

April 7, 1964: The revolutionary IBM® System/360™ is born and IBM transforms computing. The System/360 is a family of five increasingly powerful computers that run the same operating system and can use the same 44 peripheral devices.



- SABRE takes off. American Airlines® Semi-Automatic Business-Related Environment (SABRE) system goes into full operation. The industry's first real-time reservation system links IBM computers over phone lines and handles seat inventory and passenger records from terminals in more than 65 cities. Other airlines immediately order similar systems.

- IBM announces OS/360, the operating system to run on the System/360 hardware. Over the next few years, IBM would release three varieties of OS/360: PCP (Primary Control Program), MFT (Multi-programming with a Fixed number of Tasks), and MVT (Multi-programming with a Variable number of Tasks).

- **The Beatles invade America.**

It all started in the '60's

Computer makers before 1964 manufactured unique computers for specific customers. Customers had to rewrite their software applications every time they upgraded to a larger system, and none of their existing peripherals—printers, tape drives, disk storage—worked on the new system without modification. With IBM's System/360, customers are now able to scale up without a complete reinvestment in software and peripherals. Companies can run mission-critical applications for business on a highly secure platform—a significant achievement. Throughout the decade, IBM continues to make milestones.

1970: IBM introduces the System/370™ Interactive Time Sharing Option (TSO) Terminals.

- **Joe Frasier wins the heavyweight title.**

1972: IBM introduces virtual storage for the mainframe; MFT and MVT are replaced by OS/VS1 and OS/VS2 SVS (single virtual storage), respectively.

- IBM announces VM virtualization. In the 21st century, z/VM® helps create an agile mainframe where resources can be quickly and effectively used in response to dynamic requirements.

- SAP develops a revolutionary Enterprise Resource Planning (ERP) system for the System/360. For the first time, companies can place orders and track inventory in real time, helping to improve inventory control, delivery time and customer relations.

- IBM introduces S/370™ dynamic address translation (DAT).

- **Nixon visits China.**



The '80's move into high gear

The 1980s witness the introduction of IBM's Enterprise System/3090™ Model 600S. It becomes the industry's most powerful general purpose processor, giving customers 56% more processing power and leading a new 10-model S series of advanced mainframe computers. It takes advantage of IBM's Enterprise Systems Architecture/370™ and Virtual Machine/Extended Architecture operating systems and data management software. Finally, IBM releases MVS/ESA™ (more data in memory), along with NFS Support. MVS/ESA goes on to earn a B1 security rating.

Also in this decade, customers can now use the mainframe to deploy the DB2 database beyond “decision support systems” and into core transactional processing, driving reductions in CPU costs and dramatic improvements in concurrency. In this period, IBM introduces the logical partition (LP) concept, which makes it possible to logically partition a mainframe into several independent processors that share the same hardware.

1981: IBM introduces MVS/XA™ 31-bit addressing (2GB) virtual storage.

- Dynamic channel architecture premieres.

- IBM improves RAS through global resource serialization for shared resources.

- **The first Columbia shuttle flight orbits the earth.**

- **IBM announces the IBM Personal Computer, the smallest, lowest priced IBM computer to date (which quickly becomes the industry standard).**

1993: MVS ESA 4.3 debuts with OpenEdition®.



1994: IBM announces the System/390® Parallel Sysplex® offering, encompassing the Coupling Facility, the S/390 Parallel Transaction Server, high-speed coupling links and software enhancements. The Parallel Sysplex is designed to provide continuous availability of applications and reduce or eliminate planned application outages. This begins the concept of system clustering and data sharing.

1995: Complementary Metal Oxide Semiconductor (CMOS) based processors are introduced into the mainframe environment, setting the new roadmap for modern mainframe technology. CMOS chips require less power than chips using just one type of transistor.

- IBM introduces MQSeries® software.

1996: OS/390® is branded UNIX95 compliant.

2000: IBM unveils the IBM eServer™ zSeries® 900, which handles the unpredictable spikes of workload activity, allowing thousands of servers to operate within one box.

- IBM introduces z/OS, a new 64-bit operating system. The z/Architecture™ is an extension of ESA/390 and supports 64-bit addressing (16 exabytes).

- IBM introduces dynamic channel management.

- IBM introduces specialized cryptographic capability.

- The mainframe becomes “open” and capable of executing tens to hundreds of Linux images.

