



The World's Busiest Shipping Port Just Got Smarter

A story of digital transformation: How intelligent port operations, powered by Cisco's Hyperconverged Infrastructure, have dramatically boosted port efficiency

“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

Port of Shanghai

- Industry: Global Shipping
- Size: 17,213 Employees
- Location: Shanghai, China
- Website: <http://www.portshanghai.com.cn/en/>

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/year for this very time-consuming and labor intensive process.

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

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, over 150 years later, the Port of Shanghai is continuing to grow, setting world records along the way. In 2010, they became the world's busiest port, handling 29 million containers. Then, in 2016, they 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, but they are 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 ocean going 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 their port. They 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 Chosen as the Infrastructure for Digital Transformation

10 bridge cranes. 40 rail-mounted gantry cranes. 50 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 other 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 IT Manager, Zhang Chuanjie.

Cisco HyperFlex offers a system, fully integrated between 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 an 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 and with the capability of handling four million containers at a given time. Cisco HyperFlex is currently powering over 500 virtual machines and SQL Server databases for their port intelligence software system.

Since its opening, the port has experienced significant benefits. The ports handling efficiency has increased by 30%, saving 10 hours in the cargo unloading for the world’s biggest container ship. They have seen a 10% 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,” comments Huang Heng, General Manager, Shanghai Harbor e-Logistics Software. The Port of Shanghai will continue to innovate to improve their 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?

Solutions and Technologies

Cisco Hyperconverged Infrastructure

- [Cisco HyperFlex HX240 Nodes](#)
- [Cisco UCS C240 and C220 Compute Nodes](#)

For More Information

To learn more about the Cisco HyperFlex Hyperconverged Infrastructure, visit:

<http://cisco.com/go/hyperflex>

To see more HyperFlex Customer Stories, visit:

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