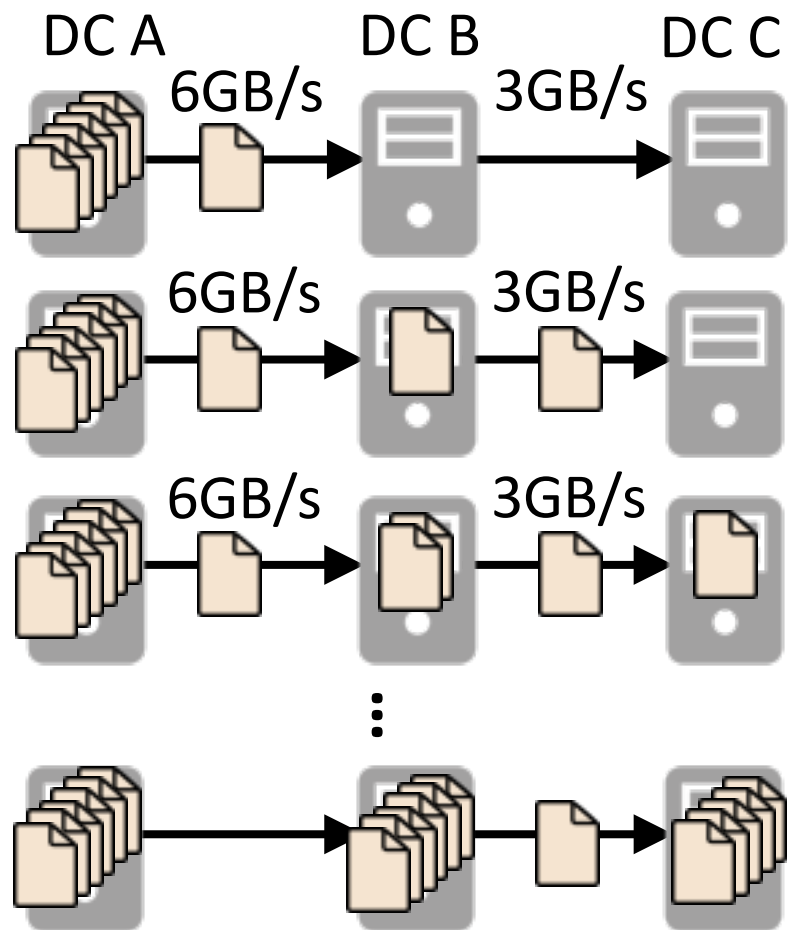


(a) No overlay: 18 sec
 $= \max(36/6, 36/2)$

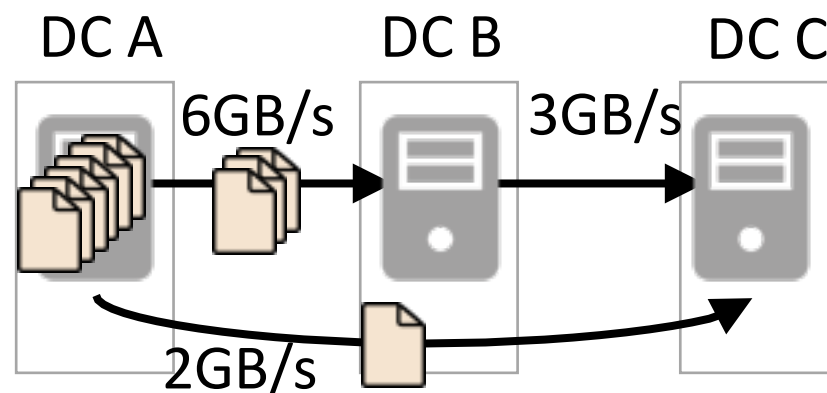


(b) Chain replication: 13 sec
 $= 6/6 + 6/3 + 6/3 + 6/3 + 6/3 + 6/3 + 6/3$

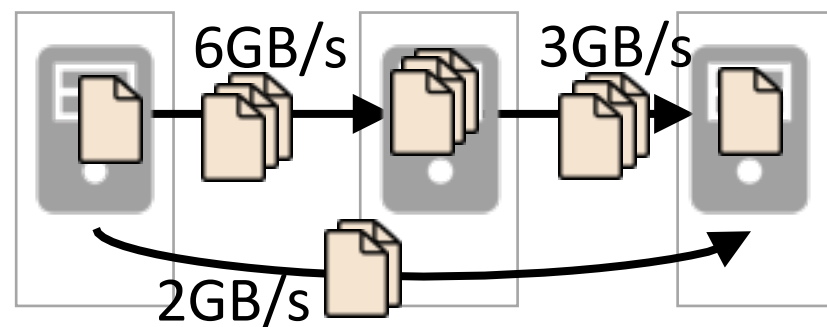
Setting:

B & C need a file of 36GB from A.
 The file is split into six 6-GB blocks.

represents a 6-GB block



3 sec = $\max(18/6, 6/2)$



6 sec = $\max(18/6, 18/3, 12/2)$

(c) Smart overlay: 9 sec
 $= 3 + 6$