UBT

a universal backup tool

– User manual –

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FEATURES

- **Speed**, **safety** and **simplicity** are the essence of UBT.
- UBT is optimized for backup to external drives via USB2 or to alternate HD drives but it works with other configurations.
- A new and highly efficient backup solution based on file signatures: it uses an optimized version of the MD5 algorithm to calculate a unique signature for each file.
- Completely reliable. Recovers perfectly from outages during operation. Copying of files and data is managed by an advanced database engine with transaction commitment and roll-back, preventing data corruption due to power outages, system crashes, etc.
- UBT is based on industry standards to ensure compatibility with future versions of operating systems and hardware.
- Full backups every time — does away with incremental backups and the associated hassle during restore.
- Easy and intuitive to use. One simple intuitive interface provides all the power.
- Complete control over the backup process and management of past backups via the same interface.
- Fast – full backups in minutes and it gets faster.
- Less space – the space required is dramatically reduced by UBT's approach. Entire folders are backed up in minimum space.
- Completely compatible with other backup tools (does not use or change the archive bit).
- Very effective in mission critical environments, where downtime must be minimized.
- No problem backing up multiple machines to the same external drive via a USB2 port (simply install UBT on each machine and create a separate backup path).

INTRODUCTION

UBT stands for Universal Backup Tool. It uses leading-edge technology (parts of UBT are used by NASA) to make backups of your HD while minimizing the storage space required. Thus multiple backups can be kept handy for quick restore. It is a simple-to-use yet powerful application that is cross-compatible with all modern versions of Windows (hence the word Universal). Have you ever tried to restore a backup performed with MSBACKUP under Windows 98 on a Windows 2000 machine? If so, you will know that although MSBACKUP looks exactly the same in both cases, the versions are not compatible and the restore process is next to impossible. UBT provides the missing compatibility without sacrificing speed and reliability. It even runs under Linux using 'Wine' - a Windows environment for Linux/Unix.

UBT has been carefully tuned to be as fast and as safe as possible during the backup run and, thanks to its novel approach, subsequent backups are even faster. It is limited only by the speed and bandwidth of the disk drives. CPU power is not an important factor. Therefore we recommend an external USB2 High-Speed Disk Drive as the backup media. This combination provides very fast and convenient access to your backups and they can easily be moved to a new machine in the event of a disaster (such as a disk crash).

Chris Carter (eBunda's founder) says: "I wrote UBT because I was frustrated with the lack of compatibility and efficiency of existing legacy applications. Most legacy backup applications are either expensive, not cross-compatible, slow, inefficient, not supported, aimed at enterprise environments, or all of these. There are very few solutions for real people that have to keep backups of their work in a hassle-free manner. UBT requires only a few minutes to set up and guarantees trouble-free operation thereafter.

I started to think about the problem in 1997, designed the concept in 2003 and I had a working version in January 2004. The first half of 2004 was spent optimizing speed and functionality, and stress-testing."

One example of backup speed on an AMD Athlon XP 1800+ machine using an external USB2 disk: first full backup of My Documents (a combination of Word, Powerpoint, Excel, TXT and ZIP files totalling 1413 MB, 5034 files): 3 minutes, 4 seconds; second full backup (some files changed) 2 minutes, 32 seconds.

USING UBT

Purpose of UBT

UBT is a software application by eBunda. It backs up selected folders from your hard disk and will restore individual files or complete folders when required. It also provides a means to manage multiple backups. Backups can be scheduled to run in background by means of Window's Scheduled Tasks.

System requirements

Any computer running Windows 98 or later and a suitable backup medium as described below.

Installation

The package includes a standard Windows installation procedure. After download click the file to install.

The first time you run UBT it will ask you for the Backup Path and take you directly to the Configure tab (see under *The Configure tab* below).

