ALEPH VERSION 18.01

Upgrade Express 17.01 to 18.01
User Guide
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1 Introduction

The ALEPH integrated library system is constantly under development in order to accommodate ongoing changes in the automated library market’s requirements; to respond to ALEPH customers’ development requests; and to adopt and integrate new hardware and software technologies. Ex Libris releases a new version of ALEPH annually that includes new features, enhancements to existing features and one that is compliant with new hardware and software technologies.

The ALEPH upgrade process is the process of replacing a version of ALEPH by a newer version.

The main objective of the Upgrade Express is to perform the upgrade of ALEPH versions quickly and efficiently so that the cutover phase will take less than 36 hours (a weekend). It is important to note that during this period, the library’s OPAC can function in read-only mode (in other words, activities such as hold requests, photocopy requests, and so on, are disabled).

The methodology of Upgrade Express is simple. Upon the new version - ALEPH 18.01 - a copy of the 17.01 utree and database is added. This creates an ALEPH 18.01 software environment with 17.01 configuration and data. It is also possible to upgrade from v.16 to v.18 without installing v.17 – in this case, upon the new version - ALEPH 18.01 - a copy of the 16.01 utree and database is added. Minor changes need to be made to allow login. After these changes, the Upgrade process is executed and transforms the configuration and data into 18.01 format. The whole process is performed without download and/or upload of data.

This process can be performed several times for testing before the final cutover. We highly recommend performing at least one test.

Although much of the Upgrade is done automatically, some configuration has to be done manually, for example, the implementation of changes to Web files. Some of these changes might take longer than 36 hours. For this reason, there is a mechanism to store these changes during the test phase and restore them instantly during the cutover phase.

This document explains step-by-step how to perform the upgrade from ALEPH version 17.01 to version 18.01.

2 Upgrade Conventions and Requirements

2.1 Conventions

In Upgrade Express documentation, we refer to the “source” and “target” versions or environments.
The **source version** is the current production platform and ALEPH version environment that the customer would like to upgrade. In this document the source version is ALEPH 17.01.

The **target version** is the new production platform and ALEPH version environment that is the target of the upgrade process. In this document, the target version is ALEPH 18.01.

### 2.2 Upgrade Options

- **Option 1.** Running Upgrade Express "inside the database". In this case, version 18.01 software is installed in parallel with version 17.01 software and is connected to the same database as version 17.01. Only one version can be active at a time (version 17.01 before the upgrade and version 18 after the upgrade). Advantage of this method: less downtime. Disadvantage: in case of failure restore from backup will be required. The risk of such a “failure” is not any higher than during usual work of the system, as the upgrade kit runs SQL scripts inside the database in order to upgrade the data. A full cold backup before the upgrade is absolutely necessary.

- **Option 2.** Upgrade Express can also be run in a separately-installed database. In this case version 18.01 software is installed together with a new database. Advantage of this method: in case of failure you can continue working on the old database while the problem is being fixed. Disadvantage: more downtime, more disc space required.

If you choose Option 2, before you can run Upgrade Express, you will need to bring your data to the newly installed instance. There are two methods proposed for doing it:

- Import and Export method. This method can take a long time for larger systems, therefore it is only suitable for “smaller” sites. The export may take 2 hours and the import 20 hours on a site with 1 million bibliographic records. It is also possible to exclude Oracle tables that take longest to import (Z97, Z98, and so on) from the import, and then run p_manage_01 to build these tables. P_manage_01 can be run either before or after the Upgrade Express. The Installation team will be able to create the same number of user tablespaces on target as you have on the source installation. The Import and Export can be performed using the Oracle export and import utility:

  To download upx_exp_imp_utility.tar from the FTP server:
  ```
  ftp ftp.exlibris.co.il
  ver18ux/password - to be obtained from a local representative
  bin
  get upx_exp_imp_utility.tar
  ```

  To open the kit:

  ```
  1. Type:
  >>gzip –d upx_exp_imp_utility.tar
  ```
The upx_exp_imp_utility.tar is composed of four files:

