*Qik*DRIVE
&
*Qik*CACHE

Solaris (SPARC) Software
Installation Guide

P/N: UI01102

Product Use
Platypus Technology Holdings Ltd products are not intended for use in medical, life saving or life sustaining applications.

Contents

Software Installation

Thank you for purchasing a *Qik*DRIVE or *Qik*CACHE PCI card. From this point on the *Qik*CACHE will be referred to as a *Qik*DRIVE as installation instructions are the same for both products. The only difference between the two devices is that the *Qik*CACHE does not have secondary power support for retaining data.

The *Qik*DRIVE is shipped with a driver that supports Microsoft, Linux and Solaris operating systems.

New drivers and latest revisions of current drivers and manuals for your *Qik*DRIVE can be downloaded from the Platypus Technology web page.

www.platypus.net

On the website select *Support* then *Drivers* to locate your required driver/manual.   If you experience any difficulties whilst navigating the website, please contact a member of our technical support team using the details on page 16.

Solaris (SPARC)

The current Solaris driver was written for Solaris 7 and 8, 32-bit and 64-bit exclusively for the SPARC machine. To install the *Qik*DRIVE into a system running Solaris, use the following procedures. You have to be able to log in as a superuser.

Preparation for the *Qik*DRIVE Installation

1. Please refer to the SPARC manual on how to properly install a new hardware device.

2. Type this command before you install the device for the sake of the system reconfiguration as a super-user.
   # touch /reconfigure

3. Shut down and turn off the system safely.

4. Wear an ant-static strap on your wrist, attach the crocodile clip to the system metal area around the case.

5. Carefully Insert the *Qik*DRIVE into any available PCI slot.

6. Re-insert the power cord, cover the case and turn on the system.

7. The installed device should be configured automatically by the OS. This configuration can be confirmed by noting the presence of "scsi" under "pci" in the device tree with the following command.
   % prtconf

8. Copy the file "PTAqd_sparc.tar.gz" from the CDROM on to your usual temporary working directory, such as "~/tmp". For example:
   % cp /cdrom/cdrom0/PTAqd_sparc.tar ~/tmp

   (Note: If installing from the Platypus' web site the file name may be slightly different.)

9. Verify the contents list of files in the file PTAqd_sparc.tar:
   % cd ~/tmp

> **% tar tvf PTAqd_sparc.tar**

10. Flatten the file with the following command:
    > **% tar xvf PTAqd_sparc.tar**

11. A directory named PTAqd should be created. This can be verified by typing:
    > **% ls –Fl**

Adding *Qik*DRIVE Packages

1. Enter the working directory name where PTAqd_sparc.tar is flattened, if necessary:
   > **% cd ~/tmp**

2. Login as Superuser, providing the root password when prompted:
   > **% su**
   >
   > **Password:**
   >
   > **#**

3. Add the package by typing:
   > **# pkgadd –d ./ PTAqd**

   or
   > **# pkgadd –d ./**

   and follow the instructions displayed onscreen.

4. The package that you have chosen will be added. After successful installation the following message will appear:
   "Installation of <PTAqd> was successful"

5. Verify the integrity of the package using the following command:
   > **# pkgchk PTAqd**

   Successful installation is confirmed when no message appears onscreen.

6. To remove the package, use the following command.
   > **# pkgrm PTAqd**

Adding or Removing the *Qik*Driver with Shell Scripts

1. If not already logged in as Superuser, login providing the root password when prompted.

    % su

    Password: <your_password>

    (As the status changes to Superuser, the prompt will change from % to #.)

2. Enter the script directory (e.g. /opt/PTAqd/script)

    % cd /opt/PTAqd/script

3. To add the *Qik*Driver, run the *sh* script - "Install.sh"

    # sh ./Install.sh

4. Should you want to remove the *Qik*Driver, run the *sh* script - "Remove sh"

    # sh ./Remove.sh

(Note: The shell scripts automatically install or remove the driver according to the current system environment [Solaris 7 and 8, 32-bit and 64-bit kernel])

Adding or Removing the *Qik*Driver Manually

1. Determine the size of the kernel

    # isalist

    ("sparcv9" indicates that the kernel is 64-bit, any other script indicates a 32-bit kernel.)

2. Enter the bin directory of the installed PTAqd

    # cd /opt/PTAqd/bin

    (The default name of the installation directory is **/opt** however, this can be changed depending on your preferences using the pkgadd command switches.)

3. Copy either the qikdrive32 file or the qikdrive64 file to the appropriate directory (depending on which kernel is in use).

