

Task 4.2 :-

◆ According to popular articles, Hadoop uses the concept of parallelism to upload the split data while fulfilling Velocity problem.

Slave1	i-0572cd695c3679453		Running				us-east-2a	ec2-3-15-2-249.us-eas...	3.15.2.249	172.31.3.78
Slave2	i-037ac22f8eb18325c		Running				us-east-2a	ec2-3-14-250-3.us-eas...	3.14.250.3	172.31.6.46
Slave3	i-07b438892064d250e		Running				us-east-2a	ec2-3-137-212-195.us...	3.137.212.195	172.31.11.166
MasterRedhat	i-05f36450029430bfb		Running				us-east-2a	ec2-3-17-184-84.us-e...	3.17.184.84	172.31.9.182

Client IP address - 103.195.202.100
 Public IPv4 DNS
 Public IPv4 address
 Private IP Address

The screenshot shows four terminal windows arranged in a 2x2 grid, illustrating the parallel upload of data from a client to three slave nodes and one master node.

- Master:** Shows the command `tcpdump -i eth0 tcp port 9001 -X > try2.master.txt` running.
- Slave 1:** Shows the command `tcpdump -i eth0 tcp port 50010 -X > try2_slave1.txt` running.
- Slave 2:** Shows the command `tcpdump -i eth0 tcp port 50010 -X > try2_slave2.txt` running.
- Slave 3:** Shows the command `tcpdump -i eth0 tcp port 50010 -X > try2_slave3.txt` running.
- Client:** Shows the command `hadoop fs -put p.txt /` running, indicating the source of the data being uploaded.

try1_master - Notepad

Master

```

File Edit Format View Help
0x0110: 2e44 6174 616e 6f64 6549 6e66 6f3b .DatanodeInfo;
10:04:31.044914 IP ip-172-31-9-182.us-east-2.compute.internal.eltservicemgr > 103.195.202.100.21754 Flags [P.], seq 577:1228, ack 1
0x0000: 4500 Master IP 1 4000 4006 19ab ac1f 09b6 E...6.@@..... Client IP
0x0010: 67c3 ca64 2329 54fa 6caf ba80 5eb5 3cce g..d#)T.l...^.<.
0x0020: 8018 00eb eaae 0000 0101 080a 7472 f45b .....tr.[
0x0030: b20d 1bb3 0000 0005 0000 0000 002c 6f72 .....or.
0x0040: 672e 6170 6163 6865 2e68 6164 6f6f 702e g.apache.hadoop.
0x0050: 6864 6673 2e70 726f 746f 636f 6c2e 4c6f hdfs.protocol.Lo
0x0060: 6361 7465 6442 6c6f 636b 002c 6f72 672e catedBlock.,org.
0x0070: 6170 6163 6865 2e68 6164 6f6f 702e 6864 apache.hadoop.hd
0x0080: 6673 2e70 726f 746f 636f 6c2e 4c6f 6361 fs.protocol.Loca
0x0090: 7465 6442 6c6f 636b 0000 0000 0000 tedBlock.....
0x00a0: 0000 0000 0093 be6f e503 87a3 ac00 0000 .....o.....
0x00b0: 0000 0000 0000 0000 0003 f000 0000 .....o.....
0x00c0: 0300 1033 2e31 352e 322e 3234 393a 3530 ...3.15.2.249 50 Slave 1 IP
0x00d0: 3031 3000 2c44 532d 3234 3037 3538 3539 010..,DS-24075859
0x00e0: 342d 3137 322e 3331 2e33 2e37 382d 3530 4-172.31.3.78-50
0x00f0: 3031 302d 3136 3033 3030 3236 3636 010-160300266666
0x0100: 33c3 9bc3 6400 0000 027f 3fb0 0000 0000 3...d.....?
0x0110: 0000 0030 0000 0000 01f7 9e00 0000 0001 ...o.....
0x0120: 754a 9e02 1800 0000 010d 2f64 6566 6175 uj...../defau
0x0130: 6c74 2d72 6163 6b29 6970 2d31 3732 2d33 lt-rack)ip-172-3
0x0140: 312d 332d 3738 2e75 732d 6561 7374 2d32 1-3-78.us-east-2
0x0150: 2e63 6f6d 7075 7465 2e69 6e74 6572 6e61 .compute.interna
0x0160: 6c06 4e4f 524d 414c 0013 332e 3133 372e 1.NORMAL..3.137./
0x0170: 3231 322e 3139 353a 3530 3031 3000 2f44 212.195:50010./ Slave 3 IP
0x0180: 532d 3134 3838 3934 3336 3636 2d31 3732 S-1488943666-172
0x0190: 2e33 312e 3131 2e31 3636 2d35 3030 3130 .31.11.166-50010
0x01a0: 2d31 3630 3332 3732 3632 3334 3139 c39b -1603272623419..
0x01b0: c364 0000 0001 ff3f b000 0000 0000 0000 .d.....?
0x01c0: 3000 0000 0001 83df 2000 0000 0175 4a9e 0.....uJ.
0x01d0: 002a 0000 0001 0d2f 6465 6661 756c 742d *...../default-
0x01e0: 7261 636b 2b69 702d 3137 322d 3331 2d31 rack+ip-172-31-1
0x01f0: 312d 3136 362e 7573 2d65 6173 742d 322e 1-166.us-east-2.
0x0200: 636f 6d70 7574 652e 696e 7465 726e 616c compute.internal
0x0210: 064e 4f52 4d41 4c00 1033 2e31 342e 3235 .NORMAL..3.14.25
0x0220: 302e 333a 3530 3031 3000 2d44 532d 3138 0.3:50010.-DS-18 Slave 2 IP

```

try1_slave1 - Notepad

Slave 1 IP

```

File Edit Format View Help
0x0010: ac1f 034e 571a c35a 6ef0 ecfd 87bc 32f4 ...NW..Zn....2.
0x0020: 8010 00e5 2a1f 0000 0101 080a 5352 79a4 ....*.....SRy.
0x0030: 7ee9 ed2f ~...
10:04:31.821216 IP 103.195.202.100.22298 > ip-172-31-3-78.us-east-2.compute.internal.50010: Flags [P.], seq 1:419, ack 1, win 229,
0x0000: 4500 Client IP 673 4000 2206 51. -- 644 E...s@"._.g..d Slave 1 IP
0x0010: ac1f 034e 571a c35a 6ef0 ecfd 87bc 32f4 ...NW..Zn....2.
0x0020: 8018 00e5 494d 0000 0101 080a 5352 7a17 ....IM.....SRz.| Slave 1 IP
0x0030: 7ee9 ed2f 0011 5093 be6f e503 87a3 ac00 ~.../..P.o.....
0x0040: 0000 0000 0003 f000 0000 0300 2444 4653 .....$DFS
0x0050: 436c 6965 6e74 5f4e 4f4e 4d41 5052 4544 Client_NONMAPRED
0x0060: 5543 455f 2d31 3130 3335 3635 3735 345f UCE_-1103565754_
0x0070: 3100 0000 0002 0013 332e 3133 372e 3231 1.....3.137.21 Slave 3 IP
0x0080: 322e 3139 353a 3530 3031 3000 2f44 532d 2.195:50010./DS-
0x0090: 3134 3838 3934 3336 3636 2d31 3732 2e33 1488943666-172.3
0x00a0: 312e 3131 2e31 3636 2d35 3030 3130 2d31 1.11.166-50010-1
0x00b0: 3630 3332 3732 3632 3334 3139 c39b c364 603272623419..d
0x00c0: 0000 0001 ff3f b000 0000 0000 0000 3000 .....?.....0.
0x00d0: 0000 0001 83df 2000 0000 0175 4a9e 002a .....uJ.* Slave 2 IP
0x00e0: 0000 0001 0d2f 6465 6661 756c 742d 7261 ...../default-ra
0x00f0: 636b 2b69 702d 3137 322d 3331 2d31 312d ck+ip-172-31-11-
0x0100: 3136 362e 7573 2d65 6173 742d 322e 636f 166.us-east-2.co
0x0110: 6d70 7574 652e 696e 7465 726e 616c 064e mpute.internal.N
0x0120: 4f52 4d41 4c00 1033 2e31 342e 3235 302e ORMAL..3.14.250.
0x0130: 333a 3530 3031 3000 2d44 532d 3138 3536 3:50010.-DS-1856 Slave 2 IP
0x0140: 3736 3635 3637 2d31 3732 2e33 312e 362e 766567-172.31.6.
0x0150: 3436 2d35 3030 3130 2d31 3630 3332 3731 46-50010-1603271
0x0160: 3233 3339 3038 c39b c364 0000 0002 7f3f 233908...d....?
0x0170: b000 0000 0000 0000 3000 0000 0002 0b0f .....0.....
0x0180: 2000 0000 0175 4a9e 0006 0000 0001 0d2f .....uJ...../
0x0190: 6465 6661 756c 742d 7261 636b 2b69 702d default-rack)ip-
0x01a0: 3137 322d 3331 2d36 2d34 362e 7573 2d65 172-31-6-46.us-e
0x01b0: 6173 742d 322e 636f 6d70 7574 652e 696e ast-2.compute.in
0x01c0: 7465 726e 616c 064e 4f52 4d41 4c00 0000 ternal.NORMAL...
0x01d0: 0001 0000 0200 ..... .
10:04:31.821258 IP ip-172-31-3-78.us-east-2.compute.internal.50010 > 103.195.202.100.22298: Flags [.], ack 419, win 6980, options
0x0000: 4500 0034 2e46 4000 4006 2a89 ac1f 034e E..4..@.0.*..N
0x0010: 67c3 ca64 c35a 571a 87bc 32f4 6ef0 ee9f g..d.ZW...2.n...

