

UNISYS

an introduction to

BTOS
III

Preface

An Introduction to BTOS II was designed as a valuable tool that can help you:

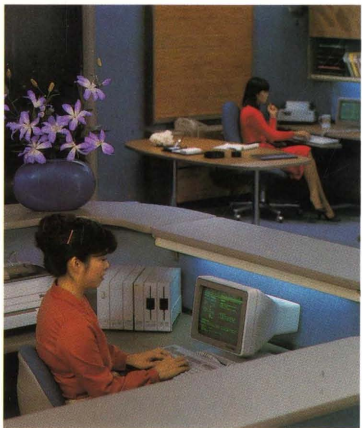
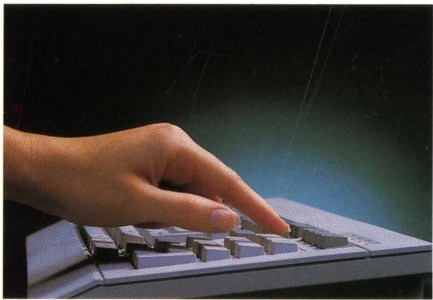
- understand the features and impact of BTOS II, the first BTOS protected mode operating system
- decide if BTOS II is the right product for your needs

Whether you already know about BTOS or are just becoming familiar with it, *An Introduction to BTOS II* includes something for everyone.

You can read through the guide from start to finish, or selectively read areas that interest you. For your convenience, we've included an index so that you can refer back to specific information.

This Introduction provides answers to these questions:

- | | |
|--|--|
| What's the story behind BTOS? | Pages 1–5 provide a look at the history and success of the BTOS product line. |
| What is BTOS II all about? | Pages 7–10 present an overview of the exciting, new BTOS II features. |
| Protected mode: what is it? | Pages 11 and 12 give you a brief introduction to the concept of protected mode. |
| Are there other BTOS II features? | <p><i>An Introduction to BTOS II</i> contains information about new features and products:</p> <ul style="list-style-type: none">■ improved clustering■ Context Manager II and Windows■ Computer-Based Training■ new Nationalization techniques |
| What if you have questions? | You can prepare for the unexpected by reviewing the answers to our list of anticipated questions (on page 31). |
| Is there anything else? | <p>Page 13 gives you a list of the BTOS II product information (complete with release levels and ordering form numbers).</p> <p>Because BTOS II is the first operating system of its kind, we've added a glossary to help you understand new terms.</p> |



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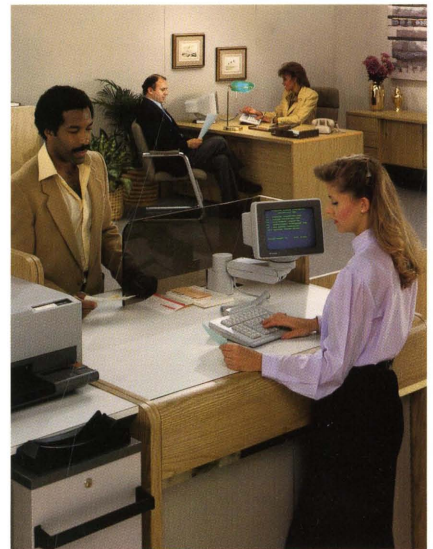
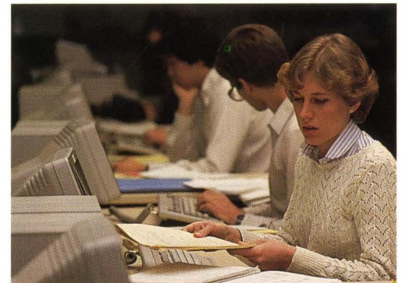
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BTOS evolution: past, present, and future

- B•TOS** (bē-tās) n. 1. the powerful Unisys workstation operating system
2. the name referring to the family of workstations that runs BTOS

The term BTOS has become recognized throughout the computer industry; BTOS has set the standard by which business operating systems are compared.

Because BTOS has so many key features built directly into it, this Unisys™ microprocessor operating system has the power and flexibility needed to compete in today's business environment.

How did it all begin?

In 1982, with the introduction of BTOS 1.0 and the B21 and B22 workstations, Unisys announced the first sophisticated workstation designed specifically to serve the needs of the business community. These early BTOS workstations allowed users to share files, disks, printers, and data communication lines.

Over the past five years, Unisys has made tremendous enhancements to the BTOS product line that have helped us maintain our superior workgroup position:

- Released in 1982 and 1983, respectively, BTOS 2.0 and 3.0 offered unparalleled software to keep pace with the increasing needs of large and small organizations around the world.
- In 1984, we announced BTOS 4.0 and unveiled the B26 workstation (based on the Intel 80186 microprocessor) and the XE520, a shared-resource processor that acts as a BTOS master workstation. BTOS 4.0 was the first release of the operating system that supported multipartitions as a standard product rather than a customizable option.

Table 1 **BTOS Technological Advances**

Technology	1982	1987
Microprocessor	8086	80386
Clock speed	5 MHz	16 MHz
Maximum Memory	640 Kb	4 Mb
Maximum Disk Storage	60 Mb	272 Mb
Cluster Line Speed	307 Kbps	1.8 Mbps

- In 1985, BTOS 5.0 supported the sophisticated Professional Word Processor (PWP) and the new word processor-specific K2 keyboard.
- Also introduced in 1985, BTOS 6.0 supported the growing financial environment. (The results of this special release were incorporated into BTOS 7.0.)
- With the release of BTOS 7.0 in 1986, the marketplace witnessed the debut of two new workstations (the B27 and the B28), and two new keyboards (the K3 and K4).
The first Unisys workstation to use "extended" memory, the B28 workstation (based on the 80286 microprocessor) offered the same modular design as the B26. The B27 workstation, an Intel 80186-based machine, provided enhanced video capabilities with its 132-column, 34-line screen.
- In early 1987, Unisys again introduced a new workstation with the release of BTOS 8.0. The B38 workstation (based on the Intel 80386 microprocessor) was considerably more powerful and faster than its predecessors.

Table 1 summarizes the BTOS technological advances over the last five years.

Has BTOS been successful?

Yes. The fundamental reason behind the success of BTOS is that it was *designed* as a multi-user, multi-tasking operating system; unlike many other operating systems, these features and capabilities are inherent in BTOS.

BTOS provides the complete solution for customers who want an operating system that allows them to:

- share information
- run many applications simultaneously
- share expensive hardware and software
- effectively communicate with others

The BTOS Family of Workstations has opened new markets by:

- selling approximately 70 percent of the BTOS workstations to large, Fortune 1000-type accounts
- installing about 50 percent of those workstations into IBM® accounts

More specifically, in 1986:

- annual unit shipments grew 66 percent (new units exceeded 56,000) (see figure 1)
- worldwide, our installed base reached approximately 120,000 units (see figure 2)
- the BTOS workstations dollar value grew 40 percent
- the BTOS workstation installed base value exceeded \$1 billion

Consistent with our marketing strategy, the IBM mainframe environment has been a particularly strong new account area for BTOS workstations. The superior networking and communications capabilities of the BTOS workstations, combined with custom application strengths, have allowed them to outperform competitive IBM products.

In a 1986 report, Dataquest ranked the BTOS Family of Workstations number one in workgroup computers (with 2 to 10 users per workgroup). Based on 1985 revenue, Unisys captured 23.3 percent of the market share. IBM, our closest competitor in this survey, had a 9.1 percent share of the market. Figure 3 shows our leadership position within this market segment. ▶

Figure 1 Annual Shipments of BTOS Workstations

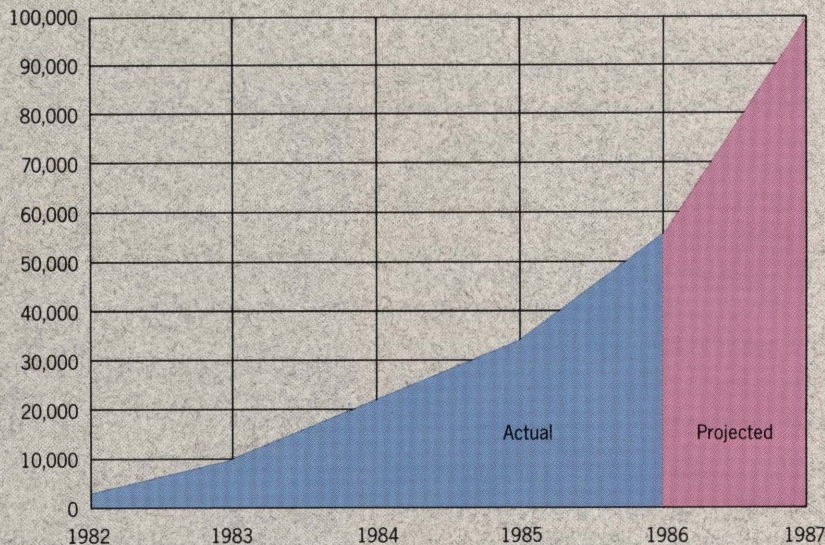


Figure 2 Worldwide Installed Base (1982-1986)

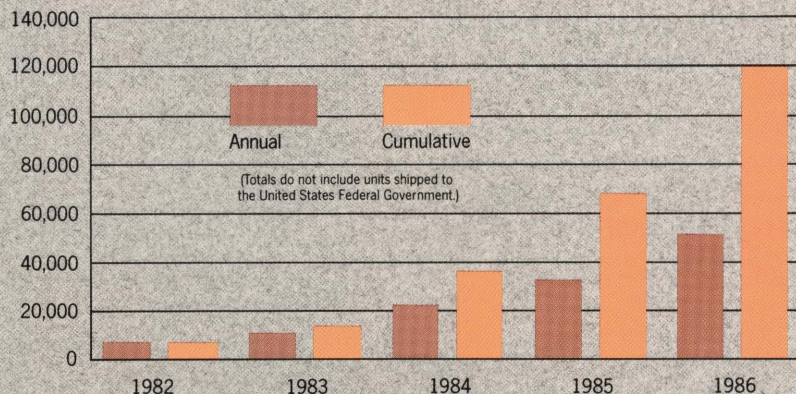
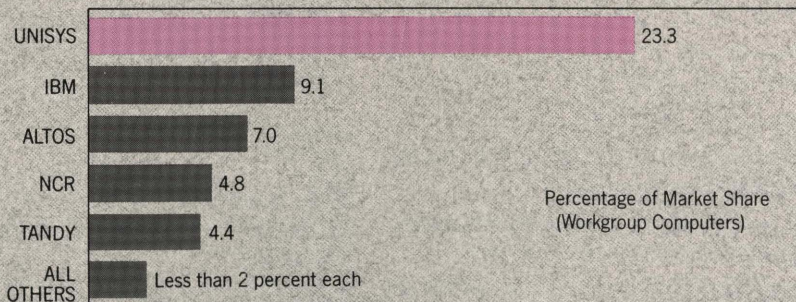


Figure 3 Dataquest Workgroup Survey Results



How is BTOS doing in the industry today?

To get an idea of just how well BTOS is doing, you must understand that today's market revolves around four key elements. Unlike our major competitors, who are just now catching on, BTOS HAS ALWAYS addressed these areas:

- superior multi-tasking and multi-user operating system
- modularity
- communication
- IBM coexistence

What is a Multi-User Operating System?

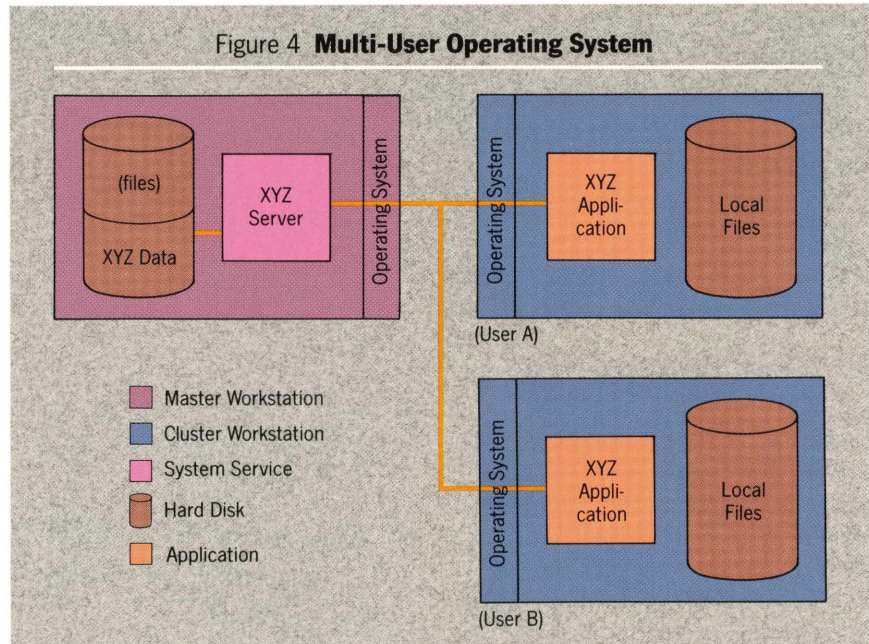
A multi-user operating system supports concurrent multiple users in an integrated environment. The multi-user operating system manages all shared resources and the communications within the cluster.

Figure 4 illustrates a multi-user system: Users A and B, independently and on separate cluster workstations, access the master workstation to run the XYZ Server and share the XYZ files at the master.

Because the operating system shown in this figure is not multi-tasking, Users A and B cannot perform other tasks while working with the application, and the master workstation can only run the XYZ Server. Any other application would have to wait until the server was finished.

What is a Multi-Tasking Operating System?

A multi-tasking operating system provides concurrent task processing. (In this case, task means an application or system service.)



For example, as shown in figure 5:

- User A is concurrently using a word processor, printing a document, and accessing the XYZ Server and XYZ Data to process an XYZ application.
- User B is concurrently copying files, using a word processor, and accessing the XYZ Server and XYZ Data to process an XYZ application.

