

# Resco Backup for Palm OS® – User manual

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# 1 About Backup

## 1.1 Introduction

Resco Backup is an easy-to-use but powerful utility to protect your important Palm's data. The purpose of the Backup is to provide a safety copy of your handheld content.

With our software you can create backups of your handheld's data, schedule them to occur at intervals of your choice and restore them when needed.

The RAM data can be saved to the card or any connected drive in general.

Backup is seemingly a straightforward action.

In many cases it is really so - mainly if you use older handhelds or have a simple installation.

However, things may become more complicated...

Following paragraphs discuss what you should know in order to keep your data safe.

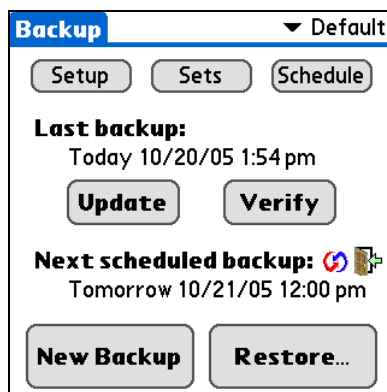


Fig. 1 – Resco Backup

## 1.2 Features

- Supports full or incremental update (fast)
- Multiple backup sets
- Partial backup and restore
- Comparison of the backup set vs. RAM by date or by content
- Manual editing of the exclude list
- Compression and encryption (fast and efficient in the card space usage)
- Multi-user and multi-set interface
- Flexible backup scheduler triggered by time, Hotsync or application exit
- Backup projects
- Application Lock List provides a tool to reduce crash risk on NVFS devices
- Backup of the internal drive
- Possibility to restore deleted files from the archive

## 1.3 Technical specifications

*Requirements:* Palm OS 5+

*Backup set path:* card/Palm/Backups

*Backup set format:* Standard zip archive; can be accessed with e.g. Resco Explorer

## 1.4 Installation/Uninstallation

To install RescoBackup.prc:

- Add .prc file to the Palm Desktop Install Tool:  
(Double-click the file, or drag the file onto the Install Tool window)
- Start HotSync on your Palm Handheld

### Uninstallation

Simply delete the RescoBackup from the handheld.

You might want additionally:

- Delete RBackup from the card.
- Delete card backup folder /Palm/Backups

## 1.5 Registration

*Resco Backup for Palm OS®* comes with a free 14-day trial.

The trial is functionally identical with the full version except it stops working after 14 days.

You can get it working again either by purchasing the unlock key or by installing a trial of a higher version.

After the purchase of the full product, you will receive the unlock code that will allow unlimited use of the purchased version of the product. You will also be entitled to **free upgrades within one year** from the date of the purchase or as long as the major product version does not change.

**After the one-year period** elapses Resco will charge next major upgrade with **50%** of the product's actual price.

(*Major upgrade* means a change of the major version number. E.g. 1.10 -> 1.20 is a minor upgrade, while 1.20 -> 2.10 is a major upgrade.)

## 2 Your first backup

You need to have a card inserted. (Resco Backup will remind you otherwise.)

To understand the whole process let's make a tour:

1. Main menu / Options / **Exclude list**

This dialog defines the databases that are excluded from the backup. Do not change the default selection unless you understand the consequences.

2. Main menu / Options / **Application lock list**

If you have an NVFS device (T5, T650, LifeDrive, E2), then some background applications that are not NVFS-aware may cause backup crash. This dialog enables to fix them in memory and removes thus the most frequent crash reason.

3. Main menu / Project / **Select Files**

Use to specify files that will be saved. Excluded files are not listed; all remaining files are selected by default. Once you unselect some files, the selection becomes fixed and will not automatically accommodate newly installed databases. (I.e. the selection becomes your responsibility.)

4. **[Setup]** button

The default setting will probably satisfy most of the users. 0 backup sets means that the [Update] will always modify the last backup set, while [New Backup] will create unlimited number of backup sets. If you switch on archiving, then you will have access to the files deleted during incremental update.

5. **[Schedule]** button

Use to define if and when the automatic unattended backup takes place. The scheduler is switched off by default ("None"). Most people would use incremental update ("Update") as this is the fastest option.

6. Create a backup by pressing the **[New Backup]** button.

This will create a new backup set based on the settings specified in previous steps.

7. Press **[Verify]** button.

This will physically (Byte by Byte) compare the last created backup set against the RAM contents. Following report will list all differences in red and position them at the top of the list so you can't miss them. Do not panic, if you'll see differences in preferences, psyslaunchDB and similar files. These databases are modified very frequently.

8. Press **[Update]** button.

This will bring up-to-date the last created backup set. Normally, this option is very fast. However, if you have too many changes, [New Backup] may perform better.

9. Press **[Sets]** button.

Here you can manage your backup sets. Press the **[Diff]** button. It offers an enhanced form of the Verify dialog:

To get the list of all RAM databases that are newer than their backup set counterparts, make sure that:

- The [->] icon is pressed. (If you don't see this icon, then all databases are up-to-date.)
- All other icons are depressed.

To group these files together, force sorting by the [?] column. (Tap the column label.)

## 3 Working with Resco Backup

### 3.1 Default backup project

A backup project is a set of conditions that define the backup action:

- Selection of the databases that have to be stored,
- Setup parameters,
- Scheduler.

Since you launch Resco Backup the first time you are working in the so-called **Default project**.

Default project exists all the time - it cannot be either created or deleted.

