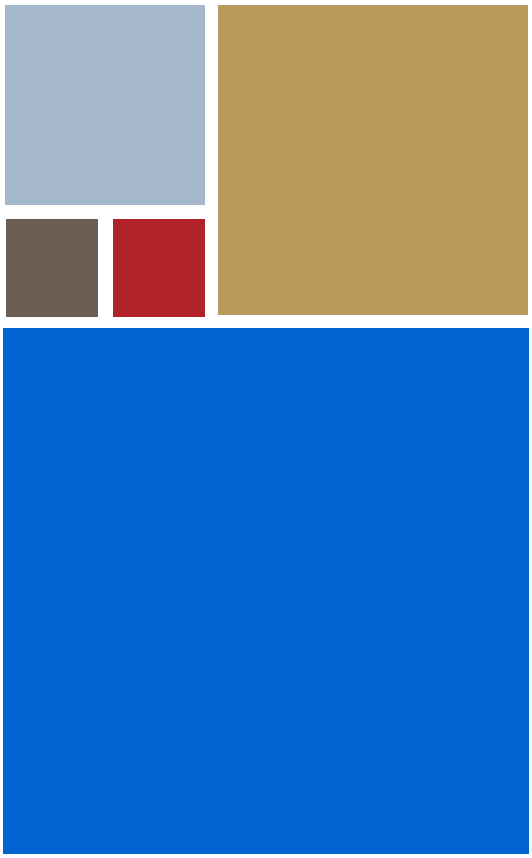

Home

Microware OS-9® Release Notes

Version 4.6

RadiSys
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Contents

Chapter 1: Introduction

Conventions 5
How to Use Release Notes 5

Chapter 2: Operating System

Known Issues 8
Resolved Problems 9

Chapter 3: Host Applications

Hawk Notes 12
Enhancements 12
Resolved Problems 13

Chapter 4: Components

OS-9 Compiler Notes 16
Enhancements 16
Resolved Problems 16
Networking Notes 18
Resolved Problems 18
OS-9 Utilities Notes 19
Enhancements 19
Resolved Problems 19

1 Introduction

Microware OS-9 version 4.6 represents a maintenance and enhancement release to incorporate all of the improvements that have been introduced into the component parts. In addition, this release includes support for Renesas SH-4A processors.

Conventions

CFxxxxx This specifies the CustomerFirst incident/problem number.

RSYSxxxxx This specifies the ClearQuest issue number.

These identifiers should be referenced if additional information about a particular bug-fix or enhancement is required.

How to Use Release Notes

The release notes in this document reflect only the enhancements and resolved issues implemented after the OS-9 v4.5 release and before this release, OS-9 v4.6. Since all processors are not released at the same time, to read about all the OS-9 changes for a particular processor from one of its releases to another you must read all the release note documents starting with the older release and stopping at the newer release. For example, assume you are currently using OS-9 v4.1 for SH-4 and you wanted to know what changed for v4.6. You would want to read the release notes for v4.2, v4.3, v4.4, v4.5, and v4.6.

2 Operating System

This chapter provides an overview of the changes and improvements made to OS-9 for version 4.6.

For information about...	Go to this page...
Known Issues	8
Resolved Problems	9

Known Issues

- RSYS9255: The SMSC 91c111 chip cannot handle 100Mb wire-speed incoming traffic

  The SMSC 91c111 chip on the MS7780SE board is not capable of handling 100Mb incoming traffic because the local bus speed is too low to be able to copy the incoming data out of the chip fast enough. It takes roughly 175 usecs to copy a large packet from the chip. It takes roughly 128 usecs for a large packet to arrive. This disparity will result in overflows that cause the loss of packets, which can cause serious problems with UDP traffic.

- RSYS9343: Hardware flow-control on the SCIF0 port does not work

  The SCIF0 serial port does not appear to support hardware flow-control as the documentation indicates. Thus, the Configuration Wizard does not support selection of the hardware flow-control device descriptors for the SCIF0 port.

Resolved Problems

The following section describes the issues related to the OS-9 operating system and how they were resolved for the current release.

- RSYS9252: rbf and dcheck were enhanced to catch and correct more kinds of disk corruption

  The random block file manager and dcheck utility were enhanced to recover from more types of disk corruption. For example, the parity on file descriptors is always checked to better ensure the file descriptor is valid. dcheck can now recover from more types of bad directory entries.

- RSYS9142: Power management sleep mode can occur too quickly when d_ticks is rolling over from 0xffffffff to 0x0.

  The pwrplcy module for all processors was fixed to ensure that sleep mode would not be entered too early when the system heartbeat tick count (d_ticks) rolls over from 0xffffffff to 0x0.

