CASE STUDY

Intel® Core™ 2 processor with vPro™ technology

Security and Manageability

A vision of the future

Intel technology helps BMW to remotely upgrade 85,000 PCs to Windows 7*

BMW is a world-renowned company famed for luxury cars and motorcycles, a prestigious brand name, and being an organization that is constantly redefining the meaning of efficiency. BMW's fame and reputation are largely based on high-quality vehicles produced in the last two decades. However, its roots can be traced back to the beginning of the 20th century when two engineers formed a company that specialized in aircraft engines. Since those early days the BMW brand has developed to such a degree that today it is immediately recognizable all over the world. BMW has a reputation for industry-leading innovation and efficiency across all areas of operation. As an early adopter of new technologies the company decided to utilize the remote management functionality of Intel® Core™2 processor with vPro™ technology to undertake an upgrade of approximately 85,000 computers to the new Microsoft Windows 7* operating system.

"Intel® Core™2 processor with vPro™ technology offers all the remote functionality we need and is the essential fulcrum that supports the migration to the Windows 7* operating system."

Thomas Schmidt,
Project Lead,
Intel vPro technology integration

CHALLENGES

- **New operating system.** BMW wanted to upgrade its office and production computer fleet from the Windows XP* operating system to the new Windows 7* operating system.
- **Huge computer fleet.** The company has 85,000 computers that needed upgrading across a distributed architecture which included Europe, South Africa and the United States.
- **Time and cost.** A traditional roll-out based on IT support staff visiting each location would take a lot of time and be expensive.

SOLUTIONS

- **Existing technology.** BMW already had experience of using the remote management functionality of Intel® vPro™ technology.
- **Pilot launched.** The company initiated a pilot to establish whether Intel® Core™2 processor with vPro™ technology would be suitable for the remote installation of Windows 7.
- **Successful results.** The pilot revealed that Intel Core2 processor with vPro technology provided robust, reliable and efficient upgrades to Windows 7.

IMPACT

- **85,000 computers.** Having BMW's current and future PC fleet using Intel Core2 processor with vPro technology will drive the Windows 7 upgrade across all computers in office and production environments.
- **Great gains.** The company anticipates significant IT costs savings and greater employee productivity.
- **Leading position.** Intel Core2 processor with vPro technology is enabling BMW to continually progress a cost-effective IT strategy.

Huge computer fleet

BMW has 100,000 employees in countries across the world. The majority are in Germany, at its Munich-based headquarters and seven huge manufacturing plants in Munich, Dingolfing, Regensburg Leipzig, Berlin, and other locations. In the UK, BMW also has four manufacturing plants where the world famous MINI* and Rolls-Royce* brands are produced. In South Africa and the United States there are also significant manufacturing operations. On average the company produces between 1 and 1.5 million vehicles every year.

Within this huge organization are approximately 85,000 computers running Microsoft* operating systems used by a wide range of staff from administrative employees to sales people, travelling executives and production engineers. The production engineers for example, use PCs to manage operations within the plants. Some PCs also run data-intensive computer fluid dynamic software on the operating systems to test engine performance, wind flow over chassis and a whole multitude of operations that make up the working components of a vehicle.

Cost and time savings, greater IT support efficiency and enhanced employee productivity

"The Intel® remote management hardware-based technology has given us the confidence to embark on what is in reality a huge upgrade of 85,000 machines."

Wolfgang Weber,
Project Lead Windows 7 Migration

Since 2002 BMW has run the Microsoft Windows XP* operating system in its PC client environment. However, in the first quarter of 2009 the company began testing a beta version of Windows 7* to establish whether it offered any functional advantages over Windows XP.

Operating system boost

Several clear benefits were established for different types of users. For example, features such as DirectAccess, a networking tool, can be tailored for BMW users. This eliminates the need for virtual private networks by allowing users to securely connect to the corporate intranet in the background without user interaction.

Furthermore, improvement in random access memory (RAM) usage is advantageous for all users but is particularly suited for production environments. In short, faster start-up times and improved memory management will improve efficiencies across the enterprise. This is particularly important in the plants where fast responsive control is important and Windows 7 machines will enable faster data throughput on which data-intensive applications are running.

Other features include revamped task bars which BMW anticipates will improve employee productivity, making it easier and quicker to move between applications. Windows 7 BitLocker* is also deemed a valuable tool by providing full-disk encryption. This will be utilized to protect portable devices.

Remote Assistance,* a Windows technical support tool that allows an IT expert to connect to a user's PC directly also has a new feature called Easy Connect,* which simplifies the process of connecting to a user's PC.

Wolfgang Weber, project lead for the Windows 7 migration at BMW, said: "There are several features that potentially provide us with more efficient remote management and also potentially allow us to replace third-party products which we previously had to purchase."

Furthermore, much application development in the future will be geared towards the Windows 7 operating system. Clearly BMW's wider strategy depends on astute deployment of technology that dovetails with these future industry trends such as the development of new applications for Windows 7.

A migration challenge

Once the decision was made to migrate from Windows XP to Windows 7 the larger question for BMW was how to migrate 85,000 computers (approximately 50,000 desktop PCs and 35,000 laptops). Challenges included not only the scale of the migration but also the geographical dispersion of machines. Most are in Germany, followed by the UK. There are also considerable numbers in the United States, South Africa and other European countries, with a growing number in Asia.

