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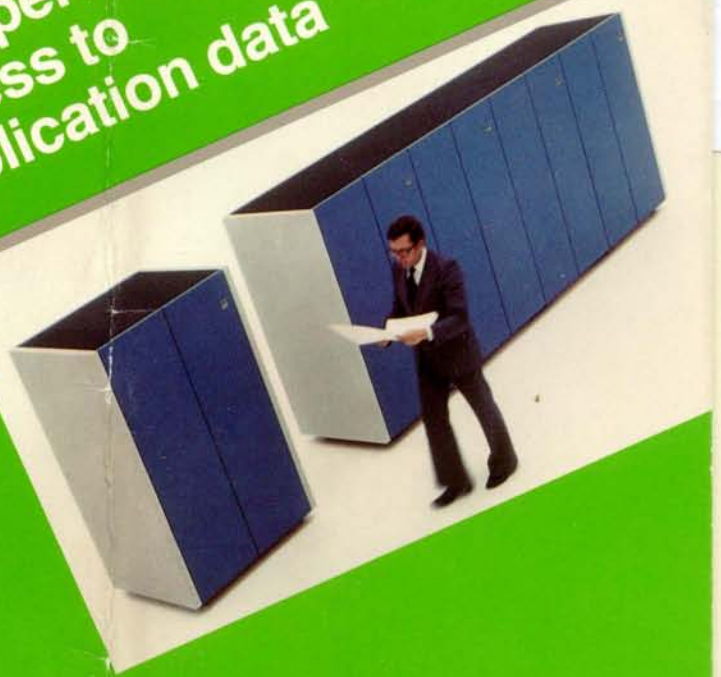
The IBM 3880 Storage Control Model 13 ...for high-performance access to application data



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The high-performance goal

With the growing number of computer applications available to more and more users, the delivery of effective online service increasingly requires both large-capacity storage devices and *fast* access to the application and system data stored on those devices.

Increases in storage device capacity and in the number of stored data sets present a challenge to data processing professionals: management of the large DASD capacity, improvement of overall system performance, and enhancement of systems personnel productivity.

Fast access to data

All of these needs—and more—are addressed by the new IBM 3880 Storage Control Model 13 which provides fast access to application and system data, with the potential to achieve dramatic increases in the DASD I/O throughput rate.

The 3880 Model 13 combines with 3380 Direct Access Storage units to provide a two-level, dynamically managed storage subsystem. Based on the IBM 3880 Model 3, the Model 13 employs two storage directors to control the 3380s. The difference, however, is that the directors for the Model 13 contain additional microcode to dynamically control a four- or eight-megabyte electronic cache. In this way, the Model 13 is designed to make most records available from the cache at electronic speeds, which reduces actuator contention and mechanical delays that occur with moving heads and rotating disks.

The cache storage directors share up to eight 3380 units—for a maximum of two full strings of 3380 DASD or 32 actuators per Model 13. In all, the Model 13 can control up to 20.16 billion bytes of direct access storage.

Dynamic management is the key

Dynamic management of the cache contents effectively extends advantages beyond physical cache size. The high-performance characteristics of the 3880 Model 13 result from satisfying most processor data requests from the electronic cache. To accomplish this, the Model 13 reads and stores not only the specified disk record, but also records *adjacent* to it. These records are retained in the cache until replaced by more active records. Observations s that records are frequently re and that subsequent records or written have a high prob of being located in close p in both space and time—i ing a high probability of "locality of reference."

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Thus, computer applications which exhibit a high ratio of reads to writes, as well as a high incidence of "locality of reference," are likely to show substantial improvements in average disk response time. Where no other contention appears, there is a potential to more than double the DASD I/O throughput while maintaining the same response time.

The value of systems performance

When measuring the value of computer systems in terms of terminal user satisfaction, two primary indicators emerge: fast response time and consistent response time.

The Model 13 can contribute to both by making the most active records available in the electronic cache when needed, thus reducing delays due to contention.

And since improved systems performance translates into improved service to end users—and the capability to service more of them—the Model 13 can help you get the most from your system.

