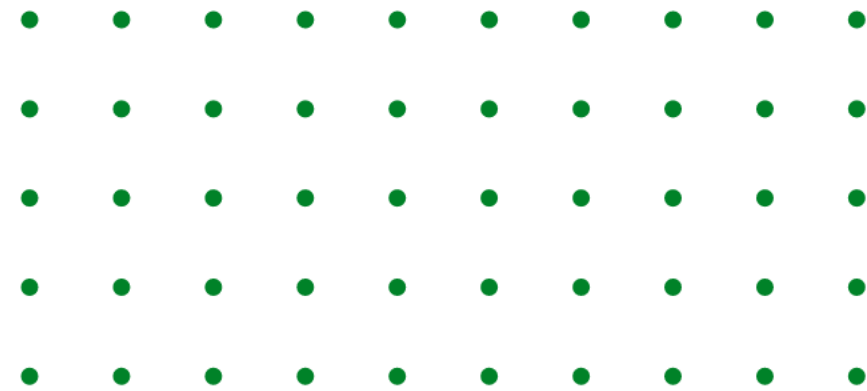


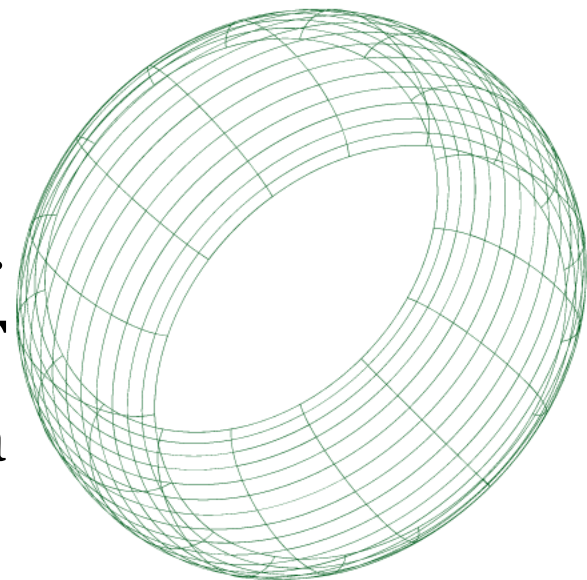
#AU_team

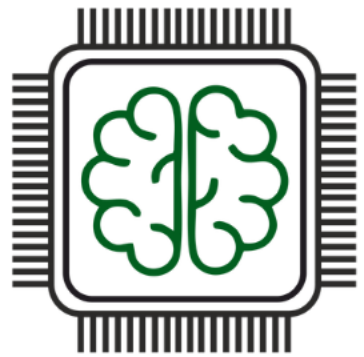


Автоматизация киберполигона в образовательном процессе высших учебных заведений

Павловский В.В.

