SPECTRA

DEEP STORAGE EXPERTS

nTier Verde: Simply Affordable File Storage

No previous storage experience required

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800-833-1132 • 303-449-6400 • (Fax) 303-939-8844 • 6285 Lookout Road • Boulder, CO 80301 USA SPECTRALOGIC.COM

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Abstract

It is an unfortunate fact of life that as technologies mature, they tend to become more complex. Over the years, additional technologies are developed to solve evolving problems. Rarely are older features or capabilities retired, as some portion of the install base continues to use them. While the new features and technology may have real benefit, products often evolve from simple to complex over years of development. nTier Verde disk brings robust features as well as simplicity.

Introduction

Storage systems, especially disk based ones, have seen this happen to them. Some disk systems support every possible connection protocol and cable type. Multiple advanced features start overlapping each other, all making it harder for both the users to manage the system and the manufacture to support.

Simplicity has to be built into a storage system from the ground up. To truly make a system simple to deploy, use and support, every decision during the development process has to have an eye toward simplicity. In this paper, we will look at why simplicity is important in a storage system and how Spectra designed Verde to be one of the simplest disk systems on the market today.

The Need for Simplicity

It is fairly well known that today's data center is one of exponential data growth, rapid change and flat budgets. Doing more with less doesn't just mean fewer hardware resources, but fewer people per server or TB of stored data. If budgets and personnel are not going to grow at the same rate as data, then we need to change the playing field. There are several advantages a simple, easy to use storage system will bring to an organization.

Installation

Historically many disk systems have been difficult to install, taking days to configure and format. There are several ways that a system that is simple and fast to install provides significant benefits.

Professional Services

Professional services can often be the difference between a great implementation of new systems and a poor one. They are most useful when integrating platforms and quickly bringing complex systems online. A simple and quick system to deploy, like Verde, allows PS budget to be focused on the area they bring the most value, not on basic system installation. Verde is designed to be installable by the customer, minimizing PS expense.

Quicker Install

Installation should be quick, not long and drawn out. Budgets are tight, and having to take several weeks to implement wastes valuable resources, both the new storage system and administrator's time. New systems are to solve problems. A lengthy install should not delay problem resolution.

Being able to put a new system into production quickly isn't only important at the initial install. It is also important when either reconfiguring the system or during disaster recovery (DR). We typically can plan our implementations, so if a system takes a week to install, it goes into the schedule. Disasters are a different matter. Since they are unplanned, and typically operations are adversely affected, being able to either reinstall the existing system, or install a replacement very quickly is very important.

Training

Complex, feature rich disk systems require a significant amount of training to manage. Training is expensive, and not just from a purchase perspective. Personnel are not as productive when they are learning a new complex system. A system simple enough to not require training will save time and allow administrators to be fully productive almost immediately.

Support

Installation and management of a storage system are important, but maintenance must not be forgotten. A system designed to be simple to use should also be simple to support. Everyone has experienced systems or items that seem overly complex, and hard to repair or support.

Simple, less complex things do not break as much. Extra features that are not useful for your deployment look great on a data sheet, but simply introduce more places that things can either be misconfigured, or bugs introduced. Fewer options and fewer lines of code create a robustness that is hard to achieve with a feature rich, complex system.

Never Lose Your Data

Simplicity does not happen by accident, it must be a design target from the beginning of development. Almost every aspect of a storage system must be looked at and every decision must consider the impact on making the system simple to use, deploy and support. A complex system cannot easily be made simple later in its lifecycle. The underlying architecture has to be built for it.

Rock Solid Hardware

Today, software defines most of the unique attributes of storage systems. Hardware still plays an important part in the system though, as it is not only what runs the software, but what the data is stored on. It is a given that the hardware needs to be reliable, but how does hardware help with simplicity?

It starts with minimizing options. Things that almost all systems will need should be standard. Things that most systems will not need should be eliminated.

Intuitive Interface

The simple truth of today's administrators is they are taking on more and more responsibilities. This means they can no longer be experts on all the systems they manage, and they should not have to be. If a system is targeted at specific use cases, the interface can be made easy enough to manage without any experience.

Software Ensures Ultimate Data Protection

Software is what makes most new storage systems unique. Over the last decade, a multitude of features have been developed for disk storage, mostly being software based. The temptation when developing a new system today is to include all of those features and capabilities, since they are "just" software. A simple system will only have the features or capabilities that are needed for the job it is designed for. This is often harder than it sounds, but pays large dividends when the system releases.

