

# HP 3000 BUSINESS COMPUTER SYSTEMS

## Introduction

HP 3000 computer systems are a compatible family of interactive, data-base oriented business processing systems. They have an integrated hardware and software design ideally suited to multi-purpose business data processing and dedicated manufacturing applications. Their advanced design provides a wide range of user-oriented capabilities that can be utilized with equal ease on both stand-alone systems and those in distributed processing networks.

## THE HP 3000 STRATEGY



The five key objectives shown below have served as the foundation of the HP 3000 strategy. Carefully following these objectives has made the HP 3000 the fifth largest installed computer system worldwide. HP's history of meeting objectives - and its commitment to continue following them - is the most important way to demonstrate to customers that the HP 3000 is an investment in the future.

1. Common operating system - Members of the HP 3000 product line share a common operating environment ensuring that applications can be moved without conversion or recompilation, from one model to another.
2. Ever-expanding product line - The HP 3000 product line is expanding, providing customers with a wide range of compatible systems so that they can match their applications to an appropriate system. Approximately every two years, we have introduced a new model of the HP 3000 family, doubling the performance of our most powerful system. Also, we have continued to reduce the price of our entry-level system. Members of the HP 3000, however, utilize a common operating environment to protect the user's investment in application software.
3. Every HP 3000 is upgradable - All HP 3000 systems are, and will continue to be, upgradable to higher performance systems. It is essential that customers' computer systems keep pace with the growth of their business and allow new applications to be added. Every HP 3000, from the first model ever shipped, is upgradable to the more powerful systems of our current product family. Upgradability, combined with compatibility, protects the customers' hardware and software investments.
4. Friendly, easy-to-use software - As computers become less expensive and more commonly used in interactive applications, it is essential that they become friendlier and easier to use. HP is continually developing

applications and tools which increase our customers' productivity by making the development of applications easier for them.

5. Networking capabilities which match our customers' organizations - All HP 3000 computers can be interconnected in networks allowing immediate access to geographically dispersed information. HP is committed to providing the wide range of data communications services necessary for networks of HP and IBM computers, and to utilizing industry standards (e.g. X.25 and SNA/SDLC) to meet the needs of multi-vendor customers.

## Overview

The HP 3000 family of compatible business systems is comprised of the Series 39, Series 42, Series 48, and Series 68 systems, each of which offers a full range of peripheral options and expandable hardware configurations. All HP 3000 systems feature compatible system software and application programs. Applications developed on the HP 3000 system can be executed on any other HP 3000 system. Each HP 3000 is supplied with the facility to execute compiled programs without the source language compiler on the system. (The systems differ only in performance and expandability).

In addition, all systems feature software disc caching, which decreases disc read time by using main memory as a buffer for disc access. This feature is optional on the Series 39 and standard on all other systems.

Each system, although sharing many compatible features, differs in overall capacity and thus, occupies a different position in the family line.

## Product Positioning

### Series 39

The HP 3000 Series 39 is a powerful, yet surprisingly affordable, entry-level system in the HP 3000 family of interactive business systems. It can offer the full functionality of HP 3000 computer systems - concurrent transaction processing, word processing, batch processing, data management, data communications and on-line program development - at a very low price. And as all HP 3000s use the same operating system, the Series 39 provides a compatible growth path to larger HP 3000 systems. The compact, entry-level Series 39 also includes an easy-to-use economical tape cartridge back-up system along with the choice of a 27 Mb, 64 Mb or 132 Mb disc drive.

### Series 42

The Series 42 is a mid-range computer in the HP 3000 family. The Series 42 is cost effective even at configurations supporting as few as 4 users and yet has the performance to support as many as 92 simultaneous users. Designed as a small business computer, the Series 42 can be the primary computer for small company business data processing applications or dedicated to a single application in a large company. In addition to its stand-alone capabilities, the Series 42 can operate as a node in a network of computers through the use of our distributed processing data communications software. The Series 42 is a cost-effective solution for computing needs at a number of different locations.

