

Address Book Appliance (ABA) Command Line Interface Specification

Mark R. Heckman

CHANGE LOG			
<i>Date</i>	<i>Vers</i>	<i>Change</i>	<i>By</i>
	1.0	• First version posted to Bb	mrh
	1.1	• Added HLP (help) command and fixed typos	mrh
4/26/20	1.2	• Changed completion code in ADR “RecordID already exists” to “Duplicate recordID”, and added that completion code to IMD command • Added EXT (exit) command • Added completion code for unrecognized commands	mrh
4/29/20	1.2.1	• Clarified handling of duplicate recordIDs in the input file for IMD • Added “Number of records exceeds maximum” completion code to ADR • Modified LIN to prompt for the password separately	mrh
5/29/20	1.2.2	• Added command prompt • Added LSU (list users) admin command	mrh
4/1/21	1.2.3	• Improved explanation for various completion codes.	mrh
10/4/21	1.2.4	• Changed DAL (display audit log) command to RAL (read audit log) • Added DAL (delete audit log) command • Changed format of database records in input and output files	mrh
7/20/22	1.3	• Added WAI and REA commands • Changed format of Input and Output data files • Removed most storage constraints, including maximum number of recs	mrh
8/10/22	1.3.1	• Updated ToC	mrh
7/28/22	1.3.2	• Fixed minor typos in text.	mrh

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Introduction

This document constitutes the command line user interface specification of the Address Book Appliance (henceforth, ABA). The ABA is an application for managing the storage and retrieval of physical address, phone number, and email address information of individuals and organizations.

The ABA application runs on a Linux operating system base and is entirely command-line driven. All user inputs and outputs are in the form of text entered or displayed in a Linux terminal. All accounts on an ABA are password-protected.

Syntax Key

Syntax for each command described in this document is represented by the name of the command, followed by input parameters. Parameters are indicated by angle brackets, "<" and ">". Optional parameters are indicated by square brackets, "[" and "]". An unspecified number of parameters (zero or more) is indicated by an ellipsis, "...".

Some parameters, such as record fields, are named. These parameters are entered by using the name of the parameter, followed by an equals sign ("=") and the parameter value, as in "name=value". For example, "SA='100 Main St.'".

For example, the following command "EDR", has two required parameters, one of which is a named parameter, and may accept one or more optional named parameters:

```
EDR <recordID> <field1=value1> [<field2=value2> ...]
```

Command Prompt

When the program first starts, and after each command, the system will present a command prompt: "ABA>". This will indicate to the user that the system is running and ready to accept a command.

Startup

When the program first starts, it will present the following text to the user:

Address Book Application, version <version number>. Type "HLP" for a list of commands.

Initial System State

When first installed, the ABA has only one, default user, named "admin". On first run, upon attempting to login, the admin user will be prompted to create a password (see the specification for the "LIN" command, below).

Admin User vs. Normal Users

After logging in, the admin user is permitted to add and delete normal user accounts (admin accounts cannot be added or deleted) and manage audit log data. Admin users may not save address book records.

A normal user, as with the admin user, must create a password on first login. Thereafter, normal users may add, edit, or delete address book records, or import or export collections of database records.

ABA Storage Constants

The ABA has the following configuration constants:

- Maximum size of a password = 24 characters
- Maximum size of a userID = 16 characters

Account Identification and Authentication

Each account must be associated with a unique userID. UserIDs must consist of between 1 and 16 ASCII letters (upper and lower case) and numbers, in any combination.

Users authenticate themselves to the ABA by providing an account userID and the password associated with that account. Passwords may be from 8 to 24 upper-or lower-case letters or numbers in length. Only a user authenticated to an account can add, modify, or delete records in that account.

