MICROWARE™

PRODUCT BENEFITS

Rapid Application Development (RAD)
OS-9 accelerates your total project time by enabling parallel hardware and software development.

Unbeatable Security
The process-based architecture localizes failures so they cannot affect other processes or system resources.

Adaptable End Products
Modules in deployed systems can be upgraded or fixed without a re-boot while the system is on line and in use.

Product Development Expertise
Customer care engineers respond quickly and intelligently to technical questions, and consultants provide advisory expertise, project management, and development services.

Comprehensive Hardware Support
The software is ready to run on your choice of VME and evaluation boards.

PRODUCT OVERVIEW

Microware's Enhanced OS-9 for 68K is an integrated system software and development tool package designed specifically for the 68K architecture. The package easily installs under Windows 95/98/NT to facilitate the creation, download and execution of OS-9 applications.

OS-9 for Embedded Systems
OS-9 for 68K is a licensed product that includes a development environment, run-time binary software, and driver sources for custom 68K hardware development.

OS-9 Board Level Solutions
Microware's board level solutions (BLS) provide a complete OS-9 run-time and development environment for immediate application development targeting the following Motorola platforms:
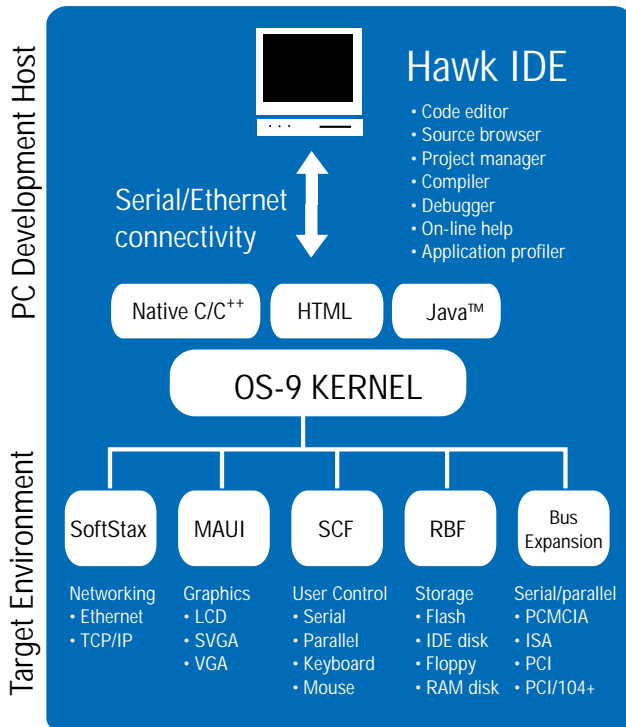• MVME 147/167/177
• MVME 162/172
• 68328ADS (Dragonball)

Based on the industry leading OS-9 real-time operating system, Enhanced OS-9 for 68K provides drop-in system software for Motorola single board computers, to address connectivity, user interface, and storage requirements for communications, imaging, industrial control and similar intelligent systems.

Enhanced OS-9 for 68K provides an open environment for resident and networked application development. Microware's Hawk integrated development environment provides robust productivity tools to create 68K system images for Flash, ROM or disk. Once your application is complete, Microware provides flexible licensing options allowing you to easily and affordably distribute to your market.

This combination of a proven OS-9 system software base, a robust development tool set and drop-in device support for 68K hardware offers integrators and manufacturers the advantage of Rapid Application Development (RAD) for real-time embedded systems.

OS-9 DIAGRAM

PC Development Host

Hawk IDE
• Code editor
• Source browser
• Project manager
• Compiler
• Debugger
• On-line help
• Application profiler

Serial/Ethernet connectivity

Native C/C++   HTML   Java™

OS-9 KERNEL

Target Environment

SoftStax	MAUI	SCF	RBF	Bus Expansion
Networking	Graphics	User Control	Storage	Serial/parallel
• Ethernet	• LCD	• Serial	• Flash	• PCMCIA
• TCP/IP	• SVGA	• Parallel	• IDE disk	• ISA
	• VGA	• Keyboard	• Floppy	• PCI
		• Mouse	• RAM disk	• PCI/104+

OS-9 Kernel

The OS-9 kernel provides a secure, process-based, multi-tasking environment for embedded systems. OS-9's use of position-independent, reentrant code modules allows the kernel to dynamically load application and/or system modules at run-time. This capability enables system designers to add or update software modules across the network during development or in the field.