Преподаватель кафедры БИТ
РГУ нефти и газа (НИУ) имени И.М. Губкина

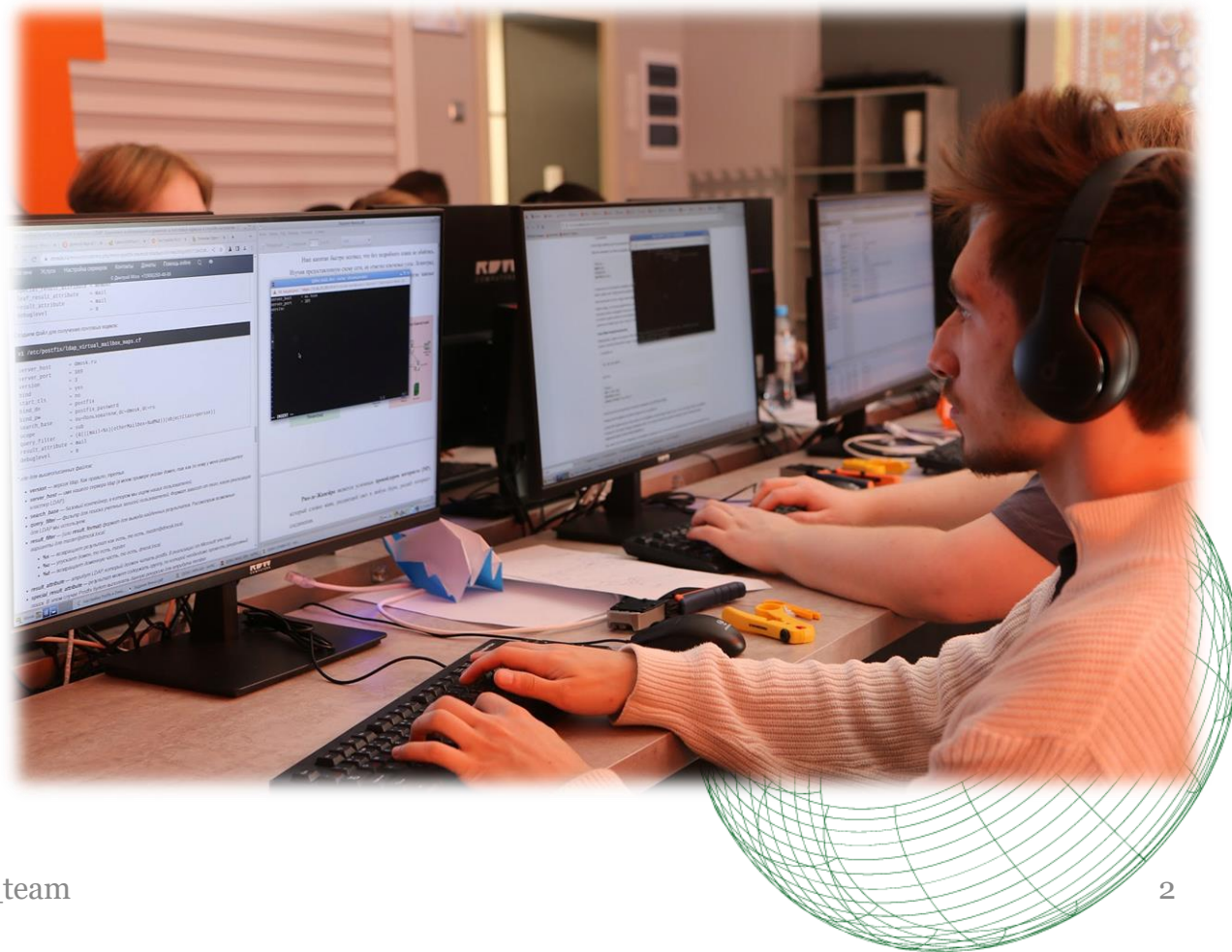


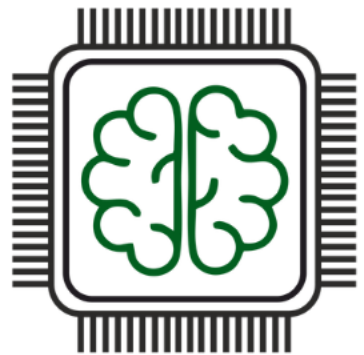


Важность практической ПОДГОТОВКИ

#AU_team

- Теоретические знания важны, но недостаточны без практики.
- Практическая подготовка укрепляет знания и навыки.
- Студенты учатся решать реальные задачи.

