

Double Trouble Lab

Infrastructure Proof:

The screenshot displays two AWS Management Console pages for EC2 instances. The top page shows the details for instance **i-0d62f3017b4126c24** (vps-a-vijaya), and the bottom page shows details for instance **i-00b8d560f894f2b6a** (vps-b-vijaya). Both instances are running t3.micro instances in the us-east-1 region.

Instance summary for i-0d62f3017b4126c24 (vps-a-vijaya)

- Instance ID:** i-0d62f3017b4126c24
- IPV6 address:** -
- Hostname type:** IP name: ip-172.31.21-5.ec2.internal
- Answer private resource DNS name:** IPv4 (A)
- Auto-assigned IP address:** 100.53.9.181 [Public IP]
- IAM Role:** -
- IMDSv2:** Required
- Operator:** -
- Public IPv4 address:** 100.53.9.181 | [open address](#)
- Instance state:** Running
- Private IP DNS name (IPv4 only):** ip-172.31.21-5.ec2.internal
- Instance type:** t3.micro
- VPC ID:** vpc-0c191489f702038c7
- Subnet ID:** subnet-04e5e8b3ad0f851a7
- Instance ARN:** arn:aws:ec2:us-east-1:686699774218:instance/i-0d62f3017b4126c24
- Private IPv4 addresses:** 172.31.21.5
- Public DNS:** ec2-100-53-9-181.compute-1.amazonaws.com | [open address](#)
- Elastic IP addresses:** -
- AWS Compute Optimizer finding:** Opt-in to AWS Compute Optimizer for recommendations. | [Learn more](#)
- Auto Scaling Group name:** -
- Managed:** false

Security details

- IAM Role:** -
- Owner ID:** 686699774218
- Launch time:** Fri Jan 16 2026 08:27:02 GMT+0100 (Mitteleuropäische Normalzeit)
- Security groups:** sg-0daee86f56cda8be9 (Double_Trouble_A_To_B_Vijaya)
- Inbound rules:** -

Instance summary for i-00b8d560f894f2b6a (vps-b-vijaya)

- Instance ID:** i-00b8d560f894f2b6a
- IPV6 address:** -
- Hostname type:** IP name: ip-172.31.20-22.ec2.internal
- Answer private resource DNS name:** IPv4 (A)
- Auto-assigned IP address:** 54.235.8.29 [Public IP]
- IAM Role:** -
- IMDSv2:** Required
- Operator:** -
- Public IPv4 address:** 54.235.8.29 | [open address](#)
- Instance state:** Running
- Private IP DNS name (IPv4 only):** ip-172.31.20-22.ec2.internal
- Instance type:** t3.micro
- VPC ID:** vpc-0c191489f702038c7
- Subnet ID:** subnet-04e5e8b3ad0f851a7
- Instance ARN:** arn:aws:ec2:us-east-1:686699774218:instance/i-00b8d560f894f2b6a
- Private IPv4 addresses:** 172.31.20.22
- Public DNS:** ec2-54-235-8-29.compute-1.amazonaws.com | [open address](#)
- Elastic IP addresses:** -
- AWS Compute Optimizer finding:** Opt-in to AWS Compute Optimizer for recommendations. | [Learn more](#)
- Auto Scaling Group name:** -
- Managed:** false

Instance details

- AMI ID:** ami-0c398cb65a93047f2
- AMI name:** ubuntu/images/hvm-ssd/ubuntu-jammy-22.04-amd64-server-20251015
- Stop protection:** Disabled
- Monitoring:** disabled
- Allowed image:** -
- Launch time:** Fri Jan 16 2026 08:26:23 GMT+0100 (Mitteleuropäische Normalzeit) (about)
- Platform details:** Linux/UNIX
- Termination protection:** Disabled
- AMI location:** amazon/ubuntu/images/hvm-ssd/ubuntu-jammy-22.04-amd64-server-2025

Two screenshots of the AWS Management Console showing the configuration of a security group named "sg-0daee86f56cda8be9 - Double_Trouble_A_To_B_Vijaya".

Top Screenshot: Inbound Rules

Details:

- Security group name: Double_Trouble_A_To_B_Vijaya
- Security group ID: sg-0daee86f56cda8be9
- Description: internal communication
- VPC ID: vpc-0c191489f702038c7
- Owner: 686699774218
- Inbound rules count: 2 Permission entries
- Outbound rules count: 1 Permission entry

Inbound rules (2):

Name	Security group rule ID	IP version	Type	Protocol	Port range	Source	Description
-	sgr-0fcb54043babf5e3a	IPv4	SSH	TCP	22	31.29.56.199/32	-
-	sgr-0f20da52dda3a7297	-	All traffic	All	All	sg-0daee86f56cda8be9...	-

Bottom Screenshot: Outbound Rules

Details:

