

QikDATA

Performance Storage System



PLATYPUS

Technology

QikDATA maximizes database application performance, with complete data redundancy.

Key Features

• Extreme speed

Provides up to 40,000 I/O transactions per second, 350 MBps data transfer rates and seek time at less than 0.1 ms.

• Data redundancy

Has HDD and battery backup and is configurable to ensure no single point of failure.

• Scalable to 128GB per PCI slot

Is expandable to accommodate future growth in system capacity needs.

• Simple integration

Has standard 1RU rack and PCI card installation. Can be formatted, partitioned or spanned as a standard HDD.

• Easily serviceable

Components are easily accessed for upgrades and part replacement.

• Operating Systems supported include:

- Compaq® Tru64®
- HP UX®
- MS® Windows 2000® & NT 4.0®
- Linux®
- Sun® Solaris®
- Visit www.platypus.net for full listing of current versions



Time is money

QikDATA storage products increase the speed of under-performing business critical applications, enabling them to cope with peak periods and organizational growth.

Regardless of the host machine's processing power, database, email, accounting, e-commerce and decision support applications are often limited by the speed of their existing storage system.

Data bottlenecks removed

QikDATA removes I/O bottlenecks caused by the limited speed of hard disk drive (HDD) based storage systems.

It also enables users to take advantage of the ever decreasing price of DRAM.

Utilizing the native speed of DRAM, QikDATA provides a storage alternative with dramatically faster data transfer. Data is stored upon SDRAM rather than rotating platters. Therefore transfer is not only faster, but also without the risks such as "crashing" that are associated with moving, mechanical parts.

Simple integration

Easily integrated into existing server environments, QikDATA's 1RU chassis is connected directly to the host machine via the PCI slot.

QikDATA is recognized by the host computer as an additional storage drive. It functions as per traditional HDDs in that it can be formatted, partitioned, spanned or mirrored.

Maximum data redundancy

QikDATA has been designed to host the most sensitive of data and offers maximum data redundancy. In the event of an external power loss, QikDATA archives data to mirrored, removable 2.5" IDE drives. Once external power is re-established, data is intelligently retrieved from the HDD archive and transferred back to the DRAM storage array.

Install now, scale later

QikDATA products can grow with your needs. With up to sixteen memory slots per unit, upgrading is as easy as inserting more Platypus DIMMs into the vacant slots.

As data needs continue to grow, additional QikDATAs can be added to each PCI card. A host machine with multiple PCI slots can support numerous 128GB QikDATA configurations, creating a large, high speed, storage system.

A competitive choice

Installing a QikDATA is an economical option that maximizes existing system infrastructure and capacity without increasing floor space requirements, system complexity, processor-based software licence fees, and administration costs.

Transferring highly accessed files, temporary files or entire I/O bound applications to a QikDATA can make the difference between a competitive system, and one that isn't.

QikDATA Features

Every feature of *QikDATA* has been designed with two overriding priorities :

1. Performance

QikDATA introduces a new level of storage performance with features including :

- **SDRAM storage**
Data is continually accessed from SDRAM storage rather than rotating mechanical HDD platters.
- **PCI connection**
By directly connecting to the host machine's 66MHz/64bit PCI slot, *QikDATA* performance is not limited by SCSI interface speeds.
- **One-way connectors**
High speed connectors maintain optimized data throughput speeds.

2. Data protection

QikDATA maximizes data security by offering multiple levels of data redundancy, including :

- **Mirrored HDD backup**
Ensuring multiple archived copies of the data.
- **Two internal UPSs**
If external power is lost, data is automatically transferred from SDRAM storage to HDD archive. Each UPS battery unit has enough stored power for several consecutive archiving processes, and is recharged during operation.
- **Background diagnostics**
The operational status of selected components such as the four back-up HDDs is continually monitored.



QikSPY

Application bottleneck diagnostic software

QikSPY diagnostic software was developed by Platypus Technology to assist customers in discovering exactly **why** and **where** their application servers are not performing to peak potential.

QikSPY software determines whether performance bottlenecks are caused by one of two things... processors or storage.

QikSPY does this by identifying :

- CPU usage
- Bytes read/written to local drives
- Most highly accessed files.

