

Enhanced OS-9 for SH-4 Release Notes

Edition 2



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Address

Microware Systems Corporation
1500 N.W. 118th Street
Des Moines, Iowa 50325
515-223-8000

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Chapter 1: Operating System and Utilities

This release notes chapter describes V2.2.9 of the OS-9 for SH-4 operating system.

Known Issues

attr Does Not Change Attributes

The utility `attr` does not change the attributes of a specified file in a PCF file system device. This issue is a limitation imposed by the PC file system.

Boot Code

The kermit booter (`llkermit`) is known not to work.

Building Boots with the Wizard

The Wizard version 1.28 has an additional menu called “Customize”. The new “Choose Utility Subset” dialog allows you to select the utilities you would like and reduces the bootfile size. For backwards compatibility with the Wizard, version 1.27, you may use the full set of disk utilities and/or embedded ROM utilities. If you decide to use customized utilities, there will be no effect if you check the “ROM Utility Set” check box or “Disk Utilities” check box in the “Master Builder” dialog. Only selected utilities will be included. If you want to include the utilities by setting the “Disk Utilities” and/or “ROM Utility Set” flags, do not select any utility provided by the “Customize” menu.

Failure of Alarm Sequences

An error message was not generated when testing invalid sequences of alarms in user state and in system state:

```
A_ATIME(non-pending), A_DELET,  
A_ATIME(non-pending), A_RESET.
```

In these two cases, an error message should have been generated because non-pending alarms (alarms that have already gone off) are removed from the system. Trying to delete a non-existent alarm should generate an error message, but the delete and reset commands did not return an error.

PCMCIA Interrupts

The SanDisk 4 MB and 20 MB PCMCIA ATA IDE cards do not work correctly with PCMCiA IDE interrupts. To make sure that all cards work with OS-9, the default mode for accessing PCMCIA IDE cards is polled mode.



For More Information

See the *Enhanced OS-9 for Super H 7750SE01 Board Guide* for information on enabling PCMCIA IDE interrupts.

Register Wait States

Due to the way the SH7750 operates its execution pipelines, CPU read-write access to some of the internal registers (such as SR - Status Register) and memory-mapped registers have to be followed by wait cycles. For example, performing a read instruction immediately after a write instruction on the SR does not return a correct result as one would expect. Therefore, it is necessary to place "dummy" wait instructions between the write and read instructions.

Since the number of wait cycles differs for various registers and that it may be changed in future variations of SH-4 processors, it was decided not to include the common register access routine in `cpu.l` and let the developers to do it as needed for their drivers. One of the software modules which had to take these wait states into account was `romcore`.

To provide future OEM users with flexibility to eliminate dummy wait states, the makefile for `romcore` (located at `\mwos\OS9000\SH4\PORTS\SH7750SE\ROM\ROMCORE\makefile`) has `MOD_LVECTORS` defined which controls the inclusion of wait states between writing and reading of the SR (status register). Disabling this flag takes these wait states off."

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Operating System and Utilities



Selecting Java Support in Wizard

It is possible to select the checkbox labeled **JAVA Support** in the Configuration Wizard's **Master Builder** window even when the **PersonalJava for OS-9** package is not installed. This checkbox should not be selected if you do not have **PersonalJava for OS-9** installed. Selecting this checkbox for a build when **PersonalJava for OS-9** is not installed will result in an error.

Additional Features

SCSI Support

Since the Solution Engine board had no onboard SCSI devices, there is no official SCSI support for this release. However SCSI drivers have been included in case OEM's want to add SCSI to their SH-4 hardware. Please note that these SCSI drivers have not been tested for SH-4 and are shipped "as is."

SH7750 Cache Mask

There is an init module definitions for the `m_cpucompat` field that will control cache behavior.

`CACHE_WT_MASK`: By setting this bit in the `m_cpucompat` field, the cache module will set up write-through mode for memory areas P0, U0, and P3.

By default, this bit is not set.

