

# Solving the Challenges of Server Consolidation and Disaster Recovery with Acronis<sup>®</sup> Backup & Recovery<sup>™</sup> 10 Virtual Edition



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## Introduction

What impact does your choice of software have on your ability to carry out server consolidation and disaster recovery? It could have plenty.

If you're consolidating servers to lower IT costs, you should read this paper. And if you're concerned about your ability to carry out a disaster recovery within the tight timeframes today's virtual environments demand, you should read it. In this paper we introduce initiatives you can put into effect to survive and thrive in our virtualized world. Then we show how Acronis virtual solutions can save administration time, lower IT expenses and improve your ability to meet both RTO and RPO goals.

We'll discuss the value of a unified approach to server consolidation and virtual machine disaster recoveries and tell you how to get the keys you need to "drive" your own trial version of the finest data protection software available for virtual environments.

## Maximizing Server Consolidation

Virtualizing is fast becoming a way of life for the world's data centers. An October 2009 research report (ID number G00171730) from Gartner Group's VP and distinguished analyst Tom Bittman predicts that more than half of all data centers will virtualize some portion of their computing inventory by the end of 2012. Even though a newer survey on virtualization adoption published August, 2010 by InformationWeek suggests that Gartner's estimate for 2012 adoption of virtualization could be somewhat optimistic, virtualization is here to stay, occupying an increasingly large segment of data center server populations.

Virtualization's most visible cost benefit comes from the way it corrals physical server populations into much more manageable, less labor-intensive collections of virtual machines.



**Consolidation offers several further benefits, including:**

- Reduced downtime
- Improved disaster recovery
- Enhanced security
- Reduced networking and cabling costs
- Reduced server TCO
- Legacy environment re-hosting
- Reduced carbon footprint

Still, you have to spend time and money to achieve these goals. While many of the costs of virtualization are very visible – acquiring host server hardware, NAS or SAN storage, improved security and networking infrastructure and virtualization platform software – other not-so-obvious costs can cut into the benefits of virtualizing if not properly handled.

Let's look at some of the issues a consolidation effort is likely to reveal and discuss what you can do to solve them.

## Avoiding Frustrations and Hidden Costs

Building new virtual machines can take a lot of time, but it doesn't have to.



### Take the fast lane to server consolidation

A well-thought-out migration solution neatly bypasses the need for building each VM from scratch. Instead of installing the operating system, application or applications one after the other along with settings and system ID, you can supercharge the process by taking an image of the entire physical or virtual machine, and recover that machine to a virtual machine or multiple machines at once, knocking hours off the average time it once took to launch each machine.

Of course, no consolidation initiative is ever truly finished, and the software you use to virtualize your servers will continue to pay dividends, whether you're transitioning from a free virtual machine product to a paid one, moving from one virtualization platform to another, or reverting back to a physical machine when a virtualization effort is unsuccessful for any reason.

### Back up everything through a single pane of management glass

Virtualization can create backup headaches if it's not properly planned and executed. Look for an all-in-one approach that supports highly flexible migrations between physical and virtual environments as well as full data protection. Migrations, backups and – when they're needed – guaranteed recoveries of files, folders, whole systems or entire data centers, can be handled without the drama using a unified management tool.

### Get rid of unnecessary agents

You can avoid one big administrative headache up front if you avoid placing agents on every virtual machine you're backing up. Administering each individual VM server backup agent creates a workload that's at odds with virtualization's promise to simplify operations and reduce costs. Opt instead for agent-less backup; it requires just a single agent on the physical host to automatically discover a new VM when it's installed and manages its backup. You can easily add or subtract VMs on the host without having to keep track of what is being backed up and what is not.

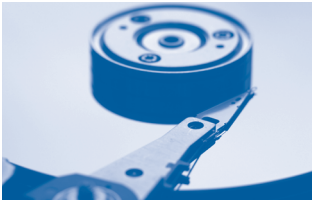
### Cut the cost of protecting each VM

One of the newest innovations in server consolidation is not technical or functional, but cost reduction. Now you can choose backup and recovery software that is licensed on a per-host basis, rather than paying for each VM you place on the host. This frees an administrator to place 15 or more VMs on a single host, limited only by the host's processor, memory and supporting disk storage. The cost of protecting each VM will fall every time another VM is added.