In other words - default project is what you know from other backup applications.

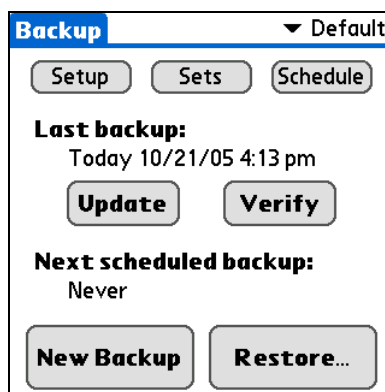


Fig. 2 –Default backup project

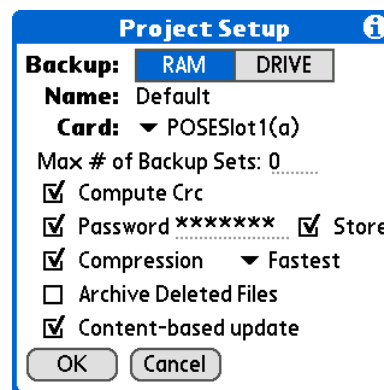


Fig. 3 – Project Setup dialog

### 3.2 Incremental update

Incremental update, shortly called "**Update**", starts by the comparison of the backup set vs. the RAM contents. The comparison can be either date-based (default) or content-based (Byte by Byte comparison). The latter mode is slower, but catches the rare cases when a database is modified while keeping the old date. Based on the results new databases are added to the backup set or some of the old ones updated.

Databases that were deleted from the RAM since the last backup are deleted from the backup set as well. However, if you have switched on the **archiving deleted files** (Setup dialog), the deleted databases are not lost, but they are moved to the archive.

The archive is physically a subfolder (with the name "Deleted") of the project folder. To make use of the archive you use the **Archive** menu option. Use archiving with care as it consumes additional card space.

Update is generally much faster than the full backup. (I.e. as long as only a small part of the RAM files were modified.) However, performing full backup from time to time is a wise policy.

Update can be performed only on the last backup set in the current project.

### 3.3 File selection

#### RAM

You can use the **Select Files** dialog to modify the file selection for backup.

(Notice that this dialog presents all RAM databases except those excluded in the Exclude List dialog and a few files that are excluded by default.)

As long as all files are selected, any backup action will concern complete RAM contents (minus excluded databases).

However, once you unselect some file, you create a **partial selection**.

Since this moment the backup will ignore newly installed RAM files - you have to add them to the selection manually if they should be stored.

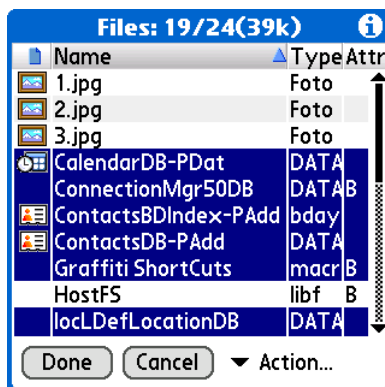


Fig. 4 – Select Files dialog for RAM

#### Drive

If the project is set as drive-based (this is specified when the project is created), the **Select Files** dialog allows selecting of card folders that will be backed up.

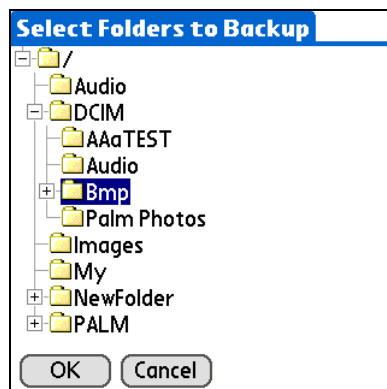


Fig. 5 – Select folders to backup

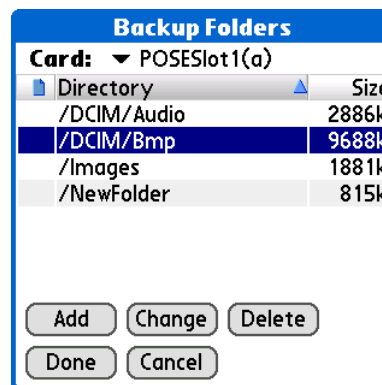


Fig. 6 – Select Files dialog for drive-based project

### 3.4 Compression and encryption

Resco Backup uses zip-based compression/encryption. Unlike the general expectation the extra computational power needed for the compression is compensated by savings in the card writing. In most cases the compressed backup proves to be even faster than the uncompressed backup. RBackup uses the same zip engine as the Resco Explorer.

Note that the fastest compression does not try to squeeze the images and Palm documents as these files are already compressed and the savings were not worth the effort.

Some users find it confusing that zip format is used even if they specify no-compression mode. In this case really uncompressed zip is used – i.e. the databases are simply copied and packed into some envelope. This might seem to be inefficient, but the reverse is true: Clustering done on small files (storing several files together) reduces card access and the number of FAT allocation blocks. The result is higher speed and card space savings.

Concerning the safety, zip encryption is not considered as safe for the industrial purposes. However, it is safe enough for any normal use.

Encryption is **password**-based. Password - once given - should remain the same for all backup sets of the same project.

Any change of the password will render unusable existing backup sets that were encrypted with the old password.

Password is queried on every use unless you specify '**Store Password**' option. (Setup dialog.) This is less safe, but saves you from retyping the password during various backup actions. To schedule encrypted backups, you have to store the password.

