



## A Better Approach to Backup and Bare-Metal Restore: Disk Imaging Technology

**Acronis True Image Enterprise Server** *for Windows*

**Acronis True Image Server** *for Windows*

**Acronis True Image Server** *for Linux*

## In This Paper

<b>Backup and Bare Metal–Restore Challenges</b>	<b>.3</b>
<b>How the Acronis Solution Works</b>	<b>.4</b>
<b>Product Features and Benefits</b>	<b>.5</b>
<b>Product Usage Scenarios</b>	<b>.7</b>
<b>Conclusion</b>	<b>.8</b>

# Backup and Bare-Metal Restore Challenges

Enterprises understand the importance of business continuity because downtime costs lots of money. With downtime costing the average enterprise more than \$1 million per hour, according to a widely respected report, the ROI for backup protection can be counted in minutes and seconds, not in years.

Make no mistake about it: Downtime can be hazardous to your organization's financial health. While energy and telecommunications providers have the most to lose from downtime — with potential hourly losses climbing into the multimillion-dollar range, as Table 1 shows — just about every type of company, from small to large, feels the impact of data loss due to downtime.

Industry	Lost Revenue / Hour	Lost Revenue / Employee
Energy	\$2,817,846	\$569
Telecom	\$2,066,245	\$187
Manufacturing	\$1,610,654	\$134
Finance/Brokerage	\$1,495,134	\$1,080
IT	\$1,344,461	\$184
Insurance	\$1,202,444	\$371
Retail	\$1,107,274	\$244
Pharmaceuticals	\$1,082,252	\$168
Banking	\$996,802	\$131
Food Processing	\$804,192	\$153
Consumer	\$785,719	\$128
Chemicals	\$704,101	\$195
Average	\$1,010,536	\$206

**TABLE 1. THE COST OF DOWNTIME**

\$1M in lost revenue per hour on average

Source: IT Performance Engineering & Measurement Strategies: Quantifying Performance Loss, Meta Group

Moreover, consider the nightmare IT departments face when rebuilding a server's operating environment from scratch after a disk drive failure or other disaster has left the operating system unresponsive. IT personnel have to reload the operating system itself, and install all the associated patches and upgrades. But first, of course, they have to collect all the software, registration codes and serial numbers. This task alone can take days even before they start configuring the system.

Acronis has a solution for this problem — Acronis True Image Enterprise Server and the Acronis True Image Server. These solutions enable enterprises to get up and running more quickly than traditional file-based restore methods after a systems failure, saving time and ultimately saving money. The solutions do this by approaching backup and restoration in a different way from file-based methods, by creating a disk image.

# How the Acronis Solution Works

Acronis uses disk imaging to backup server disks. The product views the hard drive as a group of sectors. Instead of copying individual files, the software backs up all the sectors on the hard drive that contain data, creating an exact image of the hard drive. Because the product creates a backup at the disk sector level, it can backup everything on the drive, including user accessible data as well as open Windows files, system files, the master boot record (MBR), partition tables and any partition-based boot records. Traditional file-based backup methods generally do not see these files.

## Calculating Downtime

Just how much revenue would your company lose if your systems were down and you can't process customer orders? Here's help calculating those losses:

- Multiply the average hourly revenue by the number of hours needed to recover.
- What is the cost of lost productivity?  
In calculating lost productivity, consider the payroll, taxes, benefits and overtime for recovery, then multiply by the number of employees from all affected business units.
- What is the value of IT employee productivity lost while trying to resolve the problem?  
Use this for considering the costs associated with the IT employees reassigned to reconstruct and recover the data and systems.
- How much inventory will be lost or spoiled, and how much will it cost to recover or rebalance manufacturing processes?  
When calculating this figure, consider materials and labor for handling, rework and/or disposal.
- What fines, fees and/or compensatory payments will you have to pay?  
These include the fiscal impact of breach of contract, regulatory fines, late-shipment or late-payment and attorney fees.
- Add the costs of sales and marketing campaigns required to recover revenues, lost customer loyalty, reputation and goodwill.
- Finally, add the costs of legal, health, safety or liability exposures your company will face.

**You might well be surprised by the total!**

Disk imaging is the fastest way to restore a down system because it eliminates reinstallation. An IT manager can get the system back in a known, running state in minutes, not hours or days.

Today there is simply no excuse for not having an exact image of your server's hard disks, configured exactly as you like it with all of your programs and data, configuration files and software patches, standing by in case of a disaster — large or small.

Let's take a look at the amount of time it would take to backup and restore a system using a traditional file-based system versus Acronis True Image. Table 2 provides an overview of this scenario.

