The Helios Microsoft Windows Server

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Introduction

The Helios I/O server under Microsoft Windows (Windows I/O server) is a port of the standard PC Helios I/O server (PC server). Using the Windows I/O server is thus very similar to using the standard PC server. The major difference is that the Windows I/O server provides the user with a true windowing environment.

This manual is intended as a supplement to *The Helios Parallel Operating System*[1] book and highlights the use of the Helios I/O server within the Microsoft Windows environment.

1.1   System requirements

The minimum requirements of the Windows I/O server are as follows:

- An AT is required, with Microsoft Windows installed.

- The AT must have at least 1 Mbyte of memory and a fixed disc.

- It is advisable to have a mouse installed on your AT, working with Microsoft Windows.

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[1]ISBN 0-13-381237-5, published by Prentice Hall

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- At least one Helios compatible processor card should be attached to your AT.

- The Helios operating system version 1.2 (or later) should be fully installed on the fixed disc of the AT.

- The Helios I/O server for Microsoft Windows, called **`winsrvr.exe`** (supplied with this product) is required.

- The Windows Support server for Helios, called **`startws`** (supplied with this product) is required.

It is recommended that extended memory should be installed in your AT which will enable Microsoft Windows to run in **standard mode** on a 286, or in **enhanced mode** on a 386.

1.2 Overview

The relationship between the Windows I/O server and the Windows Support server is illustrated in the diagram below.
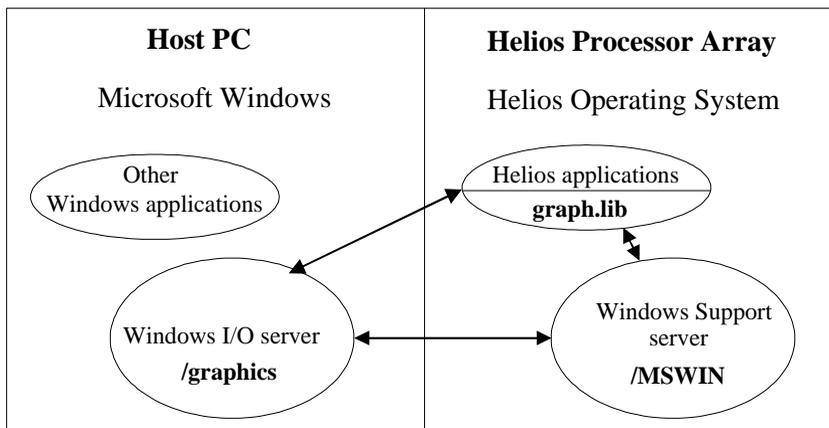
The Windows I/O server (**`winsrvr.exe`**) replaces the normal Helios I/O server (**`server.exe`**). It provides a similar set of services (with the exception of **`/PC`**, **`/keyboard`**, **`/mouse`** and **`/centronics`**) as well as providing an additional server called **`/graphics`**. The **`/graphics`** server processes all

Windows drawing, printing and control commands initiated from the Helios operating system.

Within the Helios processor array, a server called the Windows Support server (**startws**) accepts all Windows event requests (mouse, repaint and so on) as well as requests to start Helios programs such as **shell** and **help** from the host.

A graphics library, **graph.lib**, (representing a subset of windows Graphics Device Interface, GDI) acts directly with **/graphics** and **/MSWIN** to provide application graphics. The graphics library **graph.lib** is supplied only with the Helios Windows System Development Kit.

1.3   Installation

The installation process is automatic and is run from a working text-based Helios session after the server files have been copied across using the Helios **loadpac** program. Windows can then be configured to use the Windows I/O server instead of the standard text-based I/O server.

1.3.1   Installation using **loadpac**

For your own security make a back-up copy of your disc. Before installation, start a normal text-based session of Helios. You may then use the Helios installation program **loadpac** to copy the Helios Microsoft Windows software to your hard disc. Take the following steps:

1.   Type **loadpac**.

2.   Ensure that the installation drive is correct (select item 1 if incorrect).

3.   Select item 4 from the menu (**install new software**).

4.   Select the Windows server installation option.

5.   Follow the prompts. You will be asked if you want your **login** file to be modified. For further information on this refer to Configuring Helios on page 5.