Supplemental Documentation

`iopt` Command Line Options

`iopt` has command line options to control processor-specific optimizations:

- e suppress all processor specific optimizations
- ec suppress creation of CSEs containing complex constants
- ef suppress creation of CSEs containing function addresses
- eg suppress creation of CSEs containing global variable addresses

Each of these optimizations are enabled for SuperH processors. If the need should arise to disable them, use the options listed above.

Chapter 2: Hawk IDE and HawkEye

This release notes chapter describes release V1.2 of Hawk and release V1.0 of HawkEye

Hawk Known Issues

Target Connection

In order to connect to the target in user state, you need to run `spfnpd` in the background.

Installation Location

Hawk needs to be installed on a computer that does not have a previous version of the Ultra C compiler resident on it.

Attaching to a Module

Attaching to a module during a system state debugging session when the debugger connection is not active (host is currently running) invalidate the debugging session. Hawk must be restarted and the target reset before a system state connection can be re-established.

Moving Projects

Moving projects into different locations is not available. If you must move a project, manually modify preferences of the project.

Aborting a system state connection

Aborting a system state connection is not currently supported in Hawk.

Setting Break Points

You may be unable to set break points at some locations, such as the first line of code. To work around this problem, set the break point on main and trace to the first line or you can create a dummy first statement.

Response Delays

Hawk may take a few seconds to respond after hitting a break point or the step/next functionality in the debugger when debugging in system state.

Absolute Paths

Hawk projects require absolute paths. For example if a project is developed on drive C and moved to drive D, you should modify the paths within the project for all source and output folders of the Projects Properties dialog.

Forked Process

Preloading programs

Hawk requires programs to be preloaded in the target's memory in order to perform debugging. This implies that if a main process forks several child processes, you must preload all corresponding modules, including the main module in case it forks itself.

Process forking itself

Hawk does not allow you to debug a process which forks itself. If you encounter this situation, make a clone of the corresponding module with a different name and modify the main process to call this clone.

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Hawk IDE and HawkEye



System State and spf Daemons

You cannot run system state if `spf` daemons are running.

Attaching Module in System State

If you attempt to attach a module in system state when the connection is not active (connection is established and **go** has been done), Hawk comes back with an error **cannot attach**. After this, typing break on the target does not restore the system state connection.

SPF In System State Debugging

SPF cannot be used over Ethernet during system state debugging. If you start SPF on the target when using Hawk to debug in system state, Hawk will fail to connect to the target. You can use SPF and system state debugger over SLIP instead.

Output Window

The Hawk output window does not have a buffer large enough to hold long output. This problem will be addressed in a future release.

Function Keys

Active sub window

If any sub window (window other than Hawk main and source windows) is active, the function keys for step/next for assembly/source instructions do not work.

Stepping

In the debug window, the function keys to run or start stepping through a program don't work until you place your cursor inside the window containing code.

Next

If you maximize the code box, you will see an icon to the left of the **File** menu at the top of the screen. If you click that icon, one of the choices is "Next Ctrl+F6" However, Ctrl+F6 does not work properly.

Compiler

The SH-4 back end sometimes emits gratuitous moves when moving floating point values into the floating point registers specified by the SH-4 ABI.

Windows

Watch Windows

Global variables of a program do not update in the watch window, but the actual change is performed in the program.

Lingering Windows

If you experience lingering windows, such as the properties and compilation windows, do not run Hawk with Perfect Screens. The two software packages do not work together.

Output Buffer Scroll Bars

Vertical and horizontal scrollbars in the output buffer return to the original position of the cursor when released. Instead, use the scroll arrows, which work properly.

ToolBar Buttons

Adding/Removing toolbar buttons

It is possible to remove buttons from the debug toolbar, but you will be unable to add them back to the toolbar.

Empty debug toolbar

If the debug toolbar shows up empty with no button icons in it, comment a line containing "Debug" string in `$(MWOS)/DOS/BIN/mwhawk.ini` file and restart the debugging session.

Buttons not functioning

The toolbar buttons will not function if the Hawk window background is selected.

Next error button

The next error button on the toolbar (looks like three triangles with the letters ERR) clears all errors in the build window at the bottom of the screen and doesn't advance to the next error.

