

Naval use case



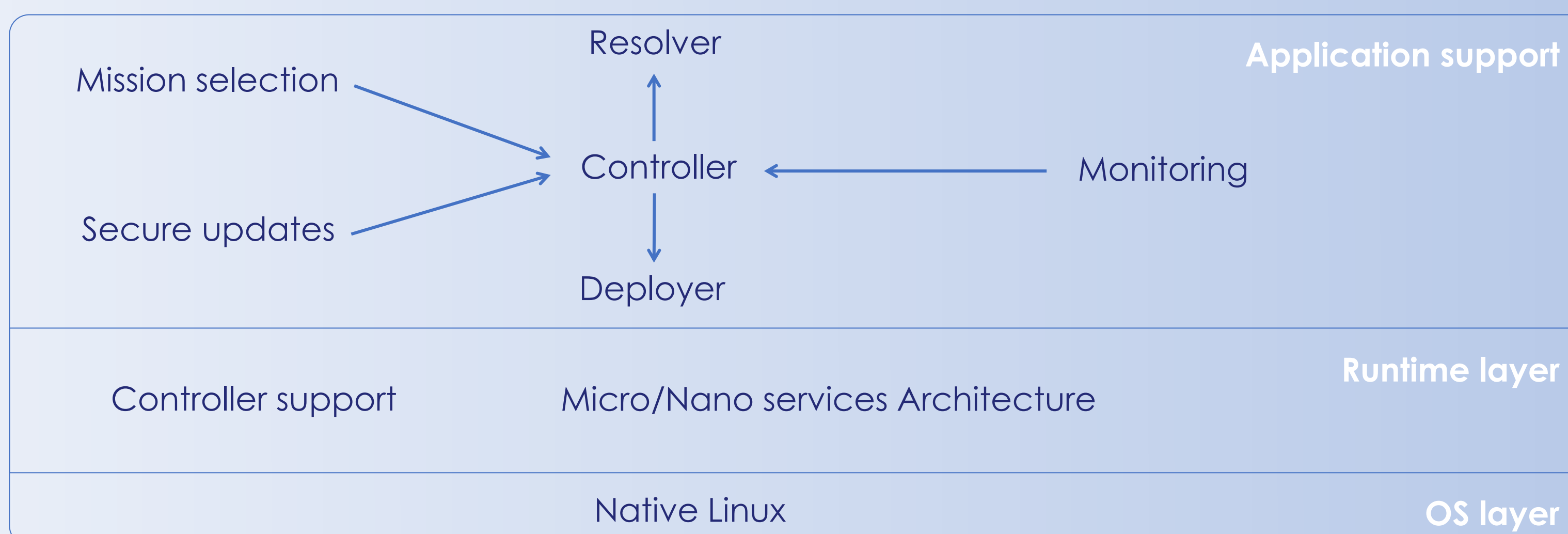
The naval use case within ADMORPH relates to the use of radar surveillance systems.

During naval missions radar surveillance systems must be capable of operating in a highly reliable and robust fashion, as command and control decisions require accurate real-time data.