- **Y2K arrives. Civilization survives.**

'00's and the future looks bright

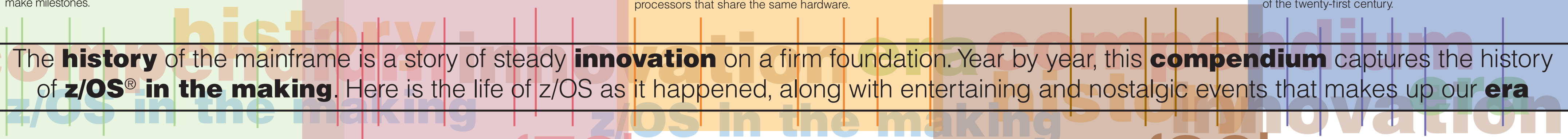
In the new century, the System/360's tradition of providing for general-purpose processing needs continues with the development of processors like the z800, z890, z900, z990, and the latest IBM System z9. New advantages include:

- Increased granularity to help control costs with smaller increments of growth
- Pioneering technology to dynamically allocate work loads and capacity as needed
- Advanced application flexibility to provide the ability to simultaneously run up to hundreds of virtual Linux servers.

Channel performance has grown from parallel channels to ESCON channels to FICON channels. System z9 continues such growth by providing a significantly higher-performance option for channel programming.

IBM continues the evolution of cryptographic hardware processing by extending basic functions and consolidating options in a single feature. IBM continues to enhance its mainframe offerings with the characteristics that have always been its strengths—and help companies like yours meet the challenges of the twenty-first century.

The **history** of the mainframe is a story of steady **innovation** on a firm foundation. Year by year, this **compendium** captures the history of **z/OS® in the making**. Here is the life of z/OS as it happened, along with entertaining and nostalgic events that makes up our **era**



1966: A social security landmark, IBM computers process some 19 million Medicare identification cards for the Social Security Administration. Just one year earlier, the U.S. Congress had passed legislation creating Medicare.

- **Miniskirts debut!**

1968: IBM introduces Customer Information Control System (CICS®). It allows workplace personnel to enter, update, and receive data online. Even decades later, CICS remains one of the industry's most popular transaction monitors.

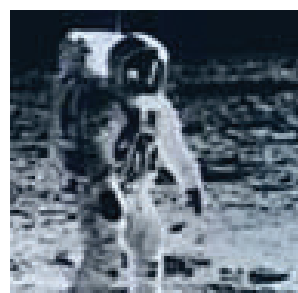
- System/360 Model 85 introduces high-speed cache memory, making high-priority data available 12 times faster than ever before. It lays the foundation for the same cache memory found across much of the 21st century's computing technology.

- IBM develops S/360 processors with 24-bit addressing and 128K of real memory.

- IBM introduces the first 2-way IBM symmetric multiprocessor (SMP), which can execute up to 15 jobs concurrently.

- **Peace, love and rock n' roll reign at the Woodstock Festival.**

1969: Several System/360s, an Information Management System (IMS™) 360, and IBM software supports Apollo 11's successful landing. Years later, the space shuttle would fly with (old!) IBM PCs hardened for the requirements of the space program.



- **Man lands on the moon.**

The mainframe grows up in the '70's

On the forefront of innovation, IBM begins to flex its muscles with the System/370 in June of 1970. The IBM System/370 is a family of compatible mainframe computers that builds on the trailblazing System/360. The 370 Model 145 is the first computer with fully integrated monolithic memory (circuits in which all of the same elements – resistors, capacitors and diodes – are fabricated on a single slice of silicon) and 128-bit bi-polar chips. Up to 1400 microscopic circuit elements can be etched onto each 1/8 in² chip. The semiconductor technology is a major departure from magnetic core technology, the mainstay of computer memory for the previous 15 years. Later 370 models will introduce 64K memory chips, 288K chips, and even one megabit chips. IBM makes great progress with Time Sharing Option (TSO) and Virtual Machine (VM).

1974: OS/VS2 adds support for running multiple address spaces and changes its name to OS/VS2-MVS Release 2.

- Release 21.8 is the final release of OS/360.

- IBM announces Systems Network Architecture (SNA), a networking protocol for computing systems.

- IBM introduces RMF™, RACF®, and clustered JES3.



1979: IBM introduces the Universal Product Code (UPC), followed by holographic scanner technology. Together, they help revolutionize the retail industry and highlight the continuing critical role for mainframes in customer transactions and inventory tracking databases.