```

Client sending the IP of Slave 3 and Slave 2 to Slave 1

try1_slave1 - Notepad

```

File Edit Format View Help
10:04:31.825667 IP ip-172-31-3-78.us-east-2.compute.internal.50502 > ec2-3-137-212-195.us-east-2.compute.amazonaws.com.50010: Flags ^.....N.....Z.F....t.....F.Z.2......
0x0000: 4500 003c 9fa9 4000 4006 1359 ac1f 034e E..<..@..Y...N
0x0010: 0389 d4c3 c546 c35a ef32 9cad 0000 0000 .....F.Z.2.....
0x0020: a002 6903 87e8 0000 0204 2301 0402 080a ..i.....#.....
0x0030: ebf4 840f 0000 0000 0103 0307 .....P.....
10:04:31.826166 IP ec2-3-137-212-195.us-east-2.compute.amazonaws.com.50010 > ip-172-31-3-78.us-east-2.compute.internal.50502: Flags ^.....N.....Z.F....t.....F.Z.2.....
0x0000: 4500 003c 0000 4000 fe06 f501 0389 d4c3 E..<..@.....
0x0010: ac1f 034e c35a c546 b49a d573 ef32 9cae ...N.Z.F...s.2...
0x0020: a012 68df 1e80 0000 0204 05b4 0402 080a ..h.....
0x0030: 1026 1a12 ebf4 840f 0103 0302 ..&.....
10:04:31.826185 IP ip-172-31-3-78.us-east-2.compute.internal.50502 > ec2-3-137-212-195.us-east-2.compute.amazonaws.com.50010: Flags ^.....N.....Z.F....t.....F.Z.2.....
0x0000: 4500 0034 9faa 4000 4006 1360 ac1f 034e E..4..@..`...N
0x0010: 0389 d4c3 c546 c35a ef32 9cae b49a d574 .....F.Z.2....t
0x0020: 8010 00d3 87e0 0000 0101 080a ebf4 840f .....P.....
0x0030: 1026 1a12 .....P.....
10:04:31.826432 IP ip-172-31-3-78.us-east-2.compute.internal.50502 > ec2-3-137-212-195.us-east-2.compute.amazonaws.com.50010: Flags ^.....N.....Z.F....t.....F.Z.2.....
0x0000: 4500 Slave 1 IP ab 4000 4006 126c ac1f 034e E..'.@..1Slave 3 IP
0x0010: 0389 d4c3 c546 c35a ef32 9cae b49a d574 .....F.Z.2....t
0x0020: 8018 00d3 88d3 0000 0101 080a ebf4 840f .....P.....
0x0030: 1026 1a12 0011 5093 be6f e503 87a3 ac00 ..&....P.O.....
0x0040: 0000 0000 0003 f000 0000 0300 2444 4653 .....$DFS
0x0050: 436c 6965 6e74 5f4e 4f4e 4d41 5052 4544 Client_NONMAPRED
0x0060: 5543 455f 2d31 3130 3335 3635 3735 345f UCE -1103565754
0x0070: 3100 0000 0001 0010 332e 3134 2e32 3530 1.....3.14.250
0x0080: 2e33 3a35 3030 3130 002d 4453 2d31 3835 .3:50010.-DS-185 Slave 2 IP
0x0090: 3637 3636 3536 372d 3137 322e 3331 2e36 6766567-172.31.6
0x00a0: 2e34 362d 3530 3031 302d 3136 3033 3237 .46-50010-160327
0x00b0: 3132 3333 3930 38c3 9bc3 6400 0000 027f 1233908...d....
0x00c0: 3fb0 0000 0000 0000 0030 0000 0000 020b ?.....0.....
0x00d0: 0f20 0000 0001 754a 9e00 0600 0000 010d ..uJ.....
0x00e0: 2f64 6566 6175 6c74 2d72 6163 6b29 6970 /default-rack)ip
0x00f0: 2d31 3732 2d33 312d 362d 3436 2e75 732d -172-31-6-46.us-
0x0100: 6561 7374 2d32 2e63 6f6d 7075 7465 2e69 east-2.compute.i
0x0110: 6e74 6572 6e61 6c06 4e4f 524d 414c 0000 nternal.NORMAL..
0x0120: 0000 0100 0002 00 .....P.....
10:04:31.826746 IP ec2-3-137-212-195.us-east-2.compute.amazonaws.com.50010 > ip-172-31-3-78.us-east-2.compute.internal.50502: Flags ^.....N.....Z.F....t.....F.Z.2.....
0x0000: 4500 0034 c28f 4000 fe06 327a 0389 d4c3 E..4..@..2z.....

```

try1_slave3 - Notepad

```

File Edit Format View Help
10:04:31.826382 IP ec2-3-15-2-249.us-east-2.compute.amazonaws.com.50502 > ip-172-31-11-166.us-east-2.compute.internal.50010: Flags ^.....N.....Z.F....t.....F.Z.2.....
0x0000: 4500 0034 9faa 4000 3f06 de4c 030f 02f9 E..4..@.?..L...
0x0010: ac1f 0ba6 c546 c35a ef32 9cae b49a d574 .....F.Z.2....t
0x0020: 8018 00d3 7f4e 0000 0101 080a ebf4 840f .....N.....
0x0030: 1026 1a12 .....P.....
10:04:31.826564 IP ec2-3-15-2-249.us-east-2.compute.amazonaws.com.50502 > ip-172-31-11-166.us-east-2.compute.internal.50010: Flags ^.....N.....Z.F....t.....F.Z.2.....
0x0000: 4500 Slave 1 IP fab 4000 3f06 dd58 030f 02f9 E..'.@..?..X... Slave 3 IP
0x0010: ac1f 0ba6 c546 c35a ef32 9cae b49a d574 .....F.Z.2....t
0x0020: 8018 00d3 c546 0000 0101 080a ebf4 840f .....F.....
0x0030: 1026 1a12 0011 5093 be6f e503 87a3 ac00 ..&....P.O.....
0x0040: 0000 0000 0003 f000 0000 0300 2444 4653 .....$DFS
0x0050: 436c 6965 6e74 5f4e 4f4e 4d41 5052 4544 Client_NONMAPRED
0x0060: 5543 455f 2d31 3130 3335 3635 3735 345f UCE -1103565754
0x0070: 3100 0000 0001 0010 332e 3134 2e32 3530 1.....3.14.250
0x0080: 2e33 3a35 3030 3130 002d 4453 2d31 3835 .3:50010.-DS-185 Slave 2 IP
0x0090: 3637 3636 3536 372d 3137 322e 3331 2e36 6766567-172.31.6
0x00a0: 2e34 362d 3530 3031 302d 3136 3033 3237 .46-50010-160327
0x00b0: 3132 3333 3930 38c3 9bc3 6400 0000 027f 1233908...d....
0x00c0: 3fb0 0000 0000 0000 0030 0000 0000 020b ?.....0.....
0x00d0: 0f20 0000 0001 754a 9e00 0600 0000 010d ..uJ.....
0x00e0: 2f64 6566 6175 6c74 2d72 6163 6b29 6970 /default-rack)ip
0x00f0: 2d31 3732 2d33 312d 362d 3436 2e75 732d -172-31-6-46.us-
0x0100: 6561 7374 2d32 2e63 6f6d 7075 7465 2e69 east-2.compute.i
0x0110: 6e74 6572 6e61 6c06 4e4f 524d 414c 0000 nternal.NORMAL..
0x0120: 0000 0100 0002 00 .....P.....
10:04:31.826572 IP ip-172-31-11-166.us-east-2.compute.internal.50010 > ec2-3-15-2-249.us-east-2.compute.amazonaws.com.50502: Flags ^.....N.....Z.F....t.....F.Z.2.....
0x0000: 4500 0034 c28f 4000 ff06 fb66 ac1f 0ba6 E..4..@..f....
0x0010: 030f 02f9 c35a c546 b49a d574 ef32 9da1 .....Z.F....t...
0x0020: 8010 1b44 bdf3 0000 0101 080a 1026 1a12 ..D.....
0x0030: ebf4 840f .....P.....
10:04:31.827638 IP ip-172-31-11-166.us-east-2.compute.internal.57612 > ec2-3-14-250-3.us-east-2.compute.amazonaws.com.50010: Flags ^.....N.....Z.F....t.....F.Z.2.....
0x0000: 4500 003c 0497 4000 ff06 c24d ac1f 0ba6 E..<..@..M...
0x0010: 030e fa03 e10c c35a 87a3 d97b 0000 0000 .....Z....{...
0x0020: 2a02 f603 h505 0000 0201 2201 0102 080a i .....#