#### Series 48

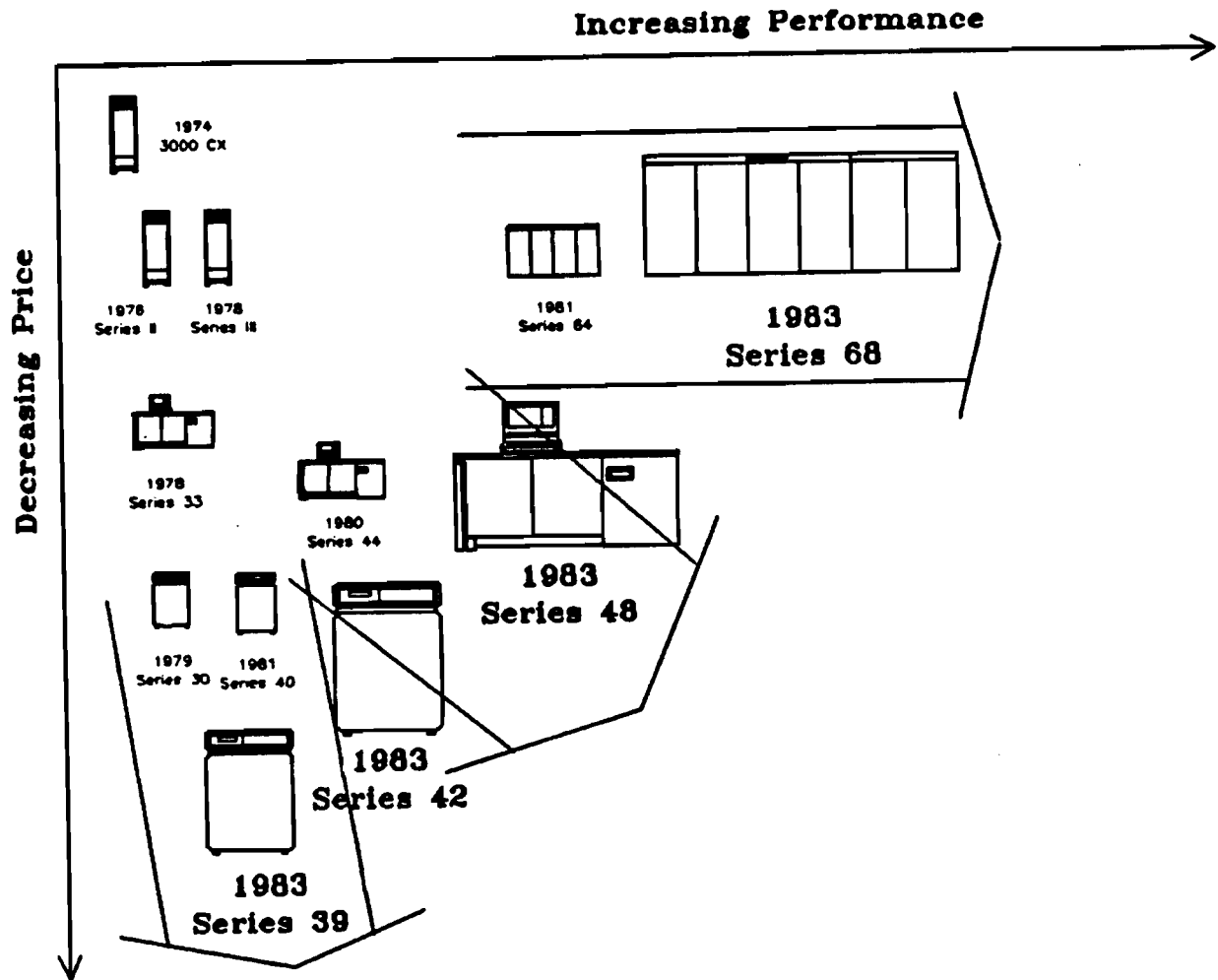
The Series 48 is a powerful and expandable mid-range member of the HP 3000 family. Operating in a stand-alone business environment, the Series 48 has the capability to handle a wide range of commercial processing needs. The Series 48 can operate equally well as a major node or as the central computer in a distributed processing network through our data communications software. The Series 48 supports up to 152 users performing a variety of applications. On-line transaction processing, program development, batch processing, word processing and data communications can all take place concurrently and easily on the Series 48.