At this stage, the software has been loaded to disc. The next steps involve configuring Helios and Windows.

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Configuring Helios

The Windows I/O server must operate with the Windows Support server. This provides a mechanism for the Windows I/O server to initiate tasks in the Helios processor network. This can be started on user login by inserting the following lines into the user's login file, called **login**:

```
test ! -d /graphics
if ($status) then
   test -d /MSWIN
   if ($status) then
      echo starting MSWIN server
      /helios/local/bin/startws &
   endif
endif
```

This will start up the Windows Support server when the user has logged into Helios. The user may verify that the Windows Support server has started by looking at the Helios I/O server start-up window. A message will be displayed in the window, indicating whether the server started successfully:

```
+++ MSWIN Server booted
```

The **startws** file is loaded by **loadpac** into **/helios/local/bin**. **loadpac** will also automatically update your **login** script if required.

An alternative to adding to the **login** file is for the user to start the Windows Support server manually by typing the following on the Helios command line:

```
/helios/local/bin/startws &
```

3

Configuring Windows

3.1   Invoking the Windows I/O server

To start up the Windows I/O server, you must first run your version of Microsoft Windows. The procedure is described in the *Microsoft Windows User's Guide*.

Ensure that you receive no error messages when Windows starts up. Any error in Windows before running the Windows I/O server may be fatal for the Windows I/O server.

Once Windows has been started, you will be presented with the **Program Manager[Main]** window.   The Windows I/O server can be invoked in two different ways.

3.1.1   The Helios I/O icon

The **Program Manager** displays a set of windows in which icons of the various applications available in the Microsoft Windows system reside. If the Windows I/O server under a Microsoft Windows icon is not displayed in one of these windows, the user should either select one of the existing windows within the **Program Manager** as the group in which the Windows I/O server is to reside, or create a new program group within the **Program Manager**. Take the following steps to add the Windows I/O server icon to an existing window:

1. Select the window in which the Windows I/O server icon should appear.

2. From the **File** menu option of the **Program Manager**, select the **New** option as illustrated in Figure 1.
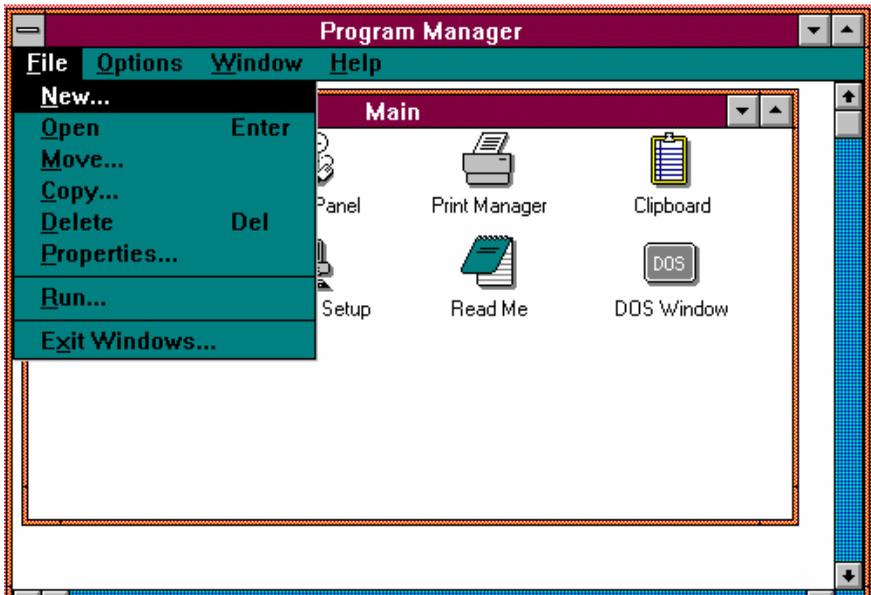
Figure 1

3. When the **New Program Object** window appears, select the **Program Item** option as shown in Figure 2.

4. The **Program Item Properties** window appears. A suitable description of the application (for example Helios), and the command line of the application must be given. The full path name of the Windows I/O server, and the Windows I/O server parameters should be supplied (for example, see Figure 3).