Default project loses the stored password during the hard reset. Other projects keep the password stored on the card, i.e. it will survive the hard reset.

Restore requires password always disregarding the 'Store Password' option.

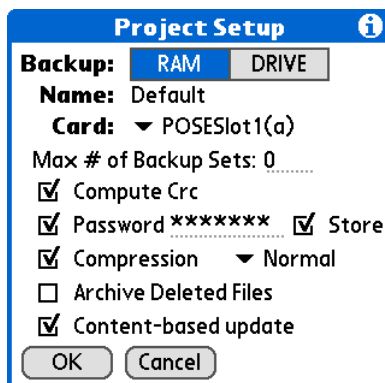


Fig. 7 – Project Setup dialog

### 3.5 Backup sets

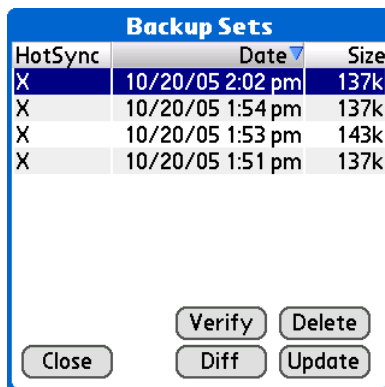
Backup set is the result of one backup action. It is stored in a separate card folder (subfolder of /Palm/Backups), whose name indicates current user and time of the last update.

**Update** button on the main screen modifies the last backup set. Older backup sets can be updated from the Backup Sets dialog. If you want to create a new backup set, you have to use the "New Backup" button.

Backup sets occupy considerable card space and it is advisable to control their number. Setting **Max. # of backup sets** can be used in two ways:

- a) The value 0 (default) means unlimited number. In this mode manual update (from the main screen) or scheduled update modifies the most recent backup set, while [New Backup] button adds a new set. It is your responsibility to control the space devoted to the backup results.
- b) Non-zero value (n) acts differently:
  - Manual Update updates the last backup set. (As before; no new set is added.)
  - [New Backup] creates a new set and then – if the number of sets exceeded given limit – deletes the excess sets.
  - Scheduled update keeps n most recent sets. I.e. it leaves (n-1) most recent sets intact and updates the n<sup>th</sup> set.

Backup Sets dialog provides the tool to the backup set management.



HotSync	Date	Size
X	10/20/05 2:02 pm	137k
X	10/20/05 1:54 pm	137k
X	10/20/05 1:53 pm	143k
X	10/20/05 1:51 pm	137k

Buttons: Close, Verify, Delete, Diff, Update

Fig. 8 – Backup Sets



## 3.6 Scheduler

Allows unattended, automatic backup that will take place without the user intervention.

Scheduler can perform **full backup** (creates new backup set) or **incremental update** (modifies existing backup set). Incremental update is faster and enables archiving.

Scheduler can be set to run at regular intervals (at certain day time or every x hours) or can be triggered by specific events:

- (before or after) the Hotsync operation, or
- when some application terminates

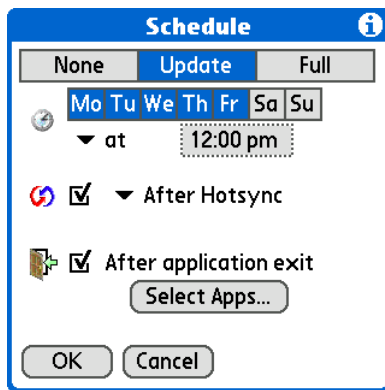


Fig. 9 – Schedule dialog

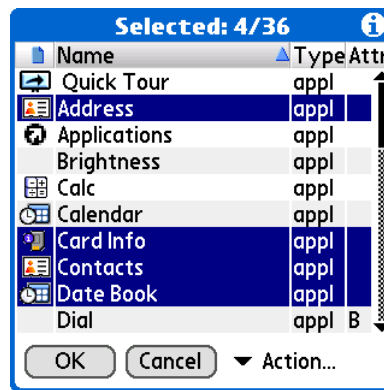


Fig. 10 – Select Applications dialog

Scheduler respects the project setting '**Max. # of Backup Sets**' (Setup dialog). This allows keeping several consecutive backup sets.

### Example

Setting this number to 3 means that the project will try to keep the last 3 backup sets. I.e. these backup sets will be subsequently created:

- Set A (1<sup>st</sup> scheduled backup)
- Set B (2<sup>nd</sup>)
- Set C (3<sup>rd</sup>)
- Set D as the update of the set A (4<sup>th</sup>)
- Set E as the update of the set B (5<sup>th</sup>)

So after 5 backups you will have 3 sets: C, D and E.

The same result is achieved in case you select to use full instead of incremental backup. The only difference is the way in which this result is achieved.

**Scheduler options dialog** accommodates options common to all projects - among them the possibility to hide the countdown dialog or the abort button in the progress dialog. (For those who are afraid of unwanted abort while carrying the PDA in their pocket.)

## Advanced topics

Technically, the scheduled backup is realized via so-called **alarms**. This is Palm OS mechanism allowing to wakeup the application at given instant. Every application can have at most one alarm. Keep this in mind if you modify existing alarms using 3<sup>rd</sup> party tools. (For those who want to check the things deeper – Resco Explorer provides the access to the application alarms in its Control Panel.)