Enhancing DASD capacity

Considerable time and expertise are expended today to increase system performance. Many systems, for example, are configured with additional controllers and channels, with data distributed across multiple actuators. Though helping to reduce contention and average access times, these practices frequently result in reduced DASD capacity utilization. Because it can enhance the performance of the direct access storage subsystem, the 3880 Model 13 can allow you to utilize a larger percentage of the capacity you already have, while reducing the need for extra controllers and channels.

An advance over fixed head storage

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over fixed head storage of changing the content of the cache to make the most active data the most readily available.

Improving personnel productivity

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example, while most data activity
at any given time may be concen-
trated on one or two actuators of a
DASD string, during the next time
period the highest level of data
activity may shift to different
actuators.

Dynamic management of the con-
tents of the IBM 3880 Model 13
cache can reduce the need for sys-
tem tuning tasks such as load bal-
ancing, and allow skilled systems
personnel to devote their time to
more productive tasks.

Ease of installation

Installation of the IBM 3880
Storage Control Model 13 requires
no changes in job control lan-
guage or application programs.

Supported by the MVS/System
Product Release 3, the Model 13
attaches to the IBM 30XX and 4341
Model Group 2 processors via the
three-megabyte-per-second,
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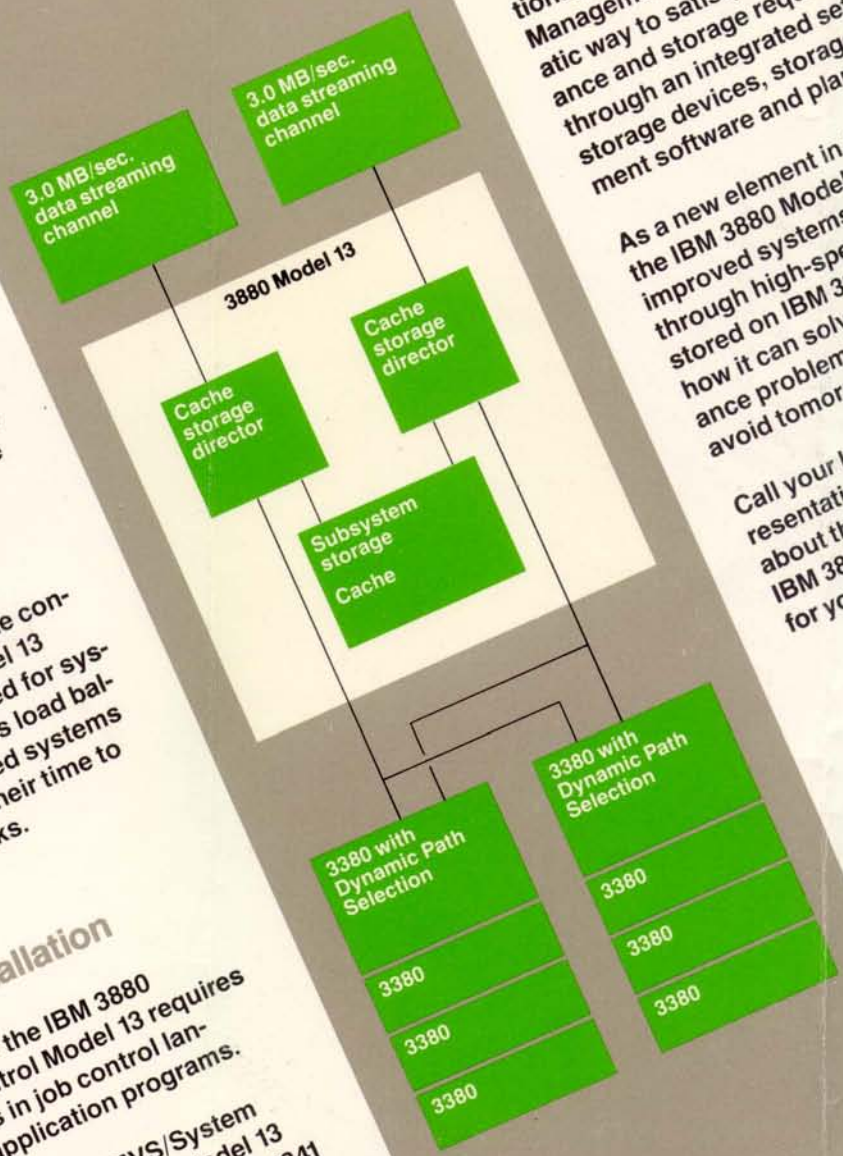

