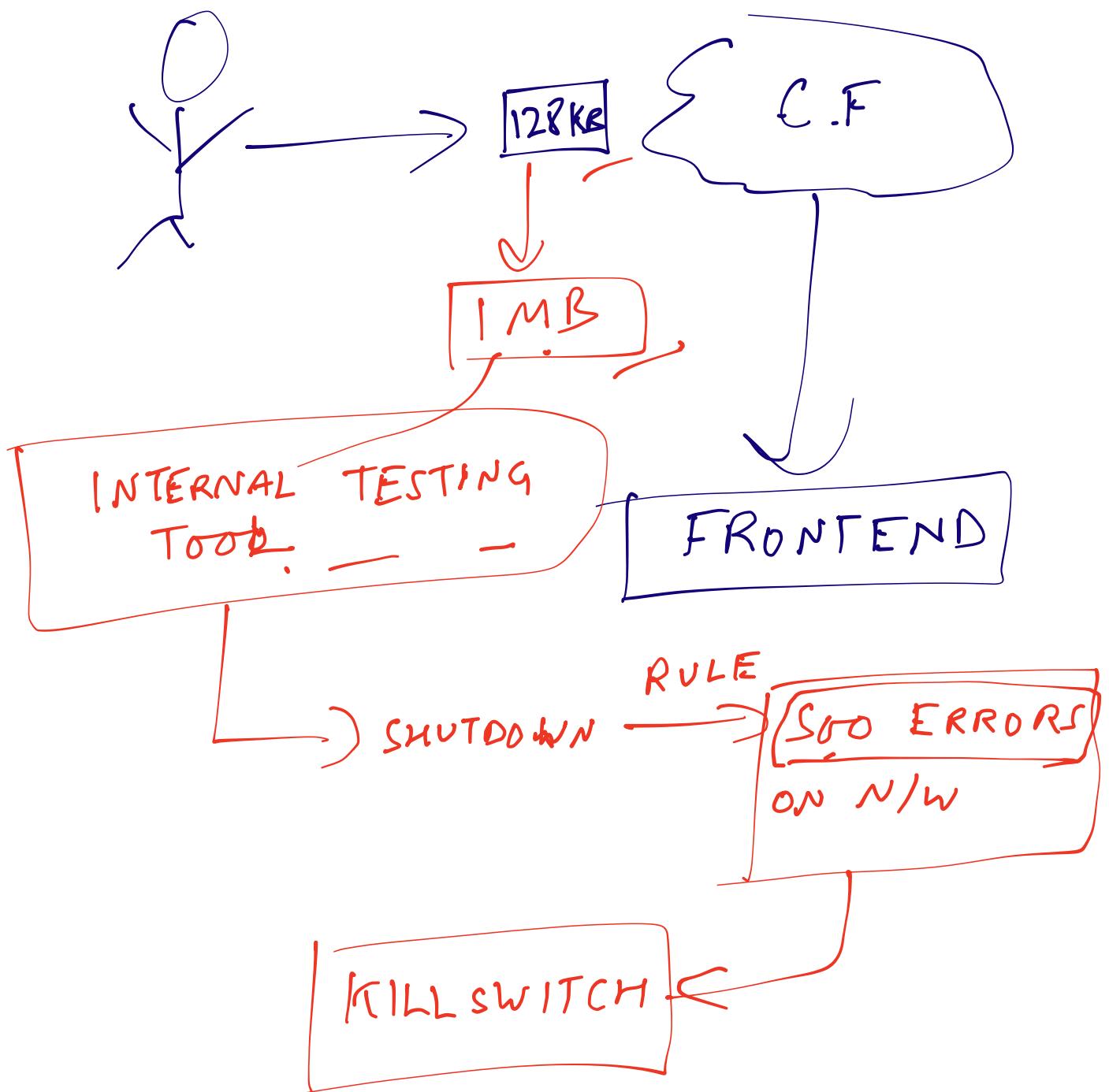
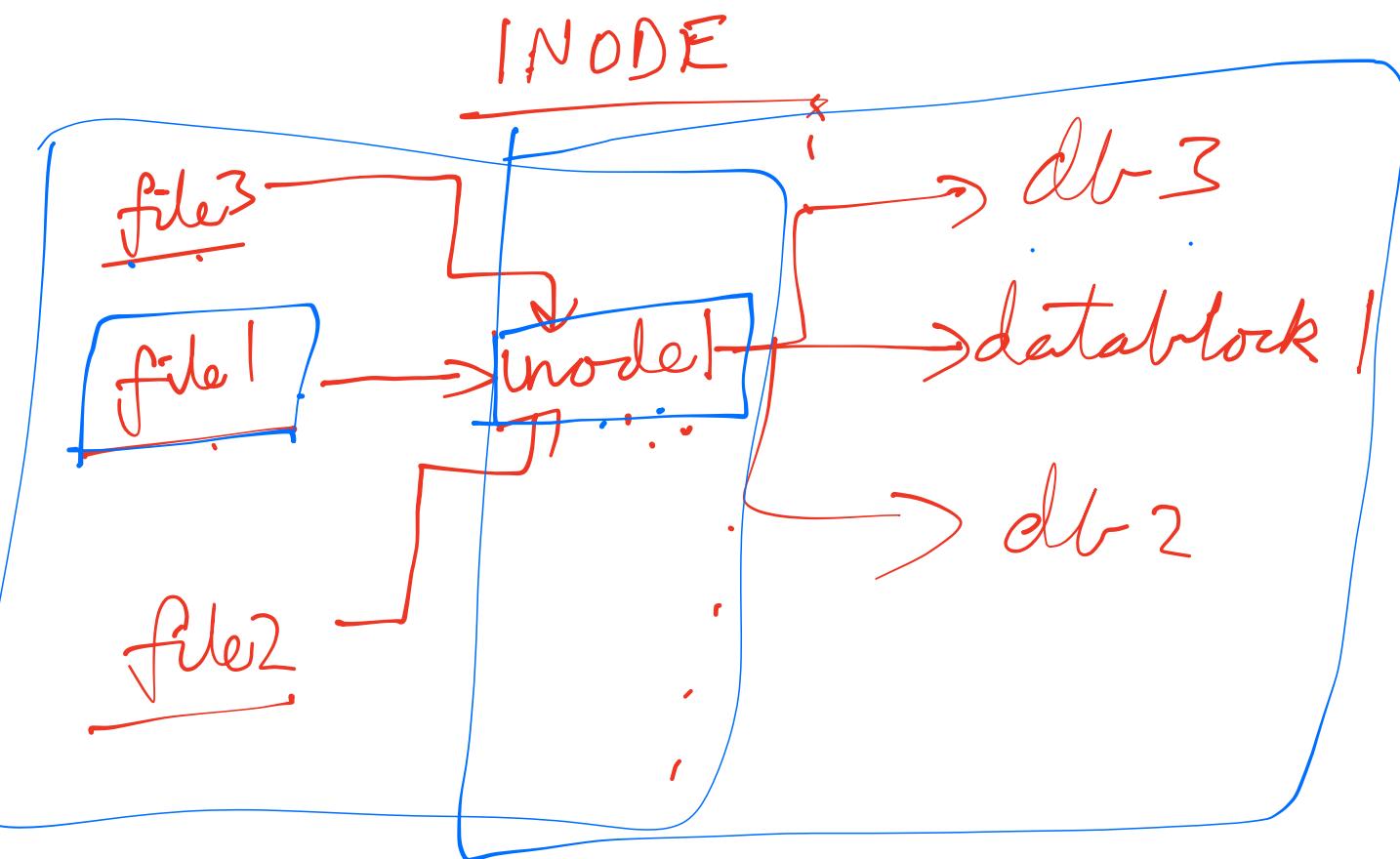


