



# Workload Optimization Ensures the Best Value from Best-of-Breed Solutions

Investing in a data center involves many complex decisions. Determining the amount of computing power, memory and storage you need requires significant research and expert information as well as a high level of technical expertise. But if that were all that is needed, building a hardware stack to execute a business workload would be little more than a high-tech jigsaw puzzle. Rather, maximizing your return on investment relies on understanding and optimizing the relationships between every link in the chain.



Optimization is not about simply tweaking a few settings. True optimization looks at every element of the technology stack from software and firmware to hardware and configuration. It requires a deep understanding of every element of the technology stack, to ensure the optimal flow of information from one part of the system to the next. Although there are myriad standards for ensuring compatibility and interoperability between components, they only set minimums. A deep understanding of how things work together allows you to optimize the interactions between the different components.

### What are the Challenges?

Today's infrastructure world is increasingly software defined. In the past, bespoke hardware was used, whereby a single vendor designed and built everything from the BIOS and firmware and to software and hardware. As a result, they were able to optimize their hardware. But we are moving into a new era in which x86 hardware is being used to carry out more tasks. In today's software-defined data center (SDDC), efficient and effective operation isn't just about buying the right hardware and installing software. The real benefits come not just from the components but how they are brought together in an optimal configuration that delivers the most value to the data center owner or operator.

Ensuring the right amount of the right type of storage is available at the right time relies on having a deep understanding of how the components work together—for instance, how hardware like Intel® Optane™ enterprise SSD storage and a software hypervisor such as VMware® can be configured to fulfill specific applications such as a database. To be more specific, adopting Intel® Optane™ SSD DC P4800X as the cache tier in vSAN™ can deliver exceedingly high throughput and low latency while running the write-intensive workload.

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**Even rack design can make a measurable difference to your overall system performance. With many vendors delivering only part of the solution, it can be challenging to identify the right components for your specific use case and find the best configuration to ensure you get the most from your investment.**

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Solutions that are assembled from multiple vendors often come with complex management tools and can be difficult to scale to meet your changing needs, resulting in higher capital costs and operational expenses and systems that are hard to manage.



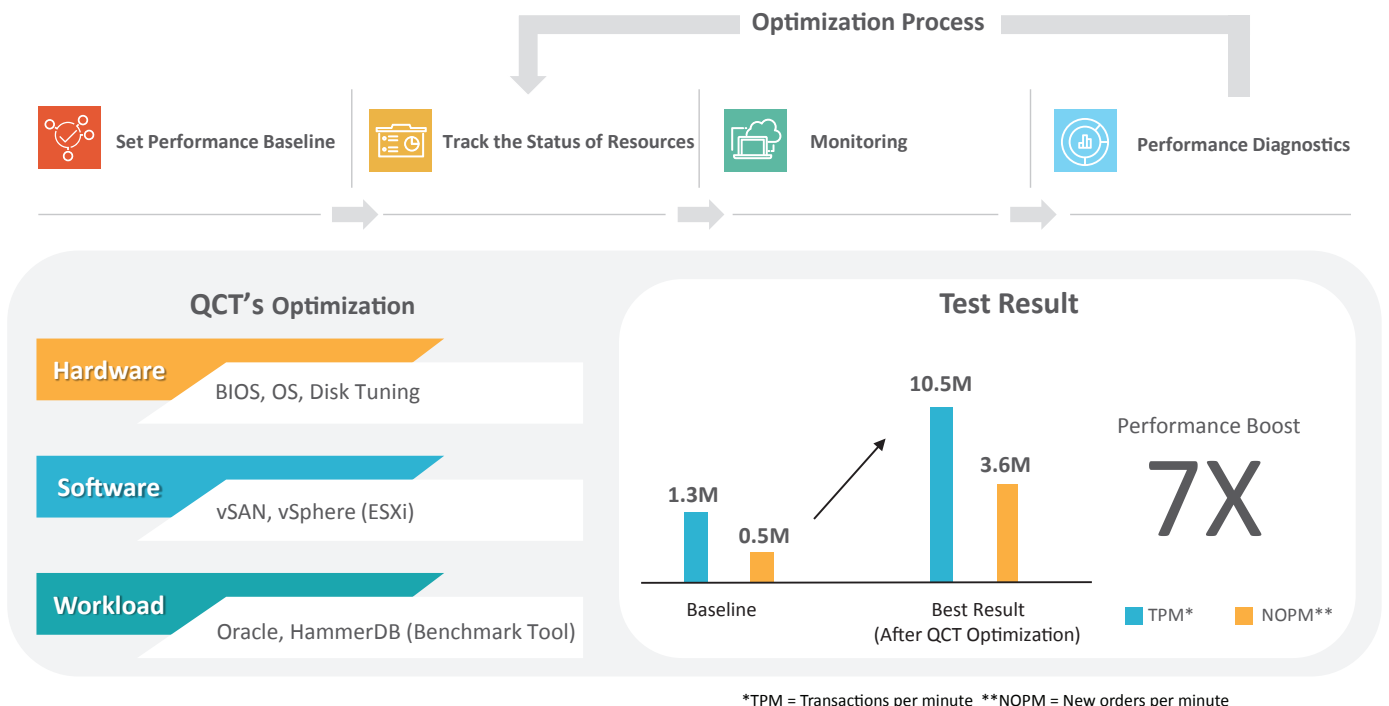
## The Benefits of Workload Optimization

