CUSTOMER CASE STUDY

RED HAT AND IBM FORM THE FOUNDATION FOR ENERGY-EFFICIENT MALAGA SMART CITY PROJECT

The Smart City project, Europe's largest eco-efficient city initiative, comprises 11 companies headed by Endesa, and aims to rationalise users' energy consumption and cut CO_2 emissions using new technologies. Red Hat® Enterprise Linux® is at the heart of the project ensuring reliability, availability, and serviceability (RAS) for IBM's IT systems and infrastructure.

SOFTWARE

Red Hat Enterprise Linux for System z

HARDWARE

IBM system z10 2097-E12 servers with four IFLs and 48GB of memory

MIGRATION

New infrastructure based on IBM System z

ENERGY INDUSTRY

CUSTOMER SINCE
2009

"Thanks to the blend of Red Hat and IBM solutions, the Smart City infrastructure is the most reliable on the market, resulting in the best availability-to-cost ratio. It also ensures data security and safe access to the various components of systems.

ANGEL MOREU GALUP
MAINFRAME EXECUTIVE, IBM

The Malaga Smart City project is Europe's largest eco-efficient city initiative. It consists of a consortium of 11 companies led by Endesa, Spain's leading electric utility. The Malaga Smart City project is developing the next generation of electrical power distribution grids in a way that lets customers and distribution companies stand shoulder to shoulder to overcome the energy challenge. The aim is to increase the use of renewable energy and commit to rational and efficient consumption.

As a part of the project, cutting-edge technology is being deployed in the Misericordia area of Malaga: smart metering, communications systems, automation of the grid, distributed generation and storage, and smart vehicle charging infrastructure. A smart grid is planned that will serve approximately 12,200 consumers, of which 300 will be industrial, 900 in professional services, and 11,000 residential. The ultimate goal of the project is to reduce energy use by 20% and CO_2 emissions by 6,000 tons per year.

IBM, A KEY PARTNER IN THE SMART CITY PROJECT

IBM provides the hardware and software for the basic technological infrastructure. A shared environment that facilitates teamwork and underpins the management, operations, and running of the Smart City project will also be implemented by IBM.

IBM will also design the systems needed to manage the way electric vehicles connect with and impact the grid. This determines the functionality of such systems and includes choosing the right software to embed in the electric vehicle and in the devices for charging it or hooking it up to the grid.

The various technologies are integrated with information systems and devices to form smart distribution grids. These grids are managed through IBM's infrastructure, which is based on Red Hat Enterprise Linux. Red Hat Enterprise Linux was chosen because of various factors consistent with the specific needs of a Smart Grid infrastructure. This choice has brought major benefits for the IT architecture of the Smart City project.

RED HAT ENTERPRISE LINUX-BASED INFRASTRUCTURE

In order to back up all the functions and ensure interoperability, IBM built a mainframe-based IT infrastructure using System z10 2097-E12 servers with four IFLs and 48GB of memory and virtualized it using IBM z/VM. Red Hat Enterprise Linux was chosen as the operating system for all machines supporting the applications running on the mainframe. This infrastructure allows an unlimited number of virtual machines using Red Hat Enterprise Linux.

The use of open source ensures compatibility of the various components. The infrastructure based on Red Hat Enterprise Linux offers both horizontal and vertical scalability, meaning that a surge in workload caused by a substantial rise in the number of users and devices on the Smart Grid can be resolved swiftly and with minimum intervention. It also minimizes the number of infrastructure components requiring management, which reduces complexity and simplifies management tasks.

Thanks to its advanced features for energy efficiency, Red Hat Enterprise Linux offers significant energy savings. This reduces inactive servers' average energy consumption by approximately 20% and optimizes active usage through effective planning designed for multicore architectures. Temporary granularity is also minimised to nanoseconds, enhancing the shared-use capabilities of the processors.

The growth and consolidation made possible by the combination of Red Hat Enterprise Linux platform, IBM System z, and the expertise of the local Red Hat team in this environment were key factors for selecting the operating system. Furthermore, the close working relationship between Red Hat and IBM both globally and locally in Spain ensured there was sufficient scope for future implementation of similar environmental projects.

"The relationship between IBM and Red Hat goes back a long way with numerous projects in Spain. We are two of the companies that contribute most to developing open source for business and together we have ensured that Linux is currently acknowledged as the platform that sets the standard for critical business environments," said Angel Moreu Galup, IBM Mainframe executive.

"All of this has made Red Hat the perfect partner for IBM in this major project. Aside from the impeccable technical aspects of Red Hat solutions, the long-standing relationship between both companies on all levels, and the excellent local support Red Hat has given us over all the years, gave us the confidence we needed to take on a project of this kind."

KEY INFRASTRUCTURE FOR A COMPLEX PROJECT

The basic technological infrastructure uses Red Hat Enterprise Linux to facilitate the development and introduction of the functionality required by the Smart City project. The remote management system, for example, enables active demand management. This allows customers and service providers to manage their energy consumption and distribution systems efficiently. Customers and service providers can integrate elements within a distribution system, and also manage new advanced automation elements.

The infrastructure implemented using Red Hat Enterprise Linux also handles the user portal system. The portal helps consumers obtain active, real-time feedback on their consumption levels, profiles, and impact on the system and emissions. Consumers can also interact through predefined functions geared towards the input of responsible consumption indicators. The Smart City project currently provides service to 7,000 people in the region.

Other key systems in the project—such as those for monitoring traffic, gathering data, actively managing demand and the electric vehicle management system—also run on IBM infrastructure using the Red Hat solution.

The Smart City infrastructure can withstand and respond to extremely high and demanding loads. The applications running on the set of machines using Red Hat Enterprise Linux monitor and control over 17,000 smart sensors, 10 official buildings, 50 residential environments, 20 transformer stations, and 72 electrical power stations. Given the vast workload, the RAS functionalities of Red Hat Enterprise Linux make it the ideal software solution for this mission-critical environment.

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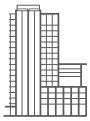

ABOUT RED HAT

Red Hat is the world's leading provider of open source solutions, using a community-powered approach to provide reliable and high-performing cloud, virtualization, storage, Linux, and middleware technologies. Red Hat also offers award-winning support, training, and consulting services. Red Hat is an S&P company with more than 70 offices spanning the globe, empowering its customers' businesses.

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