Table 2: File-Based Backup versus Acronis True Image<sup>1</sup>

File-Based Backup	Time in Seconds	Acronis True Image	Time in Seconds
Backup non-system disk (no compression selected)	<b>140</b>	Create image of non-system disk (no compression selected)	<b>30</b>
Backup of system disk (no compression selected)	<b>158</b>	Create image of system disk (no compression selected)	<b>26</b>
Restore system (including going through the Windows recovery process, restoration of the non-system disk, and rebooting after the restore)	<b>920</b>	Restore system disk (including rebooting Acronis from Windows, restoring and rebooting to Windows)	<b>163</b>

<sup>1</sup> Tests were run internally in the Acronis QA lab using the same hardware and a clean Windows install.

Backup using a traditional file-based method takes 5 times longer than using Acronis True Image and restoring a system takes almost 6 times longer. Ultimately, file-based backup and restore methods cost your business more money because they lead to more downtime.

# Product Features and Benefits

The product includes many features that simplify task of backup and restoration of servers, without requiring a new software or hardware investment. It can also be used for deployment of new servers. Below is a detailed feature and benefit list for the solution.

BENEFIT	FEATURE
<b>Ensure business continuity and worker productivity</b>	<b>Database and application consistency (New)<sup>2</sup></b> – Start batch file before and after creating point-in-time snapshot of system. Ensures databases and applications (like SQL and Exchange) are backed up with no inconsistencies No reboot – Backup while servers are running, without requiring a reboot
<b>Fastest restoration time</b>	Disk imaging – Create and restore a system from an image of an entire hard drive. Creating and restoring a system from an image is faster than file-based solutions Recovery Manager – Launch restoration by hitting F11 to restore without bootable media
<b>No reinstallation of operating system, databases, configuration files, and applications to restore a system; no need to locate and install product key numbers, serial numbers or registration codes</b>	Whole system restoration – Backup image contains everything the system needs to run
<b>Setup complete backup policy, for system and non-system files</b>	Incremental backup – Create image of sectors that have changed since the last backup
<b>Restore specific damaged files</b>	File restoration – Mount backup image as virtual drive to explore files
<b>Save space on the backup servers</b>	Image compression
<b>Restore systems without having to match the failed system hard drive</b>	Resize partitions – Increase or decrease disk partition size of a restored image automatically or manually
<b>Maximize server performance during backup</b>	CPU allocation <sup>3</sup> – Enables IT staff to limit the amount of CPU usage for the application
<b>Automation of backup tasks</b>	Scheduling – Schedule backup events Script support, including the ability to create custom scripts
<b>Streamlined application management by eliminating local management</b>	<b>Remote restore (New)<sup>4</sup></b> – Restore systems remotely from the management console Central management console <sup>5</sup> – Deploy product to remote machines and manage backup tasks remotely. It is integrated with Acronis True Image Corporate Workstation and can also be used to deploy the product and manage backup tasks of desktop PCs and laptops in the network <sup>6</sup> . Notifications – Request notification of backup results via email or Windows pop-up Image across domains and workgroups <sup>5</sup> – Connect to and backup all servers in the organization, regardless of the network or domain structure
<b>Ensure 24 x 7 uptime</b>	Cluster and dynamic disk support
<b>Fast deployment of new systems, according to company standards</b>	Disk cloning
<b>Return a system to specific a point-in-time</b>	Backup logs – View a history of all backups
<b>Easy to use, requiring minimal user training</b>	Wizard-driven Graphical User Interface (GUI)
<b>Leverage existing hardware and software investments</b>	<b>Backup server (New)<sup>5</sup></b> – Save backup images to remote tape drive Supports all Microsoft Windows server and desktop operating systems <sup>6</sup> Supports the following Linux server operating systems <sup>7</sup> : Red Hat 7.3, 8.0, 9.0/Advanced Server 2.1, 3.0, Fedora Core 1/Fedora Core 2, Advanced Server 3.0/Enterprise Server 3.0, SuSE 8.0, 8.1, 8.2, 9.0, 9.1, Mandrake 8.0, 9.2, 10.0, 10.1, Slackware 10, Debian stable and unstable (sarge), Gentoo, UnitedLinux 1.0 Supports current back-up technologies <ul style="list-style-type: none"> <li>• Direct Attached Storage (DAS)</li> <li>• Redundant Arrays of Independent Disks (RAID)</li> <li>• Tapes with support for Small Computer System Interface (SCSI) and ATA Packet Interface (ATAPI)</li> <li>• Network drives with support for the Server Message Block (SMB) and the Network File System (NFS<sup>8</sup>)</li> <li>• Universal Serial Bus (USB) and IEEE-1394 (FireWire) storage devices</li> <li>• CD-R/RW, DVD-R/RW</li> <li>• Removable drives (Floppy, Zip, etc.)</li> </ul> Acronis Secure Zone – Save backup image to a special partition, hidden from the operating system. This is ideal for businesses without storage infrastructure because storage media is not required for backup