- oracle_exp_aleph_libs
- oracle_exp_aleph_libs_a
- oracle_imp_aleph_libs
- oracle_imp_aleph_libs_a

2. Copy the oracle_exp_aleph_libs and oracle_exp_aleph_libs_a files to the source aleph_proc

3. Copy the oracle_imp_aleph_libs and oracle_imp_aleph_libs_a files to the target aleph_proc

4. On the source:
   ```
   csh -f $aleph_proc/oracle_exp_aleph_libs
   ```
   The job will echo the libraries which will be exported, the log file and ask for confirmation. The export will run in the background

5. After the export finishes you must move or copy or ftp or ln –s the files to the same place in the target $TMPDIR

6. On the target:
   ```
   csh -f $aleph_proc/oracle_imp_aleph_libs |& tee $TMPDIR/oracle_imp_aleph_libs.log
   ```
   You can then view the logfile in $TMPDIR. Note that Z98 in the bibliographic and the authority libraries make take particularly long to import. You can follow the progress of the import of a particular table by regularly logging into SQL and running counts against the table concerned. If the count is growing, it means that the import is proceeding as expected.

   o Cloning database method. Please contact your local representative for complete instructions. This requires at least as much free disk space as the source database.

2.3 Prerequisites

1. Install the Target Version (18.01)

2. Download the Upgrade Express Package

2.3.1 Installing the Target Version (18.01)

The first step in the actual upgrade process is the preparation of the target environment. The target version (18.01) can be installed on the same server as 17.01 or on a separate server. If installed on the same server, the target version (18.01) can share a database with version 17.01, or have a separate database. In any case, the hardware and operating system requirements for 18.01 and the size of the customer’s database must be taken into account. The installation is scheduled with the local Ex Libris representative, and you may be required to complete the Request for Installation form.
2.3.2 Downloading the Upgrade Express Package

Download Upgrade Express package in the target environment. The Upgrade Express Package is available for download from the FTP server and is a tar file which can be extracted anywhere but we recommend to extract it under $ALEPH_MOUNT.

```plaintext
cpf ftp.exlibris.co.il
ver18ux/password to be obtained from a local representative
bin
get <filename>

For example, get upgrade_express_1701_1801.tar.1.10.gz

To open the kit:
>>gzip –d <filename>

For example, gzip –d upgrade_express_1701_1801.tar.1.10.gz

>>tar –xf <filename>
```

2.4 When to upgrade your Oracle database from Oracle 9.2.0.7 to Oracle 10.2.0.1.0

When your source is Oracle 9.2.0.7 and your target is Oracle 10.2.0.1.0, and when not using the import/export option, then you have to upgrade your Oracle database from version 9.2.0.7 to 10.2.0.1.0. For instructions, refer to the How to upgrade an Oracle database from version 9.2.0.7 to 10.2.0.1.0 document.

3 Upgrade Process

This section is divided into two subsections. The first subsection presents a generalized list of the actions to be performed during the upgrade process. The second subsection returns to this list and details the conditions and procedures for each step in the upgrade process.

3.1 Basic Outline of the Upgrade Process

The following is a basic list of the steps to be performed during the upgrade process:

1. Copy the source utree (17.01) into the target installation (18.01) (see Copying the Utree on page 8).

2. If the upgrade is performed in a separate database, copy the complete source ALEPH database (17.01) into the target installation (18.01) (see Copying and Upgrading the Database on page 9).

3. Perform the minimal required manual changes to selected configuration files such as updates to $alephe_root/aleph_start in order to allow basic functions such as login (see

5. Copy the apache directory from the **utree** provided with the target version (18.01) into the new **utree** brought from the source version (see *Copying Apache* on page 10).