Because this operating system is not multi-user:

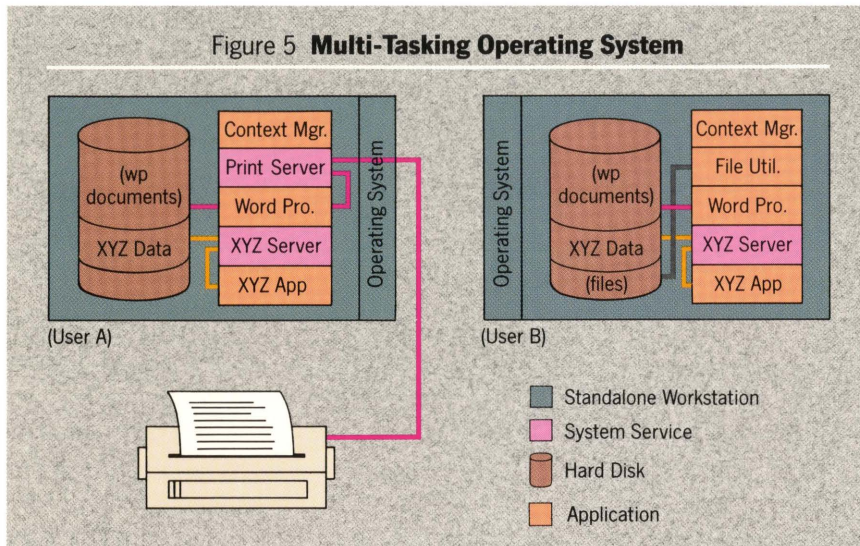
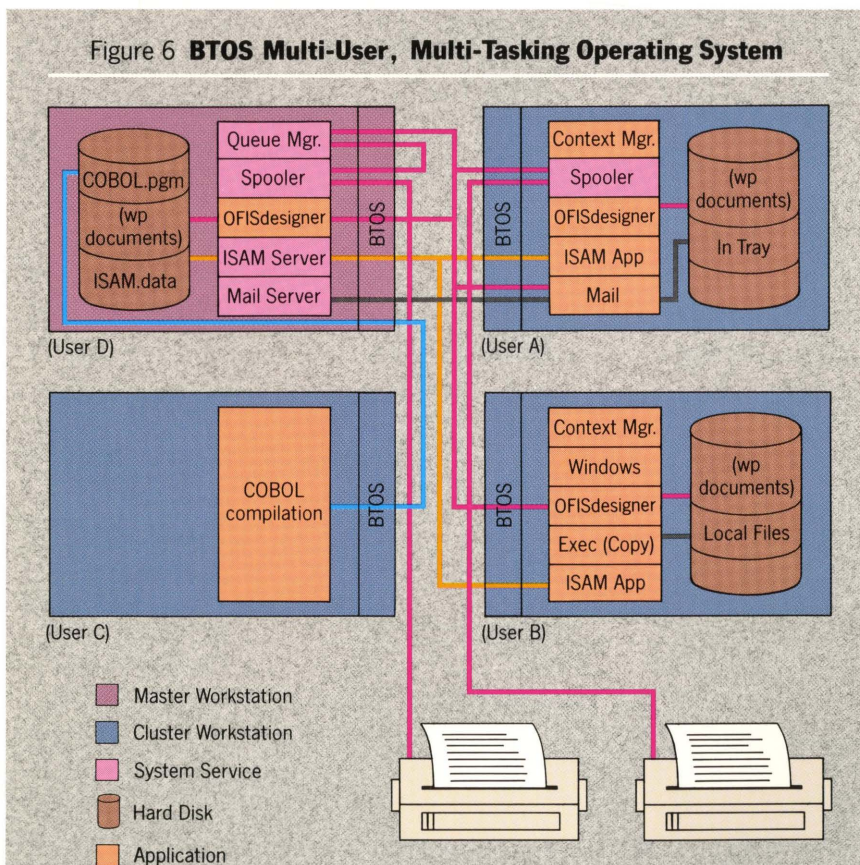
- Users A and B must each have an XYZ Server and XYZ Data and cannot share the XYZ Data.
- User B cannot share User A's printer.

What Happens When You Combine the Multi-User and Multi-Tasking Features?

Building on the previous multi-user and multi-tasking examples, figure 6 illustrates the BTOS multi-user,

multi-tasking operating system that allows:

- User A to concurrently process an ISAM application (using the ISAM Server and ISAM Data Set at the master), print mail, receive mail messages, and perform word processing (OFISdesigner), while
- User B prints an OFISdesigner™ document, copies files at the Executive, and processes an ISAM application (sharing the ISAM Server and ISAM Data Set that User A is accessing), while
- User C, on a cluster workstation without a hard disk, accesses the master to compile a COBOL program, and while
- User D, on the master workstation, runs OFISdesigner.

Figure 5 **Multi-Tasking Operating System**Figure 6 **BTOS Multi-User, Multi-Tasking Operating System**

Is workstation modularity important?

Yes. Imagine the elegance of a solution that lets you tailor software and hardware to the specific demands of your working environment.

From the operating system and Context Manager to Pascal and Enhanced Multiplan, you can run most BTOS software products on all BTOS workstation types. This unique capability allows you to share resources among different workstation types.

Within a cluster, users can share information that resides at the master workstation. In fact, a cluster workstation can depend entirely on a master workstation for its operating system, applications, and file storage.

Expandable workstations allow you to increase your system's capabilities. Some of the BTOS options include a graphics slice, floppy disk drives, hard disks, additional ports, voice modules, additional memory (cards), and many printers.

BTOS workstations won't crowd your work area; they are physically compact and easy to move from one place to another. If your work area is small or you need extra space, you can even locate the CPU and disk drives across the room (in a bookcase, for example).

But, more importantly, most BTOS peripherals are interchangeable across the product line. It is easy to detach a module, such as a graphics slice, from one workstation and attach it to another. ►

Do BTOS workstations have advanced communication capabilities?

Yes. This is important because users in a cluster need to communicate with each other, with other clusters, and with division or corporate-level mainframe systems. BTOS workstations address these needs with ease.

For communications between clusters, customers can:

- connect clusters within a building over a high-speed local area network (LAN)
- connect clusters using telephone lines to cover greater distances
- combine these two communication capabilities

Mainframe communications can be handled just as easily. The master workstation acts as the mainframe gateway, managing the communication line. Workstations in a cluster either emulate terminals, queue batch jobs for submission to the host, or provide an environment where an application can interact with an application on the host system.

The master workstation can execute other applications concurrently with its communication activities, so it need not be dedicated to this function.

Can BTOS workstations coexist with IBM?

Yes. BTOS and IBM products can coexist in three ways:

1 BTOS workstations communicate with IBM hosts.

Unisys provides various communications options for interfacing to an IBM mainframe.

In the SNA network, these options include:

- 3270 environment (both terminals and controllers)

- Remote Job Entry (RJE)

- OFISbridge™

OFISbridge provides a BTOS interface to DISOSS (IBM's Distributed Office Support System) that allows you to convert documents created with a BTOS word processor into IBM's DCA format, file documents on the IBM mainframe as revisable form documents, and distribute filed documents to a word processor for editing. For more information about OFISbridge, refer to the *OFISbridge New Product Announcement* (August 1986).

In the Bisync network, these options include:

- 3270 environment (both terminals and controllers)
- 2780/3780 emulator

2 BTOS workstations host MS-DOS applications.

BTOS provides PC application compatibility through a hosted MS-DOS™ 2.11, or MS-DOS 3.1 with the PC Compatibility Module and the PC Emulator. The PC Emulator allows many MS-DOS applications to run on B26, B28, and B38 workstations.

3 PC compatibles operate in BTOS workstation clusters.

ClusterShare™ products broaden the clustering capabilities of BTOS workstations; they give users access to BTOS resources from a Unisys PC or compatible that is connected to the BTOS master workstation. For more information about ClusterShare, refer to the *BTOS Family of Workstations New Product Announcement (NPA)* (March 1987).

Where do we go from here?

Personal computers have been popular since the introduction of the IBM PC. Low cost was one of the biggest factors in making the impact so great. But MS-DOS has its limitations; it can operate only in a single-user, single-tasking environment.

When they are released, updated versions of Microsoft Corporation's MS-DOS and IBM's newly announced Operating System/2™ will begin to address the multi-tasking environment, although applications built to run under them may not appear until the end of 1988 or early 1989.

BTOS, on the other hand, has been a multi-user, multi-tasking system with outstanding clustering capabilities since 1982. Even more significantly, the use of extended memory has been a part of the BTOS package since February 1986.

The computer industry is anticipating the arrival of next-generation operating systems that:

- support faster processors
- use the power of the hardware
- access additional memory
- provide better software

BTOS II leads this new generation of operating systems—operating systems that allow you to do things you've never done before.

Everything you've heard is true! Microcomputer users can now take advantage of the increased power already built into the hardware. With BTOS II, Unisys has again renewed its commitment to provide a vital link between you and the future. BTOS II is, without a doubt, today's most advanced microprocessor operating system.



What is BTOS II?

BTOS II is the new, high-performance operating system for the B26, B27, B28, and B38 workstations. In particular, BTOS II takes advantage of the power of Intel's 80286 and 80386 microprocessors on the B28 and B38 workstation, respectively.

Under BTOS II, the B28 and B38 workstations run a protected mode operating system, which allows your programs to use all available system memory (without the 1 Mb restriction of a real mode operating system).

The operating systems for the B26 and B27 workstations continue to run in real mode, which means that they use the 80186 microprocessor and are located in 1 Mb of memory. These workstations run the BTOS II standard utilities and the new Editor, and can be clustered to take advantage of the protected mode environment on B28 and B38 master workstations.

BTOS II allows your workstation to do more—at the same time—than it has ever done before.

The remainder of this section includes:

- a table (table 2) that lists the major new features of BTOS II
- a brief description about some of these new features that are covered in this Introduction
- a table (table 3) that lists the differences between BTOS, BTOS II (real mode), and BTOS II (protected mode)

Protected mode operating system

The B28 and B38 workstations' protected mode operating system:

- gives your programs access to a much larger address space (memory above 1 Mb)
- provides better memory management by protecting applications and the operating system from other programs that may try to overwrite them

BTOS II's protected mode environment also enhances the integrity of your system by taking advantage of the built-in protection feature offered by the 80286 and 80386 processors. This protection feature isolates the operating system software from applications and isolates tasks from each other.

Improved clusters

Clusters have been improved in the following areas:

■ **greater support**

With a B28 or B38 master workstation running BTOS II, the Customizer package allows you to build an operating system that can support up to 64 BTOS workstations in a cluster configuration.

Without the Customizer, BTOS II supports the following standard cluster configuration sizes:

- B28 master workstation with 11 cluster workstations
- B38 master workstation with 15 cluster workstations
- B26 or B27 master workstation with 5 cluster workstations

Table 2 **Major New Features of BTOS II**

Workstation	Feature
All BTOS Workstations	<ul style="list-style-type: none"> ■ Improved cluster performance ■ New nationalization method ■ Enhanced system utilities ■ New Editor features ■ Computer-Based Training
B28 and B38	<ul style="list-style-type: none"> ■ Protected Mode Operating System ■ Variable partition memory management ■ Dynamic partitioning with Context Manager II ■ Encrypted volume passwords
B38	<ul style="list-style-type: none"> ■ Support for future releases of PC Emulator (without additional hardware) ■ Support for larger cluster configurations

■ improved communications

BTOS II's cluster communication features on B28 and B38 workstations have been enhanced. These enhancements benefit the entire cluster because the master workstation now spends less time doing cluster processing and more time running applications.

■ new Cluster File Access (CFA)

CFA allows workstations to access BTOS files on the hard disk(s) of any other workstations in the cluster.

Note: BTOS standard security features are enforced.

■ improved monitoring

BTOS II's enhanced Cluster Status utility on B28 and B38 workstations provides function keys to easily display additional cluster monitoring information.



Variable partition memory management

BTOS previously used two memory management schemes: single partition and multipartition. On B28 and B38 workstations, BTOS II introduces variable partitions, an extension of the multipartition environment.

The multipartition operating system (still used for the B26 and B27 workstations) supports only fixed-sized partitions; the variable partition operating system supports both fixed- and variable-sized partitions. ►

Table 3 **BTOS II versus BTOS**

Capability	BTOS 8.0	BTOS II (B26/B27) (B28/B38)	
Protected Mode OS	—	—	●
Memory Addressing Above 1 Mb	—	—	●
Partition Swapping in OS	—	—	●
Variable Partitioning	—	—	●
Real Mode OS	●	●	—
Runs Real Mode System Services	●	●	—
Runs Real Mode Applications	●	●	●
Runs System Services in			
Protected Mode	B28/B38 Only	—	●
Cluster File Access	—	●	●
Executive Commands			
Cluster Status	●	●	●
More details	—	—	●
Function Keys	—	—	●
Create Message File	—	●	●
Files	●	●	●
Multiple Columns	—	●	●
Sorted Listing	—	●	●
Exclusionary Wildcard	—	●	●
IVolume	●	●	●
Password Encryption	—	—	●
Install New Requests	—	●	●
List Request Set	—	●	●
Make Request Set	—	●	●
Partition Status	●	●	●
Details	—	●	●
Pictorial Display	—	●	●
Editor			
Multiple Windows (up to 8)	—	●	●
Multiple Files (up to 8)	—	●	●

Dynamic partitioning with Context Manager II

Context Manager supports the variable partitioning environment available under the protected mode operating system (on B28 and B38 workstations).

Variable partitions use memory more effectively because they adapt themselves to the size of applications.

For example, if you previously specified a 500 Kb fixed partition (in a multipartition environment) to accommodate the size of the word processor, another application swapped to that partition uses the entire 500 Kb, even if the application size is considerably smaller. This wastes memory that could be available to other programs.

