

PORTLOCK™

Storage Connection

Essential Information for Storage Management

May 2004

ISSUE 3 VOLUME 3

INSIDE THIS ISSUE:

- ◆ Portlock Storage Manager's Move Pool Command
- ◆ Tech Support Q and A
- ◆ Marketing Portlock
- ◆ Reseller Spotlight
- ◆ Meet the Team

www.portlock.com

**Stuffing Big Data
into Small Budgets
got you feeling
Capacity Cramped?**



Promise Technology UltraTrak™ SCSI-to-ATA RAID Storage Subsystems

Transform your data storage with the UltraTrak™ series of SCSI-to-ATA RAID storage subsystems from Promise Technology, the worldwide market leader in ATA RAID solutions. UltraTrak RAID subsystems combine the cost-effective performance of ATA RAID with SCSI host connectivity—it's like having a high-capacity Ultra160 SCSI array without the high-end price.

Value — Lower your system cost with ATA drives that save money during your initial system set-up, as you expand your capacity, and as you replace components over time.

Freedom of Choice — UltraTrak systems work with virtually any ATA drive from the leading drive manufacturers, so with Promise you can buy hard drives at any time and gain the benefits of purchasing hard drives as a commodity component for greater system flexibility and lower cost.

Capacity — Build large-capacity storage arrays with the largest, high-capacity Ultra ATA drives for maximum versatility and economy. Also, you can daisy chain UltraTrak units for even more capacity. The UltraTrak RM15000 offers the highest drive density in a 3U rack-optimized storage subsystem.

	RM15000	RM8000	RM4000
Number of Drives Supported	15	8	4
RAID Levels Supported	0, 1, 0+1, 3, 5, 30, 50	0, 1, 0+1, 3, 5, 30, 50	0, 1, 0+1, 3, 5
Drive Types	Ultra ATA	Ultra ATA	Ultra ATA
LUNs Supported	15	8	4
Hot Swap Drives	Yes	Yes	Yes
Hot Swap Fans	Yes	Yes	No
Hot Swap Power Supplies	Yes	Yes	No
Rack Size (Rack Units)	3U	3U	1U

Discover a cost-effective new world of storage capacity with Promise Technology's SCSI-to-ATA RAID solutions. Contact Promise for more information.



Promise Technology, Inc. · 1745 McCandless Drive · Milpitas, CA 95035
(800) 888-0245 · (408) 228-6300 · fax (408) 228-6400

“Other top IT vendors without rose-colored glasses or axes to grind, such as Novell, Oracle, IBM and Portlock are porting key applications to major Linux distros as rapidly as possible...”

Page 5

“When it comes to marketing at Portlock, we let our customers do the heavy lifting...” Page 20

5 **Inside Storage...**

Adapt or Die

8 **Tech Wire...**

Portlock Storage Manager's Move Pool Command

10 **Marketing Portlock...**

Portlock Support Service

16 **Meet the Team...**

Portlock welcomes Joe Bracco

18 **Reseller Spotlight...**

PC-Ware Stands out in Germany

20 **Meet the Team...**

Portlock welcomes Joe Bracco

“Portlock Storage Manager has many different Pool Commands that allow you copy, hide, delete or create.” Page 18

Portlock Storage Connection

Publisher:
John J. Hanley
Senior Editor:
Jay Touns
Sales Director:
Les Giamona
Productions Manager:
Gerald T. Hanley
Layout and Design:
Mariya Peck
Contributing Editors:
Jackie Farren
Leonard Holling
Richard Pain

To subscribe, visit us online at www.portlock.com. Send address changes or requests to publications@portlock.com.



magnitude 

Clustered Storage Meets Novell Applications

- Unmatched Resilience
- Dynamic Simplicity
- Seamless Scale
- Proven ROI

Clustering Without Complexity

XIOtech
www.xiotech.com





Adapt or Die

Remember how the dinosaurs perished sixty or so million years ago? A huge meteor slammed into the Yucatan peninsula in Central America, instantly altering the world's climate, which changed so quickly and dramatically that most dinosaurs perished in the months and years that followed because they couldn't adapt. That's more or less the impact Linux is set to unleash on the IT industry and its global base of customers.