```

Slave 1 sending Slave 2 IP to Slave 3

Slave 2 IP

Slave 2 IP

As shown earlier, Master sends IP of all slaves to Client, where block will be stored and client gave IP of Slave 2 and 3 to Slave 1 and Slave 1 gave Slave 2 IP to Slave 3. This cleared that Client will give data to Slave 1, Slave 1 to Slave 2 and Slave 3 to Slave 2. Thus its like a Serial or linear pattern of transferring the data.

try1_slave1 - Notepad

```

File Edit Format View Help
10:04:32.113226 IP 103.195.202.100.22298 > ip-172-31-3-78.us-east-2.compute.internal.50010: Flags [.], ack 4, win 229, options [nop]
0x0000: 4500 0034 1675 4000 2206 60ba 67c3 ca64 E..4.u@.".g..
0x0010: ac1f 034e 571a c35a 6ef0 ee9f 87bc 32f7 ...NW..Zn.....2.
0x0020: 8010 00e5 253c 0000 0101 080a 5352 7b3d ....%<.....SR{=
0x0030: 7ee9 eed4 ~...
10:04:32.117311 IP 103.195.202.100.22298 > ip-172-31-3-78.us-east-2.compute.internal.50010: Flags [.], seq 419:4619, ack 4, win 229
0x0000: 45Client IP 1676 4000 2206 5Slave 1 IP ca64 E....v@.".PQg..d
0x0010: ac1f 034e 571a c35a 6ef0 ee9f 87bc 32f7 ...NW..Zn.....2.
0x0020: 8010 00e5 f223 0000 0101 080a 5352 7b43 ....#.....SR{C
0x0030: 7ee9 eed4 0001 0000 0000 0000 0000 0000 ~.....
0x0040: 0000 0000 0000 0000 00fe 0080 6c42 .....1B
0x0050: 5448 993b 01a5 a60b 5558 d66b d8c2 d0a7 TH.;....UX.k...
0x0060: e843 ba18 7283 8d7c 2505 b97f b5ca 09ad .C..r.|%.....
0x0070: aab4 92eb d3c3 8345 24ed 2bcb d2fe 3323 .....E$.+..+f#.
0x0080: ba10 268b c6e8 28ce 052b b7b4 2b66 2396 ..&...(.+..+f#.
0x0090: 45b6 53db a209 7675 47e1 3e28 d344 b95a E.S...vuG.>(.D.Z
0x00a0: 0525 fb02 844f 688c 0007 8e4a b404 7bd2 ..%.Oh....J..{.
0x00b0: 495f fc21 7cb9 9de8 e002 4aba 712c 54f0 I_!|....J.q,T.
0x00c0: 2835 0678 5e27 614e 3d27 96c4 224e ff13 (5.x^'aN='..."N..
0x00d0: 2c09 d702 a25c 389b 59ae 96df 8641 80c0 ,....\8.Y....A..
0x00e0: d780 6c42 5448 993b 01a5 a60b 5558 d66b ..LBTH.;....UX.k
0x00f0: d8c2 d0a7 e843 ba18 7283 8d7c 2505 b97f ....C..r.|%...
0x0100: b5ca 09ad aab4 92eb d3c3 8345 24ed 2bcb .....E$.+.
0x0110: d2fe 3323 ba10 268b c6e8 28ce 052b b7b4 ..3#..&...(.+..
0x0120: b266 2396 45b6 53db a209 7675 47e1 3e28 +f#.E.S...vuG.>(
0x0130: d344 b95a 0525 fb02 844f 688c 0007 8e4a .D.Z.%..Oh....J
0x0140: b404 7bd2 495f fc21 7cb9 9de8 e002 4aba ..{.I_.!|....J.
0x0150: 712c 54f0 2835 0678 5e27 614e 3d27 96c4 q,T.(5.x^'aN='..
0x0160: 224e ff13 2c09 d702 a25c 389b 59ae 96df "N.,....\8.Y...
0x0170: 8641 80c0 d780 6c42 5448 993b 01a5 a60b .A....LBTH.;....
0x0180: 5558 d66b d8c2 d0a7 e843 ba18 7283 8d7c UX.k....C..r..|
0x0190: 2505 b97f b5ca 09ad aab4 92eb d3c3 8345 %.....
0x01a0: 24ed 2bcb d2fe 3323 ba10 268b c6e8 28ce $.+..3#..&...(.+
0x01b0: 052b b7b4 2b66 2396 45b6 53db a209 7675 .+..+f#.E.S...vu
0x01c0: 47e1 3e28 d344 b95a 0525 fb02 844f 688c G.>(.D.Z.%..Oh.
0x01d0: 0007 8e4a b404 7bd2 495f fc21 7cb9 9de8 ...J..{.I_.!|...
0x01e0: e002 4aba 712c 54f0 2835 0678 5e27 614e ..J.q,T.(5.x^'aN
0x01f0: 3d27 96c4 224e ff13 2c09 d702 a25c 389b ='..."N.,....\8.

```

try1_slave1 - Notepad

```

File Edit Format View Help
0x0570: 7070 7070 7070 7070 7070 7070 7070 7070 ppppppppppppppppp
0x0580: 7070 7070 7070 7070 700a 7070 7070 7070 pppppppp.pppppp
0x0590: 7070 7070 7070 7070 7070 7070 7070 7070 ppppppppppppppp
0x05a0: 7070 7070 7070 7070 7070 7070 7070 7070 ppppppppppppp
10:04:32.733652 IP 103.195.202.100.22298 > ip-172-31-3-78.us-east-2.compute.internal.50502 > ec2-3-137-212-195.us-east-2.compute.amazonaws.com.50010: Flags [.], seq 419:4619, ack 4, win 229
0x0000: 45Slave 1 IP ae 4000 4006 f713 ac1f 034e E..|..@.. Slave 3 IP
0x0010: 0389 4d3c 5c46 c35a ef32 9da1 b49a d577 ....F.Z.2....w
0x0020: 8010 00d3 a428 0000 0001 080a ebfa 879b ....(.....
0x0030: 1026 1a16 0001 0000 0000 0000 0000 0000 &.....
0x0040: 0000 0000 0000 0000 0000 00fe 0080 6c42 .....1B
0x0050: 5448 993b 01a5 a60b 5558 d66b d8c2 d0a7 TH.;....UX.k...
0x0060: e843 ba18 7283 8d7c 2505 b97f b5ca 09ad .C..r.|%.....
0x0070: aab4 92eb d3c3 8345 24ed 2bcb d2fe 3323 .....E$.+..+f#.
0x0080: ba10 268b c6e8 28ce 052b b7b4 2b66 2396 ..&...(.+..+f#.
0x0090: 45b6 53db a209 7675 47e1 3e28 d344 b95a E.S...vuG.>(.D.Z
0x00a0: 0525 fb02 844f 688c 0007 8e4a b404 7bd2 ..%.Oh....J..{.
0x00b0: 495f fc21 7cb9 9de8 e002 4aba 712c 54f0 I_!|....J.q,T.
0x00c0: 2835 0678 5e27 614e 3d27 96c4 224e ff13 (5.x^'aN='..."N..
0x00d0: 2c09 d702 a25c 389b 59ae 96df 8641 80c0 ,....\8.Y....A..
0x00e0: d780 6c42 5448 993b 01a5 a60b 5558 d66b ..LBTH.;....UX.k
0x00f0: d8c2 d0a7 e843 ba18 7283 8d7c 2505 b97f ....C..r..|%...
0x0100: b5ca 09ad aab4 92eb d3c3 8345 24ed 2bcb .....E$.+.
0x0110: d2fe 3323 ba10 268b c6e8 28ce 052b b7b4 ..3#..&...(.+..
0x0120: b266 2396 45b6 53db a209 7675 47e1 3e28 +f#.E.S...vuG.>(
0x0130: d344 b95a 0525 fb02 844f 688c 0007 8e4a .D.Z.%..Oh....J.
0x0140: b404 7bd2 495f fc21 7cb9 9de8 e002 4aba ..{.I_.!|....J.
0x0150: 712c 54f0 2835 0678 5e27 614e 3d27 96c4 q,T.(5.x^'aN='..
0x0160: 224e ff13 2c09 d702 a25c 389b 59ae 96df "N.,....\8.Y...
0x0170: 8641 80c0 d780 6c42 5448 993b 01a5 a60b .A....LBTH.;....
0x0180: 5558 d66b d8c2 d0a7 e843 ba18 7283 8d7c UX.k....C..r..|
0x0190: 2505 b97f b5ca 09ad aab4 92eb d3c3 8345 %.....
0x01a0: 24ed 2bcb d2fe 3323 ba10 268b c6e8 28ce $.+..3#..&...(.+
0x01b0: 052b b7b4 2b66 2396 45b6 53db a209 7675 .+..+f#.E.S...vu
0x01c0: 47e1 3e28 d344 b95a 0525 fb02 844f 688c G.>(.D.Z.%..Oh.
0x01d0: 0007 8e4a b404 7bd2 495f fc21 7cb9 9de8 ...J..{.I_.!|...
0x01e0: e002 4aba 712c 54f0 2835 0678 5e27 614e ..J.q,T.(5.x^'aN
0x01f0: 3d27 96c4 224e ff13 2c09 d702 a25c 389b ='..."N.,....\8.