A migration pilot was launched consisting of approximately 200 machines. Central to the test was the use of Intel® Core™2 processor with vPro™ technology, the processing muscle that powered these machines. Several years earlier in 2007, BMW had tested Intel Core2 processor with vPro technology to remotely apply security patches. This eventually led to the activation of Intel® Active Management Technology (Intel® AMT) in 36,000 machines, installed as part of a hardware upgrade.

The remote management component of Intel Core2 processor with vPro technology, Intel AMT is designed to help IT departments protect their networked computing assets, components that enable remote management in a number of different areas.

For example, out-of-band system access enables IT engineers to access PCs even when they are powered off. If a PC is powered down, the IT engineers can simply power it up remotely. Systems can also be remotely isolated and recovered after operating system failures. Hardware-based agents proactively check whether software agents are running while missing agents are automatically detected and alerts sent to the management console.

A System Defence feature also contains infected clients before they impact the network while also alerting IT when critical software agents are removed. Remote hardware and software asset tracking, via an IT management console, helps to keep software and virus protection up-to-date by remotely applying new software upgrades and security patches.

Management at a distance

One of the huge advantages for BMW was the ability of Intel Core2 processor with vPro technology to create mirror images of operating systems and then using the Intel AMT remote management functionality to send and upload them onto PCs, irrespective of their physical location.

BMW wanted to establish how effective this process was for replacing Windows XP with Windows 7. It charged its IT partner Computercenter with managing the pilot. The pilot focused on office PCs in various locations and also included a number of PCs that were powered down. Windows 7 was also slightly modified so it could automatically install unattended.

Remote deployment of the Windows 7 operating system was managed through the Microsoft System Center Configuration Manager (SCCM) 2007*. This technology assesses, deploys and updates servers, client computers and devices across physical, virtual, distributed and mobile environments. Importantly, it provides native support for Intel AMT.

Weber, said: "The pilot clearly revealed that Intel Core2 processor with vPro technology was capable of helping us upgrade our desktop fleet with new operating systems. We could efficiently remotely install and reimage the existing clients to Windows 7 without the loss of any time for end users.

The ability to remotely power up PCs that were turned off also ensured that all computers were upgraded. For example, we did not have to send messages to activate PCs and wait for them to be turned on."

BMW plans a phased roll-out on Windows 7 during 2010.

Currently about 500 machines have been upgraded to Windows 7; BMW plans to upgrade a further 5,000 mainly office PCs by October 2010. The remainder, including production PCs will run the new operating system in 2011. The actual management of the roll-out will be handled by local IT teams. For example, upgrades to computers in BMW operations in the UK will be handled by the UK IT team and so on.

Spotlight on BMW

Bayerische Motoren Werke, better known as BMW is one of Europe's top automakers and a world-renowned, high-performing luxury brand. It operates through three business segments: Automobiles, Financial Services, and Motorcycles. Founded in 1916, BMW also owns and produces the MINI* brand and is the parent company of Rolls-Royce Motor Cars. Aside from its European presence the company has operations in America, Africa, Asia, Oceania and the rest of Europe, outside of Germany. Its famous circular blue and white BMW logo is symbolic of the movement of an aircraft propeller, signifying white blades cutting through the blue sky, and is testament to its roots originally as a manufacturer of aircraft engines.

"We can safely and securely upgrade to a new operating system ensuring 100 per cent coverage of the computer fleet and this ability also extends to the remote application of service packs and security upgrades when required."

Gerhard Weichenrieder,
BMW Workplace Technology Engineer

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The future is remote

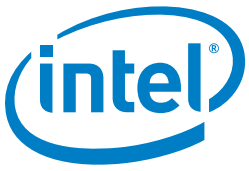
Using Intel® Core™2 processor with vPro™ technology to drive the remote implementation of the Windows 7* operating system across such a large computer fleet marks a significant achievement for BMW and has helped it achieve a leading position in cost-effective IT operations.

The remote management functionality of Intel Core2 processor with vPro technology is central to BMW's aim of having a highly automated client environment. In tandem with Windows 7 features such as DirectAccess and Remote Assistance and application virtualization the company expects support costs to decrease.

BMW does not want to be specific about exact cost-savings but Thomas Schmidt, Project Lead, vPro integration said: "Let's say the savings are significant though we are not translating these directly into costs. It's more a question of great efficiency gains.

"We are saving time on the actual deployment, we don't need engineers making desk side visits, we don't need to be concerned if PCs are turned off, we can turn them back on and we can easily see if a deployment has failed and what we need to do to remediate it."

In summary, BMW anticipates greater IT support workforce efficiency. Remote management, enabled by Intel Core2 processor with vPro technology will enable BMW to make the greatest use of Windows 7 features and reflects the company's wider ambition to maintain its position as an industry-leading automobile manufacturer famed for its efficiency and high-quality products.



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Data, results, and estimated improvements reported in this study are based on an evaluation of prototype Intel Centrino Pro processor technology equipment. Actual improvements in a production environment might vary. Other companies may see different results, depending on their IT service environment.

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