Prehistoric dinosaurs couldn't avoid the inevitability of their fate. Yet millions of species—avian, mammalian and reptilian—survived the impact and survive to this day. So it will be interesting to consider what happens to vendors and customer companies that choose to ignore the growing importance of Linux and open source, or who attempt to thwart the open source community development process. Already, cash-flush proprietary vendors such as Microsoft are burning big marketing budgets to sow fear, uncertainty and doubt, essentially proclaiming that Linux isn't worthy of enterprise IT investment (and if you read between the lines, insisting the sky isn't in some way falling on the Windows franchise). It is also interesting to consider the new alliance between former archrivals Sun Microsystems and Microsoft for the same reasons. The mutual need to survive and thrive in adverse times will always create reasons for even dog-eat-dog vendors to cooperate.

Other top IT vendors without rose-colored glasses or axes to grind, such as Novell, Oracle, IBM and Portlock are porting key applications to major Linux distros as rapidly as possible, in large part because their customers

are increasingly demanding them. Many vendors are also open-sourcing parts of their product portfolio to drive community development activity, such as Novell's iFolder file synchronization solution, now an open source project on Novell Forge. If the trend continues, and there's no reason to think it won't, open source technology, spearheaded by rampant enterprise Linux adoption, will literally compel all software vendors to create better products and offer them at lower prices in order to compete with "free" or die trying.

Survival of the Smartest, Not Necessarily the Fittest

Microsoft (one of this article's purported "dinosaurs") is of course still very much alive and thriving, and still has a few things to teach the open source community about business tactics and sheer competitive instinct. "Microsoft has more money to spend on usability than I do on research and development," said Christian Schlaeger, vice president of research and development at SUSE in a recent interview. "Some things are wrong, and we fix those, but there are some things they have done well."

Yet the shadow being cast by Linux is making companies such as Microsoft and Sun more flexible in price and licensing at the same time. After all, for network customers there's now an equal-or-better stack of enterprise Linux application software, both open source and proprietary, to choose from. There's also Linux training and technical support available from the major vendors. It all adds up to a growing competitive threat, and one that won't easily be diminished by any particular company, regardless of cash position or proprietary lockin.

In the words of Novell's open source champion, Matt Asay, "Linux threatens the proprietary software industry with innovation, rather than extinction," and he routinely accuses companies such as Microsoft of failing to come up with exciting new applications. "When was the last time that Microsoft Office got significantly better? It's been pretty much the same product for a while now," he said. "As things stand, creativity has gone, and that's one reason that Linux on the desktop makes sense. It'll be good for Microsoft, too. They won't like it, but it will force them to innovate," he added.

For customer organizations with network and storage infrastructure, adding or changing key operating system platforms is always hard. But avoiding necessary changes can be even harder, if not outright disastrous to the business effort in the long run. For example, unrelenting growth in enterprise storage needs is having a deep effect on small and medium-sized companies, who have been forced to double or even triple their data storage and management capacities over the past year. One of the primary drivers of this rapid growth comes from heightened awareness of the importance of disaster recovery systems. What will adding or consolidating to Linux do to help beleaguered companies manage more data at less cost? The answer is plenty when it comes to networking and storage management.

Before, During and After the Impact, What Will You Do?

With a growing stack of Linux software and hardware combined with enterprise-level technical services and support from top vendors such as Novell, IBM, HP and Oracle, more businesses consider the addition of or change to Linux all but inevitable. But with their key applications and services driving the need for adoption of any particular OS, IT managers considering Linux need to answer the question upfront of: What gives my organization the best TCO both now and in the future?

A key concern for IT managers is the reliability of their applications. Organizations have been understandably cautious in using open source software in mission-critical areas, such as the data center. But thanks to Novell, IBM, Portlock and other top-tier vendors, issues of applications, support and hardware availability have been addressed. Portlock is delivering a time-tested, market-hardened storage management solution for Linux—one that provides a robust, cross-platform storage foundation and thorough data protection coverage. Portlock's imaging software offers strong abilities in server provisioning, storage management, application integration and disaster recovery operations for Linux, as well as NetWare or Windows. (Portlock Storage Manager support for Linux and Windows is currently in beta release.)

Scalability—the capability of a Linux solution to meet the dynamic needs of an enterprise—is another key consideration for IT managers. With network computing hardware steadily evolving to a lowest-cost basis, the path to scalability is with clusters of relatively cheap machines rather than single mainframe-class hardware. A truly scalable solution allows IT managers to use it across a cluster of machines rather than a single system—to control costs as well as add capacity when required. And since such clusters often involve multiple hardware platforms, access protocols and security tools, a solution that is interoperable across these is an added advantage. Decision makers should opt for a Linux storage management solution that minimizes downtime and effectively manages a wide range of devices and applications in heterogeneous environments.

