

Case study



How Husky Terminal and Stevedoring
deployed 4.9G/LTE connectivity to
optimize marine freight operations
at the Port of Tacoma

The Nokia logo, consisting of the word 'NOKIA' in a white, bold, sans-serif font, positioned in the bottom right corner of the image.A photograph of a port terminal with stacks of colorful shipping containers (red, blue, yellow) in the foreground. In the background, a large, snow-capped mountain (Mount Rainier) is visible under a cloudy sky. A forklift and a truck are also visible in the port area.

Husky Terminal's container yard in Tacoma, Washington, handles thousands of shipping containers every day. Dependable wireless connectivity is essential to keeping track of them all — but the company wasn't getting that from its traditional Wi-Fi network. Even with 39 antennas placed throughout the container yard, employees would often lose connectivity for seconds or even minutes at a time, crashing applications and forcing them to redo work. The lost productivity was leading to lost revenue.

When the company needed to move to a new cloud-based terminal operating system, it realized it could do so only if it first upgraded its connectivity. So Husky Terminal turned to Nokia to design and deploy a highly reliable, cost-effective private 4.9G/LTE network that would bring better performance and productivity across the entire yard.

Business benefits



A highly reliable private wireless network with zero packet loss since implementation



100% coverage across the container yard — even in areas with metal shipping containers stacked 18 meters high — to improve productivity



Operational results exceeded expectations for network retainability, throughput and signal quality



Freeing valuable IT resources from time-consuming troubleshooting allows Husky Terminal to focus on more strategic priorities





The vision

Underperformed Wi-Fi connectivity was affecting container yard productivity — and blocking the path to a new terminal operating system.

Operating out of the Port of Tacoma, Washington, **Husky Terminal and Stevedoring, LLC**, provides container yard, vessel stevedore and near-dock rail services for multiple global supply chain clients. Its container yard covers an area of more than 115 acres — and depends on wireless connectivity to keep everything running smoothly.

Dropped connections lead to lost time and lost revenue

Throughout the yard, workers use vehicle-mounted computers to track and manage workloads, recording the movement of containers as they're loaded and unloaded from ships and semi-trailer trucks. But the company's traditional Wi-Fi network was struggling to keep up.

As a worker drives across the container yard, they should be able to seamlessly handoff from one Wi-Fi access point to another, maintaining their vehicle's wireless connection. But if they drove over five miles per hour, this handoff couldn't be completed fast enough, causing them to lose connectivity for up to 20 seconds at

a time. Anything more than five seconds of packet loss would cause the application they were using to shut down, forcing them to restart and redo their work.

At the same time, Wi-Fi access points would sporadically lose connectivity roughly once every three days, resulting in up to 20 minutes of downtime in certain parts of the container yard. Over the course of a year, those seconds and minutes add up to hours of lost productivity, slowing down container movement — with a serious impact on Husky Terminal's revenue.



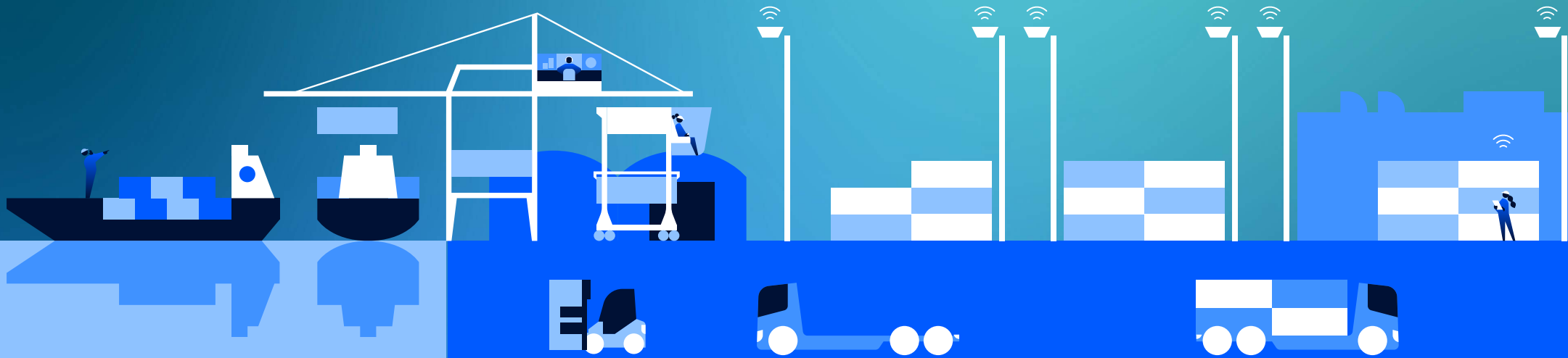
A new terminal operating system made upgrading a must

Although frustrated with the Wi-Fi's performance, it wasn't until Husky Terminal started the process of replacing its terminal operating system (TOS), which was approaching end-of-life, that it realized it needed a connectivity upgrade.

