

# Powerful Multiuser Multitasking

*Concurrent*<sup>TM</sup>  
DOS

# Operating Systems



 DIGITAL RESEARCH<sup>®</sup>

# Concurrent

## DOS FAMILY OF OPERATING SYSTEMS

### ► Introduction

Welcome to the family of Concurrent™ DOS: Concurrent DOS™ 386 and Concurrent™ DOS XM (Expanded Memory). Concurrent DOS is a multiuser, multitasking operating system for computer systems based on the Intel® 8086 series of microprocessors. Concurrent DOS offers features normally found only in mainframe operating systems. It is designed to support multiuser and multitasking operations: true simultaneous processing is achieved, thereby out-performing products which simulate multiuser and multitasking functions.

### ► PC DOS/MS-DOS Compatibility

The members of the Concurrent DOS family are fully PC DOS 3.X compatible and will run applications such as Lotus® 1-2-3®, Framework®, dBase® II and III, Symphony®, SuperCalc™, and many others. The GEM® (Graphics Environment Manager™) software team of publication and presentation graphics products developed by Digital Research, and other GEM applications, are also supported by Concurrent DOS.

### ► Multiuser Applications

Concurrent DOS runs standard PC DOS 3.X multiuser applications, like dBase III Plus LAN and RBase System V, in addition to a wide range of Concurrent DOS applications such as Dataflex®, Excalibur®, Bravo®, Income II®, Inmass II®, Medical Manager™, Pegasus™, Datafit® DP4 and Omicron™.

### ► Concurrency

The members of the Concurrent DOS operating system family are both multiuser and multitasking. A single user can run multiple PC DOS programs; multiple users can use the same multiuser application; or several users can run different programs, all at the same time. File and record locking are inherent to Concurrent DOS and guarantee the integrity of data files.

True concurrency means several application programs run simultaneously in the system; most programs continue to run when control is switched to other programs. Concurrency allows you to work more effectively with your computer, switching between various programs at the touch of a key. Concurrent DOS utilizes a priority scheduling mechanism to assure that programs requiring more system resources receive them in a timely and efficient manner.

### ► Networking

The DR NET™ networking extension provides powerful networking capabilities to Concurrent DOS users. Workstations can simultaneously act as servers and/or requesters in a Local Area Network (LAN), sharing expensive peripherals such as hard disks and laser printers, while maintaining full local processing capabilities. DR NET is particularly suited to users who want or need to share databases and program files. It is available to Original Equipment Manufacturers (OEMs) and to purchasers of the System Builder's Kit.

### ► System Management

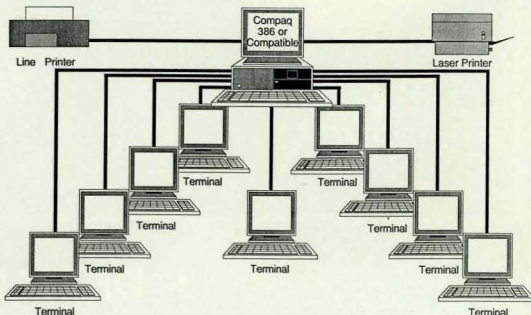
With the Concurrent DOS menu system, users can perform standard operating system functions, such as copying files, printing, and changing directories, without having to remember and enter a series of commands. Menus are also customizable to include the functions that are used the most. Each member of the Concurrent DOS operating system family comes with a wide range of utility programs, including a file manager, a quick reference cardfile program, and an editor. In addition, both files and subdirectories can be password protected.

### ► Reliability

Another strength of the Concurrent DOS operating systems is high reliability. The software has been tried and tested over the past five years by users all over the world. This experience and field-testing has helped to make Concurrent DOS XM and Concurrent DOS 386 solid, problem-free operating systems.

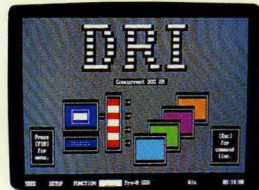
### ► Performance

Concurrent DOS has evolved to become a popular alternative to other operating systems. It performs multiuser operations faster than XENIX®; unlike OS/2™, it allows multiuser and multitasking of PC DOS applications and provides faster throughput than PC DOS. If high performance at a reasonable price is part of your evaluation criteria, Concurrent DOS is the answer.



10-User System

# Concurrent DOS XM



## ► Concurrent DOS XM Multiuser Support

**C**oncurrent DOS XM is designed to provide maximum performance for systems based on 8088, 8086 and 80286 microprocessors. It can be customized easily for use by a single-user or multiple users through easy-to-use configuration utilities. A system can be configured to support up to six users connected via serial terminals to the main console. The multitasking functions of Concurrent DOS XM, especially when combined with expanded memory, allow these users to share system resources. Thus, Concurrent DOS XM becomes a low-cost alternative to networking.

## ► Expanded Memory Features

Concurrent DOS XM works with conventional memory and/or expanded memory. It uses a memory banking mechanism, EEMS (Enhanced Expanded Memory Specification), that maps expanded memory into 8086 addressing range. Through the memory bank switching scheme, Concurrent DOS XM accesses the memory on up to four expanded memory boards. This means existing applications can run in expanded memory with multiple applications accessing up to 8 Mbytes of memory. Concurrent DOS XM performs its own memory management, assigning pages of memory to each active application. EEMS is totally transparent to application programs. Concurrent also provides expanded memory board compatibility for applications that conform to LIM-EMS.