    Where a 32-bit kernel is in use
    > **# cp ./qikdrive32 /usr/kernel/drv/qikdrive**

    Where a 64-bit kernel is in use
    > **# cp. /qikdrive64 /usr/kernel/drv/sparcv9/qikdrive**

4. The driver can now be added
    > **# add_drv –i '"scsi"' –m '* 0666 root bin' qikdrive**

5. Should you want to remove the driver manually
    > **# rem_drv qikdrive**

    Copied files can be deleted in the 32-bit kernel
    > **# rm /usr/kernel/drv/qikdrive**

    or in the 64-bit kernel
    > **# rm /usr/kernel/drv/sparcv9/qikdrive**

Creating a new File System on the *Qik*DRIVE

1. To create a new file system on the *Qik*DRIVE
        # newfs <raw_device_name>
    (E.g. **# newfs /dev/rdsk/c2d3s2**)
    then follow the instructions displayed onscreen.

2. Check the file system with the "fsck" command
        # fsck <raw_device_name>
    (E.g. **# fsck /dev/rdsk/c2d3s2**)

3. To examine the device without actually constructing a new file system on the *Qik*DRIVE
        # newfs –Nv <raw_device_name>
    (E.g. **# newfs -Nv /dev/rdsk/c2d3s2**)

Mounting the *Qik*DRIVE

1. To mount the device
        # mount <block_device_name> <mount_point>
    (E.g. **# mount /dev/dsk/c2d3s2 /mnt/qda**)

2. To unmount the device
        # umount <mount_point>
    (E.g. **# umount /mnt/qda**)

Formatting the *Qik*DRIVE

1. To format the device
     # format
    then follow the instructions onscreen.

For more information on how to use the format utility, please refer to the "System Administration Guide Volume I, II and III". http://docs.sun.com/ab2/coll.47.11/@Ab2CollView?Ab2Lang=C &Ab2Enc=iso8859-1

You can see the default Volume Table of Content (VTOC) with the following command:
     # prtvtoc <raw_device_name>
    (E.g. **# prtvtoc /dev/rdsk/c2d3s2)**

The default number of heads is 16 and the size of a sector is 64. The number of physical cylinders can be calculated by typing:

# of physical cylinder = Total Block Size / (# of head* size of a sector)

E.g. if the block size is 1048576 (512Mb) then

# of physical cylinder = 1048576 / (16 * 64) = 1024

Total Block Size can be obtained by running **qdstat** provided. Please refer to the part of Testing, monitoring and diagnostics in this manual.

The Solaris file system usually needs 2 alternative cylinders for its own purpose such as backup labelling. So the number of accessible data cylinders is usually (# of physical cylinders – 2). The default number of the alternative cylinder of the *Qik*DRIVE is 0.

# of Accessible Cylinder = # of Physical Cylinder - # of Alternative Cylinder.

As the *Qik*DRIVE is a PCI and not a SCSI device, which the format command expects it to be, a few special considerations have to be made.

Please note that entering the required parameters into /etc/format.dat enables format to use these for similar reasons.

1. When offered the choice of disks, choose "other"

2. Enter the following drive parameters when given the choice

Accessible Cylinders	Varies depending on amount of RAM in *Qik*DRIVE, use table below to determine
Heads	16
Alternate cylinders	2
Sectors	64

Amount of RAM installed in *Qik*DRIVE	Number of Physical Cylinders (# of Accessible Cylinders)
512 MB	1024 (1022)
1024 MB / 1GB	2048 (2046)
2 GB	4096 (4094)
4GB	8192 (8190)
8 GB	16384 (16382)

All other parameters can be left at default values.

3. When asked for a name for the drive enter, for example
   qda

4. Choose the **label** command from the format menu

If formatting the drive for the first time after power off follow the normal format procedure. If not, accept all the default values by continuously pressing the return key. When the prompt appears, issue the **type** command, selecting the "other" option to reset the *Qik*DRIVE to the correct configuration values. For further information on formatting refer to the formatting manual pages:

% **man format**

The current driver has a re-entrance problem on the format utility. This problem seems to be originated from the fact that the SUN Solaris does not support the PCI block device controller, only the SCSI type of controller is accepted. The following instructions will overcome this problem:

If formatting for the first time after power off, follow the usual format procedure. If this is not the first time, the format utility requires extra parameter values. Accept all the defaults values by continuously pressing the return key. Following this, use the type command in format utility, choose **other** and re-enter the appropriate values of the current *Qik*DRIVE. **Format Utility** can also be used to **partition** or **analyse** the device. Please refer to the format manual pages for more information on partitioning and analysing.