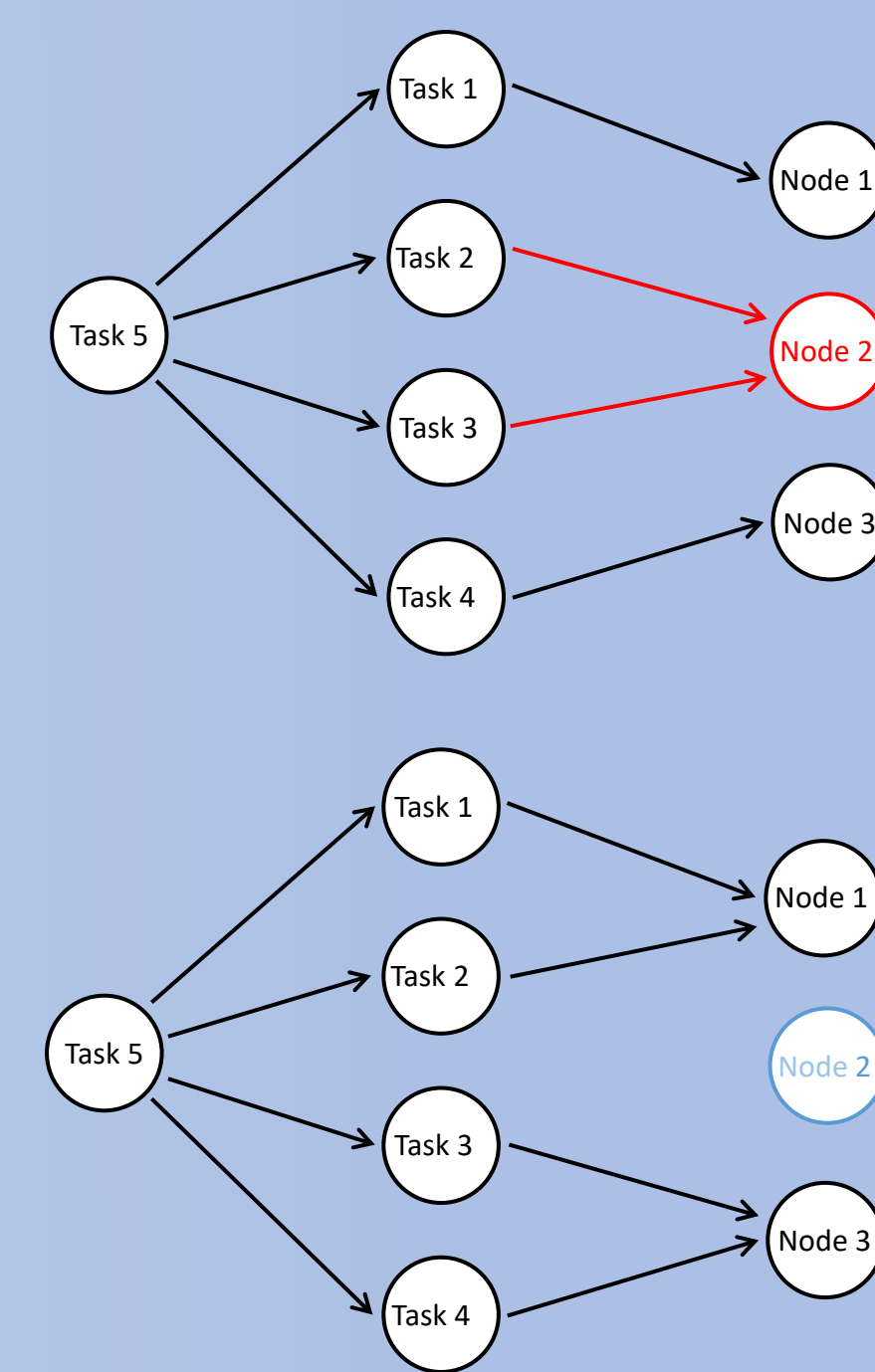
The lifetime of radar surveillance systems is also typically measured in decades. In order to keep these systems reliable and competitive, upgradability is also a key capability of a radar system by allowing it to incrementally update or even fundamentally change the system without any downtime of the sensor.

The key component in applying ADMORPH fault tolerance concepts to the naval use case lies in shifting from the static deployment of a distributed, containerized system to a dynamically adjusting configuration by implementing an application support layer with a constraint based resolver to determine the most suitable deployment based on a requirement/capability model of the available hardware and software modules, and the current use case.

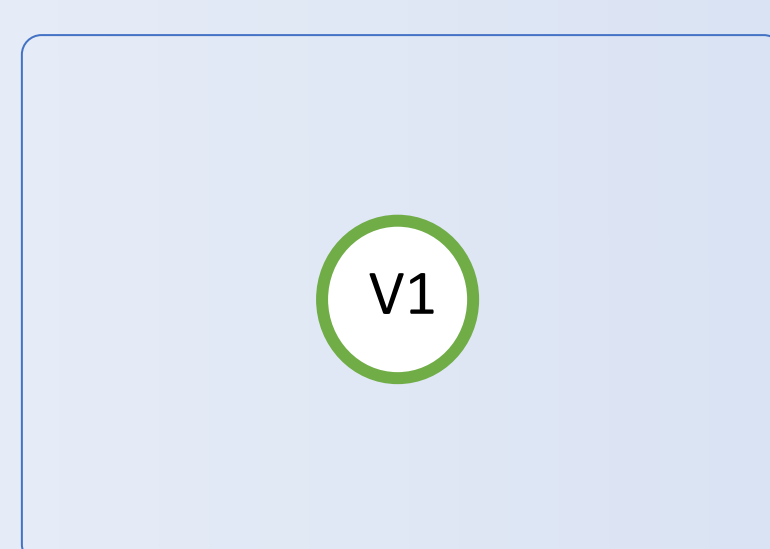
This fault tolerance is handled in this layer through dynamic re-evaluations and redeployments once software or hardware failure occurs.