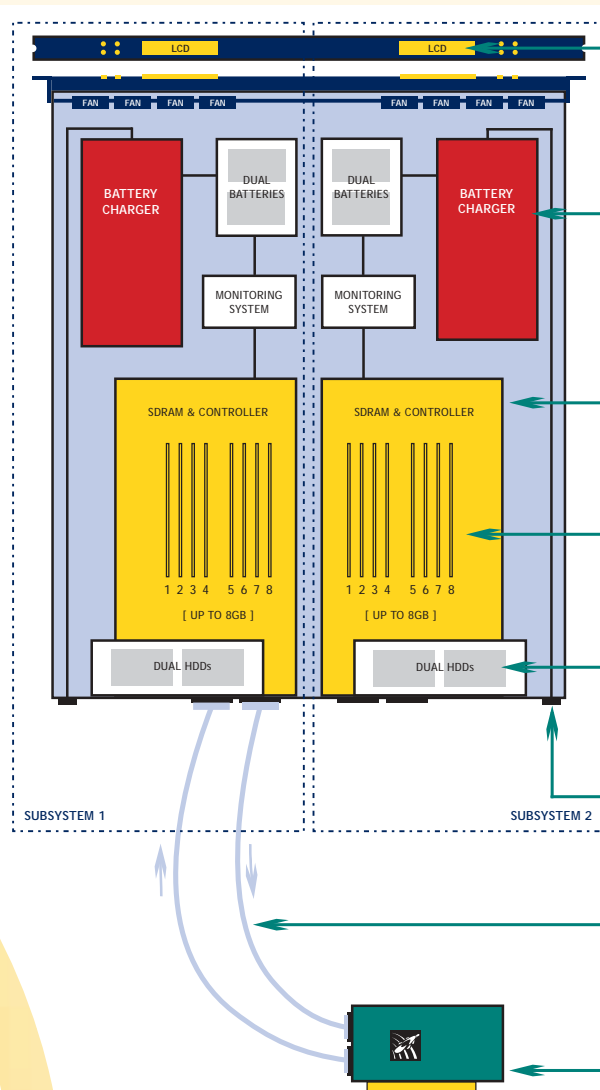
QikSPY monitors system I/O activity non-intrusively on any server. Every five seconds, "snapshots" of performance data are taken and logged in a file which is returned to Platypus.

Based on the log file's data, Platypus then provides a written "*QikSPY* Analysis Report." This report includes findings and recommendations such as which files are prime targets for being transferred to a much faster storage alternative.

"*QikSPY* Analysis Reports" are completely confidential, and supplied under customer's NDA if requested.

QikSPY software is offered to qualified customers with Platypus Technology's compliments.

A sample "*QikSPY* Analysis Report" can be downloaded from Platypus' web site at www.platypus.net



Features

Dual LCD displays

- Show each storage subsystem's
- Component status information
- Performance diagnostics
- Product specifications

Dual internal UPSs

- Independent battery units each have enough stored power to ensure several consecutive archiving processes without any recharging
- The batteries are fully recharged once external power is restored

Dual storage subsystems

- Each able to be spanned, partitioned or mirrored using standard OS utilities
- Both with 8GB storage capacity

Scalable storage

- Both storage sub-systems have 8 SDRAM slots which house either 512MB or 1GB Platypus DIMMs
- Upgradable for future growth

Mirrored HDD back-up

- If external power is lost, data from each storage subsystem is archived onto its two mirrored HDDs for extra protection

Dual power systems

- *QikDATA*'s two power inputs and dual UPSs operate independently of each other, ensuring faultless power supply

High speed connectors

- High density LVDS cables each transfer data in a single direction
- Multiple *QikDATA* chassis can be added to a single PCI card by using the multiple length connector cables

64bit PCI adapter card

- *QikDATA* connects to the host system via a 64bit, short PCI adapter card

Configuration Alternatives



By containing two completely independent storage sub-systems, *QikDATA* has been designed to encourage maximum configuration flexibility.

1. *QikDATA* Spanned

Regardless of configuration, all *QikDATA* storage systems back-up data from the DRAM storage area onto dual HDDs in the event of external power loss.

Of the various configuration options, one of the most common is to span both of *QikDATA*'s independent sub-systems to form a larger, single drive.