When an application specifies a variable-sized partition, the system looks at both the run file and Context Manager configuration file, and creates the variable partition according to the smaller specification. If you have not specified a partition size in the configuration file, the partition is created from the size of the run file.

The system creates a fixed-sized partition if you have specified a fixed partition size in the Context Manager configuration file.



New nationalization method

BTOS II's new nationalization method significantly reduces the time and expense associated with producing and maintaining native language versions of software.

Specific information (keycap legends, date and time formats, etc.) has been removed from the operating system and placed into a single configuration file. This method streamlines the nationalization process because you no longer need to relink the software; you simply need to modify the configuration file and message files to meet your requirements.

Computer-Based Training (CBT)

Computer-Based Training: BTOS II System is a self-paced, on-line training course. The new CBT is an animated presentation that provides "hands on" training about the basics of BTOS and the Executive.

File and text management

BTOS II offers several enhanced utilities to meet your file and text management needs:

- enhanced Editor
- improved password security with IVolume
- new file list features



Protected Virtual Address Mode (commonly called “protected mode”) is a form of operation for the Intel 80286 and 80386 microprocessors. An operating system that takes advantage of this mode is called a “protected mode operating system.” A real mode operating system runs on 8086 or 80186 microprocessors and, optionally, on the 80286 and 80386.

Today’s most demanding computer user wants to:

- have enough memory to run many programs concurrently
- run programs without worrying about crashes caused by programs that “step” on each other

BTOS II’s protected mode operating system (on B28 and B38 workstations) provides the solution by:

- giving your programs access to more memory (larger address space)
- providing better memory management by protecting applications and the operating system from other programs that may try to overwrite them



Why is more memory helpful?

Have you ever been frustrated when you tried to run several applications at one time and received the message:

Memory Low; Please Save

Because it provides access to extended memory, the BTOS II protected mode operating system allows several applications to run concurrently, while decreasing the chances of running out of memory. Instead of the 1 Mb limitation of a real mode operating system, your protected mode-compatible applications can have access to the maximum amount of memory on your B28 or B38 workstation (4 Mb). In addition, the protected mode operating system can load real mode applications into the lower 1 Mb of memory. This capability allows most real mode applications to run without modification.

Figure 7 shows the memory allocation differences under the real mode versus protected mode operating systems.

Why do you want your programs to be protected in memory?

Throughout the computer industry, users have had to tolerate unreliable, undependable software products that cause intermittent problems. Although BTOS is a mature and very stable product, BTOS II’s new protected mode operating system is even more reliable because it makes it more difficult for programs to overwrite each other.

For example, let’s say you’re working on a spreadsheet program that is loaded in a real mode environment. While you’re working, part of that spreadsheet software may be corrupting your word processing software. You then finish your spreadsheet work and begin a word processing session. Suddenly, the word processor crashes. Since you only saw the symptom of the corruption (the crash of the word processor), you may attribute the failure to the word processor instead of the real culprit, the spreadsheet program.

The 80286 and 80386 microprocessors restrict access rights to the areas where programs are already located. This provides isolation of one program from another and makes it less likely that a program will corrupt the operating system or neighboring programs.

BTOS II’s protected mode operating system decreases this potential conflict, thus increasing your confidence that programs are running as they should.

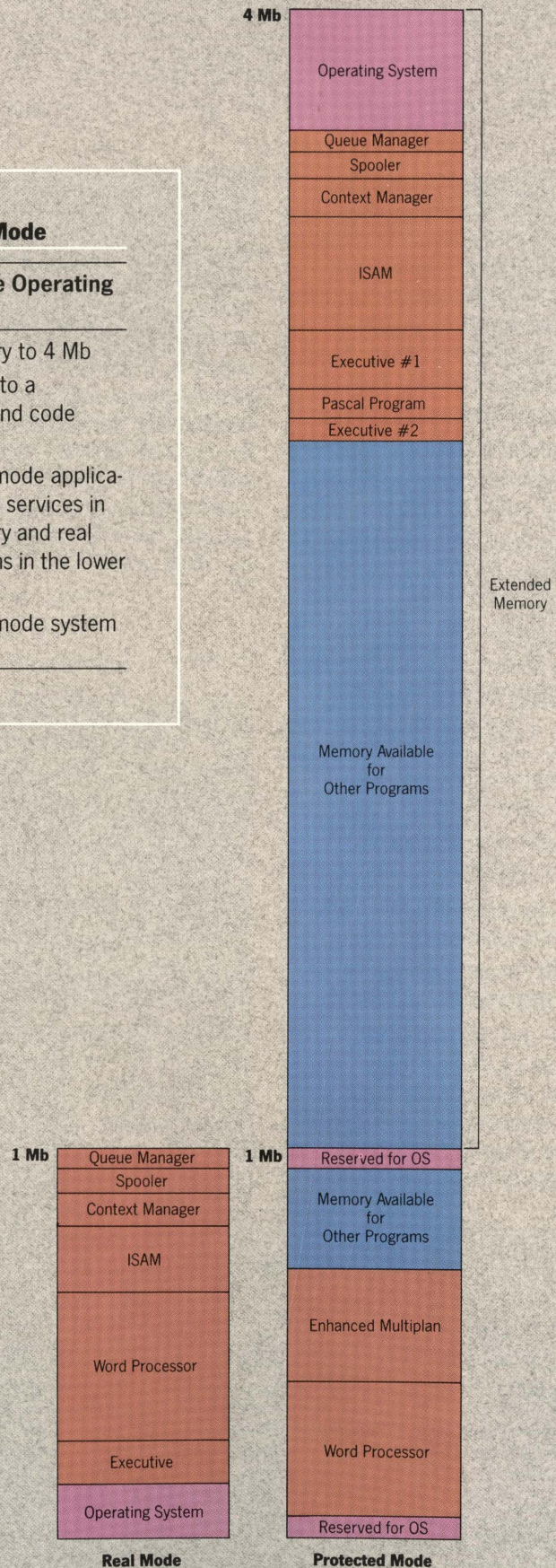
What is the difference between real and protected mode?

Table 4 shows some of the differences between real mode and BTOS II’s protected mode.

Figure 7 **Memory Allocation: Protected Mode and Real Mode Operating Systems**

Table 4 **BTOS II Real Mode versus Protected Mode**

Real Mode Operating System	Protected Mode Operating System
Accesses memory to 1 Mb	Accesses memory to 4 Mb
Does not protect a program's data or code segments	Restricts access to a program's data and code segments
Runs 8086- and 80186-based (real mode) applications	Runs protected mode applications and system services in extended memory and real mode applications in the lower 1 Mb
Runs real mode system services	Runs protected mode system services



How is clustering improved with BTOS II?

Historically, an important BTOS feature is its cluster communications capability, which allows workstations to share resources. By using a daisy-chaining technique, you can connect workstations together so that they share system-wide resources (data, software, and hardware).

BTOS II has improved its clustering capabilities by providing:

- support for more workstations in a cluster
- improved cluster communications
- a new Cluster File Access (CFA) system
- better cluster monitoring

How many workstations can you cluster together?

BTOS II supports the following standard cluster configuration sizes:

- B28 master workstation with 11 cluster workstations
- B38 master workstation with 15 cluster workstations
- B26 or B27 master workstation with 5 cluster workstations

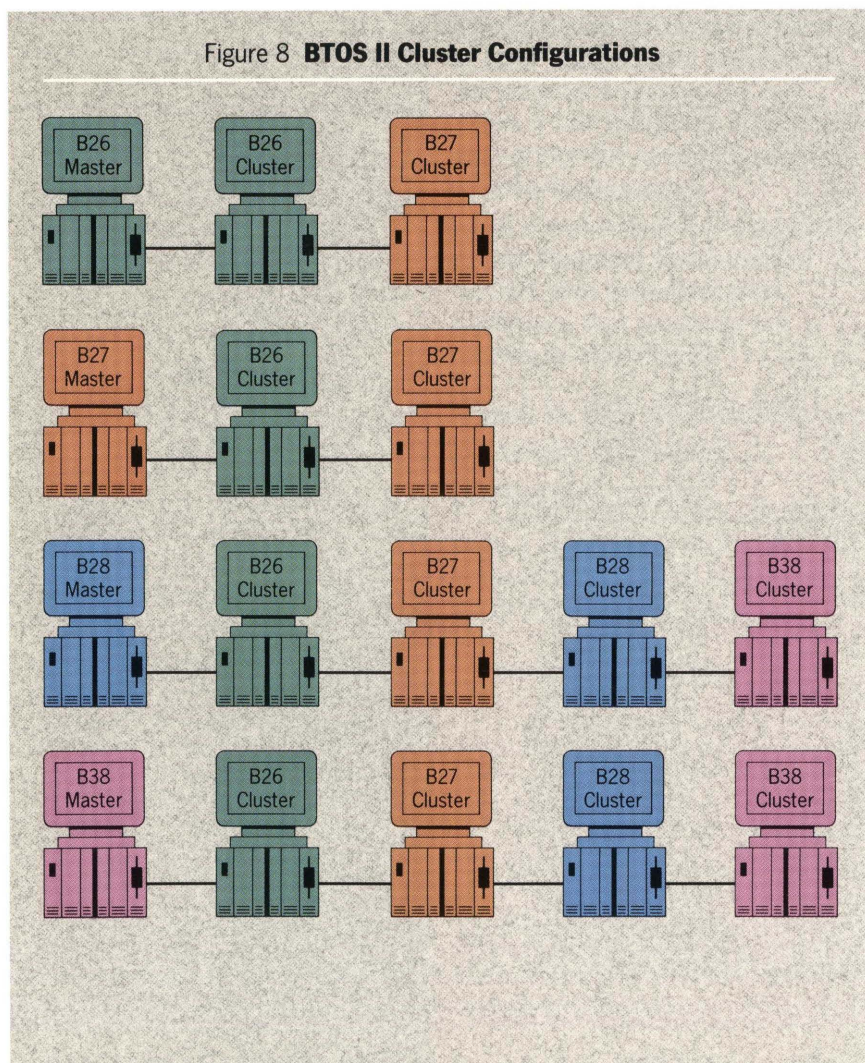
With a B28 or B38 master workstation running BTOS II, the Customizer allows you to build an operating system that permits the connection of up to 64 BTOS workstations in a cluster.

Note: For any configuration, the number of workstations that can be connected and used with satisfactory response times varies depending on the way in which the cluster workstations are being used. For example, a cluster with local file storage places less demand on the master than a cluster without local file storage. To ensure the performance and reliability of each workstation, you should connect no more than 24 workstations in one cluster.

Can you connect all workstation types in one cluster configuration?

Not entirely. BTOS II supports a B28 or B38 master workstation with any other workstation as a cluster, but a B26 or B27 master workstation can only support B26 or B27 workstations as clusters. Figure 8 shows the cluster configurations that are possible under BTOS II.

Note: B21 and B22 workstations are not supported under BTOS II.



How have cluster communications been improved?

BTOS II's cluster communication features have been enhanced; this benefits the entire cluster because the workstations now spend less time doing cluster processing.

Operations are faster because:

- the cluster communication software has been rewritten in Assembly language (rather than PL/M-86)
- communications are now at the interrupt level rather than the process level

Cluster access to the master workstation is now more evenly distributed. Thus, the last cluster workstation to power up no longer performs more slowly than the first workstation to power up.

Communication between the master and cluster workstations is now faster because the polling logic has been modified. This is significant because the cluster can now acknowledge a poll to a workstation with a response message rather than waiting for an indication to be sent from the master workstation.

What is Cluster File Access?

Cluster File Access (CFA) allows workstations to access the BTOS files on the hard disk(s) of any other workstation in the cluster. This capability applies only to BTOS files. In particular, you cannot use CFA to access ISAM Data Sets.

Note: BTOS standard security features are enforced.

Previously with BTOS, cluster workstations were only able to access the files located on the master workstation's hard disk. In addition to cluster-to-master access, BTOS II now optionally provides master-to-cluster and cluster-to-cluster file access.

This new file access capability is especially useful for copying, deleting, and editing files, performing selective volume backups, and running applications located on another workstation's hard disk.

CFA uses three agents:

■ Master Server

Installing this server on the master workstation allows the master to act as a routing agent (traffic controller) for CFA requests.

■ File Filter

Installing this filter on your own workstation allows you to access the hard disk(s) on other cluster workstations.

■ Workstation Agent

Installing this agent on the cluster workstation's hard disk(s) allows that hard disk to be accessed by other workstations.

Figure 9 shows how file accessing previously existed (with BTOS), and how BTOS II and CFA have improved file accessing.

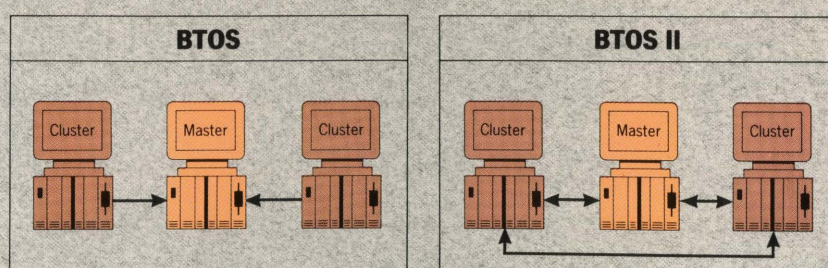
How can clusters be monitored?

You can use the Cluster Status utility to display information on the status of the cluster and workstation activity. BTOS II includes an enhanced Cluster Status utility for B28 and B38 workstations.

If the system is running in protected mode, the enhanced Cluster Status utility provides function keys to easily display additional information (not displayed for real mode). This additional information includes:

- enhanced error statistics
- the number of processing requests, sectors read, and sectors written for each workstation
- XBlock statistics
- timing statistics
 - number of polls
 - request processing

Figure 9 **File Access Before and After BTOS II**



What are Context Manager and Windows?

