

“Replay 4’s unique approach to the age-old problem of backups enables...rapid backups with little impact to client machines, plus rapid restore of files, applications, and individual hosts [which] makes it an excellent solution for small and medium enterprises who must focus on value-added activities over manual distractions.”

A recipient of Microsoft “Most Valuable Professional,” **Greg Shields** is a professional author, speaker, and IT consultant. With nearly 15 years in information technology, Greg has developed extensive experience in systems administration, engineering, and architecture specializing in Microsoft, remote application, and virtualization technologies. Greg is a Contributing Editor for TechNet Magazine, and is the author of six books, including *Windows Server 2008: What’s New / What’s Changed*. He is the Resident Editor for the Realtime Windows Server community and edits the *Windows Administration in Realtime eJournal*. He is well known for his skills in relating highly technical concepts with a drive towards fulfilling business needs. Greg is also a highly sought-after instructor and speaker, speaking regularly at conferences like TechMentor Events, and producing computer-based training curriculum for companies like CBT Nuggets.

AppAssure’s Replay 4: Protecting your Business’ Data from the Wobbly Chair

Protecting your business’ data is like a four-legged chair. On its first leg are your files and folders that require backing up. Being able to restore these individual pieces on command is a necessary and critical function of IT.

Yet files and folders are only one of that chair’s four legs. Some files actually represent collections of data, like databases and mailbox stores. Needed here is the ability to restore data from within the file. Maybe it’s a table in a SQL database, or a mailbox from an Exchange private store. A comprehensive backup solution must be able to quickly accomplish these tasks as well.

These two pieces represent the “data” in data protection, but any data is worthless without the applications that consume it. As a result, the third leg of that chair represents the backup and later restore of your servers along with

their suite of applications. Long considered backup's holy grail, bare-metal restores to a new physical or even virtual server can be a reality today with the right software.

And even these three scenarios don't fully prepare for the worst of situations: The Complete Disaster. Effective disaster recovery solutions need offsite replication along with push-button restoration of servers to quickly bring an entire environment back to production.

Coming up short in any of these parts results in a wobbly and uncomfortable chair, as well as a massive data protection problem for your business. But the problem in accomplishing all of these is that historically each required its own separate solution. One product for files and folders didn't work well for whole servers. Another for offsite replication couldn't necessarily do bare-metal restores. With traditional backups, these activities were accomplished separately because traditional backups are all about getting files on tape.

To get all of these capabilities in a single product, you need to rethink the fundamentals of how you do backups. You need a Backup 2.0 solution, one that gets past the limitations of a file-based focus. If you're a small or medium enterprise business, AppAssure's Replay 4 can be that all-in-one solution.

Backup 2.0: All about the Blocks

The segregation of these four activities is a necessity with last-generation backup solutions because these solutions focus on files. A traditional backup solution's goal is to transfer server files to an alternate storage medium such as tape for archival. This architecture works when files are the things that you need to restore. But it quickly breaks down when the focus of restoration elevates to applications or whole servers. If you've ever unsuccessfully attempted to restore an entire server from tape because of a single missing file, you know this pain.

Further, traditional backup solutions require the use of backup "jobs" to create a schedule and window for the backup activity. This job creation is necessary due again to the focus on files with traditional backup solutions. A particular time of day must be set aside to capture incremental changes in files since the last backup.

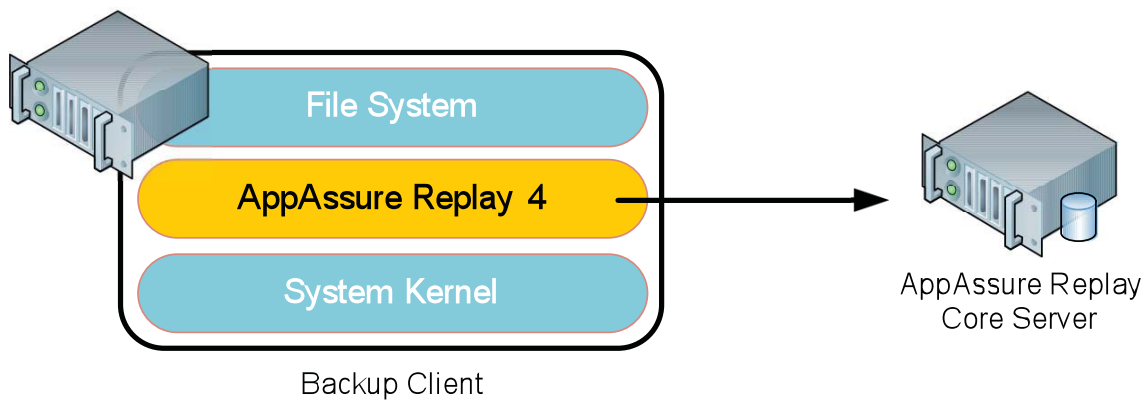


Figure 1: AppAssure Replay 4's agent sits between the file system and the kernel, transferring block-level changes to its central Core server.