#### Series 68

The Series 68 is the high-performance member of the HP 3000 family of compatible, interactive business systems. Performing as a distributed mainframe, the Series 68 has the processing power to handle a full range of EDP and distributed data processing needs, supporting up to 400 users. The Series 68 is suited for stand-alone operation and can provide a wide range of tasks for divisions in large companies or the EDP needs of an entire company. Operating in a distributed processing environment, the Series 68 can serve either as a major node or as the central computer in distributed networks. In addition to its on-line, interactive capabilities, the Series 68 performs equally well in batch processing applications. Whether the needs are for large distributed networks, intensive interactive sessions, or for dedicated stand-alone applications, the Series 68 can match the processing requirements.

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## AN INTEGRATED SYSTEM

The fundamental HP 3000 computer system consists of the system hardware, and the Fundamental Operating Software that includes the MPE operating system, utility programs, data base management, and data entry subsystems.

The HP 3000 software is integrated with an advanced hardware design that includes stack architecture, variable length code segmentation, a hardware-assisted virtual memory scheme, user protection, and dynamic storage allocation. Hardware and software work together, with hardware performing many of the operations conventionally performed by software, such as interrupts or subroutine calls.

## SYSTEM COMPONENTS

### System Hardware

The HP 3000 incorporates many features otherwise found only on very large computer systems, including:

- o Stack Architecture - provides private, hardware protected data storage for each user plus automatic movement of this data to and from the central processor.
- o Virtual Memory - consists of main memory plus an extensive storage area on magnetic disc to provide a total memory far exceeding the main memory size.
- o Separation of Code and Data - strictly separate domains for code and data permits code sharing and reentrant execution while maintaining data privacy.
- o Fault Control Memory - high speed semiconductor memory modules provide automatic fault detection and single-bit correction.
- o Microcode - more than 230 instructions are microcoded operations within the system.
- o Concurrent I/O and CPU operation - allows input/output to be performed concurrently with CPU operation.

Although the same software is used by all HP 3000 computer systems, specific system hardware differs for the Series 39, Series 42, Series 48, and Series 68. Generally, HP 3000 system hardware includes the system processor unit (SPU), main memory, and various peripheral devices available on each system series.

### Systems Comparison

Table 1 shows a comparison of the major features of each system.

Area/Feature	Series 39	Series 42	Series 48	Series 68
General				
Relative Performance	1.0	1.25	1.25	3.0
Main Memory	512Kb-3 Mb	1-3 Mb	1-4 Mb	3-8 Mb

## Systems Comparison . . . (continued)

Area/Feature	Series 39	Series 42	Series 48	Series 68
<b>Device Maximums</b>				
<b>Terminals</b>				
Point-to-Point	32	32	104	336
Total	92	92	152	400
Mass Storage	3.23 Gb	3.23 Gb	4.2 Gb	9.7 Gb
Tape Drives	4	4	8	8
INPs	3	3	7	24
<b>Other</b>				
Disc I/O Cache	Optional	Yes	Yes	Yes

TABLE 1

## Fundamental Operating Software

### MPE Operating System

The Multiprogramming Executive operating system (MPE) is the disc-based software system which supervises the processing of all programs that run on the HP 3000. MPE dynamically allocates such system resources as main memory, the central processor, and peripheral devices to each program as needed. In addition, MPE coordinates all user interaction with the system, providing an easy to use command language interface and a powerful programmatic interface in the form of intrinsics and a versatile file system.

MPE monitors and controls program input, compilation, run preparation, loading, execution and output. It also controls the order in which programs are executed and allocates and maintains usage records of the hardware and software resources they require. By relieving the user of many program controls, input/output, and other housekeeping responsibilities, MPE makes the HP 3000 extremely easy to use.

The major features of the operating system are:

- o Multiprogramming: Concurrent transaction processing, data communications, on-line program development and batch processing.