6. Perform import of the demo libraries in the target version (see *Importing Demo Libraries* on page 11).

7. Configure the Upgrade Express setup (see *Configuring Upgrade Express* on page 11).

8. Backup Oracle tables to be upgraded (optional) (see *Backing up Oracle Tables* on page 11).

9. Run the Upgrade Express (see *Running the Upgrade Express* on page 13).

10. Check upgrade results (logs, functionality, and so on) (see *Analyzing the Upgrade Express Results* on page 13).

11. Implement changes described in the implementation notes (see *Implementation Notes* on page 14).

12. Perform standard final actions (such as clear_vir, repackaging of the cataloging tables, and so on) (see *Packaging and Final Steps* on page 14).

### 3.2 Upgrade Process in Detail

The following is the detailed description of the steps to be performed during the Upgrade Express process. Please note that when the upgrade is run more than once, it is recommended to repeat the whole series of steps for each run. In case of running two upgrade packages (such as when upgrading from 16 to 18), it is recommended to run the standard final actions (such as UTIL I/6 and others described under the *Packaging and Final Steps* section on page 14) only after running the last upgrade (based on our example, only after running the upgrade from 17 to 18).

#### 3.2.3 Copying the Utree

Make sure that ALEPH is down on the target version (run $alephe_root/aleph_shutdown$). Copy the complete **utree** from the source (17.01) to the target (18.01). Use the tar command in order to copy the tree. This is necessary in order to copy the symbolic links correctly.

Note that the **utree** delivered with the target installation (18.01) by Ex Libris must be backed up. Some steps in the upgrade process make use of files in this tree.

It is recommended to clean the copied **utree** as much as possible. Remove all unnecessary files from all directories (such as scratch, files, print, and so on).

**Example of the commands that can be used:**

```bash
cd /exlibris/aleph/
Backup u18_1 tree: mv u18_1/ u18_1.orig/
Tar u17_1 tree: tar -cf u17_1.tar u17_1/
Move u17_1 to u18_1: mv u17_1/ u18_1/
Restore u17_1 tree: tar –xvf u17_1.tar
```
3.2.4 Copying and Upgrading the Database

There are two different issues:

- Using the current instance of the database versus working on a copy of this instance.
- Performing an Oracle database upgrade if the source version and the target version are not on the same Oracle version.

If you have decided to stay on the same instance of the database, a cold backup of the database is a must. Please consult with your DBA staff regarding the cold backup process. This can occur when you do not have enough disk space in order to clone the entire database. The disadvantage is that in case of upgrade failure a recovery from backup is needed. This might take longer.

The more secure option is cloning the database. Copy the full ALEPH database from source to target (clone). The amount of time it takes to copy a database depends on the size of the database and system resources but usually will take no more than a few hours. Please consult with your DBA staff regarding the procedures for cloning the database. This option is recommended. The recovery is faster than in the previous case. The disadvantage is that it requires double disk space.

For small and small-medium size libraries, there is an option to create a new instance of the database, and copy the data by exporting and importing using standard Oracle procedures. This process might take relatively long time but might be useful if the library is relatively small.

If your target version's Oracle version is higher than the one in the source version, you should also upgrade the database using the procedure as described in the appendix. This will be the case if your version 18.01 has Oracle 10g. However in the abovementioned third case (exporting and importing), when you create a new instance of the database, you can create this new instance already under the Oracle version of the target version, hence exporting from the old version plus importing it to the new one will do the database conversion on-the-fly.

A database with 10,000,000 bibliographic records takes about 5 hours to copy using the cloning database method. [contact local rep for complete instructions on cloning a database]. The export may take 2 hours and the import 20 hours on a site with 1 million bibliographic records. [For instructions on how to export/import Oracle data see 2.2 Upgrade Options on page 5].

Regardless of all the above, the upgrade requires some additional disk space since during the upgrade of Oracle tables, the processed table is renamed for backup in case the upgrade fails. This means that in the target installation, you need additional space in each table space. The additional space should be at least twice the size of the largest table/index in the tablespace.

3.2.5 Making the Minimal Required Manual Changes

To enable login into the new version, make the following minimal changes:

1. Add the following line to the ./alephe/tab/tab_version file:

   18.01  ALEPH Y 0
2. Add valid ./alephe/tab/license and alephe/tab/license.www_x files. Either copy the licenses if they have been supplied by Ex Libris or copy the license files from the Salephe_dev/alephe/tab directory. (If you have already copied the utree, this will be located in your u18_1.orig directory).

