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Ace Data Recovery

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Nothing strikes fear in the heart of a corporate executive as much as the loss of some or all of his business' data, whether it is via a hard-disk failure, a crashed RAID array, or data tucked "safely" away in the cloud. Fortunately, to offer help in these situations are many companies that strive to recover data from damaged media. One of the largest of these companies is Ace Data Recovery (http://www.datarecovery.net).

Ace will attempt to recover data from hard disks, RAID arrays, solid-state drives (SSDs), tape, mobile devices, and cloud environments, among others. A Microsoft Registered Partner, Ace is qualified to recover lost data from Microsoft Exchange and Microsoft SQL databases.

In business for thirty years, Ace has locations all over the United States. Four of these locations (Dallas/Fort Worth, Texas (its headquarters); Houston, Texas; Falls Church, Virginia; and Chicago, Illinois) are equipped with state of the art clean rooms. These sites include Class 100 and Class 10 clean rooms (less than 100 particles exceeding 0.5 microns per cubic foot or less than 10 particles exceeding 0.5 microns per cubic foot, respectively). Clean rooms are an imperative for recovering data from hard drives as a tiny particle under the disk head can scratch the disk.

Ace maintains twenty-five other locations around the U.S. that can service local customers. These locations arrange for damaged media to be shipped to a location with a clean room if necessary.

Ace performs all recovery operations on a clone of the damaged media to prevent further damage to the media or modification of the original data. The typical time for hard-disk recovery is three to five business days, though difficult restorations may take longer. Ace provides a 24/7/365 critical response data recovery service if time is of the essence.

Ace provides a free diagnostic evaluation for a single media. This results in an all-inclusive fixed price that will not increase. Ace also offers a "no data – no charge" guarantee. If it cannot recover any data, there is no charge.

Do's and Do Not's

Ace posts a useful list of do's and do not's on its web site at http://www.datarecovery.net/data-recovery-tips.html. Prior to attempting any action on a damaged storage medium, this list should be consulted. For instance:

Do's

DO back up your data early and often. It's not if, it's when.

DO try to slave your drive into a working system to check for readiness and file system integrity.

DO make a copy of a SQL database and log files to an alternate physical drive before you do anything.

Do Not's

Do NOT open your hard drive and expose the media.

DO NOT continue to power cycle a clicking or non-responsive drive; it's not going work for you and may make the drive unrecoverable.

DO NOT try to rebuild a RAID array unless you know exactly which drives failed, why they failed, and most importantly, WHEN they failed.

DO NOT make a backup of a SQL database to the same drive.

DO NOT try to defragment a Microsoft Exchange data store if mail server(s) were not brought offline properly.

Data Recovery – Hard Drives

Hard drives can exhibit any one of multiple failure modes, including:

- Unable to boot
- Accidental deletion of data
- Inaccessible drives or partitions
- Unable to run or load data
- Data corrupted
- Hard drive failure
- Hard drive crashes
- Fire and water damage
- Surface contamination and damage
- Virus attacks

When working on hard drives that must be disassembled, it is imperative that this be done in a clean room.

Ace can recover data from a full range of hard disk drives and operating systems. Disk drives include the following hard-drive assemblies:

IDE	SAS
EIDE	SCSI
STAT	

Operating systems include, but are not limited to:

Windows	DOS	VMware
MAC OS	UNIX (select families)	Novell
Linux		

Drives from multiple manufactures can be recovered. Manufactures handled by Ace include, but are not limited to:

Western Digital	Seagate	Samsung
Maxtor	Toshiba	IBM
Hitachi	Fujutsu	

Data Recovery – RAID

Even the best configured RAID arrays can fail. Failure modes include:

- RAID Controller failure
- Multiple drive failure
- Accidental replacement of media components
- Accidental reformatting of drives or whole RAID array
- Array configuration lost
- Intermittent drive failure resulting in RAID degradation

RAID recovery of crashed members of the array is similar to hard drive recovery procedures. Ace handles RAID arrays from the following manufacturers, among others:

HP	LSI Logic	Compaq
Adaptec	Dell	Hitachi
IBM	Fujitsu	

Data Recovery – SSD Devices

Ace can recover data from a full range of solid-state drives based on MLC or SLC NAND flash memory technology. SSDs have higher vulnerability to some defects to which typical hard drives are not as vulnerable. These defects include abrupt power loss, magnetic fields, and electric charges. Also, considering the fact that the SSDs have a limited number of write cycles, the ability to write to the device will eventually wear out, thus leading to potential data loss.

NAND flash memory appears in a variety of forms, such as:

USB Flash Drive	miniSD	Multimedia Card (MMC)	Memory Stick Pro
Compact Flash Card	microSD	Memory Stick	Memory Stick HG
Secure Digital (SD)	Smart Media Card	Memory Stick Duo	Memory Stick Micro
			xD-Picture Card

Ace is able to recover data from flash media devices whether they are physically damaged, unrecognized by operating systems, or unmountable in cameras or other devices.

