IBM

MSC.Software applications deliver high performance on powerful IBM hardware
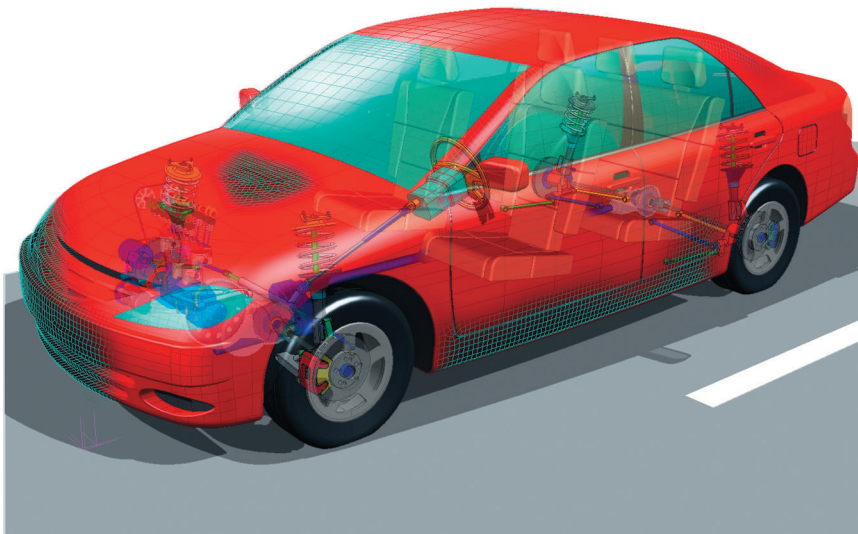

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A better, faster way to innovate

Manufacturers today face a growing number of challenges to compete effectively in a global business environment. Regulatory requirements and development costs—as well as escalating product complexity and supply-chain issues—all contribute to the difficulty and expense of new product design, development, production and support. Now more than ever, manufacturers require efficient, cost-conscious ways to bring superior products to market. Leading software developer MSC.Software offers manufacturers virtual product development (VPD) tools that can help speed time to market and reduce product development costs.

Since 1963, MSC.Software has been helping world-renowned engineering organizations, including the National Aeronautics and Space Administration (NASA), to enhance and automate

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Highlights

- *Helps speed time-to-market with advanced virtual product development software running on high-performance hardware*

- *Helps reduce implementation and development costs with sophisticated tools that are designed to maximize established competencies and expertise*

- *Helps protect investments with flexible, scalable workstations, servers and storage*

- *Improves productivity during the design process in a creative and collaborative environment*

product development. Today, MSC.Software works with thousands of companies worldwide in hundreds of industries to enhance and automate the product design and manufacturing process. And this powerful and sophisticated VPD software requires a powerful, reliable hardware platform that can cost-effectively support compute-intensive applications. For more than 30 years, IBM and MSC.Software have worked together to deliver MSC.Software's VPD applications on a wide variety of high-performance IBM hardware platforms—including IBM @server® servers, @server Linux® Cluster 1350, IBM TotalStorage® data storage, IBM IntelliStation® workstations and IBM ThinkPad® mobile workstations.

Specialized focus to meet industry challenges

Today, IBM and MSC.Software can provide manufacturers with a joint solution that includes all of the application, middleware and hardware support that

their customers need. MSC.Software collaborates with IBM on sales, service and technical issues—including the porting and optimization of its VPD applications to IBM @server servers to ensure hardware and software interoperability. While this collaboration supports manufacturers in a broad spectrum of industries, IBM and MSC.Software have formed a strategic alliance to provide aerospace and automotive manufacturers with an industry-focused solution that includes VPD software, professional services and enterprise infrastructure offerings.

Through its strategic relationship with IBM, MSC.Software also offers a complete line of Dassault Systèmes product lifecycle management (PLM) products, including CATIA, Smarteam, and Enovia.MSC.Software provides training on these products as well as project-based and enterprise implementation services. IBM has also chosen MSC.Software as the simulation

partner of choice for applications in the CATIA Version 5 environment. CATIA 5 is an integrated suite of computer-aided design (CAD), computer-aided engineering (CAE) and computer-aided manufacturing (CAM) applications that comprise Dassault Systèmes' premier digital product definition and simulation offering. With CATIA 5, IBM hardware and MSC.Software's offerings, such as SimDesigner, manufacturers can harness the power of VPD to dramatically reduce product development time and costs.