How nTier Verde Achieves True Simplicity

As Spectra was developing the next generation nTier, it became clear early on that to achieve the design goal of one of the easiest disk systems to use on the market we had to start with a clean sheet of paper. Nothing was left unturned.

Effortless Setup

A simple system should be user installable. nTier Verde was designed to allow administrators to install their own system, typically in under 30 minutes.

Quick Start Guide

Very few administrators read the User Guides and documentation before installing most IT gear. A simple Quick Start Guide makes it easy to get up and running without having to wade through a User Guide to find IP address and basic configuration information. The Quick Start Guide is a single page, front and back, that provides all the information needed to get Verde into production for the majority of installations.

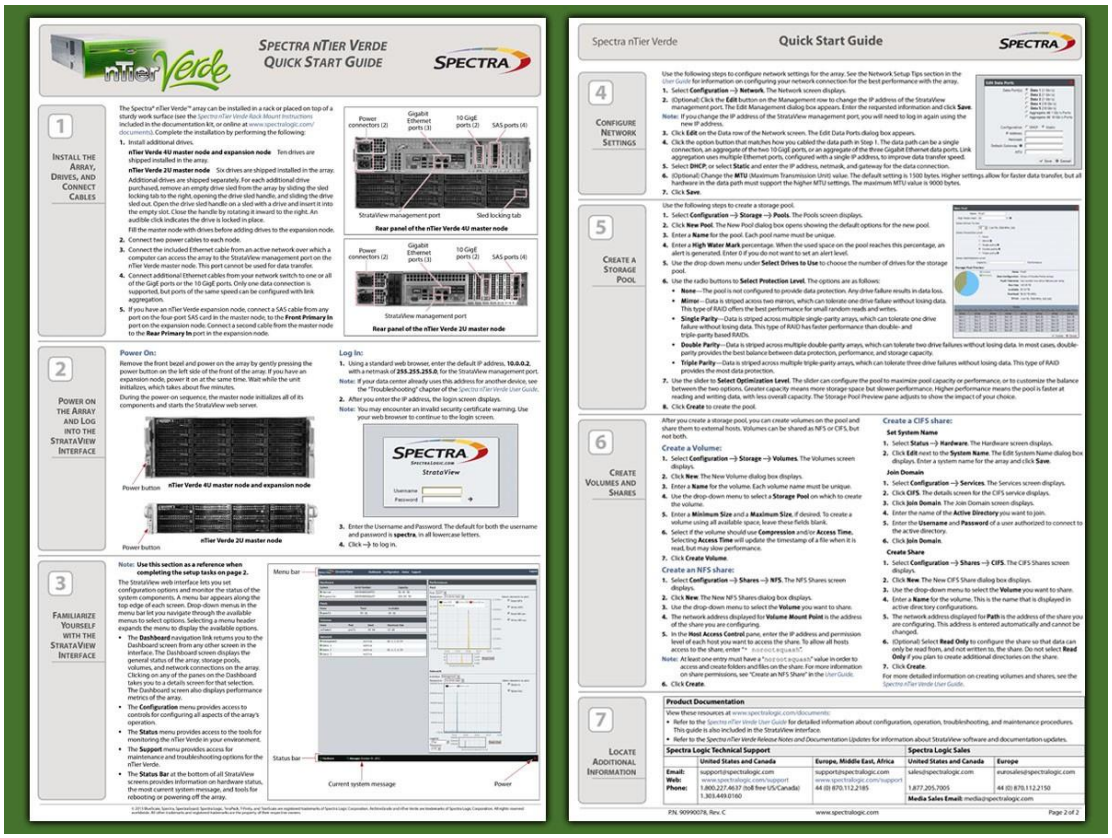

Figure 1: Quick Start Guide

FROM BOX TO PRODUCTION IN LESS THAN 30 MINUTES

Once in the rack, nTier Verde can be configured in four simple steps.

CONFIGURE THE NETWORK

The shipping IP address for the management network will have to be updated for the local network that Verde is installed on. An IP address also has to be configured for the data network port(s). DNS and SMTP addresses can also be configured at this time. If you will be using CIFS/SMB you will also want to join your domain while configuring the network.-

CREATE A POOL

Pools combine individual hard drives into a group. A pool defines the number of drives, parity level and stripe width. To learn more about pools, see the nTier Verde Architecture white paper.