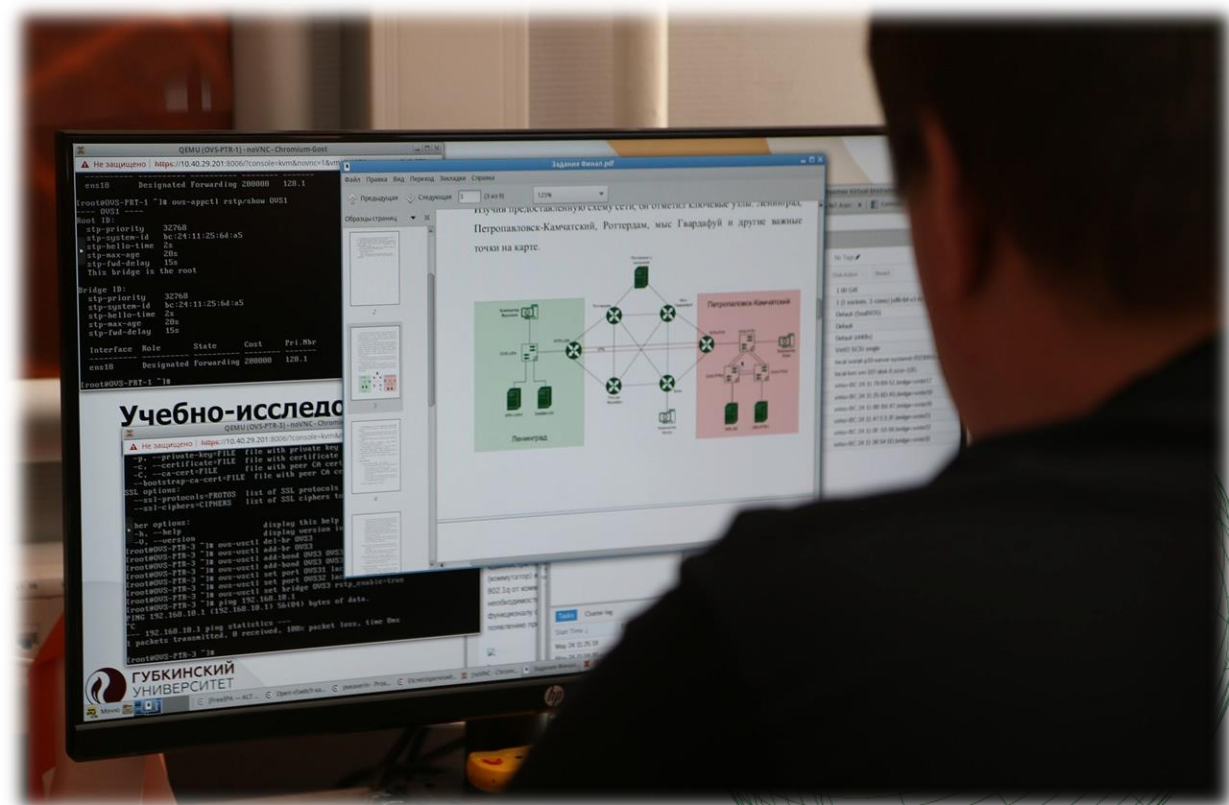




Материально-техническая база

#AU_team

- Важный элемент — киберполигоны.
- Демонстрация технологий и моделирование инфраструктур.
- Проведение технологических сессий.





Разработка собственного решения

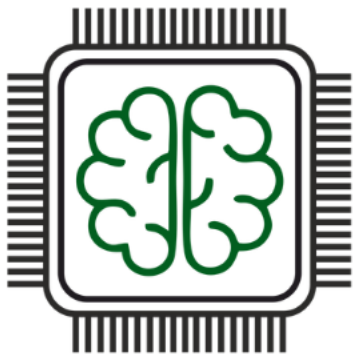
#AU_team

- Цель: Создание доступного и функционального киберполигона
- Платформа: Альт
Виртуализация в режиме PVE

The screenshot displays the Proxmox VE web interface. The top navigation bar includes 'Documentation', 'Create VM', 'Create CT', and the user 'root@pam'. The main content area is divided into a left sidebar for 'Server View' (Datacenter > pve) and a central table for 'Node pve'. The table lists various VMs and storage resources with columns for Type, Description, Disk usage, Memory usage, CPU usage, and Uptime. Below the table, the 'Tasks' tab is active, showing a 'Cluster log' table with columns for Start Time, End Time, Node, User name, Description, and Status.

Type	Description	Disk usage...	Memory us...	CPU usage	Uptime
lxc	100 (iren)	13.6 %	73.7 %	0.5% of 1 ...	5 days 19:36...
qemu	101 (alt)	-	-	-	-
qemu	102 (alt2)	-	-	-	-
qemu	103 (redpoli)	0.0 %	64.5 %	0.9% of 2 ...	20 days 19:3...
qemu	104 (rosapoli)	0.0 %	87.4 %	9.1% of 2 ...	19 days 22:1...
qemu	105 (astrapoli)	0.0 %	62.4 %	7.2% of 2 ...	19 days 22:3...
storage	VM (pve)	5.6 %	-	-	-
storage	alt-VM (pve)	29.6 %	-	-	-
storage	local (pve)	21.7 %	-	-	-

Start Time	End Time	Node	User name	Description	Status
Jun 27 21:49:31	Jun 27 21:49:41	pve	polina@pve	VM/CT 103 - Console	Error: connection timed out
Jun 27 21:48:11	Jun 27 21:49:31	pve	polina@pve	VM/CT 103 - Console	OK
Jun 27 21:47:57	Jun 27 21:48:07	pve	polina@pve	VM/CT 103 - Console	Error: connection timed out
Jun 27 21:21:31	Jun 27 21:21:41	pve	polina@pve	VM/CT 103 - Console	Error: connection timed out
Jun 27 21:20:30	Jun 27 21:21:31	pve	polina@pve	VM/CT 103 - Console	OK



Технологии автоматизации

#AU_team

- Использование Bash для автоматизации развёртывания.
- Интеграция qemu-guest-agent
- Преимущества: Упрощение создания виртуальных сред.

