

## Task Solutions for Bareos Technical Test

By the candidate  
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1/

```
alaa@alaa-GF63-Thin-105CXR: ~/Bureau/bareos/bareos-local-tests/build
23: bareos-sd (100): stored/dev.cc:980-2 close_dev "FileStorage" (storage)
23: bareos-sd (100): stored/dev.cc:1082-2 Enter umount
23: bareos-sd (100): stored/dev.cc:968-2 Clear volhdr vol=TestVolume001
23: bareos-sd (100): stored/acquire.cc:675-2 JobId=2 broadcast wait_device_release at 13-Nov-2021 14:17:06
23: bareos-sd (100): stored/acquire.cc:695-2 Device "FileStorage" (storage) released by JobId=2
23: bareos-sd (100): stored/read.cc:101-2 Done reading.
23: bareos-sd (100): lib/tls_openssl_private.cc:96-0 Destruct TlsOpenSslPrivate
23: bareos-sd (100): lib/bsock.cc:136-2 Destruct BareosSocket
23: bareos-sd (100): lib/bsys.cc:623-2 write_last_jobs seek to 192
23: bareos-sd (100): lib/jcr.cc:273-2 FreeCommonJcr: 7f5a2400ce30
23: bareos-sd (100): lib/tls_openssl_private.cc:96-0 Destruct TlsOpenSslPrivate
23: bareos-sd (100): lib/bsock.cc:136-0 Destruct BareosSocket
23: bareos-sd (100): lib/bsock.cc:84-0 Construct BareosSocket
23: bareos-sd (100): lib/tls_openssl_private.cc:65-0 Construct TlsOpenSslPrivate
23: bareos-sd (100): lib/tls_openssl_private.cc:600-0 Set tcp filedescriptor: <6>
23: bareos-sd (100): lib/tls_openssl_private.cc:612-0 Set protocol: <0>
23: bareos-sd (100): lib/tls_openssl_private.cc:546-0 Set ca_certfile: <0>
23: bareos-sd (100): lib/tls_openssl_private.cc:552-0 Set ca_certdir: <0>
23: bareos-sd (100): lib/tls_openssl_private.cc:558-0 Set crlfile: <0>
23: bareos-sd (100): lib/tls_openssl_private.cc:564-0 Set certfile: <0>
23: bareos-sd (100): lib/tls_openssl_private.cc:570-0 Set keyfile: <0>
23: bareos-sd (100): lib/tls_openssl_private.cc:588-0 Set dhfile: <0>
23: bareos-sd (100): lib/tls_openssl_private.cc:606-0 Set cipherlist: <0>
23: bareos-sd (100): lib/tls_openssl_private.cc:594-0 Set Verify Peer: <false>
23: bareos-sd (50): lib/tls_openssl.cc:79-0 Preparing TLS_PSK SERVER callback
23: bareos-sd (100): lib/tls_openssl_private.cc:466-0 psk_server_cb. Identity: R_DIRECTOR bareos-dir.
23: bareos-sd (100): lib/tls_openssl_private.cc:487-0 psk_server_cb. result: 32.
23: bareos-sd (50): lib/bnet.cc:140-0 TLS server negotiation established.
23: bareos-sd (100): lib/jcr.cc:191-0 Construct JobControlRecord
23: bareos-sd (50): lib/cram_md5.cc:105-0 send: auth cram-md5 <1417201324.1636809426@R_STORAGE::bareos-sd> ssl=1
23: bareos-sd (100): lib/cram_md5.cc:160-0 cram-get received: auth cram-md5 <322500259.1636809426@R_DIRECTOR::bareos-dir> ssl=1
23: bareos-sd (50): lib/cram_md5.cc:60-0 my_name: <R_STORAGE::bareos-sd> - challenge_name: <R_DIRECTOR::bareos-dir>
23: bareos-sd (99): lib/cram_md5.cc:231-0 sending resp to challenge: K9VxX9ULDEdM4lo72Efca
23: bareos-sd (90): stored/dlr_cmd.cc:288-0 Message channel init completed.
23: bareos-sd (100): lib/jcr.cc:273-0 FreeCommonJcr: 7f5a24014800
23: bareos-sd (100): lib/tls_openssl_private.cc:96-0 Destruct TlsOpenSslPrivate
