



# Delivering actionable insight for better clinical outcomes

Philips China improves critical-patient treatment with Internet of Things-enabled healthcare informatics using embedded PCs

**PHILIPS** Healthcare | China

## Business needs

Philips China needed an embedded PC to join unconnected patient monitoring devices to its IoT patient informatics system for intensive care units (ICUs). The PCs needed to be highly available, secure and easily connectable.

## Solutions at a glance

- [Internet of Things](#)
- [OEM Solutions](#)
- [Client Solutions](#)  
- [Dell Embedded Box PC 3000](#)

## Business results

- Supports actionable insight for better patient care
- Enables faster discharge from ICU through greater proactivity
- Zero downtime promotes highly available patient informatics
- Ease of management and long life cycles lower costs
- Good support across China ensures peace of mind
- Hardware-level security and ruggedness guarantee continued performance

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**Pan Chen Chieh**  
Solutions Architect, Philips China

Much of the Internet of Things (IoT) today is connecting legacy devices. It's easy to see why when Intel says 85 percent of today's legacy devices across industry are still isolated and unconnected to the web.

A global leader in healthcare systems, Philips is connecting legacy systems in hospitals across the world to deliver IoT-enabled healthcare informatics. The informatics solutions give clinicians and caregivers secure access to patient data on fixed and mobile devices. They also give clinicians the insight to deliver more proactive healthcare services to patients without risk of cross-contamination.

## An IoT-driven healthcare goal

Philips China specifically wanted to develop a healthcare informatics system to sit inside intensive care units (ICUs). The company planned to build a PC-based solution to aggregate data from unconnected patient monitoring devices within the ICUs. The solution would make the data available in real time to clinicians at the ICU information center close by, and on the mobile devices of those outside the center's immediate vicinity.

Pan Chen Chieh, solutions architect at Philips China says, "Customers in China wanted an all-in-one solution for ICU units that could reliably connect their monitoring devices and make the data more accessible. Our goal was to improve the quality of healthcare in the ICU with the use of data to provide greater visibility for our staff."

## Searching for embedded PC technology

Philips China looked to market for an embedded PC to support the healthcare informatics system. The PC, which would connect the monitoring systems, needed to be highly secure and manageable. It also had to be fan-less to avoid contamination caused by dust, noise or bacteria. Adds Chen Chieh, "The PC had to be small to avoid taking up valuable space in the ICUs. Besides the technical specifications, it was crucial that the PCs be well supported right across China since these are critical systems and must stay highly available."

## An original equipment manufacturer (OEM) solution

Among the vendors that Philips China approached was Dell OEM and IoT Solutions. Says Chen Chieh, "Dell has a good reputation in China, and we knew its support network was such that we could ship our solution to hospitals countrywide and still gain the same high-quality level of support. What's more the flexibility of the Dell OEM and IoT Solutions supply chain meant lead times didn't change regardless of the size of our orders."

Chen Chieh and his colleagues assessed the fan-less Dell Embedded Box PC3000 device. Featuring powerful Intel® Atom™ dual- or quad-core processors, these industrial PCs are designed for 24/7 operation over a long period of time. Importantly for Chen Chieh, the PC3000 was Trusted Platform Module (TPM)-compatible for Windows 7, the operating system for the informatics solution. This ensured the PCs were highly secure with management access controlled by hardware rather than software authentication. "We did a lot of testing of the Dell PC3000 for our informatics system," says Chen Chieh. "It proved to be highly reliable and easy to manage with the wireless broadband easy to connect to the local network."

*"We are seeing a lot of interest from hospitals in China for our informatics system supported by Dell Embedded Box PC3000 technology. We expect the number of sales to increase rapidly in the next 18 months."*

**Pan Chen Chieh**  
Solutions Architect, Philips China





## Driving IoT-driven healthcare across China

Today Philips China has deployed around 30 of its healthcare informatics systems to ICUs in hospitals in China's main cities. Says Chen Chieh, "We are seeing a lot of interest from hospitals in China for our informatics system supported by Dell Embedded Box PC3000 technology. We expect the number of sales to increase rapidly in the next 18 months."

## Aggregating data for better patient outcomes

Hospitals in China with the Philips China informatics solution system are providing clinicians with actionable insight across multiple devices between ICU care. Clinicians are, in turn, taking the real time aggregated data from the patient monitoring systems to deliver more proactive care. Therefore, the ICUs can deliver better healthcare outcomes more rapidly and discharge patients faster. Chen Chieh says, "Our solution demonstrates the power of IoT to improving healthcare. By connecting several unconnected monitoring systems using our Dell Embedded Box PC3000 technology, we can aggregate and share patient data in real time across the network to clinicians who can make more effective healthcare decisions."

## Total reliability in a healthcare environment

Feedback from customers is that the informatics systems are performing well, enabling the hospital to get the most out of IoT-driven healthcare. "We haven't seen any downtime from our informatics systems powered by Dell Embedded Box PC3000s. Our customers are highly satisfied with the results of our investments," says Chen Chieh.

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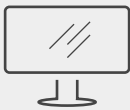


## Avoiding IT management overhead

The IT teams at the hospitals are seeing how easy the embedded PCs are to manage. Comments Chen Chieh, “We saw during testing how straightforward it is to integrate Dell Embedded Box PC3000s with Microsoft System Center Configuration Manager to simplify control. The combination of the ease of management and the PCs’ long life cycle makes our informatics system a highly cost effective solution.”

## Rapid OEM support country-wide speeds adoption

Hospitals can rest assured that any technical issues with the embedded PCs will be resolved in a timely manner. The comprehensiveness of ProSupport for OEM solutions across China was a key reason for choosing the embedded PC technology. What’s more, the embedded PCs come with a five-year warranty and should continue to perform well for another five years after the warranty has expired. “In our experience, Dell offers the most responsive level of support across China,” says Chen Chieh. “Hospitals across China can confidently adopt IoT-driven healthcare secure in the knowledge they have the support of a global IoT leader such as Dell behind them all the way.”



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