## ► Over 1000 Multiuser Applications

There are over 1000 Concurrent DOS Multiuser applications available worldwide. Programs are available for accounting systems, point of sale, office automation, database systems, real-time process control and communications, just to name a few.

Additionally, Concurrent DOS runs over 8,000 single-user PC DOS applications.

## ► Other Features

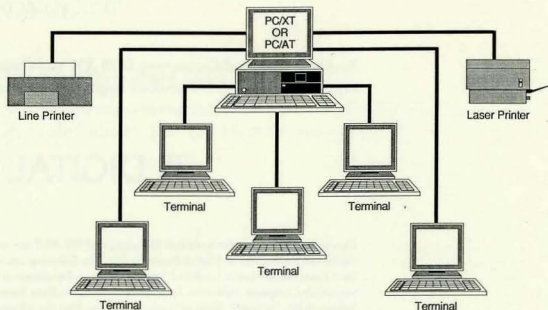
Concurrent DOS XM includes several additional features:

- runs thousands of PC DOS programs including terminate and stay resident (TSR) applications
- PC DOS 3.3 compatible
- window management
- configurable menu system
- supports hundreds of multiuser vertical market applications
- on-line HELP
- runs on IBM® Personal System/2™
- math coprocessor support
- integrated programmable function keys and keyboard macros
- command line history editing and recall
- extended BATCH processor
- input/output redirection
- PC DOS-style device driver support

## ► Hardware/Memory Requirements

Concurrent DOS XM requires the following:

- IBM®PC, PC/XT™, PC/AT™, or compatibles and Personal System/2 Models 30, 50 and 60 (a hard disk is essential for increased performance and for multiple users).
- Minimum of 256 Kbytes memory, when used in conjunction with an EEMS expanded memory board. Otherwise 512 Kbytes required.
- Monochrome and/or color display monitors can be used. The operating system supports IBM®Color Graphics and Enhanced Graphics Adaptor or EGA-compatible cards and VGA™-compatible cards.



6-User System

# Concurrent DOS 386



## ► Concurrent DOS 386

**A**s the newest member of the Concurrent DOS family, Concurrent DOS 386 takes advantage of the power and speed of the Intel 80386 microprocessor while maintaining full DOS compatibility. It is extremely easy to install and use. This operating system uses the 386 memory paging scheme to its full capacity. A large number of multiuser, multitasking applications are available for use in the Concurrent DOS 386 environment. A system can be configured to support up to ten users by connecting serial terminals to the main console.

## ► PC DOS Programs on Terminals

Your favorite DOS programs such as Lotus 1-2-3, dBase, Symphony and Sidekick can now run on serial terminals, allowing multiple users to utilize the same data files. In addition, up to two PC DOS applications can be initiated on each terminal.

## ► LAN Application Support

Today, more and more PC DOS application developers are realizing the need for many users to access their products. dBase III Plus LAN and SuperCalc 4 LAN are two examples of such products. A drawback to using these applications is the requirement of installing sophisticated network hardware and software to support these products.

With Concurrent DOS 386, the LAN hardware and network software are emulated by Concurrent DOS. This means that multiple users, with terminals, can access files just like users at workstations on a network would without incurring the cost or complexity related to a typical network implementation.

## ► Memory

Concurrent DOS 386 employs a powerful memory paging scheme that fully supports the Expanded Memory Specification (EMS-LIM) without the need for additional hardware or software. Under Concurrent DOS 386, the operating system uses 80386 internal registers to provide logical-to-physical memory translation. Because no copying within memory is involved, data retrieval, program execution, and task switching are performed at full processor speed.

Concurrent DOS 386 is capable of addressing up to 4000 Mbytes of linear physical memory and is limited only by the amount of memory that can be fitted into the system.

With Concurrent DOS 386, applications can use up to 592 Kbytes with CGA capability. The Transient Program Area (TPA) with EGA support provides 528 Kbytes of memory for your application. The amount of TPA for the application is dependent upon the specific system you are using.

## ► Other Features

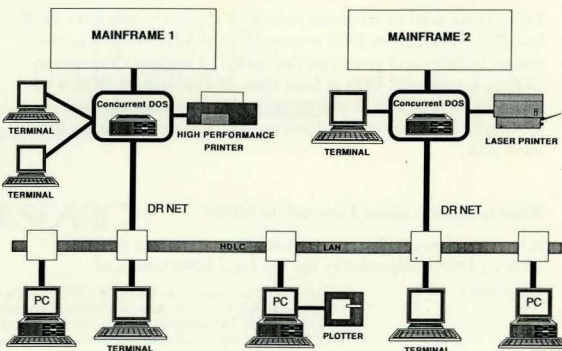
Concurrent DOS 386 supports all the Concurrent DOS XM features plus:

- runs PC DOS applications on serial terminals
- supports two tasks on each serial terminal
- emulates EMS with 80386 linear memory
- runs PC DOS LAN applications on serial terminals
- executes terminate and stay resident (TSR) programs on serial terminals
- runs on the Compaq® DeskPro® 386 and compatibles, plus the IBM Personal System/2 Model 80

## ► Hardware/Memory Requirements

Concurrent DOS 386 requires the following:

- Intel 80386-based microcomputer (a hard disk is recommended for increased performance and for multiple users).
- Minimum of 512 Kbytes memory for single-user system. About 1 Mbyte of additional memory is required for each group of 3 additional users in multiuser system environments.
- Monochrome and/or color display monitors can be used. The operating system supports IBM Color Graphics, Enhanced Graphics and VGA Graphics Adaptors or compatible cards.