23: bareos-sd (100): lib/bsock.cc:136-0 Destruct BareosSocket
23: Process 63931 has exited.
23: Process 63930 has exited.
23: Process 63929 has exited.
23: Stopping the Bareos File daemon: OK (already stopped)
23: Stopping the Bareos Storage daemon: OK (already stopped)
23: Stopping the Bareos Director daemon: OK (already stopped)
23: =
23: =
23: === bareos: OK at 14:17:10 ===
23: /1 Test #23: system:bareos ..... Passed 11.88 sec

The following tests passed:
system:bareos

WARN tests passed, 0 tests failed out of 1

Total Test time (real) = 11.88 sec
alaa@alaa-GF63-Thin-105CXR:~/Bureau/bareos/bareos-local-tests/build$
```

```
alaa@alaa-GF63-Thin-105CXR: ~/Bureau/bareos/bareos-local-tests/build
alaa@alaa-GF63-Thin-105CXR:~/Bureau/bareos/bareos-local-tests/build$ ctest -V -R system:bareos$
UpdateCTestConfiguration from :/home/alaa/Bureau/bareos/bareos-local-tests/build/DartConfiguration.tcl
Parse Config file:/home/alaa/Bureau/bareos/bareos-local-tests/build/DartConfiguration.tcl
Add coverage exclude regular expressions.
SetCTestConfiguration:ChakeCommand:usr/bin/cmake
UpdateCTestConfiguration from :/home/alaa/Bureau/bareos/bareos-local-tests/build/DartConfiguration.tcl
Parse Config file:/home/alaa/Bureau/bareos/bareos-local-tests/build/DartConfiguration.tcl
Test project /home/alaa/Bureau/bareos/bareos-local-tests/build
Run command: /home/alaa/Bureau/bareos/bareos-local-tests/build/systemtests/ctest_custom_pretest.sh
PRETEST: running /home/alaa/Bureau/bareos/bareos-local-tests/build/systemtests/ctest_custom_pretest.sh script
PRETEST: running system tests on the bareos tree
PRETEST: executing /home/alaa/Bureau/bareos/bareos-local-tests/build/core/src/dird/bareos-dir -?
PRETEST: checking configured hostname (alaa-GF63-Thin-105CXR) ... OK
PRETEST: checking postgresql connection ... OK
Constructing a list of tests
Done constructing a list of tests
Updating test list for fixtures
Added 0 tests to meet fixture requirements
Checking test dependency graph...
Checking test dependency graph end
test 23
Start 23: system:bareos
23: Test command: /home/alaa/Bureau/bareos/bareos-local-tests/build/systemtests/tests/bareos/testrunner
23: Test timeout computed to be: 300
23:
23:
23: === bareos: starting at 14:16:59 ===
23: =
23: =
23: bareos-sd (50): stored/dlr_cmd.cc:436-0 level=100 trace=0 timestamp= tracefilename=/home/alaa/Bureau/bareos/bareos-local-tests/build/systemtests/tests/bareos/working/bareos-sd.trace
23: bareos-sd (100): lib/jcr.cc:273-0 FreeCommonJcr: 7f5a24005ac0
23: bareos-sd (100): lib/tls_openssl_private.cc:96-0 Destruct TlsOpenSslPrivate
23: bareos-sd (100): lib/bsock.cc:136-0 Destruct BareosSocket
23: bareos-sd (100): lib/bsock.cc:84-0 Construct BareosSocket
23: bareos-sd (100): lib/tls_openssl_private.cc:65-0 Construct TlsOpenSslPrivate
23: bareos-sd (100): lib/tls_openssl_private.cc:600-0 Set tcp filedescriptor: <6>
23: bareos-sd (100): lib/tls_openssl_private.cc:612-0 Set protocol: <0>
23: bareos-sd (100): lib/tls_openssl_private.cc:546-0 Set ca_certfile: <0>
23: bareos-sd (100): lib/tls_openssl_private.cc:552-0 Set ca_certdir: <0>