- Security group name: Double_Trouble_A_To_B_Vijaya
- Security group ID: sg-0daee86f56cda8be9
- Description: internal communication
- VPC ID: vpc-0c191489f702038c7
- Owner: 686699774218
- Inbound rules count: 2 Permission entries
- Outbound rules count: 1 Permission entry

Outbound rules (1):

Name	Security group rule ID	IP version	Type	Protocol	Port range	Destination	Description
-	sgr-0434cba4d9862dcce	IPv4	All traffic	All	All	0.0.0.0/0	-

Automation Evidence:

1.2 Initial Connection & Verification

```
buntu@ip-172-31-21-5:~$ ls -la ~/received_from_b/ | head -n 5
-rw-r--r-- 1 ubuntu ubuntu 4096 Jan 15 19:45 .
-rwxr-x--- 6 ubuntu ubuntu 4096 Jan 15 19:22 ..
-rw-rw-r-- 1 ubuntu ubuntu  49 Jan 15 19:36 file_1768505762.txt
-rw-rw-r-- 1 ubuntu ubuntu  49 Jan 15 19:38 file_1768505883.txt
```

Edit this file to introduce tasks to be run by cron.

Each task to run has to be defined through a single line indicating with different fields when the task will be run and what command to run for the task

To define the time you can provide concrete values for minute (m), hour (h), day of month (dom), month (mon), and day of week (dow) or use '*' in these fields (for 'any').

Notice that tasks will be started based on the cron's system daemon's notion of time and timezones.

Output of the crontab jobs (including errors) is sent through email to the user the crontab file belongs to (unless redirected).

For example, you can run a backup of all your user accounts at 5 a.m every week with:

```
0 5 * * 1 tar -zcf /var/backups/home.tgz /home/
```

For more information see the manual pages of crontab(5) and cron(8)

m	h	dom	mon	dow	command
---	---	-----	-----	-----	---------

File creation every 2 minutes

```
/2 * * * * /home/ubuntu/create_on_b.sh
```

Cleanup every 15 minutes

```
/15 * * * * /home/ubuntu/cleanup_from_b.sh
```

Optional: Log rotation every day at 2 AM

```
2 * * * find /home/ubuntu/script_logs -name "*.log" -mtime +7 -delete
```

```

ubuntu@ip-172-31-20-22:~$ ls -la ~/received_from_a/ | head -n 5
crontab -l
total 28
drwx----- 2 ubuntu ubuntu 4096 Jan 15 19:45 .
drwxr-x--- 6 ubuntu ubuntu 4096 Jan 15 19:24 ..
-rw-rw-r-- 1 ubuntu ubuntu  49 Jan 15 19:36 file_1768505763.txt
-rw-rw-r-- 1 ubuntu ubuntu  49 Jan 15 19:38 file_1768505882.txt
# Edit this file to introduce tasks to be run by cron.
#
# Each task to run has to be defined through a single line
# indicating with different fields when the task will be run
# and what command to run for the task
#
# To define the time you can provide concrete values for
# minute (m), hour (h), day of month (dom), month (mon),
# and day of week (dow) or use '*' in these fields (for 'any').
#
# Notice that tasks will be started based on the cron's system
# daemon's notion of time and timezones.
#
# Output of the crontab jobs (including errors) is sent through
# email to the user the crontab file belongs to (unless redirected).
#
# For example, you can run a backup of all your user accounts
# at 5 a.m every week with:
# 0 5 * * 1 tar -zcf /var/backups/home.tgz /home/
#
# For more information see the manual pages of crontab(5) and cron(8)
#
# m h  dom mon dow   command
# File creation every 2 minutes
*/2 * * * * /home/ubuntu/create_on_a.sh
# Cleanup every 15 minutes
*/15 * * * * /home/ubuntu/cleanup_from_a.sh
# Optional: Log rotation every day at 2 AM
0 2 * * * find /home/ubuntu/script_logs -name "*.log" -mtime +7 -delete

```

```

ubuntu@ip-172-31-21-5:~$ cat ~/received_from_b/file_*.txt | head -n 1
Created by VPS B at Thu Jan 15 19:36:02 UTC 2026
ubuntu@ip-172-31-21-5:~$

```

```

ubuntu@ip-172-31-20-22:~$ cat ~/received_from_a/file_*.txt | head -n 1
Created by VPS A at Thu Jan 15 19:36:03 UTC 2026
ubuntu@ip-172-31-20-22:~$