Data Records

Address data records consist of the following named fields. For each field shown, the corresponding field name is enclosed in parentheses (except for the recordID, which does not require a field name):

1. recordID – A unique record identifier. This may be, for example, a nickname of the person identified in the record, or some other distinguishing string.
2. Surname (SN)
3. Given name (GN)
4. Personal email address (PEM)
5. Work email address (WEM)
6. Personal phone number (PPH)
7. Work phone number (WPH)
8. Street address (SA)
9. City (CITY)
10. State or Province (STP)
11. Country (CTY)
12. Postal code (PC)

Field names are used in input parameters to identify field values when records are added or edited. They are also displayed in outputs when records are read.

Data field values may be no more than 64 printable ASCII characters in length. **The ABA shall carry out nominal validity checks on parameters to ensure that, for example, no non-printing characters are entered into a database field, but otherwise does not validate data fields.**

Database Files for Importing and Exporting Address Records

Records in database files used for importing and exporting shall be in comma-separated value (CSV) format, with one record per line and all fields in a record separated by commas. All fields must be present, although empty fields are allowed.

The recordID for each record in a database file must be unique (i.e., no duplicate recordIDs are allowed in a database file).

For example, here is a record with the recordID “HM”, surname “Mudd”, given name “Harvey”, and a work phone number:

```
HM,Mudd,Harvey,,,,18805551212,,,,,
```

The order of fields in input or output database files does not matter.

Audit Records

The system generates audit records for the following security-relevant operations, where the audit record type identifier is shown in parentheses:

- Failed logins (LF)
- Successful logins (LS)
- First logins (L1) - when passwords are first created; both L1 and LS records are generated
- Logouts (LO)
- Successful password changes (SPC)
- Failed password changes (FPC)
- Added users (AU)
- Deleted users (DU)

Audit records shall have the following fields:

Date, Time, Audit record type, UserID

When Audit logs are listed by an Admin, the records shall be printed in CSV format, in the order above.

When the system needs to store an audit record, but has reached the limit of the number of audit records it can store, it deletes the oldest record and adds the new one (i.e., a circular queue using the “first in first out” FIFO principle).

Authentication Commands

Login (LIN)

Name

LIN

Syntax

LIN <userID>

Input

userID

The identifier for an account

Output

There are four cases that determine the output: 1) there is a currently active login; 2) there is no currently active login but the account does not exist; 3) there is no currently active login, the account exists, and this is NOT the first time the account has been used; and 4) there is no currently active login, the account exists, and this is the first time that the account has been used.

Case 1 – There is a currently active login:

The following completion code is returned:

```
An account is currently active; logout before  
proceeding
```

Case 2 - There is no currently active login but the account does not exist:

The following completion code is returned:

```
Invalid credentials
```

Case 3 - There is no currently active login, the account exists, and this is NOT the first time the account has been used.

The program prompts the user for their password:

```
Enter your password: <password>
```

The user then enters their password. If the user enters an incorrect password for that account, the following completion code is returned:

```
Invalid credentials
```

If the password is valid, the system returns the following completion code:

```
OK
```

Case 4 - there is no currently active login, the account exists, and this is the first time that the account has been used:

This is the first time the account is being used. You must create a new password. Passwords may contain 1-24 upper- or lower-case letters or numbers. Choose an uncommon password that would be difficult to guess.

After the user enters a password, they are prompted to enter the same password again:

Reenter the same password:

Completion status codes are returned in the following order:

Passwords do not match

Password contains illegal characters

Password is too easy to guess

OK

Description

This operation is used to authenticate to an account. There are several possible cases:

1. There is a currently active login. The user must logout of the previous session to proceed. No change to the system.
2. There is no currently active login but the userID is invalid (meaning the account does not exist). The operation cannot proceed. No change to the system.
3. There is no currently active login, the account is valid, this is not the first time the account has been used so there is an associated password for the account, but the login credential (password) is invalid. The operation cannot proceed. No change to the system.
4. There is no currently active login, the account is valid, this is not the first time the account has been used so there is an associated password for the account, and the input password is correct. The operation succeeds. The system enters a new login session using the specified account.
5. There is no currently active login, the account is valid, and this is the first time that the account has been used. In this case, the user is prompted to create a new password, consisting of up to 24 upper- or lower-case letters and numbers. The user is then prompted a second time to reenter the same password. The following conditions must be satisfied for the operation to succeed:
 - The two passwords exactly match
 - The password consists of only upper- or lower-case letters or numbers
 - The password must not be too easy to guess

If the password is accepted, the operation succeeds. The password is now associated with that user account and the systems enters a new login session using that account.