Various projects define their own schedulers independently. **Scheduling** is the process when the individual schedulers are compared and an alarm is set for the project that is scheduled as next. Scheduling takes place at events such as HotSync, time change, upgrade etc. (I.e. the scheduler will work correctly in situations such as time change, upgrade etc.)

Scheduled backup will start disregarding the currently running application. Technically the backup is launched over the running application interrupting temporarily its activity.

This naturally can result in a **conflict**. Imagine these situations:

- a) Current application is doing a lengthy update of a database that remains in an inconsistent state during this action. If the scheduled backup is launched in this moment, the saved database might be useless.
- b) A viewer loading a large image and consuming thus nearly full available memory. Backup can be launched from the event processing caused by the progress bar. If the scheduled backup is launched in this moment, it will run in the low memory conditions and the backup may fail.

Because of such risks, scheduled backup starts (unless you suppress this option) by a **count-down dialog** that offers to postpone the backup action.

Another example of a potential conflict presents Treo **keyguard**. The purpose of the keyguard is to prevent accidental key-press. This can be achieved by various means and a conflict with the RBackup scheduler (mainly with the count-down dialog) cannot be excluded. Therefore RBackup tries to suppress the count-down dialog if it detects that the device was sleeping. RBackup 1.30 works correctly with Buttler or built-in keyguard.

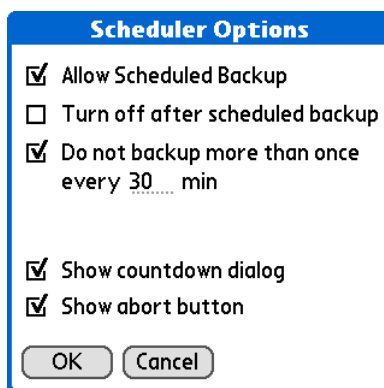


Fig. 11 – Scheduler Options dialog

## 3.7 Manual Backup Options

This dialog enables customization of the manual backup. Users can specify:

- A sound signal after the backup process completes (always, never or on error),
- The report dialog (always, never, on error),
- Turning off after the backup (always, never or when it takes longer than 30 seconds),
- Exit if no Report is shown.

The described behavior is common to all projects.

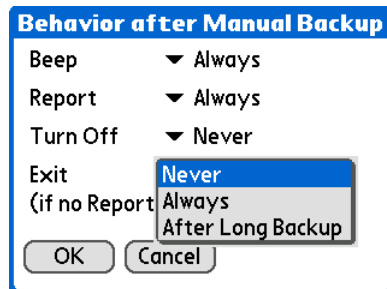


Fig. 12 – Manual Backup Options dialog

## 3.8 Projects

A project is simply a set of files backed up as one unit. **RAM-based** projects store databases, **drive-based** projects work with card files. (This is specified during the project creation.)

Every project has its own location, settings, file selection and scheduler. (Exclude list is shared among the projects.) If two projects are scheduled to the same time, then one of them will be re-scheduled to a later instant.

Since you launch Resco Backup the first time you are working in the so-called **Default project**. Majority of the users will stay here without knowing anything about the projects.

However, imagine the situation that you have a set of particularly important documents that should be stored more frequently, or just to another location, encrypted or whatever else. To solve it, create a new project. Everything what was said so far is applicable both to the Default project and to the project you just created.

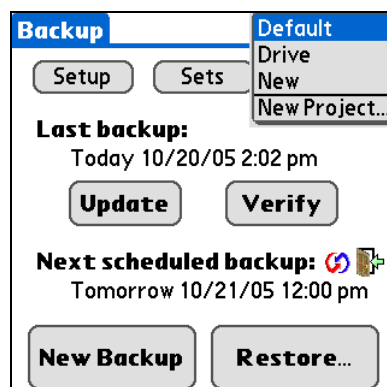


Fig. 13 – Project selection

### 3.9 Exclude list

The Exclude List dialog is accessible from the application menu and is valid for all **RAM-based** projects. Use it to specify the databases that should never be backed up because it is dangerous or for whatever other reason.

Notice the two specific cases. (Respective settings are switched on by default on the concerned handhelds.)

1. New Palm handhelds need to **exclude so-called old PIM-databases**. (Discussed elsewhere.)
2. **LifeDrive should exclude the read-only** databases. The reason is that all databases that are installed automatically after a hard reset are read-only. In other words, the read-only flag distinguishes databases that are pre-installed on hard reset. Pay attention that you do not use the read-only flag for other purposes. (I.e. do not modify it using a file manager.)

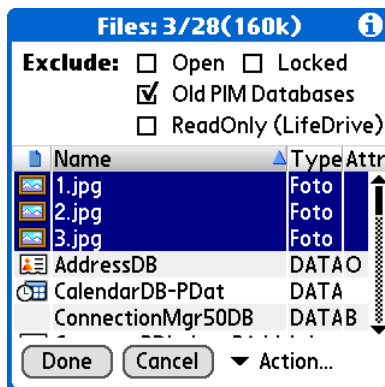


Fig. 14 – Exclude list

### 3.10 Restore

The reverse of the backup is the restore - allows the restoration of the databases to the state stored in the backup set.

To perform the restore use the main menu action Restore. In the following dialog select the backup set you want to use and press [Next] button. This leads to another dialog where you can select the individual files (**partial restore**) or leave all files selected (**full restore**).

You can also use the [Diff] dialog. This dialog enables you to analyze the differences and select individual databases for the restore action.

