

INSTITUTE FOR INFORMATION INDUSTRY

Organization Overview

Institute for Information Industry (III) is a non-government organization in Taiwan focused on advancing the Information and Communication Technology (ICT) sector and building an information-rich society in order to increase Taiwan's global competitiveness. Over the past 40 years III has taken part in planning and promoting public policies related to the information industry, contributed to pioneer ICT research and development, and built infrastructure for national information technology.



Challenge

Following the rapid changes in the global environment over recent years, III has modified its objectives and mission to focus on increasing the innovative applications of ICT technology and facilitating the development of digital economy. To accomplish this, traditional server architectures had to be reimaged, in order to achieve the lower latency and higher processing performance required by I/O-intensive workloads.

Solution

III engaged Formulus Black to deploy Intel Optane PMem technology in order to improve the performance of database applications. The institute first tried updating from hard drives to solid state drive technology and tuning its Linux systems, but these changes did not enable it to achieve the desired level of performance.

This led to III's interest in Formulus Black's In-Memory Storage virtualization technology. FORSA™ enables any database to run persistently from the memory channel, dramatically reducing latency and improving transaction-per-second performance, while at the same time providing data resiliency and the data protection expected from traditional enterprise storage. Said Senior Software Engineer Kevin Jan, "We were looking to innovate beyond the traditional approach of just testing faster SSD-based storage, and we chose to work with Formulus Black because their In-Memory Storage software solution, powered by Intel Optane PMem, was unique in the market."

Results

Jan was able to quickly deploy PostgreSQL on FORSA In-Memory Storage virtual devices called "LEMs," or Logical Extensions of Memory. Initial testing of FORSA on Intel Optane PMem delivered between 3-5x more TPS at half the average latency, even when compared to high-end NVMe SSD drives. This solution delivered both superior performance and better TCO for III.

Not only was the performance impressive, but FORSA was able to achieve it while at the same time maximizing effective In-Memory Storage capacity via its patented BitMarker in-line deduplication technology, a superior way to increase the storage capacity of PostgreSQL data. According to Jan, "Based on our initial performance results, we are excited by the possibilities FORSA enables and look forward to working with Formulus Black to identify more workloads that are well-suited to In-Memory Storage."

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average latency**



Formulus Black enables businesses to make data-driven decisions in real time. Our market-leading, award-winning In-Memory Storage virtualization technology, FORSA, powers the most data-intensive applications in the world. FORSA is a software-defined solution that enables storage class memory to be provisioned and managed as high performance, POSIX-compliant block storage for data-intensive and latency-sensitive workloads. It can be deployed in minutes on commodity hardware and requires no code modifications.