

Italy's National Institute of Geophysics and Volcanology disaster-proofs its monitoring capabilities with Charmed OpenStack

About INGV

- National research institution responsible for earthquake and volcano monitoring within Italy
- Operates observatories throughout Italy, including monitoring sites in Rome, Naples, and Catania
- Leading contributor to global research in seismology and volcanology

Highlights

- INGV is building a Charmed OpenStack private cloud to drive business continuity between monitoring sites
- Canonical deployed INGV's first OpenStack cluster, and provided knowledge transfer to empower the Institute to handle future deployments internally
- Enterprise support from Canonical is keeping INGV's mission-critical workloads secure, stable, and highly available



ISTITUTO NAZIONALE
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INGV is Italy's first line of detection for seismic and volcanic phenomena, so it is essential that the organisation's monitoring capabilities remain online even in the face of natural disasters and power outages.

To maximise business continuity, INGV aimed to build an OpenStack private cloud that would enable it to unify its services across different monitoring locations, and transfer monitoring responsibilities between them if one site were to go down. The organisation turned to Canonical for help bringing this vision to life, and it is putting Charmed OpenStack at the centre of its new cloud strategy.

Challenge

As the home of the infamous Mount Vesuvius and Mount Etna, and located just north of a major fault line, Italy must remain vigilant against volcanic and seismic activity at all times. The National Institute of Geophysics and Volcanology (INGV) is the organisation responsible for monitoring these phenomena, and alerting the Civil Protection department of potentially dangerous events to ensure that Italy's citizens can be kept safe.

Since INGV plays such a critical role in the Italian civil protection system, it is paramount that the Institute's monitoring capabilities are always operational, even during natural disasters. With that in mind, the organisation is constantly on the lookout for new ways to improve its business resilience – and it recently identified a new opportunity.

"We have monitoring sites in Rome, Naples, and Catania that monitor different areas and activity," explains Rosario Peluso, Technologist at INGV. "We wanted a way to move services between these locations so that if one site were to go completely offline, because of a power outage or some other disaster, we could transfer its monitoring responsibilities to another site and avoid any gaps in our coverage."

Starting with its Rome and Naples sites, INGV began looking for a way to unify the two sites onto a shared platform that would enable them to access the same set of services from different locations.

Solution

For advice on implementing this new capability, INGV turned to GARR, the national research and education network that delivers internet services to research and education communities throughout Italy. GARR recommended building a private cloud using Charmed OpenStack.

With an OpenStack cloud, INGV would be able to centralise resources and applications onto a single platform, which it could then access seamlessly from either Rome or Naples. Charmed OpenStack stood out from alternative distributions thanks to its cost-effectiveness, simplicity, and enterprise support.

"Our main problem was going to be building and maintaining the system," recalls Rosario Peluso. "We don't have a large IT department, so we were going to need some outside help. Charmed OpenStack was a good fit because we could engage directly with Canonical for assistance."

Charmed OpenStack also aligned well with INGV's use case due to its ease-of-use. While OpenStack is a complex platform that requires dedicated expertise to operate, Charmed OpenStack lowers the barrier to entry by packaging OpenStack operations as code and executing it in a fully automated way through Juju charms. This approach would enable the Institute's lean IT team to more easily get to grips with the technology and develop the in-house experience needed to manage the cloud in the long term.

Additionally, the high level of automation delivered by Charmed OpenStack would help minimise the operational burden for INGV's staff, and thereby keep OPEX costs down.

With the recommendation from GARR and a strong groundswell of support within the Institute, INGV decided to partner with Canonical to make the new cloud a reality.

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Results

INGV tasked Canonical with designing and deploying a Charmed OpenStack cluster at its monitoring site in Rome. Following the successful completion of this first phase of the project, Canonical created a detailed document with instructions on how to replicate the deployment at other locations. Using this document, INGV's internal team is now in the process of implementing Charmed OpenStack themselves in Naples.

Through this strategy, INGV has been able to leverage Canonical's extensive expertise and methodology for deploying OpenStack according to proven best practices. And at the same time, the organisation has upskilled its in-house IT team to take over implementation and management long-term, driving further cost-efficiency.

While INGV is now managing OpenStack deployment internally, it is still taking advantage of Canonical's enterprise support. Through Ubuntu Pro, Canonical delivers a wealth of services, including 24/7 support and 10 years of security updates, ensuring that INGV's mission-critical workloads remain stable, secure, and highly-available.

When the second phase of the project is complete, INGV will have access to all the same services in both Rome and Naples, eliminating the risk of blind spots in monitoring should either site go down. Even if one location experiences a major outage, the Institute will still be able to fulfil its responsibilities and keep the country safe.

Looking ahead, the project will position INGV to implement Charmed OpenStack in Catania and at the organisation's other sites, boosting resilience even further.

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For more information about Charmed OpenStack in Catania, please visit:
<https://ubuntu.com/openstack/docs/overview>
