



# Barcelona Metro L9

Developing a system to monitor wind conditions and ensure passenger safety in the future Barcelona Metro L9 line, which will become the longest in Europe once completed.

## The Challenge

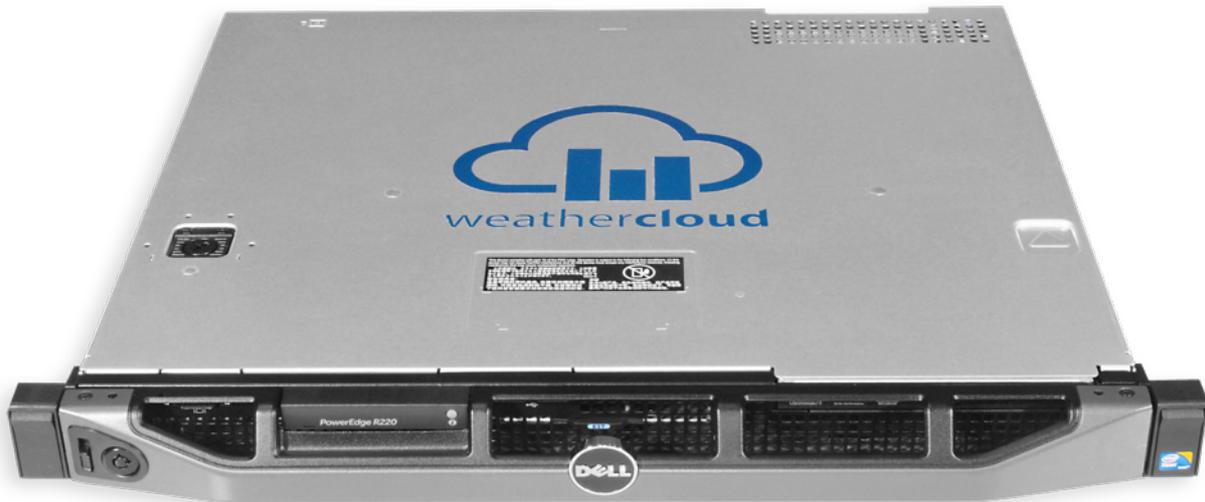
The L9 will be the first driverless subway line in Spain. This ambitious project encompasses the construction of 52 stations spread over 47.8 kilometers of track. Once completed, the line will better connect the different districts of the city with the Barcelona-El Prat Airport.

The tracks run underground except in a stretch with 4 surface-level stations, which are one kilometer away from each other. The challenge was to develop a system for monitoring wind conditions locally at each station and remotely from the control center of the L9.

## The Solution

Each surface-level station was fitted with a high performance ultrasonic anemometer on its rooftop. The 4 sensors feature an uninterruptible power supply system that ensures the availability of wind speed and direction data in the event of a power outage.

The wind data is monitored in real time using a Weathercloud ventOS server. Thereby, the technical personnel of the L9 can track the impact of wind on trains passing through the surface-level stations in order to guarantee passenger safety.



Weathercloud ventOS is a rack-mounted server providing real-time wind monitoring and data storage.

## Overview

Weathercloud ventOS is an extremely robust Linux-based server that efficiently combines sensor data retrieval with accurate real-time wind monitoring and SQL data storage.

The server can be fitted with unlimited anemometers of any type, and is fully customizable to suit even the most demanding requirements.

## Built-in Features

- Fully customizable and expandable system.
- Wide range of compatible sensors and protocols.
- Clean and stylish browser-based user interface.
- Responsive design for easy mobile monitoring.
- Automatic data transfer to FTP server and email.
- Quick data export to most spreadsheet formats.
- Low noise and power consumption.

## Optional Features

- Configurable warnings and alarms.
- Open database for remote data extraction.
- METAR, SPECI and SYNOP ready.
- RAID-ready for local backups and data protection.
- Cloud service for remote data backups.
- Local touch screen and rack keyboard.
- Dual power supply for critical applications.

