

**Release**

*Notes*

**FOR**

**OS-9000 BSP for  
x86 Processors**

**Version 2.1**

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This manual reflects version 2.1 of the OS-9000 OEM for x86 processors.

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# Chapter 1: x86 BSP Release Notes

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# Introduction

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These release notes apply to the Version 2.1 release of OS-9000/x86 BSP.

This chapter summarizes the changes to the software and installation considerations that you need to know before you try to install this version of the software.

## General Notes

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This section summarizes some special installation instructions for this release of OS-9000 for the x86 BSP.

### MWOS Directory Incompatible With Version 1.x

The MWOS directory has changed substantially between OS-9000 Version 1.x and OS-9000 Version 2.



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#### **WARNING**

Do not attempt to install OS-9000/x86 Version 2.1 over an existing OS-9000/x86 Version 1.x installation. You need to move your OS-9000/x86 Version 1.x installation to another place before installing OS-9000 Version 2.1.

---

Before you install this version of the OS-9000/x86, you should move and backup previous versions of the OS-9000/x86 2.0 Beta MWOS trees. If you have been doing development with the OS-9000/x86 Version 2.0 Beta system, you will need to re-integrate your development into the OS-9000/x86 Version 2.1 MWOS tree. Do not install the OS-9000/x86 Version 2.1 MWOS tree on top of other MWOS development trees.

### Disable Power Saving Modes

You should disable all power saving modes supported in the BIOS prior to installing or running OS-9000 for x86 processors on a PC/AT system.

## Module Format

The module format has changed between OS-9000/x86 Version 1.x and OS-9000 Version 2 systems. Version 1.x modules do not work on a OS-9000/x86 Version 2 system

## Device Descriptor Format

The device descriptor format has changed between OS-9000/x86 Version 1.x and OS-9000 Version 2.1 systems. Version 1.x device descriptors do not work on a OS-9000/x86 Version 2.1 system.

## ISP

ISP Version 2.1 is compiled with the Ultra C compiler (UCC) version 1.3. All source files and makefiles are compiled in the UCC mode (as opposed to *backwards compatible* or ANSI mode). All libraries have been created using the `libgen` utility (this implies that these libraries cannot be used with the old K&R C compiler). Utilities have been compiled using the Ultra C shared C-library, `csl`, except for `mbinstall`, `ispstart`, and `routed`.

## Makefile Template Update Requirements

If this package is to be installed into an MWOS development tree in which an OS-9/68K package (Version 3.0.2, or earlier) was previously installed, it is important that one of the following packages be installed on top of the existing package in that tree prior to installing this release:

- OS-9/68K Version 2.1 ISP update package
- OS-9/68K System-State Debugging Add-on package (BSP or OEM Kit)
- OS-9/68K Makefile template update package

## OS-9 68K System-State Debugging Add-On Packages

If the System-State Debugging Add-On Package for OS-9/68K (Version 3.0.2, or earlier) has been installed and you are installing this package in the same MWOS directory tree, you must make the following changes before installing this package:

- 
- Step 1. Copy the `cnfgdata.h` file from the `MWOS/SRC/DEFS/ROM` directory to the `ROM/CNFGDATA` subdirectory of the `MWOS/OS9/68020/PORTS/DBG147` directory, and any other debug-support port directory that you use.
- Step 2. Edit the makefile in `ROM/CNFGDATA` to update the `DEFS` macro to the following definition:

```
DEFS = -v=. $(PORT_DEFS) $(ROM_DEFS) $(MWOS_DEFS)
```

- Step 3. Add a line to the makefile in the MWOS/SRC/ROM/PROTOCOLS/LLSLIP directory. The following line should be inserted in the makefile after the TRGTS = llslip line.

```
ALL_TRGTS = k68k
```

---

## Low-Level Communication Module Limitations

While multiple low-level protocol interfaces may be configured on the system, FasTrak connections will always use the first such interface available, as defined by the first low-level communication driver to be initialized.