Pool creation is very simple, with all of the hard work automated. Simply pick the number of drives and protection level. Then the optimization level can be adjusted

by the slider bar. The system will automatically adjust the width and depth of the stripe, displaying what the selected configuration will look like. Once the configuration is good, click create. The Pool is ready for use almost instantly.

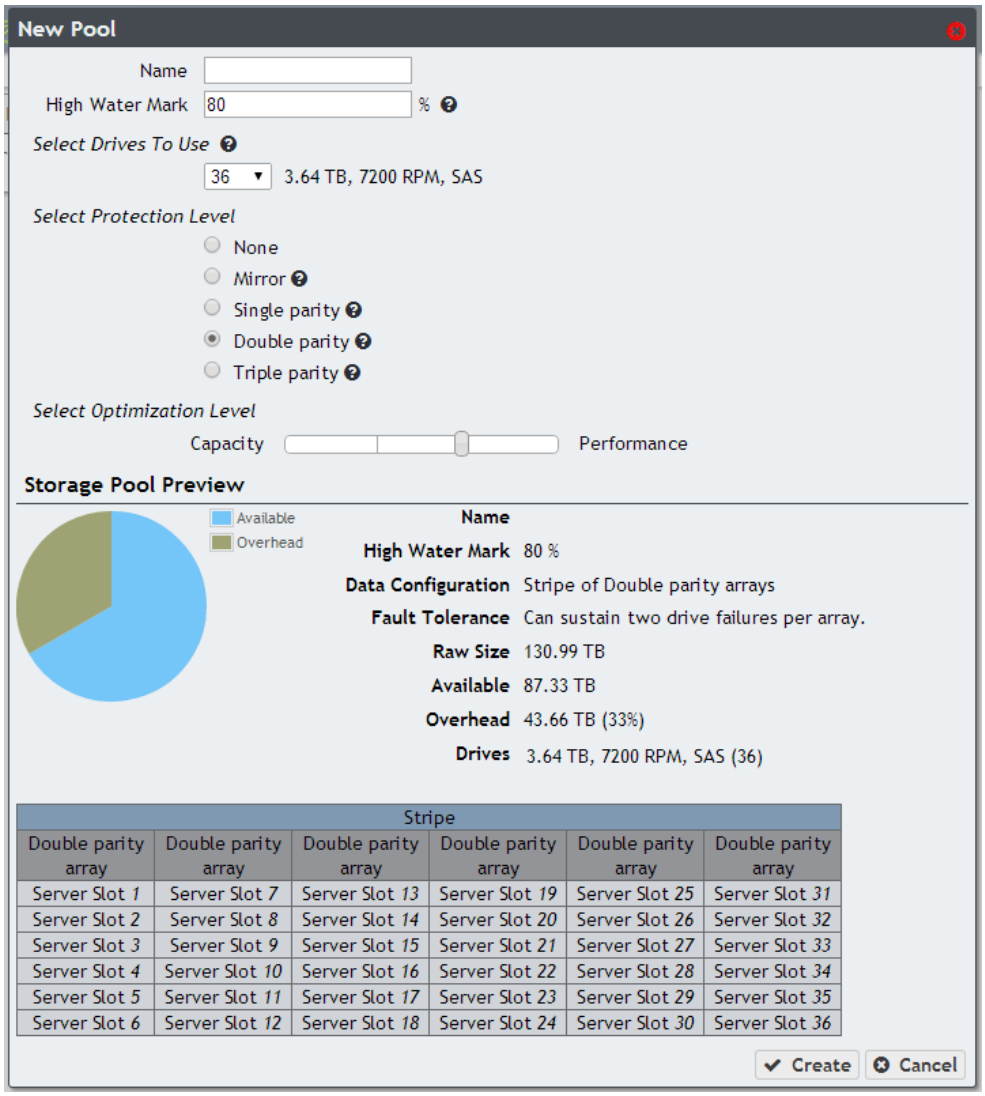

Figure 2: Pool Creation Screen

Create a Volume

Volumes on Verde are where the file system resides and are associated with a Storage Pool. They are thin provisioned, making setup quick and easy. Select a minimum and maximum size for the volume, if desired and create it.