MSC.Software VPD solutions

MSC.Software supplies a comprehensive portfolio of VPD applications for nearly every engineering discipline, and offers unique expertise in the challenging, compute-intensive fields of aerospace and automotive. Development of new aircraft, spacecraft, and military vehicles involves a level of complexity and risk not seen in any other industry. The fast-moving automotive industry demands that manufacturers produce

an ever-increasing return on investment (ROI) and reduced costs while improving quality, durability, comfort and safety. IBM servers, workstations and storage offer the powerful system performance, reliability and scalability needed to run the most complex product development projects.

The broadest range of simulation solutions

Manufacturers are no longer satisfied with buying niche CAD/CAM/CAE technologies from many different vendors and trying to make them work together. Maintaining sales and support relationships with multiple technology vendors, integrating complex and often incompatible simulation tools, translating models and data, and ensuring adequate staff training make this approach ineffective. MSC.Software is effectively changing this paradigm, enabling engineering organizations to transition from using disparate stand-alone applications to a reliable, well-integrated tool set powered by a uniform architecture.

Encompassing the broadest range of VPD solutions available from a single vendor, MSC.Software's product portfolio includes three main product lines consisting of stand-alone simulation software, CAD-integrated simulation tools, and enterprise data management and collaboration tools.

SimOffice™
A stand-alone VPD environment
SimOffice incorporates MSC.Software's market-leading applications into a unified product line and enables the functional assessment of large and complex virtual product models from concept through detailed design, testing and validation stages, across all functional performance attributes. SimOffice brings together MSC.Nastran™, MSC.Patran™, MSC.ADAMS®, MSC.EASY5™, MSC.Marc®, MSC.SOFY™ and other products with a common data backbone and flexible, on demand licensing through MSC.MasterKey. MSC.Nastran, the company's original application, is one of the most widely used finite element

analysis (FEA) programs in the world. MSC.Patran is a leading finite element modeling environment, and MSC.ADAMS is the market-leading functional virtual prototyping tool for building, testing, reviewing and improving mechanical systems before committing to physical prototypes.

Scalable from a single user to the complete enterprise, as an organization's needs evolve, the SimOffice architecture can be easily expanded with additional tools—and when powered by a highly scalable IBM infrastructure, the opportunities for growth are boundless.

SimDesigner™
A CAD-embedded VPD environment
SimDesigner delivers VPD technology to the designer's desktop by embedding MSC.Software simulation solutions into the CAD environment. This enables performance assessment across multiple disciplines, such as linear structures, motion, thermal, nonlinear structures, and more, directly on the

CAD model even in the earliest stages of the product design. In addition, SimDesigner enables the capture, storage, and reuse of product design, evaluation, and process knowledge associated with building, testing and validating products. SimDesigner Gateway products provide CAD users direct access to MSC.Nastran, MSC.Marc, and in-house proprietary systems using the STEP AP209 standard.

MSC.SimManager™
Automate and manage collaborative VPD

MSC.SimManager provides a systematic approach and infrastructure for managing the processes and data required for collaborative VPD. MSC.SimManager enables consistent management and traceability of all simulation processes, data and models, ensuring that domain experts have appropriate control of the process, and that others have appropriate access to the simulation-generated knowledge—including direct access from CAD and Web environments. It improves productivity by automating processes and reducing manual tasks, and provides the infrastructure to facilitate trade-off studies by integrating multiple simulation domains through a single process.

MSC.MasterKey™
Flexible, on demand licensing

MSC.Software's innovative MSC.MasterKey License System allows global product development teams to take advantage of MSC.Software's world-class simulation software portfolio within a flexible licensing system, using the simulation tools they need, when they need them. MSC.MasterKey utilizes a token-based licensing method to allow access to a full range of VPD solutions. With more than 100 different MSC.Software products available, MSC.MasterKey can be tailored to any unique environment to maximize productivity and optimize the VPD investment. Traditional (per seat) software licensing is available if required.