REMOTE CODE EXECUTION (RCE)

→ REACT





BACKUPS

DAY	FULL	INCREMENTAL	DIFFERENTIAL
SUNDAY	✓		
MONDAY	✗	changes since Sunday	changes since Sunday
TUESDAY	✗	changes since Monday	changes since <u>Sunday</u>

BKPUP TIME	FASTER	SLOWER
RESTORATION TIME	<u>FASTER</u>	<u>FASTER</u>

rsync

Checksum → Fixed sized Hash
calculated from the
content of the file

```
[ubuntu@ip-172-31-27-45:~$ sha256sum file.txt
e3b0c44298fc1c149afb4c8996fb92427ae41e4649b934ca495991b7852b855  file.txt
[ubuntu@ip-172-31-27-45:~$ vi file.txt
[ubuntu@ip-172-31-27-45:~$ sha256sum file.txt
1017406568ba3b7b423fe3cb2f03392dade0922e923f3a399a578ca3f2f5a392  file.txt
[ubuntu@ip-172-31-27-45:~$ vi file.txt
[ubuntu@ip-172-31-27-45:~$ sha256sum file.txt
56145f06dbf4aa738353acdeb9290482567c0b59136f74c27a1bf1739cd7b97d  file.txt
ubuntu@ip-172-31-27-45:~$
```

rsync

```
tarunasthana@IN-FVFGK2EPQ05N ~ % rsync -avz -e "ssh -i Downloads/repl.pem" test.txt ubuntu@35.172.191.175:~/backup/
building file list ... done
test.txt

sent 161 bytes received 42 bytes 36.91 bytes/sec
total size is 38 speedup is 0.19
tarunasthana@IN-FVFGK2EPQ05N ~ %
```

