

Portugal's National 112 Service Upgraded



112 is the one and only emergency call number in Portugal. Callers seek help in all types of emergency situations such as firefighting, medical or maritime distress, crime protection, and many others. Fast and efficient responses to those calls literally save lives. It is crucial to make sure callers can use the system anywhere and anytime. A service disruption at any time could be disastrous.

Seeking to strengthen the infrastructure to meet current and future requirements, as well as new national and EU regulations, the Portuguese Interior Ministry (Ministério da Administração Interna, MAI) decided in 2012 to update the existing data center and build a second data center to cover the entire Portuguese territory. The two centers are designed to be fully redundant and to ensure disruption-free operation of the emergency platform, even if one center experiences an overload or a failure.

Beyond the expansion of the services from the south into the north, Portugal 112 also added innovative capabilities and functions that increase the performance and agility of the infrastructure, helping to position Portugal for the future both from a technological and a regulatory point of view.

The Buildup of Centralized Operational Centers for Emergency Response

For many years, Portuguese authorities had relied on an emergency call management system working with 18 regionally distributed Public Safety Answering Points (PSAPs), each of which covered one of the country's

Challenges

- Implement a redundant operational center for emergency call to ensure failure-free call management
- Replace 11 local Public Safety Answering Points (PSAPs) to gain flexibility, avoid overloads during major incidents, and save money and resources
- Integrate eCall functionality to increase road safety
- Grant full emergency call access to deaf people and improve location support
- Integrate external entities such as ambulance services, police, or fire services

districts. Incoming calls reached one of the PSAPs throughout mainland Portugal. However, especially in the case of major incidents, these local PSAPs posed risks of failure or capacity overload.

Other requirements were demands to grant access to the system for the hearing-impaired community, and, more recently, to add the missing eCall functionality which the European Union now requires in all member states. Against this background, the Portuguese Interior Ministry decided to replace local PSAPs with central operational centers.

The first operational center 'COSul' went live in 2009 in Lisbon and consolidated seven PSAPs in the southern half of the country. However, the aim of the new setup was to merge into COSul the remaining 2 district PSAP's of Southern Portugal and to build the second, fully redundant operational center 'CONor' in Porto that would not only consolidate 9 PSAPs in Northern Portugal but also serve as failover for COSul and vice versa. As COSul had already been in operation since 2009, it was clear that it needed to be upgraded to allow the connection and redundant operation with the newly built CONor.

Colonel Vitor Judicibus, head of the Critical Communications Multidisciplinary Team at MAI's General Secretariat of Internal Administration, commented on this strategy: "By implementing the same Avaya technology in both our operational centers, we achieved full redundancy. We thus made sure that Portuguese emergency call services are able anytime to handle any conceivable scenario, from day-to-day public assistance to disaster management. The leading Avaya technology we have been working with for years in COSul helped us to avoid any possible risk during implementation or operation of our systems."

Innovation and Redundancy, the Ideal Combination to Minimize Risk

Disruption of an emergency call system would be unacceptable under all circumstances. Portugal 112 therefore decided to use the new operational center CONor not only to replace local PSAPs but also to back up the existing COSul center. Each of the emergency centers should be able to take over the other's operations in the event of technical disruption or capacity overload. Accordingly, the communication technology at COSul was updated to allow for the connection of both centers.

Colonel Vitor Judicibus emphasized: "Above all, it is essential to keep the technology up and running at all times. With our new Portugal 112 services, Avaya and its partners have empowered us to provide state-of-the-art technology and service to Portuguese citizens."

Furthermore, MAI was looking to deploy a flexible and future-proof technology that would be able to incorporate every functionality which users, operators, or authorities require today or might need in the future. Both operational centers COSul and CONor work with Avaya Aura®, Avaya Breeze® and Avaya Scopia® technology. The system integrates external agencies such as ambulance services, police, national guard, maritime authority, and the civil protection agency, and supports eCall functionality

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Challenges

- Upgraded COSul operational center to allow for connection to newly built CONor and for integration of eCall functionality complying with latest EU regulations
- Built up CONor to replace local PSAPs in northern Portugal and serve as a failover solution to COSul in case of disruption to operations
- Implemented eCall functionality and support for deaf people
- Empowered the whole platform to meet future requirements such as ISDN—to—SIP access migration and video calls

for vehicles. It guarantees utmost reliability and will also support the upcoming ISDN—to—SIP access migration and a possible introduction of video emergency calls.

