Significant Efficiency Increase in Scientific Workflow Through *In Situ* Analysis with ParaView Catalyst

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Objectives

- Disk I/O has become a significant bottleneck for large scale simulations and data analysis of simulation output

- *In situ* analysis aims to embed data analysis and visualization into the simulation to reduce the need for disk I/O

- Our objective is to demonstrate the feasibility of *in situ* analysis for large scale simulations

Impact

- *In situ* analysis promises to reduce time to insight for many DOE applications

- As the gap between computational power and I/O capability increases, certain types of high fidelity analysis will be achievable only through *in situ* analysis

VPIC Strong Scaling with and without In−Situ Visualization (128x128x256 grid, 3800 time steps)
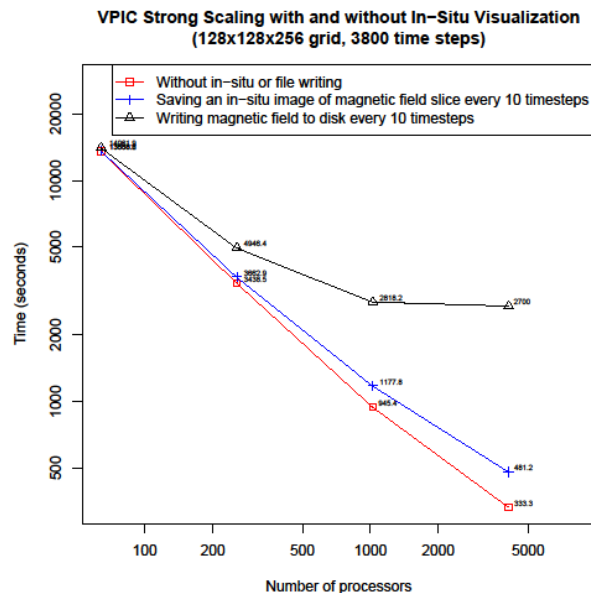
Accomplishments - FY13

- Released ParaView Catalyst, a general purpose *in situ* library that utilizes the computational engine from ParaView

- Coupled Catalyst with a number of DOE Office of Science codes including MPAS, VPIC and Albany as well as ASC and DoD codes

- Demonstrated the feasibility of general purpose *in situ* analysis through scalability studies