```

try1_slave3 - Notepad

```

File Edit Format View Help
10:04:31.830414 IP ec2-3-15-2-249.us-east-2.compute.amazonaws.com.50502 > ip-172-31-11-166.us-east-2.compute.internal.50010: Flags
0x0000: 4500 0034 9fad 4000 3f06 de49 030f 02f9 E..4..@?....I...
0x0010: ac1f 0ba6 c546 c35a ef32 9d1 b49a d577 ....F.Z.2....W
0x0020: 8010 00d3 7e50 0000 0101 080a ebf4 8413 ....~P.....
0x0030: 1026 1a16 .&..
10:04:32.733929 IP ec2-3-15-2-249.us-east-2.compute.amazonaws.com.50502 > ip-172-31-11-166.us-east-2.compute.internal.50010: Flags
0x0000: 450 Slave 1 IP ae 4000 3f06 c200 030f 02f9 E..!..@?..... Slave 3 IP
0x0010: ac1f 0ba6 c546 c35a ef32 9d1 b49a d577 ....F.Z.2....W
0x0020: 8010 00d3 da3b 0000 0101 080a ebf4 879b .....;.....
0x0030: 1026 1a16 0001 0000 0000 0000 0000 0000 .&....
0x0040: 0000 0000 0000 0000 00fe 0080 6c42 .....1B 10:04:32.733929
0x0050: 5448 993b 01a5 a60b 5558 d66b d8c2 d0a7 TH.;....UX.k...
0x0060: e843 ba18 7283 8d7c 2505 b97f b5ca 09ad .C..r...|%.....
0x0070: aab4 92eb d3c3 8345 24ed 2bcb d2fe 3323 .....E$.+..3#
0x0080: ba10 268b c6e8 28ce 052b b7b4 2b66 2396 ..&.(.+.+f#.
0x0090: 45b6 53db a209 7675 47e1 3e28 d344 b95a E.S...VUG.>(D.Z
0x00a0: 0525 fb02 844f 688c 0007 8e4a b404 7bd2 .%.On....J.{.
0x00b0: 495f fc21 7cb9 9de8 e002 4aba 712c 54f0 I..!....J.q,T.
0x00c0: 2835 0678 5e27 614e 3d27 96c4 224e ff13 (5.x^'aN='..N..
0x00d0: c209 d702 a25c 389b 59ae 96df 8641 80c0 ,...,8.Y....A..
0x00e0: d780 6c42 5448 993b 01a5 a60b 5558 d66b ..1BTH.;....UX.k
0x00f0: d8c2 d0a7 e843 ba18 7283 8d7c 2505 b97f .....C.r...|%...
0x0100: b5ca 09ad aab4 92eb d3c3 8345 24ed 2bcb .....E$.+
0x0110: d2fe 3323 ba10 268b c6e8 28ce 052b b7b4 ..3#.&..(...
0x0120: 2b66 2396 45b6 53db a209 7675 47e1 3e28 +f#.E.S...vug.>(.
0x0130: d344 b95a 0525 fb02 844f 688c 0007 8e4a .D.Z.%...Oh...J
0x0140: b404 7bd2 495f fc21 7cb9 9de8 e002 4aba ..{.I_!|....J.
0x0150: 712c 54f0 2835 0678 5e27 614e 3d27 96c4 q,T.(5.x^'aN='..
0x0160: 224e ff13 2c09 d702 a25c 389b 59ae 96df "N.....8.Y...
0x0170: 8641 80c0 d780 6c42 5448 993b 01a5 a60b .A....1BTH.;....
0x0180: 5558 d66b d8c2 d0a7 e843 ba18 7283 8d7c UX.k....C.r...
0x0190: 2505 b97f b5ca 09ad aab4 92eb d3c3 8345 %.....
0x01a0: 24ed 2bcb d2fe 3323 ba10 268b c6e8 28ce $.+..3#.&...
0x01b0: 052b b7b4 2b66 2396 45b6 53db a209 7675 .+.+f#.E.S...vu
0x01c0: 47e1 3e28 d344 b95a 0525 fb02 844f 688c G.>(D.Z.%...Oh.
0x01d0: 0007 8e4a b404 7bd2 495f fc21 7cb9 9de8 ...J..{.I_!|...
0x01e0: e002 4aba 712c 54f0 2835 0678 5e27 614e ..J.q,T.(5.x^'aN
0x01f0: 3d77 96c1 221e ff13 2c09 d702 a25c 389b =' "N \r

```

Here in Slave 3 we can see the time when it received data from Slave 1 for first time and it is near to time when Slave 1 send data first time.

try1_slave1 - Notepad

```

File Edit Format View Help
0x2390: 7070 7070 7070 7070 7070 7070 7070 7070 ppppppppppppppppp
0x23a0: 7070 7070 7070 7070 7070 7070 7070 7070 pppppppppppppppp
0x23b0: 70 p
10:04:32.736202 IP ec2-3-137-212-195.us-east-2.compute.amazonaws.com.50010 > ip-172-31-3-78.us-east-2.compute.internal.50
0x0000: 4500 0034 c296 4000 fe06 3273 0389 d4c3 E..4..@...25...
0x0010: ac1f 034e c35a c546 b49a d577 ef33 9db6 ...N.Z.F...W.3..
0x0020: 8010 6a74 4399 0000 0101 080a 1026 1da0 ..jtC.....&..
0x0030: ebf4 879c .....
10:04:32.737205 IP 103.195.202.100 22298 > ip-172-31-3-78.us-east-2.compute.internal.50010: Flags [.], seq 71819:73219, a
0x0000: 450 Client IP 6a9 4000 2206 5! Slave 1 IP :a64 E.....@.".g..d
0x0010: ac1f 034e 571a c35a 6ef2 0587 87bc 32f7 ...NW..Zn.....2.
0x0020: 8010 00e5 9838 0000 0101 080a 5352 7da7 .....8.....SR}.
0x0030: 7ee9 f12b 7070 7070 7070 7070 7070 7070 ~..+pppppppppppppp
0x0040: 7070 7070 7070 7070 7070 7070 7070 7070 ppppppppppppppppp
0x0050: 7070 7070 7070 7070 700a 7070 7070 7070 ppppppppppppp.pppp
0x0060: 7070 7070 7070 7070 7070 7070 7070 7070 ppppppppppppppppp
0x0070: 7070 7070 7070 7070 7070 7070 7070 7070 ppppppppppppppppp
0x0080: 7070 7070 7070 7070 7070 7070 7070 7070 ppppppppppppppp
0x0090: 7070 7070 7070 7070 7070 7070 7070 7070 ppppppppppppppp
0x00a0: 7070 7070 700a 7070 7070 7070 7070 7070 ppppp.pppppppppp
0x00b0: 7070 7070 7070 7070 7070 7070 7070 7070 ppppppppppppppp
0x00c0: 7070 7070 7070 7070 7070 7070 7070 7070 ppppppppppppppp
0x00d0: 7070 7070 7070 7070 7070 7070 7070 7070 ppppppppppppppp
0x00e0: 7070 7070 7070 7070 7070 7070 7070 700a pppppppppppppppp.
0x00f0: 7070 7070 7070 7070 7070 7070 7070 7070 pppppppppppppppp
0x0100: 7070 7070 7070 7070 7070 7070 7070 7070 pppppppppppppppp
0x0110: 7070 7070 7070 7070 7070 7070 7070 7070 pppppppppppppppp
0x0120: 7070 7070 7070 7070 7070 7070 7070 7070 pppppppppppppppp
0x0130: 7070 7070 7070 7070 700a 7070 7070 7070 ppppppppp.pppppp
0x0140: 7070 7070 7070 7070 7070 7070 7070 7070 pppppppppppppppp
0x0150: 7070 7070 7070 7070 7070 7070 7070 7070 pppppppppppppppp
0x0160: 7070 7070 7070 7070 7070 7070 7070 7070 pppppppppppppppp
0x0170: 7070 7070 7070 7070 7070 7070 7070 7070 pppppppppppppppp