But what if the caller can't hear or talk? Portuguese authorities have been working for years to grant barrier-free access to public services—and with Avaya technology they have now done so for the public emergency call system. Organized in a user group managed by local disability associations, speech or hearing-impaired people can now make use of a mobile phone app and the system's video call functionality. The app connects the caller to a sign language interpreter in the operational center who translates the sign language into speech. The technology also lays the foundations for future video emergency calls from all smartphones, which would allow the transmission of live images from an emergency site when alerting the security agency.

An Elaborate Technical Setup Built by Experts

The project required sophisticated technology and a complex setup, placing high demands on all product and service providers involved. To implement the full-scale system a team of designated experts worked closely together. Avaya provided the hardware and software components, most of them from its successful Avaya Aura®, Avaya Breeze® and Avaya Scopia® product suites. Other parties responsible within the project team were:

- Hexagon Safety & Infrastructure (formerly Intergraph): Computer Aided Dispatching (CAD) and Geographic Information System (GIS), consortium lead
- Fujitsu Technology Solutions: data center hardware

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- PAPTI—Soluções Globais de Telecomunicações e Informática SA: Avaya’s implementation partner in Portugal, together with products and solutions from:
 - Oecon Products & Services GmbH: eCall modem technology
 - Engelbart Software GmbH (Avaya DevConnect Partner): eCall integration and customized Breeze Snap—In development

PAPTI delivered and implemented the entire set of Avaya products. The company has been a trusted implementation partner for Avaya for many years and already played a vital role in building Portugal’s first emergency call operational center COSul back in 2009. PAPTI’s experts together with core tech provider Oecon and software developer Engelbart Software guaranteed seamless integration of all existing and new components in COSul and CONor, as well as a quick and smooth implementation and start—up of the whole system.

Colonel Vitor Judicibus was impressed by the overall teamwork: “Right from the beginning, we were looking for the best products and services available on the market. At COSul, we never experienced any unplanned service disruption. We were therefore very happy to have Avaya and local partner PAPTI on board again for CONor. Without their expertise and continued support and commitment, this project simply would not have been possible.”

Improved Public Service

Public authorities and security agencies benefit in manifold ways from the renewed Portugal 112 infrastructure. Thanks to two fully redundant operational centers that replace the formerly isolated PSAPs, the country’s emergency call service provides utmost stability and resilience against any imaginable scenario.

By implementing the eCall technology and improved localization accuracy, the system also fully complies with EU regulations. Furthermore, it is prepared to meet future requirements that might be imposed by EU authorities, for example the upcoming revision of the Universal Service Directive. And by integrating video call technology Portugal 112 not only allows speech or hearing—impaired people to use the emergency call service for the first time but has also cleared the way for future video call functionality for all users.

For Colonel Vitor Judicibus, Portugal’s people benefit most from this endeavor: “Today most mobile devices are able to transmit GPS localization data. It is just no option not to use this resource to assist people in emergency situations. It is just as mandatory to protect motorists with modern telco technology, and to grant handicapped citizens unlimited access to comprehensive emergency assistance. It will save lives.”

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Solutions

- Avaya Aura Communication Manager: telephony
- Avaya Call Center Elite: automatic call distribution (ACD)
- Avaya Call Management System (CMS): reporting
- Avaya Aura Session Manager: SIP routing engine, allowing eCall service integration and preparing for future ISDN-to-SIP migration on the Service Provider Trunk side
- G450 Series Gateway: ISDN Trunks to service provider
- AES (Applications Enablement Services): CTI integration with Hexagon Computer Aided Dispatching
- Avaya Breeze with custom-developed Snap-Ins: eCall integration and workflow management
- Avaya Scopia: video communication with deaf callers, using a sign language interpreter

About Portugal 112

Portugal 112 is the national emergency service under the General Secretariat of the Ministry of Interior (Secretaria Geral Ministério da Administração Interna), serving the single European emergency number 112. The 112 service was launched in Portugal in 1997 in the context of the creation of the European Single Emergency Number by the European Commission.