For instance, to deliver effective storage management for enterprise computing and SAN environments, the software and hardware you choose should ensure real-time data protection through Internet protocols, server mirroring and RAID technology, besides supporting kernel-level tasks such as volume replication and point-in-time image snapshots. The underlying storage management solution should also provide for rapid file system recovery from any type of storage device or location in the event of disaster or unexpected server failure.

Adapt and Thrive with Linux

Linux is already a more-than-viable server and desktop option for the enterprise. As long as the Linux solutions you're considering meet the criteria of enterprise-class software for your organization, there's no reason not to take advantage of the benefits Linux offers, for servers, desktops and for storage as well. Evaluation versions of SUSE LINUX and Novell's Enterprise Linux Services suite of network services are available from Novell, so a lack of proven enterprise-class software isn't what's keeping you from trying it all out. With beta support for Linux and Windows, Portlock Storage Manager is definitely a solution to consider in removing barriers to Linux deployment in your enterprise.

You can prepare for the impact of Linux on your network and storage infrastructure with Portlock. When it comes to fast, accurate and reliable server migrations, image and restore, partition and volume resizing and bare-metal restore operations, Portlock Storage Manager images of your current servers might be what one day save your business from extinction. It's also useful for daily operations: Server images can make your enterprise network and Web servers more responsive to changing usage demands throughout the business day. Images can help you quickly restore a downed production server or migrate the content and configuration of an old server to new hardware. And when your business is ready for the full impact of Linux, you can even change platforms with the right image karma.

Founder and president of Life Mechanics, Inc., a full service writing agency based in Darby, Montana, Jay Toups is a writer and marketing communications consultant for Novell, Portlock and other leading information technology companies. Mr. Toups studied English literature, music, psychology and business management at the University of Southern Mississippi from 1976-1980. His lifelong technology education began when first introduced to UNIX in 1981.

Visit www.wordwrench.com for more information.

All comments expressed in this article are those of the author and do not necessarily represent the views or opinions of Portlock.

The graphic features the word "PORTLOCK" at the top in a blue, serif font. Below it is a large, stylized blue letter "P" with a 3D effect, set against a background of glowing blue lines and binary code (0s and 1s).

**For more information on
storage management
solutions for
NetWare and Linux
visit us at:**

portlock.com



Portlock Storage Manager's Move Pool Command

Portlock Storage Manager has many different Pool Commands that allow you copy, hide, delete or create. This article will focus on one of the most popular commands and that is to Move a Pool from one storage location to another.

The storage location could be to a new hard drive, array or even a new SAN. In any case the new storage must be connected to the server and accessible from within NetWare. Once NetWare can “see” the new storage then Portlock Storage Manager will be able to manipulate the storage on it.

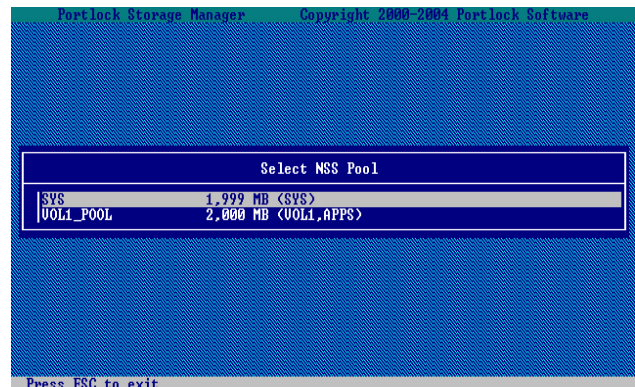
For the purposes of this article we are going to be move the SYS volume Pool from one drive to another. As mentioned previously the other drive could easily be a SAN, RAID Array or another drive. It does not matter for Portlock Storage Manager.

Portlock Storage Manager moves a Pool by first hiding the original Pool and then copying that Pool over to its new storage location.

To allow the move process to occur the volumes will need to be dismantled.

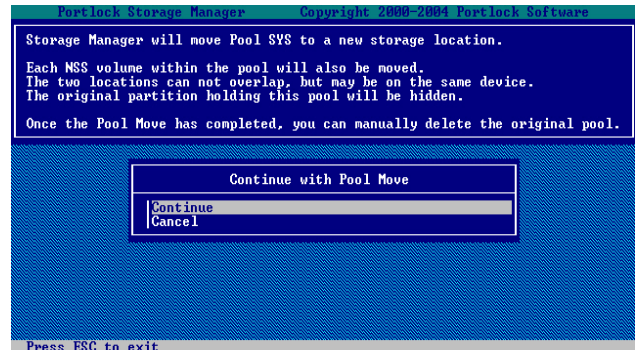
To move a Pool you need to select **Pool Commands** from the main menu of Portlock Storage Manager and select the *Move Pool* command.

