

Example

Disk 200 tracks 0 — 199, start at track 100

55 58 39 18 90 160 150 38 184

1) FIFO

100

55 (45)

58 (3)

39 (11)

18 (2) → Avg seek length

90 (72) SS.3

160 (20)

150 (10)

38 (112)

184 (146)

2) SSTF

100

90 (10)

58 (32)

55 (3)

39 (16)

38 (1)

18 (20) → Average seek length

150 (132) = 27.5

160 (10)
184 (24)

3 Scan w/ look

100

150 (50)

160 (10)

184 (24)

90 (94) Average seek length

58 (32) = 27.8

55 (3)

39 (16)

38 (1)

18 (20)

4 CSCAN

100

150 (50)

160 (10)

184 (24)

18 (166)

38 (20)

39 (1)

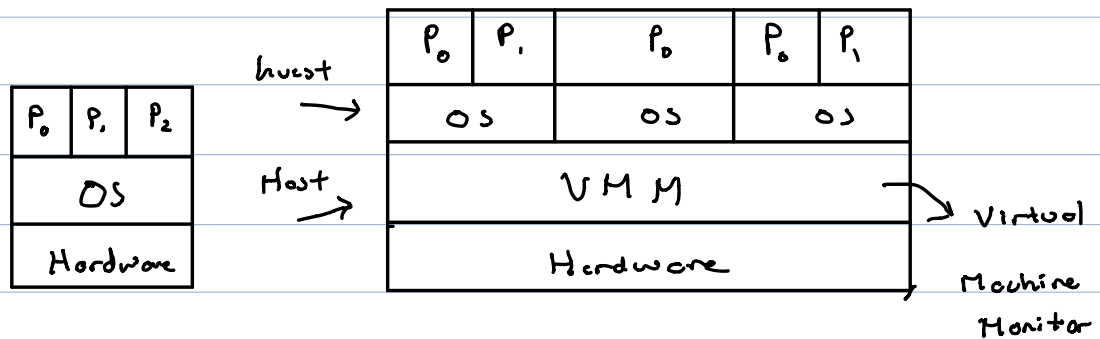
55 (16)

Average seek length

35.8

58 (3)
90 (31)

Virtual Machines



Provide multiple execution environments over the same machine

Why?

1 Protection

- Host is protected (machine)
- VM is protected from each other

2 Research and development of OSes.

3 Test programs on multiple execution environments

4 Consolidation (saving power)

Cloud Computing

Providing Computation storage, networks, software,
hardware as a service

Why?

- [1] Pay for use.
- [2] Elastic resources
- [3] Less down time
- [4] Focus on business model, not IT.
- [5] Available from anywhere

VM ₁	VM ₂	VM ₃
VMM		
HW		

Trust / prevention against
side angle attacks

Issues

[1] Risk and Trust

- [1] Private cloud
- [2] Encryption
- [3] Homomorphic Encryption

• Running computation w/o decrypting it

$$5 + 3 = 8$$

$$\text{Enc}(5) + \text{Enc}(3) = \text{Enc}(8)$$

Mobile Cloud Computing

Mobile devices + cloud computing

Client Server

P2P

Ad-Hoc Network