3. Restore aleph_startup and aleph_shutdown files supplied with the version (will now be found in u18_1.orig/alephe).

4. Synchronize the new /alephe/aleph_start file with the aleph_start file supplied with the target installation under the utree supplied with the version. It is recommended to merge the files by taking the file supplied with the installation and adding local specifications into the new file. If the Upgrade Oracle Database from 9.2.0.7 to 10.2.0.1.0 will be run, do not change the ORACLE SID to the version 10 database until the upgrade has completed.

After you have made these changes, you will be able to log in to the version and to work with SQL *Plus.

Please refer to the Manual Changes: Store and Restore section on page 14. This section describes how to save modified files so that potential subsequent upgrade runs do not override them.

Login into version 18 and test aleph_startup and aleph_shutdown. Make sure that the correct version has been shutdown and startup.

Restore the tab_system_status file supplied with the version (will now be found in u18_1.orig/alephe/tab).

3.2.6 Copying Apache

In order to have a functional Apache configuration, you must copy the apache directory supplied by the version (under the backed up utree) into the new utree to be upgraded. Copy the directory by using the tar command in order to preserve the links and to avoid copying them as directories. Note that the links might point to locations that do not exist and it is still necessary to recreate the links.

```
tar Apache directory in the original u18_1/ tree:
cd /exlibris/aleph/u18_1.orig/alephe
tar -cf apache.tar apache/

Move apache.tar into the "real" ver 18 tree:
mv apache.tar /exlibris/aleph/u18_1/alephe
cd /exlibris/aleph/u18_1/alephe

Untar: tar -xvf apache.tar
```

After copying the apache directory, perform the following:

1. If necessary, add any local configuration (such as local files, and so on) that was part of your previous apache.

2. Clean up the logs directory (/alephe/apache/logs) by removing all files (rm *).

3. Recreate the apache links by running the following command from the apm directory (get to this directory by typing apm at the command line):

```
create_htdocs_links
```
You will be required to restart the Apache server.

### 3.2.7 Importing Demo Libraries
At this point, the data of the demo libraries is also in the format of the source database (17.01). In order to replace this data with the demo data supplied with the installation, run the following command from the `ap` directory (get to this directory by typing `ap` at the command line):

```
imp_demo_libraries
```

This process make take up to a couple of hours, depending on the capacity of your server. Bear in mind that if your `usr_library` or `pw_library` in `aleph_start` is set to `usr00`, this process will override your user password data (Z66 and Z67).

### 3.2.8 Configuring Upgrade Express
In order to perform the initial upgrade configuration, perform the following:

1. Go to the `upgrade_express_1701_1801` directory by entering the following:
   ```
   cd $ALEPH_MOUNT/upgrade_express_1701_1801
   ```
2. Invoke the Upgrade Express menu by entering the following command:
   ```
   source ./upgrade_util
   ```
3. From the Upgrade Express menu, select the first option: Define Upgrade Parameters.
4. Select the View Current Parameters option. This option will display a default set of parameters:
   - The following libraries are not in demo and they will be processed
   - Main BIB library
   - Course libraries
   - Notification email address
   - Current Languages

   The defaults can be overridden if necessary. Selecting the Update parameters option from the Define Upgrade Parameters submenu does this. This option enables you to update the parameters above.

### 3.2.9 Backing up Oracle Tables
You can back up the tables that are modified by the Upgrade Express. Note that this step is optional but recommended. Carry out the backup as follows:

1. Invoke the Upgrade Express menu as explained in the previous step.
2. Select the **Backup/Restore Oracle Tables to be Upgraded** option. The following choices are displayed:
   - Backup
The Backup option enables you to create a backup of the tables that are modified by the upgrade. When using this option, you are prompted to supply a directory for export and the table name of the tables to be backed up (ALL can be used for all tables involved in the upgrade).