5. The **Change Icon** button can be used to select a suitable icon for the Windows I/O server.

Figure 2

6. Once the procedure is completed, the Windows I/O server's icon will be displayed in the window of your choice, underlined with the description (see step 4).

7. To run the Windows I/O server, just double click with the mouse on the Windows I/O server's icon.
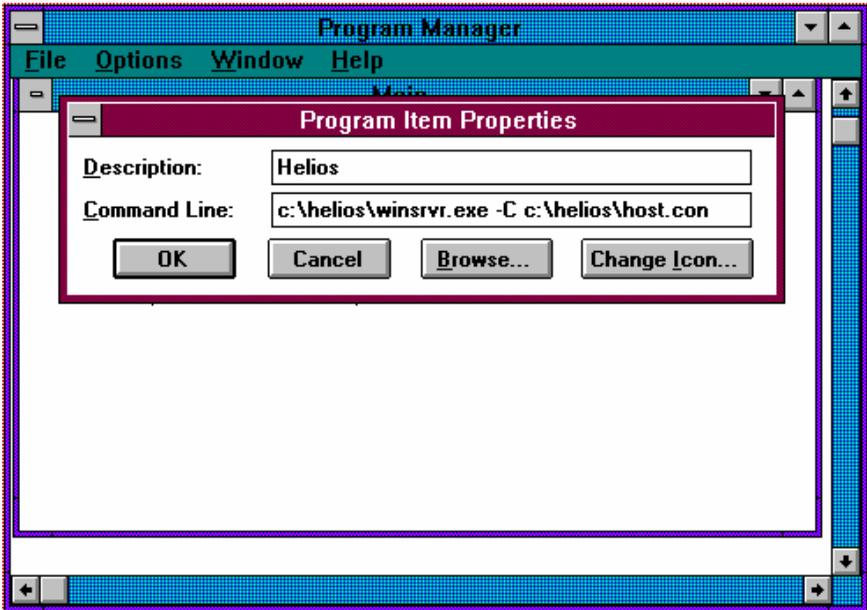
Figure 3

3.1.2   File Manager

Within the **Program Manager[Main]** window there is a **File Manager** icon. Invoke the **File Manager**, and this window will display all the files in the current directory.

If the current directory does not contain the `winsrvr.exe` and `host.con` files, change to the directory which does contain them. Once in the correct directory, run the file `winsrvr.exe` with any Windows I/O server options by selecting the `Run` option from the `File` menu. This will now invoke the Windows I/O server.

Instead of using the **File Manager**, the Windows I/O server can be invoked from the **Run** option of the **File** menu in the **Program Manager**.

3.2   The Windows I/O server presentation

The Windows I/O server will open a full screen window with the caption **Helios I/O Server**. This window is used to display the version number, copyright message and so on, of the Windows I/O server. Any error/status messages

