Intuitive solutions that give users total peace of mind

Weltmeister and Dell Technologies have partnered up to build a “smart, sophisticated, enjoyable, intriguing and inclusive” big data platform.

Business needs

As a leader in the intelligent vehicle market and an emerging provider of new energy vehicle (NEV) products and mobility solutions, Weltmeister built a future-focused big data platform following a three-step strategy that envisions the company as “a champion of intelligent electric vehicles, a data-driven smart hardware company and a service provider in the new intelligent mobility ecosystem.” With this big data platform in place, Weltmeister is striving to make new breakthroughs in digital product and user operations and corporate operations management. Once a car is delivered to the user, Weltmeister collects and analyzes user and product data for the data-driven development of intelligent hardware, bringing its “new retail + intelligent mobility” ecosystem to life.

Business results

- More efficient smart car development, manufacturing and services.
- A highly flexible, efficient, inclusive and innovative technology application platform.
- A big data platform to create a new retail and intelligent mobility ecosystem.
- TCO reduced by 33% relative to conventional solutions, with no risk of data loss.

Customer profile

威马汽车 WELTMEISTER

Automotive ADAS | China

“Based on the VxRail HCI system, Weltmeister will not only pioneer V2G technical services, but also turn smart electric vehicles into highly flexible, mobile energy storage units whose functions extend far beyond simple means of transport.”

Technical Lead
of Weltmeister Big Data Platform Project

Solutions at a glance

- Dell PowerScale
- Dell PowerStore
- Dell VxRail
- Dell Technologies Data Center Networking
- Dell ProSupport Plus Platinum technical support services

The 21st century marks the dawn of the era of artificial intelligence. Today, everything is connected to intelligent networks, with data driving the transformation of numerous industries. The in-depth integration of the internet with vehicles has prompted consumers to demand safer cars, convenient travel services and rich entertainment options. User experience is now a decisive factor when purchasing a new car.

Through the in-depth mining and analysis of massive volumes of market data, businesses can predict consumer trends and demands. This allows market participants to become first movers while catering to customer needs and improving the customer experience. This is the essence of how big data is transforming the automotive industry. Weltmeister, a leading Chinese smart car manufacturer, and Dell Technologies built a big data platform to promote digital transformation in product management, user operations and corporate operations. The two partners have written a success story of digital transformation in the intelligent vehicle market.

A hyperconverged data center to comprehensively enhance smart car development, manufacturing and service efficiency

At Weltmeister, the R&D system, manufacturing processes, and sales and service channels are completely independent. This is powered by an advanced hyperconverged data center that uses Dell VxRail Hyperconverged Infrastructure (VxRail HCI) and the Dell PowerStore storage system to provide strong IT support for adaptive welding, visual guidance, 3D glue detection, and online and offline laser measurement systems. Featuring a highly sophisticated design, VxRail HCI is not only easy to install and deploy, but also substantially reduces the data center space required. In addition, it also helps IT professionals improve data security, platform manageability and operational efficiency.

The PowerStore storage system adopts an end-to-end NVMe architecture, which boosts performance by 600–700% and reduces latency by 60%. IT staff can lower IT budgets through data deduplication and compression for 4:1 data reduction, allowing them to

“With the assistance of PowerScale, ever-growing big data resources will make product development, manufacturing and services more efficient, provide valid data support for product development, ensure continuous supply with accurate production scheduling and planning, and drive consistent improvements in the efficiency of customized consumer-to-manufacturing (C2M) production.”

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dramatically increase the platform's effective capacity without affecting its performance. This overall solution provides highly efficient support for the smart electric vehicle business, ensuring 100% automation in the plant's main production line area. It is compatible with vehicle-to-grid (V2G) technology and will help Weltmeister become one of the first companies to roll out V2G technology after passing the V2G vehicle, charging station and road tests.

