Software-defined storage reduces downtime of road assessment vehicle provider

IMP Bautest AG, a Swiss company based in Oberbuchsiten near Solothurn, is a private institute for materials science, construction advisory services and analytics.

An area of business that is of growing importance to IMP Bautest is road condition assessments on behalf of municipalities and property developers. The company has specifically developed the mobile data acquisition system I.R.I.S., which is used in minibuses packed with high-resolution cameras, a 360-degree laser and additional laser measuring devices. The vehicle drives along roads under surveyance taking regular photos of the road surface and using lasers to capture the surroundings in great detail. The data gathered allows the company to create 3D-models needed for traffic route planning.

Since the construction and maintenance of road assessment vehicles of this kind are very expensive, the company needs to reduce downtimes and get the vehicles back on the road as quickly as possible. The biggest obstacle was the long-time of downloading the data collected during operations as the typical vehicle generates about 36GB of data per kilometre and its maximum capacity of storage is up to 48TB. After reaching this maximum, the vehicle has to return to the control station to transfer the data. With the old storage solution, downloading the data could take even several days.

Solution

Another reason for having a faster storage solution was the post-processing of the images and videos. The collected data is not just stored but also tagged with detailed geodata and processed in other ways as well, large images and video files have to be always available. The new storage system not only had to meet the current requirements for parameters but also had to be highly scalable.

In the end, the decision was made in favour of Open-E. Open-E JovianDSS proved to be the optimal solution because it is highly flexible both in terms of hardware compatibility and storage connection to virtual environments. Open-E JovianDSS is based on Linux and ZFS, an infinitely scalable file system. This allows IMP Bautest to expand the system with inexpensive standard hard disks or SSDs. Transparent terabyte-based licensing of the software allows all costs to be reliably calculated.

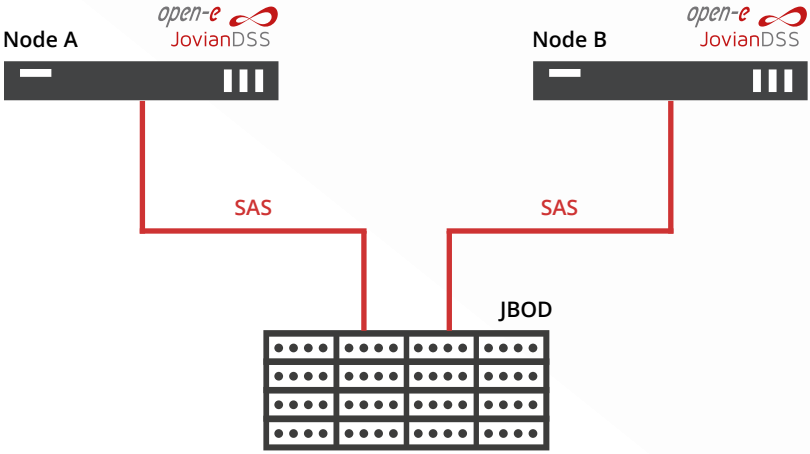
Implementation, tests and transfers took a total of two days. An Open-E-certified technical consultant was present on site for one day. During the initial implementation it turned out that Open-E system could be installed and connected to existing servers very quickly.

Hardware setup

The hardware of the implemented solution is based on the Open-E certified system by Thomas-Krenn, offering a higher-quality network connection and CPU to meet the increased IOPS requirements. It consists of a highly available system with two nodes accessing a common storage area. This comprises 60 HDDs with a total capacity of 240 terabytes in a JBOD, supplemented by 1.6 TB SSDs for caching. High throughput is provided by a total of six 10 GbE NICs per node. As with all software-defined storage solutions, performance depends not only on network bandwidth but also heavily on CPU and RAM. The nodes are therefore equipped with fast 3.6 GHz Xeon CPUs and 512 GB RAM.

The storage system as a block device is connected via several iSCSI paths to a virtual machine under VMware vSphere. The data is backed up via Veeam to an Overland Neo Tape Library.

Hardware setup



Customer feedback

Alexander Ernst, *IT Manager at IMP Bautest AG*

„The time savings for IMP Bautest are twofold. Transferring the data collected by I.R.I.S. takes now less than a third of the time previously required. Each year the system can spend several hundred additional operating hours on customer orders. For this reason, the project has paid for itself in just a few months. In addition, the processing of raw data also runs much smoother and reduces the workload of the specialists involved. The old storage system was at its limit during transmission, but the new one was far from being fully utilized. We are now working on speeding up the transmission on the part of I.R.I.S. and expecting time savings to increase by a factor of two."

IMP Bautest

IMP Bautest AG, a Swiss company based in Oberbuchsiten near Solothurn, is a private institute for materials science, construction advisory services and analytics. Founded in 1989, the company has 70 employees across several locations in Switzerland and Germany. An area of business that is of growing importance to IMP Bautest, and one which their specialists handle with extreme accuracy and efficiency, is road condition assessments on behalf of municipalities and property developers. For this particular purpose, the company has specifically developed the mobile data acquisition system I.R.I.S., which is used in a minibus packed with high-resolution cameras, a 360-degree laser and additional laser measuring devices. The vehicle drives along roads under surveillance (at speeds of up to 120km/h) taking regular photos of the road surface and using lasers to capture the immediate surroundings with an extremely high level of detail. The data gathered allows the company to create 3D-models indispensable for the maintenance and planning of traffic routes for the entire course of a road.

About Thomas-Krenn AG

Thomas-Krenn AG is a leading provider of individual server and storage systems and data center solutions. The company serves more than 15,000 customers across Europe. These include large corporations, public services and government authorities, IT service providers and educational institutions as well as many small and medium-sized enterprises. Thomas-Krenn AG allows customers to quickly configure custom-designed servers with proven components via its online shop. Most items can be delivered the very next day.
The company assembles all of its servers in Freyung, Germany and has steadily grown to now over 150 employees since its founding in 2002.
Find more info on: **https://www.thomas-krenn.com/**

About Open-E

Open-E, founded in 1998, is a well-established developer of IP-based storage management software. Its flagship product Open-E JovianDSS is a robust, award-winning storage application which offers excellent compatibility with industry standards, and is the easiest to use and manage. Additionally, it is of the most stable solutions on the market and undisputed price performance leader. Thanks to its reputation, experience and business reliability, Open-E has become the technology partner of choice for industry-leading IT companies. Open-E accounts for over 30,000 installations world-wide and has received numerous industry awards and recognition, also with its product Open-E DSS V7.
For further information about Open-E, its products and partners, visit **http://www.open-e.com**

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