```

Time when Slave 1 stops sending data to Slave 3 and again starts receiving data from Client

try1_slave3 - Notepad

```

File Edit Format View Help
0x23bd: 70 p
10:04:32.736079 IP ip-172-31-11-166.us-east-2.compute.internal.50010 > ec2-3-15-2-249.us-east-2.compute.amazonaws.com.50502: Flags
0x0000: 4500 0034 c296 4000 ff06 fb5f ac1f 0ba6 E..4..@.....0
0x0010: 030f 02f9 c35a c546 b49a d577 ef33 9db6 .....Z.F...w.3..
0x0020: 8010 6a74 bdf3 0000 0101 080a 1026 1da0 ..jt.....&..
0x0030: ebf4 879c .....
10:04:32.736209 IP ip-172-31-11-166 us-east-2.compute.internal.57612 > [ec2-3-14-250-3.us-east-2.compute.amazonaws.com.50010: Flags
0x0000: 45[Slave 3 IP]349d 4000 ff06 a607 ac1f 0ba6 E..|..@.....Slave 2 IP
0x0010: 030e 1a0a e10c c35a 87a3 d9c7 d5d2 1cb7 .....Z.....
0x0020: 8010 00d3 d145 0000 0101 080a 7688 620a .....E.....v.b.
0x0030: e891 9a69 0001 0000 0000 0000 0000 0000 ...i.....
0x0040: 0000 0000 0000 0000 0000 0000 0000 0000 .....lB
0x0050: 5448 993b 01a5 a60b 5558 d66b d8c2 d0a7 TH.;...UX.k....
0x0060: e843 ba18 7283 8d7c 2505 b97f b5ca 09ad .C..r..|%.....
0x0070: aab4 92eb d3c3 8345 24ed 2bcb d2fe 3323 .....E$.+..3#
0x0080: ba10 268b c6e8 28ce 052b b7b4 2b66 2396 ..&..(..+..+f#.
0x0090: 45b6 53db a209 7675 47e1 3e28 d344 b95a E.S...vug.>(.D.Z
0x00a0: 0525 fb02 844f 688c 0007 8e4a b404 7bd2 .%.oh....J.{.
0x00b0: 495f fc21 7cb9 9de8 e002 4aba 712c 54f0 T_!_T q,T
0x00c0: 2835 0678 5e27 614e 3d27 96c4 224e ff13 (5.x^'aN='."N..
0x00d0: c209 d702 a25c 389b 59ae 96df 8641 80c0 ,....\8.Y....A..
0x00e0: d780 6c42 5448 993b 01a5 a60b 5558 d66b .1BTH.;...UX.k
0x00f0: d8c2 d0a7 e843 ba18 7283 8d7c 2505 b97f .....C.r..|%...
0x0100: b5ca 09ad aab4 92eb d3c3 8345 24ed 2bcb .....E$.+.
0x0110: d2fe 3323 ba10 268b c6e8 28ce 052b b7b4 ..3#.R..(..+..+f#.
0x0120: 2b66 2396 45b6 53db a209 7675 47e1 3e28 +f#.E.S...vug.>(.D.Z.%..oh....J.
0x0130: d344 b95a 0525 fb02 844f 688c 0007 8e4a ..{.I_.!|...J.
0x0140: b404 7bd2 495f fc21 7cb9 9de8 e002 4aba q,T.(5.x^'aN='."N..
0x0150: 712c 54f0 2835 0678 5e27 614e 3d27 96c4 G.>(.D.Z.%..oh.
0x0160: 224e ff13 2c09 d702 a25c 389b 59ae 96df "N.,....\8.Y...
0x0170: 8641 80c0 d780 6c42 5448 993b 01a5 a60b .A....1BTH.;...
0x0180: 5558 d66b d8c2 d0a7 e843 ba18 7283 8d7c UX.k....C.r..|%
0x0190: 2505 b97f b5ca 09ad aab4 92eb d3c3 8345 %.....E$.
0x01a0: 24ed 2bcb d2fe 3323 ba10 268b c6e8 28ce $.+..3#.R..(..
0x01b0: 052b b7b4 2b66 2396 45b6 53db a209 7675 .+.+f#.E.S...vug.
0x01c0: 47e1 3e28 d344 b95a 0525 fb02 844f 688c G.>(.D.Z.%..oh.
0x01d0: 0007 8e4a b404 7bd2 495f fc21 7cb9 9de8 ...J..{.I_.!|...
0x01e0: e002 4aba 712c 54f0 2835 0678 5e27 614e ..J.q,T.(5.x^'aN
0xa1fa: 2d77 06c1 221a ff13 2c00 d702 775c 200h -' "n \o

```

Time when Slave 3 stopped receiving data from Slave 1 and starts sending to Slave 2 for first time.

You can see this time is very near to the time when Slave 1 again starts getting data from Client for second time.

So, when Client gives data to Slave 1 second time onwards, at same time Slave 3 starts sending data to Slave 2

try1_slave2 - Notepad

```

File Edit Format View Help
10:04:31.830043 IP ec2-3-137-212-195.us-east-2.compute.amazonaws.com.57612 > ip-172-31-6-46.us-east-2.compute.internal.50010: Flags
0x0000: 4500 0034 049c 4000 fe06 ed8d 0389 d4c3 E..4..@.....0
0x0010: ac1f 062e e10c c35a 87a3 d9c7 d5d2 1cb7 .....Z.....
0x0020: 8010 00d3 5413 0000 0101 080a 7688 620a .....T.....v.b.
0x0030: e891 9a69 0001 0000 0000 0000 0000 0000 ...i.....
0x0040: 0000 0000 0000 0000 0000 0000 0000 0000 .....lB
0x0050: 5448 993b 01a5 a60b 5558 d66b d8c2 d0a7 TH.;...UX.k....
0x0060: e843 ba18 7283 8d7c 2505 b97f b5ca 09ad .C..r..|%.....
0x0070: aab4 92eb d3c3 8345 24ed 2bcb d2fe 3323 .....E$.+..3#
0x0080: ba10 268b c6e8 28ce 052b b7b4 2b66 2396 ..&..(..+..+f#.
0x0090: 45b6 53db a209 7675 47e1 3e28 d344 b95a E.S...vug.>(.D.Z
0x00a0: 0525 fb02 844f 688c 0007 8e4a b404 7bd2 %.oh....J.{.
0x00b0: 495f fc21 7cb9 9de8 e002 4aba 712c 54f0 T_!_T q,T
0x00c0: 2835 0678 5e27 614e 3d27 96c4 224e ff13 (5.x^'aN='."N..
0x00d0: c209 d702 a25c 389b 59ae 96df 8641 80c0 ,....\8.Y....A..
0x00e0: d780 6c42 5448 993b 01a5 a60b 5558 d66b .1BTH.;...UX.k
0x00f0: d8c2 d0a7 e843 ba18 7283 8d7c 2505 b97f .....C.r..|%...
0x0100: b5ca 09ad aab4 92eb d3c3 8345 24ed 2bcb .....E$.+.
0x0110: d2fe 3323 ba10 268b c6e8 28ce 052b b7b4 ..3#.R..(..+..+f#.
0x0120: 2b66 2396 45b6 53db a209 7675 47e1 3e28 +f#.E.S...vug.>(.D.Z.%..oh....J.
0x0130: d344 b95a 0525 fb02 844f 688c 0007 8e4a ..{.I_.!|...J.
0x0140: b404 7bd2 495f fc21 7cb9 9de8 e002 4aba q,T.(5.x^'aN='."N..
0x0150: 712c 54f0 2835 0678 5e27 614e 3d27 96c4 G.>(.D.Z.%..oh.
0x0160: 224e ff13 2c09 d702 a25c 389b 59ae 96df "N.,....\8.Y...
0x0170: 8641 80c0 d780 6c42 5448 993b 01a5 a60b .A....1BTH.;...
0x0180: 5558 d66b d8c2 d0a7 e843 ba18 7283 8d7c UX.k....C.r..|%
0x0190: 2505 b97f b5ca 09ad aab4 92eb d3c3 8345 %.....E$.
0x01a0: 24ed 2bcb d2fe 3323 ba10 268b c6e8 28ce $.+..3#.R..(..
0x01b0: 052b b7b4 2b66 2396 45b6 53db a209 7675 .+.+f#.E.S...vug.
0x01c0: 47e1 3e28 d344 b95a 0525 fb02 844f 688c G.>(.D.Z.%..oh.
0x01d0: 0007 8e4a b404 7bd2 495f fc21 7cb9 9de8 ...J..{.I_.!|...
0x01e0: e002 4aba 712c 54f0 2835 0678 5e27 614e ..J.q,T.(5.x^'aN
0xa1fa: 2d77 06c1 221a ff13 2c00 d702 775c 200h -' "n \o

```

Time when first time Slave 2 received data from Slave 3.

