

Zeppelin Takes Predictive Maintenance to new Heights With Splunk



Executive summary

German company Zeppelin is best known globally for its solutions in construction machinery, mining machinery, agricultural machinery, rental machinery, construction logistics, construction site management, drive, propulsion, traction and energy, engineering, and plant engineering. It also develops new digital business models for the construction sector. Zeppelin needed a monitoring solution that would offer a comprehensive view of its complex IT infrastructure. The company also needed a solution that could scale into its services business, which relies on the ability to monitor the rental equipment remotely by analyzing sensor data. This allows Zeppelin to keep its customers one step ahead of machine failure. Since deploying Splunk Enterprise, the company has seen benefits including:

- Richer monitoring and optimization of all IT systems
- Reduced customer downtime thanks to the use of predictive analytics
- Improved system performance

Why Splunk

Group-wide collaboration at Zeppelin revolves around a management holding company and six strategic business units: Construction Equipment EU, Construction Equipment CIS, Rental, Power Systems, Plant Engineering and Z Lab. This structure makes it possible to centralize operations and gear its business models towards various markets and customers. The extensive IT infrastructure required to service the company includes SAP databases, a virtualization platform based on VMware and a hyperconverged infrastructure for software-defined storage. Until Zeppelin discovered Splunk Enterprise, monitoring and analyzing the log files from IT systems was an enormous task, with each team writing their own scripts.

Zeppelin deployed Splunk Enterprise to replace a monitoring tool that was no longer fit for purpose. Systems engineer, Andreas Zientek, explains, "I found Splunk, tested it for two to three days, ran to my boss and said, 'We need it!'"

Expanding to new use cases such as Internet of Things (IoT) was a natural extension using Splunk. Splunk helps Zeppelin to sift through volumes of generated data and gain meaningful business intelligence.

Industry

- Manufacturing

Splunk Use Cases

- IT Operations
- Internet of Things

Challenges

- Insufficient visibility into a complex IT infrastructure
- Required more in-depth monitoring and transparency of operational performance
- Wanted to improve customer service and reduce equipment downtime

Business Impact

- Predictive maintenance led to faster troubleshooting; improved resource allocation
- Better customer satisfaction and service with improved equipment uptime
- Richer insights into historical and real-time operational data
- Continuous aggregation of data from thousands of IoT devices

Data Sources

- Microsoft SQL Server, SAP HANA, IBM Db2 for i5
- Windows event logs
- Windows perfmon metrics
- Linux Syslog
- Linux nmon performance metrics
- VMware logs and performance metrics
- Nutanix logs and performance metrics
- Citrix performance metrics (uberAgent app)
- Exchange
- Cisco device logs
- SAP NetWeaver
- Active Directory
- Amazon Web Services (AWS)
- Commvault logs
- Java application logs
- SAP Business Objects logs
- Web proxy logs

Splunk Products

- Splunk Enterprise
- Splunk Machine Learning Toolkit
- Splunk DB Connect

Since that time eight years ago, Zeppelin has worked closely with Splunk to develop digital solutions to improve customer satisfaction, save costs and achieve greater business efficiencies.

Machine Learning capabilities move troubleshooting from reactive to proactive

With the help of Splunk's Machine Learning Toolkit, Zeppelin designed an anomaly detection model to predict future failures in spark plugs — the leading cause of power plant shutdowns. The pre-loaded algorithms and simple implementation of the Machine Learning Toolkit without needing a single line of programming code was a big advantage for the team. Zientek says, "The spark plug is among the most strained components of an engine. If it fails, the motor shuts down. We wanted to provide our customers with a solution that helps to prevent the imminent failure of a spark plug sometime in advance."

The Splunk software allowed data associated with exhaust temperature and spark plug voltage to be tracked to detect deviations in the data to identify problems in advance. The ability to isolate and correlate these measurements helped Zientek to use historical data to contextualize and resolve current issues. Zeppelin's service center was able to dispatch a service technician to the site before the problem occurred, preventing costly shutdowns and improving customer service. Real-time dashboards allow the service technician to visualize the problem before arrival on site, enabling them to ensure they have the right tools to complete the repair with as little disruption to the customer's service as possible.

"When somebody asks, 'Can I do it with Splunk?' I always say yes – in 15 minutes, or even five minutes. It's about how fast you can deliver solutions."

Andreas Zientek, Systems Engineer
Zeppelin

"Without this technology you are blind. You have thousands of devices sending data, and it can take a lot of time to find the problem."

Andreas Zientek, Systems Engineer
Zeppelin

Real-time monitoring, across thousands of data points

Using the Splunk software, Zeppelin has enhanced real-time visibility into its systems to improve monitoring quality. Thousands of logs and alerts are aggregated and indexed into clusters of events, which Zientek and his team use to analyze and extract actionable insights. "You can now see exactly what is happening with millisecond precision," Zientek says. "We once had a storage failure, and you could see when it started, what systems failed and we repaired it quickly. You get deep insights into the systems."

Raising efficiency and productivity with streamlined operations

Zeppelin is currently evaluating Splunk IT Service Intelligence (ITSI) to achieve comprehensive visibility into business performance metrics. The company was first able to showcase the business potential of Splunk ITSI at European construction trade fair, Bauma. In conjunction with Caterpillar, Zeppelin presented in real time, demonstrating the depth of business intelligence that could be extracted using the Splunk software. Insights included data on sales volumes, best seller items, most productive sales reps, and most active customers. "With Splunk, we have an innovative partner that helps us tackle the challenges with digitization," Zientek says, "For us, this is the future."

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