

MVCS Serial Communications Kernel Level Driver Installation Guide

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1.0. Introduction

This document provides instructions for installing and configuring the MVCS Serial Communications Kernel Level Driver on NightHawk™ HN6200-HN6800, Power Hawk™ Series 600, and Power Hawk™ Series 700 Computer Systems running PowerMAX OS™ 5.1, and Power Hawk Series 700 and Power Hawk Series 900 Computer Systems running PowerMAX OS 6.3.

The MVCS Serial Communications Controller is an advanced high-speed controller for VMEbus D32 applications. It provides 16 asynchronous serial ports and supports individual baud rates up to 115,200 baud.

2.0. Documentation

2.1. Concurrent Documentation

The *mvcs (7)* man page is provided by Concurrent Computer Corporation with this product.

2.2. Vendor Documentation

Vendor documentation for the Macrolink MVCS Serial Communications Controller may accompany this product. Contact the vendor if you have questions regarding this documentation.

3.0. Prerequisites

The following prerequisites apply to the MVCS Serial Communications device.

3.1. Software

- PowerMAX OS Service Release 5.1SR6 or later.
- PowerMAX OS Service Release 6.3 or later.

3.2. Hardware

- NightHawk™ HN6200-HN6800 Computer System.
- Power Hawk™ Series 600 Computer System.
- Power Hawk Series 700 Computer System.
- Power Hawk Series 900 Computer System.
- Empty VME slot.

4.0. Syntax Notation

The following notation is used throughout this manual:

<i>italic</i>	Books, reference cards, and items that the user must specify appear in <i>italic</i> type. Special terms may also appear in <i>italics</i> .
list bold	User input appears in list bold type and must be entered exactly as shown. Names of directories, files, commands, options and system manual page references also appear in list bold type.
list	Operating system and program output such as prompts and messages and listings of files and programs appear in list type.
[]	Brackets enclose command options and arguments that are optional. You do not type the brackets if you choose to specify such options or arguments

5.0. Installation Procedures

5.1. MVCS Kernel Driver Installation Procedures

This section includes the following:

- Installing the MVCS driver package for PowerMAX OS from 4mm DAT.
- Installing the MVCS Driver package for PowerMAX OS from CD-ROM.
- Configuring the kernel files.
- Tuning the mvcs in the kernel.

5.1.1. Installation from 4mm DAT

To install the MVCS Kernel Level Driver package (**mvcs**) from the 4mm DAT tape perform the following steps:

1. Boot the Concurrent Computer System to single-user mode.
2. Sign onto system as root.
3. If a version of the MVCS Kernel Level Driver already exists on this system, issue the **pkgrm (1M)** command and confirm to the command that the **mvcs** package is to be removed. (**Note:** this step can be followed to remove the driver regardless of whether a new version is to be installed.) Do the following step:
4. **#pkgrm mvcs**
5. Load the package tape into the 4mm DAT tape drive.
6. Install the software package on the system using the **pkgadd (1M)** command. When asked which package to install, select the **mvcs** package.
7. **#pkgadd -d tape1**

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Installation of MVC Sierra VME Serial Driver (mvcs) was successful.
#

5.1.2. Installation from CD-ROM

Note: The system must be configured with the **gr** (generic CD-ROM device driver) and **cdfs** (CD-ROM filesystem) modules and an entry must exist for the CD-ROM device nodes in `/etc/conf/node.d/gr`.

To install the MVCS Kernel Level Driver package (**mvcs**) from the CD-ROM perform the following steps:

1. Boot the Concurrent Computer System to single-user mode.
2. Sign onto system as root.

3. If a version of the MVCS Kernel Level Driver already exists on this system, issue the **pkgrm (1M)** command and confirm to the command that the **mvcs** package is to be removed. (**Note:** this step can be followed to remove the driver regardless of whether a new version is to be installed.) Do the following step:
4. **# pkgrm mvcs**
5. Insert the supplied disc into the CD-ROM drive and mount the file system as shown below:

```
# mkdir /mnt/cdrom
# mount -F cdfs -r /dev/cd /0 /mnt/cdrom
```

6. Install the software package on the system using the **pkgadd (1M)** command. When asked which package to install, select the **mvcs** package.

```
# pkgadd -d /mnt/cdrom/pkgs.dstream
```

```
.
.
.
```

Installation of MVC Sierra VME Serial Driver (mvcs) was successful.

```
#
```

5.1.3. Configuring the Kernel Files

The following steps are taken regardless of whether the software was installed from the 4mm DAT Tape or the CD-ROM:

Note: The examples assume that only one **mvcs** is selected for installation and that it is adapter 0.

1. Edit the `/etc/conf/sadapters.d/kernel` file to ensure the entry for the MVCS board matches the physical address strapping of the board. Of particular importance is that the “Bus Type” should match the bus that the board is installed in and the “I/O Addr 1” should match the address that the board is set to answer to.