## Low-Level Booter Module Limitation

2.88MB floppy diskettes are not supported by the fdc765 low-level floppy booter module.

## Unsupported Processors

The following CPUs are not supported by this release:

- NxGen586 CPUs are not supported by the OS-9000/x86 Version 2.1 release.
- Cyrix 686 class CPUs are detected as 486 class CPUs by the CPU detection algorithm within the boot code. In spite of this, OS-9000/x86 Version 2.1 does run on Cyrix 686 CPUs.
- Early AMD and TI-made 486 class CPUs are not supported.

## RomBug

The latest edition of RomBug uses an architecture Microware calls *Modular ROMs*. This architecture allows users to configure their low-level support in a manner similar to the way the OS-9000 operating system is configured. RomBug is now configured as a low-level module that gains access to the resources it needs by using other low-level modules.

Among the low-level modules used by RomBug is the debugger server. This module provides RomBug with the low-level debugger services it needs such as the ability to do single step execution and set breakpoints. This new *client/server* approach to low-level debugging allows other debug clients to be easily added to the system to enable more sophisticated debuggers to be used such as Microware's FasTrak Debugger tool.

# Programming Notes

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## **picirq**

A new module has been added to x86 sample ports called `picirq`. `picirq` is responsible for issuing the End-Of-Interrupt (EOI) command to the Programmable Interrupt Controller (PIC).



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### **WARNING**

All EOI commands issued to the PIC must be removed from all OS-9000/x86 Version 2.1 Beta device drivers. No supplied OS-9000/x86 V2.1 device drivers issue EOIs. Please make sure your device drivers are modified not to issue EOI to the PIC or else the OS-9000/x86 system will malfunction or hang.

---

## **DOS Hosted Development Directory Path Length Limitation**

Due to the 66 character limit on DOS pathlists, the target directory, for example MWOS, specified for installation of this package must be six (6) characters or less, and must appear in the root directory for the drive.

## Low-Level DBK Booter Selection

The modular ROM installation provided includes booters for the floppy diskette, IDE hard drive, and the Adaptec 1540 ISA SCSI controller. The Adaptec 2940 PCI SCSI booter module can be installed as a booter by modifying the `rom_mods.ml` file in the ports `BOOTLIST` directory then typing `make` from the ports `ROM/BOOTROM` directory to create a new `coreboot` file containing the modular ROM modules.

The low-level booter menu displays a boot entry similar to the following, `Boot from SCSI (SCCS) hard drive`. This boot entry refers to booting from the Adaptec 154x ISA SCSI controller.

# System Configuration Notes

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## Memory Protection

A bit defined in the `d_compat` field within the `init` module indicates to the kernel whether to use memory protection. The bit is called `B_SSM` and is defined within the `init.h` header file. `B_SSM` bit codes are:

0 - Memory protection is used if the `ssm` module is included in the bootfile

1 - Memory protection is not used regardless of the inclusion of the `ssm` module within the bootfile.

## Using RBF and PCF File Managers on the save Device

### File Manager I/O Lock Issues

OS9000 device drivers incorporate I/O locks. When a driver is *inized*, the I/O lock is created. The I/O lock will remain in effect until the device is *deinized*.

When using *RBF* and *PCF* file managers with OS-9000, the system may report `000:198 (E_LockID) Illegal I/O lock identifier`. The error reported is really an indication that two file managers are using the same device.

To avoid the `000:198` lock error, do not *inize* the device being used. When an operation is performed on the device, IOMAN will *inize* and *deinize* the device as required.

Another method would be to initialize the device that will be used most often, perhaps the /d0 RBF descriptor. When there is a need to use the /md0 PCF descriptor, simply deinitialize /d0 before using.

## PCI and ISA Devices

When using PCI and ISA devices in the same system, you may have to do some BIOS configuration. In the following example, an SMC Ethernet ISA card and a AHA1540 SCSI ISA card will be configured for a Gateway 2000 computer using AMIBIOS.