Ace recovers from SSDs made by many manufactures, among which are:

Intel	Toshiba	Samsung
Micron	OCZ Technology	Crucial
SanDisk	Transcend	

Data Recovery – Cloud Environments

Placing several machines as virtual machines in a cloud environment rather than on individual servers creates an increased risk of data loss, as multiple virtual machines will crash together if a host server fails. The following are the most common causes why data in the cloud can be lost:

- Corruption of host server file systems
- Corruption of the guest file system inside a virtual machine
- VMDK header corruption
- VHS file system corruption
- Hardware failures
- RAID disks failures
- Corrupted files within virtualized storage systems
- Accidental deletion of virtual machines on which data is stored
- Natural disasters

Ace provides data recovery for several virtual platforms including:

VMware vSphere ESX and ESXi	Virtual Desktop Infrastructure
VMware Infrastructure	Citrix XenServer
Microsoft Hyper-V	Oracle VirtualBox

Data Recovery – Mobile Devices

ACE Data Recovery has developed technology to recover data from Android devices. This technology supports SSDs, SD and MMC cards, and monolithic flash memory devices. It is able to recover data from Android devices whether they have logical corruption or physical damage. Data has been successfully recovered from nearly every type and brand of Android-based devices produced, such as smartphones, tablets, laptops, and netbooks. In addition, the Android operating system has been used on cameras, smart glasses, smart watches, headphones, and portable media players.

All information on Android-based devices is stored on the flash media, regardless of whether it is internal memory or additional SD cards. Ace has developed an advanced flash recovery technology that consists of reading individual flash memory chips into raw images, then applying reverse-engineered error correction and special mapping algorithms to unscramble images and re-assemble them. The resulting image can then be processed using existing data recovery methods.

Ace supports smartphone and tablet devices with Android OS 2.1 and later from Samsung, HTC, LG, Sony, Motorola, and others.

Data Recovery – Exchange Server

Ace supports Microsoft Exchange Server versions 5.5, 2000, 2003, 2007, 2010 and 2013.

Typical situations that cause lost Exchange Server/Mail Data include:

- Inconsistent file state
- Dirty shutdown
- Corrupted header information
- Write errors
- Duplicate keys

Ace is able to recover mailboxes located in the Information Store from most errors, such as “jet-engine errors,” “read verification errors,” database corruption, oversized files, or other problems with the Information Store.

Standard data recovery services include:

- Recovery of email addresses from Active Directory storage
- Recovery of folders, messages and file attachments
- Recovery of notes, contacts, tasks, and appointments
- Recovery of creation dates for all objects
- Formatting recovered for RTF and HTML messages

Data Recovery – SQL Server

SQL Server recovery from a drive failure is often a two-stage process. First, the physical data (raw sectors) must be recovered in order to gain access to the logical data. If the database will not attach to SQL Server, the second stage is *SQL data recovery*.

In most cases it is possible to return a database to an attachable state. If it is not possible to repair the database to a point to where it will attach, as many tables and records as possible will be recovered. The recovered data can then be merged back into an empty database with which the front end application will work.

A SQL Server system can fail due to:

- Corrupted database MDF file
- Torn page detection
- Deleted data (tables, records, system objects)
- I/O errors in SQL server
- Deleted or corrupted LDF log file
- SQL Database in "suspected" mode
- Unable to restore from a corrupted SQL backup file

Data Recovery – Tape

Tape media can be damaged by:

- Physical damage
- Back up Failures
- Water damaged tapes
- Overwritten Tapes
- Smoke or Chemically Damaged Tapes
- Intentionally damaged tapes
- Broken Tapes

Ace can recover data from a variety of tape formats including:

4mm DAT, DDS, DDS2, DDS3, DDS4 and DDS5	9-track tape recovery and conversion
Super DLT & DLT, DLT VS80 and VS160 tapes	OnStream ADR 30 and 50 GB
Exabyte 8mm	LTO 1, 2, 3 and 4
SONY AIT 1, 2 and 3	VXA 1 and 2
Travan tapes	Mammoth 1 and 2
QIC mini cartridge tapes	SLR 1, 2, 3 ,4, 5

Ace can recover from tapes made by several manufacturers, including HP, IBM, and Quantum.

Data Recovery – File System

File systems can be subject to a variety of failures, including:

- Unable to boot
- Unable to run or load data
- Accidental deletion of data
- Virus attacks
- Data corruption
- Inaccessible drives or partitions
- Hard drive crashes
- Hard drive failures
- Fire or water damage
- Surface contamination damage

Ace can recover files created by a wide variety of operating systems, including:

- All Windows-family operating systems (DOS, Windows 3.1, Windows 9x, Windows XP/2000, Windows 7/Vista), Windows Server 2003/2008
- UNIX (select families)
- VMware VMFS
- Linux
- Apple MAC OS X
- Novell

Removable Media

Ace can recover data from most removable media, including Floppy drives, ZIP drives, JAZ drives, magneto-optical write-once read-many (MO WORM) drives, CDs, and DVDs.

Summary

Ace Data Recovery is positioned well to attempt to recover lost or corrupted data from almost any medium. With offices all over the United States, all that needs to be done is to bring the damaged media to an Ace office. Ace will provide a fixed price for data recovery that will be waived if it is unsuccessful at recovering any data.

Acknowledgement

Thanks to our subscriber, Terry Critchley, for pointing us to this information.