```

```
vijayagagla@DESKTOP-FP40P26:~$ ssh -i Double-Trouble-Vijaya.pem ubuntu@98.81.87.109
Welcome to Ubuntu 22.04.5 LTS (GNU/Linux 6.8.0-1040-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/pro

System information as of Thu Jan 15 17:42:08 UTC 2026

System load:  0.05          Processes:      104
Usage of /:   23.3% of 7.57GB Users logged in:  0
Memory usage: 22%          IPv4 address for ens5: 172.31.21.5
Swap usage:   0%

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The list of available updates is more than a week old.
To check for new updates run: sudo apt update
Failed to connect to https://changelogs.ubuntu.com/meta-release-lts. Check your Internet connection or proxy settings

Last login: Thu Jan 15 14:27:10 2026 from 195.250.14.202
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-172-31-21-5:~$ whoami
ubuntu
ubuntu@ip-172-31-21-5:~$ hostname
ip-172-31-21-5
ubuntu@ip-172-31-21-5:~$ ip addr show
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: ens5: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 9001 qdisc mq state UP group default qlen 1000
    link/ether 0a:ff:f9:f8:3e:47 brd ff:ff:ff:ff:ff:ff
    altname enp0s5
    inet 172.31.21.5/20 metric 100 brd 172.31.31.255 scope global dynamic ens5
        valid_lft 3575sec preferred_lft 3575sec
    inet6 fe80::8ff:f9ff:fef8:3e47/64 scope link
        valid_lft forever preferred_lft forever
ubuntu@ip-172-31-21-5:~$
```

```
vijayagaglia@DESKTOP-FP40P26:~$ chmod 400 vps-b-vijaya.pem
vijayagaglia@DESKTOP-FP40P26:~$ ssh -i vps-b-vijaya.pem ubuntu@3.89.253.179
Welcome to Ubuntu 22.04.5 LTS (GNU/Linux 6.8.0-1040-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/pro

System information as of Thu Jan 15 17:32:23 UTC 2026

System load:  0.0               Processes:    104
Usage of /:   22.7% of 7.57GB   Users logged in: 0
Memory usage: 24%              IPv4 address for ens5: 172.31.20.22
Swap usage:   0%

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-172-31-20-22:~$ whoami
ubuntu
ubuntu@ip-172-31-20-22:~$ hostname
ip-172-31-20-22
ubuntu@ip-172-31-20-22:~$ ip addr show
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: ens5: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 9001 qdisc mq state UP group default qlen 1000
    link/ether 0a:ff:d0:89:fe:e3 brd ff:ff:ff:ff:ff:ff
    altname enp0s5
    inet 172.31.20.22/20 metric 100 brd 172.31.31.255 scope global dynamic ens5
        valid_lft 3081sec preferred_lft 3081sec
    inet6 fe80::8ff:d0ff:fe89:fee3/64 scope link
        valid_lft forever preferred_lft forever
ubuntu@ip-172-31-20-22:~$
```

2.3 Test Passwordless Connectivity

```
ubuntu@ip-172-31-21-5:~$ ssh -i vps-a-automation ubuntu@172.31.20.22
Welcome to Ubuntu 22.04.5 LTS (GNU/Linux 6.8.0-1040-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/pro

System information as of Thu Jan 15 18:25:55 UTC 2026

System load:  0.0               Processes:            102
Usage of /:   23.3% of 7.57GB   Users logged in:     0
Memory usage: 25%              IPv4 address for ens5: 172.31.20.22
Swap usage:   0%

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The list of available updates is more than a week old.
To check for new updates run: sudo apt update
New release '24.04.3 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

Last login: Thu Jan 15 18:20:16 2026 from 195.250.14.202
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-172-31-20-22:~$
```

```

ubuntu@ip-172-31-20-22:~$ ssh -i vps-b-automation ubuntu@172.31.21.5
The authenticity of host '172.31.21.5 (172.31.21.5)' can't be established.
ED25519 key fingerprint is SHA256:H4m17DI1RMXHFqaIn/Axws87bzRO9Y3Nr3+U9xiFF5A.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '172.31.21.5' (ED25519) to the list of known hosts.
Welcome to Ubuntu 22.04.5 LTS (GNU/Linux 6.8.0-1040-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/pro

System information as of Thu Jan 15 18:27:48 UTC 2026

System load:  0.0          Processes:      105
Usage of /:   23.3% of 7.57GB Users logged in: 1
Memory usage: 25%         IPv4 address for ens5: 172.31.21.5
Swap usage:   0%

Expanded Security Maintenance for Applications is not enabled.

No updates can be applied immediately.

To enable ESM Apps to receive additional future security updates.
see https://ubuntu.com/esm or run: sudo pro status

The list of available updates is more than a week old.
To check for new updates run: sudo apt update
Failed to connect to https://changelogs.ubuntu.com/meta-release-lts. Check your Internet connection or proxy settings.

Last login: Thu Jan 15 18:24:37 2026 from 195.250.14.202
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-172-31-21-5:~$

```

2.4 Harden SSH Configuration (Optional Security Enhancement)

```

# ForceCommand cvs server
PasswordAuthentication no
PermitRootLogin no
PubkeyAuthentication yes
ubuntu@ip-172-31-21-5:~$