- o Concurrent multilingual capability: COBOL, RPG, FORTRAN, BASIC, PASCAL and SPL
- o File system with file backup, user logging, security and interprocess communication
- o Access security and complete accounting of resources
- o Friendly, powerful command language, including user-defined commands, conditional job control, on-line HELP facility, and meaningful error messages
- o Device and file independence
- o Input/output conveniences: Spooling of input and output, private disc volumes, and tape labels
- o Complete, automatic terminal management, local and remote
- o Power fail/auto restart

### Data Base Management



A wide choice of data base management facilities is available to HP 3000 users. The award winning IMAGE/3000 data base management system allows information to be related logically between data sets (files), minimizing data redundancy and facilitating information retrieval. IMAGE/3000 handles multiple files and makes it easy to define and create a data base tailored to specific needs. QUERY/3000 allows both programmers and non-programmers to access an IMAGE data base with simple English-like commands. The Keyed Sequential Access Method subsystem (KSAM/3000) also extends the file system by providing files which may have one primary and up to 15 alternate keys, with retrieval based upon the value of the data.

### Data Entry and Forms Management

To simplify data entry and forms management, HP VPLUS/3000 is included in the Fundamental Operating Software. It is a comprehensive data entry and forms management subsystem which provides both a ready to use data entry program, ENTRY, and a programmatic interface for your terminal-oriented application programs. It includes facilities for immediate data editing and validation, record reformatting, and interactive forms design and forms management.



## Utilities

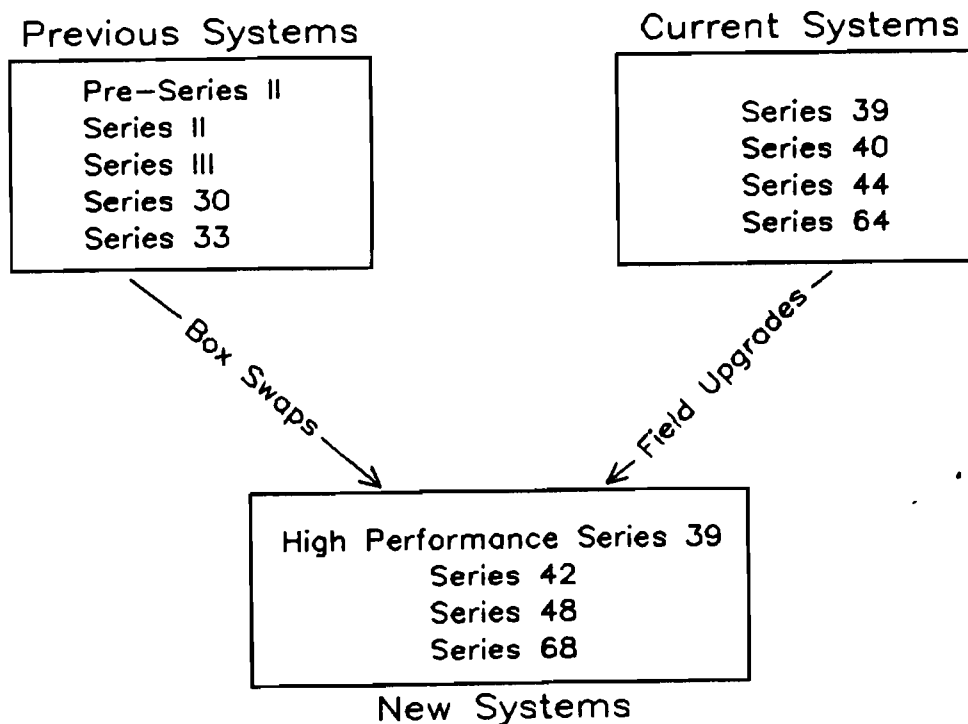
A set of utility programs, standard on each HP 3000, eases program development and file manipulation and aids in system administration. The utilities included in the Fundamental Operating Software are:

- o EDIT/3000 - An easy to use text editor
- o FCOPY/3000 - A program for general file copying
- o SORT-MERGE/3000 - A facility for ordering records in a file and merging sorted files
- o System Utilities - provide administrative controls, reports on system resources, and other special purpose capabilities
- o Facility to execute compiled programs without the source language compiler on the system

## Additional Software Systems

In addition to the Fundamental Operating Software, a full set of programming languages, extensive data communication, and data entry facilities are offered for use on the HP 3000 computer systems. For details on the available software products, see the sections that follow.

