

Sapura Teams With Splunk for Connected Ship, Shore and Subsea IoT



Executive summary

Brazilian shipping company Sapura, a joint venture between two international energy companies, Seadrill and Sapura Energy, maintains a fleet of high-tech vessels that perform subsea pipeline installation services for the Brazilian national oil company Petrobras. Sapura required solutions to monitor and troubleshoot these ships, which are essentially floating data centers, in real time. Since deploying Splunk Enterprise and Splunk for Industrial IoT, Sapura has seen benefits, including:

- Rapid return on investment
- Increase in safe and productive operations
- Real-time view of complex industrial systems
- Decrease in asset downtime

Why Splunk

Nelson Carmelinho, Head of IT at Sapura, and his team not only support essential business processes, but they continually work to enhance safety and productivity and search for new opportunities to bring innovation to the company.

Previously, one of the challenges the information technology (IT) and operational technology (OT) teams faced was getting visibility into operations data from six Sapura pipelayer vessels located 200 miles from Brazil's coast. Reviewing performance reports at the end of the month was insufficient. "We needed visibility into the vast quantities of data generated daily, hourly, so that's how we came to Splunk," says André Merlino, CEO, Sapura Brazil.

Initially, Carmelinho downloaded the free Splunk Enterprise trial version for some testing, and by creating a few dashboards that showed how to reduce spending on vessel internet and phone connections, Carmelinho demonstrated the value of the solution within three months. "It proved to be a nice tool, and we bought a license so we could extract more value," Merlino explains. "We could see that there were other capabilities, including the beta program for Splunk for Industrial IoT, which had a lot to [offer] our company."

Industry

- Travel and Transportation
- Energy

Splunk Use Cases

- Industrial Data and IoT
- IT Operations

Challenges

- Required real-time visibility to monitor complex systems and connected vessels
- Needed to ensure safety standards and avoid environmental disaster

Business Impact

- Gain operational efficiency
- Strengthen safety standards
- Apply a data-driven approach in subsea construction operations

Data Sources

- Vessel management system
- Alarm monitoring system
- Diesel generator sets
- Thrusters
- Main crane
- Auxiliary crane
- Pipelaying tower
- Tensioner system
- Tether management
- Surface system
- Subsea control
- Winches
- LARS (HPU/A-frame)

Splunk Products

- Splunk Enterprise
- Splunk for Industrial IoT

Broad data from complex systems

Aboard the vessels, a team of Sapura crew, along with client and third-party technicians, engineers, mechanics, captains and operators, perform complex operations to enable pipelaying 3,000 meters below sea level.

“Because no human being can work at that level, Sapura uses remotely operated vehicles (ROVs) that work as our eyes and our arms,” Merlino says.

In addition to the ROVs, Sapura’s many systems include the vessel itself, with its engines and thrusters and other systems related to piloting a ship. The third critical component is the pipelaying system, a tower with two tensioners that hold the pipes. Installing pipelines to connect oil wells and production units is very challenging, and ensuring safe installation and avoiding environmental disaster is of paramount importance.

Sapura is looking at a broad set of data sources, from the vessel management system, tower and ROV. All of these systems produce a range of data, including temperature, speed, tension and capacity loading. Until recently, siloed systems collected each data stream separately.

Real-time monitoring

“Using Splunk Enterprise, we managed to understand how much data we could collect, and where the information was coming from,” Merlino says. “That’s the major difference that Splunk has compared to the other solutions we had worked with. In the past, monitoring critical parts of our systems were only available if we were on board of our vessels. Today, we are transferring this data in a real-time dashboard to our headquarters in Rio de Janeiro.”

Crews performing jobs on vessels have access to Splunk dashboards, which is especially helpful when it comes to monitoring critical situations. Previously, frequent alarms from multiple vessel systems became noise that fought for the crew’s attention.

“Sapura is using Splunk for Industrial IoT as part of its data-driven approach to subsea operational excellence. Splunk for Industrial IoT is a powerful solution used to improve our capability to better leverage data throughout our organization as we strive to strengthen our safety standards, increase operational performance and deliver better solutions to our customers.”

André Merlino, CEO
Sapura Brazil

“Combined real-time alarms may mean something,” Merlino explains. “We’re able to analyze the data together and tell us if something wrong is about to happen. And today we can bring it to shore as well, and develop some intelligence on top of it.”

Priority one: visibility into pipelaying system and safety standards

Sapura’s first priority was to gain visibility into its tower, the core pipelaying system. The ROV will probably become Sapura’s second priority.

“Our goal is to have a dashboard that can combine the information coming from the ROV, from the engines and the thrusters and the tower and to know if there is any correlation among those data and predict potential failures,” Merlino says. “We are targeting to have a system that can tell us months ahead that a failure is about to happen.”

“Our core value we believe in is an environment that’s completely free of incidents and accidents, so that’s our target,” Merlino says. “We are putting all of this intelligence, on top of the information available in our vessels, to predict and prevent failures to improve our safety standards. Uptime is a natural consequence of that. The better you are on safety standards, the closer you are to [avoiding] operational accidents, and that’s what drives us. Splunk for Industrial IoT is a key factor for our company strengthening our safety and operational standards.”

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