try1_slave3 - Notepad

File Edit Format View Help

```

0x0000: 4500 0034 9fde 4000 3f06 de18 030f 02f9 E..4..@.?.....
0x0010: ac1f 0ba6 c546 c35a ef33 9db6 b49a d582 .....F.Z.3.....
0x0020: 8010 00d3 7715 0000 0101 080a ebf4 87a0 ....W.....
0x0030: 1026 1da3 .&..
10:04:32.739647 IP ec2-3-15-2-249.us-east-2.compute.amazonaws.com.50502 > ip-172-31-11-166.us-east-2.compute.internal.50010: Flags
0x0000: 4500 0034 9fdf 4000 3f06 de17 030f 02f9 E..4..@.?.....
0x0010: ac1f 0ba6 c546 c35a ef33 9db6 b49a d585 .....F.Z.3.....
0x0020: 8010 00d3 7712 0000 0101 080a ebf4 87a0 ....W.....
0x0030: 1026 1da3 .&..
10:04:32.997103 IP [ec2-3-15-2-249].us-east-2.compute.amazonaws.com.50502 > ip-172-31-11-166.us-east-2.compute.internal.50010: Flags
0x0000: 45cSlave 1 IP fe0 4000 3f06 c1ce 030f 02f9 E..|..@.?..... Slave 3 IP
0x0010: ac1f 0ba6 c546 c35a ef33 9db6 b49a d585 .....F.Z.3.....
0x0020: 8010 00d3 da3b 0000 0101 080a ebf4 88a2 ....;.....
0x0030: 1026 1da3 0001 0000 0000 0000 0000 fe00 .&.....
0x0040: 0000 0000 0000 0001 0000 00fe 0066 2396 .....f#.
0x0050: 45b6 53db a209 7675 47e1 3e28 d344 b95a E.S...vug.>(.D.Z
0x0060: 0525 fb02 844f 688c 0007 8e4a b404 7bd2 .%...Oh....J..{.
0x0070: 495f fc21 7cb9 9de8 e002 4aba 712c 54f0 _..!|.....J.q,1
0x0080: 2835 0678 5e27 614e 3d27 96c4 224e ff13 (5.x^'aN='.."N..
0x0090: 2c09 d702 a25c 389b 59ae 96df 8641 80c0 ,...,\8.Y....A..
0x00a0: d780 6c42 5448 993b 01a5 a60b 5558 d66b ..lBTH.;....UX.K
0x00b0: d8c2 d0a7 e843 ba18 7283 8d7c 2505 b97f ....C..r..|%...
0x00c0: b5ca 09ad aab4 92eb d3c3 8345 24ed 2bcb .....E$.+.
0x00d0: d2fe 3323 ba10 268b c6e8 28ce 052b b7b4 ..3#.&...,.+..
0x00e0: 2b66 2396 45b6 53db a209 7675 47e1 3e28 +f#.E.S...vug.>(
0x00f0: d344 b95a 0525 fb02 844f 688c 0007 8e4a .D.Z.%...Oh....J
0x0100: b404 7bd2 495f fc21 7cb9 9de8 e002 4aba ..{.I_.!|.....J.
0x0110: 712c 54f0 2835 0678 5e27 614e 3d27 96c4 q,T.(5.x^'aN='..
0x0120: 224e ff13 2c09 d702 a25c 389b 59ae 96df "N.....,\8.Y...
0x0130: 8641 80c0 d780 6c42 5448 993b 01a5 a60b .A....lBTH.;...
0x0140: 5558 d66b d8c2 d0a7 e843 ba18 7283 8d7c UX.K....C..r..|
0x0150: 2505 b97f b5ca 09ad aab4 92eb d3c3 8345 %.....,.....E
0x0160: 24ed 2bcb d2fe 3323 ba10 268b c6e8 28ce $.+...3#.&...(. .
0x0170: 052b b7b4 2b66 2396 45b6 53db a209 7675 .+...+f#.E.S....v
0x0180: 47e1 3e28 d344 b95a 0525 fb02 844f 688c G.>(.D.Z.%...Oh.
0x0190: 0007 8e4a b404 7bd2 495f fc21 7cb9 9de8 ...J..{.I_.!|...
0x01a0: e002 4aba 712c 54f0 2835 0678 5e27 614c ..J.q,T.(5.x^'aN
0x01b0: 3d27 96c1 221a ff13 2c09 d702 325c 320h =' "N \8

```

10:04:32.997103 → Time when Slave 3 stopped sending data to Slave 2 and again starts receiving from Slave 1

try1_slave3 - Notepad

File Edit Format View Help

```

0x2d10: 7070 7070 7070 7070 7070 7070 7070 7070 ppppppppppppppppp
0x2d20: 7070 7070 7070 7070 7070 0a70 7070 7070 pppppppppp.ppppp
0x2d30: 7070 7070 7070 7070 7070 7070 7070 7070 pppppppppppppppp
0x2d40: 7070 7070 7070 7070 7070 7070 7070 7070 pppppppppppppppp
0x2d50: 7070 7070 7070 7070 7070 7070 7070 7070 pppppppppppppppp
0x2d60: 7070 7070 7070 7070 7070 7070 7070 7070 pppppppppppppppp
0x2d70: 7070 7070 pppp
10:04:32.999765 IP ec2-3-14-250-3.us-east-2.compute.amazonaws.com.50010 > ip-172-31-11-166.us-east-2.compute.internal.57612: Flags
0x0000: 4500 0034 56a9 4000 3f06 3044 030e fa03 E..4V.@.?0D...
0x0010: ac1f 0ba6 c35a e10c d5d2 1cc3 87a5 126c .....Z.....
0x0020: 8010 7740 b86f 0000 0101 080a e891 9efb ..w@0.....
0x0030: 7688 6311 v.c.

10:04:32.999771 IP ip-172-31-11-166.us-east-2.compute.internal.57612 > [ec2-3-14-250-3] us-east-2.compute.amazonaws.com.50010: Flags
0x0000: 450 Slave 3 IP :5 4000 ff06 94c7 ac1f 0ba6 E.-t..@.....Slave 2 IP
0x0010: 030e ta03 e10c c35a 87a5 56a4 d5d2 1cc3 .....Z.VL...
0x0020: 8010 00d3 e23d 0000 0101 080a 7688 6311 .....=.....v.c.
0x0030: e891 9efb 0a70 7070 7070 7070 7070 7070 .....pppppppppppp
0x0040: 7070 7070 7070 7070 7070 7070 7070 7070 pppppppppppppppp 10:04:32.999771
0x0050: 7070 7070 7070 7070 7070 7070 7070 7070 pppppppppppppppp
0x0060: 7070 7070 7070 7070 7070 7070 7070 7070 pppppppppppppppp
0x0070: 7070 7070 7070 7070 7070 7070 7070 0a70 ppppppppppppp.p
0x0080: 7070 7070 7070 7070 7070 7070 7070 7070 pppppppppppppppp
0x0090: 7070 7070 7070 7070 7070 7070 7070 7070 pppppppppppppppp
0x00a0: 7070 7070 7070 7070 7070 7070 7070 7070 pppppppppppppppp
0x00b0: 7070 7070 7070 7070 7070 7070 7070 7070 pppppppppppppppp
0x00c0: 7070 7070 7070 7070 0a70 7070 7070 7070 pppppppp.ppppppp
0x00d0: 7070 7070 7070 7070 7070 7070 7070 7070 pppppppppppppppp
0x00e0: 7070 7070 7070 7070 7070 7070 7070 7070 pppppppppppppppp
0x00f0: 7070 7070 7070 7070 7070 7070 7070 7070 pppppppppppppppp
0x0100: 7070 7070 7070 7070 7070 7070 7070 7070 pppppppppppppppp
0x0110: 7070 0a70 7070 7070 7070 7070 7070 7070 pp.pppppppppppppp
0x0120: 7070 7070 7070 7070 7070 7070 7070 7070 pppppppppppppppp
0x0130: 7070 7070 7070 7070 7070 7070 7070 7070 pppppppppppppppp
0x0140: 7070 7070 7070 7070 7070 7070 7070 7070 pppppppppppppppp
0x0150: 7070 7070 7070 7070 7070 7070 0a70 7070 ppppppppppppp.ppp
0x0160: 7070 7070 7070 7070 7070 7070 7070 7070 pppppppppppppppp
0x0170: 7070 7070 7070 7070 7070 7070 7070 7070 pppppppppppppppp
0x0180: 7070 7070 7070 7070 7070 7070 7070 7070 pppppppppppppppp

```

Time when second time
Slave 3 sends data to
Slave 2

try1_slave2 - Notepad

File Edit Format View Help

10:04:32.739215 IP ec2-3-137-212-195.us-east-2.compute.amazonaws.com.57612 > ip-172-31-6-46.us-east-2.compute.internal.50010: Flag^{0x0000:} 4500 0034 04cc 4000 fe06 ed5d 0389 d4c3 E..4..@....]....

^{0x0010:} ac1f 062e e10c c35a 87a4 d9dc d5d2 1cc0Z.....

^{0x0020:} 8010 00d3 93b5 0000 0101 080a 7688 620dv.b.

^{0x0030:} e891 9df7

10:04:32.739232 IP ec2-3-137-212-195.us-east-2.compute.amazonaws.com.57612 > ip-172-31-6-46.us-east-2.compute.internal.50010: Flag^{0x0000:} 4500 0034 04cd 4000 fe06 ed5c 0389 d4c3 E..4..@....\....

^{0x0010:} ac1f 062e e10c c35a 87a4 d9dc d5d2 1cc2Z.....

^{0x0020:} 8010 00d3 93b3 0000 0101 080a 7688 620dv.b.

^{0x0030:} e891 9df7

10:04:32.739249 IP ec2-3-137-212-195.us-east-2.compute.amazonaws.com.57612 > ip-172-31-6-46.us-east-2.compute.internal.50010: Flag^{0x0000:} 4500 0034 04ce 4000 fe06 ed5b 0389 d4c3 E..4..@....[....

^{0x0010:} ac1f 062e e10c c35a 87a4 d9dc d5d2 1cc3Z.....

^{0x0020:} 8010 00d3 93b2 0000 0101 080a 7688 620dv.b.

^{0x0030:} e891 9df7

10:04:32.7399257 IP ec2-3-137-212-195.us-east-2.compute.amazonaws.com.57612 > ip-172-31-6-46.us-east-2.compute.internal.50010: Flag^{0x0000:} 4500 Slave 3 IP cf 4000 fe06 e20a 0389 d4c3 E.....@.....

^{0x0010:} ac1f 062e e10c c35a 87a4 d9dc d5d2 1cc3Z.....