Dell VxRail P570 is powered by Intel® Xeon® Gold 6234 processors (8 cores, 16 threads, 3.3 GHz base frequency, 4.0 GHz with Intel® Turbo Boost and 24.75 MB cache) using a 14-nanometer manufacturing process. These processors feature 64-bit CPU architecture, Intel® Deep Learning Boost, Intel® Resource Director, Intel® Speed Shift and other state-of-the-art technologies. Dell Technologies will provide Weltmeister with platinum professional technical support services. It will also assign a dedicated customer service manager to help the IT department customize support plans and the technical decision-making process and use complex technologies to improve the performance and reliability of IT facilities based on predictive suggestions automatically generated on the platform. SupportAssist and Secure Remote Services will allow Weltmeister to automate support operations and help the IT department significantly optimize workload availability. In case of a fault, Dell Technologies will dispatch a service account manager who is familiar with Weltmeister's business operations and work environment to diagnose and solve the issue with optimal efficiency. Dell also pledges to offer proactive, prompt and predictive support if a system that supports business-critical applications or workloads is affected.

A highly flexible, efficient and innovative technology application platform

We are currently driving the transformation of green mobility through the constant iteration of new-energy products, adhering to the principle that "technology should put people first," said Weltmeister's project manager. Based on the effective hyperconverged architecture of the data center, a highly flexible, efficient, inclusive and cutting-edge innovative technology application platform will be established to promote the transformation of smart mobility hardware, accelerate the formation of an energy interconnection ecosystem through the application of new technologies such as V2G, and drive an energy revolution. It will also promote an "AI + hardware + software + service" model that enables vehicles to "sense" their surroundings and users' intentions.

Vehicles will be able to deliver scenario-based interactive services and personalized user experiences, and to collaborate with each other in extended application scenarios. They will also be capable of connecting and collaborating with other intelligent ecosystems to provide comprehensive smart services centered on mobility. Based on the VxRail HCI system, Weltmeister will not only pioneer V2G technical services, but also turn smart electric vehicles into highly flexible, mobile energy storage units whose functions extend far beyond simple means of transport. They will play a positive role in peak-load shifting, load balancing and charging station efficiency. In addition, the senior management of Weltmeister is very satisfied with the investment cost, as the VxRail HCI solution offers unified storage and serves as the core database server of the subsystem. The highly flexible and efficient solution substantially improves the efficiency of related operations.

A big data platform to create new retail and an intelligent mobility ecosystem

Weltmeister will set up a big data platform based on the Dell PowerScale unstructured data management solution, with data covering the entire user lifecycle. Once a car is delivered to the user, Weltmeister collects and analyzes user and product data for data-driven development of intelligent hardware. This extends the horizons of new retail and creates a comprehensive intelligent mobility ecosystem. With the assistance of PowerScale, ever-growing big data resources will make product development, manufacturing and services more efficient, provide valid data support for product development, ensure continuous supply with accurate production scheduling and planning, and drive consistent improvements in the efficiency of customized consumer-to-manufacturing (C2M) production.

Through user categorization by location and lifestyle, Weltmeister pursues systemic optimization when deploying charging station networks, in its new 4S dealership network and intelligent mobility partner resources, in the design of intelligent connected vehicles, and even in collaboration with mobility service partners. It has pioneered new service models such as intelligent mobility spaces, benefiting both the business and car users.

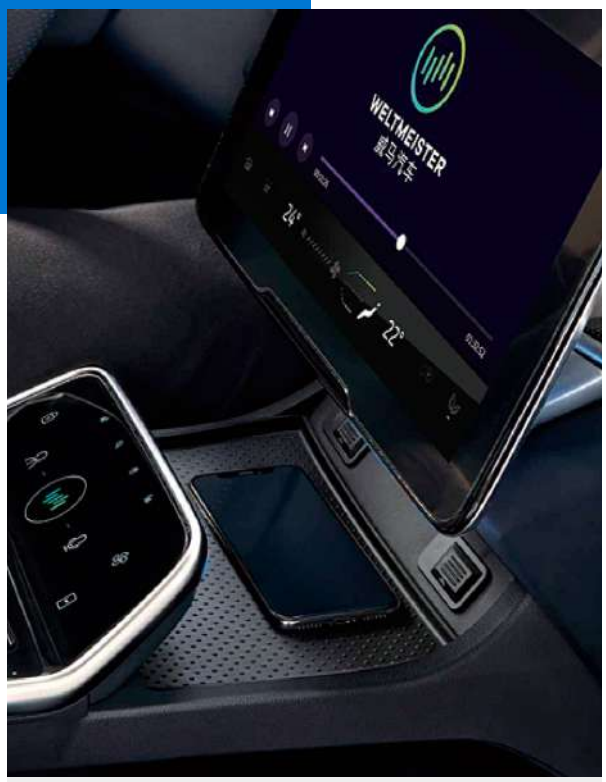
Data storage solution with unrivaled completeness and maturity

With PowerScale at its core, Dell has long retained its position in the Leader area of Gartner's Magic Quadrant. It offers three distinctive advantages.