30.06.2024

#au_team

```
#!/bin/bash
#
declare -a vmid_list

echo "Введите количество стенов:"
read num_elements

# Fill the array with incrementing values starting from 2000
for ((i = 2000; i < 2000 + num_elements; i++))
do
    vmid_list+=("$i")
done

# Вывод vmid ваших стенов

echo "Your array:"
echo "${vmid_list[@]}"

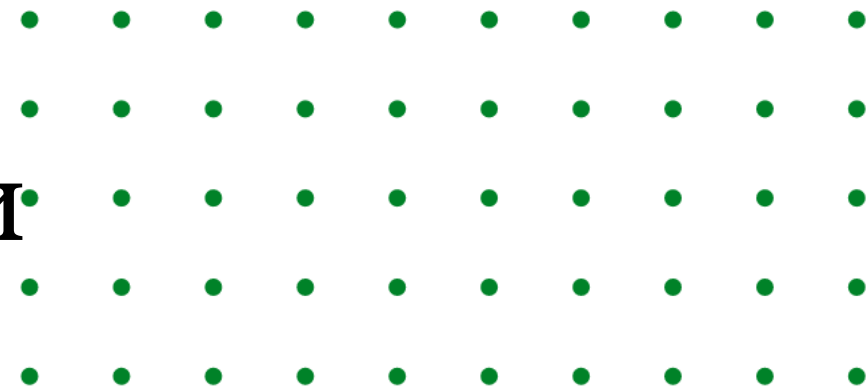
declare -a ip_list

echo "Ведите последний актет адреся для сети 10.40.29.__ (если ввод закончен то напишите end):"
```



#AU_team

Элементы оркестрации



```
#!/bin/bash
#
declare -a vmid_list

echo "Введите количество стендов:"
read num_elements

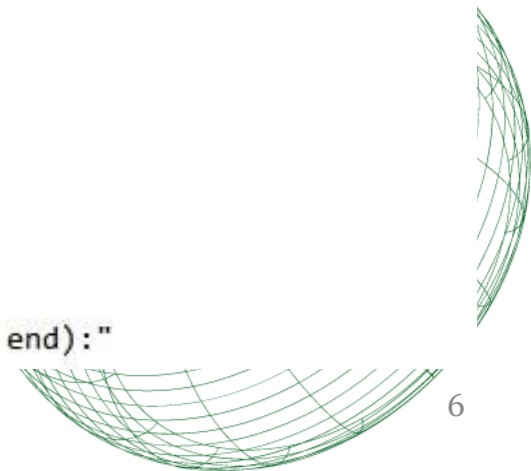
# Fill the array with incrementing values starting from 2000
for ((i = 2000; i < 2000 + num_elements; i++))
do
    vmid_list+=("$i")
done

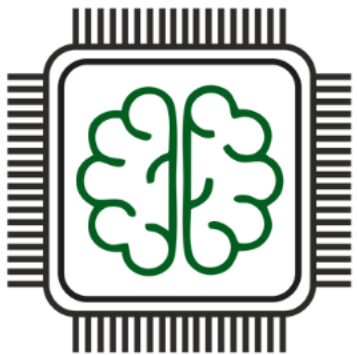
# Вывод vmid ваших стендов

echo "Your array:"
echo "${vmid_list[@]}"

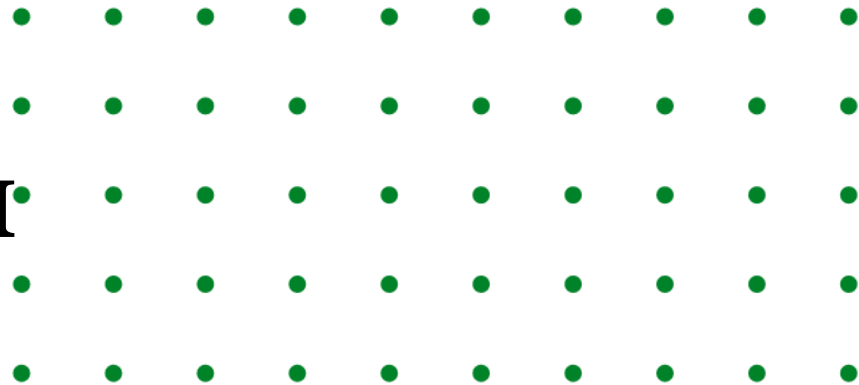
declare -a ip_list

echo "Ведите последний актет адреся для сети 10.40.29.__ (если ввод закончен то напишите end):"
```





