



# The World's Busiest Shipping Port Just Got Smarter

**A story of digital transformation:** How intelligent port operations powered by Cisco HyperFlex have dramatically boosted port efficiency

Shanghai International Port Group · Industry: Global shipping · Size: 17,213 employees · Location: Shanghai, China

## Results

With Cisco HyperFlex™, Port of Shanghai has been able to:

- Increase compute and storage infrastructure performance by 200 percent to power new port automation software with extra capacity for increased intelligence (AI).
- Deliver a rapidly scalable hyperconverged platform able to handle automation software enhancements to meet forecasted port capacity growth.
- Enable Microsoft SQL Server performance levels required to improve automation of port intelligence data.
- Increase port cargo handling efficiency by 30 percent, save 10 hours unloading cargo from the world's biggest container ship.
- Reduce port carbon emission up to 10 percent a year.
- Boost the port's standing as the busiest and most advanced automated container port in the world.

## Solutions

- Mission-critical intelligent port automation software powered by Cisco HyperFlex hyperconverged infrastructure, transforming how shipping ports operate.

## Imagine the journey of a single shipping container on a ship

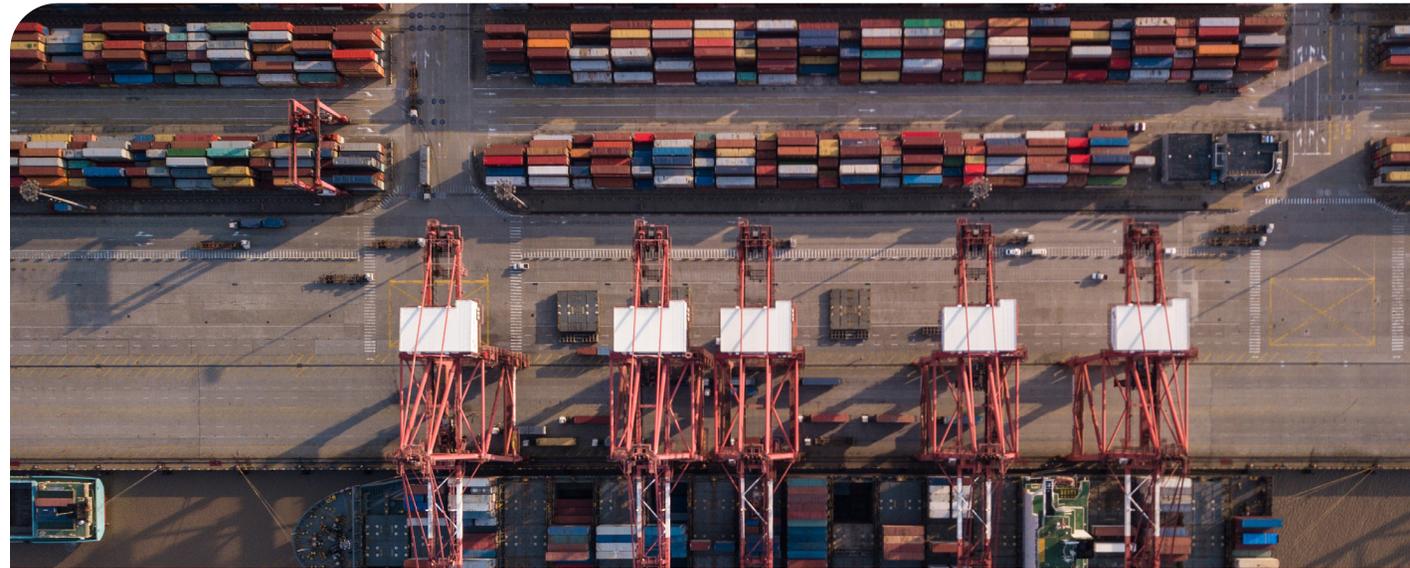
The journey begins when it's loaded with cargo and transported to the port. It sits in a container yard in the port, awaiting the arrival of its designated ship. The container is then brought to the side of the ship and loaded with the help of a gantry crane, is purposely placed based on size, weight, and its destination port for off-loading. It travels across the ocean to a new port where the container will be unloaded and transported to its final destination.

Sounds like a simple journey, right? It's not.

The ship must be docked according to a specific maritime schedule. Then, just as the container was strategically placed onto the ship, it is taken off and navigated to a different part of the port. This all has to be done in as little time as possible.

And this is just one container. A port sees hundreds and thousands of containers every day and over 40 million per year for this very time-consuming and labor-intensive process.

But what if this process could be more efficient? What if technology could help?



“We chose Cisco HyperFlex because of its ease of deployment and management capabilities. In addition, running Microsoft SQL server on HyperFlex has been beneficial for the automation of data. We were concerned about the continuous growth of the port and the ever-increasing volume, and needed a data center infrastructure with rapid scalability and superb performance. Cisco HyperFlex meets our requirements.”