AppAssure's Replay 4 solution takes a wholly different approach to how the backup is even captured. Rather than your classic "backup agent", Replay 4 instead installs a file system "shim" or "filter driver" to managed servers. This driver sits logically between that server's kernel and its file system (see Figure 1). From this vantage point, Replay 4's agent can watch each and every file system transaction as it happens. It then transfers that block-level metadata to a central server called a "Core Server" for storage.

By capturing an initial image of every server and then logging the incremental changes as they occur, Replay 4 keeps what amounts to near-continuous backups of your server. This continuous approach eliminates both the idea of the backup job as well as the traditional backup window.

You can imagine the implications of this completely different approach. Since Replay 4's agent captures and stores changes to a system as they occur, merging those block-level changes back together to make a restored file or server becomes trivial. Effectively, restoring a complete server is as simple as restoring an individual file. By setting Replay 4 to snapshot servers every 15 minutes, or every hour, you can now roll your entire IT infrastructure backwards and forwards in time at will.

Replay 4's backups are delta-based, meaning that only changes to a server are captured during each snapshot. Being captured at the block-level, server metadata can also be heavily compressed and de-duplicated as it is stored, resulting in a reduction of backup footprint by up to 80%. While not directly

tested for this review, AppAssure suggests that a full year's worth of backups for a single server might consume no more than twice its actual on-disk footprint. AppAssure best practices further suggest that either direct-attached or NAS storage provide acceptable throughput for their level of data transfer, which eliminates the need for an expensive SAN infrastructure. This is fundamentally impressive for a solution with the capacity of backing up every server every 15 minutes.

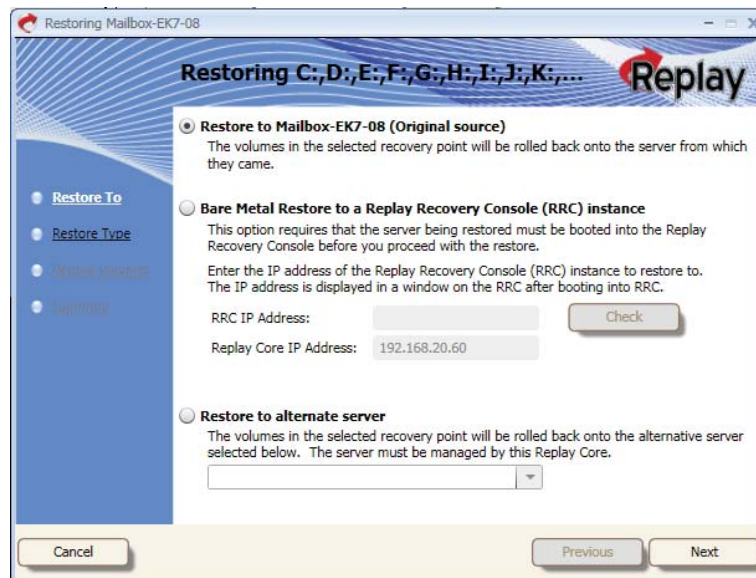


Figure 2: Restoring a full server within AppAssure's console.

Backup 2.0: All about the Apps

With its position wedged between the kernel and the file system, Replay 4 also gains some unique benefits in relation to applications. Your applications have special needs for their backups. Have you ever accidentally yanked the power plug out of your Exchange database? What happens? When you power on that Exchange server once again, you're immediately faced with a multi-hour downtime as the database verifies its consistency. That's essentially what you're doing every night when you use a traditional backup solution.

To combat this problem, many traditional solutions leverage the onboard Volume Shadow Copy Service (VSS) during the backup. VSS helps ensure that transactional applications like Exchange, SQL, and Active Directory are properly quiesced to ensure a clean backup. However, traditional backup solutions still use this method to backup an Exchange server's entire EDB file. If you need to

grab a single email out of that private store, you're stuck with restoring the entire database, mounting it elsewhere, and searching for the lost message. Do this more than a few times in a week, and you'll recognize the effort that's involved.

Contrast this with AppAssure's Replay 4. Here, changed blocks on that Exchange server are captured and stored to the Core system in a crash-consistent format as often as every few minutes. As a disk-to-disk backup solution, Replay 4 can automatically mount any of the previous snapshots and present it for retrieval. Built into its console are the tools necessary to search for individual messages or mailboxes, or even create custom queries to fulfill requests from e-discovery or compliance audits.

