Maintaining labElephant

Section 1: Introduction

labElephant is a Microsoft Access database application that is intended to be run primarily on a wired local area network (LAN) or via a remote connection such as Citrix Server where the front and back ends are on the same server. The application will also work on a wireless network where the front and back ends are connected through a wireless signal, but this comes with a risk of back end database corruption if the wifi signal is weak or if the connection is otherwise broken. If you plan to allow users to use wifi to connect, the risk is manageable, but it is especially important to create regular backups of your labelephant back end. It is important to do this anyway, in case of unforeseen back end corruption.

This guide describes ways to ensure that your labElephant back end is protected by regular backups, and how to recover if/when back end corruption occurs.

Section 2: Backing up the labElephant Back End

There are several ways to ensure that your labElephant back end is backed up on a regular basis. At least a daily schedule is advisable: then at worst you will only need to have everyone re-enter data from the past day. This has only happened once in four years in labElephant beta test. Usually it is possible to recover from a corruption without resort to that (Section 3). *It is the responsibility of the user to make backups of the back end. labElephant Software is not responsible for any data loss resulting from back end corruption.*

Ways to ensure a backup is made:

1. It may already be happening
   Your network administrators should already be making scheduled backups of files on your lab server. Check with them to see how often this happens. They should be able to restore a corrupted back end database file for you, if necessary.

2. Use the Windows Task Scheduler

   [Important note: for the scheduler to work, the user must have "Full Control" permissions on any folder containing the back end. Consult your network administrator to determine whether that is the case. If not, the network administrator may need to set this up.]

   This can be good to set up even if your network administrators do daily backups: it gives you immediate access to the backups without having to bother them.
   Whenever the labElephant back end is moved or updated, a batch file to back up the back end is made, and is saved to the labElephant front end location on your computer:
   C:\Users\%USERPROFILE%\AppData\Local\labElephant\labEleBackup.bat
   where %USERPROFILE% is the your username.
   This batch file when run will create a new backup of your labElephant back end and save it to the labEleBackups folder in your back end location.

You can set the batch file to run automatically using the Windows task scheduler, as long as your computer is switched on at the time you schedule it to run.

To set up the Windows Task Scheduler, from the Start button search box (Windows 10) type "Task Scheduler" and Open the App:


Select "Create a basic task", and enter a name and description for the task:
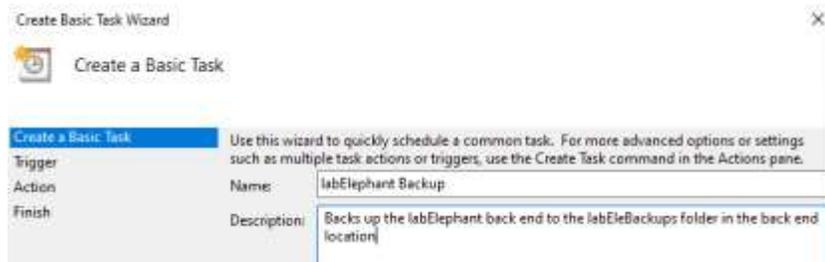
Select the task trigger: daily is recommended

Select Next, then enter the time you want the backup to occur. Choose a time when there will be no users checked in:
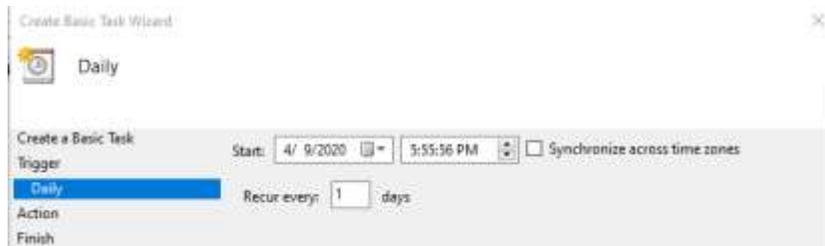
Select Next:
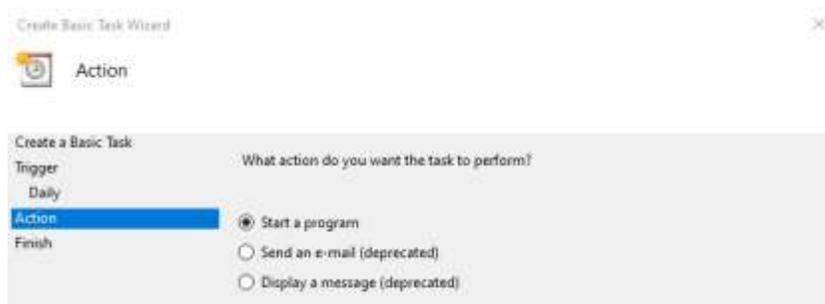
Then Next again, and browse to the batch file:
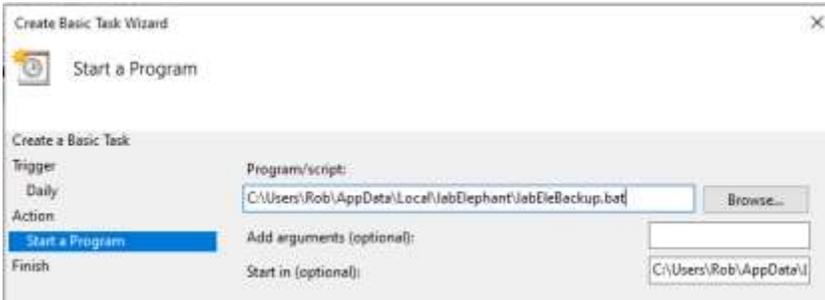
Enter the folder path in "Start In", select Next, then Finish, and close the Task Scheduler.
Check that the batch file runs as scheduled. If the backup is not created, check with your IT personnel for any network restrictions that could have interfered with it.
To restore a backup, copy it to the back end location from the blabEleBackups folder, and (after deleting the corrupted back end), rename the backup to the corrupted back end name.