<sup>2</sup> Only available in Acronis True Image Enterprise Server

<sup>3</sup> Only available in Acronis True Image Enterprise Server and Acronis True Image Server for Windows

<sup>4</sup> Remote restore of non-system partitions only

<sup>5</sup> Only available in the Acronis True Image Enterprise Server product

<sup>6</sup> License for Acronis True Image Corporate Workstation is required to backup desktop PCs and laptops. License for Acronis True Image Enterprise Server or Acronis True Image Server is required to backup Windows servers.

<sup>7</sup> License for Acronis True Image Server for Linux required to backup Linux machines

<sup>8</sup> NFS support is only available in Acronis True Image Server for Linux

# Product Usage Scenarios

The server product can be used in a number of ways by itself or in conjunction with Acronis True Image Corporate Workstation to backup and restore an entire business environment. The following are examples of how the product can be used.

## Scenario 1: Perform a Bare-Metal Restore

A business has lost an entire server and it needs to be replaced with a new server. This usually involves building a system disk from scratch — an unformatted hard drive without an operating system. It is the worst-case scenario for an IT administrator. Acronis True Image Servers are ideal tools for this. The IT administrator has been using Acronis True Image to backup the failed server. He uses the latest backup image to restore the system — including the operating system, databases, and configuration settings, as well as data files and is up and running without reinstallation or configuration.

## Scenario 2: Backup and Recovery of a Business Running Multiple Operating Systems

A small business is using 2 servers to run mission critical applications. One server is running Linux and the other server is running Windows. The company is seeking a backup and restore solution that can backup all servers and restore systems without requiring a manual reinstallation of the operating system, patches, upgrades, and applications. The company purchases 1 license of Acronis True Image Server for Windows and 1 license of Acronis True Image Server for Linux, ensuring that business can continue, even in the event of a failure.

## Scenario 3: Backup of Windows Data Center

A business is using 10 servers all running Windows. The servers are split into 2 data centers, with each location holding 5 servers. The company is seeking a solution that can backup and restore all 10 servers from the system administrator's desk. The company purchases 10 licenses of Acronis True Image Enterprise Server for Windows. The system administrator installs the Acronis Management Console on his desktop PC to administer all backup tasks and remotely installs agents on each of the 10 servers, managing the entire operation from his office.

## Scenario 4: Backup of an Entire Network

A business is running 5 servers in a data center and has 50 employees, each with a desktop PC or laptop. The business is looking for a solution that can backup and restore all servers and desktops from 1 system, as 1 IT staff member is responsible for ensuring that business can continue, even in the event of systems failure. The business purchases 5 licenses of Acronis True Image Enterprise Server for Windows and 50 licenses of Acronis True Image Corporate Workstation. The IT staff member installs the Acronis management console on his desktop PC and remotely installs agents on all the servers and workstations in the company.

## Scenario 5: Upgrade the Operating System of a Server Cluster

A business is running a cluster of 6 servers for redundancy and has decided to upgrade the servers to Windows 2003 Server. The business is seeking a solution that can clone disks, enabling IT staff to quickly upgrade the cluster environment. The business purchases 6 licenses of Acronis True Image Server for Windows. The IT staff member upgrades 1 system in the cluster and clones the system. The IT staff member applies the clone to the 5 other servers in the cluster, avoiding the manual task of upgrading all 6 servers.

## Conclusion

Enterprises need a backup and restore solution that can get business up and running as quickly as possible because downtime is so costly. Acronis True Image Enterprise Server and Acronis True Image Server, using disk imaging technology provides the fastest method to restore failed enterprise systems. With the product's easy-to-use intuitive interface, streamlined management capabilities, and whole system backup and restoration features, IT staff can minimize downtime, ultimately saving costs.

To find out more about

Acronis True Image Server products:

Call +1 877 669-9749 E-mail [sales@acronis.com](mailto:sales@acronis.com)

For distribution, OEM and reseller inquiries:

Call +1 650 875-7593 E-mail [channel@acronis.com](mailto:channel@acronis.com)