Installing upgrades

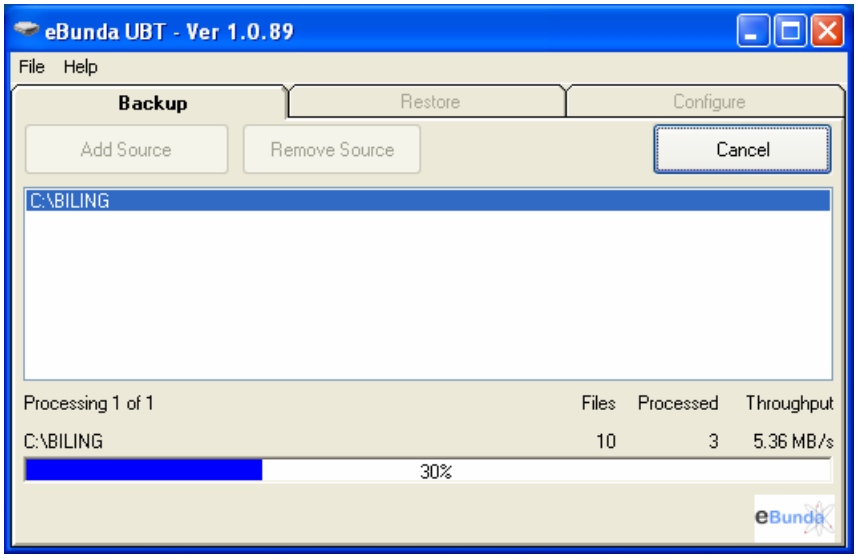
Proceed as for a first-time installation. UBT will recognize and preserve the settings from previous versions.

Removal / uninstall of UBT

The UBT program, all associated program files and Registry entries can be removed by going to Control Panel, Add or Remove Programs. Any remaining backups made with UBT can be removed by deleting the *db*, *Files* and *Logs* folders under the Backup Path (see below).

The Backup Tab

This tab contains the Source Window which displays the current sources. A *source* is a drive, folder or networked machine to be backed up by UBT.



Folders can be added to the window by clicking the Add Source button and be removed using the Remove Source button. Subfolders are automatically included. You cannot select individual files for backup (this is not considered necessary). However, you can select either individual files or folders for restore. Your chosen sources will be remembered by UBT for the next session.

The Backup button starts a *backup run*. UBT scans each source and all subfolders for files, analyzes them, checks that space is available on the backup medium and then makes a copy (if necessary). This sequence generates a backup (ie, a copy) of these files on the backup medium.

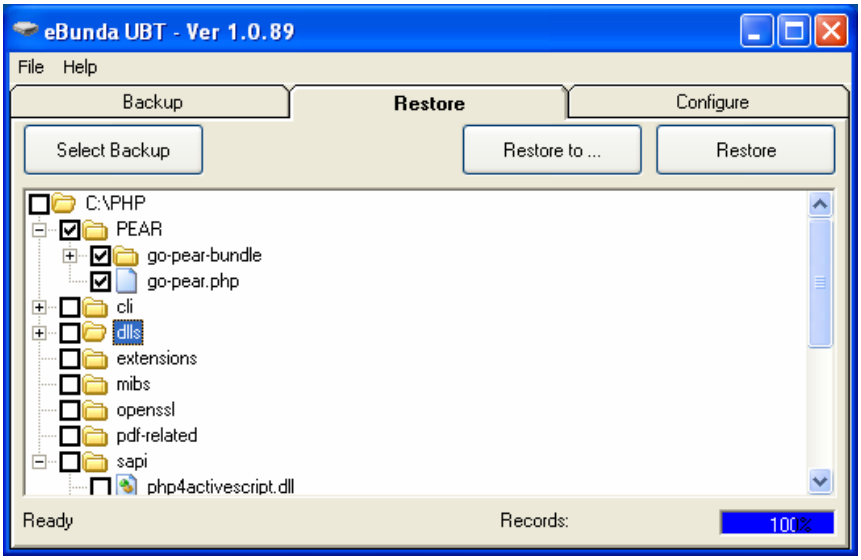
During a *backup run* the name of this button changes to Cancel. Clicking the button at this time will stop the run and no files in the source currently being processed will be backed up (the *roll-back* feature). The backup process can also generate a log file if this has been selected (see the Configure tab).

Attention: if you click the Delete button on the Configure tab, the backups of any sources not shown in the source window will be deleted.

The progress of a *backup run* will be shown below the window on the Backup tab.

The Restore Tab

The Restore tab looks like this.