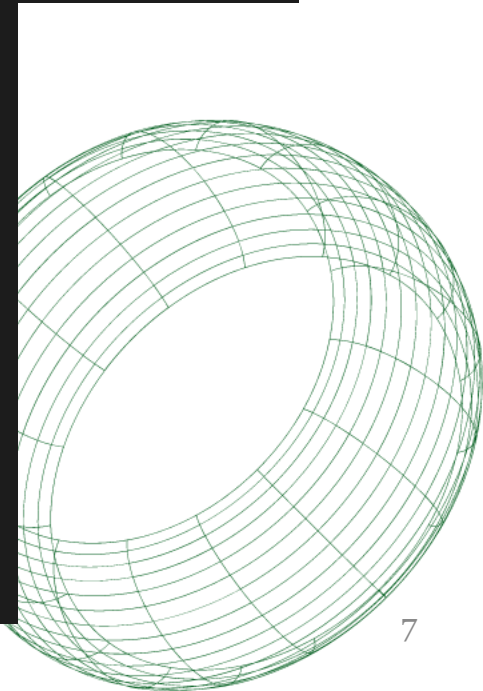
Элементы оркестрации

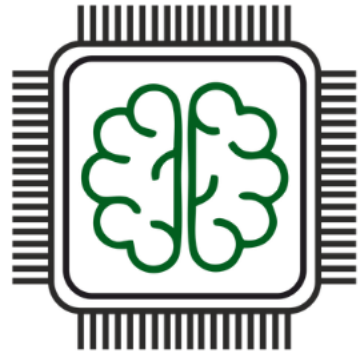


#AU_team

```
[root@pve1 kt1506]# ls
stud1-outstend      stud14-outstend      stud19-outstend      stud23-outstend      stud28-outstend      stud6-outstend
stud1-sum-outstend  stud14-sum-outstend  stud19-sum-outstend  stud23-sum-outstend  stud28-sum-outstend  stud6-sum-outstend
stud10-outstend     stud15-outstend      stud2-outstend        stud24-outstend      stud29-outstend      stud7-outstend
stud10-sum-outstend stud15-sum-outstend  stud2-sum-outstend   stud24-sum-outstend  stud29-sum-outstend  stud7-sum-outstend
stud11-outstend     stud16-outstend      stud20-outstend      stud25-outstend      stud3-outstend        stud8-outstend
stud11-sum-outstend stud16-sum-outstend  stud20-sum-outstend  stud25-sum-outstend  stud3-sum-outstend    stud8-sum-outstend
stud12-outstend     stud17-outstend      stud21-outstend      stud26-outstend      stud4-outstend        stud9-outstend
stud12-sum-outstend stud17-sum-outstend  stud21-sum-outstend  stud26-sum-outstend  stud4-sum-outstend    stud9-sum-outstend
stud13-outstend     stud18-outstend      stud22-outstend      stud27-outstend      stud5-outstend        stud9-sum-outstend
stud13-sum-outstend stud18-sum-outstend  stud22-sum-outstend  stud27-sum-outstend  stud5-sum-outstend
```

```
[root@pve1 kt1506]# cat stud3-outstend
-----HOSTNAME-ISP-----
"isp.au.team\n"
-----HOSTNAME-CLI-----
"cli.au.team\n"
-----HOSTNAME-RTR-L-----
"rtr-l.au.team\n"
-----HOSTNAME-RTR-R-----
"rtr-r.au.team\n"
-----HOSTNAME-SRV-L-----
"srv-l.au.team\n"
-----HOSTNAME-WEB-L-----
"web-l.au.team\n"
-----HOSTNAME-WEB-R-----
"web-r.au.team\n"
-----IP-ISP-----
#au_team
```