occurring during the booting of the processor or while using the processor will also appear in this window.


```
╔═══════════════════════════════════════════════════════════════╗
│ ─        │           Helios Server              │   ▼ │ ▲ │
╠═══════════════════════════════════════════════════════════════╣
│ File   Debug                                                  │
╟───────────────────────────────────────────────────────────────╢
│ Helios PC I/O Server V3.91 18th June 1992                     │
│ Copyright (C) Perihelion Software Ltd. 1987-1992              │
│ All rights reserved.                                          │
│ Booted...                                                     │
╠═══════════════════════════════════════════════════════════════╣
│ ─        │              console                 │   ▼ │ ▲ │
╠═══════════════════════════════════════════════════════════════╣
│ File   Debug   Help                                           │
╟───────────────────────────────────────────────────────────────╢
│                                                               │
│                Helios Operating System                        │
│                     Version 1.2.2                             │
│          (c) Copyright 1987-91, Perihelion Software           │
│                                                               │
│ login:                                                        │
│                                                               │
╚═══════════════════════════════════════════════════════════════╝
```
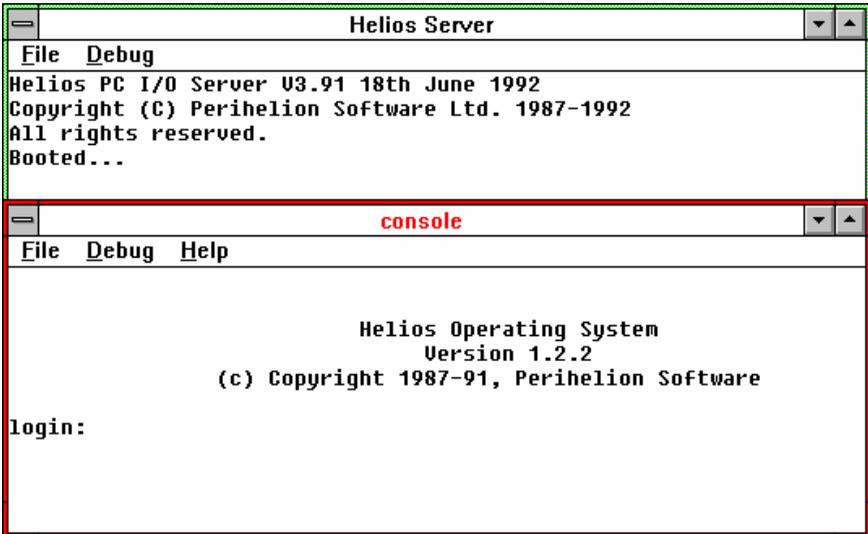
Figure 4

Once the processor has been booted and the server invoked, a console window is opened. The console window occupies the full screen width and partial screen height and has the caption **console**. The console window, as well as any other windows, will default to a white background with black text.

All new shell windows opened will have similar dimensions and placement to the console window.

The normal Helios operating system start-up messages will appear in the console window and the user will be asked to log into the Helios operating system.

Note: The user must ensure that the console window is the active window among the open windows in the Microsoft Windows environment before logging into Helios. This is achieved by selecting the window with the mouse pointing device.

4

Using the Windows I/O server

Once the Helios operating system and the Windows Support server (**/MSWIN**) have been started, the user is able to create new windows, resize windows, move windows and delete existing windows.

4.1   The menu system

The main Helios windows and each of the Helios shell windows are displayed with a standard Microsoft Windows top-level menu bar. Each menu bar contains three options, namely a **File** option, a **Debug** option and a **Help** option.

A menu option may be invoked by clicking the mouse cursor on the option or by using the **ALT** key combination; where **ALT F** will invoke the **File** option, **ALT D** the **Debug** option and **ALT H** the **Help** option.

Once a menu option has been selected, a standard Microsoft Windows pull-down menu displays the options available with each menu option.   The options displayed in the pull-down menu may be selected by:

- clicking the mouse on the option,

- using the arrow keys to position the inverse cursor over the option and then the **Enter** button, or

- the key corresponding to the underlined letter in the option.

Note: Once a top-level menu option is invoked, the Windows I/O server is effectively suspended until the user has finished with the menu. This can cause side effects depending on what the server was doing before it was suspended. If the server was polling for keyboard input, there is no real side effect since the server times out and sends this reply to Helios. However, if the server was busy reading a message from, or sending a message to a processor in the network, a partial error can occur. After selecting a menu option and one of the menu items, the server may delay for up to 5 seconds before responding to your next command.

4.1.1   The File menu option

4.1.1.1   The main Helios I/O window

The **File** option in the Helios Server window has a pull-down menu containing three items: **Reboot Helios**, **Exit Helios** and **About Helios**.

Reboot Helios	This performs the same function as the **CTRL SHIFT F10** key sequence available in the standard server.
Exit Helios	This performs the same function as the **CTRL SHIFT F9** key sequence available in the standard server.
About Helios	This item brings up a message box with information on the Windows I/O server.