### Choose feature-rich virtualization products

Server consolidation requires a lot of planning for success, but success isn't just a measure of what you've consolidated. It's a measure of how much you can do to minimize administrative overhead. Why not choose a solution that automates as many repetitive tasks as possible while maximizing virtualization's promise?





For instance, automated backup reporting helps backup administrators uncover incidents like failed backups so they can be resolved before they cause a problem. Wizard-driven scheduling and policy-based retention make it easier to set up and apply backup policies for multiple systems simultaneously, and they reduce the potential for human error. Centralized management makes it possible to control all of your computing resources from a central console.

### Cut your data storage requirements

Backup can become more of a challenge as storage requirements invariably seem to climb in virtualized environments. Many third-party backup solutions aimed at virtual machine users lack tools like data deduplication, high-performance data compression and sophisticated synthetic full backups. Fortunately, there are solutions that use these tools to successfully address the issue of VM storage sprawl. Employing them can reduce storage by at least 50%, and often much more.

### Seek a solution for all the platforms in your server population

Most VM platforms offer the option of using their own no-frills backup/recovery software to get you started, but continuing with them may trap you into establishing a separate and parallel backup and recovery structure for each virtual platform you use. This approach complicates recoveries and increases administrative headaches.

If you still have a significant physical server population, where perhaps dedicated servers run major applications like Microsoft® Exchange™ or function as a domain controller, you will find that it's easier and safer to protect them with the same software that's protecting your virtual machines. While some third-party solutions have begun to address the issue of protecting both a specific virtual platform and physical servers from a single console, it is prudent to avoid those that lack the tools needed to efficiently manage a mixed environment. A full-featured solution can cost less in the long run by leveraging rich feature sets and high levels of automation to reduce or eliminate repetitive administrative tasks.

## Oxford School District



Oxford School District is one of Mississippi's 'High Performing' K-12 districts, with a National Blue Ribbon school and two Mississippi Department of Education award-winning Level 5 (Superior-Performing) schools among its three elementary schools, a middle school and a high school. To fulfill its commitment to first-in-class education, the district has used Acronis backup and recovery software to protect 32 servers in a mixed virtual/physical environment that represent eight terabytes of data.

Recently it augmented those purchases with Acronis® Backup & Recovery™ 10 Advanced Server Virtual Edition to take advantage of three additional features designed to save money without compromising performance:

- Agent-less backup to reduce administrative overhead
- Built-in data deduplication to cut data storage requirements
- Single-license price per physical server, supporting unlimited virtual machines

Oxford's network administrator virtualized a significant number of servers on a powerful Dell® 2950 Linux® server, among them the district's food service, Blackberry® and library servers, and he was impressed with the speed of the migration effort. In the case of the food service application server, the conversion, including transferring 85 GB worth of data, was done in 30 minutes. Moreover, by using the virtual edition version instead of buying two Acronis Backup & Recovery 10 Advanced Server licenses, the district halved, approximately, the purchase cost of protecting the virtual machines. As more virtual machines are added to the same host, the cost of protecting each virtual server will continue to fall.

Acronis also simplifies deployments. Take, for example, the time the school district replaced its student administration package. *"After building the server, we loaded the Acronis Backup & Recovery 10 plug-in and started running backups. It was so easy to configure Acronis and we had a backup completed in just 15 minutes,"* the network administrator says. Through the constant evolution of its IT environment, Acronis software remains a constant. *"Acronis is the most stable piece of software we have running now"* he adds.

## The Key to Dependable Disaster Recovery

Of course, virtualization is one of the most significant steps you can take to reduce IT costs, but virtualization itself can also enable swift disaster recoveries when used with the latest recovery software. Two of the most intriguing examples of how this can be done are active restore and instant restore.

**Active restore** is used for business-critical servers where functionality must be restored in under an hour, and frequently in under 15 minutes. Active restore recovers the functionality of a failed server in seconds on another virtual server. It recovers the operating system first and then restores files and folders in background. If user accesses a particular file, it queues that one first. This approach can save up to 95% compared to the traditional approach of rebuilding a machine and then restoring all the data before you can boot up the server.