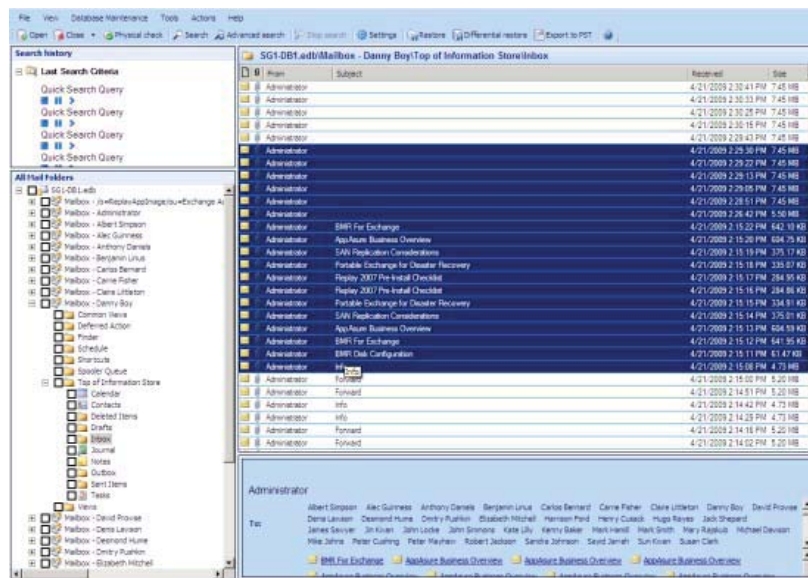


Figure 3: Restoring a single user's email from an Exchange backup.

SQL servers, Active Directory servers, and SharePoint servers are all supported in this release with Oracle server support to be released in a future version later this year. Each type of workload gets the same level of detailed restore capacity, from the individual piece of data, to the database file, or even the entire server.

Backup 2.0: Backups are Disaster Recovery

The Backup 2.0 mentality changes the options available for disaster recovery as well. Replay 4's delta-based approach and small disk footprint makes it a perfect candidate for offsite replication. Built right into its console (see Figure 4) is the

ability to create both physical and virtual standby servers, with the only requirements being available storage space and the networking to connect two Core servers together.

These features create some interesting possibilities for offsite recovery. At a connected offsite location, the state of each managed server is replicated during scheduled periods. After a disaster, those servers can be provisioned using the same methods as the earlier-mentioned bare-metal recovery: Transfer the files to the new server and power it on. Alternatively, servers in the recovery site can be automatically provisioned to become virtual machines atop a virtual infrastructure such as VMware's vSphere or Microsoft's Hyper-V. This capability means that far less hardware must be kept on-hand at the disaster site in case of a problem, further reducing your total cost of ownership.

If maintaining your own disaster recovery site isn't in your business' interest, replication to the cloud can be a valuable assistance. Replay 4 can run within a virtual machine that is hosted within a cloud-based hosting facility such as RackSpace, AppRiver, or Teramark. Once hosted and given enough storage, changes are then replicated to those locations as a protection against disaster or a secondary copy of the backups themselves. The result is offsite backups with the potential for a very quick spin-up to become offsite disaster recovery operations should the need arise.

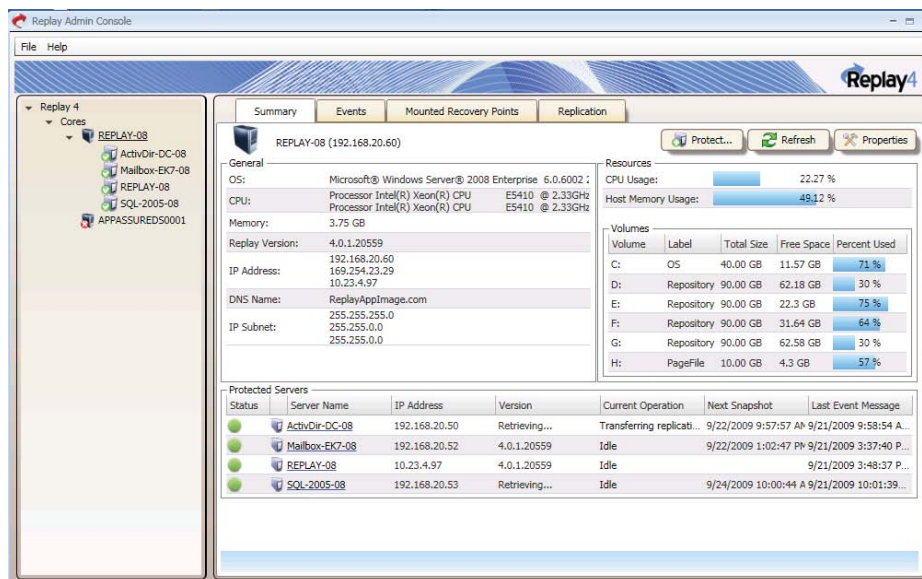


Figure 4: The AppAssure Replay 4 Console.

AppAssure Replay 4 Builds a Steady Chair

AppAssure's Replay 4's unique approach to the age-old problem of backups enables it to operate as all four legs of our otherwise-wobbly chair. Rapid backups with little impact to client machines plus rapid restore of files, applications, and individual hosts make it an excellent solution for small and medium enterprises who must focus on value-added activities over manual distractions.

Replay 4 is available in perpetual and subscription licenses and is priced on a per-managed server or desktop basis, with special discounts to businesses with administrators who have certified in their Backup 2.0 University certification program. More information on their products, their University program, as well as an informative e-book titled The Definitive Guide to Windows Application and Server Backup 2.0 by Don Jones can all be found at www.appassure.com.

~ Greg Shields, Founding Partner – Concentrated Technology