Creating an efficient and effective SDDC isn't about scanning a catalog of components and creating a shopping list of hardware and software. Everything from rack design to specific settings at every layer of the hardware and software stack can influence overall performance. Knowing which settings and options are key to getting the most value from the stack means working with a partner that has long and deep relationships with tier-one hardware vendors, which ensures you maximize your opportunity for success.

Quanta Cloud Technology (QCT) has not only worked closely with some of the world's leading hardware vendors but has also accumulated rich experience in hardware-software integration across diverse use cases. QCT designs and manufactures all the way to solution validation, which has enabled the company to build up expertise in workload optimization.

That expertise is why QCT can exceed baseline system performance of vSAN™ workloads by more than seven times, as shown in the chart below. That translates to lower upfront costs in achieving high performance and allows you to get more from your initial investment, extending the life of the hardware and helping to defer future costs.

### Test Case – QxStack VMWare vSAN-based Solution Workload Optimization Best Practice







## Optimization is a Business Enabler

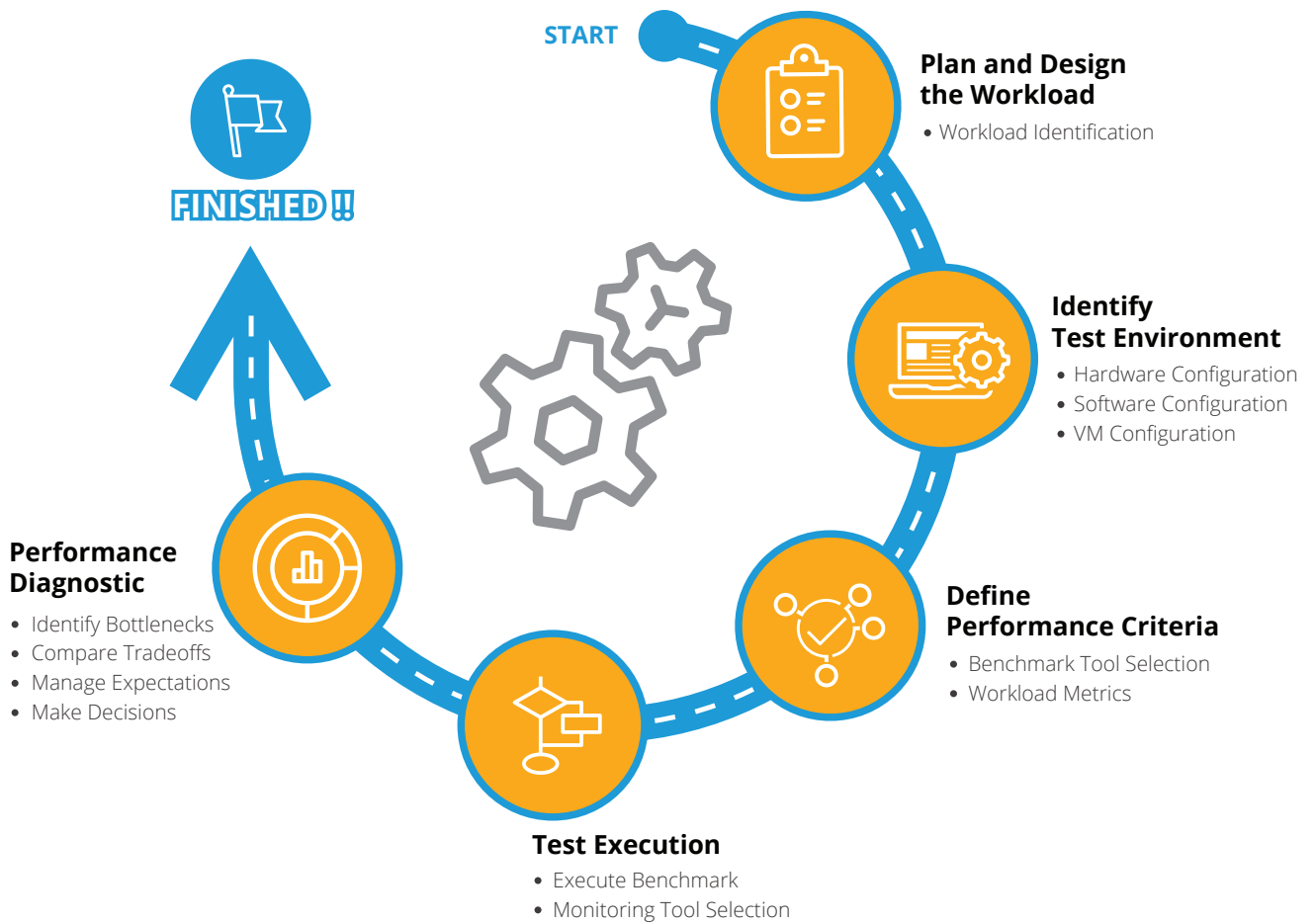
Information is the lifeblood of business. Today's business world is moving faster than ever before, with digital transformation helping businesses rapidly identify new opportunities and quickly pivot to take advantage of them. A high-performance data center ensures that decision-makers have fast access to the data they need, that customers are served quickly, and that workers can rely on a rapid flow of data so they can do their jobs without waiting.

