

# The Critical Role of Application-Tuned, High-Density Servers in Data Centers and Cloud Computing

Learn more about our Adaptec® series maxCache 4.0 SSD caching tool.



In today's data-driven world, the demand for high-quality, reliable and efficient computing services has never been greater. Data centers and cloud computing environments must rise to the challenge by deploying application-tuned, high-density servers that consistently deliver top-notch Quality of Service (QoS) to end users.

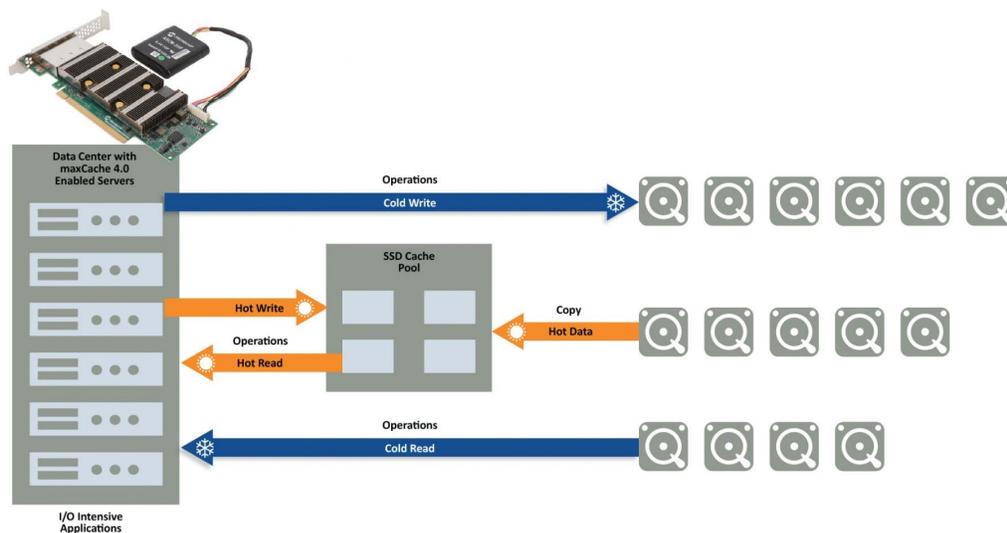
## Balancing Cost and Performance

Data centers must strike a delicate balance between maintaining high performance and controlling costs. Budgets compel operators to maximize the number of hosted users per server, thereby reducing the Cost of Service (COS) per user and minimizing both Capital Expenditures (CapEx) and Operational Expenditures (OpEx). However, increasing the number of end users on a server can lead to higher latency and lower Input/Output Operations Per Second (IOPS) per user. These issues often arise well before the storage capacity of the servers is fully utilized, forcing operators to add new servers to maintain service levels. This practice leads to low storage capacity utilization, increased CapEx and OpEx (including maintenance, power and cooling costs) and greater physical space requirements.

## Optimizing Server Performance with Intelligent Caching

To meet the fast response time and availability requirements outlined in Service Level Agreements, and to increase the number of hosted users, operators often tune servers to pool data in the system cache. Not all data is accessed uniformly; for instance, web servers pool homepages more frequently than other pages, and e-commerce platforms query images of frequently accessed ("hot") products more often than less popular ("cold") products. This intelligent data caching helps us to manage performance more effectively.

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## The Solution: Microchip's Adaptec® Series maxCache 4.0 SSD Caching

Technology that can provide fast responses for "hot" data while maintaining a large capacity for "cold" data is crucial for reducing the number of servers deployed and improving cost efficiency. Enhancements in server I/O capabilities increase the number of users per server and lower the cost per user. Our unique Adaptec series maxCache 4.0 SSD Caching tool addresses these needs by adding a small array of SSD as cache which then converts standard HDD servers into cost-effective, high-performance, scale-out application storage appliances. This technology optimizes critical usage, performance and financial metrics, making it an invaluable tool for data centers and cloud computing environments aiming to meet the ever-increasing demands of their users.

In summary, the deployment of application-tuned, high-density servers such as web serving, file serving, databases, Online Transaction Processing (OLTP), Microsoft Exchange Server and High-Performance Computing (HPC) is essential for data centers and cloud computing environments to meet the rigorous requirements of SLAs, optimize performance and control costs. Technologies like our Adaptec series maxCache 4.0 SSD caching provide the necessary improvements in I/O capability and server capacity, ensuring that operators can deliver superior service quality while maintaining economic efficiency.

Read our [white paper](#) for an in-depth analysis.