- The combination of MVS/SP™ and DFP/370 now make up the operating system called MVS/370, which supports up to 64MB of real storage, large disks, and the inclusion of more channels.

- **Margaret Thatcher becomes the first female British Prime Minister.**

1983: IBM unveils the first relational database manager, DB2®.

1984: IBM announces a 1-megabit Silicon and Aluminum Metal Oxide Semiconductor (SAMOS) chip. Although *mega* means million, the chip actually holds 1,048,576 bits of information in a space smaller than a child's fingernail.



1985: **Pete Rose breaks Ty Cobb's all-time career hits record.**

1986: IBM introduces NetView®.

1987: IBM presents the first IBM 6-way logically partitioned processor with LPAR mode capability.

- **Les Miserables opens on Broadway.**

1988: IBM introduces the S/390™ with 31-bit addressable memory (2GB), and support for multiple address spaces.

- **The Pentagon unveils the Stealth bomber.**

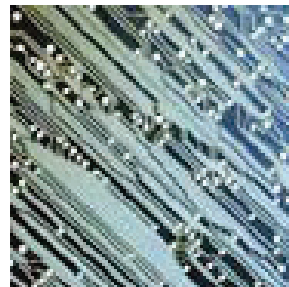
1989: **The Berlin Wall falls.**

The mainframe evolves in the '90's

The headlines are everywhere: The mainframe is dead. Nevertheless, while the pundits focus on personal computers and speculate about the dire future of the mainframe, and while science fiction writers postulate a “cyberspace,” IBM researchers and engineers continue to build on IBM's strong history of innovation in support of the present and future needs of its customers. They conceive, develop, and move into production several improvements in top-of-the line IBM systems, giving new life to the mainframe.

1998: IBM introduces the System/390, Generation 5 server. The Turbo model smashes the 1,000 MIPS barrier, making it one of the world's most powerful mainframes. Logical partitioning is extended to support 15 partitions.

- **“Titanic,” the most expensive film ever made, wins 11 Oscars.**



1999: Capacity Upgrade on Demand (CUoD) debuts on the System/390. CUoD provides extra processors installed as spare capacity that can be “turned on” as needed to help companies better manage spikes in demand and handle unpredictable changes.

- IBM introduces the first enterprise server to use IBM's innovative copper chip technology.

- FICON™, a new fiber optic channel, is introduced with up to eight times the capacity of ESCON channels.

- Linux™ appears on System/390 for the first time. Linux combines the flexibility of open source computing with the legendary scalability and reliability of the mainframe.

- **First issue of z/OS Hot Topics Newsletter hits the stands.**

- **Michael Jordan retires from basketball... the first time.**

2002: IBM introduces the eServer z800, an entry-class mainframe that continues to change the economics of mainframe computing. With this move, IBM delivers advanced Parallel Sysplex clustering technology to entry-class mainframe customers.

- IBM releases z/OS V1R4. The mainframe operating system sets a new record of 7000 SSL transactions per second—60% faster than its predecessor.



2003: IBM announces the eServer zSeries 990, the new flagship of the eServer family. In addition to doubling the number of logical partitions (LPARs) over previous models, it provides a balanced, highly secure foundation for dynamically balancing critical applications. The number of SSL transactions per second continues to increase on a z990 running z/OS V1R4.

- IBM introduces the Mainframe Charter, part of IBM's commitment to expand the value of zSeries and foster a zSeries community.

- **99% of the human genome is decoded.**

2004: IBM announces the new IBM zSeries 890 with new options to help better manage software costs and innovative technologies designed to deliver a streamlined, more responsive infrastructure.

- IBM announces DB2 Version 8 and IMS Version 9.

- IBM announces the IBM zSeries 990 Enhancements and the eServer zSeries Application Assist Processor (zAAPs).

July 27, 2005: IBM introduces IBM System z9. It uses the z/Architecture and instruction set (with some extensions) of the z900 and z990 servers. In addition to extending zSeries technology, the z9 delivers enhancements in the areas of performance, scalability, availability, security and virtualization. It supports one to four books and up to 54 processor units per server, as well as full 64-bit real and virtual storage. The z9 holds up to 512GB of system memory, and allows up to 60 logical partitions defined for 31-bit or 64-bit addressability.

- **Crowds await the release of the final installment of the Star Wars movie epic.**