Optimization means that while your competitors are spending money on more hardware to extract faster performance, you can invest your funds in business transformation efforts to deliver more value to your customers. QCT knows that workload optimization is not just about great benchmark results but also about taking that knowledge and translating it into results for your business.

In short, running a highly optimized data center is not a luxury—it is essential to success in today's business world.



## How to Do Workload Optimization



**Plan and design the workload:** Not all workloads are the same. It's important to understand the differences between a database workload and an application server. Design your technology stack to meet the specific needs of your workload.

**Design the test environment:** Design a test environment that is matched to your workload. That means considering the best hardware, software and virtual machine configurations.

**Define performance objectives:** What is an acceptable performance level for your workload? What benchmark results will deliver the business outcomes you are striving for? Choose a benchmarking tool that will allow you to measure the metrics that matter to your business.

**Execute testing:** Run your testing and execute your benchmarks. Choose a monitoring tool so you can collect data on the test performance so you can identify opportunities to optimize the performance of the platform you've chosen.

**Review performance and optimize:** Review the data from your benchmarking and monitoring tools and identify any bottlenecks and opportunities to improve performance. Where tradeoffs are needed, make decisions about what options are most valuable and manage the expectations of business and technical teams when deciding what configuration changes need to be made.

## What's the QCT Advantage

QCT is a global data center solutions provider with a long history in the technology business. It has deep knowledge as a hardware maker and software developer, with experience in everything from rack design and power management to BIOS, firmware and software, ensuring every component is operating at its peak.

With decades of experience behind it, QCT has deep expertise in workload optimization, exploiting the underlying hardware and infrastructure layers to achieve maximum performance.

Matching a workload to the best-suited hardware platform is important. For example, QCT adopts Intel® Optane™ SSD DC P4800X as the cache tier when running business-critical applications in a vSAN™ environment precisely because the Optane™ technology delivers both storage capacity and speed. Hence, customers can eliminate their storage bottlenecks with this high-performance, highly reliable technology

pre-integrated into the best-fit hardware platform. Moreover, the overall data solution can be provided at a more affordable price, as a single piece of the Optane™ technology can be used as both memory and storage. Knowing the right platform to use comes from long and deep partnerships with the best companies in the world.

It's those strong, long-term relationships and decades of experience that enable QCT to outperform other vendors seven-fold with the same hardware and software combinations. Based on its experience in workload optimization, QCT has developed a proven methodology to ensure the best possible performance and is uniquely placed to get the most from every piece of the technology stack.

Optimization starts with choosing the right hardware and software from a trusted vendor that, through experience and exceptional technical knowledge, is able to work with you to design and implement a high-performance solution matched to your specific workload.

Learn more about how workload optimization can make a difference to your business. Please contact the QCT team:  
<https://go.qct.io/contact/contact-qct-solutions/>



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