23: bareos-sd (100): lib/tls_openssl_private.cc:558-0 Set crlfile: <0>
23: bareos-sd (100): lib/tls_openssl_private.cc:564-0 Set certfile: <0>
23: bareos-sd (100): lib/tls_openssl_private.cc:570-0 Set keyfile: <0>
23: bareos-sd (100): lib/tls_openssl_private.cc:588-0 Set dhfile: <0>
23: bareos-sd (100): lib/tls_openssl_private.cc:606-0 Set cipherlist: <0>
23: bareos-sd (100): lib/tls_openssl_private.cc:594-0 Set Verify Peer: <false>
23: bareos-sd (50): lib/tls_openssl.cc:79-0 Preparing TLS_PSK SERVER callback
23: bareos-sd (100): lib/tls_openssl_private.cc:466-0 psk_server_cb. Identity: R_DIRECTOR bareos-dir.
23: bareos-sd (100): lib/tls_openssl_private.cc:487-0 psk_server_cb. result: 32.
23: bareos-sd (50): lib/bnet.cc:140-0 TLS server negotiation established.
23: bareos-sd (100): lib/jcr.cc:191-0 Construct JobControlRecord
23: bareos-sd (50): lib/cram_md5.cc:105-0 send: auth cram-md5 <2065294490.1636809419@R_STORAGE::bareos-sd> ssl=1
23: bareos-sd (100): lib/cram_md5.cc:160-0 cram-get received: auth cram-md5 <803196942.1636809419@R_DIRECTOR::bareos-dir> ssl=1
23: bareos-sd (50): lib/cram_md5.cc:60-0 my_name: <R_STORAGE::bareos-sd> - challenge_name: <R_DIRECTOR::bareos-dir>
23: bareos-sd (99): lib/cram_md5.cc:231-0 sending resp to challenge: WS/T89/Pqn++8E/VK6QBSA
23: bareos-sd (90): stored/dlr_cmd.cc:288-0 Message channel init completed
```

```

alaa@alaa-GF63-Thin-105CXR: ~/Bureau/bareos/bareos-local-tests/build/systemtests/tests/acl$ bin/bareos status
bareos_dir-acl is stopped
bareos_sd-acl is stopped
bareos_fd-acl is stopped
alaa@alaa-GF63-Thin-105CXR:~/Bureau/bareos/bareos-local-tests/build/systemtests/tests/acl$ bin/bareos start
Starting the Bareos Storage daemon
Starting the Bareos File daemon
Starting the Bareos Director daemon
Checking Configuration and Database connection ...
alaa@alaa-GF63-Thin-105CXR:~/Bureau/bareos/bareos-local-tests/build/systemtests/tests/acl$ bin/bareos status
bareos_dir-acl (pid 65698) is running...
bareos_sd-acl (pid 65679) is running...
bareos_fd-acl (pid 65684) is running...
alaa@alaa-GF63-Thin-105CXR:~/Bureau/bareos/bareos-local-tests/build/systemtests/tests/acl$ bin/bconsole
Connecting to Director alaa-GF63-Thin-105CXR:90001
Encryption: TLS_CHACHA20_POLY1305_SHA256 TLSv1.3
1000 OK: bareos-dir Version: 21.0.0-pre993.4cfdab07b (12 November 2021)
self-compiled binary
self-compiled binaries are UNSUPPORTED by bareos.com.
Get official binaries and vendor support on https://www.bareos.com
You are connected using the default console

Enter a period (.) to cancel a command.
.*
.*
*list jobs
Automatically selected Catalog: MyCatalog
Using catalog "MyCatalog"
+-----+-----+-----+-----+-----+-----+-----+-----+
| jobid | name          | client | starttime | type | level | jobfiles | jobbytes | jobstatus |
+-----+-----+-----+-----+-----+-----+-----+-----+
| 1 | backup-bareos-fd | bareos-fd | 2021-11-13 14:05:32 | B | F | 1 | 57 | T |
| 2 | RestoreFiles    | bareos-fd | 2021-11-13 14:05:35 | R | F | 1 | 0 | T |
+-----+-----+-----+-----+-----+-----+-----+-----+