^{0x0020:} 8010 00d3 9610 0000 0101 080a 7688 6311v.c.

^{0x0030:} e891 9df7 0001 0000 0000 0000 fe00

^{0x0040:} 0000 0000 0000 0001 0000 00fe 0066 2396f#.

^{0x0050:} 45b6 53db a209 7675 47e1 3e28 d344 b95a E.S...vuG.>(D.Z

^{0x0060:} 0525 fb02 844f 688c 0007 8e4a b404 7bd1 %.Oh...J...I_..!|...J.q,T.

^{0x0070:} 495f fc21 7cb9 9de8 e002 4aba 712c 54f0 (5.x^'aN='..N..

^{0x0080:} 2835 0678 5e27 614e 3d27 96c4 224e ff13 ,...,\8.Y....A..

^{0x0090:} 2c09 d702 a25c 389b 59ae 96df 8641 80c0 ..1BTH.;...UX.k

^{0x00a0:} d780 6c42 5448 993b 01a5 a60b 5558 d66b .D..C..r.%....

^{0x00b0:} d8c2 d0a7 e843 ba18 7283 8d7c b971E\$.+.

^{0x00c0:} b5ca 09ad aab4 92eb d3c3 8345 24ed 2bcf ..3#..&...(.+..

^{0x00d0:} d2fe 3323 ba10 268b c6e8 28ce 052b b7b4 +f#.E.S...vuG.>(

^{0x00e0:} 2b66 2396 45b6 53db a209 7675 47e1 3e28 D.Z.%..Oh...J...{.I_..!|...J.q,T.

^{0x00f0:} d344 b95a 0525 fb02 844f 688c 0007 8e4a 712c 54f0 q,(5.x^'aN='..N..

^{0x0100:} b404 7bd2 495f fc21 7cb9 9de8 e002 4aba "N,...,\8.Y....A..

^{0x0110:} 712c 54f0 2835 0678 5e27 614e 3d27 96c4 ..1BTH.;...UX.k

^{0x0120:} 224e ff13 2c09 d702 a25c 389b 59ae 96df .A...lBTH.;...UX.k....C.r.%....

^{0x0130:} 8641 80c0 7d80 6c42 5448 993b 01a5 a60b ..

^{0x0140:} 5558 d66b d8c2 d0a7 e843 ba18 7283 8d7c ..

0x0030: 0095 30f4 ..0.

10:04:37.440601 IP ec2-3-14-250-3.us-east-2.compute.amazonaws.com.45458 > ip-172-31-9-182.us-east-2.compute.internal.etlservicemgr: Master Private IP^{0x0000:} 450 Slave 2 IP fd3 4000 3f06 8746 030e fa03 E.....@.?..F.

^{0x0010:} ac1f 09b6 b192 2329 3f3a 7f14 c22c 017b#)?:....

^{0x0020:} 8018 02e4 f905 0000 0101 080a 6d86 e2f3

^{0x0030:} 7c57 9588 0000 01bf 0000 0489 0000 626c [w.....bl

^{0x0040:} 6f63 6b52 6563 6569 7665 6400 0000 0300 ockReceived....

^{0x0050:} 3b6f 7267 2e61 7061 6368 652e 6861 646f ;org.apache.hadoop

^{0x0060:} 6f70 2e68 6466 732e 7365 7276 6572 2e70 op.hdfs.server.p

^{0x0070:} 726f 746f 636f 6c2e 4461 7461 6e6f 6465 rotocol.Datanode

^{0x0080:} 5265 6769 7374 7261 7469 6f6e 003b 6f72 Registration.;or

^{0x0090:} 672e 6170 6163 6865 2e68 6164 6f6f 702e g.apache.hadoop

^{0x00a0:} 6864 6673 2e73 6572 7665 722e 7072 6f74 hdfs.server.prot

^{0x00b0:} 6f63 6f6c 2e44 6174 616e 6f64 6552 6567 ocol.DatanodeReg

^{0x00c0:} 6973 7472 6174 696f 6e00 1033 2e31 342e istration..3.14.

^{0x00d0:} 3235 302e 333a 3530 3031 3000 2d44 532d 250.3:50010.-DS

^{0x00e0:} 3138 3536 3736 3635 3637 2d31 3732 2e33 1856766567-172.3

^{0x00f0:} 312e 362e 3436 2d35 3030 3130 2d31 3630 1.6.46-50010-160

^{0x0100:} 3332 3731 3233 3339 3038 c39b c364 ffff 3271233908....

^{0x0110:} ffd7 6119 3948 0000 0000 0000 0000 0000 ..a..9H.....

^{0x0120:} 0000 0000 0000 0000 0000 0000 0000 0000 ..

^{0x0130:} 0fff 0000 0000 0028 5b4c 6f72 672e 6170 ..([Lorg.ap

^{0x0140:} 6163 6865 2e68 6164 6f6f 702e 6864 6673 ace.hadoop.hdfs

^{0x0150:} 2e70 726f 746f 636f 6c2e 426c 6f63 6b3b .protocol.Block;

^{0x0160:} 0000 0001 0025 6f72 672e 6170 6163 6865%org.apache

^{0x0170:} 2e68 6164 6f6f 702e 6864 6673 2e70 726f .hadoop.hdfs.pro

^{0x0180:} 746f 636f 6c2e 426c 6f63 6b00 256f 7267 tocol.Block.%org

^{0x0190:} 2e61 7061 6368 652e 6861 646f 6f70 2e68 apache.hadoop.h

^{0x01a0:} 6466 732e 7072 6f74 6f63 6f6c 2e42 6c6f dfs.protocol.Blo

^{0x01b0:} 636b 93b6 6f65 0387 a3ac 0000 0000 ck..0.....

^{0x01c0:} 117a 0000 0000 0000 03f0 0013 5b4c 6a61 ..z.....[Lja

^{0x01d0:} 7661 2e6c 616e 672e 5374 7269 6e67 3b00 va.lang.String;

^{0x01e0:} 0000 0100 106a 6176 612e 6c61 6e67 2e53java.lang.S

^{0x01f0:} 7472 696e 6700 00 triing..

10:04:37.441222 IP ip-172-31-9-182.us-east-2.compute.internal.etlservicemgr > ec2-3-14-250-3.us-east-2.compute.amazonaws.com.45458:

try1_master - Notepad

```

File Edit Format View Help
0x0020: 8010 0314 8a10 0000 0101 080a f0e7 f83d .....= @.RV
0x0030: 408b 5256 .....#
10:04:37.443439 IP [ec2-3-15-2-249.us-east-2.compute.amazonaws.com.38090 > ip-172-31-9-182.us-east-2.compute.internal.etservicemgr: Slave 1 IP b16 4000 3f06 630f 02f9 E.....@.?.... Master private IP
0x0000: 45 Slave 1 IP b16 4000 3f06 630f 02f9 E.....@.?.... Master private IP
0x0010: ac1f 09b6 94ca 2329 e1ac 6669 108e bc06 .....#).fi....
0x0020: 8018 02ec 081d 0000 0101 080a 154a 354f .....j50
0x0030: 0095 30f4 0000 01be 0000 044e 000d 626c ..0.....N..bl
0x0040: 6f63 6b52 6563 6569 7665 6400 0000 0300 BlockReceived.....
0x0050: 3b6f 7267 2e61 7061 6368 652e 6861 646f ;org.apache.hadoop
0x0060: 6f70 2e68 6466 732e 7365 7276 6572 2e70 op.hdfs.server.protocol
0x0070: 726f 746f 636f 6c2e 4461 7461 66ef 6465 protocol.Datanode
0x0080: 5265 6769 7374 7261 7469 6f6e 003b 6f72 Registration.;or
0x0090: 672e 6170 6163 6865 2e68 6164 6f6f 702e g.apache.hadoop.
0x00a0: 6864 6673 2e73 6572 7665 722e 7072 6f74 hdfs.server.prot
0x00b0: 6f63 6f6c 2e44 6174 616e 6f64 6552 6567 ocol.DatanodeReg
0x00c0: 6973 7472 6174 696f 6e00 1033 2e31 352e istration..3.15.
0x00d0: 322e 3234 393a 3530 3031 3000 2c44 532d 2.249:50010.,DS-
0x00e0: 3234 3037 3538 3539 342d 3137 322e 3331 240758594-172.31
0x00f0: 2e33 2e37 382d 3530 3031 302d 3136 3033 .3.78-50010-1603
0x0100: 3030 3236 3636 33c3 9bc3 64ff ffff 002666663...d...
0x0110: d761 1939 4800 0000 0000 0000 0000 0000 .a.9H.....
0x0120: 0000 0000 0000 0000 0000 0000 0000 0000 .....
0x0130: ff00 0000 0000 285b 4c6f 7267 2e61 7061 .....([Lorg.apa
0x0140: 6368 652e 6861 646f 6f70 2e68 6466 732e che.hadoop.hdfs.
0x0150: 7072 6f74 6f63 6f6c 2e42 6c6f 636b 3b00 protocol.Block;
0x0160: 0000 0100 256f 7267 2e61 7061 6368 652e ....%org.apache.
0x0170: 6861 646f 6f70 2e68 6466 732e 7072 6f74 hadoop.hdfs.prot
0x0180: 6f63 6f6c 2e42 6c6f 636b 0025 6f72 672e ocol.Block.%org.
0x0190: 6170 6163 6865 2e68 6164 6f6f 702e 6864 apache.hadoop.h
0x01a0: 6673 2e70 726f 746f 636f 6c2e 426c 6f63 fs.protocol.Bloc
0x01b0: 6b93 be6f e503 87a3 ac00 0000 0000 1911 k..o.....
0x01c0: 7a00 0000 0000 0003 f000 135b 4c6a 6176 z.....[ljav
0x01d0: 612e 6c61 6e67 2e53 7472 696e 673b 0000 a.lang.String;;
0x01e0: 0001 0010 6a61 7661 2e6c 616e 672e 5374 ....java.lang.st
0x01f0: 7269 6e67 0000 ring..
10:04:37.443650 IP ip-172-31-9-182.us-east-2.compute.internal.etservicemgr > ec2-3-15-2-249.us-east-2.compute.amazonaws.com.38090:
0x0000: 4500 0093 df54 4000 4006 a793 ac1f 09b6 E.....@. .....
0x0010: a2af a2fa 3229 9a1c 108a hr06 a1c0 682h #1 h+