You are now presented with a list of pools on the server. All you need to do is select a Pool you want moved. In our example we will be moving the SYS Pool from one device to another.



Select the Pool to be moved and press [Enter] to continue.

Remember that all volumes in the Pool will be dismantled. Portlock Storage Manager dismantles the volumes in the Pool and then places the Pool into maintenance mode.



You are now presented with a screen that confirms the steps that Portlock Storage Manager will do to move the Pool to its new location.

```

Portlock Storage Manager Copyright 2000-2004 Portlock Software
Checking NSS Pool SYS - 1,999 MB
Verify NSS Partition: Success - 10,137,015 sectors
Verify Super Block: Success - 511,744 (4 KB) Volume Blocks
Verify Free Tree:
Verify Check Point: Success - 10,237 Blocks (39 MB)
Verify Name Tree: Success - 1 Name Tree Blocks
Verify Dir Tree:
Verify User Tree: Success - 2 User Tree Blocks
Verify Leaf Tree: Success - 3,191 Leaf Records
Directory Count: Success - 233 Directories
File Count: Success - 2,947 Files
File Blocks: Success - 64,080 Blocks
Salvage Blocks: Success - 19 Blocks (988 deleted files)
Zulo - Zvol: Success
Unclaimed Data Blocks:
Current Pool Volume: SYS
Progress: [Progress bar] 13.00%
Total Check Time: 4 seconds - Estimated Time Left 26 seconds
Press ESC to exit

```

Once the pool has been deactivated an integrity check is run on the Pool to ensure that there are no problems with the Pool. Once the check has been completed then Portlock Storage Manager will then present a list of available storage devices that the Pool may be moved to.

```

Portlock Storage Manager Copyright 2000-2004 Portlock Software
Device #2 [IDE: 0:1] VMware Virtual IDE Hard 20,480 MB
# Partition Type Mirrored Offset MB Size MB
- MBR - 0 63*
- Free Space 0 20,480 MB

Select Destination Drive
Device #1 [IDE: 0:0] VMware Virtual IDE Hard 10,236 MB
Device #2 [IDE: 0:1] VMware Virtual IDE Hard 20,480 MB

Press ESC to return - F4 Hide - F5 Display in MB - F6 sectors - F7 cylinders

```

You are now presented with a list of available devices you can move the selected Pool to. Select the device you wish to move the Pool to and press [Enter] to continue. If the destination server had multiple partitions, you could select which location the pool is moved to. As this is a drive with no data on it, we start at the beginning of the drive.

```

Portlock Storage Manager Copyright 2000-2004 Portlock Software
Device #2 [IDE: 0:1] VMware Virtual IDE Hard 20,480 MB
# Partition Type Mirrored Offset MB Size MB
- MBR - 0 63*
- Free Space 0 20,480 MB

Pool: SYS
Current Pool Size: 1,999 MB
Minimum Pool Size: 1,999 MB
Maximum Pool Size: 20,473 MB
Enter the new pool size in MB:
Size: 5000
Press ESC to exit

```

As part of the *Move Pool* command you may wish to resize the Pool. Portlock Storage Manager will let you enlarge the Pool to the available size on the drive you selected.

```

Portlock Storage Manager Copyright 2000-2004 Portlock Software
Move Status for NSS Pool SYS
Pool Name: SYS Complete: 6.00%
Block Size: 4,096 bytes Elapsed Time: 45
Pool Size: 6,000 MB Estimated Time Left: 11:12
Segment Count: 1 Blocks to Copy: 386,150
Current Segment: 0 Blocks Copied: 24,210
Segment Size: 1,999 MB Performance: 2,152 KBS
Space Used: 1,508 MB
Space Free: 490 MB

Move Progress: [Progress bar]
Press ESC to stop

```

The move of the Pool will now commence.

Once the Pool Move has completed you will then have two Pools on your server. The original Pool which is hidden and the new Pool.

Once you are satisfied that the new Pool is OK you can then manually delete the hidden Pool. If for any reason you wish to use the original Pool you have one of two choices.

