ANNEX A · PRACTICAL 7.4: FILE TRANSFER

NAME _____ **DATE** _____ **GROUP** _____

Goal. Move files between your PC and a server in three ways — `sftp`, `scp`, `rsync` — all inside SSH, and prove that the copy is identical. Work alone. Write the results on this sheet as you go.

My server (your teacher gives it): user _____ @ host _____

TASK 0 Get ready — 4 min

```
mkdir -p ~/transfer-lab/docs && cd ~/transfer-lab
echo "# Tramuntana office server" > README.md
for n in 01-overview 02-shares 03-containers; do echo "# $n" > docs/$n.md; done
head -c 5M /dev/urandom > manual.pdf        # a 5 MB file that plays the role of a PDF
export SRV=user@host                        # write YOUR user and host
ssh $SRV hostname                           # if it asks for a password: ssh-copy-id $SRV
```

DONE WHEN `ssh $SRV hostname` prints the name of the server **without asking for a password**. Name: _____

TASK 1 sftp: walk around and move files — 7 min

```
sftp $SRV
sftp> pwd                                   (where am I on the server?)
sftp> lpwd                                  (where am I on my PC?)
sftp> mkdir incoming
sftp> cd incoming
sftp> put README.md                         (my PC -> server)
sftp> ls -l
sftp> get /etc/hostname server-name.txt     (server -> my PC)
sftp> bye
```

Remote working directory: _____ Local working directory: _____

DONE WHEN `cat server-name.txt` on your PC shows the name of the server.

TASK 2 scp: one line, one copy — 5 min

```
scp manual.pdf $SRV:incoming/               # one file, to the server
scp -r docs $SRV:incoming/                  # a whole folder (-r = recursive)
scp $SRV:/etc/os-release .                  # from the server to here (the dot = this folder)
ssh $SRV ls -l incoming incoming/docs
```

Which system does the server run (first line of `os-release`)? _____

DONE WHEN the `ls` shows `README.md`, `manual.pdf` and the three files inside `docs`.

TASK 3 rsync: send only what changed — 10 min

1 Run it and write how many bytes were **sent** (last lines of the output):

```
rsync -av ~/transfer-lab/ $SRV:incoming/mirror/
```

Run 1 — sent: _____ bytes

2 Run **exactly the same command** again. Run 2 — sent: _____ bytes

3 Change one file and run it a third time. Which file names does rsync list? _____

```
echo "new line" >> docs/02-shares.md
rsync -av ~/transfer-lab/ $SRV:incoming/mirror/
```

Run 3 — sent: _____ bytes

4 Why is run 2 so much smaller than run 1?

_____

5 Add one line at the end of the 5 MB file and look at what really travels:

```
echo "one more line" >> manual.pdf
rsync -av --stats ~/transfer-lab/ $SRV:incoming/mirror/ | grep -E "Literal|Matched"
```

Literal data (sent): _____ bytes Matched data (not sent): _____ bytes

6 Delete a file here, and ask rsync what it **would** do. Then do it for real (the same line without `--dry-run`).

```
rm docs/03-containers.md
rsync -av --delete --dry-run ~/transfer-lab/ $SRV:incoming/mirror/
```

Which line of the output tells you what will be deleted? _____

DONE WHEN `ssh $SRV ls incoming/mirror/docs` shows only two files, and your teacher has seen your three numbers.

TASK 4 — Prove that the copy is identical — 3 min

```
sha256sum manual.pdf
ssh $SRV sha256sum incoming/mirror/manual.pdf
```

First 8 characters here: _____ on the server: _____

DONE WHEN both lines show the same 64 characters.

TASK 5 — Which tool? — 3 min

Write `sftp`, `scp`, `rsync` or **none**, and five words of reason.

a) Every evening, send the documentation folder (300 files, 3 changed) to the server. _____

b) You must find an old report on a server you do not know, and bring it. _____

c) A script must copy one log file to the server each time it runs. _____

d) A supplier gives you an FTP address, a user and a password “to upload the invoices”. _____

Hand in on Google Classroom, before Monday 23:59: `practical-7.4-surname.md` with (1) the commands of Tasks 1–4, (2) your three “sent” numbers and the Literal / Matched numbers, with one sentence that explains them, (3) the two checksums, (4) your four answers of Task 5.
Marking (out of 10): Task 1 sftp 2 · Task 2 scp 1.5 · Task 3 rsync 3 (numbers 1.5, explanation 1.5) · Task 4 checksum 1 · Task 5 choices 1.5 · report clear and in the Markdown template 1.

EXIT TICKET Alone. Tick one answer per question and give this sheet to your teacher.

1. Why is plain FTP not used any more?

☐ **a)** It is too slow for big files
☐ **b)** It only works on Windows
☐ **c)** Password and files travel in clear text
☐ **d)** It cannot copy folders

2. `sftp`, `scp` and `rsync` (as used today) all travel…

☐ **a)** inside TLS, on port 443
☐ **b)** inside SSH, on port 22
☐ **c)** in clear text, on port 21
☐ **d)** inside SMTP, on port 25

3. You run the same `rsync -av` twice. The second run…

☐ **a)** sends almost nothing: only differences travel
☐ **b)** copies every file again
☐ **c)** deletes the destination
☐ **d)** fails because the files exist

4. How do you prove that the file on the server is identical?

☐ **a)** The size looks the same
☐ **b)** The name is the same
☐ **c)** `scp` printed 100%
☐ **d)** `sha256sum` gives the same result on both sides