By working to help provide compatibility among VPD products, PLM products and high-performance IBM servers, storage and workstations, IBM and MSC.Software can offer comprehensive, one-stop-shopping for manufacturers seeking a better, faster way to improve time-to-market and reduce costs.

IBM hardware solutions
Workstations with on demand flexibility

From powerful desktop stations to dynamic mobile notebooks, IBM delivers a wide range of solutions for clients running MSC.Software applications—to meet every budget and workload need:

IBM IntelliStation workstations

IBM IntelliStation workstations are engineered specifically to meet the needs of designers. Choose from a range of task-tuned OpenGL 3D graphics adapters and single- or dual-processor configurations featuring Intel® Pentium® 4 speed, Intel Xeon™, AMD Opteron™ multiprocessing power or

IBM POWER™ processors. Get the big picture with single or dual IBM monitors up to 22.2 inches. Then, complete the solution with a vast array of compatible IBM options, including ECC memory, CD-RW/DVD-ROM combination drives and more.

The competitive IntelliStation price includes a wealth of productivity-enhancing advantages, starting with the confidence of IBM service and support to back investments. A three-year limited warranty on parts and onsite labor is standard. In addition, Web-based help and support resources like Ask IntelliStation as well as a dedicated team of IBM system engineers are available online (for pre- and post-sales questions, configuration advice and to support an extensive portfolio of leading applications).

Moreover, for exceptional optimization, the IBM IntelliStation application enablement team works directly with MSC.Software, refining and tuning IntelliStation hardware for optimum application performance.

- ***IntelliStation Pro workstations: Advanced workstations designed for peak performance and productivity***
  For technical users running the Microsoft® Windows® or Linux operating systems, IntelliStation Pro workstations fast-track workflow with leading-edge 32- and 64-bit processors in single or dual configurations. Choose from compact desktop or flexible mini-tower designs packed with up to 16GB of memory, fast storage subsystems and optimized 3D graphics that set the pace in visual computing.

- ***IBM IntelliStation POWER workstations: POWER processor-based workstations for demanding technical simulations***
  For designers of large, complex 3D models—from aircraft to cars to locomotives—IBM offers 64-bit UNIX® operating system-based IntelliStation POWER workstations. They feature 1-2 way SMP, exceptional floating-point performance, powerful 3D graphics accelerators and enterprise-level reliability and availability using the industrial-strength AIX 5L™ operating system.

- ***IBM ThinkPad Mobile workstations***
  ThinkPad mobile workstations offer high-performance graphics for displaying detailed designs and dramatic demonstrations and running high-powered applications—all in a thin, light notebook. Equipped with new Intel Centrino mobile technology on select models, IBM ThinkPad notebooks are a new benchmark of computing performance, battery life and mobility.

Powerful servers and storage

The IBM @server platforms offer outstanding performance, scalability, reliability and security. The @server p5, pSeries®, xSeries® and Linux Cluster 1350 offerings are integral parts of the IBM @server product line—advanced servers that can help lower costs, improve efficiency and speed time-to-market by providing the power required to run robust CFD applications and the interoperability required to share information across the enterprise. The foundation of the technologies for these servers draws on decades of

Virtual product development for a competitive advantage

mainframe experience as well as IBM leadership in research and development. Combined with new virtualization and on demand tools for managing end-to-end growth, risk and costs, IBM @server platforms are designed to handle the rapid growth and ever-changing needs of a collaborative operation.

- **IBM @server *pSeries servers***
  IBM @server pSeries servers with the POWER4+™ processors and AIX 5L—the advanced, open, scalable UNIX operating system from IBM—deliver outstanding performance, scalability, reliability and security. Built on innovative technology from IBM, pSeries servers running AIX 5L provide a powerful, flexible base for MSC.Software applications and solutions. Featuring exceptional processing power, memory and I/O capabilities, pSeries systems can scale dynamically to meet client demands.

With the introduction of dynamic logical partitioning (LPAR) in AIX 5L Version 5.2, IBM delivered advanced flexibility and scalability to pSeries systems. Using dynamic LPAR, clients can create virtual servers within a server and dynamically add and remove processors, real memory and I/O slots from active partitions— each isolated from other partitions and running its own instance of the AIX 5L operating system—without the need to reboot. In this manner, dynamic LPAR enables clients to assign system resources where they are most needed, easily adjusting to changing system priorities and growth requirements.