You can hide the newly created Pool so that NetWare can no longer see it and then unhide the original Pool or you can delete the newly created Pool and then unhide the original Pool.

Tip: If the Pool you moved contained the SYS: volume, we recommend you reboot the server to allow all of the NLMs that use the SYS: volume to be reinitialized.



I am about to use Portlock Storage Manager to image a server. For planning purposes can you give me an approximate expected data transfer so we can plan on how long the migration will last? We will be using a dedicated switch with ports set to 100/full and both servers will be set to 100/full.



Transfer rates will vary greatly due to controller and disk drive performance. Controllers and drives can have great performance under NetWare but very poor performance when used from DOS.

Portlock suggests that you take a look at (if you have not already seen it) our server to server migration document at <http://www.portlock.com/documents>.

As a rough guideline you should see somewhere from 5-10 MB/s performance.



We are using GroupWise for our mails and I can not use the zip file! The attachment is damaged!



This is a common problem with Novell's GroupWise. To resolve this problem install the latest GroupWise patches.

Our license server uses BASE64 encoding for attachments. Novell's GroupWise has a bug with BASE64 encoding.

Here is an example Novell TID documenting this problem: <http://support.novell.com/cgi-bin/search/searchtid.cgi?/10075148.htm>

We will resend your license using the MIME encoding.



After doing an Image—>Initialize—>Restore, my test 5.1Sp2a server booted up fine, but when my 98SE client v3.4 logs in, the NALExplorer searches and finally hangs. If I login to my active server the NAL works fine. Any thoughts?



Is your production environment a single server?

If it is not then it could be that the ZENworks objects that NAL is looking for are not available. Is the restored server a Master replica or a read/write replica in NDS? Depending on your version of ZENworks and configuration the workstations need to contact the Master replica in order to work correctly.

If not configured then ZEN and NAL will attempt to walk the NDS tree to find what objects and policies the workstation should run.



We tried to copy a server to an ftp-file. But we get the error: there are file system blocks that are not assigned. unassigned blocks: 9 what must we do now?



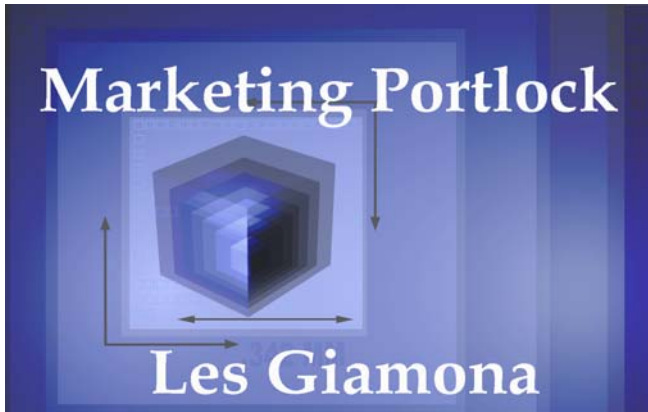
The best way to resolve these errors if you are running the latest version of Portlock Storage Manager is to make sure that you have a verified backup of your Pool and then do a Pool rebuild, preferably with SP4 installed or at least NSS3C which should work OK with NW6SP2.



“Portlock Volume Defrag”. I would like confirm with you if this application supports NSS Volume on Netware 5.1 SP5



Portlock Volume Defrag supports NSS volumes on NetWare 5.1



Marketing

When it comes to marketing at Portlock, we let our customers do the heavy lifting... (Other storage players have marketing money running like water to acquire new customers)...Portlock has the world's best customers who buy our software on the overwhelmingly positive reports of other technical professionals.

With so many customers touting Portlock Storage Manager we have a defacto sales force of existing customers, with more and more companies deploying Portlock Storage Manger everyday. "Thanks, we couldn't do marketing without you...our valued customer. "I have the greatest job in the world as sales and marketing director of Portlock." of course, it's still hard work...but our customers make it much more enjoyable! And when it comes to product reliability or customer service, Portlock is number one.

Products

When it comes to products there are no finer products on the market today. With the research and development that goes into our products no other company enhances their products like Portlock, in fact "Portlock Storage Manager", the enterprise class product for the storage industry is continually evolving to meet the demands of an ever changing and challenging market.

Portlock's Storage Suite includes: Portlock Storage Manager, software designed to manage storage on Linux, NetWare, or Windows servers; Portlock Scorpion, a solution that converts Traditional volumes to NSS volumes; Portlock Volume Defrag,

a tool for improving the layout and performance of Novell NetWare file systems; Portlock Disk Test, a program for testing disk drives and NetWare partitions.