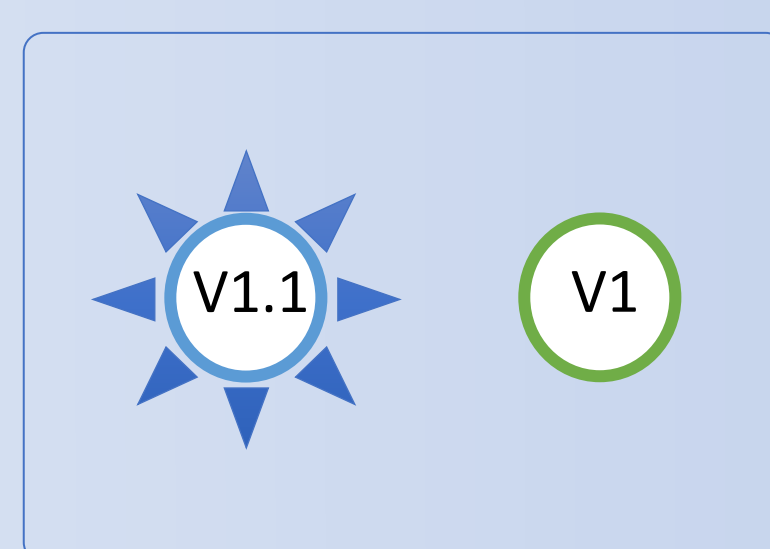
In this example, an initial deployment becomes invalid due to hardware failure in 'Node 2'. The control layer then dynamically redeploys on the remaining hardware to keep the system operational.



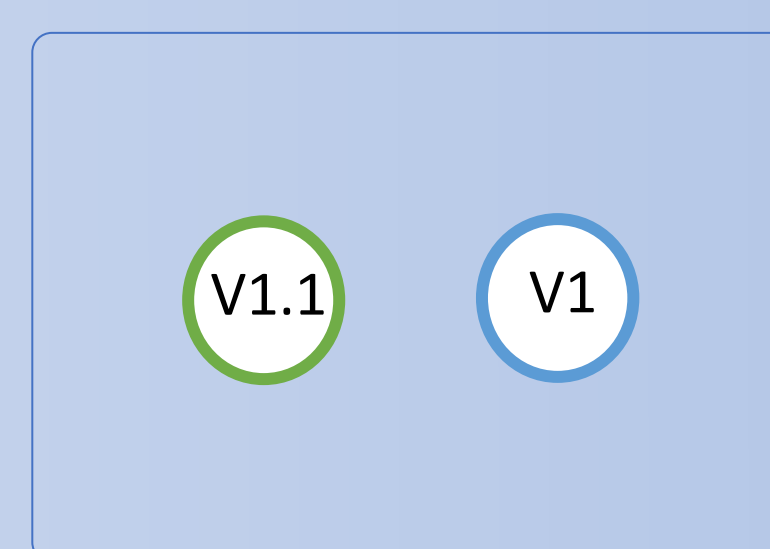
Secure updates are performed parallel to normal system operation. The task of the application support layer in this process is to control the steps of the update process, i.e. determine when to download and/or apply an update.



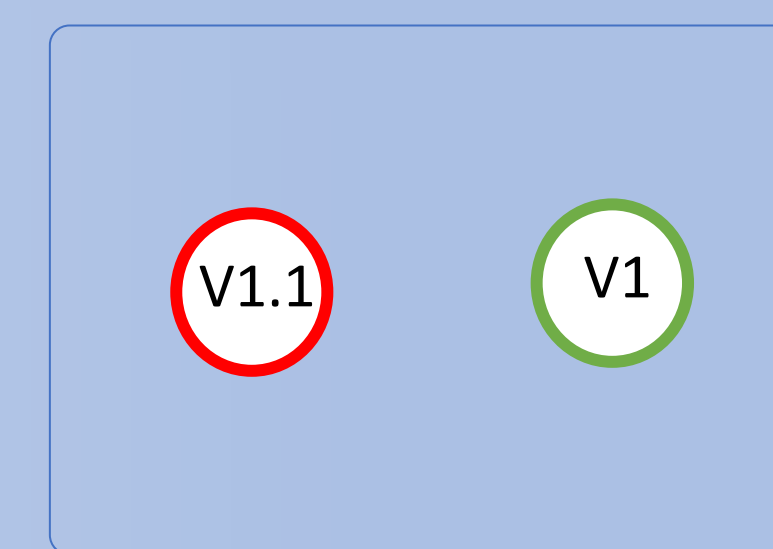
An initial version of a node is running in a deployment



An update becomes available, but since the original is still busy, the system waits with applying the update



Once idle, the old version is shut down and the new one brought online.



In the case that a systematic issue is present in the newer version, the system is capable of rolling back to the previous version.