#### Safety

Restore suffers several stability risks, some of being similar to the Backup process:

- Conflicts with running background applications
- Specific NVFS problems (again concerns mainly background applications)

The safest procedure for the full restore is:

1. Perform hard reset (Restore into a clean machine minimizes potential conflicts)
2. Then perform warm reset (This additionally deactivates certain system services.)
3. Perform restore

Use this procedure as the last resort if nothing else helps.

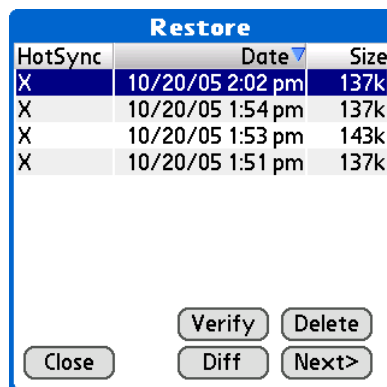


Fig. 15 – Restore

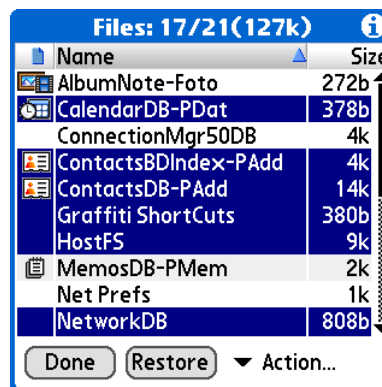


Fig. 16 – Select files for Restore

### 3.11 Application Lock List dialog

This dialog is to be used on the NVFS systems only.

Main reason to lock applications is the safety. NVFS brought changes to the Palm OS programming and not all applications reflected them. (Those that were last time updated prior to NVFS release, could not.) One of the most frequent problems is that the Palm databases are no longer fixed. That's exactly the problem that is targeted by this dialog.

The dialog displays list of all applications. To lock some of them, select respective rows by tapping them and press OK. In turn, on next backup/verify/restore operation all selected applications will be locked in memory.

This will help in most cases, but not always:

- The application may perform other NVFS-related incorrect operations and locking itself is not enough.
- One could envisage specific programming constructs that under special occasions would conflict with external locking as performed by Resco Backup. These constructs are not very probable, but cannot be excluded either.

Disabling particular hack is another technique that usually works - often even better.

However, we experienced at least one case, when disabled application was causing crashes (apparently the application was not fully inactive), which disappeared after this application was locked.

#### Warning

Locking too many applications that need not be locked may have adverse impact on the system performance.

#### Test results

Locking of TextPlus, ClipPRO, OKey help to avoid crashes caused by these applications. Locking PiLoc (Hebrew localization v3.7) did not help.

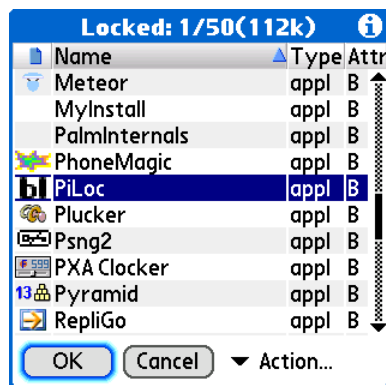


Fig. 17 – Application lock list dialog

### 3.12 Backup of the Internal drive

In the creation phase the project can be set as **drive-based**. These projects can backup any VFS folders. However, the most logical choice are the folders of the Internal drive on the NVFS systems.

Use the File Select dialog to select folders that will be backed up. (See Fig. 5,6.)

NVFS systems: To backup your complete handheld you will need 2 projects - one for RAM, one for the Internal drive. Do not backup **PALM\_DM** folder on the Internal drive, as it is a private OS folder.

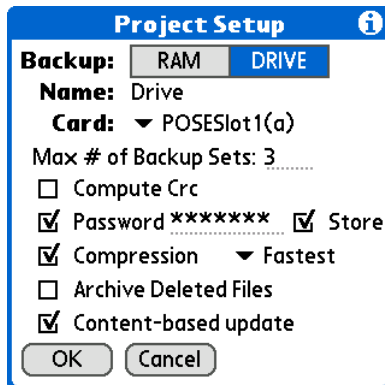


Fig. 18 – Setup dialog for backup of the internal drive

### 3.13 Archive

Archive is a place where deleted files are moved. The use of the archive has to be switched on in the project settings. Archiving is done only for **incremental update**. Full update (can be used in the scheduler) creates a new backup set without making any comparison to the old set.

The archive is physically a subfolder of the project folder (with the name "Deleted"). Except different location the archives use the same format as the backup sets. Resco Backup offers the archive management dialog under the menu option Archive. The dialog uses the same tools as the Backup sets dialog, i.e. you can browse the archive sets, compare them or even restore ("undelete") selected files.

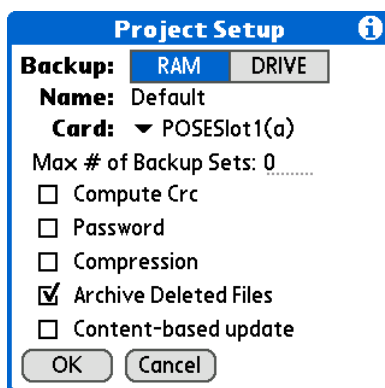


Fig. 19 - Archive Setup

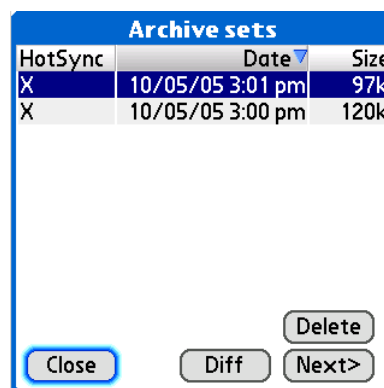


Fig. 20 – Archive Management

## 4 Verify/Dif dialogs

### 4.1 Brief database explanation

The following will present simple DB explanation just sufficient to explain backup specifics. Read if you are interested in technical details, skip otherwise.