```

2/

I would improve the performance of the setdebug command by making the program itself asking for enabling a trace as well as asking for debug level and daemon

So when the user executes setdebug without passing arguments or without passing the trace argument , The command line will ask the user to input a trace , and if he inputs a negative trace (Trace<0) the command line will ask him to input a positive integer

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The Function that handles this functionality is:

## SetdebugCmd

located in the file “ **core/src/dird/ua\_cmds.cc** “

and it calls the functions

## DoAllSetDebug

## DoDirectorSetdebug

## DoClientSetdebug

## DoStorageSetdebug

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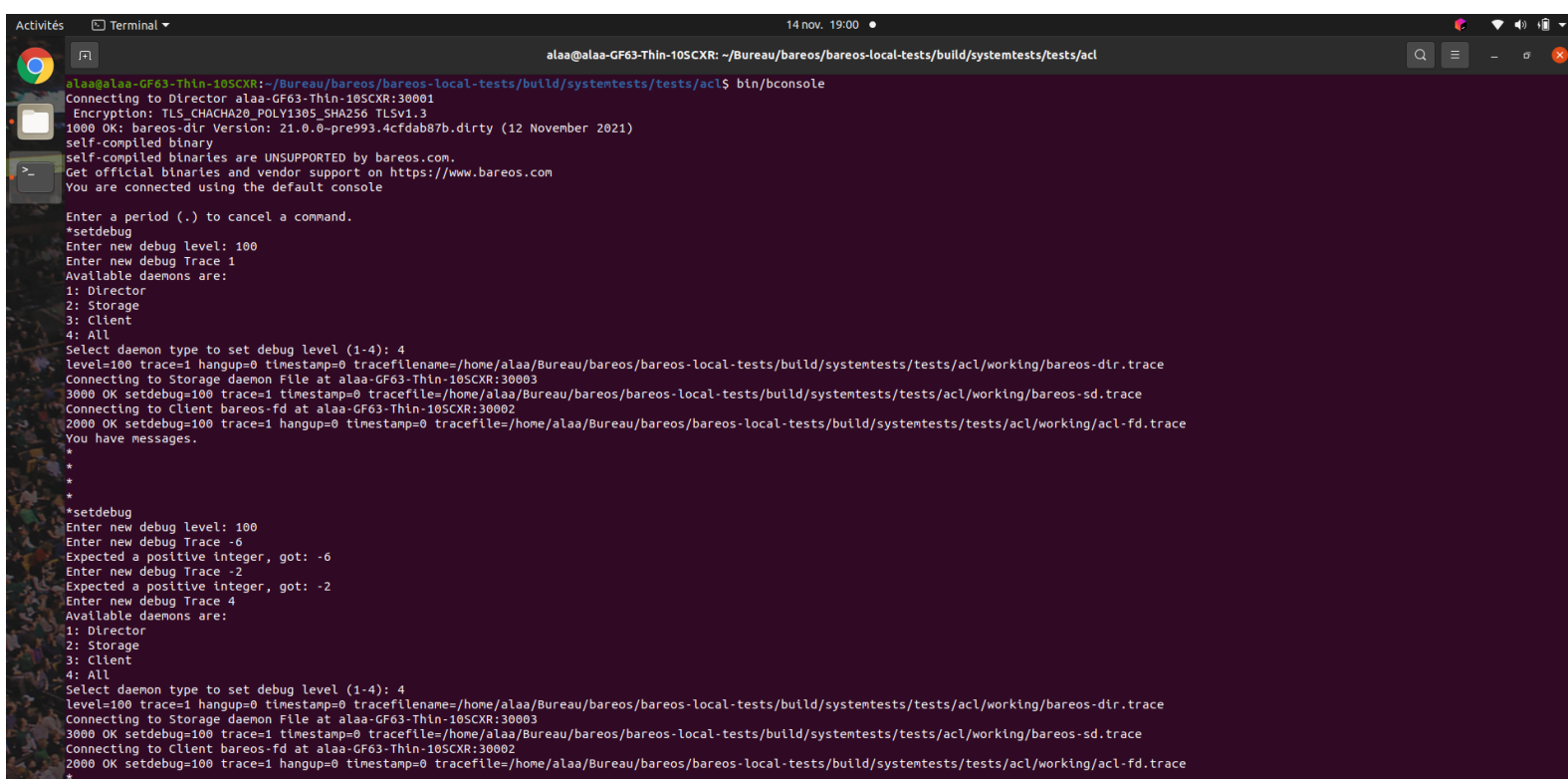
In order to apply my solution described in Question /2 , I will modify the `setdebugCmd` Function to ask the user to pass the Trace argument like the other arguments (Debug level and daemons) , so in case the user doesn't specify the trace , automatically he will be asked to input it  
Also if the user passes a negative number as a trace, the command line will display : Enter new debug Trace and it will repeat that until the user enters a number ( 0 or positive number )  
P.S : The only case that the file would not be created is if the client himself fixes the trace as 0