Logout (LOU)

Name

LOU

Syntax

LOU

Input

none

Output

Completion status codes are returned in the following order:

No active login session

OK

Description

This operation is used to end an active login session. If there is an active login session, the session is terminated. Otherwise, there is no change to the system.

Change Password (CHP)

Name

CHP

Syntax

CHP <old password>

Input

Old password

The current password for the account

Output

If the authentication credentials (viz., old password) is correct, the system prompts the user as follows:

```
Create a new password. Passwords may contain up to 24
upper- or lower-case letters or numbers. Choose an
uncommon password that would be difficult to guess.
```

After the user enters a password, they are prompted to enter the same password again:

```
Reenter the same password:
```

Completion status codes are returned in the following order:

```
No active login session
```

```
Invalid credentials
```

```
Passwords do not match
```

```
Password contains illegal characters
```

```
Password is too easy to guess
```

```
OK
```

Description

This operation is used to change the authentication credential (password) associated with the active account. There must be an active account session. The following conditions must be satisfied for the operation to succeed:

- There must be an active login session.
- The user must supply the correct authentication credential for the active account.
- The new password must meet the requirements for a password (contain no more than 24 upper- or lower-case letters or numbers and not be easy to guess).

If the conditions are met, the authentication credential associated with the account is changed. Otherwise, there is no change to the system.

Admin-only Commands – Add/Delete User and Audit Logs

Add User (ADU)

Name

ADU

Syntax

ADU <userID>

Input

userID

An identifier for a user account

Output

Completion status codes are returned in the following order:

No active login session

Admin not active

Invalid userID

Account already exists

OK

Description

This operation is used to add a new user account. Several conditions must be met for the operation to succeed:

1. The admin account must be active.
2. The userID must have the correct form (from 1 to 16 lower- or upper-case letters, or numbers) and not already identify an existing account

If these conditions are satisfied, a new account is created with the userID. Otherwise, there is no change to the system.

Delete User (DEU)

Name

DEU

Syntax

DEU <userID>

Input

userID

An identifier for a user account

Output

Completion status codes are returned in the following order:

No active login session

Admin not active

Invalid userID

Account does not exist

OK

Description

This operation is used to delete an existing user account. Several conditions must be met for the operation to succeed:

1. The admin account must be active.
2. The userID must have the correct form (from 1 to 16 lower- or upper-case letters, or numbers) and identify an existing account

If these conditions are satisfied, the account and all associated records are deleted. Otherwise, there is no change to the system.

List Users (LSU)

Name

LSU

Syntax

LSU

Input

None.

Output

List of all user account names, each on a separate line.

Completion status codes are returned in the following order:

No active login session

Admin not active

OK

Description

This operation permits the admin user to list all of the user accounts. The admin account must currently be active for the operation to succeed. There is no change to the system.

Read Audit Log (RAL)

Name

RAL

Syntax

RAL [<userID>]

Input

userID

An identifier for a user account. This input is optional.

Output

Completion status codes are returned in the following order:

No active login session

Admin not active

Invalid userID

Account does not exist

OK

Audit records

Description

This operation is used to display the contents of the audit log. Several conditions must be met for the operation to succeed:

1. The admin account must be active.
2. The userID, if supplied, must have the correct form (from 1 to 16 lower- or upper-case letters, or numbers) and identify an existing account

If these conditions are satisfied, the operation succeeds, and all of the audit records for the specified account are printed to standard out (i.e., the console), one audit record per line. If no userID is specified then all of the audit records for all users are printed to standard out. Otherwise, there is no change to the system.