- 
- Step 1. When the system starts to boot press <Esc> or <F1> to enter the setup screen.
  - Step 2. Move the right arrow key to the `Advanced` menu. Use the down arrow key to select the `Plug and Play Configuration` entry.
  - Step 3. Select the `Configuration Mode` entry and choose `Use Setup Utility` option.
  - Step 4. Press the down arrow key to select the `ISA Shared Memory Size` entry. If the SMC card is set to use the default of 16KB, then select 16k for shared memory access.
  - Step 5. Move down to the `IRQ10` and `IRQ11` entries. Enable `IRQ10` for the SMC card and `IRQ11` for the AHA1540 card.

Keep in mind that the BIOS needs to be setup for ISA memory access and ISA interrupt assignments.

Different PCs will include different setup options to deal with this issue.

# 1

- Step 6. Once OS9000 is up and running, run the `pciv` utility to see if the interrupts are configured correctly.
- 

## Creating OS-9000 Hard Disk Partitions

When you create hard disk partitions using the OS-9000 `fdisk` utility, the following options will be displayed.

- OS-9000/386 type partition
- Extended Type 41 partition

Always select option 1, (OS-9000/386) when creating partitions unless specifically directed to select a Type 41 partition.

# Known Problems

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The following problems were discovered in the OS-9000/x86 Version 2.1 software but were not fixed in this release of the software.

## **fsave/freestore**

Files transported by tape between OS-9000/x86 and OS-9000 for PowerPC™ Version 2.0 using `fsave/freestore` will not reflect proper file dates.

## **Hard Disk Device Drivers**

The system will hang if you attempt to `iniz` an IDE device descriptor in a system without an IDE controller installed.

The system may hang if you attempt to `iniz` an Adaptec 2940 device descriptor in a system without a PCI Adaptec 2940 SCSI controller.

## **dcheck**

The `dcheck` utility in this distribution will refuse to run on removable disk media of the opposite endian format (for example, floppy disks formatted on an OS-9000 for PowerPC™).

The `dcheck` utility distributed with OS-9000/x86 will not perform properly with floppy disks formatted on OS-9000 for PowerPC™ Version 2.0.

## RomBug

Watchpoints are not correctly supported.

## ISP

`snmpwalk` may display problems with the IP object. The routing list may display an infinite loop.

`if83c790` (SMC Ultra) is not configurable through the descriptor for BNC or 10 Base T. This will need to be done through the DOS setup utility provided with the adapter.

The `if8390` and `if83c790` descriptors currently consume approximately 96KB of `mbuf` space for the receive ring. This is configurable by changing the following field in `systype.des`.

```
le_nrmb = 64;
```

This has been tested and works fine at 16 mbufs. Busier network usage may require this value increased. The `nsstat` utility can be used to monitor for receive buffer shortage. If using the default descriptors, the network may need additional memory added to `mbsinstall` in order to run effectively.

The slip descriptor `x/2` points to the `/+1` descriptor. It should point to the `/+2` descriptor. Update the `systype.des` file to change the descriptor.

## Sample Utilities

---

This section describes port-specific utilities provided in the OS-9000/x86 Version 2.1 BSP. The port-specific utilities are located in the following directory:

```
MWOS/OS9000/80386/PORTS/PCAT/CMDS
```

### abort Utility Example

The PC/AT sample port directory contains a Non-Maskable Interrupt (NMI) handler called `abort`. The `abort` module is a P2 module that will break to the system debugger when a Non-Maskable Interrupt is generated.

### vidbios Utility Example

The PC/AT sample port directory contains an OS-9000 trap handler and an example utility that calls the trap handler to allow INT10H video BIOS calls to be made from the OS-9000/x86 system. The `vidbios` utility is useful for setting BIOS video modes. The `vidbios` utility uses the INT10H trap handler to make video BIOS calls.

### pciv Utility Example

The PC/AT sample port directory contains an OS-9000 utility that prints out PCI and interrupt configuration information.