```

```

PasswordAuthentication no
PermitRootLogin no
PubkeyAuthentication yes
ubuntu@ip-172-31-20-22:~$

```

3) Create Secure Directory Structure


```
Auswählen ubuntu@ip-172-31-21-5: ~
ubuntu@ip-172-31-21-5:~$ mkdir -p ~/received_from_b
ubuntu@ip-172-31-21-5:~$ chmod 700 ~/received_from_b
ubuntu@ip-172-31-21-5:~$ ls -la ~/received_from_b
total 8
drwx----- 2 ubuntu ubuntu 4096 Jan 15 18:44 .
drwxr-x--- 5 ubuntu ubuntu 4096 Jan 15 18:44 ..
ubuntu@ip-172-31-21-5:~$ ls -la ~
total 48
drwxr-x--- 5 ubuntu ubuntu 4096 Jan 15 18:44 .
drwxr-xr-x 3 root root 4096 Jan 15 13:42 ..
-rw----- 1 ubuntu ubuntu 805 Jan 15 18:20 .bash_history
-rw-r--r-- 1 ubuntu ubuntu 220 Jan 6 2022 .bash_logout
-rw-r--r-- 1 ubuntu ubuntu 3771 Jan 6 2022 .bashrc
drwx----- 2 ubuntu ubuntu 4096 Jan 15 14:27 .cache
-rw-r--r-- 1 ubuntu ubuntu 807 Jan 6 2022 .profile
drwx----- 2 ubuntu ubuntu 4096 Jan 15 18:02 .ssh
-rw-r--r-- 1 ubuntu ubuntu 0 Jan 15 18:40 .sudo_as_admin_successful
-rw----- 1 ubuntu ubuntu 883 Jan 15 18:01 .viminfo
drwx----- 2 ubuntu ubuntu 4096 Jan 15 18:44 received_from_b
-r--r--r-- 1 ubuntu ubuntu 3381 Jan 15 17:49 vps-a-automation
-rw-r--r-- 1 ubuntu ubuntu 742 Jan 15 17:49 vps-a-automation.pub
ubuntu@ip-172-31-21-5:~$
```

```
ubuntu@ip-172-31-20-22:~$ mkdir -p ~/received_from_a
ubuntu@ip-172-31-20-22:~$ chmod 700 ~/received_from_a
ubuntu@ip-172-31-20-22:~$ ls received_from_a
ubuntu@ip-172-31-20-22:~$ ls -la received_from_a
total 8
-rwx----- 2 ubuntu ubuntu 4096 Jan 15 18:46 .
-rwxr-x--- 5 ubuntu ubuntu 4096 Jan 15 18:46 ..
ubuntu@ip-172-31-20-22:~$ ls -la received_from_a
total 8
-rwx----- 2 ubuntu ubuntu 4096 Jan 15 18:46 .
-rwxr-x--- 5 ubuntu ubuntu 4096 Jan 15 18:46 ..
ubuntu@ip-172-31-20-22:~$ ls -la ~/received_from_a
total 8
-rwx----- 2 ubuntu ubuntu 4096 Jan 15 18:46 .
-rwxr-x--- 5 ubuntu ubuntu 4096 Jan 15 18:46 ..
ubuntu@ip-172-31-20-22:~$ ls -la ~
total 48
-rwxr-x--- 5 ubuntu ubuntu 4096 Jan 15 18:46 .
-rwxr-xr-x 3 root root 4096 Jan 15 17:26 ..
-rw----- 1 ubuntu ubuntu 332 Jan 15 18:22 .bash_history
-rw-r--r-- 1 ubuntu ubuntu 220 Jan 6 2022 .bash_logout
-rw-r--r-- 1 ubuntu ubuntu 3771 Jan 6 2022 .bashrc
-rwx----- 2 ubuntu ubuntu 4096 Jan 15 17:32 .cache
-rw-r--r-- 1 ubuntu ubuntu 807 Jan 6 2022 .profile
-rwx----- 2 ubuntu ubuntu 4096 Jan 15 18:27 .ssh
-rw-r--r-- 1 ubuntu ubuntu 0 Jan 15 18:32 .sudo_as_admin_successful
-rw----- 1 ubuntu ubuntu 2371 Jan 15 18:39 .viminfo
-rwx----- 2 ubuntu ubuntu 4096 Jan 15 18:46 received_from_a
-r----- 1 ubuntu ubuntu 3381 Jan 15 17:54 vps-b-automation
-rw-r--r-- 1 ubuntu ubuntu 742 Jan 15 17:54 vps-b-automation.pub
ubuntu@ip-172-31-20-22:~$
```

