

Air Liquide Deploys Top Layer's IPS Solution to Protect Industrial Network

With more than 40,000 employees in 72 countries, Air Liquide is a world leader in industrial and medical gases and related services. The Group offers innovative solutions based on constantly enhanced technologies and produces air gases (oxygen, nitrogen, argon, rare gases) and many other gases including hydrogen. The Group contributes to the manufacturing of many everyday products: bubbles in sparkling beverages, protective atmosphere for packaged foods, oxygen for hospitals and homecare patients, ultra-pure gases for the semiconductor industry, hydrogen to desulfurize fuels, among others.

In the U.S., Air Liquide has more than 4,000 employees and more than 200 plants and locations nationwide. Its research and development activities are dedicated to an improved life, a communicating world and a sustainable environment.

Introducing Intrusion Prevention into the Manufacturing Center's Industrial Network

Air Liquide relies on production from nearly 200 plants across the United States to produce its products. These manufacturing facilities create a unique security environment, where distributed control systems (DCS), programmable logic controllers (PLC) and supervisory control and data acquisition (SCADA) systems are crucial to ongoing operations. Air Liquide very early recognized that its plants must be protected from the growing potential of cyber threats. The initial steps taken by Air Liquide included sophisticated firewall technology and embedded supervision of existing network technology.

Taking immediate steps, Air Liquide brought in a consultant to define a set of additional security requirements that would provide adequate protection of its industrial network, and after conducting extensive reviews, identified areas of Air Liquide's industrial security posture, which while strong and comprehensive, needed additional protection. Understanding the crucial role that the industrial network and SCADA systems serve Air Liquide, the company evaluated options for strengthening its defenses around these areas. According to Charles Neely Harper, Director - National

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— Charles Neely Harper, Director - National Supply & Pipeline Operations for Air Liquide Large Industries U.S. LP

Supply & Pipeline Operations for Air Liquide Large Industries U.S. LP, “We examined a couple of different avenues that would enable us to achieve our industrial network security objectives, beginning with simple TCP/UDP port blocking approaches in layer 3 switches, but the resulting protection capabilities of that solution did not align with what we envisioned. We then evaluated intrusion prevention solutions from a short list of vendors and chose Top Layer Networks' IPS 5500 solution.”

The layer 3 switch port blocking option proved less than ideal due to its inability to inspect traffic that was allowed through the open ports, leaving significant exposure to cyber threats. In addition, device configuration and management was a manual activity that would burden the Air Liquide IT staff. As Air Liquide pored over potential solutions, an important factor in the equation was the cost-effectiveness of the solution, since it would need to be deployed across its 200 plants nationwide. “Traditionally, when one thinks of intrusion prevention and firewall technology, it is in reference to the enterprise network on which the business collaborates or conducts transactions. However, we felt that the separate industrial network that powered our plants and SCADA systems would prove to be an innovative application of IPS technology while further illustrating our commitment to continuous plant operation and reliability of supply to our customers,” continued Harper.

The Right Network Performance Makes all the Difference

Air Liquide operates a small data center in each of its facilities, processing terabytes of data for the real-time command and control environment of SCADA, where thousands of data feeds are used to control pipelines, change production in plants, etc. Within these “Command Centers,” personnel sit behind several consoles that control the manufacturing process. Top Layer’s IPS 5500 solution protects these command centers from the threats of the outside world. “Air Liquide’s performance requirements were easily exceeded by the high-performance network operation delivered by the IPS 5500. SCADA traffic volume is usually somewhat small, but the high throughput of the IPS 5500 translates into increased protection against cyber threats with no detectable latency whatsoever, which gives us comfort in knowing that systems are running at optimal performance levels,” added Harper.

“The IPS 5500 delivers highly-reliable deep packet inspection, to protect the SCADA systems and industrial network from cyber threats that exist around every corner of the Internet,” according to Harper. Air Liquide was excited about the initial deployment of the first IPS 5500 – its bypass mode capabilities enabled the company to plug the device into its network and observe security events immediately, and many of these pointed to real security risks on the network. The IPS 5500 instantly identified oversized ping packets, and nefarious DNS protocol violations. In addition, bypass mode identified many active attacks originating from countless sources, many from locations they would have never guessed. A number of these threats were initiated by compromised computers that had not been patched with the latest Microsoft security updates, which alerted Air Liquide to revise its patching process along the way.

“It was enlightening to see what was happening on our network, and the visibility into this world of previously undetected cyber threats reassured our team that we were doing the right thing by adding intrusion prevention technology across our industrial network,” shared Harper. “Top Layer’s device was the only one that combined the high levels of performance with the deep packet inspection that made us comfortable with putting it inline in our network that simply cannot afford a minute being offline.”

A Different Type of Regulatory Driver: The FDA’s Impact on Network Security

Air Liquide helps its customers increase productivity, manage their industrial gas supplies and improve the yield of their process or production sites. Many of its gas products must be pharmaceutical-grade as they are regulated by the Food and Drug Administration (FDA). The challenges of meeting FDA requirements highlighted Air Liquide’s need for its industrial network and SCADA systems to be adequately protected, as a computer compromised by viruses, worms or other malware could negatively affect the production system, and ultimately lead to a violation of FDA regulations. Although FDA regulations are not commonly cited in IT security projects, they became a crucial consideration in Air Liquide’s security ecosystem nonetheless.

To that end, Air Liquide embarked on a nationwide initiative to deploy Top Layer IPS 5500 units across more than 100 sites in the U.S. Protecting the industrial network that is completely separate from the IT network proved to be a significant undertaking, but one well-worth the effort. “The potential losses associated with stalled production and remediation made the business case for starting this IPS journey. Combined with top-notch technology, the entire Top Layer Networks team has been a dream to work with – hands-on, thoughtful and responsive to our unique business needs for this endeavor,” said Harper.

About Top Layer

Top Layer is a leading provider of Network Intrusion Prevention Systems (IPS) that reduce organizations’ risks and losses by protecting critical online assets against cyber threats. Its family of high performance IPS provides the most advanced protection against zero-day attacks at maximum throughput rates. Top Layer is headquartered in Massachusetts, USA, with Global Sales and Support worldwide.



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