## BSP Installation Notes

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The OS-9000/x86 Version 2.1 PCAT sample port is intended to run on Intel-made 80386, 80486 and Pentium family processors. Microware makes an attempt to have the OS-9000 PCAT sample port run on as many PCAT compatible machines as possible. However, we cannot promise to run on all PC compatible clones due to differences in CPUs, hardware, etc.

OS-9000 device drivers (in general) use the IRQ and base I/O addresses specified within the device descriptors. The default IRQ and base addresses expected by the OS-9000/x86 BSP install program are listed below (not all devices listed).

<b>Device</b>	<b>Base I/O Address</b>	<b>IRQ</b>
System ticker	0x40	0
Keyboard port	0x60	1
NMI		2
Serial port #2	0x2f8	3
Serial port #1	0x3f8	4
Diskette controller	0x3f0	6
Parallel port #1	0x3bc	7
SCSI controller	0x330	11
First IDE controller	0x1f0	14

These IRQ values and base I/O addresses can be changed once OS-9000/x86 has been installed by modifying the device descriptors and recreating the boot files.

## ISA Plug-and-Play (PnP)

OS-9000/x86 does not support ISA Plug-and-Play (PnP). This means OS-9000/x86 does not query the PnP capability of adapter cards to determine their IRQ and base I/O addresses. It is suggested that all PnP capabilities be disabled on adapter cards. Disable PnP capabilities within BIOS setup utilities for use with OS-9000/x86. If you have a problem installing the OS-9000/x86 BSP, please check that your system devices have the correct IRQ and base I/O addresses selected using the table above as a reference. Some OS-9000 devices may support limited Plug-and-Play features related to DMA and interrupt channel assignments.

## PCI Plug-and-Play (PnP)

OS-9000/x86 PCI devices determine IRQ and address assignments through the PCI system support library. PCI device descriptors used in OS-9000/x86 set the IRQ vector to zero and the I/O addresses are determined by PCI library calls.

## BSP Install Program Changes

The OS-9000/x86 resident BSP install program now queries the user on the selection of the keyboard layout.

# 1

x86 BSP Release Notes



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# **Chapter 2: Changes Since x86 Version 2.0 Beta Release**

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# 2

Changes Since x86 Version 2.0 Beta Release



## Introduction

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This chapter explains the changes that have been made to this version of the OS-9000 software since the OS-9000/x86 Version 2.0 Beta release. If you did not install a Beta 2.0 version of the software, you should read the information in [Chapter 3: Changes Since x86 Version 1.4 Release](#) instead of reading this chapter.

## Features and Changes

---

This section lists the new features that have been added since the OS-9000/x86 Beta Version 2.0 release and any changes that have been made to the software.

### OS-9000/x86 Descriptors

OS-9000/x86 V2.1 device descriptors, `init` modules and the `cnfgdata` Modular ROM module are now created using the OS-9000 `Editmod` utility from the ports directories.



---

#### For More Information

Refer to the *Utilities Reference* for details about how to use `Editmod`.

---

### SCSI Adapter Support

Support for the NCR 810/825 SCSI controller has been added for both the Modular ROM system and the OS-9000 high-level system.

## 2

Changes Since x86 Version 2.0 Beta Release



### **OS-9000/x86 Installation on 2nd physical IDE drive**

Support has been removed from the OS-9000/x86 V2.1 install program to install OS-9000/x86 on the second physical IDE drive. Refer to the ***OS-9000 BSP Reference*** for details on manually installing OS-9000 if you wish to install the OS-9000 BSP on a slave IDE hard drive.

### **Nested Interrupt Support**

The OS-9000/x86 boot code programs the interrupt controller to use fully nested mode, allowing nesting of hardware interrupts based upon interrupt priority where IRQ #0 has the highest priority.