First, storage capacity expansion is more cost-effective. For storage devices, the cost of capacity expansion per terabyte (TB) is typically higher than the price of newly purchased capacity. As a result, when storage capacity reaches a certain level, it would be less expensive to buy a new storage device with the same capacity rather than expand the capacity of existing storage. As dictated by the normal marketing strategy, the retail price is naturally higher than the wholesale price.

However, in defiance of this tradition, PowerScale will make capacity expansion less expensive than buying new devices, with the cost advantage set to increase in the future. This is because access to unstructured data such as videos, images and documents naturally fluctuates over the data lifecycle. New files are typically accessed more frequently, with their access frequency gradually decreasing with time. The PowerScale powerful auto-tiering technology can deploy storage nodes with different performance and capacity features within individual clusters to meet the performance and capacity requirements of files with varying access frequencies. Stored data is automatically tiered with no manual intervention required, which is automatically performed by the system backend. The process is simple, highly efficient and completely transparent to business systems.

Second, it is just as easy to manage 1 petabyte (PB) of data as it is to manage 10 TB. In general, the greater the data volume, the more complicated data management becomes. The size of traditional storage



"Not only does PowerScale support different types of nodes within the same cluster, but its future-proof design concept also means that new and old nodes can be contained in the same cluster."

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file systems is typically capped at a certain level, such as 100 TB. When the data volume grows from tens of terabytes to hundreds, the complexity of management increases exponentially. With more than a dozen storage systems and multiple file systems, both data and hot spots are unevenly distributed, and snapshots have to be manually deleted from time to time due to space constraints. These issues not only make data management more challenging, but also increase exposure to system operation risks.

PowerScale also defies this convention, as the capacity of its single file system can be scaled to 93 PB, with the data evenly distributed across all storage nodes. Expansion can be completed in just a few minutes, so managing 1 PB is nearly as simple as managing 10 TB.

Finally, PowerScale will make things easier in the future by totally eliminating the need for data migration. Storage products have a lifecycle of about five years, after which they gradually shift away from production toward testing or disaster recovery environments, before finally being scrapped. On the other hand, the data lifecycle may last decades, so customers need to migrate data from old storage devices to new ones every few years. Data migration has always been a time-consuming, labor-intensive and high-risk task. Even if the underlying replication technology of the storage provider is adopted, it usually entails setting a large number of file system replication relationships and substantial downtime, with an adverse effect on normal business operations. PowerScale puts an end to the conventional data migration approach, eliminating the need for data migration once and for all.

Eliminates risk of data loss and reduces TCO by 33% from conventional solutions

This description clearly shows that PowerScale is capable of significantly improving IT maintenance efficiency. The technical staff from Dell Technologies analyzed the Hadoop big data environment at Weltmeister and studied its impact on power consumption (server rack occupancy) and equipment procurement. When the data volume exceeds 1 PB, the adoption of PowerScale for architecture transformation by storage-computation separation will reduce rack occupancy and TCO by one-third, even without factoring in the simplification of operational maintenance.

The storage utilization rate of the original Hadoop architecture was 33%. Through storage-computing separation architecture, PowerScale can realize 80% storage utilization, reducing the routine operational maintenance workload of administrators. Weltmeister rarely upgraded its Hadoop storage system to avoid the risk of data inconsistency, but this approach was counterproductive in terms of new feature deployment and maintaining a stable environment. By contrast, the storage-computing separation architecture makes it possible to upgrade the computing platform and the storage platform separately. PowerScale Storage ensures data consistency so that the big data platform can be easily and promptly upgraded and iterated, without any risk of data loss.

Not only does PowerScale support different types of nodes within the same cluster, but its future-proof design concept also means that new and old nodes can be contained in the same cluster. In fact, a cluster containing three generations of PowerScale nodes already exists. Data is gradually migrated from old nodes to new ones via the backend cluster network, with no impact on business operations.