4) Create Automated File Transfer Scripts

```
ubuntu@ip-172-31-21-5:~$ ls -la ~
total 56
drwxr-x--- 6 ubuntu ubuntu 4096 Jan 15 18:52 .
drwxr-xr-x 3 root   root   4096 Jan 15 13:42 ..
-rw----- 1 ubuntu ubuntu  805 Jan 15 18:20 .bash_history
-rw-r--r-- 1 ubuntu ubuntu  220 Jan  6  2022 .bash_logout
-rw-r--r-- 1 ubuntu ubuntu 3771 Jan  6  2022 .bashrc
drwx----- 2 ubuntu ubuntu 4096 Jan 15 14:27 .cache
-rw-r--r-- 1 ubuntu ubuntu  807 Jan  6  2022 .profile
drwx----- 2 ubuntu ubuntu 4096 Jan 15 18:02 .ssh
-rw-r--r-- 1 ubuntu ubuntu    0 Jan 15 18:40 .sudo_as_admin_successful
-rw----- 1 ubuntu ubuntu 2002 Jan 15 18:51 .viminfo
-rwx----- 1 ubuntu ubuntu  691 Jan 15 18:51 create_on_b.sh
drwx----- 2 ubuntu ubuntu 4096 Jan 15 18:44 received_from_b
drwxrwxr-x 2 ubuntu ubuntu 4096 Jan 15 18:52 script_logs
-r----- 1 ubuntu ubuntu 3381 Jan 15 17:49 vps-a-automation
-rw-r--r-- 1 ubuntu ubuntu  742 Jan 15 17:49 vps-a-automation.pub
ubuntu@ip-172-31-21-5:~$
```

```
ubuntu@ip-172-31-20-22:~$ vi ~/create_on_a.sh
ubuntu@ip-172-31-20-22:~$ mkdir -p ~/script_logs
ubuntu@ip-172-31-20-22:~$ chmod 700 ~/create_on_a.sh
ubuntu@ip-172-31-20-22:~$ ls -la ~
total 56
drwxr-x--- 6 ubuntu ubuntu 4096 Jan 15 18:56 .
drwxr-xr-x 3 root   root   4096 Jan 15 17:26 ..
-rw----- 1 ubuntu ubuntu  332 Jan 15 18:22 .bash_history
-rw-r--r-- 1 ubuntu ubuntu  220 Jan  6  2022 .bash_logout
-rw-r--r-- 1 ubuntu ubuntu 3771 Jan  6  2022 .bashrc
drwx----- 2 ubuntu ubuntu 4096 Jan 15 17:32 .cache
-rw-r--r-- 1 ubuntu ubuntu  807 Jan  6  2022 .profile
drwx----- 2 ubuntu ubuntu 4096 Jan 15 18:27 .ssh
-rw-r--r-- 1 ubuntu ubuntu    0 Jan 15 18:32 .sudo_as_admin_successful
-rw----- 1 ubuntu ubuntu 3881 Jan 15 18:56 .viminfo
-rwx----- 1 ubuntu ubuntu  691 Jan 15 18:56 create_on_a.sh
drwx----- 2 ubuntu ubuntu 4096 Jan 15 18:46 received_from_a
drwxrwxr-x 2 ubuntu ubuntu 4096 Jan 15 18:56 script_logs
-r----- 1 ubuntu ubuntu 3381 Jan 15 17:54 vps-b-automation
-rw-r--r-- 1 ubuntu ubuntu  742 Jan 15 17:54 vps-b-automation.pub
ubuntu@ip-172-31-20-22:~$
```

4.3 Test the Scripts

```
ubuntu@ip-172-31-21-5:~$ ssh -i vps-a-automation ubuntu@172.31.20.22 "ls -la ~/received_from_a/"
total 8
drwx----- 2 ubuntu ubuntu 4096 Jan 15 18:46 .
drwxr-x--- 6 ubuntu ubuntu 4096 Jan 15 18:56 ..
ubuntu@ip-172-31-21-5:~$
```

```
ubuntu@ip-172-31-20-22:~$ ssh -i vps-b-automation ubuntu@172.31.21.5 "ls -la ~/received_from_b/"
total 8
drwx----- 2 ubuntu ubuntu 4096 Jan 15 18:44 .
drwxr-x--- 6 ubuntu ubuntu 4096 Jan 15 18:52 ..
ubuntu@ip-172-31-20-22:~$
```

