NEMO Performance Assessment Summary

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The NEMO Audit located two main areas for improvement, one of which is being further investigated in a POP Performance Plan. Changes made based upon the POP suggestions will significantly reduce the runtime of the NEMO code and hence save resources.

The application has very good load balance but many regions of the code had low Instructions per Cycle (IPC) which suggests that code restructuring is needed and could improve the speed of these regions. This audit also suggested the potential for the overlap of operations with OpenMP which would allow for better scaling due to concurrent calculations that are currently performed in order.

Further work in a POP Performance Plan will analyse the memory access pattern and provide more detailed information about where in the source code there is potential for optimisation and quantify these savings.

Nemo is an oceanographical application developed by a European consortium. The data for this POP Audit was gathered by ATOS on their machine.