- RSYS8876: os_getrinf() should not assume the current global pointer is system globals

  The os_getrinf() function in ROM/p2lib.l was fixed to not assume that the current globals pointer is the system globals when the d_sysrom field is not pointing to a "new" style ROM jump table. In addition, the use of a system call was eliminated. The get_sysglobs() function from cpu.l was used instead. This applies to both OS-9 and OS-9 for 68K.

- RSYS30623: PCF used on flash media can cause excessive wear.

  PCF was enhanced to include control for CTRL_NOWRITE which reduces the number of file descriptor updates to a minimum. This keeps PCF from constantly updating the modified date as writes are performed. The final modification date is written when the file is closed. RBF already has similar support.

- CF17445: Marvell Discovery enet driver for MVME5500 crashes during shutdown

  Marvell Discovery Ethernet driver now correctly calls shutdown routine in dr_term().

- RSYS9287: RomBug's stack backtrace command does not work well on SH-3 and SH-4.

  RomBug was fixed to correctly display the stack frame on SH-3 and SH-4 processors. Previously, it only displayed the correct current PC, the remainder of the display was invalid program counters.

3 Host Applications

This chapter contains release notes for host applications used with OS-9 v4.6.

For information about...	Go to this page...
Hawk Notes	12

Hawk Notes

The following sections represent changes and updates to Hawk since the last release.

Enhancements

- RSYS8720: Hawk debugging network performance is slow

  The Hawk debugger (mwsrcdbg.dll) and networking daemon (spfndpdc) were updated to use the TCP_NODELAY socket option. This avoids any pooling of transmit data in the TCP stack. Note: This change alone will not improve performance without being used in conjuction with the Windows TcpAckFrequency fix. For more information, consult the Microsoft Knowledge Base at http://support.microsoft.com/kb/328890. Refer to http://support.microsoft.com/kb/815230 for additional information about a "hotfix" to apply before implementing the fix in 328890.

- RSYS8691: Copy/Paste and ASCII field editing capability should be added to the memory window.

  Users have the ability to copy a single row or the entire table to the clipboard in ASCII format. Users can now edit the ASCII field of the memory dump field to ease debugging, however, to add a period (.) users must still edit the HEX value directly.

- RSYS8686: When using the stand-alone debugger, the user should be able to set debugger options before forking a program.

  The stand-alone debugger (hawkdbgr.exe) was enhanced to include a “Options” button on the opening dialog. This allows users to modify the various debugger options prior to forking the debugged program.

- RSYS33995 - The memory window should be updated while stepping with the debugger.

  Stepping or animating in the Hawk source code debugger now updates the memory pane as the target executes code.

- RSYS8694: The Hawk debuggers should be enhanced to have more of RomBug’s functionality when Hawk is used as a system debugger.

  The Hawk debuggers were enhanced to include the following additional commands:

  - memcopy - Copy memory from one place to another on the target
  - ow, owk, owa, owd - Manipulate watchpoints on the target.
  - x{string} - Execute an OEM extension command on the target and display the result
  - wfind - Search through all known symbols for those matching a wildcard pattern.

  Refer to Using Hawk for more information on these commands.

- RSYS8688: Hawk should display the symbol browser automatically when connecting to a system with linked modules.

The Hawk debuggers were modified to display the symbol browser window when connecting to a system with linked modules. This makes it easier to set breakpoints.

- RSYS8689: The memory display window should assume the user wants to enter a hexadecimal value.

  The memory display window now automatically puts the string "0x" in the memory display input area. This allows one to quickly enter a hexadecimal value, but the text must be removed for any other type of expression.

Resolved Problems

This section provides a list of Hawk-specific issues and how they were resolved for the current release.

- CF17436: When installing a new version of Hawk, custom changes to DOS/BIN/hawkdata.xml are lost.

  For installs over an existing product, the installer now renames any existing hawkdata.xml to hawkdata.bak.

- RSYS9261: The Hawk debuggers crash if an unrecognized stack frame is received.

  Fixed a problem that would cause Hawk to exit if it received an unrecognized stack trace from the target.

- RSYS8697: When system-state debugging, the stack traceback function does not work when a monitored exception is encountered.

  The information that the system-state debugging NDP daemon (sndp) returns was adjusted so the stack trace seen when an exception occured while performing system state debugging will appear as expected.

4 Components

This chapter contains processor-independent release notes for OS-9 components.

For information about...	Go to this page...
OS-9 Compiler Notes	16
Networking Notes	18
OS-9 Utilities Notes	19

OS-9 Compiler Notes

The following sections contain release notes for the OS-9 Ultra C/C++ compiler.

Enhancements

The following list describes general enhancements made to the Ultra C/C++ compiler for this release.