```

try1_master - Notepad

```

File Edit Format View Help
0x0030: 7c57 9ad0 |W.
10:04:37.441882 IP [ec2-3-137-212-195.us-east-2.compute.amazonaws.com.34302 > ip-172-31-9-182.us-east-2.compute.internal.etservicemgr: Slave 3 IP d17 4000 fe00 ffe0 0101 0389 d4c3 E.....@. .....
0x0000: 450 Slave 3 IP d17 4000 fe00 ffe0 0101 0389 d4c3 E.....@. .....
0x0010: ac1f 09b6 85fe 2329 1cb8 3a74 9ce0 4014 .....#).:t..@.
0x0020: 8018 0314 c8fe 0000 0101 080a f0e7 f83c .....<
0x0030: 408b 4d30 0000 01c4 0000 02b6 000d 626c @.M.....bl
0x0040: 6f63 6b52 6563 6569 7665 6400 0000 0300 BlockReceived.....
0x0050: 3bf5 7267 2e61 7061 6368 652e 6861 646f ;org.apache.hadoop
0x0060: 6f70 2e68 6466 732e 7365 7276 6572 2e70 op.hdfs.server.protocol
0x0070: 726f 746f 636f 6c2e 4461 7461 66ef 6465 protocol.Datanode
0x0080: 5265 6769 7374 7261 7469 6f6e 003b 6f72 Registration.;or
0x0090: 672e 6170 6163 6865 2e68 6164 6f6f 702e g.apache.hadoop.
0x00a0: 6864 6673 2e73 6572 7665 722e 7072 6f74 hdfs.server.prot
0x00b0: 6f63 6f6c 2e44 6174 616e 6f64 6552 6567 ocol.DatanodeReg
0x00c0: 6973 7472 6174 696f 6e00 1333 2e31 3337 istration..3.137
0x00d0: 2e32 3132 2e31 3935 3a35 3030 3130 002f .212.195:50010./
0x00e0: 4453 2d31 3438 3839 3433 3636 362d 3137 DS-1488943666-17
0x00f0: 322e 3331 2e31 312e 3136 362d 3530 3031 2.31.11.166-5001
0x0100: 302d 3136 3033 3237 3236 3233 3431 39c3 0-1603272623419.
0x0110: 9bc3 64ff ffff d761 1939 4800 0000 0000 ..d....a.9H.....
0x0120: 0000 0000 0000 0000 0000 0000 0000 0000 .....
0x0130: 0000 0000 0000 ff00 0000 0000 285b 4c6f .....([Lo
0x0140: 7267 2e61 6368 652e 6861 646f 6f70 rg.apache.hadoop
0x0150: 2e68 6466 732e 7072 6f74 6f63 6c2e 426c .hdfs.protocol.B
0x0160: 6c6f 636b 3b00 0000 0100 256f 2e61 lock;....%org.a
0x0170: 7061 6368 652e 6861 646f 6f70 2e68 6466 pache.hadoop.hdf
0x0180: 732e 7072 6f74 6f63 6f6c 2e42 6c6f 636b s.protocol.Block
0x0190: 0025 6f72 672e 6170 6163 6865 2e68 6164 .%org.apache.had
0x01a0: 6f6f 702e 6864 6673 2e70 726f 646f 636f oop.hdfs.protoco
0x01b0: 6c2e 426c 6f63 6b93 be6f e503 87a3 ac00 l.Block..o.....
0x01c0: 0000 0000 1911 7a00 0000 0000 0003 f000 .....z.....
0x01d0: 135b 4c6a 6176 612e 6c61 6e67 2e53 7472 .[Ljava.lang.Str
0x01e0: 696e 673b 0000 0001 0010 6a61 7661 2e6c ing;....java.l
0x01f0: 616e 672e 5374 7269 6e67 0000 ang.String..
10:04:37.442094 IP ip-172-31-9-182.us-east-2.compute.internal.etservicemgr > ec2-3-137-212-195.us-east-2.compute.amazonaws.com.34302:
0x0000: 4500 0093 0daf 4000 4006 9e94 ac1f 09b6 E.....@. .....
0x0010: 0389 d4c3 2329 85fe 9ce0 4014 1cb8 3c3c .....#).....@..<.
0x0020: 8018 8257 8027 0000 0101 080a 108b 5256 R @ RV

```

try1_master - Notepad

```

File Edit Format View Help
0x0060: 2e61 7061 6368 652e 6861 646f 6f70 2e69 .apache.hadoop.i
0x0070: 6f2e 4f62 6a65 6374 5772 6974 6162 6c65 o.ObjectWritable
0x0080: 244e 756c 6c49 6e73 7461 6e63 6500 0476 $NullInstance..v
0x0090: 6f69 64 oid
10:04:37.444078 IP ec2-3-15-2-249.us-east-2.compute.amazonaws.com.38090 > ip-172-31-9-182.us-east-2.compute.internal.etlservicemgr:
0x0000: 4500 0034 1b17 4000 3f06 64d0 030f 02f9 E..4..@.?d.....
0x0010: ac1f 09b6 94ca 2329 e1ac 682b 108e bc65 .....#)..ht+...e
0x0020: 8010 02ec 69d8 0000 0101 080a 154a 3550 ....i.....J5P
0x0030: 0095 342d ..4-
10:04:37.741757 IP [103.195.202.100].21754 > [ip-172-31-9-182] us-east-2.compute.internal.etlservicemgr: Flags [P.], seq 784:888, ack 1
0x0000: 45[Client IP] 16e5 4000 2806 9[Master IP] a64 E.....@(..Yg..d
0x0010: ac1f 09b6 54fa 2329 5eb5 3cce 6caf bd0b ....T.#)^.<.l...
0x0020: 8018 0108 0951 0000 0101 080a b20d 35e3 .....Q.....5.
0x0030: 7472 f45b 0000 0064 0000 0006 0008 636f tr.[...d.....co
0x0040: 6d70 6c65 7465 0000 0002 0010 6a61 7661 [mplete.]....java
0x0050: 2e6c 616e 672e 5374 7269 6667 0006 2f70 .lang.String..p
0x0060: 2e74 7874 0010 6a61 7661 2e6c 616e 672e .txt..java.lang.
0x0070: 5374 7269 6e67 0024 4446 5343 6c69 656e String.$DFSclient
0x0080: 745f 4e4f 4e4d 4150 5245 4455 4345 5f2d t_NONMAPREDUCE_
0x0090: 3131 3033 3536 3537 3534 5f31 1103565754_1
10:04:37.743713 IP ip-172-31-9-182.us-east-2.compute.internal.etlservicemgr > 103.195.202.100.21754: Flags [P.], seq 1228:1246, ack
0x0000: 4500 0046 3692 4000 4006 1c23 ac1f 09b6 E..F6..@..#....
0x0010: 67c3 c464 2329 54fa 6caf bd0b 5eb5 3d36 g..d#)T.1...^..6
0x0020: 8018 00eb e835 0000 0101 080a 7473 0e85 .....5.....ts..
0x0030: b20d 35e3 0000 0006 0000 0000 0007 626f ..5.....bo

```

All the data transfer completed, informed by client to master.

According to above observation, the data transfer between the client and slaves take place in serial order

Here as we see Client gives data to Slave 1, Slave 1 to Slave 3 and Slave 3 to Slave 2. The data is transferred alternately between the units in chain. Client first sends only some part of the block to Slave 1 and stops, Slave 1 then send some part to Slave 3 and stops. After this again Client sends to Slave 1 whereas Slave 3 send some part to Slave 2 simultaneously.

Hence when Client sends Slave 1, Slave 3 sends to Slave 2 while when Slave 1 sends to Slave 3, Client and Slave 2 rest.

Thus the alternate units of the chain work simultaneously and transfer data. This happens turn wise i.e for some time one unit(slave) receives data and for some time sends data.

Hence, Hadoop follows Serialism to transfer data although because of working simultaneously and alternately all the slaves receive complete block in nearly same time. Hence solve the velocity problem of Big Data.