IDA Teams: lc command reference manual

Table of Contents

Last updated on February 14, 2024 — v8.4

1. Introduction

The lc executable provides a command-line interface to interact with a Lumina server and its contents.

> **NOTE** | virtually all the commands described in this document, require administrator rights; "regular" users will typically not have the necessary privileges.

2. Command-line options

-h, --host HOSTNAME[:PORT]
    Lumina host name and port (if port is omitted, it defaults to 443)

-u USERNAME
    specify username

-p PASSWORD
    specify password

-v, --verbose
    verbose output

In order to connect to a Lumina server, lc must at least be provided with a hostname and a valid user-password pair.

| **TIP** | In order to keep the various commands' syntax as clear as possible, we will omit the login options from commands for the rest of this manual. |

Other options exists, specific to each lc command (see Commands).

3. Commands

The following commands are accepted by lc:

3.1. Operating with metadata

Commands in this section let users view metadata stored in the Lumina server and their history.

3.1.1. `hist show`

`hist show [OPTION]`

Queries history of changes for function(s).

The following informations will be displayed for each change:

- The ID of the change
- The timestamp of the change
- The ID of the push that contains the change
- The name of the function at that change (+ `(*)` if it has been modified past this change)
- optional: The username of the user that pushed this change
- optional: The name of the license associated with the push for this change
- optional: The email of the license associated with the push for this change
- optional: The ID of the license associated with the push for this change
- optional: The ID of the function
- optional: The effective address (EA) of the function in the input file for the change
- optional: The hash of the function
- optional: The path of the idb file where the change came from
- optional: The hash of the file where the change came from
- optional: The path of the file where the change came from

> **TIP** Wildcards can be used to facilitate the usage of options that take strings as input. See the appendix.

Options

-a, --additional-fields LIST

Comma-delimited list of additional info to display (`username`, `license_name`, `license_email`, `license_id`, `func_id`, `func_ea`, `calcrel_hash`, `idb_path`, `input_hash`, `input_path`, `all`)

-d, --details

Show details (diff-like) for each change

--chronological

Display entries in chronological order (defaults to reverse-chronological).

-m, --max-entries NUMBER

maximum number of entries to fetch (defaults to 100)

-l, --license-id LICENSE

license ID (XX-XXXX-XXXX-XX format) to operate on

-r, --history-id-range RANGE

history ID range(s) to operate on (`start0..end0 [⋯]`)

-t, --time-range RANGE

time range to operate on (`start..end`) see the appendix

-i, --idb IDB

    IDB name(s) to operate on

-f, --input FILE

    input file(s) to operate on

-u, --username USERNAME

    username(s) to operate on

-n, --func NAME

    function name(s) to operate on

-h, --input-hash HASH

    input file hash(es) to operate on

-p, --pushes-id-range RANGE

    Pushes ID range(s) to operate on (`start0..end0 [⋯]`)

-c, --calcrel-hash HASH

    function hash(es) to operate on

--last-change

    Select only the last change for a function (which speeds up execution)

Examples:

List the last 8 changes ("-m 8" specifies the number of changes to show; the default order is reverse-chronological)

```
alice@alice_PC$ lc hist show -m 8
    Change Time               Push Func name
    ------ ------------------ ---- ---------------------------
    507    2022-09-15 14:48:18 5    math_things
    506    2022-09-15 14:48:17 4    calc_things (*)
    505    2022-09-15 14:48:17 4    start
    504    2022-09-15 14:48:16 3    keygen_window_dialog_proc_a
    503    2022-09-15 14:48:16 3    display_keygen_window
    502    2022-09-15 14:48:15 2    fstat
    501    2022-09-15 14:48:15 2    __umoddi3
    500    2022-09-15 14:48:15 2    __udivdi3
    # Shown 8 results (more are available...)
```