Picture the following scenario:

You're copying multiple spreadsheet files from your hard disk to a floppy disk when your system notifies you that you have urgent mail. You can:

- cancel the copying in the middle of the session, determine which files have been copied and which have not, and start it again after you read your mail, or
- wait until the long copying session is finished and hope that the urgent mail isn't TOO urgent

Unisys offers two software packages with features that go to work for you in a difficult situation like this:

- Context Manager
- Windows

What is Context Manager?

Context Manager is a product that allows users to run up to 10 applications or utilities simultaneously on their BTOS workstation. This is done by switching between "contexts."

A context is an application that you have started with Context Manager. You can interact with only one context at a time, although other contexts that you have activated continue to run. The one you are working on is the current context, and is the only one that responds to input from the keyboard or mouse (if you have mouse support). When you switch contexts (switch to another application), the new context becomes the current one.

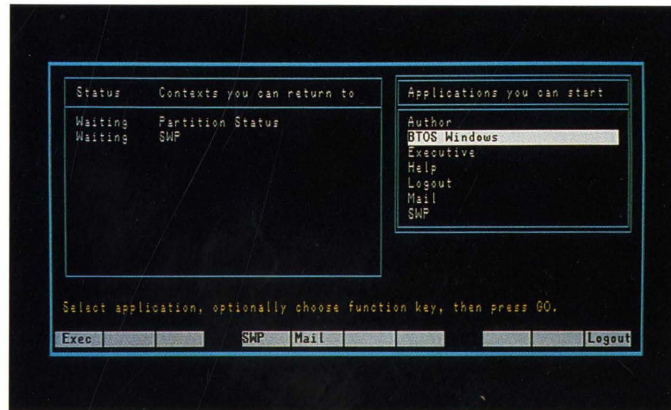


Figure 10
Main
Context
Manager
Screen

How can Context Manager make things easier?

If you had Context Manager in the above scenario, you could finish copying the spreadsheet files while you read the urgent mail, since Context Manager does not have to save, open, or close files when you switch between contexts. Without Context Manager, you have to work on one application at a time, and finish each one before starting another.

If you run out of workstation memory when you attempt to start another application, one context may be "swapped" to a temporary file. This means that the swapped context stops running (activity is suspended) until it is swapped back into memory.

An added benefit for all workstation users is that since the Context Manager interface runs on all workstations, a user does not have to learn different operating procedures—they are the same for all workstation types.

Figure 10 shows the main Context Manager screen.

What is Windows?

BTOS Windows is an application that works with Context Manager to allow users to view, modify, or transfer data between contexts. Windows enables you to look at several contexts on your screen at one time; with Context Manager, you can only see one context at a time even though you may be running several concurrently.

Working with Windows is like handling several papers on a desk. Users can arrange windows like a stack of papers (with one covering all the others beneath it) or view part or all of many windows simultaneously.

Windows is especially helpful for users who want to:

- view multiple contexts

This feature allows users to compare and edit text that appears in different applications.

- transfer data between applications

This feature allows users to copy information from one application to another (from a spreadsheet file to a word processor file, for example).

Figure 11 shows the main Windows screen.

What's new about Context Manager II?

In addition to all of its earlier advantages, BTOS II's enhanced Context Manager II contains several new features for the B28 and B38 workstations, including:

- protected mode compatibility
- increased memory access
- variable partitions
- code sharing between partitions
- 2- and 3-button mouse support

Context Manager II also provides support for virtual keyboard translation tables on all BTOS workstations. ►



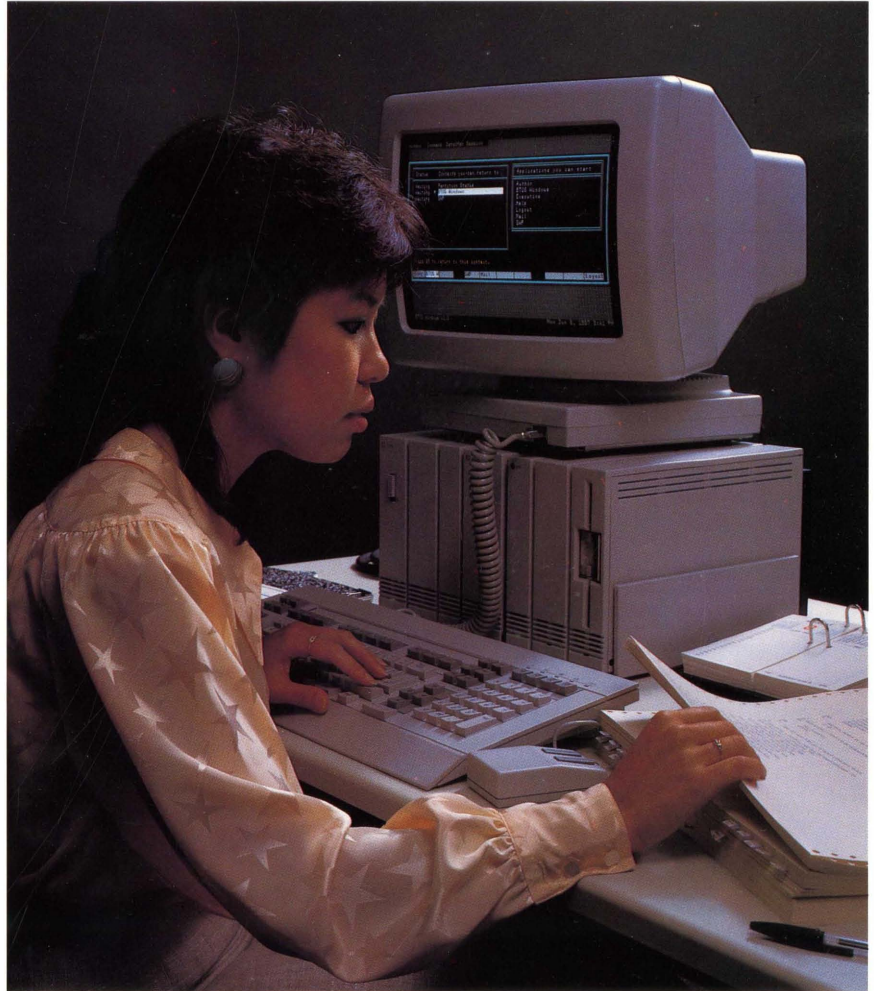
Does Context Manager II work in protected mode?

Yes. The new Context Manager II is protected mode-compatible, which means that it is loaded in extended memory on a B28 or B38 workstation. Context Manager II also contains a separate run file that allows it to work in a real mode environment on a B26 or B27 workstation.

Why can applications use more memory on B28 and B38 workstations?

Applications running in protected mode (on B28 and B38 workstations only) can use extended memory (up to 3 additional Mb), while real mode applications are limited to the first Mb of memory. Context Manager II consists of two run files, one for protected mode operation (B28 and B38 workstations), and one for real mode (B26 and B27 workstations).

Under the 1 Mb limitation in a real mode environment, users can run only a few programs (such as the Executive and SWP) without having to swap an application to disk. With Context Manager II, users can run several protected mode-compatible applications at once without swapping.



What are variable partitions?

A variable partition is one that can change size and memory location. Variable partitioning simplifies partition management, since users no longer have to configure partitions before running applications.

This eliminates the need for administrators to estimate partition sizes based on probable application use. The partitions are created or terminated as the application starts or finishes.

In protected mode, variable partitions may change size or location in memory during a Chain operation. (A Chain operation is the process of changing or "chaining" from one run file to another, and then back again.)

For example, if you start a spreadsheet program (a real mode application) from the Executive (which is located in protected memory on a B28 or B38 workstation), that application partition is relocated to real memory. When you terminate the spreadsheet program, the partition again resides in protected memory and is running the Executive.

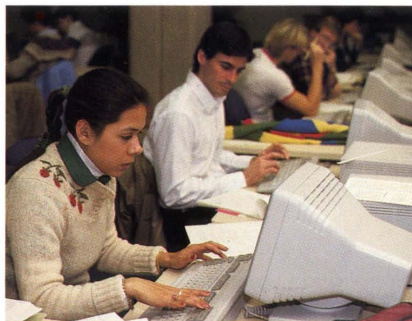
To fully use variable partitions, you must have protected mode-compatible run files that contain sizing information, such as minimum and maximum memory allocations.

How can variable partitions be monitored

BTOS II's Partition Status utility has been upgraded for compatibility with protected mode and variable partitions.

On a protected mode operating system, users can request additional detailed information on a specific partition, including:

- partition location
- memory use (long- and short-lived memory)
- available memory
- context status
- code space
- partition type (fixed or variable)
- a memory map showing the layout of memory with the individual tasks



What is code sharing?

Context Manager II also supports code sharing between partitions. Each context running under Context Manager II occupies a memory partition. If you are working in one context and want to open another context to run the same application, you save partition memory space since the second context can share the code that resides in the first context.

What is a mouse?

A mouse is an electronic, hand-held device that you use with your workstation. It plugs into your keyboard and tracks the movement of your hand on the work surface to control the cursor position on the screen.

Context Manager II features 2- and 3-button mouse support on B28 and B38 workstations. With the mouse, users can select an application from the Context Manager II screen.

What are Virtual Keyboard Translation Tables?

For several years, BTOS has provided users with the ability to change the function of particular keys on the keyboard. This is done by modifying the Keyboard Translation Table, which contains characters that correspond to the keys on your keyboard.

For example, when you press the **GO** key, the operating system recognizes that key as the **GO** key because it corresponds to a character in the Keyboard Translation Table. You can modify the table to have the system recognize the **GO** key as an **Enter** key instead. This would be useful if you are working with programs that emulate other devices.

Context Manager II now allows you to switch between applications that use different Keyboard Translation Tables.

For example, let's say you:

- start working in the word processor (where the **GO** key is actually the **GO** key), and
- context switch to an emulator program (where the **GO** key is an **Enter** key), and then
- switch back to the word processor

Instead of maintaining the translation table of the emulator program when you switch back to the word processor (as was the case with Context Manager), Context Manager II now restores the table associated with the word processor.

What is Computer-Based Training?

Computer-Based Training: BTOS II System is a self-paced, on-line training course that provides “hands on” training for:

- users who have little or no computer experience and need to learn the basics before they start with BTOS II
- users who have previous computer experience, but are new to the BTOS II environment
- users who want to learn about Executive commands
- users who want to know about BTOS applications

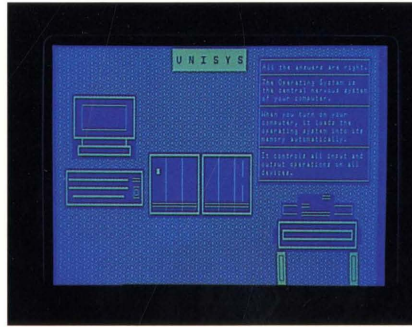
Why is Computer-Based Training (CBT) important?

Can you think of a time in your life when you were given a task, but not the training you needed to get started? Frustrating, wasn't it? You probably learned very quickly that it was difficult to do something if no one showed you the correct way to do it.

You can apply the same idea to computers. Users need to learn the basics of their computer system before they will become proficient. That's where computer-based training comes in.

Computer-based training:

- allows the user to practice a skill and be successful
- gives hands-on experience
- tells how operations work
- contains only essential information
- defines the goals and shows the results of each operation
- reinforces information
- allows the user to see immediate results



What can students expect from CBT?

A CBT course features:

- extensive animation
The course contains lively, sophisticated displays. For example, an overview of the hardware may show workstation modules snapping into place.
- hands-on experience
The course includes a concept called Training Wheels, which allow students to practice as though they are working with real software.
Since they are actually working within the course and not with the real application, they don't have to worry about pressing the wrong key or harming the system in any way.

- simulated applications

With simulated applications, students can see how the program works, just as if an instructor were showing them how to use the actual software. For example, they can watch as the system shows them how to copy one document to another.

- a variety of questions

Throughout the tutorials, students are given an opportunity to test and reinforce their newly acquired skills. The course not only offers true/false and multiple choice questions, but fill-in-the-blank questions, as well.

- easy exit, automatic resume

By using the **FINISH** key, students can easily exit the course at any time; later, students can return to the same lesson by pressing the “yes” key to the Resume? prompt.

- on-line help

During any interactive training session, students can press the **HELP** key to see instructions on how to proceed. This **HELP** feature eliminates the frustration and anxiety often associated with learning.

What information is included in the BTOS II CBT?

The BTOS II CBT course features seven lessons and a glossary. Figure 11 presents a look at the course content.