5) Create Cleanup Scripts

```
ubuntu@ip-172-31-21-5: ~
ubuntu@ip-172-31-21-5:~$ ls -la ~
total 64
drwxr-x--- 6 ubuntu ubuntu 4096 Jan 15 19:05 .
drwxr-xr-x 3 root root 4096 Jan 15 13:42 ..
-rw----- 1 ubuntu ubuntu 805 Jan 15 18:20 .bash_history
-rw-r--r-- 1 ubuntu ubuntu 220 Jan 6 2022 .bash_logout
-rw-r--r-- 1 ubuntu ubuntu 3771 Jan 6 2022 .bashrc
drwx----- 2 ubuntu ubuntu 4096 Jan 15 14:27 .cache
-rw-r--r-- 1 ubuntu ubuntu 807 Jan 6 2022 .profile
drwx----- 2 ubuntu ubuntu 4096 Jan 15 18:02 .ssh
-rw-r--r-- 1 ubuntu ubuntu 0 Jan 15 18:40 .sudo_as_admin_successful
-rw----- 1 ubuntu ubuntu 5516 Jan 15 19:05 .viminfo
-rwx----- 1 ubuntu ubuntu 643 Jan 15 19:05 cleanup_from_b.sh
-rwx----- 1 ubuntu ubuntu 691 Jan 15 18:51 create_on_b.sh
drwx----- 2 ubuntu ubuntu 4096 Jan 15 18:44 received_from_b
drwxrwxr-x 2 ubuntu ubuntu 4096 Jan 15 18:58 script_logs
-r----- 1 ubuntu ubuntu 3381 Jan 15 17:49 vps-a-automation
-rw-r--r-- 1 ubuntu ubuntu 742 Jan 15 17:49 vps-a-automation.pub
ubuntu@ip-172-31-21-5:~$
```

```
ubuntu@ip-172-31-20-22: ~  
ubuntu@ip-172-31-20-22:~$ ls -la ~  
total 64  
drwxr-x--- 6 ubuntu ubuntu 4096 Jan 15 19:05 .  
drwxr-xr-x 3 root   root   4096 Jan 15 17:26 ..  
-rw----- 1 ubuntu ubuntu  332 Jan 15 18:22 .bash_history  
-rw-r--r-- 1 ubuntu ubuntu  220 Jan  6  2022 .bash_logout  
-rw-r--r-- 1 ubuntu ubuntu 3771 Jan  6  2022 .bashrc  
drwx----- 2 ubuntu ubuntu 4096 Jan 15 17:32 .cache  
-rw-r--r-- 1 ubuntu ubuntu  807 Jan  6  2022 .profile  
drwx----- 2 ubuntu ubuntu 4096 Jan 15 18:27 .ssh  
-rw-r--r-- 1 ubuntu ubuntu    0 Jan 15 18:32 .sudo_as_admin_successful  
-rw----- 1 ubuntu ubuntu 6739 Jan 15 19:05 .viminfo  
-rwx----- 1 ubuntu ubuntu  643 Jan 15 19:05 cleanup_from_a.sh  
-rwx----- 1 ubuntu ubuntu  691 Jan 15 18:56 create_on_a.sh  
drwx----- 2 ubuntu ubuntu 4096 Jan 15 18:46 received_from_a  
drwxrwxr-x 2 ubuntu ubuntu 4096 Jan 15 19:00 script_logs  
-r----- 1 ubuntu ubuntu 3381 Jan 15 17:54 vps-b-automation  
-rw-r--r-- 1 ubuntu ubuntu  742 Jan 15 17:54 vps-b-automation.pub  
ubuntu@ip-172-31-20-22:~$
```

6) Automate with Cron Jobs

```
ubuntu@ip-172-31-21-5:~$ crontab -e
no crontab for ubuntu - using an empty one

Select an editor. To change later, run 'select-editor'.
 1. /bin/nano      <---- easiest
 2. /usr/bin/vim.basic
 3. /usr/bin/vim.tiny
 4. /bin/ed

Choose 1-4 [1]: 2
crontab: installing new crontab
ubuntu@ip-172-31-21-5:~$ crontab -l
# Edit this file to introduce tasks to be run by cron.
#
# Each task to run has to be defined through a single line
# indicating with different fields when the task will be run
# and what command to run for the task
#
# To define the time you can provide concrete values for
# minute (m), hour (h), day of month (dom), month (mon),
# and day of week (dow) or use '*' in these fields (for 'any').
#
# Notice that tasks will be started based on the cron's system
# daemon's notion of time and timezones.
#
# Output of the crontab jobs (including errors) is sent through
# email to the user the crontab file belongs to (unless redirected).
#
# For example, you can run a backup of all your user accounts
# at 5 a.m every week with:
# 0 5 * * 1 tar -zcf /var/backups/home.tgz /home/
#
# For more information see the manual pages of crontab(5) and cron(8)
#
# m h  dom mon dow   command
#
# File creation every 2 minutes
*/2 * * * * /home/ubuntu/create_on_b.sh
#
# Cleanup every 15 minutes
*/15 * * * * /home/ubuntu/cleanup_from_b.sh
#
# Optional: Log rotation every day at 2 AM
0 2 * * * find /home/ubuntu/script_logs -name "*.log" -mtime +7 -delete

ubuntu@ip-172-31-21-5:~$
```

```

ubuntu@ip-172-31-20-22:~$ crontab -e
no crontab for ubuntu - using an empty one

select an editor. To change later, run 'select-editor'.
 1. /bin/nano      <---- easiest
 2. /usr/bin/vim.basic
 3. /usr/bin/vim.tiny
 4. /bin/ed

Choose 1-4 [1]: 2
crontab: installing new crontab
ubuntu@ip-172-31-20-22:~$ crontab -l
# Edit this file to introduce tasks to be run by cron.
#
# Each task to run has to be defined through a single line
# indicating with different fields when the task will be run
# and what command to run for the task
#
# To define the time you can provide concrete values for
# minute (m), hour (h), day of month (dom), month (mon),
# and day of week (dow) or use '*' in these fields (for 'any').
#
# Notice that tasks will be started based on the cron's system
# daemon's notion of time and timezones.
#
# Output of the crontab jobs (including errors) is sent through
# email to the user the crontab file belongs to (unless redirected).
#
# For example, you can run a backup of all your user accounts
# at 5 a.m every week with:
# 0 5 * * 1 tar -zcf /var/backups/home.tgz /home/
#
# For more information see the manual pages of crontab(5) and cron(8)
#
# m h dom mon dow   command
# File creation every 2 minutes
*/2 * * * * /home/ubuntu/create_on_a.sh

# Cleanup every 15 minutes
*/15 * * * * /home/ubuntu/cleanup_from_a.sh

# Optional: Log rotation every day at 2 AM
0 2 * * * find /home/ubuntu/script_logs -name "*.log" -mtime +7 -delete

ubuntu@ip-172-31-20-22:~$