List changes from id 9 up to (but excluding) id 14

```
alice@alice_PC$ lc hist show -r9..14
    Change Time               Push Func name
    ------ ------------------ ---- --------------------
    13     2022-09-15 14:48:05 2    AllocateBucketGroup
    12     2022-09-15 14:48:05 2    addr_map_find
    11     2022-09-15 14:48:05 2    addr_map_insert
    10     2022-09-15 14:48:05 2    addr_map_compare_func
    9      2022-09-15 14:48:05 2    addr_map_free_func
    # Shown 5 results
```

List changes using multiple ranges (9..14,505..515; in this case, there were no changes after 507 in the database)

```
alice@alice_PC$ lc hist show -r9..14,505..515
    Change Time               Push Func name
    ------ ------------------ ---- --------------------
    507    2022-09-15 14:48:18 5    math_things
    506    2022-09-15 14:48:17 4    calc_things (*)
    505    2022-09-15 14:48:17 4    start
    13     2022-09-15 14:48:05 2    AllocateBucketGroup
    12     2022-09-15 14:48:05 2    addr_map_find
    11     2022-09-15 14:48:05 2    addr_map_insert
```

```
    10     2022-09-15 14:48:05 2     addr_map_compare_func
    9      2022-09-15 14:48:05 2     addr_map_free_func
    # Shown 8 results
```

Find changes from a specific idb file ("-i"), showing the function hash and ea ("-a" adds additional columns to the output)

```
alice@alice_PC$ lc hist show -i C:\malware\apts\pc_keygenme_3.pe.idb -a calcrel_hash,func_ea
    Change Time                 Push Func name                 Func EA Func hash
    ------ ------------------   ---- --------------------      ------- --------------------------------
    504    2022-09-15 14:48:16 3     keygen_window_dialog_proc_a 4011e2 420A0485EDB7C6774E1822953FB785D4
    503    2022-09-15 14:48:16 3     display_keygen_window         401099 ACA673D198FBC0DF24C20A15FF7F25CE
    # Shown 2 results
```

Show the first 4 changes ("-m4") with their input file(s) (in "--chronological" order; "-a" adds an additional column)

```
alice@alice_PC$ lc hist show --chronological -m 4 -a input_path
    Change Time                 Push Func name             Input path
    ------ ------------------   ---- --------------------   ------------------------------------
    1      2022-09-15 14:47:44 1     .init_proc             /home/alice/work/pc_dwarf_arrays.elf
    2      2022-09-15 14:47:44 1     _start                 /home/alice/work/pc_dwarf_arrays.elf
    3      2022-09-15 14:47:44 1     __do_global_dtors_aux  /home/alice/work/pc_dwarf_arrays.elf
    4      2022-09-15 14:47:44 1     frame_dummy            /home/alice/work/pc_dwarf_arrays.elf
    # Shown 4 results (more are available...)
```

Show the last change by a user ("-u" indicates the user, "-m1" means show 1 change only, "-a" adds an additional column)

```
alice@alice_PC$ lc hist show -ubob -m1 -a username
    Change Time                 Push Func name Username
    ------ ------------------   ---- --------- --------
    502    2022-09-15 14:48:15 2     fstat      bob
    # Shown 1 results (more are available...)
```

Show up to 4 changes ("-m4") between two dates ("-t" indicates a range of "YYYY-MM-DD" dates)

```
alice@alice_PC$ lc hist show -m4 -t2022-09-02..2022-12-03
    Change Time                 Push Func name
    ------ ------------------   ---- --------------------------
    507    2022-09-15 14:48:18 5     math_things
    506    2022-09-15 14:48:17 4     calc_things (*)
    505    2022-09-15 14:48:17 4     start
    504    2022-09-15 14:48:16 3     keygen_window_dialog_proc_a
    # Shown 4 results (more are available...)
```

Show up to 4 changes ("-m4") between two "now"-relative dates ("-t", from 2 weeks ago to 5 minutes ago) ("-a" adds an additional column)

```
alice@alice_PC$ lc hist show -m4 -t-2w..-5M -a func_id
    Change Time                 Push Func name                 Func ID
    ------ ------------------   ---- --------------------------   -------
    507    2022-09-15 14:48:18 5     math_things                  506
    506    2022-09-15 14:48:17 4     calc_things (*)              506
    505    2022-09-15 14:48:17 4     start                        505
    504    2022-09-15 14:48:16 3     keygen_window_dialog_proc_a 504
    # Shown 4 results (more are available...)
```