4.1.1.2   Shell windows

The **File** option in the console and shell windows and the console window invokes a pull-down menu containing four items, namely **New Shell**, **Close Shell**, **Reboot Helios** and **Exit Helios**.

New Shell	This opens a new shell window. This option will perform the same operation as typing **wsh** on the command line.
Close Shell	This will close the shell window in which the option was selected. The shell window will automatically be removed from the screen. This option

	cannot be invoked if there is activity in the shell. This option is not available in the console window. Invoking this option is the same as typing **exit** on the command line.
`Reboot Helios`	This performs the same function as in the main Helios window (see section 4.1.1.1).
`Exit Helios`	This performs the same function as in the main Helios window (see section 4.1.1.1).

4.1.2   The Debug option

This menu option invokes the same pull-down menu in the main Helios window and the Helios shell windows. The option invokes a pull-down menu with three items;

Set/Reset Options	This option allows the user to control all the debugging options available in the server, and also to change the current logging destination.
Select All	This option enables all debugging options.
Reset All	This option resets all debugging options so that no debugging messages are displayed.

Set/Reset Options provides a dialogue box which displays the current debugging options, the current logging destination and the current logging file name.
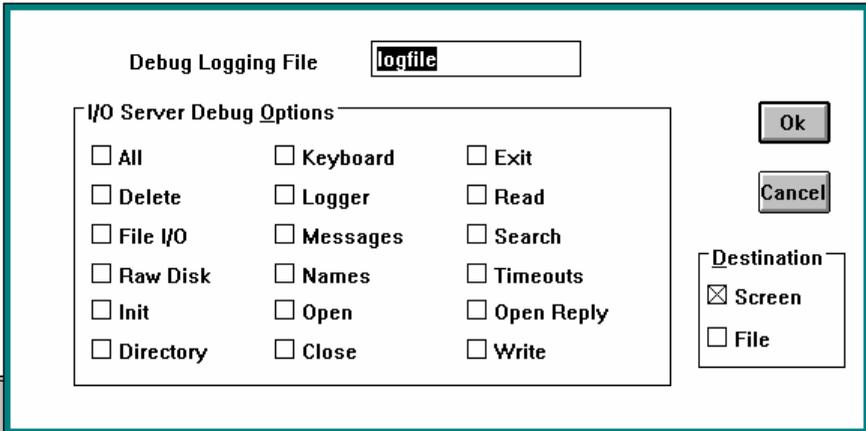
Figure 5

The user is able to select or deselect an option by toggling the check box associated with each option. The logging destination may be changed by toggling the **Screen** or **File** check boxes, and the logging file name may be changed by entering a new file name in the edit box supplied.

4.1.3   The Help option

This involves the standard Helios help facility to display help information in a new full-size window.

Note: in order to use this option, the Helios online help system must be installed.

4.2   Moving and resizing windows

All the windows may be resized or moved using a mouse or the keyboard. For mouse operations, the mouse cursor is positioned in the window to be moved or resized.

To move the window, place the mouse cursor in the caption bar area, click the left mouse button and whilst holding the button down, move the cursor to move the window. Once the window is in position, release the button.

The procedure for moving the window using the keyboard requires the selection of the **move** option from the Control-menu box (see *The Microsoft Windows User's Guide*), and the relocation of the window using the arrow keys. The contents of the window will remain unaffected by the **move** operation.

The procedures to be followed to move a window or to resize a window are detailed in *The Microsoft Windows User's Guide.*

To resize the window, the mouse cursor must be placed on the border of that window. Click the left mouse button and whilst keeping the button down, drag the border to resize the window. When the window reaches the desired size, release the button.

Reducing the height of the window will cause some of the contents to be discarded. If you have a maximized window and you reduce the window size, the top portion of the text will be lost. If the window is maximized again, only a portion of the window will contain text.

Reducing the width of the window has no effect on its contents. If the window is restored to its original size, its contents remain.

4.3   Switching between windows

The user is able to switch windows using either the mouse or the keyboard.

The user can switch to any open window by moving the mouse cursor into a window and clicking a mouse button.

