IMS Product
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The State of IMS

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I am pleased to report that the current health and future outlook for IMS continues to be robust and hearty. On the strategic front, increased migration of customer workload to our latest releases, combined with new licenses and overall IMS workload growth, says we are meeting our goal of producing the new function to meet our customers' requirements, in the on demand operating environment. This growth justifies IBM's continued investment, by returning satisfactory business results. In the lab, our high performance team continues to exploit the capabilities inherent in the new 64-bit z/Architecture™ . Our focus on quality has produced fewer reported problems, faster turnaround on fixes and higher overall customer satisfaction. The business model to deliver new, rich function to the marketplace faster, which we adopted in 2000, is working well and we will continue its implementation.

IMS: delivering value to customers and to IBM

The rate of acceptance by our customers, of the new versions we are delivering, is the best measure of our success as developers. Therefore, we continuously monitor several metrics that tell us if we are developing the right function. In the past twelve months, each of these metrics tells us quite clearly that we are on the right track. In 2004 workload, as measured in the MIPS capacity of IMS systems, increased 65.3% on our latest versions. Workload on older versions was reduced 35%. At year end, there was over six times the work being done on current versions than on older versions, worldwide. Overall in 2004, MIPS of IMS systems grew over 35%. By yearend, IMS Version 9, which shipped in late October, had almost 150 licenses worldwide, surpassing the customer acceptance rates of both IMS Version 7 and IMS Version 8. Overall, the growth of net new IMS licenses remained positive, fueled largely by expansions required because of merger/acquisitions among existing customers in the Americas and Europe and the selection of IMS for new zSeries(R) footprints, predominantly by emerging opportunities in Asia.

The ability of the IMS team to deliver revenue growth to the IBM company is a measure of our success as business managers. Success in this area supports continued investment by IBM in development of future versions and the growth of resources devoted to that effort. In 2004 IMS enjoyed another record breaking year, surpassing 2003 as the largest revenue producing year in its 37 year history. IMS has shown consistent revenue growth each year, since adoption of the current IMS business model in 2000. It is of interest to note that customers have showed continued confidence in the future of IMS, investing in IMS at a greater rate of growth than the overall IT industry.

The focus for IMS in 2005, and beyond, is to strive to remain the strategic choice for the most business critical applications of our largest customers, as well as of emerging large enterprises. Success in that area suggests that IMS will continue as a major

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IMS and The Mainframe: a winning combination for 37 years:

factor in the growth strategy of the IBM Corporation, as it has been for the past 37 years.

IMS and The Mainframe: a winning combination for 37 years:

The history of IMS tells us that 37 years ago it was originally designed to run exclusively on the System/360™ architecture. Over the ensuing years, through the evolution to today's z/Architecture, the only thing that has changed is the synergy of this relationship has increased. IMS is designed and built to run on zSeries, on OS/390® and z/OS® , exclusively. When you run IMS, you also have all the benefits of the z/Architecture. Designed-in Availability means zSeries hardware rarely fails. This reliability design is assisted by several hardware features. There is extensive error checking, which can assure computational integrity as well as data integrity in all functional components. There is error correcting code to enable system recovery from transient errors. Virtually all errors are detected and corrected. There is memory chip sparing, whereby an error threshold is maintained for each chip and, when exceeded, a new chip is non disruptively substituted by the hardware. There is dynamic CPU sparing. Some of the zSeries' processors are designated as "spares." If a running CPU chip fails and the instruction retry is unsuccessful, the spare CPU chip begins executing at precisely the instruction where the failing CPU chip failed. Activation of the spare is done completely by the hardware, helping to enable the system to be restored to full capacity in less than 1 second. The z/OS operating system has been architected to also provide extremely high reliability. Within z/OS, design guidelines require that all operating system code must have recovery routines, and these routines must include secondary recovery routines. Any failures that cannot be transparently recovered must be isolated to the smallest unit; and for all errors, diagnostic data must be provided so it can be identified and fixed after a single occurrence.

The z/Architecture will continue to provide growth and protect your enterprise computing investment, well into the future. The recent growth in processors supported has been phenomenal:
In 1998 it was a 4-way; in 1999 an 8-way; in 2000 the z900 a 16-way; and in 2003 the latest z990 is 32-way. The growth of I/O bandwidth and of connectivity over that same period are just as impressive. We must ask ourselves, since zSeries is just starting to exploit the new 64-bit architecture, what growth can be accomplished in future years? Our IT predecessors have to feel very good about their investment in S/360™. Looking back at the last 40+ years and the potential for future growth, you have to still ask, today, why would anyone ever consider investing their future in anything else?