Show up to 4 changes ("-m4") between two "now"-relative dates ("-t", from 2 weeks ago to 5 minutes ago) ("-a" adds an additional column), only select the last change for each function

```
alice@alice_PC$ lc hist show -m4 -t-2w..-5M -a func_id --last-change
    Change Time                 Push Func name                 Func ID
    ------ ------------------   ---- --------------------------   -------
    507    2022-09-15 14:48:18 5     math_things                  506
    505    2022-09-15 14:48:17 4     start                        505
    504    2022-09-15 14:48:16 3     keygen_window_dialog_proc_a 504
    503    2022-09-15 14:48:16 3     display_keygen_window         503
```

```
    # Shown 4 results (more are available...)
```

Show up to 4 changes ("-m4"), occurring after a "now"-relative date ("-t", from 6 hours ago up to now)

```
alice@alice_PC$ lc hist show -m4 -t-6H
    Change Time               Push Func name
    ------ ------------------ ---- ---------------------------
    507    2022-09-15 14:48:18 5    math_things
    506    2022-09-15 14:48:17 4    calc_things (*)
    505    2022-09-15 14:48:17 4    start
    504    2022-09-15 14:48:16 3    keygen_window_dialog_proc_a
    # Shown 4 results (more are available...)
```

Show changes about a specific function name ("-n")

```
alice@alice_PC$ lc hist show -n print_relocinfo
    Change Time               Push Func name
    ------ ------------------ ---- ---------------
    175    2022-09-15 14:48:08 2    print_relocinfo
    # Shown 1 results
```

Show changes about a function name ("-n") searched by wildcard ("like:…")

```
alice@alice_PC$ lc hist show -n "like:%reloc%info%"
    Change Time               Push Func name
    ------ ------------------ ---- --------------------------
    179    2022-09-15 14:48:08 2    print_reloc_information_32
    178    2022-09-15 14:48:08 2    print_reloc_information_64
    177    2022-09-15 14:48:08 2    print_relocinfo_32
    176    2022-09-15 14:48:08 2    print_relocinfo_64
    175    2022-09-15 14:48:08 2    print_relocinfo
    # Shown 5 results
```

Show metadata details ("--details") in changes for a function ("-n"); this particular change added a new function

```
alice@alice_PC$ lc hist show -n is_location_form --details
    Change Time               Push Func name
    ------ ------------------ ---- ---------------
    126    2022-09-15 14:48:07 2    is_location_form
           >> Score
           >>    - 0
           >>    + 1445
           >> Name
           >>    - None
           >>    + is_location_form
           >> Prototype
           >>    -
           >>    + 0C303D08626F6F6C65616E0207
           >> Member @ 0x8
           >>    .type
           >>       - None
           >>       + 07
           >>    .cmt
           >>       - None
           >>       +
           >>    .rptcmt
           >>       - None
           >>       +
           >> Insn operands @ 0+0x3
           >>    - [<no ops repr>]
           >>    + [op0=0xb, op1=0x0, op2=0x0, op3=0x0, op4=0x0, op5=0x0, op6=0x0, op7=0x0]
           >> Insn operands @ 0+0x9
           >>    - [<no ops repr>]
           >>    + [op0=0xb, op1=0x0, op2=0x0, op3=0x0, op4=0x0, op5=0x0, op6=0x0, op7=0x0]
           >> Insn operands @ 0+0xf
           >>    - [<no ops repr>]
           >>    + [op0=0xb, op1=0x0, op2=0x0, op3=0x0, op4=0x0, op5=0x0, op6=0x0, op7=0x0]
```

```
        >> Insn operands @ 0+0x15
        >>    - [<no ops repr>]
        >>    + [op0=0xb, op1=0x0, op2=0x0, op3=0x0, op4=0x0, op5=0x0, op6=0x0, op7=0x0]
        >> Insn operands @ 0+0x1b
        >>    - [<no ops repr>]
        >>    + [op0=0xb, op1=0x0, op2=0x0, op3=0x0, op4=0x0, op5=0x0, op6=0x0, op7=0x0]
        >> Insn operands @ 0+0x21
        >>    - [<no ops repr>]
        >>    + [op0=0xb, op1=0x0, op2=0x0, op3=0x0, op4=0x0, op5=0x0, op6=0x0, op7=0x0]
        >> Insn operands @ 0+0x27
        >>    - [<no ops repr>]
        >>    + [op0=0xb, op1=0x0, op2=0x0, op3=0x0, op4=0x0, op5=0x0, op6=0x0, op7=0x0]
    # Shown 1 results
```