```

7) Monitoring & Verification

7.1 Check System Operation

```
ubuntu@ip-172-31-21-5:~$ ls -la ~/received_from_b/
total 8
drwx----- 2 ubuntu ubuntu 4096 Jan 15 18:44 .
drwxr-x--- 6 ubuntu ubuntu 4096 Jan 15 19:10 ..
ubuntu@ip-172-31-21-5:~$ tail -f ~/script_logs/create_on_b.log
=== Script completed at 2026-01-15 19:10:01 ===

=== Script started at 2026-01-15 19:12:01 ===
ubuntu@172.31.20.22: Permission denied (publickey).
=== Script completed at 2026-01-15 19:12:01 ===

=== Script started at 2026-01-15 19:14:01 ===
ubuntu@172.31.20.22: Permission denied (publickey).
=== Script completed at 2026-01-15 19:14:01 ===
```

```
ubuntu@ip-172-31-20-22:~$ ls -la ~/received_from_a/
total 8
drwx----- 2 ubuntu ubuntu 4096 Jan 15 18:46 .
drwxr-x--- 6 ubuntu ubuntu 4096 Jan 15 19:10 ..
ubuntu@ip-172-31-20-22:~$ tail -f ~/script_logs/create_on_a.log
=== Script completed at 2026-01-15 19:00:57 ===
/home/ubuntu/create_on_a.sh: line 19: i: command not found
=== Script started at 2026-01-15 19:12:01 ===
ubuntu@172.31.21.5: Permission denied (publickey).
=== Script completed at 2026-01-15 19:12:01 ===
/home/ubuntu/create_on_a.sh: line 19: i: command not found
=== Script started at 2026-01-15 19:14:01 ===
ubuntu@172.31.21.5: Permission denied (publickey).
=== Script completed at 2026-01-15 19:14:01 ===
/home/ubuntu/create_on_a.sh: line 19: i: command not found
=== Script started at 2026-01-15 19:16:01 ===
ubuntu@172.31.21.5: Permission denied (publickey).
=== Script completed at 2026-01-15 19:16:02 ===
/home/ubuntu/create_on_a.sh: line 19: i: command not found
```

