

Cloud-based measurement data monitoring **testo Saveris 2**

With the testo Saveris 2 WiFi data logger system,
measurement data is available everywhere



The current trend is moving towards the cloud

Online banking, office applications, social networks – in the private and in the business sector, the use of cloud solutions is now widespread. “Renting instead of buying” is the motto these days when it comes to using software, in technical jargon also referred to as SaaS – Software as a Service. Studies show that most large companies already widely use cloud-based services, and the potential of the cloud is increasingly being recognized in medium-sized companies too. Moreover, when it comes to mobile devices such as smartphones and tablets, the “data cloud” trend is being promoted by the high level of market penetration, because cloud solutions allow ubiquitous data access from any terminal device and without any prior installation of specific software. This saves time and makes processes more efficient – opting to use the cloud therefore also has an effect on a company’s economic profitability and competitiveness.

In the field of measuring technology, cloud applications are still relatively rare – Testo was one of the first suppliers on the market, with its testo Saveris 2 measurement data monitoring system which was launched in 2014, and the company has gained extensive experience. Meanwhile, the system is being used by customers in many applications and sectors, for monitoring the temperature of food and drugs and also for monitoring the climate in museums and data centres. In all these applications, the system has proved to be very reliable – with well over 99 percent availability, testo Saveris 2 offers an exceptionally high level of availability, particularly in comparison to smaller, non-industrial networks.

Progressive automation of measurement data monitoring

In addition to the increased availability of data, a cloud solution is also an opportunity to extensively automate labour-intensive and time-consuming processes. It’s not all that long ago (and in some companies still common practice) that data was collected manually using a simple thermometer, and then documented on paper. The next stage of development was the installation of data loggers at critical measuring points, which at least automated the measurement, but – without a network connection – these still had to be read out manually. For analysis and reporting, this data subsequently had to be read into proprietary software and was then also only accessible on this particular terminal device – for example, a PC in the Quality Manager’s office. Moreover, only an ex-post analysis of the readings was possible, so limit value violations were often detected when it was (too) late.

The option of real-time monitoring was not possible until networked WiFi data loggers were introduced. These automatically sent their data to a central location and could trigger an alarm if a limit value was violated. However, it was still necessary to install specific software, which needed to be maintained and regularly updated. As well as real-time alerts, comprehensive monitoring of all measuring points was now possible for the first time, however still only by certain terminal devices. Only when this networking concept was ported to the cloud was the data available everywhere – around the clock, anywhere in the world and using any terminal device. Rather than specific software, with testo Saveris 2 only a standard web browser is required to monitor and visualize the readings.

Greater reliability and more efficient processes

This development comes at just the right time, because given the fact that there are ever more legal stipulations and increasing quality management requirements, automated data acquisition, storage and analysis makes it possible to significantly improve efficiency during everyday work. The integrity of the data is ensured at all times, and errors can be rectified quickly thanks to the customizable alerting

options. The documentation requirements, for example to prepare audits, are also considerably simpler. This gives testo Saveris 2 users the assurance that their products are not liable to suffer any undetected loss of quality due to inappropriate storage conditions.

Typical examples of this would be measuring the temperature and humidity of food in a supermarket (Fig. 1) or of



Fig. 1: All readings can also be viewed and visualized at any time on mobile terminal devices.

drugs in a hospital. Manual read-out of data loggers, previously a considerably demanding task in terms of both time and personnel, is completely automated with testo Saveris 2. Data from all measuring points is available directly via the Testo Cloud – not just on an office PC, but also on a smartphone or tablet, so the Quality Manager can take a look at the current situation from anywhere. If a set upper or lower

limit value is exceeded, testo Saveris 2 immediately sends an alert via e-mail or SMS, so that measures can be taken promptly. Spoiled food products or drugs damaged by frost are therefore a thing of the past.

All defined specifications are observed, the cold chain remains unbroken, and proof of this can be supplied any time, with a simple click of the mouse.

How safe is the data in the Testo Cloud?

The advantages of cloud-based measurement data monitoring are therefore evident – and if there are still any reservations about this solution, they are mostly related to the issue of data security. Strictly speaking, there are two separate issues here: one about preventing the loss of data, and the other about protecting data from unauthorized access by third parties. With regard to both these aspects, the Testo Cloud offers high, state-of-the-art safety standards. The Testo Cloud is hosted at one of the world's largest cloud providers (AWS), which is certified to national and international standards (e.g. PCI DSS, ISO 27001 and 95/46/EC). The provider itself has no access to the stored data; only the customer has this, similar to a safe deposit box in a bank.