3.1.2. hist pushes

hist pushes [OPTION]

Shows pushes to the Lumina server.

Options

-a, --additional-fields LIST

Comma-delimited list of additional info to display (`license_name`, `license_email`, `license_id`, `all`)

-t, --time-range TIMESTAMP

timestamp

-u, --username USERNAME

username(s) to operate on

-l, --license-id LICENSE

license ID (XX-XXXX-XXXX-XX format) to operate on

-m, --max-entries NUMBER

maximum number of entries to operate on (defaults to 100)

--chronological

Display entries in chronological order (defaults to reverse-chronological).

Examples:

```
alice@alice_PC$ lc hist pushes
   Push ID Time                User name IDB path
   ------- ------------------- --------- ------------------------------------
   5       2022-09-15 14:48:18 alice     /home/alice/work/pc_math_b_64.elf.i64
   4       2022-09-15 14:48:17 alice     /home/alice/work/pc_math_a_64.elf.i64
   3       2022-09-15 14:48:16 damian    C:\malware\apts\pc_keygenme_3.pe.idb
   2       2022-09-15 14:48:05 bob       /Users/bob/idbs/pc_dwarfdump.elf.idb
   1       2022-09-15 14:47:44 alice     /home/alice/work/pc_dwarf_arrays.elf.idb
   # Shown 5 results
```

List all pushes from a specific license ID

```
alice@alice_PC$ lc hist pushes -l BB-0B0B-AC8E-01 -a license_email
   Push ID Time                User name License email IDB path
   ------- ------------------- --------- ------------- ------------------------------------
   2       2022-09-15 14:48:05 bob       bob@acme.com  /Users/bob/idbs/pc_dwarfdump.elf.idb
   # Shown 1 results
```

List all pushes from licenses with IDs matching a pattern ("-a" adds an additional column)

```
alice@alice_PC$ lc hist pushes -l like:AA-% -a license_id
    Push ID Time                User name License ID       IDB path
    ------- ------------------- --------- --------------- ----------------------------------------
    5       2022-09-15 14:48:18 alice     AA-A11C-AC8E-01 /home/alice/work/pc_math_b_64.elf.i64
    4       2022-09-15 14:48:17 alice     AA-A11C-AC8E-01 /home/alice/work/pc_math_a_64.elf.i64
    1       2022-09-15 14:47:44 alice     AA-A11C-AC8E-01 /home/alice/work/pc_dwarf_arrays.elf.idb
    # Shown 3 results
```

Show the first push

```
alice@alice_PC$ lc hist pushes --chronological -m 1
    Push ID Time                User name IDB path
    ------- ------------------- --------- ----------------------------------------
    1       2022-09-15 14:47:44 alice     /home/alice/work/pc_dwarf_arrays.elf.idb
    # Shown 1 results (more are available...)
```

List all pushes between two timestamps

```
alice@alice_PC$ lc hist pushes -t"2022-09-07 10:20:00..2022-12-31"
    Push ID Time                User name IDB path
    ------- ------------------- --------- ----------------------------------------
    5       2022-09-15 14:48:18 alice     /home/alice/work/pc_math_b_64.elf.i64
    4       2022-09-15 14:48:17 alice     /home/alice/work/pc_math_a_64.elf.i64
    3       2022-09-15 14:48:16 damian    C:\malware\apts\pc_keygenme_3.pe.idb
    2       2022-09-15 14:48:05 bob       /Users/bob/idbs/pc_dwarfdump.elf.idb
    1       2022-09-15 14:47:44 alice     /home/alice/work/pc_dwarf_arrays.elf.idb
    # Shown 5 results
```