A database consists of a header, data records and optional AppInfo/SortInfo blocks.

DB header contains this information:

- DB type, creator, name, version
- DB attributes (resource, open, read-only, hidden, stream, backup, launchable, bundle, copy protect, ResetAfterInstall, AppInfoDirty, recyclable)
- DB modification number
- DB creation and modification date

Palm OS recognizes resource databases (e.g. applications) and record databases (usually data).

Record databases have records consisting of data and attributes:

- 'Busy' represents a kind of record lock
- 'Delete' denotes deleted record (its data was destroyed)
- 'Dirty' marks modified records (that are expected to be hotsynced)
- 'Secret' denotes private records.

Note that 'deleted' record has just the record header (this information is kept for possible use by e.g. Hotsync); the record data was destroyed.

*Archived records are worse:* They should appear as deleted from the handheld point of view, but at the same time they must keep the data to be hotsynced into the PC archive. (Only then they are really deleted.) Technically this is realized by setting 'Delete' and 'Dirty' record attributes and keeping the record data.

Resco Backup ignores deleted records, but otherwise stores complete record databases incl. archived records.

Resource databases are simpler. They have just header and data records and each record has assigned type and id. A record either exists or does not exist; there are no intermediate states such as records marked for deletion or archiving.

Resco Backup stores complete resource databases.



## 4.2 Date comparison

Date comparison is the usual solution used by all other backup packages.

It will discover any changes that are made in a standard way - i.e. when the DB change is accompanied by a respective change of the DB modification date.

However, this method won't notice a modification that:

- Is made intentionally so that the size/date values remain constant.
- Is interrupted by force (e.g. a crash).

## 4.3 Data comparison

This performs bitwise comparison of:

- Records data
- Record categories and attributes
- AppInfo/SortInfo blocks

DB header is checked only partially, i.e. DB type, creator, name and the resource attribute.

Hence, the data comparison will detect all important changes, but may overlook some unimportant modifications. (Most of the header data.)

## 4.4 Verify dialog

A simple, fast tool to reliably check the backup set contents.

Verify performs byte-wise comparison of the databases stored in selected backup set vs. their RAM equivalents.

Notice that some databases may change virtually at any moment, e.g. preferences or databases modified by the system or running background applications. So, don't be surprised if you find differences in databases such as:

- Saved Preferences
- Unsaved Preferences
- psyslaunchDB (launcher DB)
- etc. (Depending on your installation, this list will be longer.)

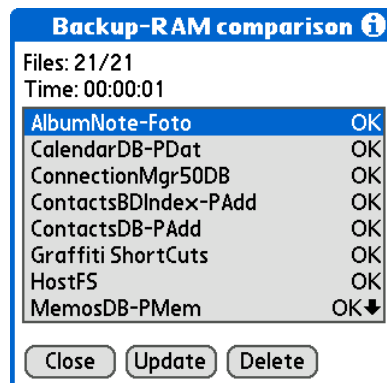


Fig. 21– Verify dialog

## 4.5 Diff dialog

An enhanced form of the Verify dialog. To open it, start first the Backup Sets dialog (accessible from the main menu), select a backup set and press [Diff] button.

Diff dialog reports also new databases that are not in the backup set.

You can select comparison by date/size or by contents as well as update selected set of databases. (Note that update is allowed only for the most recent backup set.)

Main dialog controls:

- Combo box in the top left corner allows the selection of the comparison criterion (date/content).
- The icons at the top represent comparison results. By tapping these icons you change the file selection. E.g. to select all databases that were not yet backed up, press the first icon.
- To change the sort order tap respective column label.
- To select/unselect specific file manually, tap respective list row.
- The Actions combo box offers additional commands, e.g. definition of the list columns.
- **Update** button performs update of **all databases that are selected** at given instant. Do not confuse with the functionality of the Update button on the main screen. (This “Update” works on all files that were identified as different, whereas Diff dialog lets you to make the file choice.)

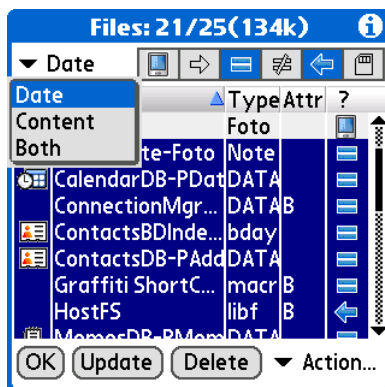


Fig. 22 – Diff dialog

Icon meaning left to right:

- RAM only: DB is missing in the backup set
- RAM newer: DB is newer than its copy in the backup set
- Equal: DB and its copy in the backup set are identical
- Not equal: DB differs from its copy in the backup set
- Backup newer: DB is older than its copy in the backup set
- Backup only: DB exists in the backup set only

Empty icon is used if there exists no DB with given status. (E.g. compare by content won't produce “RAM newer” state as it does not care about the date.)

