



Optimizing Server Infrastructure for a Major Life Sciences Instrumentation Company

by Dan Wakefield



Background: A major life sciences instrumentation company was facing the challenge of an impending server refresh in their primary data center. With the existing equipment nearing the end of its lifecycle, the company sought a solution that would not only upgrade their infrastructure but also enhance efficiency and reduce costs. Their environment comprised three separate VMWare clusters, each serving different aspects of their operations.

Challenges:

- Need for server refresh due to aging equipment.
- Uncertainty regarding the optimal configuration for improved performance and cost-efficiency.
- Desire to streamline hardware requirements while accommodating anticipated growth over the next lifecycle.

Approach:

- **Initial Assessment:** The process began with a thorough discussion to understand the current environment and future needs. Key considerations included evaluating the necessity of reducing the number of clusters and assessing user feedback regarding application performance.
- **Performance Monitoring:** Implemented an agentless performance monitoring tool to capture and analyze data related to processor usage, RAM, disk IO, network throughput, and latency. Ran the tool for 7 days to capture variations in performance needs throughout different times of the week.
- **Detailed Analysis:** Documented the process model at both host and cluster levels, including details about cores, frequency, RAM configuration, and network speeds. Calculated current utilization percentages for each aspect of compute to identify areas for improvement.
- **Hardware Selection:** Utilized SPECint as a measure of processor performance to understand performance gains between processor generations. Considered factors beyond frequency and core count, such as RAM speed and memory lanes, to recommend the most suitable hardware configuration.

20% REDUCTION IN
HARDWARE
EXPENDITURE.



Optimizing Server Infrastructure

Proposed Solution:

Based on the analysis, proposed a new solution that included a 3-node cluster, a 4-node cluster, and a 7-node cluster, reducing server requirements by 3 nodes while increasing overall performance and accounting for future growth.

Results:

- **Cost Savings:** The optimized solution resulted in a 20% reduction in hardware expenditure compared to the initial projections.
- **Efficiency Gains:** Consolidating to fewer nodes reduced the overall hardware footprint, leading to savings in chassis/network requirements and VMware licensing.
- **Future Readiness:** The proposed solution not only met current performance needs but also allowed for anticipated growth over the next hardware lifecycle, ensuring long-term efficiency and scalability.



Conclusion:

By leveraging detailed analysis and a deep understanding of server performance metrics, the major life sciences instrumentation company was able to achieve significant cost savings while greatly enhancing the efficiency of their data center environment. The optimized solution not only addressed immediate hardware needs but also laid the foundation for future growth and scalability, positioning the company for continued success in their operations.