List all pushes from two users ("-a" adds an additional column)

```
alice@alice_PC$ lc hist pushes -u"bob damian" -a"license_name license_id"
    Push ID Time                User name License name License ID       IDB path
    ------- ------------------- --------- ------------ --------------- -----------------------------------
    3       2022-09-15 14:48:16 damian    Damian       DD-DA81-A000-01 C:\malware\apts\pc_keygenme_3.pe.idb
    2       2022-09-15 14:48:05 bob       Bob          BB-0B0B-AC8E-01 /Users/bob/idbs/pc_dwarfdump.elf.idb
    # Shown 2 results
```

3.1.3. `hist del`

hist del [OPTION]

Deletes history and metadata for functions.

Options

-s, --silent

Do not ask for confirmation before deleting history

-l, --license-id LICENSE

license ID (XX-XXXX-XXXX-XX format) to operate on

-r, --history-id-range RANGE

history ID range(s) to operate on (`start0..end0 [⋯]`)

-t, --time-range RANGE

time range to operate on (`start..end`) see the appendix

-i, --idb IDB

IDB name(s) to operate on

-f, --input FILE

    input file(s) to operate on

-u, --username USERNAME

    username(s) to operate on

-n, --func NAME

    function name(s) to operate on

-h, --input-hash HASH

    input file hash(es) to operate on

-p, --pushes-id-range RANGE

    Pushes ID range(s) to operate on (`start0..end0 [···]`)

-c, --calcrel-hash HASH

    function hash(es) to operate on

--last-change

    Select only the last change for a function (which speeds up execution)

Examples:

Display the last 10 changes, with their input file(s) and function ID(s)

```
alice@alice_PC$ show -m10 -a input_path
    Change Time               Push Func name                  Func ID Input path
    ------ ------------------ ---- ------------------------- ------- -------------------------------
     507   2022-09-15 14:48:18 5    math_things                506     /home/alice/work/pc_math_b_64.elf
     506   2022-09-15 14:48:17 4    calc_things (*)            506     /home/alice/work/pc_math_a_64.elf
     505   2022-09-15 14:48:17 4    start                      505     /home/alice/work/pc_math_a_64.elf
     504   2022-09-15 14:48:16 3    keygen_window_dialog_proc_a 504    C:\malware\apts\pc_keygenme_3.pe
     503   2022-09-15 14:48:16 3    display_keygen_window      503     C:\malware\apts\pc_keygenme_3.pe
     502   2022-09-15 14:48:15 2    fstat                      502     /Users/bob/idbs/pc_dwarfdump.elf
     501   2022-09-15 14:48:15 2    __umoddi3                  501     /Users/bob/idbs/pc_dwarfdump.elf
     500   2022-09-15 14:48:15 2    __udivdi3                  500     /Users/bob/idbs/pc_dwarfdump.elf
     499   2022-09-15 14:48:14 2    dwarf_get_ADDR_name        499     /Users/bob/idbs/pc_dwarfdump.elf
     498   2022-09-15 14:48:14 2    dwarf_get_FRAME_name       498     /Users/bob/idbs/pc_dwarfdump.elf
    # Shown 10 results (more are available...)
```

