

# DISTRIBUTED COMPUTING IN HYBRID ENVIRONMENT

Manage the complexity of heterogeneous servers easily and quickly.



The cloud can be seen as an infinite galaxy of heterogeneous servers, each with its own specific characteristics. So what is the best way to manage such a diverse range of servers?

The container represents the perfect element, as it makes it possible to manage the existing complexity.

A container encapsulates the application and all its dependencies are rendered independent from the underlying architecture.

The containers are then able to package applications in any environment, without worrying about feasibility conditions.

The containers offer an excellent solution in different contexts, facilitating the quick distribution and “porting” of applications between different types of infrastructure, the creation and management of more accurate and efficient cloud services, the development of various modes of transport and so on.

Thanks to its extensive industry expertise, to its knowledge of services coupled with technological capacities, Reply had adopted this solution in many contexts, including as regards to multimedia content.



# CONTEXT

The widespread use of diverse and increasingly more connected devices has raised the standard of consumer expectations when it comes to online content.

Whether one is using a smartphone or a full HD television, a fibre or a mobile connection, multimedia content must be accessible with increasing fluidity and with the highest level of definition possible. Each media company is faced with these challenges, leading to the need to have the same content available in a multitude of formats (transcoding) in order to meet and exceed customer expectations.

The transcoding process requires considerable resources, especially in terms of CPU, and at times of strong editorial pressure, a company's on-premise resources alone may not be sufficient to handle the work within the required timeframes. Purchasing servers that offer higher performance to use only at peak times, is rarely an ideal answer.

## THE SOLUTION

Reply has developed a solution that integrates proprietary transcoding platforms within a hybrid-cloud context.

The solution involves three main software components:

1. a dispatcher that runs on-premise and breaks down the media into "chunks"
2. an agent that can operate both on-premise and on-cloud
3. an orchestrator that handles the off-loading by instantiating cloud-based agents



## A SUCCESSFUL CASE

The hybrid cloud solution has facilitated, in a single week, the conversion into HD format of the entire catalogue of the streaming platform of a leading national pay TV operator. In 7 days, more than 5,000 assets were adapted to the new bit rate.

The processing of such a significant workload in such a short period of time

would have been impossible on-premise, without additional capital expenditure.

Thanks to the use of the platform, not only was it possible to reprocess the catalogue assets, but in addition, the process related to the publication of new titles was also optimised.

## HOW DOES THE SOLUTION WORK?

The orchestrator constantly monitors the number of “chunks” available and the number of agents running. When the total load exceeds a certain threshold, the orchestrator instantiates containers in the

cloud which download the latest transcoding software version, communicate its presence to the dispatcher and wait to be assigned a job to execute.

## THE TOOLS INVOLVED

The Google Container Engine, based on the Kubernetes management system, represents the heart of the cloud-based solution.

Kubernetes is an open source product, whose design is based on Google’s extensive experience in the container realm, but whose contributors – in addition to independent developers – include Red Hat, the ZTE Corporation and several other large companies. This orchestration tool makes it

possible to deploy the containers within a cluster of nodes, to manage the networking of containerised services and to implement cluster self-healing methods.

Finally, the security of communications is guaranteed by the use of Google Cloud VPN, while a direct peering connection with Google’s Edge Points of Presence helps reduce latency and optimise bandwidth usage.

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