At the AWS server centres, the measurement data is stored in a high-availability cluster with mirrored, physically separate databases, so that even in the event of a fire, one data copy will still be available. Load balancing between different servers also guarantees a short access time (low latency) at high access rates. In order to prevent potential loss of data in the event of connection problems, the readings remain stored locally in the data loggers until entry in the database has been confirmed. A temporary interruption to the WLAN connection therefore cannot result in any data gaps. Each logger stores up to 10,000 readings, so that with the usual measuring cycle of 15 minutes, the memory is only overwritten after more than 100 days. Furthermore, data export from the cloud to a local server is also possible at any time, as required.

Access to the data and potential manipulation by third parties are prevented by SSL encryption in transit. The integrity of all data is verified with the aid of checksums. The security of the company network is also not jeopardized in any way by the connection to the Testo Cloud: the ports used for the testo Saveris 2 data loggers' communication merely need to be opened, bidirectional openings are not required. All Saveris 2 data loggers also have a unique MAC address and support all current WLAN security standards, including WPA2 Enterprise.

Moreover, in some sectors the issue of compliance – for example, the legal framework conditions in the country in which the cloud servers are located – also plays a key role. In order to avoid any potential problems in this regard right from the outset, the data is kept on servers in Europe (Germany), in Asia (Singapore) or in America (USA), depending on the country of origin of the Testo customer (Fig. 2). The European AWS server centre is located in Frankfurt am Main and is therefore subject to strict German and European data protection law. In the specific case where company policies prohibit the outsourcing of data to a public cloud, testo Saveris 2 can alternatively be installed on a dedicated customer server (private cloud) or as a virtual appliance in the customer's own data centre, so that the data never leaves the customer's own network (local cloud).