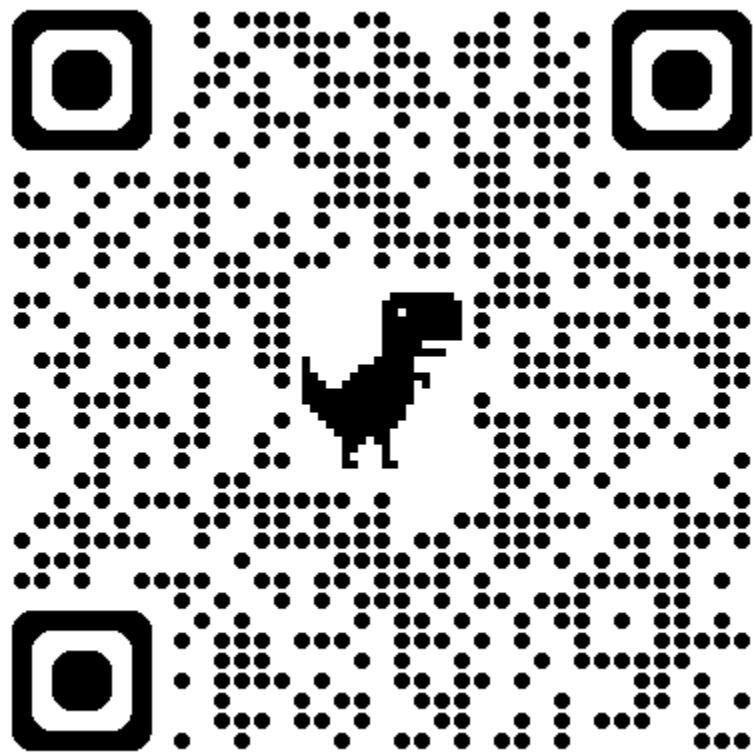
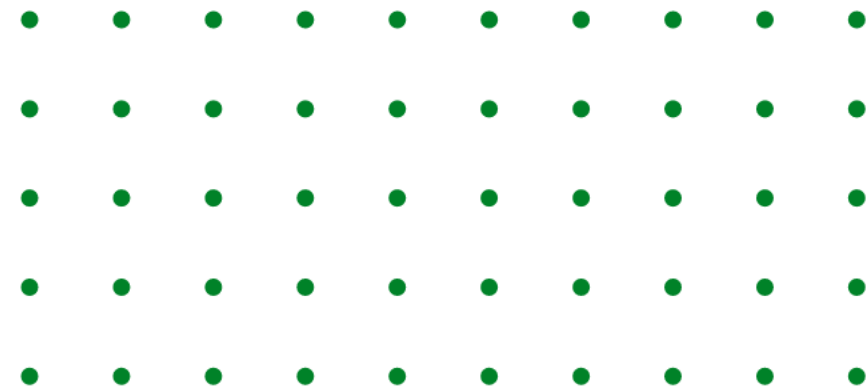




#AU_team

Элементы оркестрации

```
[root@pve1 ~]# cat check.sh
#!/bin/bash
#
isp=240
cli=241
rtrl=242
webl=243
srvl=246
rtrr=245
webr=244
echo "-----HOSTNAME-ISP-----" >> outstend
qm guest exec $isp -- bash -c "hostname" | grep "out-data" | sed 's/"out-data" :// ' | tr -d ' ' >> outstend
if grep "isp.au.team" outstend ; then
    SUM=$(( $SUM + 1 ))
fi
echo $SUM
echo "-----HOSTNAME-CLI-----" >> outstend
qm guest exec $cli -- bash -c "hostname" | grep "out-data" | sed 's/"out-data" :// ' | tr -d ' ' >> outstend
if grep "cli.au.team" outstend ; then
    SUM=$(( $SUM + 1 ))
fi
echo $SUM
echo "-----HOSTNAME-RTR-L-----" >> outstend
qm guest exec $rtrl -- bash -c "hostname" | grep "out-data" | sed 's/"out-data" :// ' | tr -d ' ' >> outstend
if grep "rtr-l.au.team" outstend ; then
    SUM=$(( $SUM + 1 ))
fi
echo $SUM
echo "-----HOSTNAME-RTR-R-----" >> outstend
qm guest exec $rtrr -- bash -c "hostname" | grep "out-data" | sed 's/"out-data" :// ' | tr -d ' ' >> outstend
if grep "rtr-r.au.team" outstend ; then
    SUM=$(( $SUM + 1 ))
fi
echo $SUM
echo "-----HOSTNAME-SRV-L-----" >> outstend
qm guest exec $srvl -- bash -c "hostname" | grep "out-data" | sed 's/"out-data" :// ' | tr -d ' ' >> outstend
if grep "srv-l.au.team" outstend ; then
    SUM=$(( $SUM + 1 ))
fi
echo $SUM
```

Спасибо за
ВНИМАНИЕ!

<< <https://auteam-usr.github.io/>

Учебно-исследовательская
лаборатория>>