Delete all changes for functions matching a pattern

```
alice@alice_PC$ lc hist del -s -n like:%dwarf%
    267 entries deleted from history

alice@alice_PC$ hist show -m10 -a input_path,func_id
    Change Time               Push Func name                  Func ID Input path
    ------ ------------------ ---- ------------------------- ------- -------------------------------
     507   2022-09-15 14:48:18 5    math_things                506     /home/alice/work/pc_math_b_64.elf
     506   2022-09-15 14:48:17 4    calc_things (*)            506     /home/alice/work/pc_math_a_64.elf
     505   2022-09-15 14:48:17 4    start                      505     /home/alice/work/pc_math_a_64.elf
     504   2022-09-15 14:48:16 3    keygen_window_dialog_proc_a 504    C:\malware\apts\pc_keygenme_3.pe
     503   2022-09-15 14:48:16 3    display_keygen_window      503     C:\malware\apts\pc_keygenme_3.pe
     502   2022-09-15 14:48:15 2    fstat                      502     /Users/bob/idbs/pc_dwarfdump.elf
     501   2022-09-15 14:48:15 2    __umoddi3                  501     /Users/bob/idbs/pc_dwarfdump.elf
     500   2022-09-15 14:48:15 2    __udivdi3                  500     /Users/bob/idbs/pc_dwarfdump.elf
     474   2022-09-15 14:48:14 2    free_macro_stack           474     /Users/bob/idbs/pc_dwarfdump.elf
     468   2022-09-15 14:48:14 2    print_line_detail          468     /Users/bob/idbs/pc_dwarfdump.elf
    # Shown 10 results (more are available...)
```

Delete all changes stemming from a specific file

```
alice@alice_PC$ lc hist del -s -f/Users/bob/idbs/pc_dwarfdump.elf
```

```
    228 entries deleted from history
```

List the changes from pushes 1 to 5 (not included), showing their input file(s)

```
alice@alice_PC$ lc show -p1..5 -a input_path
    Change Time               Push Func name                   Input path
    ------ ------------------ ---- ------------------------- -----------------------------------
    506    2022-09-15 14:48:17 4   math_things                 /home/alice/work/pc_math_a_64.elf
    505    2022-09-15 14:48:17 4   start                       /home/alice/work/pc_math_a_64.elf
    504    2022-09-15 14:48:16 3   keygen_window_dialog_proc_a C:\malware\apts\pc_keygenme_3.pe
    503    2022-09-15 14:48:16 3   display_keygen_window       C:\malware\apts\pc_keygenme_3.pe
    7      2022-09-15 14:47:44 1   __do_global_ctors_aux       /home/alice/work/pc_dwarf_arrays.elf
    6      2022-09-15 14:47:44 1   __libc_csu_init             /home/alice/work/pc_dwarf_arrays.elf
    5      2022-09-15 14:47:44 1   main                        /home/alice/work/pc_dwarf_arrays.elf
    4      2022-09-15 14:47:44 1   frame_dummy                 /home/alice/work/pc_dwarf_arrays.elf
    3      2022-09-15 14:47:44 1   __do_global_dtors_aux       /home/alice/work/pc_dwarf_arrays.elf
    2      2022-09-15 14:47:44 1   _start                      /home/alice/work/pc_dwarf_arrays.elf
    1      2022-09-15 14:47:44 1   .init_proc                  /home/alice/work/pc_dwarf_arrays.elf
    # Shown 11 results
```

Delete one single change

```
alice@alice_PC$ lc hist del -s -r505..506
    1 entries deleted from history
```

Delete all the changes from push 1

```
alice@alice_PC$ lc hist del -s -p 1..2
    7 entries deleted from history

alice@alice_PC$ hist show -a username
    Change Time               Push Func name                   Username
    ------ ------------------ ---- ------------------------- --------
    507    2022-09-15 14:48:18 5   math_things                 alice
    506    2022-09-15 14:48:17 4   calc_things (*)             alice
    504    2022-09-15 14:48:16 3   keygen_window_dialog_proc_a damian
    503    2022-09-15 14:48:16 3   display_keygen_window       damian
    # Shown 4 results
```

Delete all changes by a user

```
alice@alice_PC$ lc hist del -s -udamian
    2 entries deleted from history

alice@alice_PC$ hist show -a func_id
    Change Time               Push Func name       Func ID
    ------ ------------------ ---- --------------- -------
    507    2022-09-15 14:48:18 5   math_things       506
    506    2022-09-15 14:48:17 4   calc_things (*) 506
    # Shown 2 results
```

