

Improving business competitiveness with big data technology

United Daily News Group harnesses a big data technology and analysis platform to increase response time and develop more business and revenue opportunities



“Deploying servers based on Intel® Xeon® processors allowed our IT team to benefit from, and embrace, the latest and fastest big data technology. UDN has improved response time for meeting customer requirements and created more business opportunities and revenues.”

– Thomas Huang
IT Director
Information and Technology R&D Center
e-commerce Department
United Daily News Group

Besides providing the latest news and information, United Daily News Group (UDN) is also involved in a myriad of other online businesses such as e-commerce, ticketing, and cultural and creative platforms, as well as developing, producing, selling, and recommending products, services, and content that cater to its readers. To carry out in-depth analysis of system logs, activities, and customer behaviors through its websites, and to better cater to consumers and market demands, UDN decided to utilize big data technology via HP ProLiant* servers powered by the Intel® Xeon® processor E5 and E7 families. This solution allowed the company to take advantage of a faster, decentralized architecture that not only improved system stability, but also increased time to market response demands and the company's overall competitiveness.

Challenges

- **Build a more stable data warehouse.** Enhance stability of current data warehouse to ensure efficiency in carrying out real-time analysis and recommendations for customers based on the system logs from UDN websites, including UDN Shopping*, UDN News*, UDN Ticketing*, and uDesign*.
- **Eliminate performance bottlenecks.** Address performance bottlenecks during Apache Hadoop* software data importation and SPSS* modeling to effectively carry out more in-depth, cross-industry, and cross-device customer behavior analysis.

Solution

- **Deploy big data analytics solution on Intel® architecture.** Build a massive parallel processing/computing (MPP) big data analytics framework using HP ProLiant servers powered by the Intel Xeon processor E5 and E7 families to resolve performance bottlenecks caused by huge data volume from the traditional data warehouse, as well as boost system stability and I/O performance.

Impact

- **Build a stable data lake analytic framework.** With a more stable data warehouse, UDN was able to harness the business benefits of big data technology by enabling in-depth data analysis, modeling, and forecasting.
- **Effectively address rapidly growing data volume.** Since the newly deployed servers based on Intel Xeon processors have shown powerful performance and scalability, UDN has been able to show excellent results in stability and performance in addressing rapidly growing data volume.
- **Created more business opportunities.** The new big data system enables UDN to capture more business opportunities, such as implementing a cross-device recommendation system to enable users who browse products through handheld devices to seamlessly continue browsing as they switch to a PC at home.

Performance and stability issues hinder full potential of big data analytics framework

UDN has built a data warehouse that utilizes traditional business intelligence (BI) tools such as Oracle Database*, SPSS* data mining, and ETL* data conversion. This data warehouse is integrated with the Hadoop recommendation engine that utilizes big data technology to carry out data analysis and make recommendations based on the system logs of its websites, including UDN Shopping, UDN News, UDN Ticketing, and uDesign.

“By integrating the Hadoop recommendation engine into our data warehouse, we are able to record and analyze customer browsing and shopping behavior. Then, based on different products, services, and content, we can make exclusive and accurate recommendations to individual users. Based on this big data technology framework, we can also include other applications in the future, such as integrating customers' mail opening and click records in the EDM* transmission system, customer service records, and app browsing behavior into the data analysis process.



UDN maximizes the benefits of big data technology for efficient data analysis and recommendations

This gives us a more comprehensive and complete operational perspective,” explained Thomas Huang, IT director of the Information and Technology R&D Center, e-commerce Department of UDN.

However, the implementation proved to be lacking in stability and posed performance issues. “When we try to import Hadoop’s data into the Oracle database to carry out multi-dimensional customer behavior analysis, the huge data volume hinders the system from operating efficiently. Performance bottlenecks were also evident during SPSS modeling. As a result, we were not able to carry out more in-depth cross-industry and cross-device customer behavior analysis,” related Huang.

To address the performance and stability issues caused by the huge data volume in the traditional data warehouse, UDN decided to steer towards a MPP big data analytics framework using HP ProLiant servers powered by the Intel Xeon processor E5 and E7 product families to take advantage of enhanced stability and powerful I/O performance.

Eliminating performance bottlenecks with a stable data system

To resolve performance bottlenecks, UDN spent three months assessing and testing big data analytics engine solutions to support its newly adopted MPP framework. In the end, UDN chose the EDW solution with open-source R language, which is equipped with both column-oriented and row-oriented storage capacity and supports powerful statistical analysis, data mining, and parallel computing power. The solution successfully resolved the performance bottleneck issues UDN encountered with its traditional data warehouse.

Since system stability is a paramount requirement, UDN chose to deploy servers based on the Intel Xeon processor E5 and E7 product families. “We prioritize system stability above all else. We will not risk using products that we have no confidence in. This is why we chose servers based on Intel Xeon processors, since Intel has a long-standing reputation as a market leader in performance and stability. All these aspects solidified our decision to use the servers,” shared Huang.

Increasing business competitiveness with a scalable database system

Although data from the engine was not able to be ported into the original database for processing and analysis, the Hadoop recommendation engine was finally able to increase the conversion rate of UDN Shopping by 50 percent over the last two years after deployment of servers based on Intel Xeon processors. Customer stay time has also increased by 50 percent, which played a big role in increasing the transaction rate. Huang added that since the Hadoop recommendation platform has successfully generated more revenue, he was able to persuade UDN management to effectively harness big data technology to build a data lake analytic framework for in-depth analysis, modeling, and forecasting, utilizing Intel Xeon processor-based servers.

Since the data lake analytic framework now offers stability, performance, and scalability, UDN’s IT team can now unleash the benefits of the big data system and efficiently address its rapidly growing data volume.

- Big data analytics has helped increase the conversion rate of UDN Shopping by 50 percent over the last two years.
- System stability is vital in data mining and analysis. Intel® technologies help deliver the performance and stability to keep up with huge data volume while providing uninterrupted operations.
- The Hadoop recommendation engine platform, using servers based on Intel Xeon processors, makes the data warehouse infrastructure more scalable to cater to future business demands.

With a solid foundation in stability, performance, and scalability, UDN can swiftly complete the full implementation of the EDW analytics engine, use the latest and fastest big data technology, and develop higher-value applications. UDN is now looking at implementing a cross-device recommendation system to allow users who browse products on the move through their handheld devices to continue browsing and complete their transactions through their PC when they return home.

“Big data implementation and analysis are critical for our business needs, yielding the highest return on investment. Analyzing big data is also key for the survival of enterprises in the future. With these preliminary recommendations, and the unparalleled stability of the computing platform, the Intel Xeon processor-based system allows our IT team to strive further using the power of big data technology,” concluded Huang.

Find the solution that's right for your organization. Contact your Intel representative, visit Intel's **Business Success Stories for IT Managers**, and check out **IT Center**, Intel's resource for the IT industry.



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