If the user does not have a mouse, switching between applications can be achieved using the **ALT TAB** key combination.

To switch between windows in the Helios environment, there are two key sequences, namely **ALT F1** or **ALT F2**.

ALT F1 switches to the **Helios I/O Server** window, while **ALT F2** switches to the next shell window. The sequence followed when switching windows is the same as the sequence in which the windows where opened.

4.4   Using `emacs`, `more` and `map`

The usefulness of these functions depends on the size of the window in which they are invoked. The functions check the size of the window only when they start. Thus the window's size should not be altered until the user exits from the function.

If the **emacs** editor is invoked in a window which is not a full screen window, **emacs** will use the size of that window for the duration of the editing session.

Starting **emacs** in a full screen window and then reducing the window to half the size can make **emacs** difficult to use and is not recommended.

When using **more**, the top half of the text displayed will scroll off the screen if the screen is reduced while **more** is active.

When using these commands, the window should be maximized before invoking the function and not resized during operation. To view other windows, the current window may be minimized or moved.

5

Displaying error messages

Errors originating from the Windows I/O server will display messages in a Microsoft Windows message box. An exception to this is the error message displayed when the server runs out of memory. This message is displayed in the **Helios I/O Server** window.

Errors originating from the Helios applications using the `IOdebug()` function will display messages in the **Helios I/O Server** window. The error messages displayed are similar to those displayed in the standard PC I/O server.

6

The graphic printer interface

The Windows I/O server includes a **/graphics** server, the graphics interface which consists of a graphic display (controlled by **graph.lib**) and the graphic printer interface.

The graphic printer interface allows the printing of Microsoft Windows-compatible metafiles, under the control of Microsoft Windows. The graphics printer server is separate from the graphic interface which allows the graphic printer to be used independently from the graphics server.

A user may initialize a print job from the command line using the **printgrf** command. The command requires the full DOS path name and file name of a metafile as a parameter. The **printgrf** command also requires the file **prngrfx** to be located in the **/helios/bin** directory. For example, to print the file **/helios/lines.met**, the following command line should be used:

```
printgrf /c/helios/lines.met
```

The short-hand Helios name **/helios/lines.met** will not work.

The **printgrf** command starts the print job, and passes control to the Windows I/O server. Once the print job has commenced, an icon and a Microsoft Windows dialogue box appear on the screen. The dialogue box contains a **CANCEL** button, enabling the print job to be cancelled at any time.

The dialogue box remains on the screen until the print job terminates or is cancelled. Some print jobs can take a long time. The **Print Manager** is a useful tool for monitoring the printer status.

Once the print job has been started, the Windows I/O server may continue with other processing. Note, however, that printing under Microsoft Windows takes up all the processing time of the parent application. It is possible for other applications in the Microsoft Windows environment to run while a print job is in progress, but the parent application cannot continue until the print job is terminated. It may therefore be necessary to suspend the print job at intervals and allow the Windows I/O server time to continue with other tasks. The user can specify the number of seconds for which the print job will be suspended by inserting an entry called `Print_Delay` into the `host.con` file.

Graphics are printed using a banding technique provided by Microsoft Windows. The printed page is broken up into a number of bands and the graphics for each band are drawn separately. The print job will be suspended for a period defined as `Print_Delay` seconds between bands. During the printing of a band of graphics, the server is effectively suspended until the band is complete. If the printer being used does not support banding, the server may be suspended for the duration of the print job.

Since the server is suspended during the printing of each band of graphics, it tends to run intermittently. The longer the print delay, the smoother the server will run but it will slow down the printing job. The default `Print_Delay` is 30 seconds.

A number of print jobs can be started, although only one may be active at any one time. The other print jobs will wait on the processor until the active job terminates before being serviced.

The printer selected will be the default printer in the Microsoft Windows environment (the printer defined in the `devices` section of the `win.ini` file.). The printer may be changed by editing the `win.ini` file, or by using the `control.exe` program provided with Microsoft Windows. For more information on setting up and using the printer in Microsoft Windows, consult the *Microsoft Windows User's Guide*.

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