SoftStax Communications Framework

SoftStax is a high-performance communications subsystem that supports a wide variety of standard and custom networking protocols, including local and wide area networks (LAN/WAN). SoftStax's architecture and API layer allow applications to be written independent of the underlying protocols, device drivers and network media for portability. With SoftStax, applications can utilize several protocol stacks during a single communications session, and switch protocols depending on the network requirements. The Enhanced OS-9 for 68K package includes a TCP/IP protocol stack and popular Ethernet drivers.

MAUI Embedded Graphics & Multimedia Support

Microware's MAUI multimedia environment provides a rich set of text, drawing and animation functionality with windowing, clipping, and inking services to support the graphical interface. The small and fast graphics subsystem takes advantage of the real-time design features of OS-9. MAUI supports numerous I/O devices, including greyscale and color LCD panels, SVGA/VGA graphics terminals, touchscreens, mice, keypads/keyboards, and other devices commonly found in man-machine interfaces.

Serial/Parallel I/O

The Sequential Character File Manager (SCF) I/O subsystem handles basic character oriented I/O devices, such as serial ports, parallel ports and modems. It also functions as the input path for a variety of MAUI devices, such as keypads, mice and touchscreens.

Storage I/O

The Random Block File Manager (RBF) I/O subsystem implements a hierarchical, UNIX-like file system for data storage. Enhanced OS-9 for 68K includes a RAM disk device driver for OEMs whose devices require temporary storage during operation.

PCMCIA I/O

Enhanced OS-9 for 68K features PCMCIA technologies to support a variety of popular PCMCIA devices including modems, ATA flash and hard disks, 8250 serial devices, Ethernet and more.

Hawk Integrated Development Environment (IDE)

Microware's Hawk IDE is designed to increase the efficiency of OS-9 development. Hawk's highly integrated tool set simplifies and automates the tasks of creating, debugging, analyzing and managing complex real-time software development projects. The development environment includes the Codewright™ code editor, compiler, linker, object loader, application and system level debugger, application profiler, and on-line documentation.

OS-9 Configuration Wizard

The OS-9 configuration wizard provides a graphical user interface which simplifies the sometimes complex task of configuring and building system images. Simply point and click for networking, TCP/IP configuration, graphics, or debugging, and the wizard automatically creates a software image for your target.
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Enhanced OS-9 for 68K contains the following software integrated on CD-ROM:

• OS-9 RTOS
• MAUI multimedia I/O system
• SoftStax communications I/O system
• Ethernet and PPP client support
• BSD v4.4 TCP/UDP/IP LAN networking
• Sample application source code
• Finished ported boot image for reference platform(s)
• Device driver source (in licensed package only)
• OS-9 configuration wizard
• Microware Hawk IDE for OS-9 including:
      Premia's Codewright™ code editor
      Source code browser
      Project manager
      Ultra C/C++ Compiler
      Hawk system and user state debugger
      Resident tool set
      On-line help

OS-9 for 68K

DATA SHEET

MICROWARE™

SYSTEM REQUIREMENTS

Host Development System
• Microsoft Windows 95, 98 or NT
• Pentium processor
• 32 MB RAM
• 250-350 MB free disk space
• CD-ROM drive

Target System

	RAM	ROM
Base OS-9 Configuration (Baseline)	64K	64K
Baseline OS-9 with TCP/IP connectivity (Networked)	256K	256K
Networked OS-9 with graphics (Multimedia)	512K	512K

HARDWARE SUPPORT

Ethernet Controllers
• i82596
• 3COM EtherLink III PC CARD (3c509/3c589)
• DEC21040
• DEC21140
• SMC91c94

Serial Device Support
• 8530
• 16550

Physical Disk Media
• IDE standard
• PCMCIA IDE

DOCUMENTATION

Extensive tutorial-style documentation is included on the product CD-ROM. The searchable documentation includes getting started manuals, using guides, programming references, and porting guides. For additional user convenience, help files can be accessed directly from the Hawk development tool.

PROFESSIONAL SERVICES

Microware's professional services team works individually with clients to customize the right set of services for each client's challenges. Microware's goal is to make each customer successful through premier advisory services and software engineering solutions. Microware's approach delivers complete solutions that are on time and on budget.

TRAINING & SUPPORT

Microware's #1 rated application support engineers quickly and effectively diagnose problems and answer customer questions. Microware's training seminars accelerate your development cycle by giving you hands-on experience with OS-9, guided by our experienced training engineers.

COMPANY DESCRIPTION

For more than 20 years, Microware (NASDAQ: MWAR) has developed, marketed, and supported real-time operating system software and development tools covering the spectrum from deeply embedded applications to high-end consumer devices.

ORDERING INFORMATION

For pricing, licensing, and ordering details, contact your local Microware representative or Microware headquarters at 1-800-475-9000 or 1-515-223-8000. Contact us by e-mail at: info@microware.com

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