This *QikDATA* option provides the following level of data security :

- 2 back-up copies of data
- 3 independent power sources
- 1 data path.

When using this alternative, a single PCI adapter card directly connects the *QikDATA* chassis to the host machine.

From each PCI adapter card, multiple *QikDATA*s can be added to form a single spanned storage drive of up to 128GB.

Multiple 128GB configurations can be spanned to create a larger high speed storage drive.

2. *QikDATA* Mirrored

For maximum data redundancy, *QikDATA* can be configured with no single point of failure.

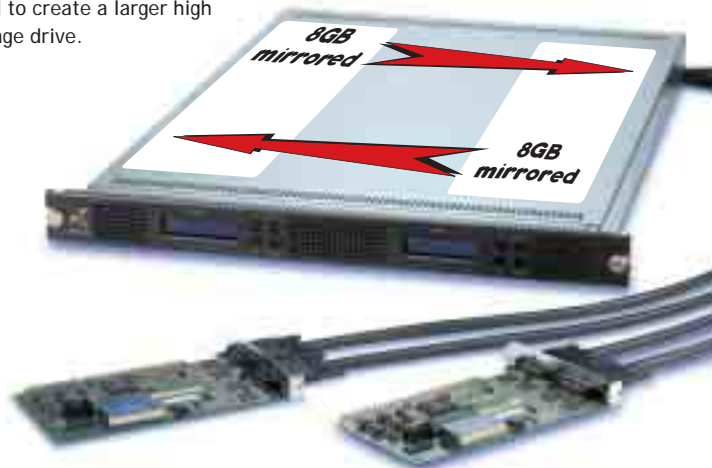
This is done by configuring the unit as a fully duplexed RAID1 (mirrored) system. Here, data is mirrored across the two independent DRAM storage subsystems.

If external power is lost, data is backed-up from DRAM to each subsystem's mirrored HDDs.

QikDATA storage with this increased level of data redundancy is highly scalable, and requires dual Platypus PCI adapter cards.

This *QikDATA* option provides the following level of data security :

- 4 back-up copies of data
- 6 independent power sources
- 2 independent data paths.



QikDATA Upgrades

All Platypus products are expandable to accommodate future growth and system needs.

Storage capacity can be increased by simply installing additional SDRAM DIMMs, or by spanning together multiple units using standard OS tools (as you would a standard HDD-based system).

When a Platypus storage product is ordered, it is shipped pre-configured, that is, with its memory installed.

Customers are able to nominate the use of either 512MB or 1GB capacity DIMMs. While it is cheaper to configure Platypus products using 512MB DIMMs, using the smaller capacity option will fill up a larger number of available slots.

Memory Specifications

All Platypus products use the same detailed memory specifications.

The DIMM modules shipped on each Platypus product are manufactured to a strict set of specifications and quality guidelines. Every module is vigorously tested before being installed into a Platypus product, and again after installation.

Perhaps more importantly, Platypus provides the maximum possible performance and features by using very specific memory.

Due to Platypus' purchasing power, upgrade pricing is extremely competitive.

The Platypus support team can be contacted via support@platypus.net to assist with any further queries about Platypus memory upgrades.

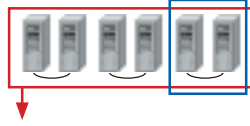
QikDATA

Performance Storage System

Case Study : Cost impact on Email server farm

EXISTING SCENARIO

6 Email servers
[3 redundant pairs]



All 6 servers

Emails per day - 3,000,000 [approx]
Emails per second - 120 [peak]
H/W investment - 6 servers @ \$10k
= \$60k

Per pair

Emails per second - 40 [peak]

Diagnosis

Email queue throughput is limited by the speed of HDD I/O reads/writes

Requirements

240 Emails per second [overall minimum]

OPTION A

Install additional 6 redundant server pairs. Total = 12 servers



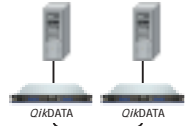
Option A - Add 6 redundant servers
- Total of 12 server2

Expected result - 240 Emails per second [peak]

Total H/W cost - 12 servers @ \$10k
= \$120k
[plus substantial admin costs]

OPTION B

Install 8GB QikDATA storage to 1 redundant server pair



Option B - Attach QikDATA storage
- Transfer email queue to QikDATA
- Redeploy 4 servers elsewhere

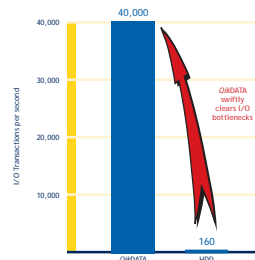
Actual result - 1,200 Emails per second
Total H/W cost - 2 servers @ \$10k +
- 2 x 8GB QikDATAs
= \$69k

The Result

Customer installed Option B, delivering the performance of 60 servers, worth \$600k.

