

US AFB Implements ProtecTIER[™] — Cuts Backup Time by 50 Percent While Maximizing the Use of Existing Storage Resources

Business Need

Organizations performing services for the U.S. Government are held accountable for meeting strict standards as part of the services they provide. For members of this unit's infrastructure support team, that accountability extends to ensuring data under their care is routinely backed up and able to be restored at a moment's notice.

"When our contract is made, we are required to maintain a certain level of success in key areas. One thing was that backups must be done in the window we have available. We cannot fail," says the Storage Resource Manager for the Infrastructure Support Team.

"When we put the Diligent solution in place, we literally cut our backup time in half. That, right there, made us happy with this product. The ProtecTIER platform worked as well as anyone expected, and even exceeded our expectations."

— Storage Resource Manager,
US AFB

A US AFB unit serves a unique Department of Defense (DoD) function: The performance of sophisticated testing, modeling, simulation and analysis for the nation's ballistic missile and theater air defense programs. Managed by the Missile Defense Agency, this AFB maintains state-of-the-art modeling and simulation hardware and software systems. The unit's data center is supported by an IT organization under contract to the MDA.

Yet, ensuring the success of the support team's backup and restore mandate had become increasingly difficult for the administrators in the unit that is responsible for system administration and storage management for over 25TBs of application and file data related to several internal AFB clients.

Constrained by a shrinking overnight backup window, they had begun to find it harder and harder to complete incremental, nightly backups and full weekend backups. "Even with the best case scenario, just doing the math meant there was no way to stream that data from the servers involved in an overnight fashion," says the Storage Resource Manager. "If we'd had 80 drives to use, it would have been fine — but that just wasn't realistic."

Compounding the problem was the fact that more and more AFB employees had begun to work late into the night, which meant delaying the start of backup routines that could otherwise impact the availability of production systems and key SQL Server and Oracle databases.

One thing became clear: The team needed to look for new ways to help solve its mounting backup dilemma while building in the ability to accommodate future growth in its backup requirements.

The Support Team's Data Center and Backup Environment

The unit's multi-terabyte backup needs centered around a Microsoft Exchange database, several Web servers (many backed by an SQL Server or Oracle database), various Microsoft Office-related files, output files from simulations, analysis data and various multimedia files (MP3, video, etc.). Several operating systems were represented by the mix of servers supporting the AFB's computing requirements, including SGI IRIX, Sun Solaris, Linux and Windows 2000 and 2003. Data was stored within servers, on workstations and a mix of disk arrays from EMC, SGI and StorageTek.

The Diligent Solution

Engineers decided to address these growing backup and restore problems by deploying a new, director-class 4Gbps Fibre Channel fabric, a new IBM 3584 tape library with seven LTO-3 tape drives, and a virtual tape disk-to-disk solution using SATA drives. In choosing the virtual tape solution, the team worked with Ken Payne of Abba Technologies. One thing that sparked the team's interest was the proposed use of Diligent Technologies' unique ProtecTIER data protection platform with data de-duplication technology capable of shrinking the size of backup data on disk by as much as 25 times.

"When the team showed interest in the ProtecTIER concept, I told them what their options were for back-end disk storage," says Ken Payne. The support team liked the flexibility of being able to decide what type of back-end storage they could use with ProtecTIER.

Contrasting the benefits of a higher-end Fibre Channel array against the more economical use of some type of back-end SATA storage, Payne told members of the team that the issue really centered on the price-point they were trying to meet. "In the end, the driving factor for the design came down to the price-point. So, we decided to put ProtecTIER in with a medium-force Nexsan SATABoy, SATA back-end system, consisting of 4 arrays presenting 20TB of raw disk — in place of the higher-end arrays."

The benefits of this combined solution became immediately apparent. "When we put the ProtecTIER solution in place, we literally cut our backup time in half by writing to disk. That, right there, made us happy with the product," says the Storage Resource Manager.