Even more intriguing is **instant restore**, which takes only a few minutes to set up. Use this when seconds count for recovery. An administrator directs backup software to endlessly take live images of a mission-critical machine every fifteen minutes, automatically restoring them to a preconfigured, dedicated offline virtual machine which can be located anywhere. If the production machine fails, the administrator can instantly switch on the virtual machine for instant recovery of the lost application and all the data associated with it. The cost of setting up and maintaining this fallback device is trivial because it uses existing resources. Even better, it's several times less costly than traditional replication solutions that involve acquiring, powering and maintaining a physical machine.

## Take advantage of the cloud



Local backup and recovery software may allow you to recover from moderate problems such as a mistakenly deleted file, or from a server or workstation crash. But local backups won't protect you from the severe consequences of natural or manufactured disasters, like fire, flood or theft unless they're also stored offsite and available online.

Until recently, businesses have had to be willing to budget a significant sum of money to build an offsite data facility and buy high-speed communications links. But a combination of inexpensive, cloud-based storage and server virtualization has made off-site storage a more affordable component in a disaster recovery plan. When you combine newly-available, lower-cost cloud-based storage services and the speed of disk imaging, even small businesses can bounce back from a full-scale data center disaster (or anything less) without busting the budget. Here's what to look for:

- **Single user interface** for both virtual and physical machines. Specifying this will build in the flexibility your organization needs to recover to any platform that's available.
- **Time- and cost-saving features.** For example, agent-less backup can eliminate the administrative headache of assigning each virtual machine an agent before it can be backed up and protected. Data deduplication and file compression can be used in tandem to substantially reduce rising storage costs and shrink your data storage footprint.
- **Support for cloud-based offsite backups** of both virtual and physical machine images and individual files and folders.

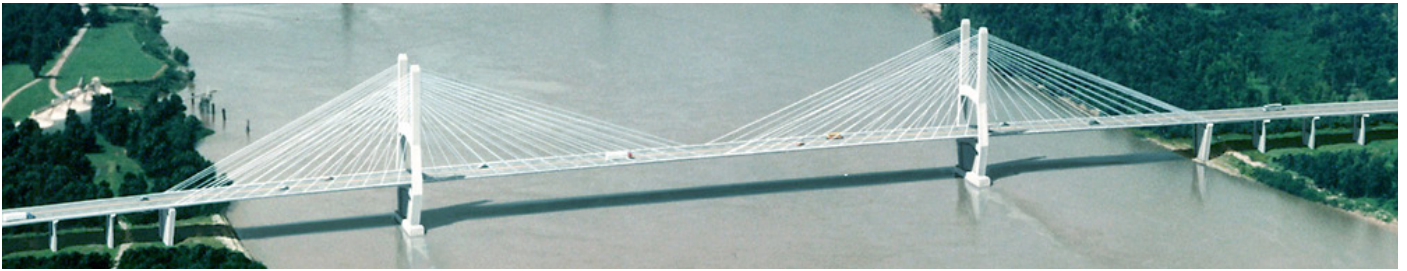
Combined, these capabilities provide the keys to efficient and cost-effective disaster recoveries.

When evaluating cloud services, decide how much you want to manage and how much you are willing to let the cloud services provider take over. Public clouds require you to do the integration work, and for many, that's a straightforward extension of what they would do anyway on the way to building a dedicated offsite recovery facility. Some public cloud providers offer add-on services to carry out the integration work, but the buyer is still responsible for making sure it all works. Private clouds deliver a turnkey solution, ideal if you want to leave the driving to someone else and can budget the money.



Security's important too. Look for a solution that fully protects backup data via AES-256 data encryption and user authentication. Large multiple-terabyte backups may take too long to transmit over a network to an online repository, so you may wish to consider an initial "seeding" option where the initial full backup is placed on a drive and sent to the physical cloud facility for uploading. From that point, incremental backups transmitted online to the offsite facility will keep the backups current. A similar "re-seeding" option is advised in cases where it's actually faster to ship big disks to the recovery point than to transmit multiple terabytes of data.

## Mississippi Department of Transportation



The Mississippi Department of Transportation (MDOT) plans, designs, and manages the state's transportation infrastructure, including more than 13,000 lane miles of state highways as well as transportation over water, air and rail. They use 300 servers to drive some of the nation's most advanced applications, ensuring swift and safe traffic flow. In 2009, the department launched a virtualization initiative to lower its hardware costs and improve overall hardware reliability.