The company would be moving from on-premises servers to a cloud-based TOS — and testing revealed that the Wi-Fi network would not be capable of supporting that new system. To make the transition as smooth as possible, Husky Terminal turned to Nokia to design and deploy a private 4.9G/LT network for its container yard.

How Nokia helped

The solution: a cost-effective, private network that covers the entire container yard.



First, Nokia worked closely with Husky Terminal to understand its connectivity requirements. Because the company's applications transmit relatively small volumes of data — and because it has not yet adopted advanced use cases, such as remote drone inspections, that require ultra-low-latency connections — Nokia determined that 5G's main advantages weren't required just yet. Instead, a **private 4.9G/LTE network** could cost-effectively deliver the bandwidth and capacity Husky Terminal needed today, while also being futureproofed to handle more demanding operation

enhancements and data analytics down the road.

Nokia installed just six antennas in four locations, providing **100% coverage across the entire container yard** despite all the metal and concrete inherent to that kind of environment. Compared to the 39 access points needed by the previous Wi-Fi network, this approach greatly reduced both deployment and maintenance complexity.

Recognizing the approaching end-of-life date for the TOS, the network went from **design to implementation in**

just a few months. Nokia was awarded the contract in December 2022 and began installation in February 2023, with everything in place ahead of the April 2023 launch of the new cloud-based system.

A Nokia representative was available every step of the way to answer questions from and provide recommendations to Husky Terminal's IT team. That included supporting Husky with **heat mapping and radio performance testing software and hardware** to validate that the network was operating optimally.

Finally, geo-redundant edge servers were installed on-site. These connect to the **Nokia Digital Automation Cloud (DAC)**, which continuously receives the latest wireless signaling information from the U.S. Federal Communications Commission (FCC) to ensure the CBRS-based private network is in compliance with all relevant regulations. The DAC enables Nokia to remotely support the network and continuously provide software updates, and simplifies and streamlines the provisioning of new LTE-enabled equipment.



Case study: Husky Terminal and Stevedoring

The results

A more reliable network lays the foundation for advanced port terminal use cases.

The reliable, pervasive wireless coverage provided by the Nokia private 4.9G/LTE network has significantly improved productivity throughout Husky Terminal's container yard:

- In the first two months since implementation, the network has experienced **zero packet loss**. The Husky Terminal IT team even challenged staff to try to find a spot in the yard where they could lose or “break” connectivity — but it couldn't be done. The company is confident that connectivity is no longer a contributing factor to any loss in productivity.
- Testing confirmed that **network performance and quality are exceptional**. Network accessibility and retainability are at 100%, with both intra-frequency and inter-frequency handovers having perfect success rates. Signal strength is high, even in the presence of metal shipping containers stacked 18 meters high. Throughput, signal-to-noise ratio, referenced signal receive quality (RSRQ) and other criteria are all excellent.
- The private wireless network is more energy efficient than the previous Wi-Fi network, helping Husky Terminal **reduce its overall energy consumption** with 91 percent less hardware footprint.
- Improved reliability means **fewer trouble tickets** submitted to Husky Terminal's IT team, which used to spend one-quarter of each day troubleshooting connectivity issues. In the two months before the private wireless network went live, the team received 54 trouble tickets related to wireless connectivity issues with the container yard vehicles. In the two months after implementation, they received just four tickets for true connectivity issues — all caused by factors other than the local private wireless network. As a result, the IT team can focus on more strategic, big-picture items that will help the company better serve its clients.



What's next?

Husky Terminal has changed its IT strategy to be centered around 4.9G/LTE connectivity, with the company now working to design use cases and deploy applications. These will take full advantage of the capabilities of Nokia Mission Critical Industrial Edge (MXIE), MX Boost to integrate with existing Wi-Fi for increased capacity and lower latency and Nokia Digital Automation Cloud (DAC) private wireless network.

As Husky Terminal begins a massive container yard reconfiguration project, it is proactively asking vendors to centralize the solutions around 4.9G/LTE and contemplating moving to 5G in the future if new applications demand it.

“ Nokia provided the best throughput and the best connectivity. Now our workers come in, turn on their computers and stay connected all day, every day. There really was no other choice for us.”

Philip Styf
IT Director, Husky Terminal



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About Nokia

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As a B2B technology innovation leader, we are pioneering the future where networks meet cloud to realize the full potential of digital in every industry. Through networks that sense, think and act, we work with our customers and partners to create the digital services and applications of the future.

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