If you supplied an e-mail address at the parameters stage, a notification e-mail message will be sent when the export is complete.

The following Oracle tables are modified by the 17.01 – 18.01 Upgrade Express process: Z01, Z129, Z303, Z309, Z31, Z325, Z37, Z37H, Z403, Z61, Z66, Z68, Z52, Z69, and Z305.

The following new Oracle tables are added by the 17.01 – 18.01 Upgrade Express process: Z323, Z370, Z370H, and Z73.

The List all backed up tables option enables you to view the list of tables that you have backed up.

The Restore option enables you to restore the backed up Oracle tables in the event if something has gone wrong with the upgrade. As with the Backup option, you are prompted to supply the directory of the exported files to be imported and the table name of the tables to be imported (ALL can be used for all tables involved in the upgrade).

If you supplied an e-mail address at the parameters stage, a notification e-mail message will be sent when this is complete.

3.2.10 Upgrade Express localization

Note that for most customers this section is not relevant.

The Upgrade Express is multi-language. The localization process includes the translation of the Upgrade Express to other languages other than English. This process is usually done by distributors / offices and does not require the customers’ interaction.

Upgrade Express can be translated into different languages - one or more during the same upgrade. While running, each language-related step will iterate over all defined languages. The languages are defined at the configuration stage.

The localization is done as follows: Under upgrade_express_1701_1801/conf each language has a separate directory, in which all language-related steps are configured. New languages must be added to this location by copying the original eng directory and translating all files in it.

Non-language-related configuration files (usually there are only a few) are under the upgrade_express_1701_1801/conf/general directory.
3.2.11 Running the Upgrade Express

All previous steps can be considered prerequisites for the Upgrade Express process. In order to run the upgrade, invoke once again the Upgrade menu and select the **Run Upgrade Express** option.

The upgrade program runs a number of steps that include conversion of data and setup. Every step is listed in a log file that explains what action is included in the step and whether it was successful or not.

The **Run Upgrade Express** option enables you to run a single step or the complete set of steps. It is highly recommended to run the complete set of steps. The option to run a single step should only be used if you find that a particular step failed and you do not want to restart the complete process.

The upgrade program may take several hours to run, depending on the size of the database and server resources.

Note that while the upgrade is running, all menu options are disabled in order to avoid conflicts that might arise by, for example, changing the initial parameters.

If you supplied an e-mail address at the parameters stage, a notification e-mail message will be sent as soon as the upgrade is complete.

3.2.12 Analyzing the Upgrade Express Results

As explained above, the Upgrade Express includes a number of steps/tasks. After running the upgrade, a log file for each of the steps is created under the **log** directory located under the **upgrade_express_1701_1801** directory. Each task performed has been assigned a numeric identifier; the log for the file appears in the directory under the following convention: [step_number].log (for example, 198.log). These files contain a description of the task performed and success/failure messages.

The first task to be performed as soon as the Upgrade Express concludes is the analysis of these log files in order to detect any problems as soon as possible. In the event of failed steps, you might need to perform the tasks manually or re-run the step after making necessary changes.

You can view the log file by invoking the Upgrade menu and selecting the **View Logfiles** option. This option enables you to view the main log or the log for a single step. In addition, you can view the logs of previous Upgrade runs.

Following is an example of a manual change that might be required:

Our sample step adds a new form to the form_eng directory of the administrative library. While running the upgrade, the program has detected that the file already exists in the target **utree**. In this case, the log of the step will state that the file was not added since it found that the file already exists.

The user’s task is to analyze if he should keep the original file or manually copy the new file.

Following is another example:

Our sample step adds changes to a form in the form_eng directory. Based on the Upgrade Express methodology, changes to the form_eng files are only added if the target file is identical to the demo file of the source installation (17.01). If the files
differ, the log of the step contains a message informing the user that the change could not be made and that the changes should be implemented manually.

Please refer to the Manual Changes: Store and Restore section on page 14. This section describes how to save modified files so that potential subsequent upgrade runs do not override them.