### **PC/AT IPL Bootstrap Supports**

The IPL bootstrap programs used by the PC/AT sample port that are installed on the first sector of the boot partition during the BSP install process have had their filenames changed within the following directory:

```
MWOS/OS9000/80386/PORTS/PCAT/CMDS/BOOTOBS/IPL
```

`iplfd` - IPL bootstrap for 3.5 and 5.25 inch floppies

`iplhd` - IPL bootstrap for hard disks, queries for MS-DOS or OS-9000 boot.

`iplhdnoq` - IPL bootstrap for hard disks, boots OS9000, no query.

The ***OS-9000 BSP Reference*** x86 Processor-Specific Appendix describes the installation of the IPL bootstrap which is done as part of the OS-9000 BSP install.

The IPL bootstrap code will work with the IBM OS/2™ Boot Manager and Linux LILO.

## Improved Keyboard Support

The OS-9000/x86 Version 2.1 system contains term descriptors for the following keyboard layouts:

- `term` - U.S QWERTY style keyboard layout
- `term_fr` - French keyboard layout
- `term_gr` - German keyboard layout
- `term_nw` - Norwegian keyboard layout
- `term_uk` - U.K. keyboard layout

## Modular ROM Support

Microware Modular ROM support was added.

## 3Com Etherlink III PCI Support

Support for 3Com Etherlink III PCI was added.

## System Modules

### Kernel

Parameter block edition checking has been added to the kernel. The kernel checks the inbound parameter block on each kernel call for an edition number contained within the parameter block. If the inbound edition number is less than that supported by the kernel, a `E_PARAM` (000:241) error is returned to the caller. The service call edition for OS-9000/x86 Version 2.1 is set to 1. If your program uses the `_oscall()` function call, you must modify your program to set the `edition` field of the system call parameter block to the value 1 or else a `E_PARAM` error will be returned by the kernel. If you are relinking with the OS-9000/x86 Version 2.1 libraries, you do not need to make any source code changes.

Kernel stacks have been increased from 2KB to 3KB to allow more space for interrupt nesting (see *Nested Interrupt Support* above for details.)

## File Managers and Device Drivers

### Real Time Clocks (`rt146usa`, `rt146eur`, `rt146nds`)

There are now three real time clock modules that vary by Daylight Savings Time convention:

`rt146usa` - RTC 146818 real time clock driver that uses the USA convention for Daylight Savings Time.

`rt146eur` - RTC 146818 real time clock driver that uses the European convention for Daylight Savings Time.

`rt146nds` - RTC 146818 real time clock driver for time zones that do not have Daylight Savings Time.

## SCF

Support was added for `SS_READY` on polled input devices.

## IDE

IDE drives up to 1.6GB in capacity are supported.

The software now supports up to two IDE controllers in a system.

## Adaptec 154x Family ISA (aha1540)

The Adaptec 154x Family ISA (`aha1540`) device driver now allows DMA and interrupt settings other than the default setup.

## 8250/16450/16550 Serial Port (sc16550)

The filename changed from `sc16450` to `sc16550`.

Support was added for NS16550 compatible serial ports.

Support was added for 57.6Kbps and 115.2Kbps transmission.

## Generic High-Level Serial Driver (sc11io)

A new device driver, `sc11io`, was added. See the ***OS-9000 OEM Reference*** manual for information on how to configure/use this device driver.

## Riscom8 Serial (scriscom)

Use `_pic_enable()` and `_pic_disable()` function calls to enable/disable the programmable interrupt controller (PIC).

## Hostess i Serial (schost)

Use `_pic_enable()` and `_pic_disable()` function calls to enable/disable the programmable interrupt controller (PIC).

## Low-Level Modular ROM System

### Booter Support

Low-level booter support has been added for the NCR 810/825 SCSI controller.

The `rombreak` pseudo-booter has been added.

The `fdc765` low-level booter uses DMA (by default) rather than programmed I/O to load the boot file into memory.

### Caching

The PC/AT sample port enables processor caching during the boot phase. Previously, processor caching would not be enabled until the OS-9000/x86 V2 system booted.