Delete Audit Log (DAL)

Name

DAL

Syntax

DAL [<userID>]

Input

userID

An identifier for a user account. This input is optional.

Output

Completion status codes are returned in the following order:

No active login session

Admin not active

Invalid userID

Account does not exist

OK

Description

This operation is used to delete the contents of the audit log. Several conditions must be met for the operation to succeed:

1. The admin account must be active.
2. The userID, if supplied, must have the correct form (from 1 to 16 lower- or upper-case letters, or numbers) and identify an existing account

If these conditions are satisfied, the operation succeeds, and all of the audit records for the specified account are deleted from the audit log. If no userID is specified then the entire audit log is deleted. Otherwise, there is no change to the system.

Database Commands (Non-Admin)

Add Record (ADR)

Name

ADR

Syntax

```
ADR <recordID> [<field1=value1> <field2=value2> ...]
```

Input

recordID

The unique ID for the new record.

field data

One or more record field label=value pairs. These are optional.

Output

Completion status codes are returned in the following order:

No active login session

Admin not authorized

No recordID

Invalid recordID

One or more invalid record data fields

Duplicate recordID

OK

Description

This operation is used to add a new record to a database. Several conditions must be met for the operation to succeed:

1. A non-admin user must be currently logged-in.
2. The record data provided must include a recordID.
3. All record field identifiers are valid.
4. All record fields must satisfy formatting requirements.
5. There must not already be a record in the database with that recordID.

If these conditions are satisfied, the operation succeeds and a record with the input data is created in the database for the currently active user. Otherwise, there is no change to the system.

Delete Record (DER)

Name

DER

Syntax

DER <recordID>

Input

recordID

The recordID for a record in the database.

Output

Completion status codes are returned in the following order:

No active login session

Admin not authorized

No recordID

Invalid recordID

RecordID not found

OK

Description

This operation is used to delete a record from a database. Several conditions must be met for the operation to succeed:

1. A non-admin user must be currently logged-in.
2. The command must include a valid recordID for a record that exists in the database for the active user.

If these conditions are satisfied, the operation succeeds and the record in the database for the currently active user that matches the recordID is deleted. Otherwise, there is no change to the system.

Edit Record (EDR)

Name

EDR

Syntax

EDR <recordID> <field1=value1> [<field2=value2> ...]

Input

recordID

The recordID for a record in the database.

field data

One or more record field label=value pairs. At least one is required.

Output

Completion status codes are returned in the following order:

No active login session

Admin not authorized

No recordID

Invalid recordID

RecordID not found

One or more invalid record data fields

OK

Description

This operation is used to change field values in a record in the currently active user's database. Several conditions must be met for the operation to succeed:

1. A non-admin user must be currently logged-in.
2. The command must include a valid recordID for a record that exists in the database for the active user.
3. All of the new fields and field values must be valid and in a valid size and format.

If these conditions are satisfied, the operation succeeds and the record in the database for the currently active user that matches the recordID is deleted. Otherwise, there is no change to the system.

Read Record (RER)

Name

RER

Syntax

```
RER <recordID> [<fieldname> ...]
```

Input

recordID

The recordID for a record in the database.

fieldname

One or more field names. These are optional. If no field name is specified, all fields in the record are returned.

E.g., RER Bob SN PPH

Output

The contents of the record, using the “fieldname=value” format. For example

```
Bob SN=Smith PPH=8805551212
```

Completion status codes are returned in the following order:

```
No active login session
```

```
Admin not authorized
```

```
Invalid recordID
```

```
Invalid fieldname(s)
```

```
No record found
```

```
OK
```

Description

This operation is used to display a record in the database of the currently active user. If no recordID is specified then every record in the database for the currently active user will be displayed. Several conditions must be met for the operation to succeed:

1. A non-admin user must be currently logged-in.
2. The command must include a valid recordID and the recordID identifies a record that exists in the active user’s database.
3. All specified fieldnames must be valid.