#Adapter Name	Logical Adptr #	Bus Type	Intr Type	Slot Number	I/O Addr 1	I/O Addr 2
mvcs	0	vme0	intr	-	c1000000	0

2. Ensure the `/etc/conf/node.d/mvcs` file has the appropriate line for each **mvcs** un-commented as shown below:

# Module	Name	type	Adapter	Adp#	uid	gid	mode	level
mvcs	tty	p:16	mvcs	0	0	3	0600	2
#mvcs	tty	p:16	mvcs	1	0	3	0600	2
#mvcs	tty	p:16	mvcs	2	0	3	0600	2
#mvcs	tty	p:16	mvcs	3	0	3	0600	2

3. If installation of the **mvcs** real-time driver was selected during the installation of the **mvcs** package, then ensure the `/etc/conf/node.d/mvcsrt` has the appropriate line for each *mvcs* uncommented as shown below:

# Module	Name	type	Adapter	Adp#	uid	gid	mode	level
mvcsrt	rtty	p:16	mvcs	0	0	3	0600	2
#mvcsrt	rtty	p:16	mvcs	1	0	3	0600	2
#mvcsrt	rtty	p:16	mvcs	2	0	3	0600	2
#mvcsrt	rtty	p:16	mvcs	3	0	3	0600	2

4. Rebuild the kernel and reboot.

/etc/conf/bin/idbuild -B

The PowerMAX OS kernel will be rebuilt now.

This will take some time. Please wait.

Root for this process is /.

[...]

The PowerMAX OS kernel has been rebuilt.

The following command sequences reboot the system:

cd /

shutdown -i6 -g0 -y (if boards are already installed)

shutdown -i0 -g0 -y (if boards need to be installed)

5.1.4. Tuning the MVCS in the Kernel

Every port on each installed MVCS is separately tunable via the tunables identified in the `/etc/conf/mtune.d/mvcs` tunable file. One should use the **config (1M)** or the **idune (1M)** utilities to modify the tunables associated with the installed MVCS boards.

Some of the tunable parameters include:

Defaults are shown in parentheses.

- Control Flag settings (CS8 | CREAD | CLOCAL | HUPCL | B9600)
- Input Flag settings (IXOFF | IXON | ISTRIP | IGNPAR)
- Extended Flow Control settings (0x0)
- Receive FIFO Trigger Level (56)
- Board Interrupt Level (6)
- Board Oscillator Selection (0)

5.2. MVCS Hardware Installation

This section includes the following:

- Configuring the switches and jumpers on the board.
- Installing the Model CE0948 MVCS in the Card Chassis

5.2.1. Board Configuration

5.2.1.1. Address Switches

The base address of the MVCS is selected via rotary switches SW1 and SW2. SW1 is the most significant nibble of the board's address. These rotary dials are located near the Fail/Busy/Run indicator in the upper left corner of the board as seen with the component side towards you. For example, when the MVCS is located in A32 space and the switches are set to C1, the address of the MVCS will be 0xC1000000.

The address dialed in should match the "I/O address 1" identified in the `/etc/conf/sadapters.d/kernel` file.

5.2.1.2. MVCS Jumpers

The MVCS has two user configuration jumpers. The remaining jumpers are set at the factory and must not be changed.

5.2.1.2.1 E3 – Oscillator Select

This jumper is located near the exact center of the board. When the jumper is installed at positions 2 & 3 (default), the UART clock source is the oscillator at location U25, with the frequency divided by two. When installed at positions 1 & 2, the UART clock source is the 14.7456 MHz auxiliary oscillator installed at location U30. The auxiliary oscillator frequency is **not** divided by two.

5.2.1.2.2 E4 – Address Space Disable

These jumpers are located near the rear edge connectors at the center of the board. They are used to set the address space in which the MVCS is mapped.

If both jumpers are removed, the board will appear in both the A24 and A32 address spaces. It is not recommended that you remove both jumpers unless it is required for your installation. If both jumpers are installed, the board will not appear in any VMEbus address space. A jumper installed from 1-2 will disable the A24 address space. A jumper installed from 3-4 will disable the A32 address space.

5.2.1.3. Installing the MVCS

The MVCS must be installed in a backplane that has both P1 and P2 connectors. The interrupt acknowledge (IACK IN/OUT) jumpers or switches must be removed or opened, as applicable, for the slot in which the MVCS is to be installed. Refer to the applicable Architecture Manual to determine the location of the IACK jumpers/switches.

The Bus Request (BR3-0 In/Out) signals are automatically jumpered by the MVCS and the corresponding backplane jumpers/switches do not have to be removed or opened.

Slide the board into the slot; ensure that it is fully seated into the backplane connectors. Tighten the lock down screws to secure the board and guarantee proper RF shielding.

6.0. Direct Software Support

Software support is available from a central source. If you need assistance or information about your system, please contact the Concurrent Software Support Center at our toll free number 1-800-245-6453. For calls outside the continental United States, the number is 1-954-283-1822. The Software Support Center operates Monday through Friday from 8 a.m. to 5 p.m., Eastern Standard Time.

Calling the Software Support Center gives you immediate access to a broad range of skilled personnel and guarantees you a prompt response from the person most qualified to assist you. If you have a question requiring on-site assistance or consultation, the Software Support Center staff will arrange for a field analyst to return your call and schedule a visit.

You may also submit a request for assistance at any time by using the Concurrent Computer Corporation web site at [http:// www.ccur.com/isd_support_contact.asp](http://www.ccur.com/isd_support_contact.asp) or by sending an email to support@ccur.com.