Question mark icons

In the Toolbar Customization dialog box, the two question mark icons both perform the same operation, "Help for keyword under cursor."

Spell Check

If you select **Tools->Spell Check** you may receive a warning: **Function "DlgSpellCheck" not found.**

Cleanup Option/Incremental Link

There is no cleanup option or incremental link option in the current version of Hawk.

Profiler

Opening a .prf file

Opening a `.prf` file, followed by starting a profile session in the file's context may cause erratic behavior (like a dead profiler session, module list not displayed, etc.). **Open** is simply to view a previously saved profile. For a new profile, do a **New**, and then **Profile**. If you chose to do an **Open**, it is recommended that you invoke a new profiler session for future profiling.

Alternate connections

Alternate connections to the target do not work if the new connection is being established when `spfnppdc` for the existing connection has not exited. This issue is caused by timing related issues on the target.

Update

Double/multiple entries are added on clicking the **Update** button several times before the earlier ones are complete.

Target IP address

In the absence of DNS, create a host file called `hosts` in the Windows directory. Sample host file:

```
172.16.2.217 <host_name 2>  
172.16.2.45 <host_name>
```

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Hawk IDE and HawkEye



Stop to view

If you select **Stop to view** in the Display Parameter window, you can still view the update information in the main window by pulling the horizontal scrollbar to the far right and then bringing it back to the far left.

File -> Save As

The display has an **Open** button instead of a **Save** button. This button does perform a **Save** operation.

Multiple Sessions

Multiple profile sessions to a target is not supported.

Overwrite Warning

Save does not display an overwrite warning if the file already exists and assumes the working draft can be overwritten.

Open without file extension

The file name with extensions has to be specified to open a `.prf` file.

HawkEye Known Issues

- Hawkeye uses timer 1 on the SH7750 board.
- When starting HawkEye, select **File->Preferences->Target** and choose the **SuperH4** processor type. HawkEye's current default processor is **PowerPC**.
- If the router daemon locks up, reset the target to capture any future profiles.
- Currently, logging to a user log is not supported on the SH-4. User events are logged directly into the system log.
- The PC values corresponding to some of the kernel's internal system calls are not set to enhance performance.
- The process ID (PID) is set to the program that calls the kernel. Because of this, the system call event will show up in the log file as part of the calling process. Furthermore, the PC value is not properly set in the details window for the system call events.
- The stack indicated is the system stack. Some of the system calls include the following:

F_UACCT

F_MOVE

F_CMPNAM

F_PRSNAM

F_INITDATA

F_SLINK

F_TLINK

I_IOEXIT

I_IOFORK

I_IODEL

F_SALARM

I_OPEN

I_GS_DEVTYPE

I_GS_DSIZE

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Hawk IDE and HawkEye



I_READ
I_CLOSE
I_GS_EOF
I_GS_FD

- If the filters are applied in the Filter Criteria dialog box, the system call events will not show up in the HawkEye application window. However, the details will show up in the Details dialog box.

Chapter 4: LAN Communications Pak

This release notes chapter describes V3.3 of the LAN Communications Pak.

Enhancements/Changes

IP Address Configuration

The IP address is now configurable from the General Purpose switches if not specified through the wizard. SW5 contains the Most Significant byte of the address and SW9 contains the Least Significant Byte. (For the GP switches ON is read as 0 and OFF is read as a 1.)

SPF IP Address

The IP address for the SPF system is read (if not specified in the inetdb modules/wizard) from the low level system (if present).

Ethernet IP Address

The Least Significant byte for the Ethernet address is now read from General Purpose Switch SW9.

Open Issues

Remote mkdir

Remote `mkdir` to a RAM disk fails from within an ftp client session

IP Address change

If the IP address is changed after the IP stack is initiated (using `ifconfig` for example), User Datagram Protocol transmits continue to use the original address.

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Product Discrepancy Report

To: Microware Customer Support

FAX: 515-224-1352

From: _____

Company: _____

Phone: _____

Fax: _____ Email: _____

Product Name:

Description of Problem:

Host Platform _____

Target Platform _____

Product Discrepancy Report