**Zhang Chuanjie**, IT Manager, Shanghai International Port Group



## The Port of Shanghai opens its doors

In 1842, the Port of Shanghai opened its first three terminals, spanning a 13-kilometer shoreline and totaling a 3.76 million square meter container yard. Operating as China's largest shipping port, they could access imports and exports from every part of the world.

Now, more than 150 years later, the Port of Shanghai is continuing to grow, setting world records along the way. In 2010, it became the world's busiest port, handling 29 million containers. Then, in 2016, it set a historic record by handling over 37 million containers, and broke the record again in 2017, handling 40 million containers. The port is a trailblazer in the shipping industry, yet always mindful of its constantly evolving nature.

## Thinking smarter

With current changes in the global supply chain, the size of global imports and exports is increasing, as is the size of oceangoing ships themselves. More imports and exports coming in and out of the port requires more labor and accurate coordination of all aspects of the port. So, the Port of Shanghai had a choice.

"As China's economy continues to grow, we need to be able to handle even more container volume. Adding more people and equipment doesn't improve handling volume. You end up with increased traffic which actually lowers the efficiency of loading and unloading," says Huang Heng, general manager, Shanghai Harbor e-Logistics Software.

The Port of Shanghai set out to digitally transform the port. Its team developed a four-phase transformation plan with a goal to launch a fully automated and intelligent port for their newest Yangshan Harbour zone, running 24 hours a day, seven days a week. The vision was to have a port intelligence system that could control all aspects of container handling, from ship traffic coordination and automated cranes, to autonomous container vehicles. Human interaction would be limited to the control tower, monitoring video feeds of container traffic and ensuring the port intelligence software was operating correctly. And they needed a data center infrastructure to power their mission-critical software.

## Cisco selected as the infrastructure for digital transformation

Ten bridge cranes. Forty rail-mounted gantry cranes. Fifty unmanned, automated guided vehicles. All to be run by their mission-critical port intelligence software. The intelligence software would simultaneously control the cranes and vehicles, while also collecting and analyzing data to make millions of decisions per second. Port of Shanghai needed a compute and storage infrastructure they could trust.

A few key components were necessary—the infrastructure needed to have expansive compute and data storage capabilities. Additionally, they had plans to grow the intelligence software, so they required a system that was easily scalable with performance efficiency and highly available around the clock.

After evaluation of all major hyperconverged vendors, they chose Cisco HyperFlex. “We chose Cisco HyperFlex because of its ease of deployment and management capabilities. In addition, we were concerned about the continuous growth of the port and the ever-increasing volume, and needed a data center infrastructure with rapid scalability and superb performance. Cisco HyperFlex meets our requirements,” says Zhang Chuanjie, IT manager, Shanghai International Port Group. Cisco HyperFlex offers a system that fully integrates compute, storage, and networking. With its ease of deployment, management capabilities, and scalable nature, it met all requirements for Port of Shanghai. Additionally, HyperFlex offers always-on deduplication and compression, allowing the port to efficiently handle all the intelligence data.

## The automated port comes to life

In December 2017, the vision became a reality. With the port intelligence software in place, fully designed and developed domestically by the Shanghai Harbor e-Logistics Software group, the Yangshan Harbour Zone opened its doors. The port was fully automated and fully intelligent, with the capability to handle four million containers at any given time. Cisco HyperFlex currently powers more than 500 virtual machines and SQL Server databases for the port intelligence software system.

Since its opening, the port has experienced significant benefits. The port increased compute and storage infrastructure performance by 200 percent to power new port automation software, with extra capacity for increased intelligence (AI). Handling efficiency has subsequently increased by 30 percent, saving 10 hours in the cargo unloading for the world’s biggest container ship. They have seen a 10 percent decrease in carbon emission, and have boosted the port’s standing as the busiest and most advanced automated container port in the world.

## The future for the Port of Shanghai

“For the future, we are confident we will keep improving the intelligence of the software and further increase the operational efficiency of the port,” says Heng.

The Port of Shanghai will continue to innovate to improve the port and the shipping industry as a whole. They have plans to add more cranes and automated guided vehicles to increase handling capacity from 4 million to 6.3 million containers. They also have their eyes set on becoming a world shipping center. Stay tuned to see what the Port of Shanghai will do next.

If Cisco HyperFlex helps the world’s busiest port get even busier, how can it help your business grow?

Explore more Cisco Data Center Compute customer success stories at [cs.co/dccstories](https://cs.co/dccstories).

## For more information

- [Cisco HyperFlex](#)
- [Cisco Unified Computing System™ \(Cisco UCS®\)](#)

## Products and services

Cisco Hyperconverged Infrastructure

- Cisco HyperFlex HX240 Nodes
- Cisco UCS C240 and C220 Compute Nodes