- CF17416: Daylight saving time start and end time will change starting in 2007.

  The Ultra C libraries handling for daylight saving time was updated to reflect that, in the United States, it starts the second Sunday in March and ends the first Sunday in November in 2007 and years thereafter.

- RSYS8719: The Ultra C compiler back-end is too slow on files with large functions

  The Ultra C back-ends (all processors) were enhanced to compile source files containing large functions with many variables faster. The back end now operates between 2 and 15 times faster on such files.

- CF17438: A process shouldn't be limited to 32 simultaneous FILE streams

  For OS-9, a process can expand its path table. Ultra C was enhanced to allow any number of FILE streams to be open simultaneously. The ANSI macro FOPEN_MAX remains 32 since this is the minimum that a process is guaranteed to available simultaneously. Refer the _os_ioconfig() for information on expanding the number of paths for a process.

- RSYS8848: The RTTI information should be omitted when --no_rtti is used with the C++ front-end.

  The C++ front-end (cpfe.exe) was changed to omit the RTTI informationwhen the ––no_rtti option was used. This results in a slightly smaller executable image.

Resolved Problems

The following list describe resolved issues related to the Ultra C/C++ compiler for this release.

- CF17410: optppc can replace xxx(r0) with xxx(rN) where N is non-zero

  The assembly language optimizer has been fixed to preserve the meaning of register indirect with offset when the base register is r0.

- CF17167: optmips can incorrectly rearrange code when delay slot filling

  optmips was fixed to no longer convert a conditional branch around an unconditional branch as a result of filling the conditional branch's delay slot when the unconditional branch has one or more labels.

- RSYS8573: The 80386 compiler incorrectly compares the result of arithmetic operations with 0 in some cases.

  The 80386 back-end was fixed to no longer eliminate the test or cmp instruction after an arithmetic operation when a signed conditional branch followed that was based on a comparison with 0. That is, the C statement "if (a - b >= 0)" is now

executed correctly for all values of a and b. Previously, non-zero values of a and b that caused overflow and were negative would cause the conditional to be reversed, a - b would be considered >= 0 even though the result was negative).

- RSYS8494: Comparisons of the result of signed subtraction are not always correctly performed on ARM processors.

  The ARM/StrongARM/XScale back-end and assembly code optimizer were fixed to no longer incorrectly remove the CMP x,#0 instruction after a subtraction instruction. It was incorrectly assumed that the overflow (V) flag was set identically by a SUBS and CMP x,#0 instruction.

Networking Notes

The following sections include the release notes for the current versions of SoftStax and LAN Communications.

Resolved Problems

This section discusses problems that were resolved for SoftStax and LAN Communications:

- RSYS9140: The rstatd daemon can return an incorrect boot date if d_ticks rolls over from 0xffffffff to 0x0

  The rstatd daemon was fixed to maintain the boot time in a fashion such that the current value of d_ticks is not used to re-compute the boot date.

- RSYS9256: sppro100 fails to transmit at a rapid pace

  The Intel Ethernet Pro 10/100 driver was changed to delay a little longer (from roughly 1 100th of a second to 1 32nd of a second) when the transmit buffer is full upon a transmit request. The code was also fixed to be sensitive to running on a systems with various tick rates and systems that do not have a clock at all.

- RSYS8983: Network communication can fail when the d_ticks value wraps from 0xffffffff to 0x00000000

  The SPF file manager (spf/spf_rx) was fixed to correctly maintain the order of timers when the d_ticks system global wraps.

- RSYS8620: systems can crash when crossing the 0xffffffff to 0x0 d_ticks boundary

  The SPF file manager (spf/spf_rx) was fixed to no longer lock up the system when the system global d_ticks crosses the 0xffffffff to 0x0 boundary. The unsigned comparison was converted to a signed comparison that takes into account all boundaries.

- RSYS8592: NFSD doesn't work with Windows XP NFS client.

  nfsd has been updated to allow connections from Windows XP clients.

OS-9 Utilities Notes

The following section represents changes and updates to OS-9 utilities for this release.

Enhancements

The following list describes general enhancements made to the OS-9 utility set for this release.

- RSYS9252: dcheck now supports a -s option to show the segment count for each file

  The dcheck utility was enhanced to have a -s option that can be used to display the number of segments for each file on the disk. This value can be used to determine if a disk is overly fragmented.

Resolved Problems

This section describes CustomerFirst incidents related to the OS-9 utilities and how they were resolved for the current release.

- RSYS9077: editmod will crash if your MWOS path exceeds 100 characters

  editmod was changed to eliminate all constant sized string buffers. Now, editmod will allocate a buffer at least large enough to hold strings that it builds.