→ a → Archive Mode
Preserve the perms, timestamps

$-v$ \rightarrow verbosity

$-z$ \rightarrow compression

Mirror

Source will match the destination absolutely with mirroring

W/o mirroring the destination is allowed to have extra files.

```
tarunasthana@IN-FVFGK2EPQ05N ~ % rsync -avz --delete -e "ssh -i Downloads/repl.pem" backup ubuntu@35.172.191.175:~/  
building file list ... done  
deleting backup/test.txt  
backup/  
  
sent 94 bytes received 26 bytes 21.82 bytes/sec  
total size is 0 speedup is 0.00
```

Limit Bandwidth

```
tarunasthana@IN-FVFGK2EPQ05N ~ % rsync -avz --bwlimit=1024 -e "ssh -i Downloads/repl.pem" backup ubuntu@35.172.191.175:~/  
building file list ... done  
  
sent 84 bytes received 20 bytes 23.11 bytes/sec  
total size is 0 speedup is 0.00
```

Dest to Src sync

```
tarunasthana@IN-FVFGK2EPQ05N ~ % rsync -avz -e "ssh -i Downloads/repl.pem" ubuntu@35.172.191.175:~/backup .
receiving file list ... done
backup/
backup/test.txt

sent 44 bytes received 161 bytes 37.27 bytes/sec
total size is 5 speedup is 0.02
tarunasthana@IN-FVFGK2EPQ05N ~ % cd backup
tarunasthana@IN-FVFGK2EPQ05N backup % ls
backup      test.txt
tarunasthana@IN-FVFGK2EPQ05N backup % cd ..
tarunasthana@IN-FVFGK2EPQ05N ~ % rsync --delete -e "ssh -i Downloads/repl.pem" ubuntu@35.172.191.175:~/backup .
receiving file list ... done
deleting backup/backup/test.txt
deleting backup/backup/
backup/

sent 22 bytes received 117 bytes 25.27 bytes/sec
total size is 5 speedup is 0.04
tarunasthana@IN-FVFGK2EPQ05N ~ % cd backup
tarunasthana@IN-FVFGK2EPQ05N backup % ls
test.txt
tarunasthana@IN-FVFGK2EPQ05N backup %
```

Scenario:

You're responsible for backing up the /var/app/data directory daily. Your task is to write a script that:

1. Performs an incremental or differential backup based on the day of the week:

- * On Sunday, do a full backup
- * On Monday to Wednesday, do an incremental backup
- * On Thursday to Saturday, do a differential backup

2. Generates a checksum for the created backup file.

3. Validates the checksum immediately after backup creation.

4. Syncs the backup to a remote server backup@example.com:/backups/ using rsync.

- Deciding which bkp to take today
- date + day

→ How to do 'incremental or differential bkp'

tar -Xvcz <files>

— How to select files to take backup of?

backup ()

{

tar -xwf . . . - -

touch fullbackup.txt
touch incre.txt
touch diff.txt

markers

select_file ()

{

find /var/app/data -typef

- newe fullbackup.txt

incre.txt

- Generate & validate checksum
 $\text{sha256sum } \text{filename} > \text{file.txt}$
- rsync to remote server

SKELETON

```
#!/bin/bash
set -eu pipefail
trap . . . . . - - -
```



```
SRC = "/var/app/data"
DEST = "/backup"
REMOTE = "backup@example.com:/backups/"
```



```
INC_MARK = "$DEST/.inc.txt"
DIFF_MARK = "$DEST/.diff.txt"
FULL_MARK = "$DEST/.full.txt"
```

decide_backup_type()

{

Basis the day, decide backup to take

3

prepare_file_list()

{

find -newer

3

create_backup()

{

tar -xvf . . . --

touch FULL_MAR Or INC_MAR

3

generate_checksum()

{

sha256sum i

3
validate - checksum()

{
 ✓

3

Sync - remote()

{
 byne

3

decide - backup - type
prepare - file - list
generate - checksum

create _ backup

validate _ checksum

Sync - remote