- Portlock Storage Manager is designed to optimize server storage, specializing in bare-metal disaster recovery, server-to-server migration and storage management. Users can copy, create, clone, image, restore and resize partitions and volumes. Image/Restore from disk, tape, CD/DVD, FTP and web servers. Disaster and Data Recovery of failed servers is very fast and dramatically simplified.
- Portlock Scorpion converts NetWare Traditional volumes to NSS volumes and NSS volumes to Traditional volumes. You can use Portlock Scorpion to copy from Traditional File System (TFS) to NSS (on versions 5.x and 6.x of NetWare). You can even use it to copy from TFS to TFS, NSS to TFS or NSS to NSS. Portlock Scorpion allows you to convert from a smaller NetWare volume to a larger NetWare volume, whether it is TFS or NSS. This is especially useful if you have upgraded your NetWare server to NetWare 6.x and want to convert the existing volumes to support the newer (and faster) NSS volumes. Even with all the advantages provided by NetWare, network administrators and users need more to expand beyond the limitations still imposed by the traditional NetWare storage system. They need the ability to store larger files and to store more of them in a single directory. They need to mount more volumes on a single server. They want faster volume mount times and quicker error recovery. While gaining these new capabilities, users and administrators still need all the NetWare advantages they've come to depend on. Novell has attempted to make the process of upgrading traditional volumes to NSS volumes supported on NetWare 5.x and 6.x as easy as possible, yet an opportunity has emerged for Portlock Software to make this task even easier.
- Portlock Volume Defrag is a powerful and comprehensive tool for improving the layout and performance of Novell NetWare file systems. By combining cutting-edge technology and real world use by a large client base, Portlock has designed Portlock Volume Defrag to minimize downtime and maximize system operation.
- Portlock Disk Test is a powerful and comprehensive tool for testing disk drives and NetWare partitions on Novell NetWare servers. Portlock Disk Test provides full-support for execution on both NetWare and DOS platforms

Portlock provides products and services for NetWare data recovery for Traditional and NSS volumes and partitions. Portlock's knowledge and expertise encompasses the design and feature sets of NetWare file systems. As the only company with tools that directly manipulate NSS volumes, we help companies recover lost data.

Support

Portlock Technical Support Records

Call came in at 12:57 p.m. to Technical Support

Server Down NW 6 SP3

This customer is getting an error that Volume SYS. Fats don't match. There is a mismatched directory error, on Novell TID. I initiated a 3-way call with the customer and the technician on site, at 12:59 p.m.

Time: 1:05 p.m.

To: Portlock Sales Support

From: Portlock Technical Support

This customer is about to call to purchase a license for Portlock Storage Manager, as they have a broken traditional volume that they need a licensed version of Portlock Storage Manager to fix. The error they are getting is 2 volume segments with the same sync value with mismatched data.

Time: 1:10 p.m.

From: Portlock Sales Support

To: Portlock Technical Support

Payment approved and the license sent to the customer.

Time 1:30 p.m. 33 minutes – Service Ticket

Closed

From: Portlock Technical Support

To: Portlock Sales Support

The customer is very satisfied with our product and service. Portlock Storage Manager Fixed their problem with the traditional volume and the server is now up and running.

“Wow” that is amazing and hard to believe that from the time the customer called us with a down server to the time they were up and operational again was a mere 33 minutes. With exceptional customer service like that my job is really the easiest job there is. The series and events shown are of an actual call report that came into the technical support department and the times and events represented are accurate. At Portlock as you can see there is no separation between the sales department and the service department as the customer is always number one with everyone in our organization.

Exceptional customer service is the foundation for any company and at Portlock here are a few reasons why we believe in and maintaining our focus towards providing exceptional customer service:

1. A dissatisfied customer typically tells 8 others about the negative experience. Those people then tell more people. Just one dissatisfied customer can negatively influence up to 82 others.
2. Only 4% of all customers ever complain. For every complaint received there is an average of 26 other complaints that were never voiced. Six of these complaints are serious enough to drive your customer to the competition.
3. Nearly 95% of customers who complain will continue to do business with you if the complaint is handled quickly and to their satisfaction.
4. Research shows it costs five times as much to attract a new customer as it does to retain an existing customer.