## 5 Advanced topics

### 5.1 Problems with background applications

For the reason of brevity we shall call these applications hacks - i.e. we shall retain the name used before Palm OS 5 arrived.

Hacks are applications that run concurrently with backup (or any other application currently used). They can react on a number of events such as database modification, pen tap, keyboard press etc. They may react in any thinkable way and some of these reactions may conflict e.g. with the Restore operation.

#### Example

Let's take a hypothetical hack that makes a log (a database called say DbLog) of all created databases. Let's suppose the Restore operation just started.

As the restore progresses, it creates new databases. Palm OS broadcasts notifications about every created database, so our hack will get the message and add corresp. entries to DbLog. This works until the moment Restore tries to rewrite the DbLog itself. The result will depend on the way the hack is written, i.e. whether it allows such an action:

- If DbLog was opened exclusively, restore of this particular DB would fail, but nothing else would be affected.
- Second extreme would be that the hack keeps live pointer into the DbLog, which would probably result in a crash.

#### Prevention

The above was just a motivation example (maybe not the best one), but hacks can really do a number of things depending on their purpose.

If you observe problems, then you might consider either **disabling active hacks** or running backup/restore after a warm reset.

**Warm reset** (reset while "Up" button is pressed) starts just core system services. Among other consequences, this means that no hack application is activated.

#### Remark

The name "hack" is derived from the well-known term "hacker".

In the past (Palm OS 4 and lower) hacks were patches to the OS, i.e. pieces of the code that replaced part of the OS. Hence the name "hack" was justified.

Palm OS 5 prevented this technique and hacks had to be re-programmed to react to the OS notifications, i.e. messages about important events such as database creation, user action etc. Hence, the name "hack" is not justified anymore (despite we use it). On the other hand the power of the hack apps (incl. eventual destructive influence) remained undiminished.

## 5.2 Opened/locked databases

Start Resco Backup and open the "Select Files" menu option.

Look at the Attr column. (Sort the rows by tapping its column label.)

- "O" denotes opened,
- "XO" exclusively opened,
- "L" locked databases.

The former ones are more dangerous.

The fact that a database is opened means that there is a live pointer into it and its overwriting is potentially dangerous. This is the risk of the Restore operation.

However, an opened database can also mean an inconsistent state. (E.g. part of the data is queued in some cache.) This is the risk of the Backup operation.

Exclusively opened databases cannot be opened by any other application. Hence, these databases cannot be either backed-up or restored. Fortunately, this "trick" is used very seldom.

### Prevention

Again, **warm reset** will generally decrease the number of opened databases.

You can also add a dangerous database to the **Exclude list**. (This should be the last resort, of course.)

## 5.3 PIM databases

This chapter concerns modern palmOne handhelds (T3 and higher).

### History

Old well-known PIM databases are AddressDB, DatebookDB, MemoDB and ToDoDB. As the time passed a need for richer data appeared.

palmOne reacted logically by designing new PIM databases. So e.g. MemoDB was replaced by MemosDB-PMem. However, there were plenty of legacy applications relying on presence of original MemoDB.

The adopted decision was to keep a fake (emulated) MemoDB etc. That means the DB is empty, but in case some application needs it, MemoDB will be temporarily populated from the new PIM databases.

Works well, i.e. until someone uses MemoDB to overwrite the contents of the new memo database. This will lead to a partial loss of data. This is exactly what happens during Restore if you backed up both old and new PIM databases.

## **Prevention**

**Exclude old PIM databases** from the backup. (Exclude List dialog is accessible from the application menu.)

Note that this option is switched on by default on all T3+ palmOne handhelds, while for the remaining handhelds the option is hidden.

## **5.4 A zipper**

Backup set is a set of zip archives located under the folder /Palm/backups.

You can take any zip program to preview the backup set contents. Resco Explorer is perhaps the best option.

You may not only check the contents, but also preview any stored database or even install (i.e. copy) it to the RAM manually.

## 6 NVFS - related problems

This chapter concerns NVFS-based handhelds. (At the time of writing T5, T650, E2, LifeDrive.)

### 6.1 What is NVFS

Non-Volatile File Storage, i.e. a permanent storage that will survive even the battery removal.

Unlike older Palm handhelds, databases are located in the NVFS storage and cannot be accessed directly. Instead, they are accessed through a reserved RAM area called DbCache.

It is a kind of window into NVFS: Prior to use the DB must be copied to the DbCache and after the use the changes are copied back to NVFS and the DB may be removed from the DbCache to provide the space for other databases. For efficiency reasons the last step is delayed until the DbCache is full.

DbCache uses to be around 10 MB and you can have installed a lot more data in the RAM. You can even have a single database that is larger than the whole DbCache. This implies a fundamental consequence for the Palm programming: The position of the database or their records is no longer constant.

### 6.2 What kind of problems happen

#### 1. NVFS itself has problems.

(Concerns mainly T5 and early T650 releases; later handhelds are much safer.)

It appears that certain functions are not reliable and can return bad values or cause random crashes. Fortunately their frequency is not too high.

*Remark:* Latest T5 update

([www.palmone.com/us/support/downloads/tungstent5/tungstent5update.html](http://www.palmone.com/us/support/downloads/tungstent5/tungstent5update.html)) seems to have solved most of NVFS bugs for this handheld.

#### 2. Variable DB position.

(Discussed above.) Programs not realizing this will occasionally crash.