## **Growth Paths**



Growth paths are available from all HP 3000 computers to the current product line. Because HP 3000 systems are software compatible, moving to a higher performing system can be easily achieved. Upgrades can be made with a minimum of disruption to the customer. Consult a current HP 3000 Computer Systems Price Guide for information on the current upgrade programs available.

## Documentation

Included with the HP 3000 computer system is a comprehensive set of user manuals. Complete documentation is provided for the operating system and for special tasks such as system installation and program conversion, in addition to documentation for individual subsystems.

### Introductory Level Manuals

These manuals introduce all the major concepts of the HP 3000 computer system and provide an introduction to the use of the system. Particularly informative are the series of manuals (Using the HP 3000, Using Files, Using VPLUS/3000) that contain practical examples showing the new user how to perform a variety of common tasks. These include how to build files, design terminal screens, compile and run programs, equate files to input/output devices, and obtain hardcopy listings.

#### Major Introductory Level Manuals:

- o General Information Manual (30000-90008)
- o Using the HP 3000 (03000-90121)
- o Using Files (30000-90102)
- o Using VPLUS/3000 (32209-90004)

### Standard User Level Manuals

These manuals provide complete reference documentation for the full line of HP 3000 software. They fall into two general categories:

- o Program Development manuals - provide complete reference specifications for the programmer on using the operating system, the various language compilers, the data base and file management subsystems, as well as the data editing and data entry subsystems, and all the HP 3000 utility programs. An Error Message and Recovery Manual summarizes the error messages and recovery actions for operating system, language, and utility subsystem errors. Another useful manual, the Index to the MPE Reference Documents, provides a master index to the entire set of MPE operating system manuals.

- o Applications manuals - provide full instructions for non-programmers on using the Hewlett-Packard application programs available on HP 3000 computer systems.

#### Major Standard User Level Manuals:

- o Commands Reference Manual (30000-90009)
- o Segmenter Reference Manual (30000-90011)
- o System Utilities Manual (30000-90044)
- o Index to MPE Reference Documents (30000-90045)
- o Error Messages and Recovery Manual (30000-90015)
- o Debug/Stack Dump Reference Manual (30000-90012)
- o Intrinsics Reference Manual (30000-90010)

### Administrative Manuals

These manuals provide a guide for the day-to-day management of the system. System monitoring is covered in the HP 3000 Console Operator's Guide. The more complex information required for system modification and account managing is covered in the System Manager/Supervisor Manual.

#### Major Administrative Manuals:

- o HP 3000 Console Operator's Guide (32002-90004)
- o System Manager/Supervisor Manual (30000-90014)

### Summary Level Manuals

These are a set of convenient pocket size manuals that summarize the reference specifications for the MPE operating system, and for various programming languages and subsystems. These guides are primarily memory aids and assume a familiarity with the effects of the syntax they summarize. An essential pocket guide is the Software Pocket Guide that summarizes the MPE command and system procedures, the file system error messages, and the commands that control the more commonly used utility programs. A quick reference guide is available for the data entry operator who uses the HP VPLUS/3000 data entry application program, ENTRY.

#### Major Summary Level Manuals:

- o Software Pocket Guide (30000-90049)
- o VPLUS/3000 ENTRY Program Operator's Guide (32209-90003)

## Summary

The HP 3000 productline consists of the HP 3000 Series 39, a powerful yet affordable entry-level system, the Series 42 mid-range computer which is surprisingly affordable yet can be configured to support as many as 92 simultaneous users, the Series 48, a powerful yet expandable mid-range computer suited to a wide range of commercial processing needs, and the Series 68 high performance interactive business system. All previous HP 3000 computers can be upgraded to the current systems and numerous software products and peripherals are available. A common operating system allows the user to transfer application programs from one model to the other without conversion or recompilation. These friendly, easy-to-use systems can be configured into a network to match the customers' organization or other requirements.