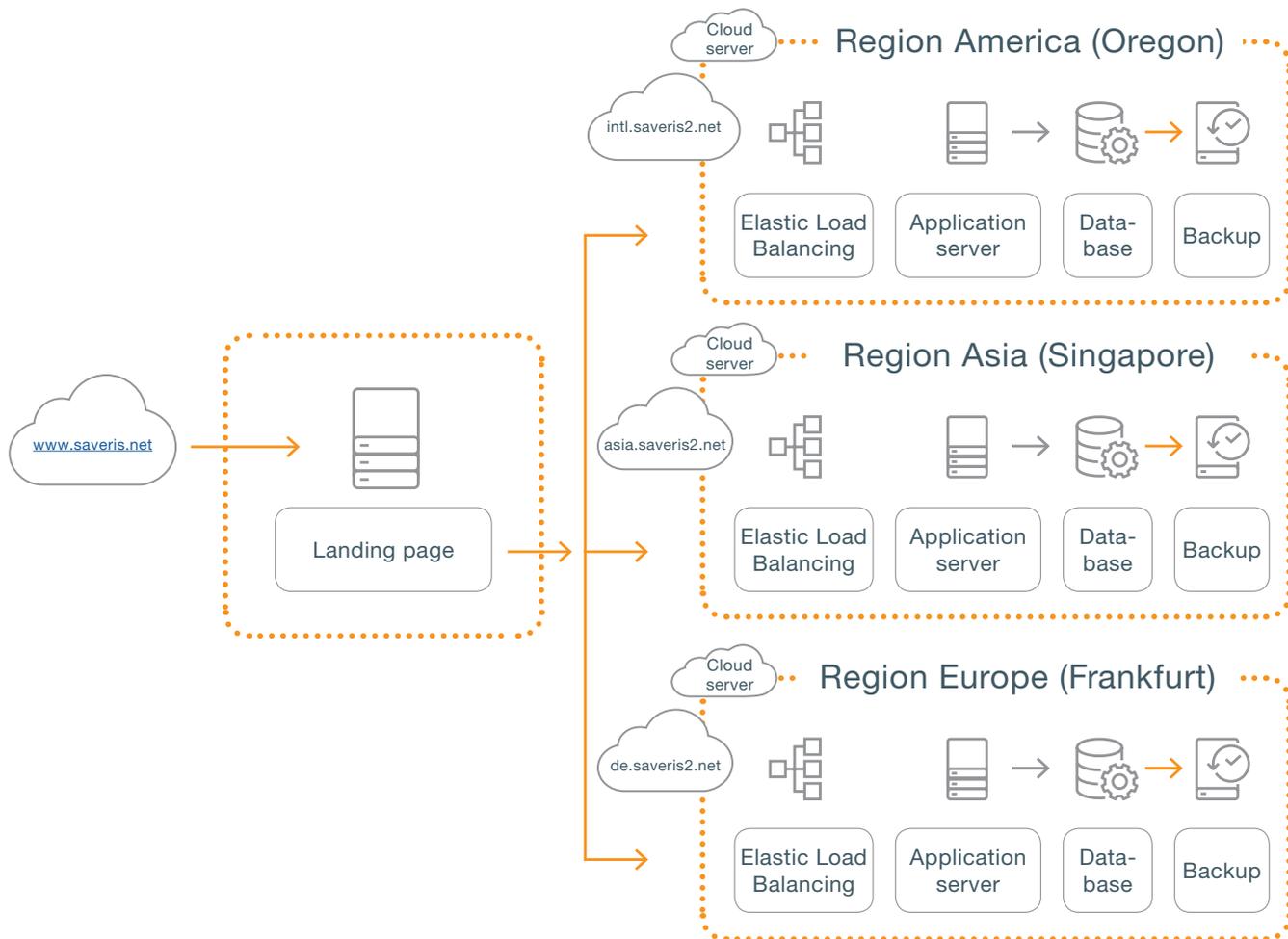


Fig. 2: The Testo Cloud's servers are located on three continents, which guarantees low latency and prevents data storage compliance problems.

Conclusion: It's time for the cloud

Companies in many sectors are currently faced with the task of meeting their customers' growing legal requirements and quality requirements as effectively as possible, and at reasonable cost. Small to medium-sized companies in particular, who have not yet introduced any networked measurement data monitoring, can now take a leap forward with the testo Saveris 2 cloud solution: this system can be put into practice easily, with the benefits outlined, without investing in a local IT infrastructure. Various licence models for the Testo Cloud, starting from a free Basic licence, cover a range of different requirements, and the scope of application can be scaled according to need.

With the cloud solution, spot measurements and manual read-out of data loggers will soon be a thing of the past, and personnel allocated to these tasks can be used elsewhere. The reporting system is also largely automated. However, the most important aspect is the advantage in terms of data availability and data security: all readings are available via the cloud at all times, and can be retrieved from anywhere and using any terminal device. The testo Saveris 2 cloud solution therefore offers the ideal prerequisites for reliable, guideline-compliant monitoring of temperature and humidity, as well as significant efficiency gains as a result of automated processes.

Overview of the advantages of cloud-based measurement data monitoring

- Availability of data – independent of location, time or device
- Significant increase in quality and efficiency at low cost
- Data access via standard web browser, installation and maintenance of specific software no longer required
- Very high level of data security and availability

Typical fields of application for testo Saveris 2

- Food monitoring in bakeries, butcher's shops, supermarkets and restaurants
- Storage of drugs in pharmacies and hospitals
- Climate monitoring in server rooms and data centres
- Climate monitoring in buildings, museums and archives
- Production of temperature- and moisture-sensitive goods (e.g. textiles, granules)
- Monitoring drying processes (e.g. paint booths, building drying)

Further information

about the cloud-based measurement data monitoring system testo Saveris 2 and its possible applications can be found here: <https://www.testo.com/de/anwendungen/saveris-2-applications>

Testo

Testo, with its headquarters in Lenzkirch in the Black Forest, is a world market leader in the field of portable and stationary measurement solutions. In 32 subsidiary companies around the world, 2,700 employees research, develop, produce and market for the high-tech company. Customers all over the world are impressed by the measuring technology expert's high-precision measuring instruments and innovative solutions for the measurement data management of the future. Testo products help save time and resources, protect the environment and human health and improve the quality of goods and services.

An average annual growth of over 10% since the company's foundation in 1957 and a current turnover of over a quarter of a billion euros clearly demonstrate that the Black Forest and high-tech systems are a perfect match. The above-average investments in the future of the company are also a part of Testo's recipe for success. Testo invests about a tenth of annual global turnover in Research & Development.

More information at www.testo.com