The bottom line at Portlock is providing exceptional customer service, with a quality product, at an affordable price makes for happier customers, which as I stated before makes my job much easier and more enjoyable.



Greetings from the Portlock Software Sales Team!

At Portlock we are dedicated and committed to our Reseller program and because of that dedication it is growing at a rapid pace and has become a very important part of our business. As the first part of a series of articles we will be featuring one of our many successful Resellers. With that being said, it is only fitting that we start with our top reseller from last quarter; PC-Ware Information Technologies AG.

PC-Ware Information Technologies AG, headquartered in Leipzig, Germany, is recognized as one of Europe's premier IT service enterprises. They offer their customers a comprehensive service portfolio, covering a wide range of activities from the licensing of standard software, system support and complete system house services. PC-Ware employs more than 600 staff members and operates in four key areas of the IT sector; Software Sales & Licensing, Software Support & System Management, Integrated System Solutions & Support, and Enterprise Solutions.

PC-Ware has subsidiaries in eight European countries and serves a customer base of more than 70,000 corporate clients. They have grown to become the market leader of software licensing and license management in Germany and the Netherlands.

PC-Ware has developed business relationships with a number of global players within the IT industry including Novell, Microsoft, IBM/Lotus, Symantec, Veritas, Oracle, Citrix, Adobe, Corel, Borland, Tobit, Attachmate, Network Associates, Computer Associates, Fujitsu-Siemens and Hewlett Packard.

In addition PC-Ware cooperates with innovative producers like Portlock. PC-Ware and Portlock became partners in November 2002 and they have continued to market and support Portlock and our products since. With enthusiastic representatives like Niko Merkel in the Munich office and Sven-Torsten May in Leipzig they have quickly become one of our top resellers.

The Portlock Team would like to take this opportunity to thank PC-Ware in helping make Portlock one of the leaders in storage management solutions and services. Portlock is dedicated to innovation, development, implementation and customer support.

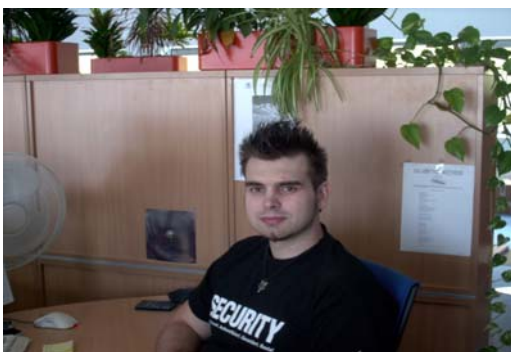
Thanks again PC-Ware and keep up the top-notch effort!

For more information about PC-Ware visit:
<http://www.pc-ware.de/en/pc-ware/main.htm>





PC-Ware's corporate headquarters in Leipzig, Germany.



Niko Merkel in Poing, near Munich, Germany.



Sven-Torsten May at headquarters in Leipzig, Germany.

Portlock has added a system administrator to our team of growing professionals in the Butte, Montana office. Joe Bracco a native and life long resident of Butte brings to Portlock a wealth of experience and knowledge in the IT sector, having worked for IBM and Northwestern Energy as an Information Systems Analyst.

A graduate of Montana Tech of the University of Montana having completed the coursework to receive a Bachelor of Science Degree in Computer Science with a minor in Mathematics has provided Joe with the skills to take complex logic, programming and database design concepts and apply them to team orientated software engineering projects.



Joe Bracco
System Administrator

Hired April 1st Joe will be responsible for maintaining, expanding and developing the IT infrastructure for the multiple office environment of Portlock.

For fun Mr. Bracco enjoys working out, learning about investing, and watching a good episode of the Sopranos.

A promotional graphic for Portlock Storage Manager. The background is blue with binary code (0s and 1s) scattered throughout. On the left is a 3D rendering of the software's product box. In the center, the word 'PORTLOCK' is written in a large, stylized, outlined font. Below it, 'Storage Manager' is written in a smaller, white, sans-serif font. Underneath that, three key features are listed: 'Image and Restore', 'Server-to-Server Migration', and 'Bare-metal Disaster Recovery'. Below these features, it says 'Storage Management for Linux, NetWare and Windows'. The main headline reads 'When it comes to marketing our solutions, Portlock customers do the talking.' Below the headline are two testimonials. The first is from Michael Holmes at Seminole Community College, Florida USA, praising the product for migrating NetWare systems. The second is from Wayne Martin at Morgan-Keller Construction, Virginia USA, praising the product for cloning a server and the quality of support. At the bottom, the website 'www.portlock.com' is listed, followed by a small copyright notice for 2004.