Benchmarks

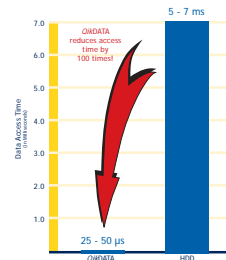
I/O Transactions per second



The diagram above shows that QikDATA completes 2k I/O events significantly faster than mechanical HDDs.

Storage systems have to deal with the queries of hundreds and even thousands of users. The speed with which the QikDATA can satisfy an I/O event builds additional capacity into a storage system. QikDATA allows hundreds of additional requests to take place in the same time that a HDD could satisfy just one request.

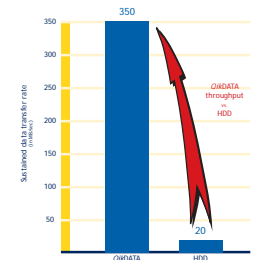
Storage Access Speed



The access speed to data is dramatically faster when using SDRAM as storage.

Traditionally, milliseconds ms (1/1000) are used when measuring HDD access speed. This represents the time taken for the storage system to locate the start address of the data block(s) requested. Solid-state systems measure access times in microseconds µs (1/1,000,000). Whilst these figures appear small, there can be billions of accesses required for a single action such as generating a database report.

Data Streaming Speed



The streaming speed represents how much data can be read from, or written to a storage media. This is generally measured in MB/sec.

HDDs are limited in their ability to stream data by both the speed of the spinning magnetic platter, and the need of the HDD controller to verify that each write has been accepted. Silicon (DRAM) based storage can stream data almost instantaneously, with the ability to achieve sustained rates exceeding 1,000MB/sec.



Platypus Technology Inc.

79 East Wilder Road
West Lebanon, New Hampshire 03784
United States of America
phone +1 (603) 298 7455
toll free +1 877 718 8900
fax +1 (603) 298 7457
email sales.usa@platypus.net

Platypus Technology Limited

47A High Street
Hungerford, Berkshire RG17 0NE
United Kingdom
phone +44 (0)1488 662 121
fax +44 (0)1488 662 122
email sales.uk@platypus.net

Platypus Technology Australia Pty. Ltd.

Level 4, 1 Atchison Street
St. Leonards, NSW 2065
Australia
phone +61 (0)2 8436 8500
fax +61 (0)2 8436 8501
email sales.aus@platypus.net

www.platypus.net

Specifications

SPECIFICATIONS	QikDATA PCI CARD	QikDATA
Form Factor	PCI short card	1RU
Bus Architecture	64-bit PCI	N/A
Capacity	N/A	2GB — 16GB
QikDATA		
Installed Memory	Error Correction Code (ECC) PC100, unbuffered SDRAM 168 pin DIMM	
PERFORMANCE		
Access Time (microseconds)	25 - 50	
Transactions per second	Up to 40,000 (2k)	
Data Transfer Rates (MB/sec)	350 (sustained)	
SOFTWARE		
Drivers (see web for updates)	HP UX, Linux, MS Win. 2000, NT 4.0 Sun Solaris, Compaq Tru64	

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POWER REQUIREMENTS	QikDATA
Primary Source	External source
Back-up	Internal UPS (Qty = 2)
Maximum Power Consumption	70 watts
Voltage	100/240V AC, 50/60Hz
DATA PROTECTION	
Archive HDDs	IDE (Qty = 4)
Internal UPS	12V SLA batteries (Qty = 4)
Battery features	240V detection, 12V kill cct with auto on when mains detected, battery condition test
Battery recharging	Floating trickle
Number of Fans	8

WARRANTY	QikDATA
Time Period	Twelve months (return to base)
Support	Telephone, internet, onsite (optional)