

Vaillant accelerates SAP environment through the use of SSD-technology

TMS boxes accelerate performance to a factor of 12.3

The Vaillant Group has been active in the areas of heating, air conditioning and ventilation technology for more than 135 years. The family enterprise provides worldwide energy efficient products and systems. With current sale volumes of 2.2 billion Euros in the 2009 financial year, the group and its 12,300 global employees is one of the leading companies in the HVAC industry.

In the internal IT operation, Vaillant draws on powerful SAP environments which access memory MaxDB- and Oracle-database environments. The intensity of this access created a potential point of system instability. Due to the latency times of the disk storage systems, several software applications, both dialog transactions, and other background programs, very high volumes of optional read access (Random I/O) were generated, resulting in poor response times and delays.



A satisfied gathering in the Vaillant display room. Looking back at the company's past is especially exciting after the successful interaction of the SSD High-End Systems. (Left to right: Berthold Schneider (Director Technique & Development, PSP), Christian Spiess (SAP Infrastructure Consultant, Vaillant Group), Andreas Kustura (Consultant, PSP), Klaus Scheid (Manager Information Technology, Vaillant Group))

Since nearly all optimizing and expansion possibilities of the SAN's were exhausted, alternative ways were looked for in order to generate the necessary speed. The decision was quickly made to use the Solid State Drive Technology (SSD) which at the time was more and more in focus. This technology is about storage units without movable parts such as those found in the traditional mechanical hard drives. SSD systems, which in most cases are based on flash chips, are clearly faster in the execution of processes. While a hard drive provides 250 to 350 IOPS (read-/write operations per second), the high grade SSD solutions effortlessly will provision one-half million IOPS. The Vaillant subsidiary "VAICON Vaillant Consulting GmbH" selected Texas Memory Systems (TMS) to be its partner for a "Proof of Concept" (POC). TMS is the worldwide leading producer concerning speed in the SSD environment. TMS is represented by the PSP distributor (www.psp.net) in the German speaking region and the adjacent European countries.

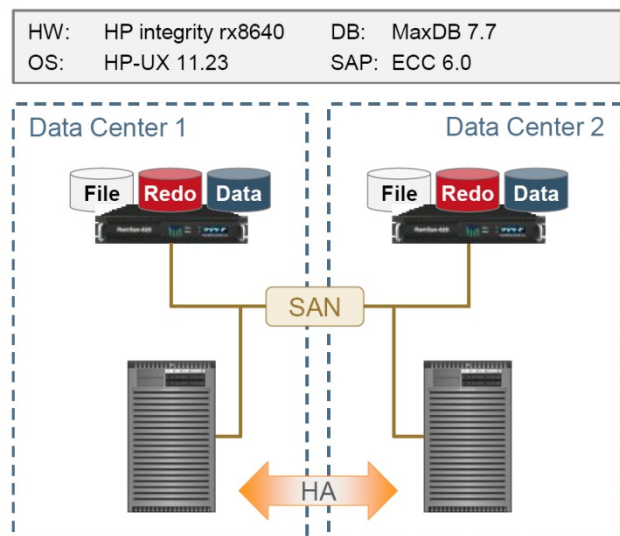
VAICON received the POC via PSP – a TMS RamSan 620. The POC concept stipulated that the client would be obligated to accept the solution only if pre-agreed-upon performance targets had been achieved. Six critical points were quickly outlined in which significant improvement was expected.

