for a dependable hosting partner to support our growth."

Real-time cardiac monitoring in the cloud

To achieve its goals, COPCAR selected [IBM Cloud Virtual Servers](#).

"We initially became interested in the IBM Cloud through our engagement with the [IBM Global Entrepreneur Program](#), which provides startups like us with access to technology expertise and usage credits," says Muñoz.

"One of the things that we value most about the IBM Cloud is the reliability of the platform. Our monitoring solution helps us make life-and-death decisions on patient care, so it was vital that we chose a hosting partner we can trust. With IBM, we have the confidence that our mission-critical application will always be available—24 hours a day, 365 days a year."

As an organization working in the healthcare environment, it is important that COPCAR demonstrates its compliance with stringent regulations around the storage and protection of sensitive patient data. COPCAR has retained the services of a data privacy consultant to help it keep up to date with a fast-changing regulatory landscape—including incoming requirements such as the General Data Protection Regulation [GDPR].

Working together with IBM, COPCAR migrated its monitoring solution to the IBM Cloud. The platform comprises two virtual servers running Ubuntu Linux and configured for high availability.

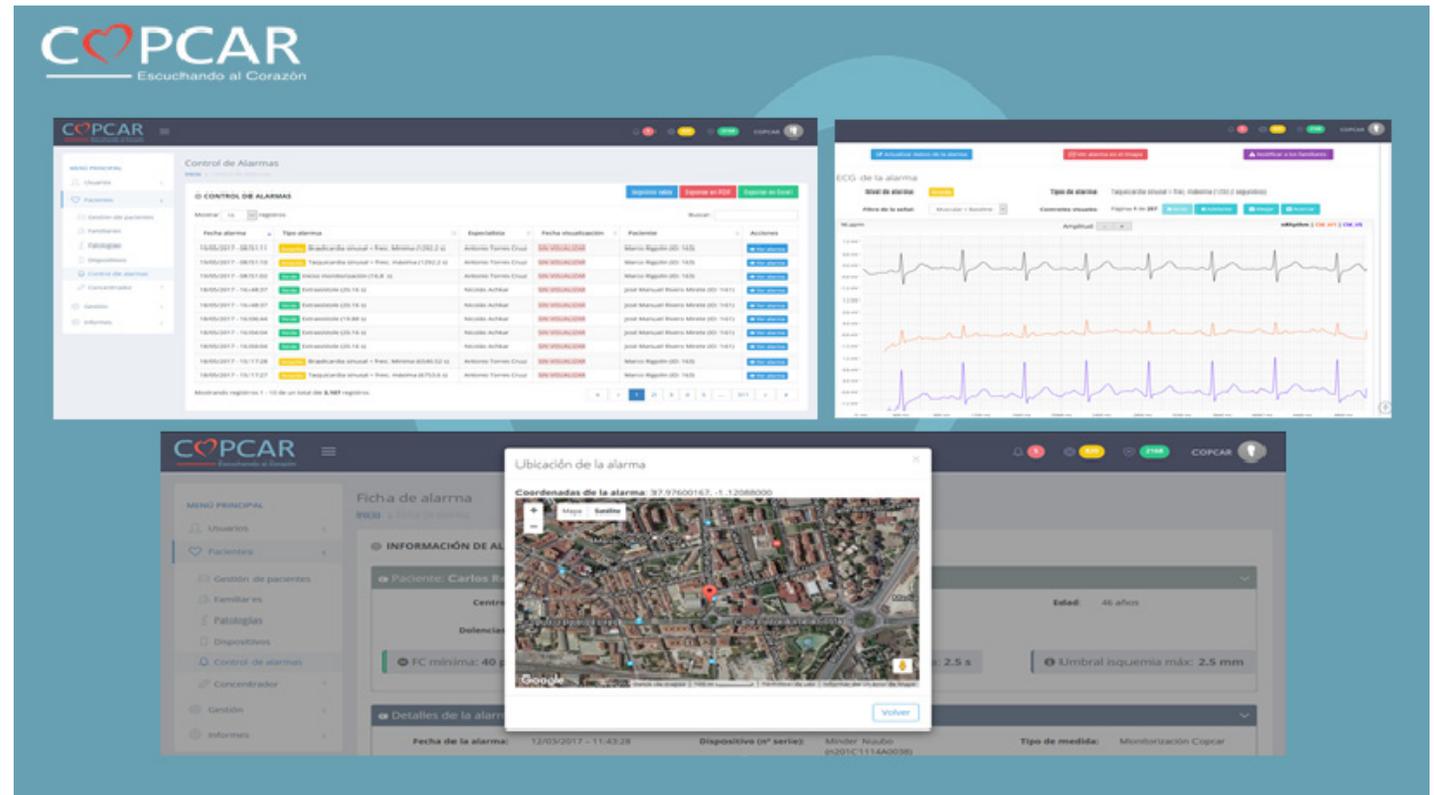
“IBM is a prestigious global brand, which makes them an ideal partner to drive our growth,” says Muñoz.