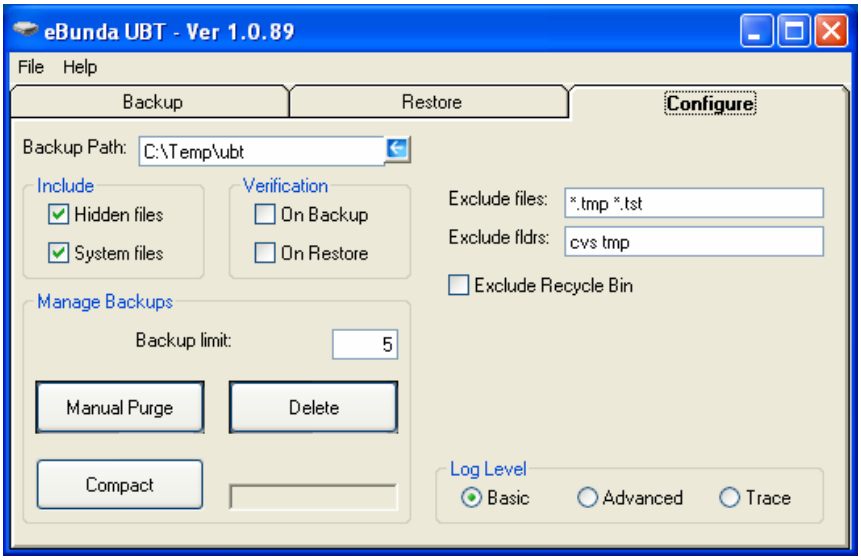
The Select Backup button opens a window that displays all the backups for each source in date order (most recent at the top). Click the one you want and click the OK button. The chosen backup will be displayed in the window and you can now choose the files or folders you wish to restore.

The default setting restores files to their original location. If you want to use a different location, this can be chosen via the Restore to… button.
Attention: remember that the file will be restored along with its pathname including any folders. For example, if a file called *Loans* has been backed up as part of the *My Documents* source with pathname My Documents\banks\Loans and you chose to restore it to c:\temp. The pathname to the restored file will be c:\temp\banks\Loans.

The Restore button starts the restore process and details of progress are shown at the bottom of the screen.

The Configure tab

eBunda UBT requires certain minimal parameters to operate correctly. The first time you run UBT it will ask you for the Backup Path and take you directly to the Configure tab. This mandatory parameter will be highlighted in yellow.



You can type in the full path to your backup location or use the blue left arrow to find the path using the folder browser. UBT will now make sure it has all the necessary information to run properly or provide suitable values. It automatically generates a folder structure (*Files*), logs folder (*Logs*) and backup database (*db*) if these do not exist. After this you can go to the Backup tab and start adding Sources. The Backup Path can be changed at any time.

Use of the Include section is evident.

Verification: during either a backup run or a restore, it is possible to verify that the file backed up or restored is an exact copy of the original. UBT already performs some standard tests to ensure that files are processed successfully; however this option will guarantee that a file is an exact replica of the original. (A small amount of extra time is entailed.)

Exclude files: allows you to enter a space-delimited list of file extensions (eg, *.tmp *.$$$). Any files with these extensions will not be backed up.

Exclude fldrs: works in the same way.

Exclude Recycle Bin: select this if you want to exclude the deleted files in the Recycle bin from the backup.

Backup Limit: is the maximum number of backups per source. After this number is reached, any further backup will replace the oldest backup.

Manual Purge: if you have reduced the Backup limit above, this will purge excess records from the database. In any event a purge is executed

automatically after each backup run. It is useful if you change the Backup Limit and wish to reduce the space occupied by your backups.

Delete: CAUTION, this deletes all backups of any source not currently shown in the window on the Backup tab. Run Compact after deleting (see below). You would normally use this process to delete records of sources you no longer wish to back up.

Compact: this removes orphan files and cleans up the database. In some cases it can take several minutes. You would normally run Compact after you Delete a source.

Log Level: UBT will create one or more log files in the Logs folder under the Backup Path. The content of these log files depends on the selected logging level. They provide additional information on UBT's activities and speed, backup size, etc. Basic is for most users. Advanced is for those who wish to have greater detail. Trace logs are for reporting bugs to eBunda.