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The IMS Business Model

The IMS development objective is faster delivery of new function for today's heterogeneous environment, with open standards, easy integration and enablement, and self managing capabilities. This is being achieved by a model that allows the IMS development team to release new state-of-the-art function, as soon as it has been proven production ready, in the laboratory. The delivery mechanism includes:

a) an aggressive, rapid time-to-market and delivery plan for new IMS releases. Effective communication of release dates enables customers to better plan for migrations and the lab to better schedule the largest, most challenging enhancements.
b) a number of new/enhanced IMS Data Management Tools, announced and delivered at least twice per year and
c) use of the existing IMS service stream to distribute modifications and enhancements. This allows for additional testing and improved quality, without significantly impacting time-to-market

IMS Version 7 and IMS Version 8: the e-business releases

The general availability of IMS Version 7 in October 2000 signaled the beginning of a new growth era of e-business for IMS customers and for IMS. IMS Version 7 provided the means to quickly make long-standing investments in IMS a significant part of future e-business solutions.

Customers could readily web-enable existing IMS programs. They created new JAVA and programs using XML and integrated them with existing programs. IMS Connect provided easy-to-install transparent access to IMS applications and data from any application environment, including LINUX.

IMS Connector for Java™ allowed access to existing IMS transactions from any Java application virtually anywhere on the Internet. New Java applications, written and tested on workstations, were executed on the host system, accessing IMS DB and DB2® data. New IMS Java applications exchanged XML-formatted messages.

IMS V7 High Availability Large Database (HALDB) support allowed a customer's e-business database to grow to over 40 TERABYTES. This was five thousand times larger than the largest database allowable in IMS Version 5 or Version 6. The data could be divided into over 1000 independent partitions, thereby providing, as a practical matter today, essentially unlimited growth.

IMS Version 7 will reach the end of service in November 2005. It was my first release as IMS lab director. Version 7 has served its

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customers and IBM very well. It has been a release that we are all proud to have been a part of. The recommended migration path for remaining IMS Version 7 customers is IMS Version 9.

IMS Version 8, delivered October 2002, builds upon the e-business capabilities of Version 7 and also addresses the need to assist technical support staff in being more productive and in keeping systems continuously available, in an operating environment that is growing more and more complex. IMS Version 8 contains over a dozen new and improved functions to enhance the productivity and effectiveness of database administrators and systems programmers.

The new function introduced with Version 8 included Coordinated Online Change, which automatically coordinates application of any command entered on one IMS across the IMS sysplex, replacing the earlier manual coordination process. It has IMS Control Center, which provides a single user interface to control both IMS and DB2 from a single workstation. It has Parallel Database Processing, which automatically uses multiple MVS threads to significantly reduce the amount of time required to reopen databases after an outage, replacing the earlier serialized process. IMS Version 8 introduced the Sysplex-Wide Resource Manager, which provides global management of IMS terminal resources and enhances availability by enabling an interrupted user to resume work on any IMS. Also new in Version 8 was the Single-Image Operations Manager, which provides for a single point of control (SPOC) to help manage a group of IMSs in a parallel sysplex environment.

IMS Version 8 is the recommended migration path for existing Version 6 customers, who can then grow to Version 9.

IMS Version 9, the release for the on demand operating environment

IMS Version 9, the release for the on demand operating environment, delivered October 28, 2004

To fully understand the business value of IMS Version 9, we should view it from the perspective that it was designed and developed as a key building block for the now-and-future on demand operating environment, just as IMS has been the foundation of information management technology for its customers for the past 37 years.

In the on demand operating environment, business processes are integrated end-to-end across the company and with key partners, suppliers and customers, so that IMS customers can respond with flexibility and speed to any customer demand, market opportunity or external threat.

IMS Version 9 is the IMS offering for the on demand operating environment. Version 9 became generally available on Oct 28, 2004, after over 1 ½ years in the Quality Partnership Program.

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When GA was achieved many of the QPP customers were already in major production and the entire portfolio of IMS tools was enabled and tested. At the end of the year, we had over 100 licenses in North America and EMEA, not counting the QPP customers. IMS V9 has all the indications of being a big winner.

The major new features among the 40-50 new and enhanced functions are: Integration of the IMS Connect tool into the base product; native XML database support; online HALDB Re-org and support for Web services and Service Oriented Architecture.

The IMS development process helps assure that each of these new and enhanced line items have customer value built in. Each developer or software engineer who owns a line item must justify it's presence in the release in terms of customer value. Line items originate with a documented customer request or written requirement. Extensive function testing is done, extensive system integration testing is done, performance validation and tuning is done, all in the lab. And the product doesn't get out the door until the QPP participants say it's ready for production.