3.2.13 Implementation Notes
In addition to failed steps, which need to be handled manually, there are a number of configuration files (mainly HTML files) that require manual upgrade. A list of these changes is included in the Upgrade Express 17.01 – 18.01 - Implementation Notes documents distributed with the Upgrade Express programs.

Please refer to the Manual Changes: Store and Restore section on page 14. This section describes how to save modified files so that potential subsequent upgrade runs do not override them.

3.2.14 Packaging and Final Steps
The final step of the upgrade is to perform a set of standard actions. These actions can be performed by invoking the Upgrade menu and selecting the Perform Post Upgrade Express Actions option.

Following actions should be performed:

- Remove UTF files
- Clear VIR sessions
- Repack Cataloging tables (UTIL M/7)
- Synchronize Headers (UTIL H/2-3)
- Create Print Templates Package for the PC Client (UTIL I/6)

After these steps are completed, re-start servers and UE processes. The system should be operational.

Note that when performing two separate Upgrade packages, this option should be run only after the last Upgrade Express package. So if upgrading from 16.01 to 17.01 and then from 17.01 to 18.01, the Post Upgrade Express Actions option should be run only after the last run of the second upgrade.

4 Some Guidelines on the Upgrade Methodology

4.1 Manual Changes: Store and Restore
All configuration files that are modified during the Upgrade Express process must be saved to the side – otherwise subsequent upgrade runs will override them. The Upgrade Express package has a mechanism for “storing” files that have been modified during the process. Each time a file is modified, use util d:

D. Online Store/Restore Utilities
0. Exit Procedure
1. Store Library Data
2. Store Library Configuration
3. Restore Library Data
4. Restore Library Configuration

All saved files can be restored after a subsequent run of the Upgrade Express.

4.2 What is not included in Upgrade Express

Upgrade Express upgrades the customer's ALEPH system with the aim of maintaining current setup and functionality. The upgrade process is not the time for implementing new functionality as this will interfere with the upgrade itself. New functionality should be implemented after the switch to production with the new version. Upgrade Express does not include automatic setup for implementing new and enhanced functionality, unless it must be implemented to maintain current functionality. Upgrade Express from 17.01 to 18.01 will not even add new setup files or changes in setup files unless they are mandatory.

5 Cleanup utilities

Due to architectural changes in ALEPH, for clarity and upgrade purposes, as from version 17.01 pc_b_[lng] and error_[lng] directories are under aleph directory, which means they are a part of the installation of the product. However the customer can still configure these files under the alephe directory like in the previous versions of ALEPH. In order to avoid obsolete duplicity and possible misunderstandings there is a need to cleanup these directories under alephe. The Upgrade Express includes two utilities which can help the customer to cleanup his pc_b_[lng] and error_[lng] directories.

5.1 pc_b_[lng] files cleanup utility

This utility is available from the main menu of the Upgrade Express:

6. Organize pcb files

It compares the ./aleph/pc_b_[lng] directory to the customer's ./alephe/pc_b_[lng]. The appropriate report is given with the detailed current situation of the directory and some advices regarding the action which should be taken.

- Similar files in the two compared directories can be deleted from ./alephe/pc_b_[lng].
- Files with differences may be customized and they should remain under alephe.
• Files which appear only under ./alephe/pc_b_[lng] and not under ./alephe/pc_b_[lng], are not in use any more by ALEPH, and they can be deleted.

The "delete obsolete files" menu point deletes all the similar files from ./alephe/pc_b_[lng].

5.2  error_[lng] files cleanup utility

This utility is available from the main menu of the Upgrade Express:

7. Organize error files

It compares the ./aleph/error_[lng] and ./alephe/error_[lng] directories. The appropriate report is given with the detailed current situation of the directory and some advices regarding the action which should be taken.

• Similar files in the two compared directories can be deleted from ./alephe/error_[lng].

• If at least one error message line is different in a file, this should be merged

The "2. Delete similar files" menu point deletes all files which include all messages similar. The merge actions should be taken manually by the customer.