MDOT purchased **Acronis Backup & Recovery 10 Advanced Server Virtual Edition** to take advantage of a unique pair of features. First, it eliminates a requirement to place backup agents on each of many VMs before they can be backed up. A single host agent manages the backup tasks of all VMs automatically. *"Upgrading agents has always been time consuming,"* says the department's Information Systems Administrator. *"We currently have about 14 VMs on a single host at any given time, and all of them are run by one agent. That represents only one upgrade versus 14, and when we save time, we save money. With Acronis agent-less backup, it's one less thing you rely on the server operating system to do. In fact it's totally transparent to the operating system."* While the department has not suffered from any disasters since installing Acronis, it has regularly used Acronis images to restore machines and pull files. Second, it leverages the product's pricing support for an unlimited number of VMs on a physical host for a single physical host license. With about 14 servers on each host, this translates into an approximate 90% savings over supporting the same number of VMs with Acronis' regular advanced server solution.

Acronis disk imaging technology has also cut physical-to-virtual server transitions from several hours to under an hour, saving approximately 80% of the time it would have taken to manually carry out the process. By mid 2009, newly available Acronis management tools like centralized management and automated reporting further reduced the time it took to carry out each physical-to-virtual migration to about 15 minutes. By late summer 2010, the virtual server count had climbed to 125. The department was on track to enter the new year with 200 virtualized servers of the department-wide total of 300 machines.

### Where IT organizations can go for help

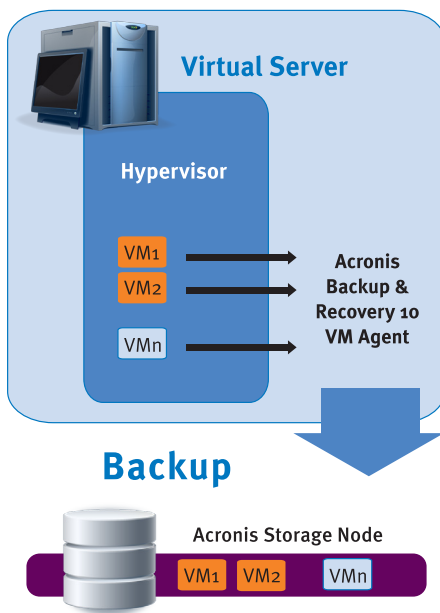
Virtualisatie biedt zoveel voordelen, en het kiezen van de correcte software voor back-up en herstel voor uw consolidatie- en herstelbehoeften, bepaalt de mate van bescherming. Daarom raden wij Acronis Backup & Recovery 10 Advanced Server Virtual Edition aan. Dit product voldoet aan de meest kritieke eisen m.b.t. een succesvolle consolidatie en beschermt al uw virtuele apparaten.

### Acronis Backup & Recovery 10 Advanced Server Virtual Edition Server consolidation and disaster recovery in one package

Acronis serves both virtualization and data protection initiatives in a single solution. It is a fully integrated package that simplifies administration and lowers the cost of building and managing Windows and Linux servers.



## Server consolidation for maximum results



Bare-bones tools included in virtual platform products can get your consolidation effort off the ground, but their limited functionality can stretch your timeline for completion to unreasonable lengths. Acronis keeps you flying with:

- **Fast, error-free migrations between** physical and virtual machines, using Acronis patented disk image technology that has migrated vast numbers of servers worldwide
- **Agent-less backup** that dramatically lowers ongoing administration costs
- **One flat price per host** that saves 50% – 95% of the cost of protecting each virtual machine
- **Massive storage and network bandwidth reductions** with industry-leading data deduplication and file compression tools capable of reducing storage requirements by 50% – 90%
- **Support and Certification for the widest array of hypervisors** in one product

## Disaster Recovery you can depend on

IT organizations also consolidate servers to achieve more flexible, faster disaster recoveries. For several years, Acronis has concentrated exclusively on building and refining a product line that offers:

- **More protection.** Acronis patented disk imaging technology is your best choice for backup and disaster recovery. Storage Magazine calls Acronis “the new king of midrange backup applications” in its June 2010 issue.
- **More options.** Recover not only to another virtual machine, but also to any physical hardware using the Acronis® Universal Restore™ feature
- **Better recovery time objectives (RTO)** by leveraging a stand-by virtual machine to recover instantly– using the Instant Recovery feature
- **More flexible recovery point objectives (RPO)** with the ability to recover the whole VM or just specific files from the VM
- **Reduced cost of ownership.** Acronis protects physical, virtual and cloud-based resources through a single pane of management glass, eliminating the need for parallel, duplicate disaster recovery solutions.
- **VMware Ready® protection.** Our commitment to data protection and our deep virtualization expertise made Acronis one of the first disk-imaging based companies to be awarded VMware Ready status by VMware, Inc.