3. Make a backup from within labElephant
A backup of the labElephant back end can be made at any time by the PI from within labElephant, as long as no-one else is checked in. From the Switchboard form, select the button with the "Save" icon:
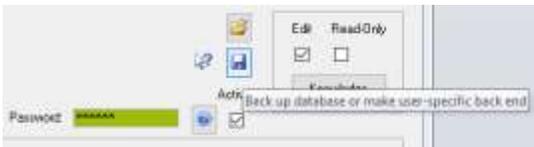
Select the button to check that no-one else is checked in. Then select the check boxes to determine whether you want the back end to undergo a Compact-and-Repair (see Section 3 for guidance on this), and whether you want the backup to replace the current back end. Then select Start Back-up. Doing a compact and Repair periodically recovers back end capacity freed up by (say) deletion of OLE links, and maintains back end health. "CR" is added to the end of backup file names when this option is chosen.
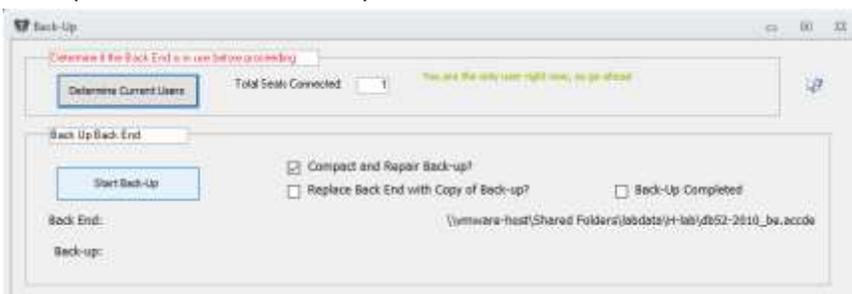
(If the security window pops up, select Open, and the backup process will finish).

4. Simply copy the back end to another folder from within Windows Explorer
This will create a snapshot of your back end that you can store anywhere. This requires discipline as a strategy for making regular backups. Automation is better.

Section 3: Compact-and-Repair

From Microsoft:

"Database files can grow quickly as you use them, sometimes impeding performance. They can also occasionally become corrupt or damaged. You can use the Compact and Repair Database command to prevent or fix these problems. The compact process does not compress your data — it makes your database file smaller by eliminating unused space. The Compact and Repair Database command can also help improve performance of your database."

"During the repair process, Access may truncate some data from tables that are damaged. It is sometimes possible to recover this data from a backup. In addition to your regular backup strategy, you should make a backup immediately before you use the Compact and Repair Database command."

There are four ways this strategy can be implemented in labElephant:

1. Use the Windows Task Scheduler
   Use the procedure described above in Section 2.2 to create a Compact-and-Restore schedule, with the following differences:
   a. Set the Trigger to weekly
   b. Set the time to after the daily backup (allow time for the backup to finish)
   c. For the Program/script, browse to:
      C:\Users\%USERPROFILE%\AppData\Local\labElephant\labEleCompact.bat

   In this way the back end will undergo weeky Compact and Repair, with recourse to a non-compacted backup made just prior, in case it is needed.

2. Run the labEleCompact.bat file by double-click on the file in Windows Explorer
3. Use the Back-up form within labElephant to create a backup with the Compact and Repair option (see Section 2.3 above). First create a backup without Compact and Repair. Then create a backup with Compact and repair.
4. Use Microsoft Access. Open Access from the Start button, and select Open under the file tab. Navigate to the back end location, select the back end database file, then select OK while holding down the Shift key. After the back end file has loaded, select the Compact and Repair button, also under the file tab:

   When done, close Access.

Section 4: Recovering from Back End Database Corruption

1. First try a Compact and Repair on the back end, by one of the methods in Section 3, after making a backup copy (Section 2). The Compact and Repair process may take a while. When it has finished, try opening the Front End again, to see if the Back End is now accessible. This will resolve most instances of Back End database corruption. If successful, delete the copy you made.

2. In the event that the Compact and Repair process was not successful, copy the last Backup to the directory where the Back End is kept, delete the corrupt Back End, and rename the Backup to the Back End name. Then try opening the Front End again. The Backup can be one you made yourself from within labElephant or one supplied by your network administrators from their regularly scheduled backups.