

On Board Cloud System

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Each day as we (individuals or corporations) are getting more benefits from cloud services we rely on them more in our private, corporate or scientific tasks. Therefore, these services become indispensable for any kind of data management solution. However, to sustain this way of dealing data there must be quick and uninterrupted connection which cannot be always the case on board due to difficulties on rough sea conditions. To overcome this problem and ensure data integrity, a private cloud-based service is installed on the server in our research vessel named RV TUBITAK MARMARA. This on board cloud system provides service as a buffer zone between the vessel and the institution to avoid any data conflicts due to communication loss. It also allows the scientists in the different laboratories on board to gather and analyze data concurrently. Moreover, the on board cloud system uploads the most recent sea data to the office by synchronizing the two private cloud-based services when there is robust connection. In this way, the data is backed up in at least three different computers.

A local network is set up to have connection between the main server and all computers on board. The 3G mobile network is firstly connected to the main server and then the network is distributed to whole computers in laboratories by a network switch. To build a private cloud-based service, ownCloud which is client-server software is installed and configured on the server and other computers for file hosting service. This software works like well-known web cloud storage services e.g. Google Drive, Dropbox and so on. The best part to run ownCloud is that its openness avoids enforced quotas on storage space or the number of connected clients, instead having hard limits (like on storage space or number of users) defined only by the physical capabilities of the server. Thus, huge size of data can be shared with scientists, technicians and even ship crew easily. In other words, no one has to deal with the data sharing, storing and backing-up processes after the file is saved in an ownCloud folder.

To sum up, building a private cloud-service on board avoids any data conflict during offline, allows to gather and analyze data during cruise, creates a two-way communication between office and vessel efficiently and takes backup of sea data automatically.

