



# The Internet of Things optimizes factory floor operations

Intel saves several million dollars at Malaysian manufacturing site through improved decision making by using Internet of Things (IoT) technologies and running big data software on a shared infrastructure



As a result of the automation system, Intel recouped several million dollars in Penang through better decision making.

## Customer profile



<b>Company</b>	Intel Corporation
<b>Industry</b>	Technology
<b>Country</b>	Malaysia
<b>Employees</b>	9,000+
<b>Website</b>	<a href="http://www.intel.com">www.intel.com</a>

## Business need

Intel looked to create a proven, next-generation factory automation system that other manufacturers could also use to improve efficiency and reduce cost by using IoT technologies, such as big data analytics.

## Solution

Intel chose Dell to support a key part of the project, selecting Dell PowerEdge VRTX shared infrastructure platform technology with Intel® Xeon® processors to underpin its solution.

## Benefits

- Realized millions of dollars in savings at a site in Penang, Malaysia
- Achieved optimized cost-avoidance processes
- Boosted yields with real-time predictive maintenance
- Simplified deployment with end-to-end IoT big data analytics solution
- Offered a highly scalable blueprint for manufacturers worldwide

## Solutions at a glance

- **Big Data**
- **Converged Infrastructure**
- **Cloud Solutions**
- **Enterprise Support**

Manufacturing is becoming increasingly automated, generating huge volumes of data. In a highly competitive business world, this data is incredibly valuable. It provides companies with the insight to avoid costly breakdowns in production processes and maximize the quality of their products. But up to now, organizations have lacked the tools to extract the full value of the information available, thus limiting their ability to realize higher performance.

Intel Corporation wanted to develop a next-generation factory automation system to give manufacturers the ability to increase factory floor performance. The solution would include Internet of Things (IoT) capabilities, meaning it would collate data from key devices on the factory floor since they would all be networked. What's more, the automation system would combine a cloud platform and data analytics to give near-real-time information for improved decision making.

#### **Building an IoT-centered partnership**

Intel chose to partner with Dell and selected the Dell PowerEdge VRTX shared infrastructure platform to implement the private cloud for data analytics. The platform features two Dell PowerEdge M820 blade server nodes with Intel® Xeon® processor E5-4600 product family. Both blades support Red Hat Enterprise Linux and offer 900GB of storage available via multiple 10k RPM SAS drives.

Of the solution's two compute nodes, one runs Hadoop based on Cloudera Enterprise Data Hub Edition for a unified big data platform, and the other runs Revolution R Enterprise analytics software and Fusionex GIANT, a big data business intelligence solution.

Intel Inside®. Powerful Solution Outside.

Intel wanted a solution to support big data analytics and required high performance and the ability to scale by hundreds of gigabytes. The Division found that Dell PowerEdge VRTX platform featuring Intel® Xeon® processors met all the requirements from within a single chassis. The platform has a small footprint, allowing it to sit in an office environment and run off a standard power supply.

#### **Boosting yields and avoiding costs with real-time predictive maintenance**

Intel piloted the solution at its Penang site in Malaysia, which is one of its assembly facilities that focuses on chip design. The trial showed that the factory automation solution helped production lines run for longer periods of time since maintenance times were reduced.

The exercise also showed that the solution was capable of predicting up to 90 percent of failures faster than traditional monitoring technology. Intel came away from the pilot realizing that its industrial customers could also optimize cost-avoidance processes and decision making by using this IoT solution built on a highly reliable Dell platform.

#### **Millions of dollars in measured business benefit at Penang location**

As a result of the automation system, Intel recouped several million dollars in Penang through better decision making. Key performance metrics included:

- Yield losses due to test and assembly manufacturing inefficiencies down 25 to 50 percent
- Spare parts costs cut by 20 percent
- Maintenance time reduced by 50 percent
- Classification of defects completed 10 times faster

## **Products & Services**

### **Services**

Dell Support Services  
– Dell ProSupport for Enterprise

### **Hardware**

Dell PowerEdge VRTX shared infrastructure platform with Intel® Xeon® processors

Dell PowerEdge M820 blades with Intel® Xeon® processor E5-4600

### **Partner**

Intel® IoT Gateway

Red Hat Enterprise Linux

Cloudera Enterprise Data Hub Edition

#### **Creating a highly scalable blueprint for manufacturers worldwide**

The factory automation solution at Intel in Penang, based on the Dell PowerEdge VRTX platform featuring Intel® Xeon® processors, demonstrated the value and benefits that data mining and analytics can bring to manufacturing. Today, manufacturers across the world have the opportunity to embrace big data on the factory floor using the automation solution from Intel's pilot program. Like Intel, they can reap the benefits of IoT for factory operations.

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