Delete the last change for a function

```
alice@alice_PC$ lc hist del -s --func math_things --last-change
    1 entries deleted from history

alice@alice_PC$ hist show -a func_id
    Change Time               Push Func name   Func ID
    ------ ------------------ ---- ----------- -------
    506    2022-09-15 14:48:17 4   calc_things 506
    # Shown 1 results
```

Delete all remaining changes for a function by name

```
alice@alice_PC$ lc hist del -s --func calc_things
```

```
    1 entries deleted from history

alice@alice_PC$ hist show
    # Shown 0 results
```

3.2. Various information

3.2.1. info

info

Shows lumina connection information.

Example:

```
alice@alice_PC$ lc info
Hex-Rays Lumina Server v8.0
Lumina time: 2022-08-29 10:13:37, up since 2022-08-21 21:00:05
MAC address: FF:32:67:FF:D3:00
Client name: alice *ADMIN*
Client host: 127.0.0.1
```

3.2.2. users

users

Shows users.

Example:

```
alice@alice_PC$ lc users
LastActive Adm Login  License         User name                   Email
---------- --- ------ --------------- --------------------------- ------------------
2022-08-29 *   bob    XX-XXXX-XXXX-XX bob                         bob@acme.com
2022-08-29 *   alice  XX-XXXX-XXXX-XX alice                       alice@acme.com
2022-08-27      damian XX-XXXX-XXXX-XX damian                      damian@acme.com
```

3.2.3. stats

stats [OPTION]

Shows the numbers of functions, pushes, history records, IDBs and input files stored in the Lumina server database.

Options

-u, --username USERNAME
    username(s) to operate on

Examples:

```
alice@alice_PC$ lc stats
    Consolidated statistics from lumina_server:
    Number of functions: 4
    Number of pushes: 5
    Number of history records: 6
    Number of IDBs: 3
    Number of input files: 3
    -------------------------------------------
```

Retrieve the statistics for a list of users

```
alice@alice_PC$ lc stats -ualice,bob,russ
```

```
Statistics for alice:
Number of functions: 2
Number of pushes: 3
Number of history records: 4
Number of IDBs: 1
Number of input files: 1
---------------------------------------------
Statistics for bob:
Number of functions: 1
Number of pushes: 1
Number of history records: 1
Number of IDBs: 1
Number of input files: 1
---------------------------------------------
```

3.3. Administrative commands

These commands require that the user executing them has admin privileges.

3.3.1. Managing users

Users management is delegated to the Hex-Rays Vault server; the administrator will be in charge of performing the adding/editing/deleting of users on the Hex-Rays Vault server itself.

Whenever a user connects to the Lumina server, it will turn to the Hex-Rays Vault server to ask it to perform authentication.

A "shadow" of the user data is nonetheless kept in the Lumina server's database, in order to be able to attribute contributions.

The host name (and port) of the Hex-Rays Vault server need to be present in the `lumina.conf` file.

3.3.2. Managing sessions

3.3.2.1. `session list`

`session list`

Lists the current connections to the Lumina server. For each connection, the currently executed query (if any) is shown.

Example:

```
alice@alice_PC$ lc session list
id=1642 peer="127.0.0.1", user="...", license="...", e-mail="...", established="2022-08-16 17:13:21"
current_query="INSERT INTO pushes (fk_idb, fk_user) VALUES (?, ?)" (0msec)
```

3.3.2.2. `session kill`

`session kill ID`

Kills an existing connection to the Lumina server.

Parameters

ID   The connection to kill, as shown by the `session list` command

Example:

```
alice@alice_PC$ lc session list
id=1 peer="127.0.0.1", user="...", license="...", e-mail="...", established="2022-09-20 16:47:07" current_query=""
(0msec)
alice@alice_PC$ lc session kill 1
Connection killed
alice@alice_PC$ lc session list
No connections.
```

4. Concepts

4.1. What is the Lumina server

The Lumina server is a "functions metadata" repository.