Thin Provisioning: *[Storage System] A technology that allocates the physical capacity of a volume or file system as applications write data, rather than preallocating all the physical capacity at the time of provisioning.*[1]

Create a Share

The final step is creating a share. This could be CIFS or NFS. Either one can literally be created in seconds.

Intuitive User Interface

Verde is designed so it can be managed by someone that isn't a full time storage administrator. Management can be done with either the command line interface (CLI) or the web GUI. In typical deployments, the majority of systems will be administered via the GUI.

Dashboard

The Verde dashboard is the core of the interface. From this location, an administrator can see the systems current configuration, status and performance.

As with most interfaces, there is a menu structure to navigate to all the features and capabilities of Verde. However, recognizing the need for simplicity, most common tasks can be initiated directly from the dashboard. Click on any area on the dashboard to bring up the dialog or edit screen for it. From configuring the network to creating a new disk pool, it can all be done from the dashboard.

[1] SNIA Dictionary. http://snia.org/education/dictionary/t Accessed March 24, 2014

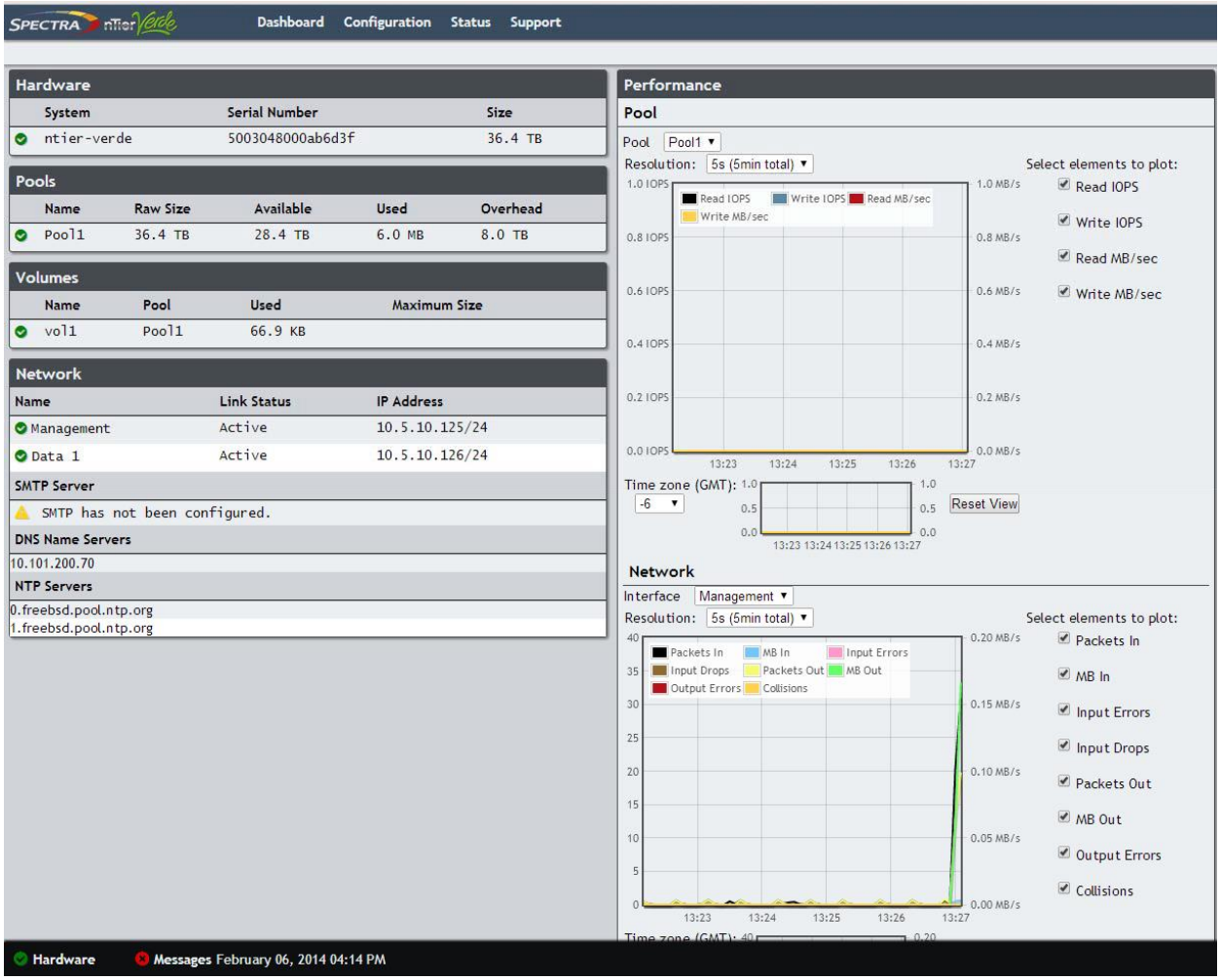

Figure 3: nTier Verde dashboard

Mobile User Interface

Given the mobile nature of today's administrator, being able to remotely check in on systems is important. Verde provides a simple smart phone compatible version of the interface. Verde detects it is being accessed from a browser on a mobile device and displays an optimized GUI. Any mobile browser will work with Verde. The mobile interface provides current system status and identifies failed components. It does not have the capability to configure new disk pools, volumes and shares.

Bringing up the GUI after getting an email alert of an issue will allow for quick diagnosis of issues. In the screen shot, the network icon is yellow, indicating a problem with the network. Clicking on it will take the administrator to the actual issue; in this case, the SMTP server is not configured.

Figure 4: Mobile Interface Home Screen

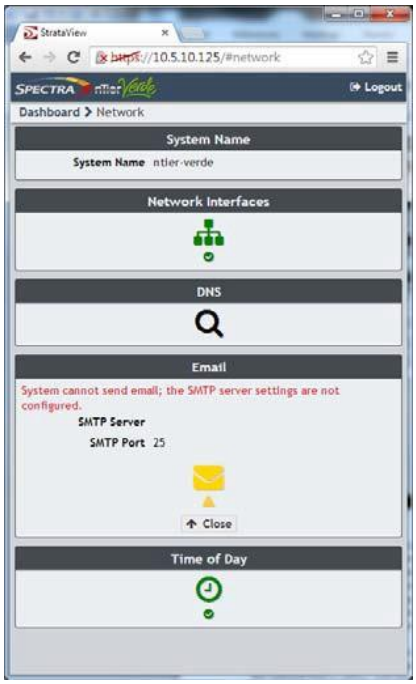

Figure 5: Mobile Interface Showing Error

File Storage made Simple

Simplicity is more than just the actual system; it is also about how it interacts with its environment. Verde's targets use case backup, archive and large file storage, Network Attached Storage (NAS) or file based storage as well.