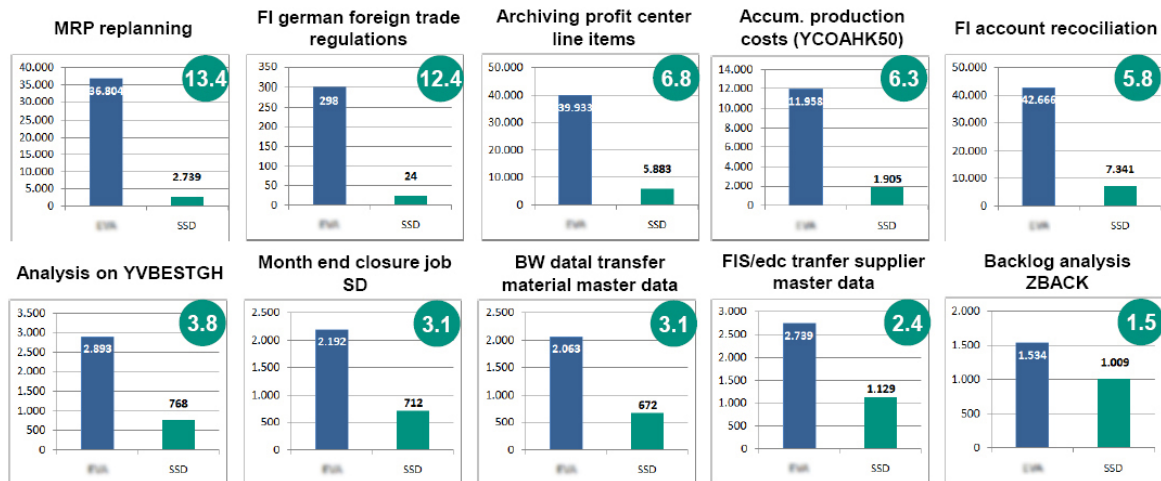
1. Improvement of end of the month analysis and reports, which due to the long response time were prior to the POC running parallel to the daily IT operations and negatively affecting response times for IT users.
2. Considerable acceleration of transfer time for the Material Resource Planning (MRP) which is extremely important for the production of planning, but is not allowed to run parallel to production.
3. Improvement of reload time of buffered tables.
4. Optimization of work-in-process in the Electronic Invoice Verification application in order to reduce considerably long wait times and the associated working time.
5. Reduction of long response times in the processing of the online requirements and supply list, especially for those parts which are used in multiple production lists.
6. Enabling databank consistency checks. Prior to the installation of the RamSan-620 system, this test took more than 43 hours and accordingly could not be carried out on a regular basis. This carried a very high risk, as the accuracy of the data records could only be checked periodically on a random test basis.

The POC test was carried out under real conditions on the premises of Vaillant. The 2U unit rack TMS benchmark machine was compared with the existing inserted systems, each with a disc array from the high end, in other words, mid-range field.

The basic monitoring data which was measured via the inserted databank system was impressive. The measured TMS response time under normal workload was 30 times faster in the reading of data and 7.5 times faster in writing than the high-end system

A similar result showed up in the comparison of the midrange system. The increase in the response times of the TMS under high workload was almost negligible. Whereas, for example, the response times for the writing of data under load of the midrange system worsened drastically from 1.11 ms to 14.66 ms because the relatively small write cache filled up quickly and the writing speed was reduced to the physical speed of the hard disk drives.