Scheduling automatic backups

eBunda UBT can be executed in unattended mode. This means you can configure it to run at night, lunch time or even while you're working. UBT currently understands two commands: backup and compact. Just add these to the command line parameters when adding UBT to your favorite task scheduler. A typical command line would look like:

```
ubt.exe backup compact
```

backup	will tell UBT to examine all Sources and make a backup of each one.
compact	will optimize the backup space used by UBT.

PRACTICAL RECOMMENDATIONS

The following is for users who are new to backup issues. Experienced users can jump to *THINGS YOU SHOULD KNOW ABOUT UBT* below.

Why backup? – the hazards

The real hazards to your data, in order of probability are:

- Hard disk failure
- Accidentally overwriting a file.
- Theft or loss (particularly laptops)
- Virus infection
- Software and migration problems
- Fire, accidents and natural disasters

Based on our experience managing hundreds of PCs and mainframes, it is safe to say that nearly everyone will face at least one critical data loss every six years.

A few years ago this was relatively unimportant but as more and more people are using their computers more intensely, the personal computer or laptop has come to occupy a central role in everything. For most of us the PC is now a critical part of our lives and our ability to communicate.

When a hard disk crashes *we are generally incapable* of even remembering all the different items of information it contained.

Another purpose of backup is to transfer data to another computer and/or hard disk. This important aspect is often overlooked until the last moment. And there is more. Perhaps you had a backup and then tried to restore it to another machine but found the associated software is not compatible. Or worse, you cannot find your last backup.

Media

Until recently, backups required expensive and complicated arrangements (tape drives and tapes, software, configuration, backup policies, care in switching tapes, etc). There are some user-friendly solutions that use burnable CDs, DVDs or ZIP drives but these are slow and only solve part of the problem (incomplete backups, multiple disks/CDs, etc). Will a proprietary device always be compatible with new computers and operating systems?

Experience shows that the only effective way to make a fast, reliable backup is using an external or second hard drive. And luckily, the cost of such drives has fallen dramatically. Please note that such external and removable drives can be stored separate from the computer, packed in a separate bag when travelling, left with a neighbor when going on vacation and so on. This helps to keep your data safe from theft and fire. Check the list of hazards above.

We personally recommend external USB2 hard drives because of their ease of set-up, usage and price. Most such hard drives fit into your shirt pocket,

offer huge amounts of storage and are very competitively priced (you can get a good unit for under $200). If you opt for a USB2 hard drive make sure the box clearly states it is USB2 *and* hi-speed. I have heard stories of manufacturers selling USB2 hard disk that do not provide the bandwidth of USB2 (which is 480 Mbits/s). Only USB devices that carry the USB2 logo and state they are hi-speed can be considered trustworthy.

The size of the backup disk depends on how much data you have to backup. If you have say, 3 PCs, each with 8GB of different user data (email, documents, presentations, spreadsheets, etc.) then you would require 24GB to store a backup. If you will retain 20 backups you would potentially require 480GB. In practice the space required is much less, because the amount of data added, modified or removed each day is much less. Suppose each user modifies 1GB of data every day (MS Outlook data is a disk hog), then you would require 44GB of disk space to store your 20 days' worth of backups (which in this example represents a saving of 91% in disk space). Thus in this case, a 60GB USB2 hard disk would suffice.

Full backups versus incremental and differential

There are different types of backups: *Full*, *Incremental*, *Differential*, etc. Full backups are the best because all the data is backed up but full backups require the most storage space and take the longest to execute. Therefore many people run one full backup and then complement it with either incremental or differential backups. However, there is a drawback: when you restore, you must first restore the full backup and then restore each incremental (or differential) in sequence; and there are no shortcuts! The different versions and dates become a nightmare to manage.

So it's a trade-off between convenience (full backups are best) and the space required (incremental backups). Suppose you could combine the advantages of both and create full backups in the same space as incremental ones? Suppose a full backup ran as fast as a differential? This is where UBT comes in.

What to back up

Under normal circumstances it is not necessary or even advisable to back up the entire hard disk (HD). Most programs will not run unless they are freshly installed so there is little purpose in backing up the operating system or program files.