File bases storage systems have several benefits over block based storage for these kinds of uses. NAS systems provide simpler access and scaling than block based storage systems.

Simple Access

NAS storage is universal in its ability to be accessed. Every major operating system in use today can access either a NFS or a CIFS/SMB share. Unlike a block based system, no special hardware or drivers are needed. More importantly, it is very easy to configure multiple clients to access the same data. Block storage does not allow the same storage or data to be accessed by multiple clients.

Fast Online Disk Management

Disk systems are typically expanded several times during their life span. Increasing the capacity of a block based system is typically a several step process.

Steps to expand space for block storage

1. Install additional drives
2. Create new disk pools or RAID groups
3. Export each LUN
4. Edit the zoning on the SAN switch
5. Mount new LUNs on each server
6. Format space
7. Update application to use new space
8. Verde is far easier to expand. The disk pool can add drives while the system is online. Steps to expand Verde
9. Install drives
10. Add drives to disk pool

If the volume(s) on the disk pool do not have a maximum size, then nothing else needs to be done. If the volume(s) do have a maximum size, then a 3rd step is to change the maximum size of the volume.

Thin provisioning allows the volume to continue to expand automatically. Since servers and applications access the storage through the share, they do not need updated when capacity is expanded.

Conclusion

Everything in the IT field is constantly changing, except the number of hours in a day. As organizations have to manage more applications, devices and data the systems and platforms they use must become simpler. A simple storage system saves time, money and can increase reliability. nTier Verde was designed from the beginning to be one of the easiest to use storage systems available.

Deep Storage Experts

Spectra Logic develops deep storage solutions that solve the problem of long term storage for business and technology professionals dealing with exponential data growth.

Dedicated solely to storage innovation for more than 35 years, Spectra Logic's uncompromising product and customer focus is proven by the largest information users in multiple vertical markets globally.

Spectra enables affordable, multi-decade data storage and access by creating new methods of managing information in all forms of deep storage—including archive, backup, cold storage, cloud, and private cloud.

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