## The value of agent-less backup

Acronis reduces administrative overhead with agent-less backup technology for VMware and Microsoft VM environments.

For VMware installations, one Acronis agent is loaded in its own virtual environment on a physical host capable of supporting a potentially unlimited number of virtual machines. For Microsoft Hyper-V environments, a single agent is installed on the physical server. In both cases, no additional agents are installed in the VMs themselves. Instead, the host server’s agent executes and manages the backup process for all hosted VMs.

After the agent takes an image of a virtual machine, it moves the backup onto an Acronis storage node on the network and backs it up there. This eliminates performance slowdowns that occur when physical host servers are saddled with backup duties.

### Acronis provides the most consistent and manageable solution for mixed server environments.

- A completely consistent management interface applies across all servers. Administrators reap a host of benefits when they take advantage of Acronis Backup & Recovery 10's ability to support server consolidations and recover from disasters.
- One console manages all your machines.
- High flexibility. Administrators can:
  1. migrate from one VM platform to another
  2. restore a VM as a physical machine
  3. back up a physical machine and restore it as a virtual machine
- Intuitive user interface has been designed, refined and applauded by customers and reviewers over generations of development. Administrators can be productive immediately, and even a novice can restore a failed server or recover files and folders using a truly user-friendly, wizard-driven interface.
- VMware vCenter synchronization to reduce management time.
- The same backup process applies to all Windows and Linux machines in all of their physical or virtual forms.
- VMs with common backup requirements may be managed holistically by setting group policies.

### Efficient data storage

Acronis combines two technologies to create one of the industry's most complete approaches to data storage efficiency. It begins with some of the industry's highest-performing file compression algorithms to create more efficient storage without sacrificing recovery flexibility. And it offers integrated data deduplication to further reduce the amount of data backed up. Administrators can choose whether to deduplicate at the source or target, depending on their needs.

Because Acronis® Deduplication is a software-only product, it bypasses the need for costly proprietary hardware. Instead it runs on inexpensive commodity hardware you may already have in house. Acronis offers a choice of backup consolidation schemas known in the industry as "synthetic full backups" and "incrementals forever backups." The question of whether to carry out source or target deduplication becomes less critical because network traffic is minimized after the first full backup.

Finally, Acronis integrates deduplication functionality with protection for servers and workstations, so a machine failure will never force IT administrators to carry out a time-consuming manual rebuild before the data can be restored. Instead the failed machine can be recovered in the space of a few minutes from a disk image.

### Extensive recovery options

Acronis Backup & Recovery 10 offers extensive, easily administered recovery options, whether you're recovering a complete VM or a single file. You may restore a machine from an archive or to a physical server without concern for the hardware configuration by using a popular option, Acronis Universal Restore. Moreover, Acronis was one of the first data protection companies to offer a choice between active restore, where the machine is recovered in minutes while the data is recovered in a user-transparent background process, and instant recovery, in which a standby virtual machine – a virtual copy of the original – can be turned on instantly, complete with all of its data intact.

## Conclusion

The more significant your virtualization effort, the more it pays to address implementation issues surrounding server consolidation and disaster recovery as soon as you can. Whether you are responsible for just a few machines or thousands, Acronis is the key to maximizing your virtualization investment.

## Try it yourself!

Please take advantage of the many available resources for Acronis® Backup & Recovery™ 10 Advanced Server Virtual Edition, including a full-function trial version you can download in minutes:

**Test drive** Acronis® Backup & Recovery™ 10 Virtual Edition at  
<http://www.acronis.com/enterprise/download/backup-recovery/advanced-server-virtual/>

**Visit** the Acronis website for more information on deduplication with Acronis® Backup & Recovery™ 10 Virtual Edition.  
<http://www.acronis.com/backup-recovery/advanced-server-virtual/>

**For more information**, please contact your reseller or send an email to [sales@acronis.com](mailto:sales@acronis.com)



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