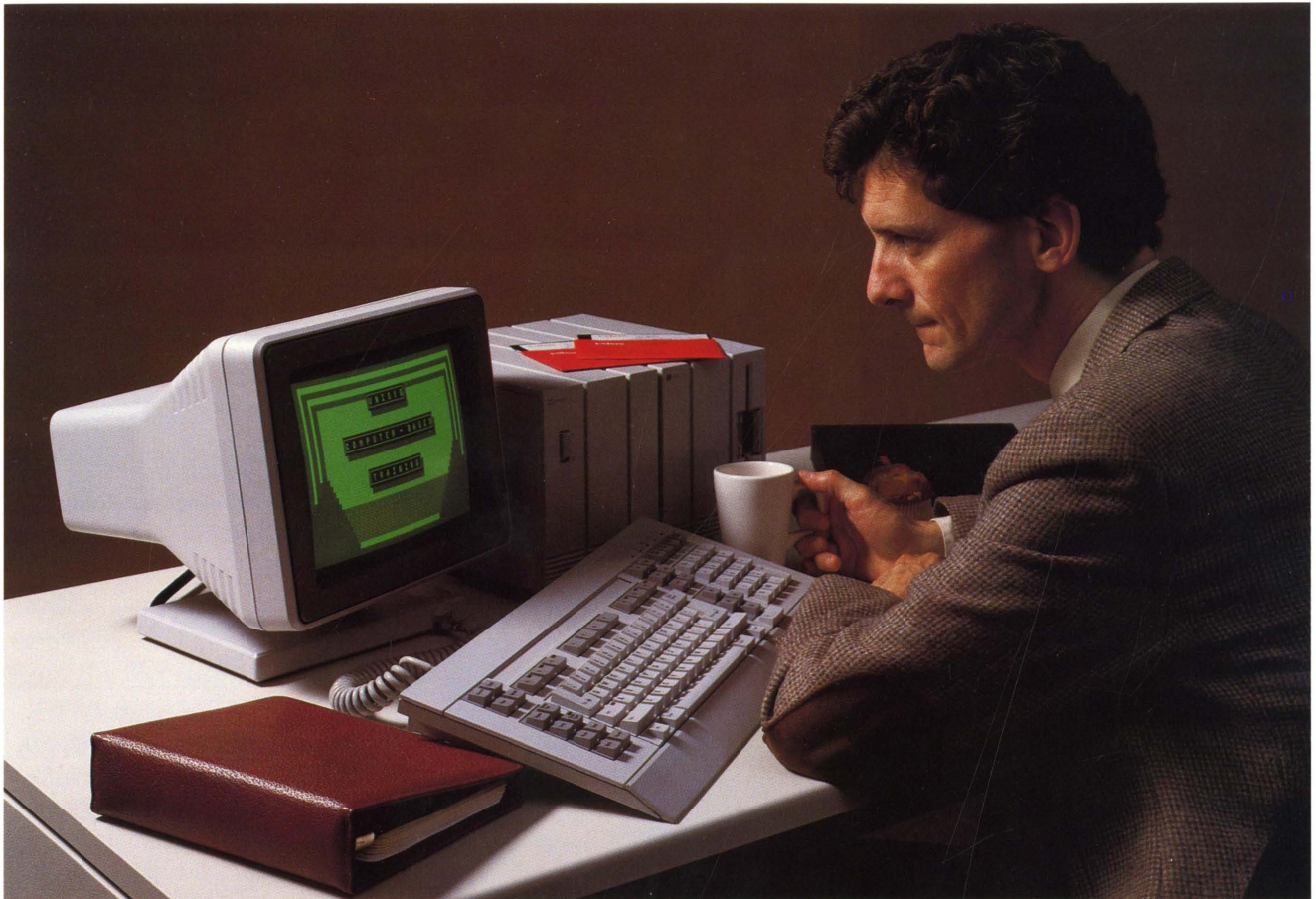


Figure 11 Content of BTOS II CBT Course

<p>Lesson 1 Getting Started</p> <p>Provides information about taking the CBT course</p>	<p>Lesson 2 The Basics</p> <p>Introduces basic computer concepts and terms</p>	<p>Lesson 3 BTOS</p> <p>Presents the features of the operating system</p>	<p>Lesson 4 The Executive</p> <p>Describes the BTOS user interface and its commands and utilities</p>
<p>Lesson 5 File Management</p> <p>Describes the basics of BTOS volumes, directories and files</p>	<p>Lesson 6 Protection</p> <p>Gives details about password-protecting volumes, directories and files</p>	<p>Lesson 7 Applications</p> <p>Gives a brief description of other BTOS applications</p>	<p>Glossary</p> <p>Defines a list of terms used throughout the course</p>

BTOS II offers several enhanced utilities to meet your file and text management needs:

- enhanced Editor (a text-processing application)
- improved password security with the IVolume utility
- new file list features with the Files utility

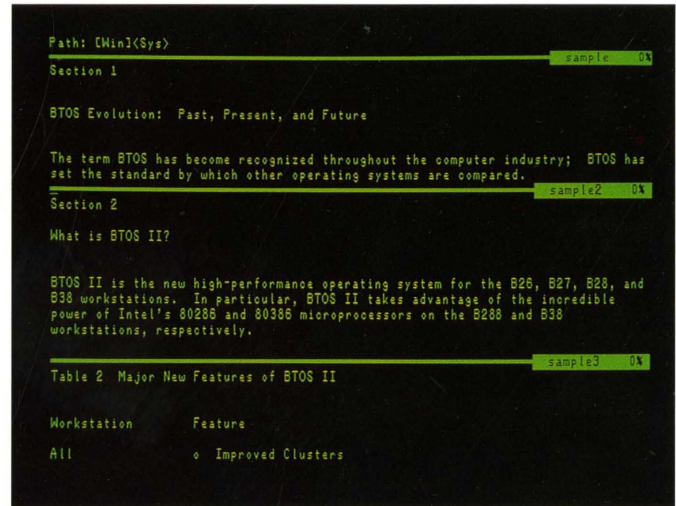
What is new about the BTOS II Editor?

The BTOS II Editor includes a new multiple window/multiple file feature that is especially helpful for frequent Editor users.

The new BTOS II Editor allows users to open up to eight windows concurrently. This multiple windows feature can also be used to open separate files or access parts of one file. Multiple windows are especially useful for comparing, copying, and moving text.



Figure 12
**Multiple
Window
Editor
Screen**



For example, let's say you have to add new, duplicate information to two different files. You have the following options:

- You can enter the information into one file, and then retype the same information into another file. This takes time and could lead to inconsistencies between the two files if you make a mistake while typing.
- You can open the first file, type the information, open the second file, and copy the information from the first file to the second. In this case, you've not only saved retyping time, but you've eliminated the possibility of inconsistencies because you've only typed the information once.

Figure 12 shows a sample screen with multiple windows.

How are passwords more secure?

On B28 and B38 workstations, the IVolume utility now allows users to specify an encrypted (software) password; this password displays encrypted and is not revealed during a system dump.

This new encrypted password is an important security enhancement for those who need to maintain confidential files or want to prevent potential intrusion by others.

Because this new IVolume enhancement is only available on B28 and B38 workstations, users should be aware that:

- floppy disks with encrypted passwords (initialized on a B28 or B38 workstation) cannot be used on B26 and B27 workstations
- floppy disks without encrypted passwords cannot be used on B28 and B38 workstations with hard disks protected by encrypted passwords

What are the file list features?

The Files utility displays a list of the files in a directory. You can enter parameters that direct BTOS to:

- display files in one, several, or all directories
- display only the files that have similar names (by using wildcards)
- display file details (such as length and date last modified)
- place the file list information in a file that the user can print

With BTOS II, the Files utility has been enhanced to provide more information. Users can now:

- display the files listing in multiple columns
- sort the files listing according to the file names (alphabetically, for example)
- display files while excluding a specified subset of files with similar names (by using the exclusionary wildcard)



How is programming different under BTOS II?

BTOS II offers programmers:

- more memory for protected mode-compatible programs on a B28 or B38 workstation
- a better development environment because protected mode isolates programs and makes it easier to trace bugs
- an enhanced request file system

Associated BTOS II product offerings include:

- protected mode-compatible compilers, libraries, and programming tools
- new Forms Designer features

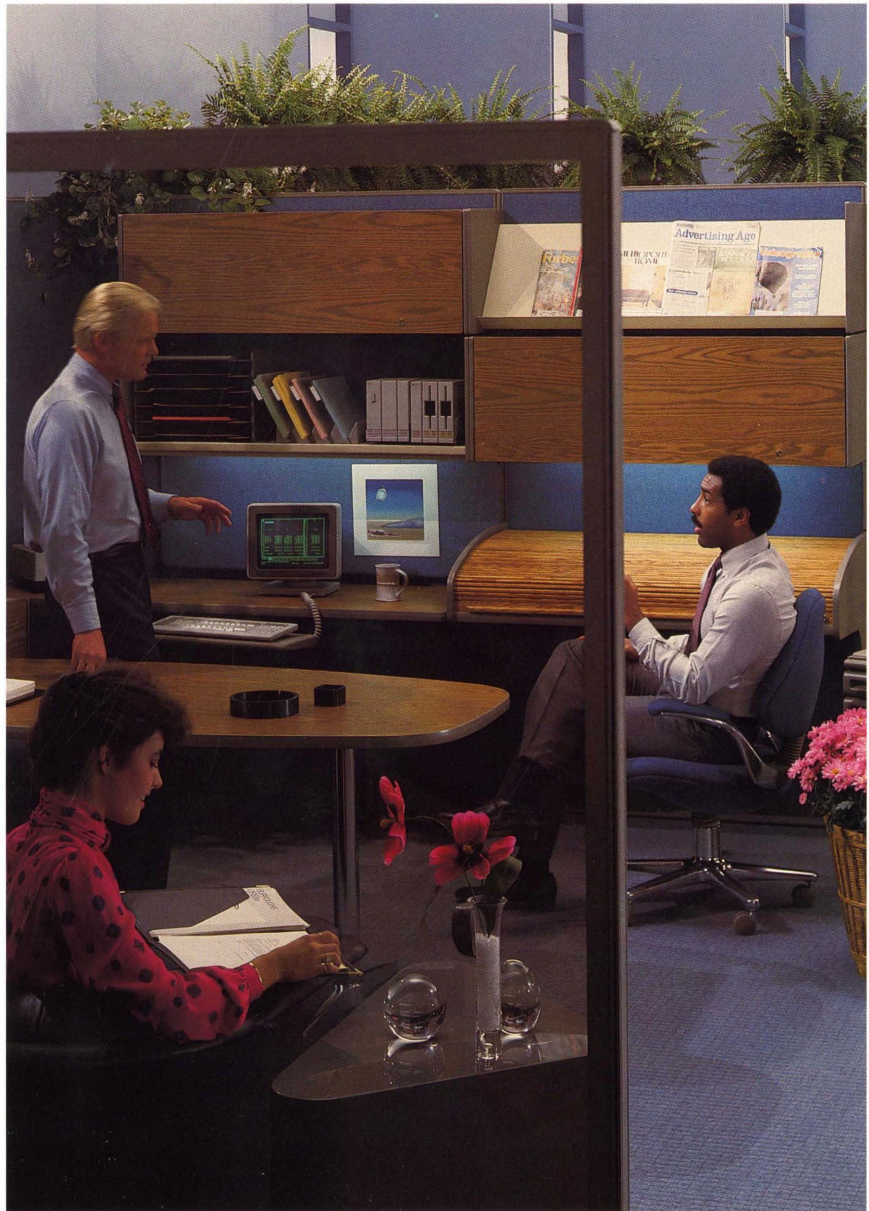
When programming under BTOS II, programmers must remember that:

- all system services must be protected mode-compatible
- there are restrictions that may affect existing real mode or protected mode applications and the way programs are written in the future

What is a system service?

A system service is a program that performs a service for other programs. An application issues a request to notify the system service that it wants the service performed.

If an application includes a system service, the system service must run in protected mode under BTOS II, even if the program calling the system service is not running in protected mode. (All system services released with BTOS II are protected mode-compatible.)



What are the real mode restrictions for BTOS II?

BTOS II supports only those real mode applications that use raw interrupt service routines (ISRs). You must modify real mode programs that contain mediated ISRs to use raw ISRs.

How do BTOS II protected mode restrictions affect applications?

To determine the impact in making applications protected mode-compatible, programmers need answers to the following questions:

- “Is my program written in Assembly language?”
- “Does my program interface directly with BTOS?”
(i.e., does my program use system calls or get information directly from operating system tables (for example, the System Common Address Table))?
- “Does my program directly manipulate a physical address?”
For example, in Pascal, ADS allows programmers to extract a variable’s address, which they can then manipulate.
- “Does my program consist of noncontiguous segments of the same type?”
Segments must be contiguous for the Linker to produce a protected mode run file.

If the answer to each of these questions is *NO*, the program should be protected mode-compatible if the compiler, tools, and libraries used to create it are protected mode-compatible.

If the answer to any of these questions is *YES*, the program will not run in protected mode because of BTOS II addressing and access restrictions.

Note: If your application runs in protected mode using BTOS 8.0 and the Protected Mode Operating System Server (PMOSS), your application will run in protected mode with BTOS II. In addition, several PMOSS restrictions no longer apply because the BTOS II operating system runs in protected mode.

For more information on protected mode programming, refer to the *BTOS II Protected Mode Programming Guide*.

How does protected mode addressing work?

A protected mode system uses the same two-part addressing scheme as in real mode (a segment register and offset register), but the physical address is calculated differently.

This is because 80286 and 80386 microprocessor addressing was implemented to:

- achieve extended memory addressing
- continue compatibility with real mode systems

The protected mode segment register does not contain the base address of the segment; it contains an index called a selector. The selector points to a descriptor in a descriptor table. The descriptor contains segment attributes, including the base address.

The 80286 and 80386 microprocessors:

- 1 Read the segment register to determine the selector.
- 2 Follow the selector to the descriptor.
- 3 Use the descriptor to get the segment base address.
- 4 Combine the offset (from the offset register) with the segment base address when the instruction is executed.
- 5 Check that combination (offset and base address) during the execution of the instruction to make sure it does not exceed the limit (also a segment attribute contained in the descriptor).

In real mode, programmers could use the direct relationship between the segment register and the offset register to access a specific memory location (physical address).

For example, some programmers did this by changing the segment register to bound different segments by one offset.

This will not work under protected mode. ►

What is a descriptor?

A descriptor is a definition of a segment (for example, the base address, whether it is code or data, the size, the access rights, etc.).

When BTOS II operates in protected mode, every segment in the system must have a corresponding descriptor.

There are many types of descriptors and there can be multiple descriptor types in any of the descriptor tables.

Descriptors are contained in one of three types of descriptor tables:

- **Global Descriptor Table (GDT)**
The descriptors in the GDT define the operating system segments. (There is only one GDT.)
- **Interrupt Descriptor Table (IDT)**
The descriptors in the IDT define the segments used in the ISRs. (There is only one IDT.)
- **Local Descriptor Table (LDT)**
The descriptors in the LDTs define application segments.

Which compilers, libraries, and programming tools must be used?

For programs to operate in protected mode, the run files must be linked as protected mode programs (a Linker parameter). The Linker creates an initial LDT in the protected mode run files; the LDT is used when the program is loaded.