If these conditions are satisfied, the operation succeeds and the record in the database for the currently active user that matches the recordID is displayed.

There is no change to the system whether the operation succeeds or not.

Read All Records (RAR)

Name

REA

Syntax

REA [<fieldname> ...]

Input

fieldname

One or more field names. These are optional. If no field name is specified, all fields in the records are returned.

E.g., REA SN PPH

Output

All records for the active user with the specified fields, using the “fieldname=value” format. For example

Bob SN=Smith PPH=8805551212

Sue SN=Jones PPH=8005551217

Completion status codes are returned in the following order:

No active login session

Admin not authorized

Invalid fieldname(s)

No record found

OK

Description

This operation is used to display all records in the database of the currently active user. Several conditions must be met for the operation to succeed:

1. A non-admin user must be currently logged-in.
2. All specified fieldnames must be valid.

If these conditions are satisfied, the operation succeeds and the entire database for the active user is displayed, one record per line.

There is no change to the system whether the operation succeeds or not.

Import Database (IMD)

Name

IMD

Syntax

```
IMD <Input_File>
```

Input

Input_File

The file name of a database file.

Output

Completion status codes are returned in the following order:

No active login session

Admin not authorized

No Input_file specified

Invalid Input_file name

Can't open Input_file

Input_file invalid format

Duplicate recordID

OK

Description

This operation is used to import a file of database records. The records in the file are added to the database for the currently active user. Several conditions must be met for the operation to succeed:

1. A non-admin user must be currently logged-in
2. A filename must be specified as an input parameter and the ABA must be able to follow the path to the file and have sufficient permissions to open it read-only.
3. All data records in the Input_File must have unique recordIDs (within the file) and be in the correct record format.

If these conditions are met, the operation succeeds and the records in the file specified by Input_file are added to the database for the currently active user. Imported records with recordIDs that are already in the database replace the original records.

Otherwise, there is no change to the system.

Export Database (EXD)

Name

EXD

Syntax

EXD <Output_file>

Input

Output_file

The file name of a database file.

Output

Completion status codes are returned in the following order:

No active login session

Admin not authorized

No Output_file specified

Invalid Output_file name

Can't open Output_file

Error writing Output_file

OK

Description

This operation is used to export a file of database records. All of the records for the current user are appended to the output file in the standard address record format. If the file does not already exist, the ABA creates the file and writes the address records to it. Several conditions must be met for the operation to succeed:

1. A non-admin user must be currently logged-in
2. A filename must be specified as an input parameter and the ABA must be able to follow the path to the file and have sufficient permissions to open it for writing.

If these conditions are met, the operation succeeds and the records in the database for the current user are appended to the file specified by Output_file. There is no change to the ABA system.

Miscellaneous Commands

Help (HLP)

Name

HLP

Syntax

HLP [<command name>]

Input

Command name

This parameter specifies one of the commands. The parameter is optional.

Output

The command syntax for the command identified by the input parameter, as specified in this document. If no command is specified then print the command syntax for all commands.

Completion status codes:

OK

Description

This operation prints a list of commands accepted by the system. There is no change to the system.

Who Am I (WAI)

Name

WAI

Syntax

WAI

Input

None

Output

Completion status codes:

OK

Description

This operation returns the active userID. It always succeeds.

Exit (EXT)

Name

EXT

Syntax

EXT

Input

None

Output

Completion status codes:

OK

Description

This operation closes the open session, if any, and exits the program. It always succeeds.

Unrecognized Commands

Any command that is not one of the recognized commands returns the following completion code:

```
Unrecognized command
```