## Utilities

### **fdisk**

An option was added to install a Master Boot Record (MBR) on a target drive.

Prints partition sizes in megabytes (MB).

# 2



## `irqs`

## Display the OS-9000 Interrupt Polling Table For a Given System

---

### PACKAGE

■ Embedded    ■ Disk-Based    ■ Extended

---

### DESCRIPTION

`irqs` displays a list of the system's IRQ polling table. The IRQ polling table contains a list of the service routines for each interrupt handler known by the system.

The `irqs` display header lists the system name and the OS-9000 version number.

Each line in the `irqs` display contains six fields:

Name	Description
<code>vector</code>	Exception vector number used by the device. A second number, is the exception number in hexadecimal format.
<code>prior</code>	Software polling priority.
<code>drivstat</code>	Address of the device driver's static storage.
<code>irq svc</code>	Interrupt service routine's entry point.
<code>driver</code>	Name of the module which contains the interrupt service routine, usually a device driver.
<code>dev list</code>	If the <code>drivstat</code> and the <code>dev list</code> entry are the same, then the <code>dev list</code> entry is displayed and additional information is available using the <code>-d</code> option.

---

**EXAMPLE**

The following example displays the IRQ polling table for a system named Calvin:

```
$ irqs

PC-AT Compatible 80386 OS-9000 V2.1 for Intel x86

vector  ($)      prior  drivstat   irq svc    driver    dev list
-----
   64  ($40)      10  $00fd3f40  $0005d1b5  tk8253    <na>
   65  ($41)      10  $00ffd080  $00069a1c  sc8042    $00ffd080
   75  ($4b)      10  $00ff7474  $0007c1a8  aha1540   <na>

$ irqs

PC-AT Compatible 80386 OS-9000 V2.0 for Intel x86

Vector: 65 ($41) Priority 10  IRQ_SVC $00ffd080
Device: term      Driver: sc8042   File Mgr: scf
DrvStat: $00ffd080  FMStat: $00ffe3d0  LUStat: $00ffc8d0  Port:
$000b8000
Users: 2  Mode:$2003  Type: 0   Class: 1  Logical Unit: 0  Current
Process: 3
```

---

**SEE ALSO**

F\$IRQ system state service request in the ***OS-9 Technical Manual***

## Corrected Problems

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This section lists the problems that were discovered in OS-9000/x86 Beta Version 2.0 of the software and have been fixed in this release.

### Slow IPL boot

Some PC/AT compatible machines would print the OS-9000 80386 boot banner in the upper left hand corner of the screen and then take up to 90 seconds to load the `firstboot` file off of diskette. This problem has been fixed on the BSP installation diskettes.

### Can't allocate system tables Kernel Error

On some PC/AT machines, the kernel would crash during installation of OS-9000 with a `Can't allocate system tables` error. This problem has been fixed.

### SSM

A memory leak from system-state processes was fixed.

`_os_permit()` does not return a 000:164 error anymore when accessing video memory when SSM is installed.

The `ssm.noerr` module has been renamed to `ssmnoerr`.

## File Managers

### RBF

`rbf` now checks for disks formatted by OS-9000/x86 V1.4 and creates files with the correct date. Previously, the timestamp on the resultant file would be 10 years off.

### PCF

Problems with manipulating zero-length PCF files have been fixed.

The OS-9000 `free` utility now works on PCF formatted drives.

The OS-9000 `rename` command now works correctly on PCF formatted drives.

The shell operator `>` - now works correctly on PCF formatted drives.

## RBF Device Drivers

### IDE (rb1003)

The problems with multi-sector write hangs have been fixed.

The problems with accessing the second IDE drive (slave) on a single controller have been fixed.

### AT Floppy Disk (rb765)

A check for *media full* was added to fix a problem using the OS-9000 `fsave` utility.