Table 5 lists the compilers that generate protected mode-compatible code and the libraries that are protected mode-compatible. Earlier versions of the compilers or libraries cannot be used to generate protected mode-compatible code.

What are the new Forms Designer features?

Forms Designer 6.0 includes:

- protected mode compatibility
- support of new bit-mapped graphics
- independent field color selection
- mouse support for cursor positioning
- color capability run-time checks
- word wrap for repeating fields

What are the request file system enhancements?

BTOS II provides new utilities that allow programmers to convert request files into text files and then back into request files. Two of the utilities create a single loadable request file (Request.sys) from various loadable request files or text files. The system then loads this single request file at boot time.

In addition, BTOS II's request file system has been improved so that programmers and third party vendors no longer have to contact Unisys for a request file designation when they write a program that uses a system service. With BTOS II, programmers can individually name their program's request file. (They still must contact Unisys to reserve the request.)

Table 5 **Protected Mode-Compatible Compilers and Libraries**

Software	Release	Library
BTOS II	1.0	CTOS.lib
BTOS II	1.0	Mouse.lib
ISAM	8.0	ISAM.lib
Forms Designer	6.0	Forms.lib
Pascal Compiler	6.0	Pascal.lib
FORTTRAN Compiler	6.0	FORTTRAN.lib
BASIC Compiler	6.0	BASIC.lib

How do the new request file utilities work?

Figure 13 shows the three request file command choices: Install New Requests, List Request Set, and Make Request Set.

- List Request Set translates one or more binary loadable request files into one text file. List Request Set can be used to merge many request files into one text file.

In the figure 13 example, List Request Set combines Request.1.sys, Request.sys, and Request.ISAM.sys into one text file (Request.temp.txt).

- Make Request Set translates one or more text files into one binary request file. Make Request Set can be used to create a single request file with a program-specific name; however, BTOS loads only Request.sys.

In the figure 13 example, Make Request Set combines Request.A.txt, Request.temp.txt, and Request.New.txt into one loadable request file (Request.sys).

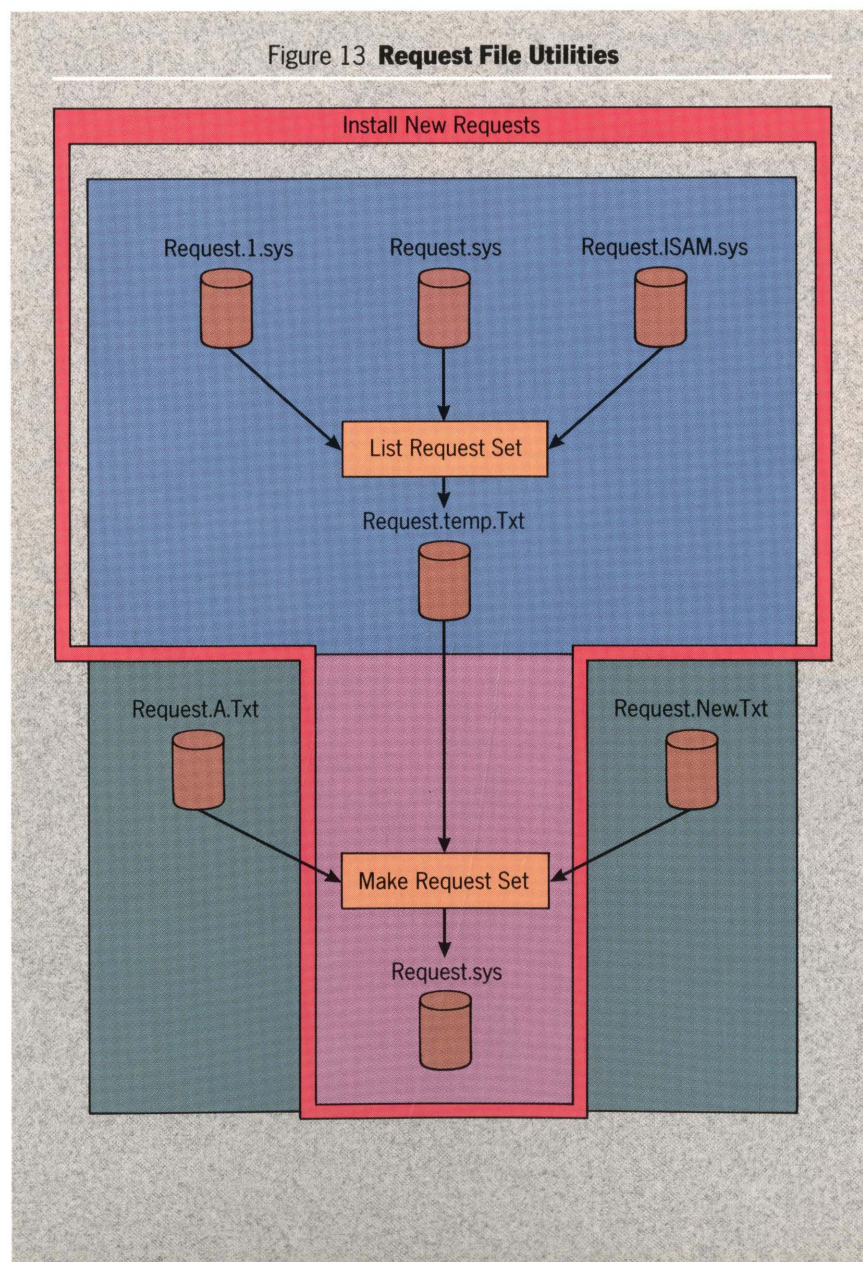
- Install New Requests activates the List Request Set and Make Request Set utilities; Install New Requests is particularly helpful during software installation for combining several request files into one request file.

In the figure 13 example, Install New Requests combines Request.1.sys, Request.sys, and Request.ISAM.sys, into one loadable request file (Request.sys).

How has request file naming changed?

Under BTOS, the request file naming convention allowed only a maximum of 36 (10 numeric and 26 alpha) different loadable request files.

BTOS II's individual naming system permits an almost limitless number of request files.



How are products nationalized?

When a U.S. product is distributed to another country, the local subsidiaries usually translate and modify some data from English to the local language.

Unisys provides the subsidiaries with a Local Language Package (LLP) that contains text, configuration, submit, and run files. Subsidiaries then produce a local version of the product using the LLP and the Generic Nationalization Tool (GNT).

When it was introduced with BTOS 7.0, GNT was an attempt to better address nationalization. GNT will still be used, but Unisys recognizes the need to make nationalization even easier. BTOS II's new method is a strategically important platform for making this a reality.

How does BTOS II make nationalization easier?

BTOS II's new nationalization method is easier because it significantly reduces the time and expense associated with producing and maintaining native language versions of software. This means that nationalized versions may be distributed earlier.

The following are the most significant differences between the former nationalization procedures and the new BTOS II procedures:

- Textual strings that must be translated are now located in new disk-based message text files. The new Create Message File Utility functions like a compiler, turning text files into machine-readable object files.
- Configuration data that must be modified is now located in a single configuration file (Nls.sys) instead of being scattered throughout the operating system.

Figure 14 illustrates the old nationalization method and shows how BTOS II's new procedures have simplified the process.

What is a Message Text File?

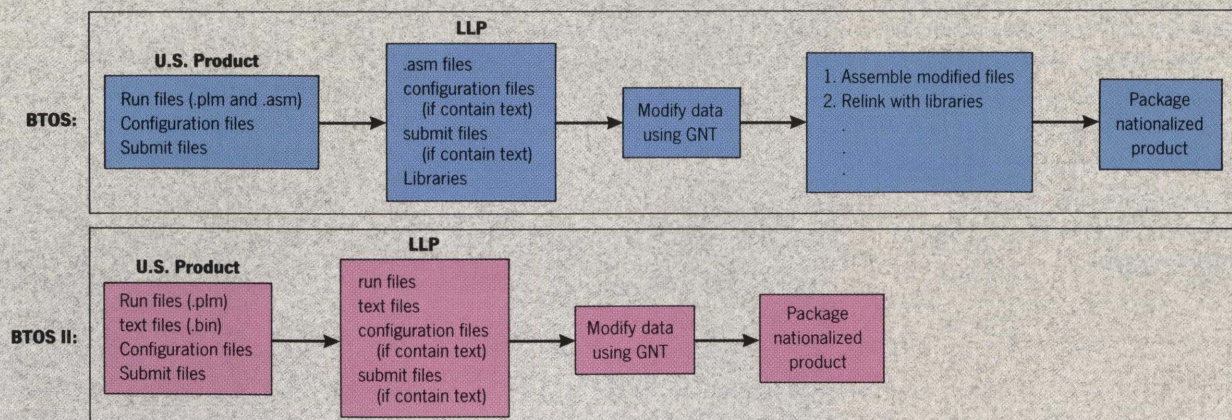
The new Message Text File contains all textual strings that subsidiaries must translate into the local language. Messages such as **Press GO to confirm FINISH, CANCEL to cancel command** are located in this text file.

In BTOS II, most of the standard software utilities (except programming tools and the new Editor) use message files. International subsidiaries can simply translate the text and use the U.S. version of the run file to load the text.

What is Nls?

Native Language Support (Nls) is a series of routines that allows applications to access data that needs to be nationalized from the operating system. The configuration file that contains this data (Nls.sys) is built directly into BTOS II. Specific information (keycap legends, date and time formats, etc.) has been removed from the operating system and placed into this file.

Figure 14 **BTOS versus BTOS II Nationalization Methods**





This new method streamlines the nationalization process and represents an improvement over past procedures because subsidiaries no longer need to relink all of the software.

What does the Nls configuration file contain?

The Nls configuration file contains all the information that subsidiaries need for reformatting data to meet local language requirements.

The following information is located in the Nls file:

■ Video Byte Stream Text

This text includes the following messages:

Press NEXT PAGE or SCROLL UP to continue

Press NEXT PAGE to continue

■ Keycap Legends

Keycap legends are the names of the dedicated function keys, such as **Delete**, **Move**, and **Jump**. These names can now be translated just once in a table. When a message display contains a keycap legend, the system locates the name in the table.

■ Date/Time Formats

As released, BTOS II displays the date in the standard American format of month/day/year (for example, 07/14/87). This format can be changed through the nationalization configuration file to conform to other standards (for example, 14/07/87 in France).

Subsidiaries can also nationalize alphabetic date representation, such as **mars** for **March** in French.

■ Decimal Position Character

The configuration file permits subsidiaries to specify the character used to indicate decimal placement. The choices are:
. (period) and , (comma).

■ Triad Separator Character and Options

This option allows subsidiaries to specify the character used to denote the separation of numbers into triads (for example: thousands, millions). The choices are:
. (period) and , (comma).

The printing of the triad separator can be suppressed for numbers under 10,000 and can be used selectively, optionally, or not at all.

■ Currency Symbol and Position

The Nls.sys file contains the currency symbol and position of the target country.

■ Collating Sequence

The collating sequence determines the sequencing of a group of characters. The collation table contains the information, for example, that **A** comes before **B**. Subsidiaries can nationalize this table. For example:

■ In German, the **u umlaut** has the same value as **ue**.

■ In Spanish, the combination **ch** follows the single letter **c** at the beginning of a word.

■ In French, the letter **e** can vary its collating value depending on any accompanying accent marks.

In all these cases, the operating system is nationalized through the nationalization configuration file.

Which applications use the new nationalization?

Because BTOS II's new nationalization is just the beginning of things to come, most BTOS products don't yet take advantage of the new techniques. As selective products are released in the future, they will conform to this new nationalization method.



Answers to your questions about BTOS II

What is BTOS II?

BTOS II is an operating system for the Intel 80186, 80286, and 80386 microprocessors. BTOS II allows you to run programs in real or protected mode.

What is protected mode?

Protected mode means two things:

- your programs can access extended memory (the memory above 1 Mb)
- the operating system and your applications are less likely to be overwritten by other programs

What is the difference between protected mode and real mode?

Applications running in real mode are restricted to the memory located in the lower 1 Mb address space; the upper memory remains unused. Protected mode allows your programs to use that upper memory, thereby increasing the amount of memory available.

Can I run my existing applications on BTOS II?

In BTOS II real mode, you can run your existing applications just as you did before (as long as they don't contain mediated interrupts). BTOS II allows you to run protected mode-compatible applications and system services as well as real mode applications.

Which workstations can run BTOS II?

Your B26 and B27 workstations will run BTOS II's real mode operating system; the B28 and B38 workstations will run BTOS II's protected mode operating system.

Can I use BTOS and BTOS II simultaneously on my workstation?

No, BTOS II is a new operating system and cannot be used with the current BTOS environment.

What about connections to networks, such as B-NET or B-LAN?

Any configuration supported under BTOS will continue to be supported under BTOS II.

Are line speeds faster between clusters?

The default cluster speed is now 1.8 Mbps (instead of 307 Kbps). If your cluster previously contained B21 and B22 workstations (which are no longer supported), your cluster line speed will be faster. If your cluster did not previously contain B21 or B22 workstations, your cluster should remain the same.

Do I need BTOS II if I only have B26 and B27 workstations?

No, but you'll miss the chance to use the other exciting, new BTOS II features, such as new utilities and the Cluster File Access.

Can I use the BTOS II real mode and protected mode operating systems within the same cluster?

Yes, provided that the master workstation is a B28, B38 or XE520.

Will my data communications products work under BTOS II?

If you have your own data communication applications and they use Unisys gateways, they will not be compatible with BTOS II unless you use the new data communication gateways released with BTOS II.

Will my programs run faster under BTOS II?

Not necessarily, but it depends on the workstation and the software. The B38 workstation is faster than the B26, B27, or B28 workstation. But a program loaded under BTOS II may actually be:

- faster because there is less application swapping
- slower if you constantly switch between real mode and protected mode because this requires additional machine time

How much more memory do I need to run BTOS II?