Viabile Solutions, Inc.

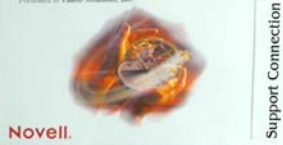


Our Name Says It All!

Service Excellence Award

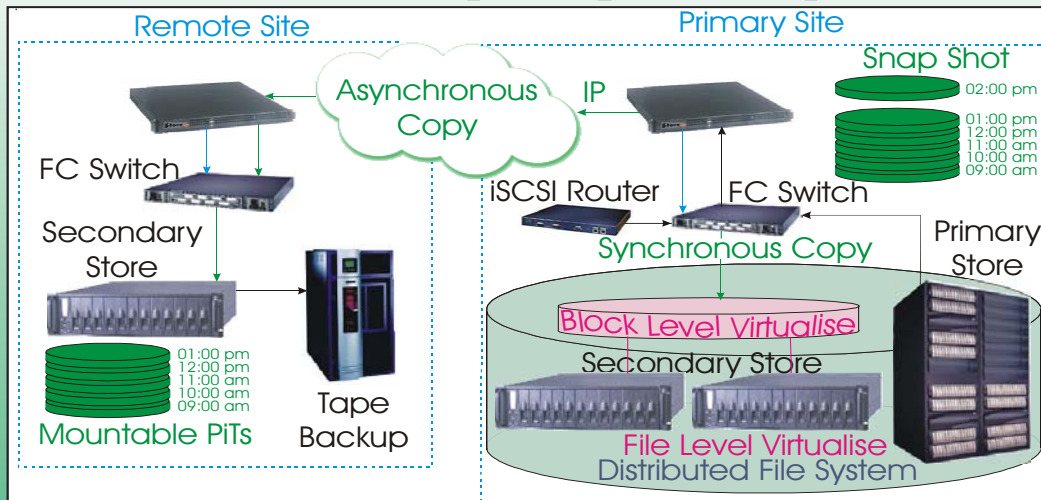


Service Excellence Certificate 2000



<http://www.viable-solutions.com>

No matter how complex your requirements



If it can be done with storage - we'll show you how

SOLUTION CENTRE

Solution Centre Limited, Vickers House, Priestley Road, Basingstoke, RG24 9NP, UK
Tel: 01256 818600, Fax: 01256 819600, E-Mail: pstore@solutioncentre.co.uk

Our Professional Service teams can provide you with a technical resource to help you run your business more efficiently. IT departments are often busy fighting fires and do not have time to take a strategic view of their business and the benefit IT provides. We provide consultancy and implementation services in the areas of our specialization:

Storage and Data Availability
PC Deployment and Life Cycle Management
Messaging, Unification, E-Mail and Fax
Security of Data and Networks

In principle, it is generally true to say that centralizing and consolidating functions and management reduces cost and improves availability. Most of our services have these aims.

Within those areas of expertise typical uses of our Professional Service teams include:

Storage Discovery and Consolidation

- Audit infrastructure to identify a starting point
- Implement Highground software for a defined period to analyze data and trends
- Produce forecast reports
- Develop and document storage strategy
- Design scalable solution
- Consolidate primary and secondary storage
- Consolidate servers
- Optimize performance



ERP:

Sound made by CIO
when people see data
they shouldn't.

Your people need access to information. You just don't want to give everybody access to everything. You need a secure identity management process. Novell's Nsure™ solutions let you control access for all your employees and business partners. Quickly and easily. So you can stop worrying about who's seeing what and start concentrating on more important things, like the bottom line. To learn how Novell's consultants and partners can apply their expertise to help you increase security without decreasing access, call us at 1-800-764-3700 or visit <http://www.novell.com/nsure> **WE SPEAK YOUR LANGUAGE.**

Novell.

© 2002 Novell, Inc. All rights reserved. Novell is a registered trademark, and Nsure is a trademark, of Novell, Inc., in the United States and other countries.



Corporate Headquarters

**101 N Main Street
Butte, Montana 59701-0370
USA**

European Headquarters

**Vickers House
Priestley Road
Basingstoke
RG24 9NP UK**

©2004 Portlock. All rights reserved.
Portlock is a trademark of Portlock in
the United States and other countries.
Linux is a registered trademark of
Linus Torvalds. All other marks are
the property of their respective
holders.