In terms of the system's ability to shrink the size of backups stored on disk, the Storage Resource Manager notes he hasn't felt the need to track it down to the gigabyte level. This, in itself, has been a nice change from the hyper-focus he used to devote to compression rates in his tape environment. "I used to have to look at every detail and do studies about the compression ratios we could obtain. But, I just haven't had to do that with the ProtecTIER solution. I can now kind of prop my feet up, because we have so much free storage space left," he said.

US AFB Expectations Exceeded

The Storage Resource Manager believes that Diligent's ProtecTIER de-duplication technology is working — and in a very big way. "We are only using half the capacity of the SATA disks, as we speak. So, we can grow quite a bit before we run into any issues. It may be 2008 before we have to add any new disks to this setup."

"The ProtecTIER technology worked as well as anyone expected, and even exceeded our expectations," he says. The Storage Resource Manager notes this is no small feat, given the weekly backups going through the ProtecTIER platform and the Nexsan system, that now amount to roughly 15TBs per week and about 1-2TBs each night. More systems are also slated for backup migration to the ProtecTIER platform in the coming months.

The fact that disk is used predominantly in place of tape has also eased their tape maintenance burden considerably. "The solution really runs just like a tape drive, except so much faster. NetBackup treats it as just another robotic device with 10 to 14 drives. Unless I put my hands on it, all the stats look like I'm writing to a Quantum DLT7000, except it's a lot faster. It doesn't act any differently."

While tape is still in use, it now serves a different function in conjunction with the disk-based backups. "We keep daily backups on disk for two weeks and weekly full backups for three months," says the Storage Resource Manager, noting that backups on disk have led to not only faster backups, but much faster restores.

"For my team, we can back up anything, even a DAT drive with CD-ROM. But, can I put it back in a timely manner? That's really the key," he says. In terms of restore, he notes that restoring files for users now happens as fast as making a copy. "In the restore window, we just see the Diligent system saying, 'I need Backup Number 0000,' and it's done. The normal restore process before was to watch the robots find the tape, put it in the drive, forward to the correct file marker, then see the buffering where it's writing, idle, writing, idle. All of that has disappeared."

The team now uses Symantec NetBackup with Symantec Enterprise Vault to stream data stored via ProtecTIER, on disk, to tape, without impacting any production systems. Now, tape has become a fall-back position to faster disk in the team's data protection strategy.

Another welcome benefit to implementing ProtecTIER has been the higher level of user satisfaction. "Customers are happy when they call us. We don't talk like we used to about how restoring a file could take a while. Actual restores take about as long as it takes to talk to the customer and ensure we are putting the right file back," he said. "We're not only satisfying our customers now, but we're giving them more than they ask for, when we ask if they want the data back from the previous day."

The team now has no trouble meeting its nightly backup window, and knows it can also breathe easily about meeting the growing backup needs of its internal AFB clients. "We had to have something we thought could grow, and buy something we can use not just for today," he said. "Abba and the guys downstairs [engineers] found us a great solution that really works for our needs. It's good to be able to pat them on the back for a job well done."

Benefits of ProtecTIER

- Reduced backup time by 50%
- Enterprise-class performance: Offers in-line data de-duplication with sustained throughput of 250MBs
- Near instantaneous restores of user files
- Significantly reduced tape maintenance, tape monitoring functions and costs
- Reduced the amount of backup disk storage required by roughly 25 times
- Saved money by being able to invest in lower-cost SATA storage
- Postponed the need to acquire more backup-related disk storage for several years

If you would like to learn how the ProtecTIER data protection platform can benefit your business, contact Diligent at +1 508-663-1300, email info@diligent.com or visit us online at www.diligent.com.

175 Crossing Boulevard | Framingham, Massachusetts | 01702
508.683.1300 | 508.663.1399 fax | www.diligent.com

© Diligent Technologies Corporation. All rights reserved.

Any unauthorized duplication, distribution, transmission, publication, reproduction, sale or lease is a violation of applicable law.

Diligent Technologies logo VTF, ProtecTIER and HyperFactor are trademarks of Diligent Technologies Corporation. All other trademarks are the property of their respective owners.