The IBM 3880 Model 13... meeting storage needs in the '80s

The Model 13 is the latest evolu-
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As a new element in this approach,
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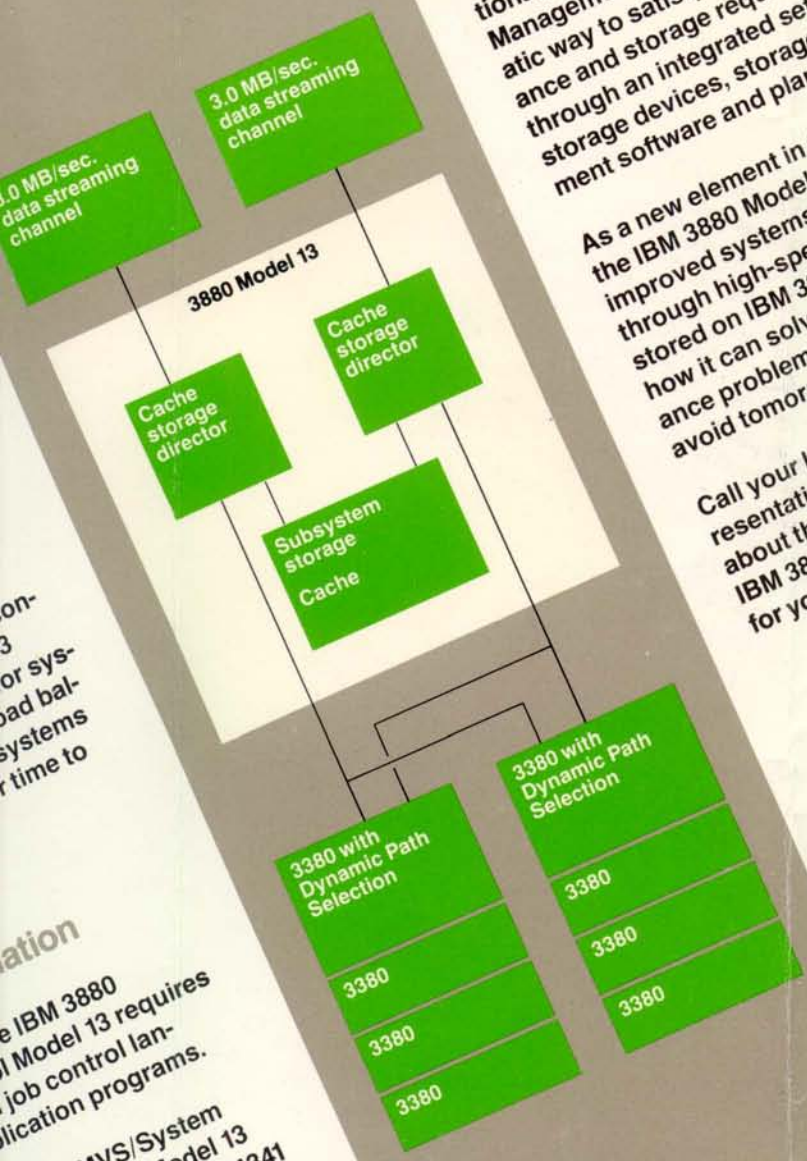

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This high-density microprocessor, with 1,496 circuits, is one-tenth the size of a penny, and the basic element of the IBM 3880 storage directors. With the power to execute five million commands per second, the 3880 microprocessor invokes an algorithm to dynamically manage application and systems data in the electronic storage.

3380

3880

Photographs show design models