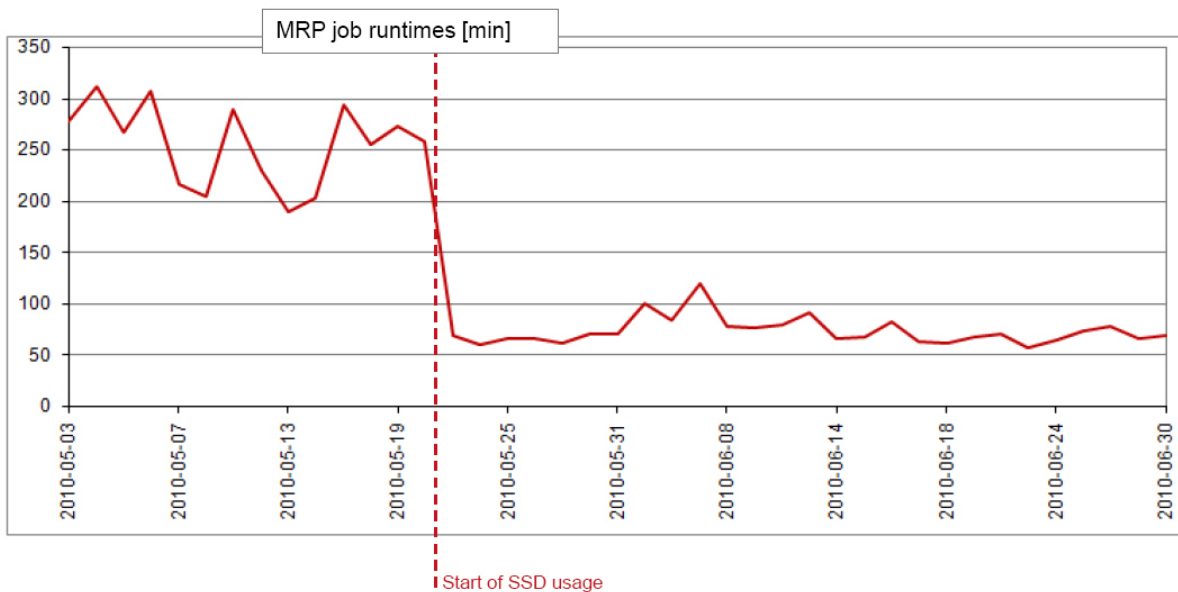




In all tests unbeaten class-best and thereby up to 13.4 times faster than the existing installation. The producer's TMS SSD solution for the worldwide fastest storage systems have been fully convincing. (Source: Vaillant Group)

To begin with, two application facilities were reconstructed in the Vaillant-QA environment (Quality Assurance) in order to, as far as possible, accurately proof the actual efficiency.

In the first test configuration, the RamSan functioned exclusively as a read accelerator and supported the mirrored redo logs and data volumes of the midrange system. In the second scenario, the RamSan was allocated full read and write functionality. The results were impressive. Critical transactions and batch jobs were enormously improved. Thus, for example, the above-mentioned data consistency check of 43 hours was reduced to only 3.8 hours. A request of actual "line items" now only took 24 seconds, whereas before it took 298 seconds. The end of the month analyses experienced a performance acceleration of the factor 3.1; however, in the tape drives backup area no significant improvement could be achieved because the speed of the tapes appeared to be the limiting factor.

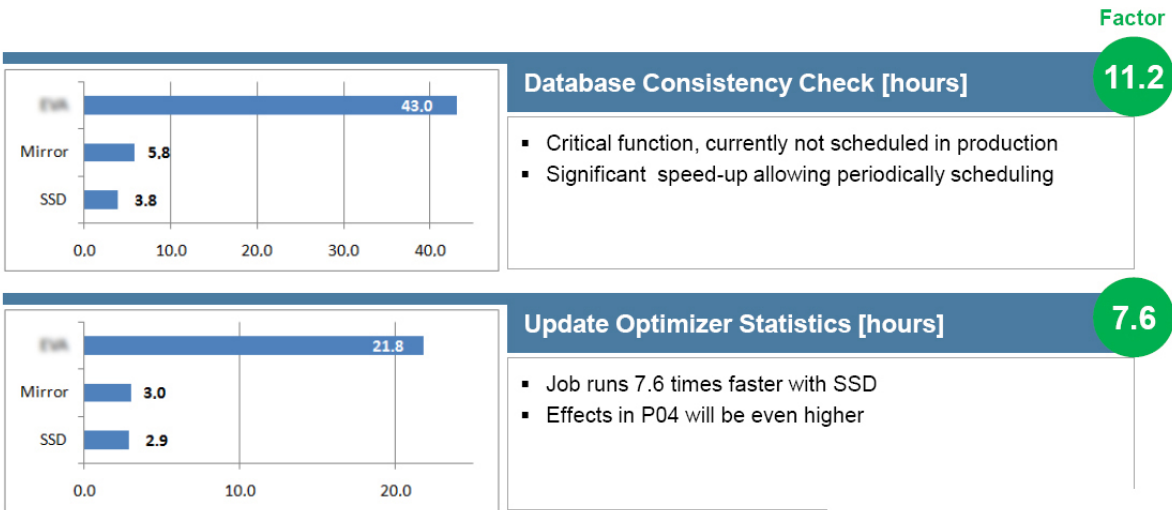


Since the introduction of the TMS SSD solution, the Material Resource plan (MRP) has been running more than four times faster with a consistent high performance. (Source: Vaillant Group)