Fully Integrated Network Gateway

## QUESTIONS AND ANSWERS

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hat is concurrency?

Concurrency allows multiple users to share system resources and execute the same program or different programs simultaneously. It also allows a single user to execute several different programs simultaneously.

### How much memory do I need to run Concurrent DOS 386 and Concurrent DOS XM?

You need a minimum of 512 Kbytes of memory to run Concurrent DOS. However, if you are using an EEMS Expanded Memory Board with Concurrent DOS XM, you need only 256 Kbytes of conventional memory.

### What kind of hardware do I need?

For Concurrent DOS 386, you need a Compaq Deskpro 386 or compatible, or IBM Personal System/2 Model 80. For Concurrent DOS XM you need an IBM PC, PC/AT, PC/XT or compatible or IBM Personal System/2 Model 30, 50 or 60. Memory boards to take full advantage of the expanded memory capabilities of Concurrent DOS XM are optional.

### How do I install Concurrent DOS?

Concurrent DOS practically installs itself. The installation process is entirely menu-driven. You are prompted for all installation options and told when to change disks. Just boot Concurrent DOS from the system diskette and follow the menu instructions.

### Do I need to reformat my hard disk to install Concurrent DOS?

There is no need to reformat your disk if you already have DOS installed. Concurrent DOS creates its own subdirectory for its system utilities and gives you the option of loading Concurrent DOS or regular PC DOS at boot time. If Concurrent DOS is the only system installed, it has its own utilities for formatting, partitioning and activating Concurrent DOS directly from the hard disk.

### What is unique about Concurrent DOS?

It is a real-time, multiuser, multitasking operating system offering DOS-compatibility for the Intel 8086 family of processors.

### How many programs can I run at once?

Under Concurrent DOS 386 and Concurrent DOS XM, you can run up to four applications plus background tasks on the main console. Concurrent DOS 386 supports two additional tasks on each attached serial terminal while Concurrent DOS XM supports one application per serial terminal. Both systems will run a maximum of 255 simultaneous tasks.

### How many users does Concurrent DOS support?

Concurrent DOS XM will support a maximum of six users while Concurrent DOS 386 supports up to ten users. With a Concurrent DOS System Builder's Kit, you can extend the number of users to the maximum the hardware will allow.

### Will the PC DOS programs I have now run on Concurrent DOS?

Yes, most PC DOS programs will run on Concurrent DOS, including such popular programs as Lotus 1-2-3, dBase II and III, Symphony, SuperCalc, Framework, and many others. GEM presentation and publication graphics applications and other GEM programs also run on Concurrent DOS. With Concurrent DOS 386, character-based PC DOS applications will also run on attached serial terminals.

### What about CP/M-86® programs?

All CP/M-86 programs also run on Concurrent DOS.

### What control does a programmer have over programs running on the system?

Concurrent DOS provides for prioritization, timing and parent/child process control as part of the system service calls. Programs may also transfer and communicate information with each other.

### Can programs share files?

Yes, the programming interface provides for file sharing as well as a full-featured file- and record-locking scheme.

# PROGRAMMING TOOLS

## ► System Builder's Kit

**T**he XIOS is the software interface between Concurrent DOS 386 or Concurrent DOS XM and the physical hardware. With the Concurrent DOS System Builder's Kit, Original Equipment Manufacturers (OEMs) and Value Added Resellers (VARs) can modify the XIOS software to tailor it to almost any 8086-, 80186-, 80286- or 80386-based computer system. They can also modify the XIOS to support additional users as well as custom add-on boards and unique peripherals. A System Guide and Programmer's Utilities Guide for your particular version of Concurrent DOS are also included.

## ► Programmer's Toolkit

Independent Software Vendors (ISVs) and VARs can use Concurrent DOS to support and write sophisticated vertical market applications in single-user and multiuser environments. Applications written for the Concurrent DOS environment will work unmodified on DR NET, providing application-transparent networking solutions. Developers can provide complete software solutions at the microprocessor level without losing PC DOS compatibility. The programming interfaces of both Concurrent DOS XM and Concurrent DOS 386 are fully compatible with each other, providing a flexible system environment for existing and new applications.

A System Guide, Programmer's Guide, and Programmer's Utilities Guide are included with the Programmer's Toolkit.

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Registered users of Concurrent DOS XM and Concurrent DOS 386 receive 90 days of free technical support and are offered product upgrades at a nominal charge directly by Digital Research.

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