Although BTOS II requires more memory than BTOS, your programs now have an additional 3 Mb of memory on B28 and B38 workstations.

A B28 or B38 workstation should have a minimum of 2 Mb of memory for the master workstation and 1 Mb for a cluster workstation. A B26 or B27 master workstation should have at least 1 Mb and a cluster workstation should have 512 Kb.

Do I need different applications for a B26 or B27 workstation than I do for a B28 or B38 workstation?

No, all BTOS applications can run in either real or protected mode if they are protected mode-compatible.

Can I have one system service that will work on all BTOS workstations?

Yes, the same system service can run in either real or protected mode if it is protected mode-compatible.

Will my B21 or B22 work with BTOS II?

B21 and B22 workstations are not supported under BTOS II. These workstations must be clustered in a separate configuration with an earlier version of BTOS.

Why is variable partitioning better than multipartitioning?

A variable-sized partition eliminates the possibility of memory waste by creating a partition to fit the size of an application.

For example, if you previously specified a 500 Kb fixed partition (in a multipartition environment) to accommodate the word processor, another application swapped to that partition uses the entire 500 Kb, even if the application size is considerably smaller. This wastes memory that could be available to other programs.

Variable partitioning uses memory more effectively because the partitions adapt themselves to the size of the applications.

If I have a hard disk on my workstation, can I also share someone else's hard disk?

BTOS II includes the new Cluster File Access, which allows you to access BTOS files on the hard disk(s) of any other workstation in your cluster.

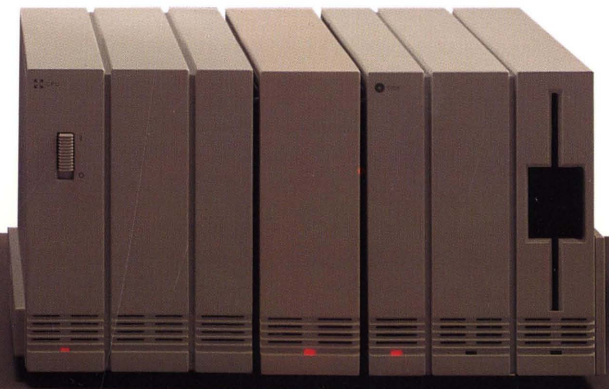
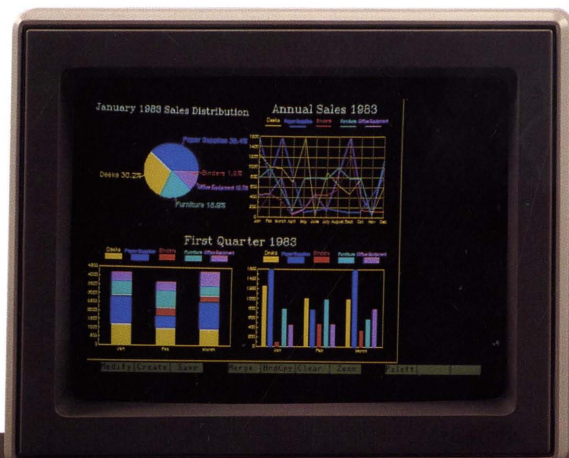
Note: BTOS standard security features are enforced.

Can I use Context Manager (instead of the new Context Manager II) under BTOS II?

No, the old Context Manager is not compatible with BTOS II (in either real or protected mode).

Will an application linked with BTOS II's CTOS.Lib function under BTOS 8.0?

Although we do not support this backward compatibility, you could possibly use such an application with BTOS 8.0. However, there are enhancements in the new CTOS.Lib that will not work with earlier versions of BTOS.



What documentation is available?

This section lists the documentation available:

- now (before BTOS II)
- with BTOS II
- after BTOS II

You can order these items using order form 3020003 obtained from your local Unisys representative. Orders should be mailed to:

Unisys Corporation
 Publication Center, Building 4
 41100 Plymouth Road
 Plymouth, MI 48170

Documents available now (before BTOS II)

BTOS Protected Mode Programming Guide, 1.0
 (form number 5026065)

BTOS Pascal Compiler Programming Reference Manual, 6.0
 (form number 5016793)

BTOS Indexed Sequential Access Method (ISAM) Operations Reference Manual, 7.0
 (form number 5026180)

OFISbridge New Product Announcement (NPA)
 (July 1986)
 (form number 1208444)

BTOS Family of Workstations New Product Announcement (NPA)
 (March 1987)
 (form number 1211943)

Documents available with BTOS II

BTOS Systems: Power for the Workgroup (July 1987)
 (form number 1212198)

BTOS II Standard Software Operations Guide, 1.0
 (form number 5027105)

BTOS II Standard Software Operations Quick Reference Guide, 1.0
 (form number 5027113)

BTOS II System Computer-Based Training Implementation Guide, 1.0
 (form number 5027519)

BTOS II Protected Mode Programming Guide, 1.0
 (form number 5027063)

BTOS II System Reference Manual, 1.0
 (form number 5027121)

BTOS II System Procedural Interface Reference Manual, 1.0

(form number 5027139)

BTOS II System Status Codes Reference Manual, 1.0
 (form number 5027147)

BTOS II Sort/Merge Operations Reference Manual, 1.0
 (form number 5027188)

BTOS II Customizer Programming Guide, 1.0
 (form number 5027154)

BTOS II Language Development Assembler Programming Guide, 1.0
 (form number 5027162)

BTOS II Language Development Linker and Librarian Programming Guide, 1.0
 (form number 5027071)

BTOS II Editor Operations Guide, 1.0
 (form number 5027170)

BTOS II Debugger Programming Guide, 1.0
 (form number 5027196)

BTOS II Voice Services Programming Guide, 1.0
 (form number 5027287)

BTOS Windows Installation and Configuration Guide, 2.0
 (form number 5027295)

BTOS Windows Operations Training Guide, 2.0
 (form number 5027303)

BTOS Context Manager II Installation and Configuration Guide, 1.0
 (form number 5027329)

BTOS Context Manager II Operations Training Guide, 1.0
 (form number 5027337)

Documents available after BTOS II

BTOS FORTRAN Compiler Programming Reference Manual, 6.0
 (form number 5016835)

BTOS BASIC Compiler Programming Reference Manual, 6.0
 (form number 5016819)

BTOS Forms Designer Programming Guide, 6.0
 (form number 5027212)

BTOS Indexed Sequential Access Method (ISAM) Operations Reference Manual, 8.0
 (form number 5027279)

Glossary

Addressing. Addressing is the method for referencing a specific memory location (allowing programs access to that memory location).

Application. An application is a program solution to a data processing problem. Some of the applications available on BTOS II are: OFISdesigner (word processing), Mail Manager (electronic mail), and Multiplan (spreadsheet).

Application Partition. An application partition is an area in memory reserved for the execution of an application.

Architecture. A computer's architecture is the design and organization of both the hardware and software.

Assembler. The Assembler translates 8086 Assembly language programs into BTOS object modules (machine code).

Attribute. An attribute describes the characteristics, but not the content of an item. For example, the character A has an underline attribute.

Background partition. A background partition is a Context Manager partition that does not have control over the screen and keyboard.

BASIC Compiler. The BTOS BASIC Compiler translates BASIC programs written to the ANSI Standard X3.60-1978 into BTOS object modules (machine code). Release 6.0 supports protected mode.

Batch. Batch is a program for non-interactive processing of applications. It consists of a system service (Batch Manager) that uses batch control statements in a batch job stream to direct the loading and execution of the applications. Batch is not supported under BTOS II.

BIND. Bind is a command that activates the Linker to create a version 6 run file. Version 6 run files are required for protected mode compatibility.

B-NET. B-NET is a network program that provides access to files and other resources of workstations in remote locations.

BTOS II. BTOS II is the new operating system for B26, B27, B28, and B38 workstation. Although the user interface is consistent across all workstations, the mode of operation varies. BTOS II allows you to run programs in either protected mode or real mode on the B28 and B38 workstations and in real mode only on the B26 and B27 workstations.

B26 Workstation. The B26 workstation is based on the Intel 80186 micro-processor. Real mode is the only operating environment available for this microprocessor.

B27 Workstation. The B27 workstation is based on the Intel 80186 micro-processor. Real mode is the only operating environment available for this microprocessor.

B28 Workstation. The B28 workstation is based on the Intel 80286 micro-processor. The B28 operating system runs in protected mode, but applications can run in either real mode or protected mode.

B38 Workstation. The B38 workstation is based on the Intel 80386 micro-processor. The B38 operating system runs in protected mode, but applications can run in either real mode or protected mode.

Byte Stream. A byte stream is an implementation of the Sequential Access Method (SAM). It is a readable (input) or writable (output) sequence of 8-bit bytes.

Cache. The cache is a temporary storage area. It is used to store information that is frequently needed.

CBT. Refer to Computer-Based Training.

Central Processing Unit (CPU). The CPU is the computer component that contains the circuitry for interpreting and executing instructions. The CPU controls the overall activity of the computer.

Chaining. The automatic termination and subsequent start of another program is called chaining.

Child Program. A child program is a program that has been started by another program (the parent program). If the parent program is terminated, the child program is automatically terminated.

Client Process. A BTOS client process is any process that makes a request of a system service.

Cluster File Access (CFA). Cluster File Access allows workstations to access the BTOS files on the hard disk(s) of any other workstation in the cluster. This capability applies only to BTOS files. BTOS standard security features are enforced.

ClusterShare. ClusterShare consists of hardware and software components that allow an IBM-PC, IBM-PC/AT or PC/AT-compatible to connect to a BTOS master workstation and share resources, such as disks and printers.

Cluster workstation. A cluster workstation is connected to a master workstation within a cluster configuration. (Refer to master workstation.)

COBOL Compiler. The BTOS COBOL Compiler translates COBOL programs written to the ANSI Standard X3.23-1974 into BTOS object modules (machine code). Release 5.0 supports only real mode.

Code Segment. A code segment is the part of the program that consists of the executable instructions. (Refer to data segment.)

Compiler. The BTOS compilers translate high-level language programs into BTOS object modules (machine code).

Computer-Based Training (CBT). Computer-Based Training refers to an on-line tutorial that provides users with interactive computer software training.

Context. In Context Manager, a context is one application environment. The most recently started context has control of the screen and keyboard.

Context Manager II. Context Manager II is a program that allows users to run more than one application or utility at the same time, by using memory partitions.

Coprocessor. A coprocessor is a processor that acts in conjunction with another processor.

Customizer. The BTOS Customizer software provides object module files that allow programmers to customize the operating system and the BTOS Debugger.

DAM. Refer to Direct Access Method.

Data Manager. Data Manager is a program that provides forms and menus to help programmers create data processing programs that use an ISAM database.

Data segment. A data segment is the part of the program that consists of the information. (Refer to code segment.)

Debugger. The Debugger is a BTOS programming tool that is packaged with the Customizer. It allows programmers to debug programs written in FORTRAN, Pascal, and Assembly at the symbolic instruction level. They can use the Debugger to examine and modify memory, set and clear breakpoints, and produce formatted memory displays.

Descriptor Table. A Descriptor Table (only applicable in protected mode) contains descriptors that define the segment's type, length, and protection level.

Device Driver. A device driver is a program, or part of a program, that directly controls the data transfers to and from I/O peripherals.

Diacritical Characters. Diacritical characters are characters that include a diacritical mark, such as a circumflex, to distinguish them from characters that otherwise are graphically identical.

Direct Access Method (DAM). DAM is one file access method used by BTOS. A BTOS DAM file consists of records identified by record numbers. The record sizes are specified when the DAM file is created. (Refer to File Access Methods, Record Sequential Access Method, Sequential Access Method, and Indexed Sequential Access Method.)

Directory. A BTOS directory contains information relating to a set of files. The Files command allows users to list files in specific directories and users can password-protect specific directories. One or more directories reside on a volume.

Dynamic Partitions. Dynamic partitions refers to the Context Manager II ability to dynamically allocate memory partitions for applications on a B28 and B38 workstation.

Editor. The Editor is a utility that comes with the standard BTOS software. The Editor allows users to enter and edit text.

Enhanced Multiplan™. Enhanced Multiplan is a spreadsheet program that runs on BTOS. Enhanced Multiplan has additional features not available in Multiplan.

Exchange. A BTOS exchange is an area where messages or processes are queued.

Extended Memory. Extended memory refers to the memory above 1 Mb on a B28 or B38 workstation.

External Interrupt. An external interrupt is caused by conditions that are external to the processor and are asynchronous to processor instruction execution.

File. A BTOS file is a set of related records. File information resides in a directory.

File Access Methods. BTOS file access methods are object module procedures located in the standard BTOS library. They can be linked into applications. (Refer to Direct Access Method, Record Sequential Access Method, Sequential Access Method, and Indexed Sequential Access Method.)

File Control Block (FCB). An FCB is an operating system structure, contained in memory and used for file system administration. BTOS has an FCB for each open file. The FCB contains information about the file, such as its location, how many file handles currently refer to the file, the file handles, and the file mode.

File Handle. A file handle is a unique 16-bit integer that identifies an open file.

File Header Block. The BTOS File Header Blocks are in a file (fileheader.sys). Each file's File Header Block contains file information, such as name, password, protection level, and the date/ time it was created and last modified.

File Locking. File locking makes a file unavailable to any application other than the application that locked the file.

Files. The BTOS Files command allows users to display information on files that reside in one or more directories.

Fixed Partition. A fixed partition has a set size.

Font Designer. Font Designer is a program that allows programmers to design character display fonts that display when their program runs.

Forms. Forms is a program that allows programmers to develop screen forms for user entry when their program runs.

FORTRAN Compiler. The BTOS FORTRAN Compiler translates FORTRAN programs written to the ANSI Standard X3.9-1978 into BTOS object modules (machine code). Release 6.0 supports protected mode.

Frame. A frame is a separate, rectangular area on the screen; it can have any width and height, up to the dimensions of the screen.