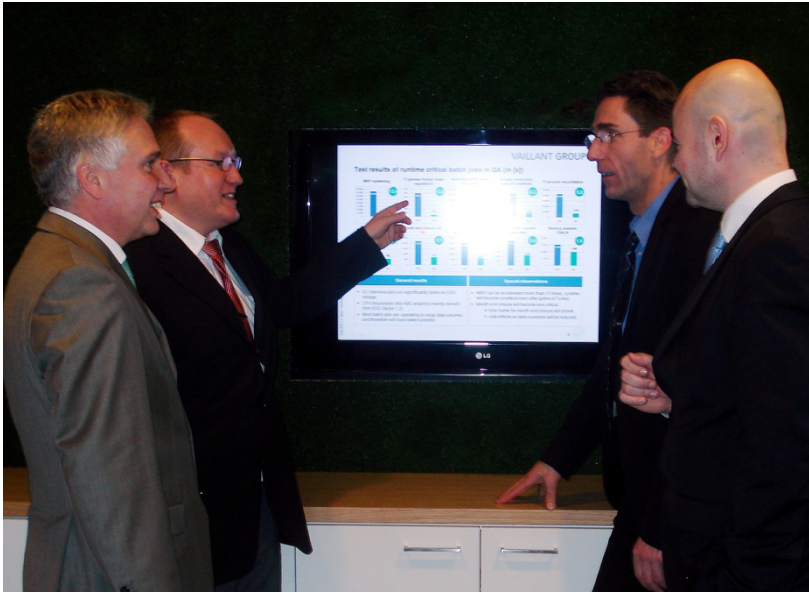
After convincing results on the QA system, the TMS RamSan system 620 was placed into production. Vaillant decided to allocate and configure all read operations to the TMS unit databank. Therefore, the databank in the primary data center was put into the hands of SSD. The traditional infrastructure on the highly available opposite side of the second data center remains in place for the time being. SSD high end storage will also be applied there in the final upgrade.

The investment for the first integration phase cost a total of 200,000 Euros. That’s a lot of money, but in comparison with the results and the consequentially achieved savings it’s a conceivably low sum.

CPU and databank response times were just about synchronized. Starting from the planning of materials up to production, it has become possible to optimize the internal processes. Performance problems have been completely eliminated and system user satisfaction has risen significantly, because most transactions are now being processed faster and with greater system stability. Additionally, the energy consumption and electricity costs of the storage system were reduced considerably.



Time machine! Processes which in the past took up to two days and/or were not even illustratable, are now accomplished in a few hours, thanks to the TMS SSD-solution.



Christian Spiess (SAP Infrastructure Consultant, Vaillant Group) and Klaus Scheid (Manager Information Technology, Vaillant Group) proudly present the impressive performance data of the new TMS SSD-storage surroundings. (left to right: Klaus Scheid (Manager Information Technology, Vaillant Group), Christian Spiess (SAP Infrastructure Consultant, Vaillant Group), Berthold Schneider (Director Technique & Development, PSP), Andreas Kustura (Consultant, PSP))

date there hasn't been one single disturbance." With the introduction of the worldwide fastest storage technology in the SAP environment, the heating and climate specialist, like in so many other aspects of its business, is once again one step ahead of its competition.

The Vaillant Group's conclusion was clear. "The application of RamSan-620 is a leap in technology in answer to Storage-Performance!" the director Klaus Scheid of IT Infrastructure of the Vaillant Group, emphasized proudly. Quoting the System Analyst of the Vaillant Group, Christian Spiess, who is responsible for the SAP-infrastructure, "All expectations concerning the performance were more than fulfilled. Even after 6 months in the production phase, there has been no decline in the I/O-times, as observed in other SSD-products. Its reliability has also convinced us because to

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