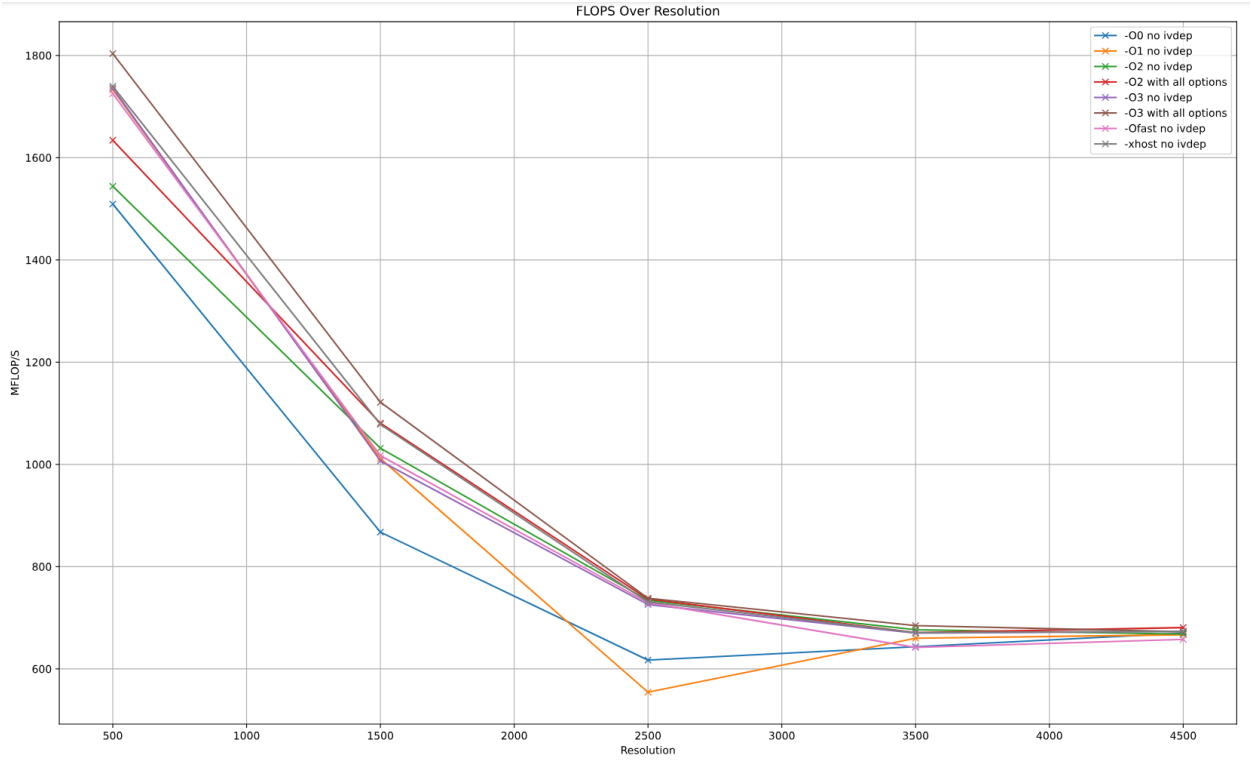
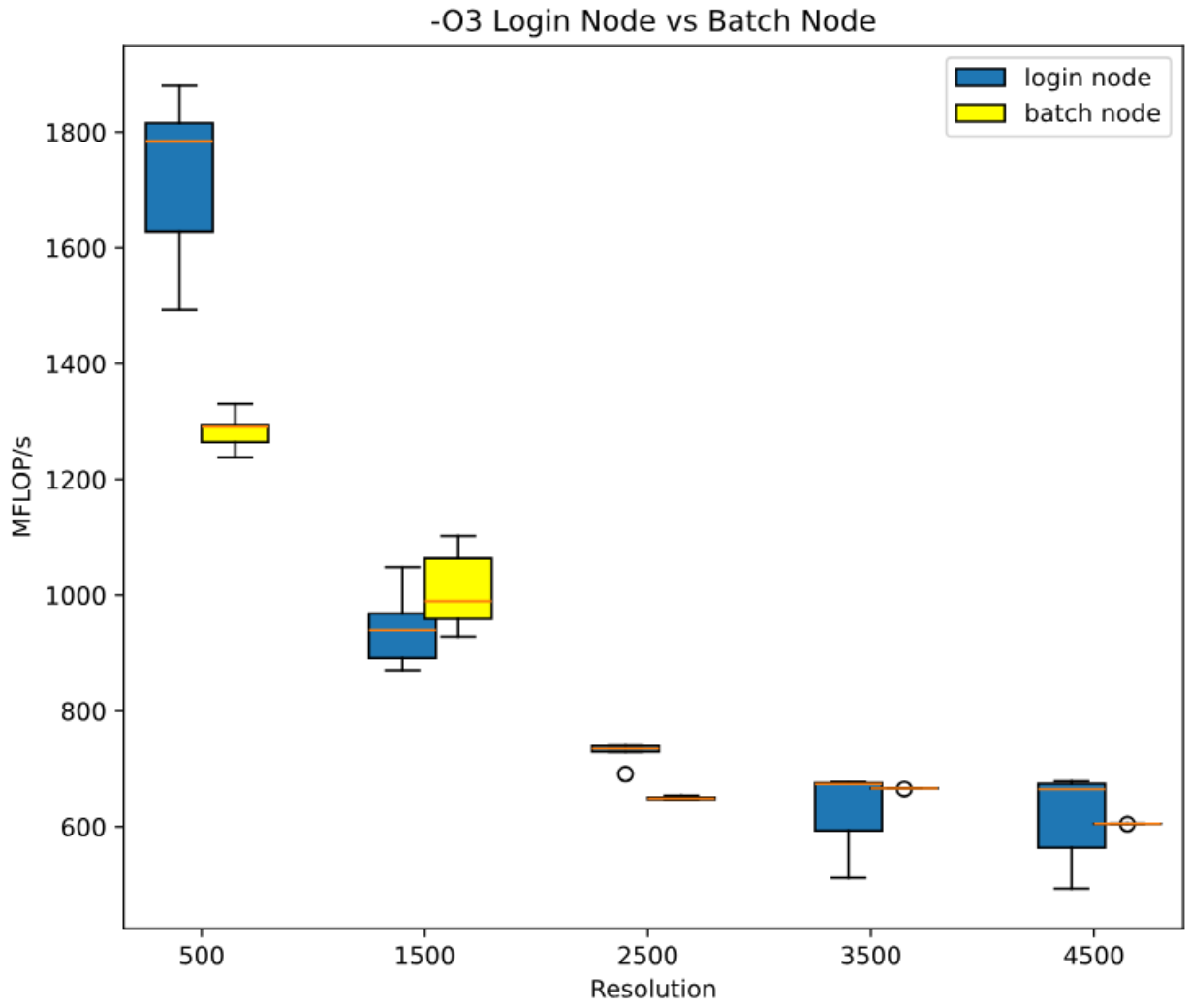