In the case of the **analyse** with format utility, type **setup** to set a test environment, (it is advisable not to set the entire disk because it erases the disk label you have created.) The disk label is usually located in the alternative cylinders. Try to set the test domain as only available cylinders. For example, if you set the number of physical cylinders as 1024 and 2 for alternative cylinders, the number of available cylinders will be 1022.

The format re-entrance problems should be eradicated with the next version of the *Qik*Driver.

Testing, Monitoring and Diagnostics

When installed on Solaris, the device can be monitored using the following commands:

> **qdstat**
>
> **rwt**
>
> **iostat**
>
> **dit**

"qdstat": R/W and Error Statistics on the Installed *Qik*DRIVEs

1. Enter the bin directory of the installed PTAqd
    > **# cd /opt/PTAqd/bin**

2. Call up the list of options
    > **# qdstat**
    >
    > usage:
    >
    > > qdstat <raw_device_name> -<option>
    >
    > raw_device_name:
    >
    > > e.g.: /dev/rdsk/cx(tx)dxsx
    >
    > option:
    >
    > > i: *Qik*DRIVE's Current State
    > >
    > > s: *Qik*DRIVE's R/W/Error Statistics
    > >
    > > r: Toggle R/W/Error Statistics reset flag

3. A raw_device_name is assigned by the OS. Check the name of the installed *Qik*Driver
    > **# ls –l /dev/rdsk | more**

4. Find out the file whose name ends with **.../scsi@[pci-slot-number]:[a-h],raw**. For example if a *Qik*DRIVE is put in the pci slot 1 then the whole raw device disk's name should end

with **.../scsi@1:c,raw** and the absolute filename would be **/dev/rdsk/c?d1s2.**

5.   Enter the bin directory of installed PTAqd
     # cd /opt/PTAqd/bin

6.   Raw_device_name is referred to in number "2" of this section.

7.   Check the available maximum blocks
     # ./qdstat <raw_device_name> -i
(E.g. **# ./qdstat /dev/rdsk/c2d3s2 –i**)

```
Raw device name:                        /dev/rdsk/c2d3s2
Total # blocks READ            =        0 blocks
Total # blocks WRITTEN         =        0 blocks
Total # correctable errors     =        0
Total # uncorrectable errors   =        0
Sunnyboy # qdstat /dev/rdsk/c2d3s2 –i
Raw device name:                        /dev/rdsk/c2d3s2
# QikDRIVE type:                        QikDRIVE1
# Raw device location:                  /dev/rdsk/c2d3s2
# Serial Number:                        3001541
# EEPROM Revision Number:               2
# Flex Version:                         vF2A2
# MAX ID:                               ab
# MAX VERSION:                          1
# MAX ROWS, COLS, BANKS:                12,11,2
# Total blocks:                         1048576 blocks
# Total capacity:                       512 Mbytes
# ECC Memory:                           installed
# CAPACITY in DIMM [0]:                 1048576 blocks
```

"rwt": Raw Stream File Read/Write Test

The rwt command will erase the content of the device. Please use with care.

1. Call up the list of options
   # ./rwt

   usage:

   test [<raw_device_name>] [-n<blocks>]

   options:

   -n<blocks> number of blocks to test

   run the qdstat utility to see available # blocks

2. To conduct a raw file stream test
   # ./rwt /dev/rdsk/c2d3s2 –n<number_of_blocks>
   (E.g. **# ./rwt /dev/rdsk/c2d3s2 –n1048576**)
   (Note that there is no space between the –n option and number of blocks.)

"iostat": Generic I/O Performance Testing Tools

1. To conduct a performance test, use the iostat command. You can refer to the man page for more information. A typical example is
   # iostat –DMx 1 10000

"dit": Driver Integration Test – Using "\n" Option to obtain more information

1. Change the user status to "Superuser"
   % su

2. Create a new file system on the *Qik*Driver (using the instructions on page 8.)

3. Mount the new file system to any mount point (using the instructions on page 8.)

4. Change the *Qik*Driver's mounted directory <mount_point>
   #cd <mount_point>
   (For example: **# cd /mnt/qda**)

5. Copy the "dit" file from the installed bin directory to <mount_point>
   # cp <installed_directory>/PTAqd/bin/dit <mount_point>
   (For example: **# cp /opt/PTAqd/bin/dit /mnt**)

6. Test the device 10 times
   # ./dit –n10

Contacting Platypus Technology

If you have tried the solutions recommended in this manual and are still experiencing problems with your *Qik*DRIVE, please contact Platypus Technology Technical Support using the contact details below.

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