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Changes Since x86 Version 2.0 Beta Release



### **Adaptec 154x Family ISA (aha1540)**

The problems with using the Adaptec 154x controller on PC/AT systems with more than 16MB of memory were fixed.

## **SCF Device Drivers**

### **PC/AT Parallel Port (scp87303)**

A delay in flipping the parallel port STROBE bit was added to fix problems using OS-9000 with some printers.

### **NULL Device Driver Descriptor (nil)**

The `nil` device descriptor has been fixed so as not to return errors when redirecting output to `nil`.

## **Low-Level Modular ROM System**

### **Booter Support**

The `fdc765` low-level booter now supports booting from 5.25 floppy diskettes.

Problems with booting from Adaptec 154x family controllers on systems with greater than 16MB of memory have been fixed.

Problems with the `ide` and `fdc765` low-level booters printing garbage after the volume name have been fixed.

The `fdc765` low-level floppy booter does not hang the system anymore when the floppy drive is selected for boot and there is no floppy in the drive.

## Memory Usage

The OS-9000/x86 Version 2.0 Beta had the `firstboot` file created at a fixed size, which wasted system memory. The `firstboot` file is now created as a variable sized file, which saves system memory since the file is not being padded.

## romcore boot code

Problems with `romcore` boot code setting up the system IDT and GDT tables up incorrectly have been fixed. Specifically, user state OS-9000 processes cannot perform I/O to certain regions of I/O space.

## io8042 Keyboard Driver

Problems whereby the system would hang when a key was pressed before the low-level boot menu was displayed have been fixed.

## Utilities

### `bfed`

`bfed` now exits without returning a 000:002 error.

Problems whereby `bfed` would fault with an 000:014 code when no file name was given on the command line when executed have been fixed

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Changes Since x86 Version 2.0 Beta Release



### **setime**

The problem that caused `setime` to go into an infinite loop after the `<ESC>` key was pressed when querying for the current time has been fixed.

### **tape**

The problem that caused the `tape` command with the `-o` option to erase a tape has been fixed.

### **dir**

The `-r` option now works with PCF formatted devices.

## **RomBug**

The problem with the `ov` command causing a system crash has been fixed. The problem used to occur after re-starting a system that had stopped on an interrupt trap using an `ov` command.

RomBug now recognizes Non-Maskable Interrupts (NMIs) correctly.

## **ISP**

The 3Com Etherlink ISP driver now work more reliably with faster systems.

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# **Chapter 3: Changes Since x86 Version 1.4 Release**

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# 3

Changes Since x86 Version 1.4 Release



## Introduction

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This section describes changes, bug fixes, and enhancements made between the OS-9000/x86 Version 1.4 release and the Beta Version 2.0 release.

## New Features and Changes

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### Cross-Development Supported

Development for OS-9000/x86 Version 2.1 targets can be performed on Windows 3.1™, Windows 95™, Windows NT™, or UNIX™ hosts.

### Low-Level Modular ROM System

The `boot` and `bootdebug` files within the OS-9000 Version 1.4 release have been replaced by a small bootstrap core and a collection of low-level configurable system modules called the low-level Modular ROM system. The Modular ROM system allows flexibility in system configuration and enables system-state debugging by linking necessary modules.

Among the low-level modules used by RomBug is the debugger server. This module provides RomBug with the low-level debugger services it needs such as the ability to do single step execution and set breakpoints. This new *client/server* approach to low-level debugging allows other debug clients to be easily added to the system to enable more sophisticated debuggers to be used such as Microware's FasTrak Debugger tool.

### Debugging Options

RomBug or FasTrak can be used for system-state debugging. The host portion of FasTrak can be run on Windows or UNIX hosts while debugging x86 targets.

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Changes Since x86 Version 1.4 Release



## **Virtual PC Support removed**

VPC support has been removed.

## **SCSI Adapter Support**

Adapter support for the Adaptec 2940 PCI SCSI controller has been added. The Adaptec 154x family of ISA SCSI adapters is also supported.

Support for the NCR 810/825 SCSI controller has been added.