“Whenever we need technical support or guidance, IBM is always on hand to provide the information we need. Better still, we can scale the platform effortlessly as we add more patients. In fact, we’ve already increased our compute and storage capacity twice—in each case in a matter of minutes and with no interruption to our services.”

Muñoz adds: “In the coming years, we aim to offer our service to health insurers and healthcare providers across Spain and internationally. Without question, having a brand like IBM behind us will lend credibility to our offering and facilitate our growth.”

“Our cardiac monitoring solution is already saving lives—and by hosting it in the IBM Cloud, we know our patients are protected 24 hours a day.”

Carlos Jimenez Muñoz, Chief Executive Officer and Co-Founder, Control de Pacientes de Alto Riesgo



Reacting fast to provide critical care

Using the IBM Cloud, COPCAR proactively monitors 50 patients in Spain for the signs of eight cardiac disorders, and the organization has already intervened with lifesaving assistance.

“One of our patients had been experiencing dizziness and fainting with no apparent cause,” says Muñoz. “By monitoring the patient 24 hours a day, we were able to detect that an intermittent cardiac condition was causing the events during stressful points in their working day. By diagnosing and addressing the problem, the patient has reported being happier and healthier.”

On a number of occasions, COPCAR’s analytics have helped patients receive critical care. One of the company’s older patients discovered they were at a high-risk of ventricular tachycardia after being enrolled on the monitoring tool for an unrelated cardiovascular condition, which helped the patient’s cardiologist adapt their treatment and reduce their risk of cardiac events. In another case, a patient with a high-risk arrhythmia received a potentially lifesaving surgery as a result of diagnostic data from the solution—dramatically improving their quality of life.

Based on the success of its validation studies in Spain, COPCAR is already planning on expanding and enhancing its platform with artificial intelligence (AI) capabilities.

“Our algorithms already diagnose potential cardiovascular issues with a high degree of accuracy, but for legal reasons we are not permitted to let the solution decide when to alert the emergency services here in Spain,” explains Muñoz. “Looking to the future, we plan to augment our platform with machine learning from IBM Watson—enabling us to refine our predictive models and demonstrate to our government regulators that the solution is just as capable, or even more so, than a human diagnostician.”

Muñoz comments: “As we scale out our solution in Spain and beyond, we know that automating our user support processes will be crucial to enable cost-effective growth. By deploying solutions such as [IBM Watson® Conversation](#) and [IBM Watson Tone Analyzer](#), we predict that we will be able to build a chatbot that answers common questions about how to set up our mobile app or use the sensor vest in real time.”

He concludes: “Our cardiac monitoring solution is already saving lives—and by hosting it in the IBM Cloud, we know our patients are protected 24 hours a day.”

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Carlos Jimenez Muñoz, Chief Executive Officer and Co-Founder, Control de Pacientes de Alto Riesgo

Solution components

- IBM® Cloud™ Virtual Servers

Take the next step

To learn more about the IBM Cloud, please contact your IBM representative or IBM Business Partner, or visit the following website: ibm.com/cloud

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