Recent versions of Windows encourage users to store all user data under a folder such as *My Documents*. However this only includes part of the data (for example: Outlook stores its data in a different folder; therefore only making a backup of *My Documents* would not be sufficient). We recommend making backups of all internal hard drives (eg: C:\, D:\, etc.); nevertheless if you believe this is excessive then you should point your Source to the lowest folder where your data is kept (in the case of XP this is *C:\Documents and Settings*).

It is not worth including the Backup Drive as a Source because it would only double the effort of backing up data that has already been backed up.

What about disk images?

UBT does not create a disk image; however, you can download UBT from our website and use it to restore your data to another PC.

How often?

It very much depends on your requirements – how often you add, modify or remove data. As a general rule of thumb, people are willing to accept loosing up to one day of work in the event of a disaster. Therefore it would seem acceptable to run a UBT backup once a day. This can be easily configured using the Task Scheduler built into Windows.

How many backups should be retained?

This refers to how many backups you want to keep for each source. Again, this depends on your requirements. If you work on your PC from Monday to Friday, you might need 1 week, 2 weeks, 3 weeks or more. Simply calculate how many backups you require, based on your periodicity.

Why would you want to keep more than one backup? Suppose you deleted something three days ago and you only just realized. If you only kept one backup and ran backups every night, the data would be lost.

UBT will retain backups up to the number in the Backup Limit window on the Configure tab (default value 10). After that it deletes the oldest one, dropping it off the list. In our example this would manage two working weeks of full backups.

CAUTION: once a backup has been deleted it is impossible to restore any of the files from it. In most cases this is not a problem; however if this is a problem for you, you can manually restore a certain backup to an alternate location. Alternatively, eBunda has commercial software that will allow you to 'extract' backups for burning on CDs, DVDs or other permanent media.

How to restore a single file you deleted or overwrote by accident

In the event of a disaster (mistakenly deleted a file, overwrote it with something else, hard disk crash, etc.), you will want to restore your backup. UBT gives you the option of restoring directly to the same path it was backed up from or restoring to an alternate location (so you do not overwrite existing files).

How to restore all your data to a new HD or different computer

In order to restore your data to a new HD or different PC you should follow the Install instructions above and then follow the Restore procedure.

THINGS YOU SHOULD KNOW ABOUT UBT

- It does not support tape drives.
- It will not back up a file if only the name has been changed (not the file itself). There is no need.
- UBT will work across a local area network but performance may be impaired. Future development and a commercial version will address this issue via *local agents*.
- UBT installs a database on the backup medium and creates three folders. These are required by UBT in order to function properly. If you delete any of them, UBT will automatically recreate them the next time it is started.
- Max number of files per Source: 512000
- Max folder depth during restore: 1024
- A copy of the code has been deposited with a third party for future safety.
- UBT may not be sold or incorporated in other products without the express consent in writing, of Chris Carter and eBunda. See the copyright agreement.

WHAT IS MD5?

MD5 is a standard IETF (Internet Engineering Task Force) algorithm described in RFC1321 that calculates a unique signature for a file or string. It works the same way as human fingerprints in the sense that no two different files have the same signature (or “fingerprint”).

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Warning

This software contains implementations of powerful cryptographic algorithms. Many countries place restrictions on distribution (import and export) and usage of such software. You should consult relevant sources to find out the exact laws that apply to you.

Credits

Parts of UBT use the following third-party software:

Software	Vendor
ebCrypt.dll	http://homepages.ihug.com.au/~bakharev/ebcrypt
Ags_sqlite.dll	http://www.ag-software.com/SQLite.aspx

Escrow copy

A copy of the UBT source code has been deposited with an independent company with instructions in the event of major calamities. Details available on request.

FEEDBACK AND SUPPORT

Participate

UBT version 1.x is being distributed free in the hope others will find it useful and participate in its development. Despite being a 1.x release, it has experienced extensive adjustment and testing and is a mature and stable product. We welcome suggestions, criticism, pats-on-shoulder, money, etc. If you would like to participate, please join our mailing list by sending an e-mail to ubt-list-subscribe@yahoogroups.com.

Error log

An error log is created in the event that UBT fails or generates an error. The log can be found in C:\UBTERR.LOG. Please attach this error log file to your e-mail when reporting errors.

ABOUT THE AUTHOR

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