7.2 Monitor Cron Job Execution

```
ubuntu@ip-172-31-21-5:~$ sudo tail -f /var/log/syslog | grep CRON
Jan 15 19:12:01 ip-172-31-21-5 CRON[2745]: (ubuntu) CMD (/home/ubuntu/create_on_b.sh)
Jan 15 19:14:01 ip-172-31-21-5 CRON[2753]: (ubuntu) CMD (/home/ubuntu/create_on_b.sh)
Jan 15 19:15:01 ip-172-31-21-5 CRON[2766]: (ubuntu) CMD (/home/ubuntu/cleanup_from_b.sh)
Jan 15 19:16:01 ip-172-31-21-5 CRON[2772]: (ubuntu) CMD (/home/ubuntu/create_on_b.sh)
Jan 15 19:17:01 ip-172-31-21-5 CRON[2780]: (root) CMD ( cd / && run-parts --report /etc/cron.hourly)
Jan 15 19:18:01 ip-172-31-21-5 CRON[2785]: (ubuntu) CMD (/home/ubuntu/create_on_b.sh)
Jan 15 19:20:01 ip-172-31-21-5 CRON[2794]: (ubuntu) CMD (/home/ubuntu/create_on_b.sh)
Jan 15 19:22:01 ip-172-31-21-5 CRON[2807]: (ubuntu) CMD (/home/ubuntu/create_on_b.sh)
Jan 15 19:24:01 ip-172-31-21-5 CRON[2820]: (ubuntu) CMD (/home/ubuntu/create_on_b.sh)
Jan 15 19:26:01 ip-172-31-21-5 CRON[2836]: (ubuntu) CMD (/home/ubuntu/create_on_b.sh)
```

```
ubuntu@ip-172-31-20-22:~$ sudo tail -f /var/log/syslog | grep CRON
Jan 15 19:18:01 ip-172-31-20-22 CRON[2397]: (ubuntu) CMD (/home/ubuntu/create_on_a.sh)
Jan 15 19:20:01 ip-172-31-20-22 CRON[2406]: (ubuntu) CMD (/home/ubuntu/create_on_a.sh)
Jan 15 19:22:01 ip-172-31-20-22 CRON[2418]: (ubuntu) CMD (/home/ubuntu/create_on_a.sh)
Jan 15 19:24:01 ip-172-31-20-22 CRON[2446]: (ubuntu) CMD (/home/ubuntu/create_on_a.sh)
Jan 15 19:26:01 ip-172-31-20-22 CRON[2525]: (ubuntu) CMD (/home/ubuntu/create_on_a.sh)
```

8) Security Verification & Cleanup

```
ubuntu@ip-172-31-21-5:~$ ssh -i vps-a-automation ubuntu@172.31.20.22 "echo 'Secure connection successful'"
Secure connection successful
ubuntu@ip-172-31-21-5:~$ ls -la ~/.ssh/
ls -la ~/received_from_*/
ls -la ~/.*.sh
total 16
drwx----- 2 ubuntu ubuntu 4096 Jan 15 18:02 .
drwxr-x--- 6 ubuntu ubuntu 4096 Jan 15 19:22 ..
-rw----- 1 ubuntu ubuntu 1145 Jan 15 18:01 authorized_keys
-rw-r--r-- 1 ubuntu ubuntu 284 Jan 15 18:04 known_hosts
total 20
drwx----- 2 ubuntu ubuntu 4096 Jan 15 19:30 .
drwxr-x--- 6 ubuntu ubuntu 4096 Jan 15 19:22 ..
-rw-rw-r-- 1 ubuntu ubuntu 49 Jan 15 19:26 file_1768505162.txt
-rw-rw-r-- 1 ubuntu ubuntu 49 Jan 15 19:28 file_1768505283.txt
-rw-rw-r-- 1 ubuntu ubuntu 49 Jan 15 19:30 file_1768505402.txt
-rwx----- 1 ubuntu ubuntu 643 Jan 15 19:05 /home/ubuntu/cleanup_from_b.sh
-rwx----- 1 ubuntu ubuntu 711 Jan 15 19:22 /home/ubuntu/create_on_b.sh
ubuntu@ip-172-31-21-5:~$
```



```
ubuntu@ip-172-31-20-22:~$ ssh -i vps-b-automation ubuntu@172.31.21.5 "echo 'Secure connection successful'"
Secure connection successful
ubuntu@ip-172-31-20-22:~$ # On both servers
ls -la ~/.ssh/
ls -la ~/received_from_*/
ls -la ~/.ssh
total 20
drwx----- 2 ubuntu ubuntu 4096 Jan 15 18:27 .
drwxr-x--- 6 ubuntu ubuntu 4096 Jan 15 19:24 ..
-rw----- 1 ubuntu ubuntu 1136 Jan 15 17:59 authorized_keys
-rw----- 1 ubuntu ubuntu 978 Jan 15 18:27 known_hosts
-rw-r--r-- 1 ubuntu ubuntu 142 Jan 15 18:27 known_hosts.old
total 28
drwx----- 2 ubuntu ubuntu 4096 Jan 15 19:32 .
drwxr-x--- 6 ubuntu ubuntu 4096 Jan 15 19:24 ..
-rw-rw-r-- 1 ubuntu ubuntu 49 Jan 15 19:24 file_1768505043.txt
-rw-rw-r-- 1 ubuntu ubuntu 49 Jan 15 19:26 file_1768505163.txt
-rw-rw-r-- 1 ubuntu ubuntu 49 Jan 15 19:28 file_1768505282.txt
-rw-rw-r-- 1 ubuntu ubuntu 49 Jan 15 19:30 file_1768505402.txt
-rw-rw-r-- 1 ubuntu ubuntu 49 Jan 15 19:32 file_1768505522.txt
-rwx----- 1 ubuntu ubuntu 643 Jan 15 19:05 /home/ubuntu/cleanup_from_a.sh
-rwx----- 1 ubuntu ubuntu 711 Jan 15 19:24 /home/ubuntu/create_on_a.sh
ubuntu@ip-172-31-20-22:~$
```