It is a place where IDA users can **push**, and **pull** such metadata, to ease their reverse-engineering work: metadata can be extracted from existing projects, and re-applied effortlessly to new projects, thereby reducing (sometimes dramatically) the amount of time needed to analyze binaries.

4.1.1. Lumina server vs Hex-Rays Vault server: what is the difference?

While the workflow with the Hex-Rays Vault server and associated tools (hv, hvui and IDA's diff/merge modes) are extremely powerful for working on multiple revisions of the same binaries, the Lumina server in turn eases the replication of past efforts to new projects.

In effect, the Lumina server offers another "dimension" to collaborative reverse-engineering efforts.

4.1.2. Functions metadata

The Lumina server associates "function metadata" to functions, by means of a (md5) *hash* of those functions: whenever it wants to push information to, or pull information from the server, IDA will first have to compute hashes of the functions it wants to retrieve metadata for, and send those hashes to the Lumina server.

Similarly, when IDA **push**es information to the Lumina server, it will first compute hashes for the corresponding functions, extract the metadata corresponding to those from the `.idb` file, and send those hash+metadata pairs to the server.

4.1.3. Metadata contents

Metadata about functions can include:

- function name
- function address
- function size
- function prototype
- function [repeatable] comments
- instruction-specific [repeatable] comments
- anterior/posterior (i.e., "extra") comments
- user-defined "stack points" in the function's frame
- the function frame description and stack variables
- instructions operands representations

4.1.4. Pushing & overriding metadata

When a user pushes metadata about a function whose md5 hash isn't present in the database, the Lumina server will simply create a new record for it.

However, when a user pushes metadata about a function whose md5 hash (and associated metadata) is already present in the database, the Lumina server will attempt to "score" the quality of the old metadata and the quality of the new metadata. If the score of the new metadata is higher, the new function metadata will override the previous one.

NOTE	When a user asks IDA to push *all* functions to the Lumina server, IDA will automatically skip some functions: those that still have a "dummy" name (e.g., sub_XXXX), or that are below a certain size threshold (i.e., 32 bytes) will be ignored.

4.1.5. Metadata history

The Lumina server retains a history of the metadata associated to functions. Using the lc utility, it is possible to dig into

that history, and view changes (detailed diffs, too.)

4.1.6. File contents

It's worth pointing out that when pushing metadata to the Lumina server, IDA will not push the binary file itself. Only the following metadata about the file itself will be sent:

- the name of the input file
- the name of the IDB file
- a `md5` hash of the input file

The Lumina server cannot therefore be used as a backup/repository for binary files & IDBs (that would be the role of the Hex-Rays Vault server)

Appendix A: Commands

A.1. String patterns

Options that take strings as inputs can be enhanced through wildcards. The following wildcards are available:

`%`

    represents zero, one or multiple characters.

`_`

    represents one character.

To use wildcards in a string, it must be prefixed with `like:` e.g. `-n like:%main%`.

A.2. Timerange formats

For timeranges, the following syntaxes are supported:

- `<ts>..<ts>` (from timestamp to (but not including) timestamp)
- `<ts>` (only one timestamp)

Where `<ts>` can be of the form:

- `yyyy-mm-dd HH:MM:SS`: e.g., `2022-09-12 11:38:22`
- `yyyy-mm-dd`: e.g., `2020-03-12`
- `+|-<count><unit>`: this is a "now-relative" timestamp, where `<unit>` must be one of `w`, `d`, `H`, `M`, `S` for weeks, days, hours, minutes or seconds respectively. E.g., `-4d`, `+5w`, `-8H`, `+1H`, …

NOTE	when using the `<ts>` syntax (i.e., only 1 timestamp is provided, not an actual range), the final range will be either "from now to <ts>", or "from <ts> to now", depending on whether `<ts>` is before, or after, the present time.

A.3. Speed of retrieving changes

Although it may seem like a simple operation, `lc hist show` is actually a very demanding one: by default it will have to fetch bits of information from multiple tables (e.g., in order to provide information about which change was superseded by a later one.)

This can be significantly sped up through the use of `--last-change`: this option lets the server issue a much simpler query, resulting in significantly reduced processing time.