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Evaluating Disk Hardware for Small Deployments of PostgreSQL

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The PostgreSQL database is a vital component of critical services at the RHIC/USATLAS Computing Facility such as the Quill subsystem of the Condor Project and both PNFS and SRM within dCache. Current deployments are relatively unsophisticated, utilizing default configurations on small-scale commodity hardware. However, a substantial increase in projected growth has exposed deficiencies in this model. Our goal, therefore, is to ensure the scalability and continued availability of our database servers while minimizing costs and administrative overhead. To attain this goal we tested database I/O throughput across a range of inexpensive server and local/external disk configurations in order to determine which was optimal for our environment. This evaluation considered processor type (AMD vs. Intel), disk family (SATA vs. SAS), RAID configuration, and the amount of system memory. Finally, while our evaluation was designed to solve specific problems, we believe that the results of our general tests can be applied to similar deployments of PostgreSQL elsewhere.

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