#### 3. Background applications.

Although "hacks" proved to work reliably in the past, they are as a rule not prepared for NVFS. As a rough guideline you may expect that hack written prior to NVFS launch (October 2004) are potentially risky.

The most frequent problem is that the application itself can be moved. Although this can be considered as Palm OS problem, the workaround must be done by the hack itself. If not, the user will experience random crashes.

### Specifics of a backup program

Backup works with huge amounts of data, which necessarily leads to a full DbCache and higher frequency of DB swapping. This in turn implies higher risk of the NVFS crashes.

This also means a higher risk of hack crashes.

*Data errors:* NVFS (mainly early releases) may return incorrect data.

This effect (invalid backup set) can be discovered only by using tool such as the Resco Backup Verify function.

## 6.3 How to perform backup on NVFS devices

1. If you can identify risky background applications, then lock them via Application Lock Dialog. There is a fair chance that this measure will help.
2. Run backup after warm reset. This minimizes bad interactions with hack programs.
3. Exclude the old PIM databases. (This isn't an NVFS-related point, but it might save your PIM data.)
4. Run Backup. On eventual crash resume with Update. Then run Verify and update the differences found. (Notice that some differences are natural - e.g. preferences or various caches can change at any time.)
5. If you have too large installation and the above steps do not work, then you can still seek for a partial solution. Backup just the most sensitive data. (By making suitable file selection.)

## 7 Device specifics

### Treo 650

You should turn the phone OFF on the Treo 650 prior to performing a restore operation

### LifeDrive

Readonly flag is used to denote databases that are pre-installed after the hard reset. Suggested strategy:

- Do not modify readonly flags
- Exclude readonly databases (Exclude list dialog)

### New Palm handhelds

Starting from Tungsten T3 you should exclude old PIM databases (Exclude list dialog) or you may lose your contacts, appointments etc.

### Tungsten/T5

Make sure you installed T5 update

([www.palmone.com/us/support/downloads/tungstent5/tungstent5update.html](http://www.palmone.com/us/support/downloads/tungstent5/tungstent5update.html))

## 8 Problems

### 8.1 Backup crashes.

Although we cannot exclude Resco Backup bug, the reason is often found elsewhere.

The most frequent causes:

- a) Influence of active background applications.  
Suggestion: (Important mainly for NVFS-based systems.) Run Backup after warm reset or deactivate background applications or lock them via Application Lock dialog.
- b) NVFS errors. (Concerns NVFS-based systems.)
  - a. *T5 users*: Make sure you installed T5 update
  - b. *T650*: There are updates for the first releases. Newer handhelds don't have substantial problems.
  - c. *E2, LifeDrive*: No substantial problems.
- c) Card problems. To test this eventuality get some file manager and browse the card. FAT problems may concentrate on some directory only. Therefore go to the /Palm/backups folder, browse it and try to add/delete some files.

### 8.2 Restore causes a reset loop

Possible reasons:

- Invalid backup set used. Could be interrupted backup, damaged card a.s.o.
- Some DB was backed up in invalid state. This can happen by chance (scheduled backup was run during the DB update) or e.g. some application is programmed so that it is dangerous to backup certain databases. A good example are the old PIM databases.

Solution:

- Interrupt the reset loop by a warm reset. (This should go in most cases.)
- Run RBackup from the card and compare the backup set used for release to the RAM. (Verify or Diff dialog.)
- (New Palm handhelds) Make sure that the old and new PIM databases are not mixed: If the backup set contains AddressDB, MemoDB, ToDoDB or DatebookDB, then delete them from the backup set and repeat the restore.
- Try to restore pyslaunchDB individually. This is the launcher DB and it is permanently updated during the restore, so it is possible that the things went wrong.
- Look for the application that fails to initialize. Start disabling or deleting installed applications until you find the one that causes the problem.

### 8.3 Specific errors

**Error: A file with this name already exists at this location (0x2A06)**

*Explanation:*

Names of the backup folders are derived from the time expressed in minutes.

The backup must have been less than 1 min after the last backup.

*Solution:*

Wait 1 min and retry.



**Q: I just completed backup, but Verify shows differences.**

A: Probably file that was just changed. This is normal for Saved Preferences, Unsaved Preferences, psyslaunchDB, Queries etc.

**Q: After the Restore launcher shows strange things.**

(Some applications are duplicated, applications have strange icons and similar...)

I use default Palm launcher.

A: Restore of the psyslaunchDB failed. The problem probably happened when Palm OS imported the restored psyslaunchDB. Restore psyslaunchDB again, eventually repeat reset. (psyslaunchDB is repaired during the reset.)

If it does not help, then delete psyslaunchDB (you will need a file manager such as Resco Explorer) and reset. This will result in losing the categories, but will solve the problem.

**Q: Can't open backup set archives using my zipper.**

A: Probably you need to switch on CRC in the project settings dialog. It is switched off for performance reasons by default.

**Q: Scheduling non-default projects**

A: Description of these projects is (unlike the default project) stored on the card. Hence, this project will be scheduled only if the card is inserted. RBackup performs re-scheduling whenever the card is removed or inserted.

**Q: What does it mean "DBprotected" error?**

A: This error occasionally appears in the Restore report list. It means that the database being restored cannot be overwritten because it is "protected" by Palm OS. (Usually as a consequence of some 3<sup>rd</sup> party application request.) Warm reset should "de-protect" this database.