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Test Cases :

case 1: Setdebug executed without mentioning the trace

case 2: Setdebug executed with a negative trace then executed with a positive trace



```
alaa@alaa-GF63-Thin-10SCXR: ~/Bureau/bareos/bareos-local-tests/build/systemtests/tests/acl$ bin/bconsole
Connecting to Director alaa-GF63-Thin-10SCXR:30001
Encryption: TLS_CHACHA20_POLY1305_SHA256 TLSv1.3
1000 OK: bareos-dir Version: 21.0.0-pre993.4cfdab87b.dirty (12 November 2021)
self-compiled binary
self-compiled binaries are UNSUPPORTED by bareos.com.
Get official binaries and vendor support on https://www.bareos.com
You are connected using the default console

Enter a period (.) to cancel a command.
*setdebug
Enter new debug level: 100
Enter new debug Trace 1
Available daemons are:
1: Director
2: Storage
3: Client
4: All
Select daemon type to set debug level (1-4): 4
level=100 trace=1 hangup=0 timestamp=0 tracefilename=/home/alaa/Bureau/bareos/bareos-local-tests/build/systemtests/tests/acl/working/bareos-dir.trace
Connecting to Storage daemon File at alaa-GF63-Thin-10SCXR:30003
3000 OK setdebug=100 trace=1 timestamp=0 tracefile=/home/alaa/Bureau/bareos/bareos-local-tests/build/systemtests/tests/acl/working/bareos-sd.trace
Connecting to Client bareos-fd at alaa-GF63-Thin-10SCXR:30002
2000 OK setdebug=100 trace=1 hangup=0 timestamp=0 tracefile=/home/alaa/Bureau/bareos/bareos-local-tests/build/systemtests/tests/acl/working/acl-fd.trace
You have messages.
*
*
*
*
*setdebug
Enter new debug level: 100
Enter new debug Trace -6
Expected a positive integer, got: -6
Enter new debug Trace -2
Expected a positive integer, got: -2
Enter new debug Trace 4
Available daemons are:
1: Director
2: Storage
3: Client
4: All
Select daemon type to set debug level (1-4): 4
level=100 trace=1 hangup=0 timestamp=0 tracefilename=/home/alaa/Bureau/bareos/bareos-local-tests/build/systemtests/tests/acl/working/bareos-dir.trace
Connecting to Storage daemon File at alaa-GF63-Thin-10SCXR:30003
3000 OK setdebug=100 trace=1 timestamp=0 tracefile=/home/alaa/Bureau/bareos/bareos-local-tests/build/systemtests/tests/acl/working/bareos-sd.trace
Connecting to Client bareos-fd at alaa-GF63-Thin-10SCXR:30002
2000 OK setdebug=100 trace=1 hangup=0 timestamp=0 tracefile=/home/alaa/Bureau/bareos/bareos-local-tests/build/systemtests/tests/acl/working/acl-fd.trace
*
```

6/

When a user tries to determine the built version and he is not installing GIT , An error occurs  
So I would suggest to return “ Git Not installed Try installing Git “ and give him the command to do so : “ apt install git” to avoid any problems for the user trying to understand the cause of failing

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The work (Source Code) has been pulled to <https://github.com/bareos/bareos>