In addition, all MSC.Software applications are expected to be available on IBM @server p5 systems—the next generation of IBM @server pSeries servers using IBM Power Architecture™ technology. These servers build on the IBM tradition of outstanding UNIX and Linux operating system (OS) innovation and performance to help businesses excel in an on demand world. Innovations in the eServer p5 product line range from the IBM POWER5™ processor—the most advanced 64-bit chip available from IBM—to IBM Virtualization Engine™ systems technologies that set the standard for systems utilization and management. With these breakthroughs, the @server p5 product line represents a new paradigm for UNIX and Linux operating systems.

- **IBM @server *xSeries servers***

  IBM @server xSeries servers are affordable, scalable Intel processor-based servers with mainframe-inspired reliability technologies. Built using innovative IBM X-Architecture™ technology, the xSeries helps address the pressing needs of current and future product lifecycle management (PLM) environments with attractive pricing for enterprises large and small. The xSeries x336 rack-mounted server can run up to two Intel Xeon processors with up to 3.6 GHz with high-performance 800 MHz front-side bus speed, with a capacity of 512MB (standard) to 16GB (maximum) PC-2 3200 DDR2 (double data rate) Chipkill™ memory. Enterprise nodes are designed to allow system scaling from 4-way to 16-way by simply adding another node connected via high-speed scalability ports, thereby helping protect the initial system investment.

- **IBM @server *Linux Cluster 1350***

  Built on cost-effective Intel or AMD Opteron™ processor–based servers, the IBM @server Linux Cluster 1350 provides a choice of Linux operating systems, IBM Cluster Systems Management (CSM) for Linux, IBM TotalStorage solutions and leading OEM switch interconnects and options. The Linux Cluster 1350 uses Linux on 32-bit or 64-bit platforms to enable a scalable, high-availability computing solution designed to support compute-intensive applications such as MSC.Software tools.

The IBM Linux Cluster 1350 also offers compute nodes in a variety of server technologies to best suit each enterprise's unique needs— IBM @server 326 systems built with AMD Opteron processors; IBM @server xSeries 336 and 346 systems built with Intel Xeon EM64T processors; or IBM @server BladeCenter™ HS20 or IBM PowerPC® JS20. Both Intel Xeon EM64T and AMD Opteron architectures can run 32-bit and 64-bit applications natively. As a result, the @server 326 and xSeries 336 are ideal choices for organizations that want to run 32-bit applications today and later migrate to 64-bit applications in the future. IBM @server xSeries and BladeCenter platforms offer enterprise-class infrastructure and provide many advanced features that help keep availability high and system management costs low.

- **IBM TotalStorage solutions**

  IBM TotalStorage solutions are designed to help companies of all sizes simplify their storage infrastructure, support business continuity and improve information lifecycle management. By using storage more efficiently, IBM storage solutions can help reduce the need for capacity upgrades, while simplifying data protection, backup and archive management. With a wide range of products based on open standards, the IBM TotalStorage DS Family of disk storage systems combines cost-effective scalability, a more consistent method to store and access data across the enterprise, streamlined data management tools and advanced virtualization technologies. The DS4000 series offers attractively priced storage systems providing a flexible, high-performance platform that allows businesses to build a storage infrastructure with pay-as-you-grow upgrades.

Benefits of working with IBM and MSC.Software

IBM end-to-end e-business on demand™ solutions provide a powerful and flexible VPD computing foundation for manufacturers in virtually any industry. To help create seamless interoperability, IBM and MSC.Software work in concert to port and optimize MSC.Software applications to IBM @server products. MSC.Software also supports IBM Dassault Systèmes PLM products—enabling clients to select complementary, compatible solutions that meet their specific product development process needs. As result, the joint solution provided by IBM and MSC.Software can help manufacturers minimize costs, increase collaboration and innovate designs in order to reduce time-to-market and gain a competitive edge.

For more information

To learn more about IBM @server and MSC.Software, please contact your IBM representative, IBM Business Partner or visit:

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