Integrated IMS Connect Function was the leading stated customer requirement of the past two years. It provides easy-to-install, easy to use, high performance/high volume and security-enhanced transparent access to IMS applications and data from any application environment, including LINUX. It provides commands to manage the network environment and assist with workload balancing, helping to result in better resource utilization. It can reduce design/coding effort for client applications and provide easier access to IMS applications and operations, thereby helping to improve programmer productivity. It can be used with IBM WebSphere Application Servers and Studio Tools to quickly transform static web sites into sources of dynamic Web Content, improving marketing effectiveness and customer service, and also to transform IMS transactions into Web services for Service-Oriented Architectures (SOA), helping to enable quick response to new customer requirements, business opportunities and competitive threats. It can be used with DB2 and the IMS Control Center to control both IMS and DB2 operations, helping to improve system availability and operator productivity. This integrated function can be used to replace the separately orderable/priced IMS Connect Tool offered for earlier IMS versions, helping to simplify administration and reduce cost.

IMS Connect provides one to any and any to one connectivity. You can now achieve TCP/IP performance comparable to SNA by using IMS Connects in parallel (e.g. in the lab we get 22,000 transactions per second with SNA on a two-way zSeries Model 990 and achieve that with four Connects at 6000 transactions per second each). This is a major performance increase since the early days of ITOC, when we got 250 -300 transactions per second.

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Version 9 provides the ability to store XML data natively in the database (both full function and HALDB). This also give IMS the ability to pull non-XML data from IMS and convert it to XML to pass across the enterprise. The data can be converted back to its native format for normal storage in IMS or stored in XML format.

This capability provides high speed, transparent universal information interchange throughout the enterprise and with partners and customers. The key differentiator for IMS Version 9 is that this is NATIVE support, there is no overhead required for translation or conversion.

In addition, the XML implementation with IMS will be fully integrated with the DB2/zOS implementation. IMS will use the same XQuery language to pull data from IMS and DB2. We see IMS being the high volume XML data store and integrating with DB2 for data mining, replication and business intelligence applications.

High Availability Large DataBase was introduced in IMS Version 7. It greatly increased, by orders of magnitude, the maximum database size permitted in earlier releases. HALDB delivers the first requirement for information management in the unpredictable on demand operating environment: virtually unlimited database capacity. IMS Version 9 Online Reorganization delivers on the second: continuous availability of business-critical databases. IMS V9 OLR provides a fully integrated online reorganization by partition of HALDBs, with concurrent online update and availability. This is totally non-disruptive. There is no outage. This online reorganization function provides for greatly enhanced database availability for those applications that cannot go off-line.

Service Oriented Architecture is currently very topical with enterprise customers and a major IBM initiative. Most IMS customers are either doing it, planning for it or talking about it. The Web services support in IMS Version 9, when used with WebSphere Application Server makes it possible to wrapper IMS applications and publish them as Web services. The Services Oriented Architecture is key to interoperability and flexibility for on demand business. SOA supports end-to-end integration across the enterprise and among business partners. This provides a flexible business process model that can allow customers to respond quickly to new customer requirements, new business opportunities, and competitive threats. Web services is the means whereby customers can integrate all the IMS applications they've been investing in for the past 37 years with not only other zSeries applications and applications on other IBM platforms but with applications on non-IBM platforms, as well. IMS provides Web services for IMS applications using the WebSphere Application Server, IMS Connector for Java, and IMS Connect.

You can transform existing IMS transactions into Web services by using WebSphere Studio tools to create service definitions for IMS

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transactions. You then deploy these service definitions to WebSphere Application Server (WAS) to make the IMS services available as Enterprise Java Bean (EJB) services or Simple Object Access Protocol (SOAP) services. With this capability IMS provides for integration with non-IBM products as well. IMS is also using the WebSphere XML Adapter for COBOL and SOAP support with its IMS SOAP gateway code, a sample/demo of which is currently available at www.ibm.com/ims.

The above named four items (Integrated IMS Connect; native XML; Online Re-org and Web services support) are those new functions that will be of most interest to almost everybody involved with IMS. However, there are a number of additional enhancements and functions that will be of special interest to technical staff members. There are way too many to go over in this space but please visit our IMS website (www.ibm.com/ims) for an in depth treatment of all these wonderful new functions. Please remember, they only made it into the release because they were responding to a documented customer request or requirement.

If you are an applications programming manager, for example, the ability to transparently use the zSeries Application Assist Processors for your JAVA programs would be of interest, as would the interoperability of IMS and DB2 and JAVA and COBOL. The IMS Enhanced Command Environment would be of interest to operations managers, as they are continually faced with the challenge of finding and training qualified people to keep an environment running that is growing more and more complex. System Generation enhancements eliminating a step in the process and thereby reducing the time and MIPS needed for the system generation process would be of interest to systems programmers, as would Syntax Checker Enhancements and Installation Verification Program enhancements, that will help improve productivity by eliminating mind-numbing busy work. Database administrators are, of course, going to be interested in IMS Connect and integrated online re-org and native XML support that we spoke of earlier but there are also database recovery and system restart functional enhancements to interest them, as well. There are some nice enhancements for those customers who use the Fast Path option, as well. The ones that help reduce start up times and enhance performance tuning capability would be of special interest.