## **Boot Code**

The PC/AT boot code dynamically checks for the presence of an Intel-made 80386, 80486, or Pentium™ family processor. The OS-9000/x86 cache module flushes the processor cache using the algorithm appropriate for the specific processor family.

## **File Manager (RBF)**

Support was added for hard disk drives up to 4GB capacity.

## **RBF Device Drivers**

### **IDE (rb1003)**

The file name changed from `at_hdc` to `rb1003`.

All BIOS dependencies have been removed from the OS-9000 IDE device driver.

EIDE support has been added.

IDE device driver source code is now ANSI compatible.

### **AT Floppy Disk (rb765)**

The file name changed from `at_fdc` to `rb765`.

The `d0` and `d1` device descriptors refer to high density 1.44MB floppy diskettes. `d01` and `d11` refer to low density 720KB floppy diskettes.

### **Adaptec 154x Family ISA SCSI (aha1540)**

The file name changed from `scsi1540` to `aha1540`.

Support was added for the Adaptec 1542CP SCSI controller.

### **Adaptec 2940 PCI SCSI (aic7870)**

Support was added for the Adaptec 2940 PCI SCSI controller.

### **SCSI TEAC Floppy (rbteac)**

Support was added for the TEAC SCSI floppy device.

The device descriptors that were missing from the OS-9000/x86 Version 2.0 Beta release were added.

### **NCR 810/825 PCI SCSI(scsi8xx)**

Support was added for the NCR 810/825 SCSI controller.

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Changes Since x86 Version 1.4 Release



## SCF Device Drivers

### PC/AT Keyboard/Video (sc8042)

The device driver now disables keyboard interrupts before initializing the keyboard device.

Support was added to better detect attached color or monochrome monitors.

### Hostess i Serial Port (schost)

The file name was changed to `schost`.

The bus size parameter for default operation was changed.

### Riscom8 Serial Port (scriscom)

The file name was changed from `riscom8` to `scriscom`

### PC/AT Parallel Port (scp87303)

The file name changed from `pcp11` to `scp87303`.

## Utilities

### fdisk

`fdisk` has a new `-e` option to display additional information about disk partitions.

### **idbdump/idbgen**

`idbdump` and `idbgen` were modified to support OS-9000/x86 Version 2.1 modules.

### **rpcdump/rpcdbgen**

`rpcdump` and `rpcdbgen` were modified to support OS-9000/x86 Version 2.1 modules.

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Changes Since x86 Version 1.4 Release



## Corrected Problems

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### System Module (SSM)

The `F_PERMIT`, `F_PROTECT`, `F_ALLTSK`, and `F_DELTSK` system calls were modified to return `SUCCESS` for system-state processes.

### AT Floppy Disk Device Driver (rb765)

The problems with using the floppy drive on faster processors was fixed.

### SCSI Common Command Set Device Driver (rbscs)

The problem with *format unit* on SCSI partitions was fixed.

### PC/AT Keyboard/Video (sc8042)

The problems with keyboard initialization on some PCs was fixed.

### Exabyte Tape (sbgiga)

The problem with *terminate* and `NOTREADY` status was fixed.

## General SCSI Tape (sbscsi)

The problem that prevented using a SONY SDT-5000 tape was fixed.

## Keyboard Lockup

Keyboard lockups caused by jumping from RomBug back into the running system have been fixed.

Keyboard lockups during system initialization on Pentium™ machines, with 100Mhz and greater speeds, has been fixed.

## IPL Bootstrap

PC/AT IPL bootstrap problems have been fixed.

The PC/AT IPL bootstrap now works with IBM OS/2™ Boot Manager.

The IPL bootstrap program for PC/AT machines has been renamed to `iplfd_3` (for 3.5 inch floppies), `iplfd_5` (for 5.25 inch floppies), `iplhd` (hard disk boot for DOS or OS-9000), and `iplhd_noq` (hard disk boot for OS-9000 only).