



SSD

Highlights

- **High performance, high availability disk subsystems**
- **In excess of 10,000,000 gigabytes of SSA storage supplied to customers**
- **State of the art technology which is the fundamentals on which computing is built.**

Storage Subsystems – Mission Critical Solutions

IBM's storage products allow people to use, share, protect and manage their information assets. Storage subsystems form the foundation of the e-business infrastructure, providing swift and reliable services for databases, Web servers and transaction processing applications.

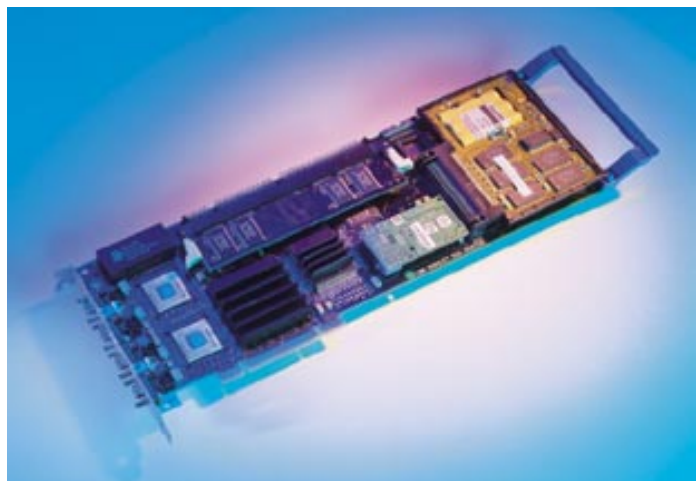
Storage Subsystems Development (SSD) Hursley is part of IBM's Storage Systems Group and comprises technology, hardware, firmware, software and test teams.

We create high performance, high availability disk subsystems.

SSA

In the early 1990s, SSD Hursley invented serial attached storage and a few years later the serial storage architecture (SSA) was born. The development and exploitation of SSA subsystems has been the department's principal activity over the past five years.

SSA is an industry standard interface that provides low-cost, high performance storage. The flexibility of the SSA subsystem not only allows up to 96 disk drives to be attached to a single SSA adapter, but it also allows up to 8 adapters to share those same drives. The ability to distribute storage access to multiple servers allows for the creation of highly available systems, with no single point of failure. This is a must for our customer's mission critical continuous operations.



To date over ten petabytes (10,000,000 gigabytes) of SSA storage has been supplied to customers.

The SSA adapters developed in Hursley are also key components of several of IBM's flagship high-end storage products. The 'Shark' IBM Enterprise Storage Server^{*} and the Magstar^{**} Virtual Tape Server both make use of SSA and the RAID function in our adapters, taking advantage of the reliability and performance they provide.

The Hursley team

The Hursley teams are involved in every aspect of the field from the hardware itself to the controlling software essential to make the new storage technology available to new and existing operating systems. These functions are performed by teams specialising in a number of disciplines.

Technology group

The technology group designs and develops state of the art VLSI chips for use in our products, of which the latest is a 20-million transistor dataflow ASIC using 0.18 micron copper CMOS technology.

Hardware group

The hardware group is responsible for designing enclosure electronics and adapter cards – complex multi-level boards with very high component densities.

Firmware group

The firmware group develops high performance code to run on storage adapter cards under a real-time operating system. This includes everything from the low-level hardware interfaces, up to advanced function such as RAID and read/write caching.

Software group

The software group produces device drivers, configuration and diagnostic tools for a variety of operating systems including AIX^{*}, Netware and a selection of Microsoft Windows^{**} platforms. Latest products include cross-platform sub-system configuration tools developed in C++ and Java^{**}.

Test group

The test group take the products developed by the rest of the department and subject them to real life situations. For hardware these start simply from tests of robustness, for example, how much can we physically bend an adapter card before it breaks, working up to complex functional tests designed to simulate a customer environment. A keen analytical mind, problem solving and communication skills are all essential to our work.

The future

The team at SSD Hursley has a history of innovation and timely delivery of top-class products and is hard at work on the next generation of storage products and the generation after that. Development at the leading edge of storage is exciting and challenging, getting involved in the fundamentals of computing upon which all other products are built.



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