Gb. The abbreviation for gigabyte, 1 Gb = app. 1×10^9 bytes.

Generic Print System (GPS). GPS is a set of programs that provides a hardware-independent printer interface for applications. With GPS, the applications no longer have to include the code to drive individual printers.

GetpStructure. GetpStructure is a system call that provides a "clean" interface to the system tables, such as the System Common Address Tables (SCAT).

Global Descriptor Table. A Global Descriptor Table contains code and data segments used by the operating system and available to the entire application set.

Graphics Slice. A Graphics Slice is a hardware module that provides graphics capabilities, versus character-only capabilities. BTOS Graphics Slices can be added to B26, B27, B28, and B38 workstations.

I/O. I/O is an acronym for Input/Output.

Index. An index references a location in a table.

Indexed Sequential Access Method (ISAM). ISAM is a separately orderable BTOS file access method that allows data to be retrieved by using an index (key) instead of using the data location. (Refer to File Access Methods, Direct Access Method, Record Sequential Access Method, and Sequential Access Method.)

Internal Interrupt. An internal interrupt is caused by the processor and is synchronous to the processor's execution. (Refer to external interrupt.)

Interrupt. An interrupt is an event that interrupts the sequential execution of processor instructions.

Interrupt Descriptor Table. An Interrupt Descriptor Table contains descriptors that point to the location of up to 256 interrupt service routines.

Interrupt Handler. An interrupt handler is a subroutine that executes when an interrupt occurs.

ISAM. Refer to Indexed Sequential Access Method.

Kb. The abbreviation for kilobyte, 1 Kb = app. 1×10^3 bytes.

Kernel. The BTOS kernel schedules process execution and provides interprocess communication primitives.

LAN. Refer to Local Area Network.

Language Development. The BTOS Language Development software provides the Assembler, Linker, and Librarian.

Large Scale Integration (LSI). Large Scale Integration is the combination of 1,000 to 10,000 circuits on a single chip. Typical examples of LSI chips are memory chips, microprocessors, calculator chips, and watch chips.

Librarian. The Librarian is part of the BTOS Language Development software. Programmers can use the Librarian to create and maintain object module libraries. The Linker can search in such libraries to select object modules that a program calls.

Library. A library is a collection of object modules.

Linear Address. A linear address varies depending upon the architecture:

In a segmented architecture, a linear address is derived from a logical address; if virtual memory is not used, the linear address is the physical address. For example, a logical address is translated into a linear address consisting of a segment address and offset. On the 80386, if paging is not enabled, this would also be the physical address.

In a flat or linear architecture, linear address refers to an address that does not contain a segment and offset; instead, it contains an offset large enough to address any memory location.

Link. To create a BTOS run file, programmers must use the Linker to link (version 4) or bind (version 6) the file. Version 4 run files are not protected mode-compatible.

Linker. The Linker is part of the BTOS Language Development software. Programmers can use the Linker to link or bind one or more object files into a run file. (Refer to Link and Bind.)

Loadable Device Driver. A loadable device driver is a device driver that is loaded by the system at boot time.

Loader. The loader allocates memory to a program when it loads the program.

Local Area Network (LAN). A LAN is a data communications network of limited distance (usually less than two kilometers).

Local Descriptor Table. A Local Descriptor Table (only applicable in protected mode) contains descriptors associated with a task.

Logical Address. A logical address cannot be used to access memory until it is translated into a physical address. (Refer to Virtual Address.)

Logical Memory. Logical memory is memory that does not physically exist. This term is often used to describe Virtual Memory, wherein the system accesses a mass storage device as if it were an extension to physical memory.

LSI. Refer to Large Scale Integration.

Mail Manager. Mail Manager is a program that allows BTOS users to send messages to and receive messages from other mail users in the mail system.

Maskable Interrupts. A maskable interrupt is a type of external interrupt; it receives priority from the 8259A Programmable Interrupt Controller and can be ignored by the use of the processor interrupt-enable flag.

Masking. Masking is the process of selectively allowing an input to pass through (to be ignored). This is often used to describe the process whereby only certain interrupts cause the execution of an interrupt handler.

Master Workstation. A master workstation is the hub of a cluster configuration: It provides a file system, queue management, and other services to all the cluster workstations, in addition to supporting its own inter-active applications.

Math Server. The Math Server is a BTOS system service that provides emulation of a numeric coprocessor and the context saving of multiple floating point applications. The context saving is an extension of the BTOS multi-tasking environment, which allows multiple floating point applications to execute asynchronously.

Mb. The abbreviation for megabyte, 1 Mb = app. 1×10^6 bytes.

Memory. Memory is the main high-speed computer storage area where instructions are kept for a program that is running.

Message. A message is a predefined sequence of data that conveys instructions and/or data to the receiving process. Messages are transmitted between processes by the interprocess communication facility.

Message-Based Operating System.

A message-based operating system is one that utilizes messages for interprocess communication.

Microprocessor. A microprocessor is a single-chip central processing unit incorporating LSI technology.

Multiplan™. Multiplan is a spreadsheet program that runs on BTOS.

Multiprocessing Operating System.

A multiprocessing operating system appears to execute more than one process concurrently. Although BTOS executes on one processor only, the frequent switching between processes makes it appear to process multiple tasks concurrently.

Multi-Tasking Application. A multi-tasking application is an application that consists of more than one task; each task executes asynchronously and is composed of one or more processes.

Multi-Tasking Operating System. A multi-tasking operating system provides concurrent task processing; in this case, task means an application or a system service.

Multi-User Operating System. A multi-user operating system provides the sharing of resources (such as files and printers) among multiple users.

Nationalization. Nationalization is the process of adapting BTOS software for use in countries that use a language other than American English. Among other things, this includes translating displays and messages, and updating keyboard mapping tables to include special characters.

Native Language Support (NLS). NLS is the software that helps translators nationalize BTOS software. This software includes programs and configuration files that ease and expedite the nationalization of the operating system and some applications.

NLS. Refer to Native Language Support.

Object Module. An object module is a file that consists of machine code (instructions and data); however, it is not executable without additional modification.

Object Module Procedure. An object module procedure is similar to a system call because it is available through the same mechanism, but it does not interface with the operating system. The task is executed solely by the instructions contained within the object module.

OFISbridge. OFISbridge is a program that allows users to exchange, store, and distribute documents and other forms of information to an IBM host running DISOSS.

OFISdesigner. OFISdesigner is a program that allows users to integrate spreadsheets, voice, and graphics into word processing files.

OFISforms. OFISforms is a program that allows users to design interactive forms.

Parent Program. A parent program is a program that starts another program (the child program).

Partition. A partition is a division of memory that is used to isolate an application or system service.

Pascal Compiler. The BTOS Pascal Compiler translates Pascal programs written to the International Standards Organization (ISO) Standard into BTOS object modules (machine code). Release 6.0 supports protected mode.

PC Emulator. The PC Emulator is a hardware and software product that emulates an IBM PC-AT.

Physical Address. A physical address is an address that actually exists. (Refer to Logical Address.)

Physical Memory. Physical memory is memory that actually exists. (Refer to Logical Memory.)

PMOSS. Refer to the Protected Mode Operating System Server.

Pointer. A pointer is a variable type, which contains a memory address. The memory address can be logical, physical, or linear.

Polling Protocol. Polling protocol consists of rules that govern the format and timing of control-messages from the master workstation to each cluster workstation. The control-messages sequentially invite individual cluster workstations to transmit.

Primitive. A primitive is an instruction that directly causes BTOS kernel execution.

Process. A process is the basic entity that competes for processing time; BTOS schedules processes for execution based on the process priority. A process consists of Instructions and Data, which can be an entire task or part of a task.

Process Context. A BTOS process has hardware and software contexts: information about the process. The hardware context consists of those values that the kernel loads into the microprocessor when scheduling the process. The software context consists of the process default response exchange and the process priority.

Process Control Block (PCB). The combined hardware and software context of a process is maintained in a system data structure called a Process Control Block.

Processor. The processor is the functional part of the computer system that reads, interprets, and executes instructions.

Process Priority. Process priority is an attribute of a process that describes its relative importance; the scheduler uses it to determine when the process will run (versus other processes).

Professional Word Processor (PWP). PWP is a program that allows BTOS users to perform word processing functions, including headers, footers, attributes, math, merge, and phrases. (Refer to Secretarial Word Processing.)

Protected Mode. Protected Virtual Address Mode (commonly called protected mode) is a mode of operation of the Intel 80286 and 80386 microprocessors.

Protected Mode Operating System Server (PMOSS). A part of BTOS 8.0, PMOSS is a program that loads protected mode-compatible system services into extended memory on B28 and B38 workstations. It allows the system services to run in protected mode transparently to the resident portion of the operating system, which is running in real mode.

Protected Virtual Address Mode. Protected Virtual Address Mode (commonly called protected mode) is a mode of operation of the Intel 80286 and 80386 microprocessors.

Pseudo-Interrupt. A pseudo-interrupt is an internal interrupt that operates asynchronously to the processor execution; each process can have pseudo-interrupts.

RAM Disk Cache. In general, the RAM Disk Cache is a program that uses memory to emulate a mass storage device. The System Performance Accelerator (SPA) RAM Disk Cache is a read-only implementation that allows a predetermined set of files to reside in memory (instead of the mass storage device).

Raster. Raster is a scanning pattern used to generate, record, or reproduce television, facsimile, or graphics images on a screen (called raster scanning).

Real Mode. Real mode is the only mode of operation for the Intel 8086 and 80186 microprocessors and is the mode of the 80286 and 80386 microprocessors when they are reset. (Refer to Protected Mode.)

Reboot. Reboot is the action whereby the hardware is reset and the operating system is reloaded and executed. BTOS reboots automatically when the workstation is turned on, after a power failure, and when the command Bootstrap is activated.

Record. A record is a collection of related data items (fields); several records comprise a file.

Record Locking. Record locking makes a record unavailable to any application other than the application that locked the record. (Refer to File Locking.)

Record Sequential Access Method (RSAM). RSAM is one file access method used by BTOS. A BTOS RSAM file consists of fixed or variable length records. The file can be opened for read, write, or append operations. (Refer to File Access Methods, Direct Access Method, Sequential Access Method, and Indexed Sequential Access Method.)

Request Block. A request block is a formalized message recognized globally throughout the system.

RSAM. Refer to Record Sequential Access Method.

Run-Time Library. A Run-Time Library is a library (group of object modules) that is used by an application when the application is running.

SAM. Refer to Sequential Access Method.

Secretarial Word Processor (SWP). SWP is a program that allows BTOS users to perform advanced word processing functions, including automatic table of contents, automatic indexing, and strings.

Segment. A segment is a variable-length area of contiguous memory addresses.

Selector. A selector is the index into a Descriptor Table

Sequential Access Method (SAM). SAM is one file access method used by BTOS. A BTOS SAM provides device-independent access to devices (such as the video, printer, files, and keyboard) by emulating byte streams. (Refer to File Access Methods, Direct Access Method, Record Sequential Access Method, and Indexed Sequential Access Method.)

Single Partition Operating System. A single partition operating system is a compact version of BTOS that does not allow concurrent execution of interactive applications because it is limited to one partition. (This operating system is not available with BTOS II.)

Sort/Merge. Sort/Merge is part of the BTOS standard software. It includes a Sort utility and a Merge utility that provide sorting and merging of a sequence of data records.

SPA. Refer to System Performance Accelerator.

Swapping. Swapping is a process that moves programs between main memory and secondary storage.

System Calls. System calls are subroutines that are provided by BTOS to interface to the operating system.

System Common Access Table (SCAT). SCAT is a table that contains the addresses of structures or information commonly used throughout the operating system and applications.

System Event. Any event that stops the sequential execution of a process, such as an interrupt, is a system event. System events are used to schedule processes.

System Image. A system image is a file that contains a program exactly as it would appear in memory when it executes, as opposed to an object module that must be modified prior to execution.

System Performance Accelerator (SPA). SPA is a BTOS system service that uses the extended memory on a B28 or B38 workstation to store (cache) read-only files (including run files). This improves response time for master and cluster workstations performing file system operations.

System Service. A system service is a program that performs a service for other programs. An application notifies a system service that it wants its service performed by issuing a request.

Task. A task consists of executable code, data, and one or more processes. In BTOS II, a task is a run file.

Utility. A utility is a program provided as part of an operating system; the utility performs standard data-maintenance functions, such as file save and restore, and file copy. The utility may be called by other programs to perform the task.

VAM. Refer to Video Access Management.

VDM. Refer to Video Display Management.

Variable Partitions. Variable partitions are an option available when Context Manager II is configured on a B28 or B38 workstation. The partitions are allowed to shrink and grow based on run file information about the application's memory needs.

Video Access Management (VAM). The VAM is a series of system calls and object module procedures that provide direct access to the characters and character attributes of each video frame.

Video Display Management (VDM). The VDM is a series of system calls that provide direct control over the video hardware. For example, VDM controls the loading of a new character font, stops the video refresh, and allows initialization of screen frames.

Virtual Address. A virtual address is an address that must be translated into a physical address before it can be used. Virtual addresses are used when virtual memory is enabled.

Virtual Memory. Virtual memory is a style of memory management that permits the virtual address space to exceed the physical address space by using secondary storage to hold the overflow from memory.

Virtual Segmentation. Virtual segmentation is an implementation of virtual memory whereby segments may exist either in memory or on a mass storage device. This is achieved by swapping the segment to and from disk based on the need to access the segment. The 80286 and 80386 Intel microprocessors provide hardware virtual segmentation.

Voice Services. BTOS Voice Services are a set of programs and data files that provide an interface between the voice hardware and applications.

Volume. A BTOS volume is a name for a mass storage device, such as a floppy disk or hard disk. By referring to a device by a volume name, it is not necessary to know the physical location of the volume.

Window. A window is a portion of the screen.

X-Block. An X-Block is a data block that is passed between a master and a cluster workstation across the cluster line.

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