The performance of the code was evaluated through a comprehensive series of tests conducted on the login node. Various optimization flags, including "-O0", "-O1", "-O2", "-O3", "-Ofast", and "-xhost", were applied both with and without the ivdep pragma in the relax_jacobi.c file. Additionally, the "-ipo", "-fno-alias", and "-xCORE-AVX512" options were employed to further refine the tests. In total, 24 distinct combinations were tested to identify the most effective configuration.

Interestingly, the ivdep pragma did not yield performance improvements; in fact, it led to a decline in performance under certain optimization flags. Consequently, the results associated with the ivdep pragma were excluded from the analysis and subsequent graphs.

Among the tested options, "-ipo", "-fno-alias", and "-xCORE-AVX512" demonstrated modest enhancements when combined with the top-performing "-O2" and "-O3" optimization flags. These configurations were thus incorporated into the initial graph.

Ultimately, the most optimal results were achieved by utilizing the "-O3" optimization flag in conjunction with the "-ipo", "-fno-alias", and "-xCORE-AVX512" options. This combination yielded the best performance across both the login and batch nodes, as depicted in the following graph.


-O3 Login Node vs Batch Node
login node
batch node
MFLOP/s
1800
1600
1400
1200
1000
800
600
500
1500
2500
3500
4500
Resolution