IMS Tools: second to none in function and competitiveness

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The IMS tool set is very extensive. Since 2000, we have introduced over 15 brand new and twenty-two significantly enhanced products to support all aspects of IMS usage.

Our utilities for Full Function and Fast Path databases provide a high performance solution that improves IMS availability. Our administrative tools make managing large and small IMS systems

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easier and faster. Our performance management tools help tune IMS systems and avoid outages. Our information integration management tools enable fast and effective transfer of data from transactional to informational systems. Our application management tools make application runtime environments more effective.

The new IMS Parameter Manager™ tool helps save time and reduce errors associated with IMS system definitions providing migration assistance to newer versions of IMS. Migration to IMS V7, V8 and V9 is also aided with the latest IMS HALDB Conversion & Maintenance Aid™. IMS Performance Analyzer™ when combined with IMS Problem Investigator™ can allow both novice and experienced IMS users to take their log analysis and problem determination to the next level. In addition there have been new versions of our database reorganization tools enriching the IMS Information Management Tools portfolio.

New Technology, as it evolves with XML and Web services, is also continuing to be exploited to enable new Application Development tooling. IMS is forging a strong alliance with the AD community to provide an integrated tool solution for supporting IMS Java and connectivity to the Internet

Using the maintenance stream to deliver new function

Using the maintenance stream to deliver new function

IMS has also continued to deliver rich new function to the marketplace in the service stream. This mechanism along with aggressive in-house testing and review allows us to introduce high quality new function to waiting customers, more rapidly. Recent enhancements help ease application development, integration and open access for IMS Java, XML, and Open Transaction Management Access (OTMA); simplify management for diagnostics and sysplex operations; and provide improved performance, capacity and availability for IMS Fast Path, HALDB, and Database Recovery Control (DBRC) facilities.

IMS Education and Training

IMS Education and Training

In 2003 the IMS Silicon Valley Lab development team responded to the stated needs of our customers by assuming full responsibility for worldwide curriculum and course development and delivery of all formal IMS education, at all levels.

In 2004, all IMS courses were updated and several new courses developed. There are now many courses available in a city near you. Additionally we are delivering education via web conferences, to help eliminate travel and reduce time away from the office. The complete education schedule and enrollments are at http://ww.ibm.com/services/learning/us. We'd also be delighted to customize education and deliver it at your site. Just drop us a note at ibmdds@us.ibm.com

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In response to overwhelming demand from IMS lovers everywhere, at the end of 2004, Prentice Hall published a new IMS text book. We're all excited about this comprehensive textbook, which was created at SVL by the team lead for IMS Information Development. It is much more technically comprehensive than the modest title suggests. It really ought to be: "Everything You Wanted to Know About IMS But Were Afraid to Ask". You can place an order now on Amazon.com or Barnes and Noble and get 32% off the $69.99 list price. Alternately, if you have read down this far and would really like a copy of this new book and are one of the first six readers to drop me a note at gilliamb@us.ibm.com, I'll be delighted to send you a personalized copy. This is a big deal for us. It is the first text book we've had and it speaks volumes (unintentional pun) about the growing need in the marketplace for an IMS text book.

We are also quite pleased with the brand new IMS Examples Exchange website. Programmers can down load code examples that will save them the time and pain of reinvention. IMS developers and customers are providing examples that can be used by others to leverage their development efforts. There is a *search* function to view example code and samples submitted by others and a *submission form* to share your own IMS examples with others. Some examples include: *Building a Java application using J2EE Connector Architecture Common Client Interface; SAF/RACF Security Class definitions; Installation Verification Procedure JOBS & tasks.*

The URL is
http://www.ibm.com/software/data/ims/examples/exHome.html

Beyond IMS Version 9.1, delivering function for the on demand world

Beyond IMS Version 9.1, delivering function for the on demand world

Subsequent releases of IMS are currently at various stages of development or planning, laying the groundwork for ongoing technological evolution through this decade. Work is progressing on these and the IMS organization continues to broaden its horizons in response to customers' stated requirements. The IMS development strategy includes providing continuous improvements. IMS goals are to provide our customers with the highest possible levels of accessibility, security, growth potential, availability, and dynamic installability, with the latest in technology.

The IMS Silicon Valley Laboratory team has been striving to deliver on its promise of value to IMS customers: to provide the highest possible performance and availability for mission critical applications. IMS customers have responded most positively by moving more and more workload to IMS and by their rapid acceptance of new IMS offerings. The IMS team remains committed to delivering function that our customers value, producing the fastest, most reliable database and transaction

management computing system in the world. Thank you for your business.

For more information about any of the above topics, please visit our IBM Information Management System website at: www.ibm.com/ims

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