



CODECO's Validation and Experimentation Challenges



Field	Details
1. Name of Challenge	Evaluate the CODECO SWM Scheduler
2. Partners (Mentors)	FOR (Contact person is Tina Samizadeh at samizadeh@fortiss.org)
3. Description	<p>The aim of this challenge is to develop performance evaluation of the CODECO graph-based scheduling approach, Seamless Workload Migration (SWM) against the Kubernetes vanilla scheduler, and also against the Kubernetes network-aware scheduler [1].</p> <p>The performance evaluation parameters are:</p> <ul style="list-style-type: none">- scalability, trade-off in terms of latency (pod deployment time) against number of nodes in a cluster, and load- energy efficiency, assess the energy consumption cost for the whole system, varying the number of nodes, number of links, as well as considering different node and network loads.
4. Submission Specifications	<p>Steps and Milestones:</p> <p>M1- Setting up CODECO in a single-cluster (using KinD or CODEF). A From-Scratch guide is available in Eclipse gitlab https://gitlab.eclipse.org/eclipse-research-labs/codeco-project .</p> <p>Two Codeco Application Models should be executed:</p> <pre>./acm/config/samples/codeco_v1 alpha1_codecoapp_ver2.yaml</pre>

	<p>./acm/config/samples/codeco_v1 alpha1_codecoapp_ver3.yaml</p> <p>M2- Provide the settings to compare CODECO SWM against the Kubernetes network-aware scheduler and the Kubernetes vanilla scheduler.</p> <p>M3- Measure the following metrics: latency, time to deploy, time to schedule, energy consumption.</p> <p>Requirements:</p> <p>All of the experiments should be carried in one platform. Experiments should be repeated for several times (at least 5). Raw results need to be made publicly available via the CODECO GitLab repository - all code needs to be open and be provided via the CODECO Gitlab repository, with adequate readmes for replicability.</p> <p>Deliverables:</p> <p>A short report (2-5 pages) summarizing:</p> <p>1- Performance trade-offs between the SWM against the plain Kubernetes and the K8s network-aware plugin.</p> <p>2- All of the results should be provided for a period of time in the excel file.</p> <p>3- Observed bottlenecks and optimization opportunities.</p>
<p>5. Plataforms to be used</p>	<p>Private CODEF, KinD or local testbed.</p> <p>Applicants are expected to follow up with the listed contact persons in order to obtain the necessary material and then upload their submission via a Zip File.</p>