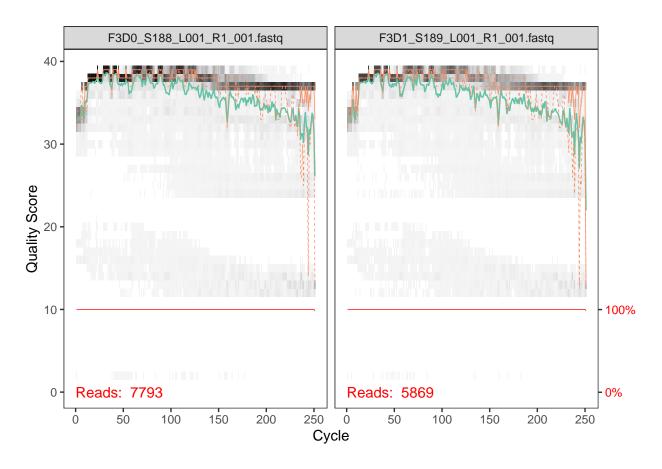
Dada2 tutorial

```
library("dada2")
## Loading required package: Rcpp
path <- "~/MiSeq_SOP" # CHANGE ME to the directory containing the fastq files after unzipping.
list.files(path)
##
    [1] "F3D0_S188_L001_R1_001.fastq"
                                         "F3D0_S188_L001_R2_001.fastq"
   [3] "F3D1_S189_L001_R1_001.fastq"
                                         "F3D1_S189_L001_R2_001.fastq"
   [5] "F3D141_S207_L001_R1_001.fastq" "F3D141_S207_L001_R2_001.fastq"
   [7] "F3D142_S208_L001_R1_001.fastq"
                                         "F3D142_S208_L001_R2_001.fastq"
  [9] "F3D143_S209_L001_R1_001.fastq" "F3D143_S209_L001_R2_001.fastq"
##
                                         "F3D144_S210_L001_R2_001.fastq"
## [11] "F3D144_S210_L001_R1_001.fastq"
## [13] "F3D145_S211_L001_R1_001.fastq" "F3D145_S211_L001_R2_001.fastq"
## [15] "F3D146_S212_L001_R1_001.fastq" "F3D146_S212_L001_R2_001.fastq"
## [17] "F3D147_S213_L001_R1_001.fastq" "F3D147_S213_L001_R2_001.fastq"
## [19] "F3D148_S214_L001_R1_001.fastq"
                                        "F3D148_S214_L001_R2_001.fastq"
## [21] "F3D149_S215_L001_R1_001.fastq" "F3D149_S215_L001_R2_001.fastq"
## [23] "F3D150_S216_L001_R1_001.fastq" "F3D150_S216_L001_R2_001.fastq"
## [25] "F3D2 S190 L001 R1 001.fastq"
                                         "F3D2 S190 L001 R2 001.fastq"
## [27] "F3D3_S191_L001_R1_001.fastq"
                                         "F3D3_S191_L001_R2_001.fastq"
## [29] "F3D5 S193 L001 R1 001.fastq"
                                         "F3D5 S193 L001 R2 001.fastq"
## [31] "F3D6_S194_L001_R1_001.fastq"
                                         "F3D6_S194_L001_R2_001.fastq"
## [33] "F3D7_S195_L001_R1_001.fastq"
                                         "F3D7 S195 L001 R2 001.fastq"
## [35] "F3D8_S196_L001_R1_001.fastq"
                                         "F3D8_S196_L001_R2_001.fastq"
## [37] "F3D9_S197_L001_R1_001.fastq"
                                         "F3D9_S197_L001_R2_001.fastq"
## [39] "HMP_MOCK.v35.fasta"
                                         "Mock_S280_L001_R1_001.fastq"
## [41] "Mock_S280_L001_R2_001.fastq"
                                         "mouse.dpw.metadata"
## [43] "mouse.time.design"
                                         "stability.batch"
## [45] "stability.files"
# Forward and reverse fastq filenames have format: SAMPLENAME_R1_001.fastq and SAMPLENAME_R2_001.fastq
fnFs <- sort(list.files(path, pattern="_R1_001.fastq", full.names = TRUE))</pre>
fnRs <- sort(list.files(path, pattern="_R2_001.fastq", full.names = TRUE))</pre>
# Extract sample names, assuming filenames have format: SAMPLENAME_XXX.fastq
sample.names <- sapply(strsplit(basename(fnFs), "_"), '[', 1)</pre>
plotQualityProfile(fnFs[1:2])
```



```
# Place filtered files in filtered/ subdirectory
filtFs <- file.path(path, "filtered", paste0(sample.names, "_F_filt.fastq.gz"))
filtRs <- file.path(path, "filtered", paste0(sample.names, "_R_filt.fastq.gz"))
names(filtFs) <- sample.names
names(filtRs) <- sample.names</pre>
```

Creating output directory: /home/rstudio/MiSeq_SOP/filtered

head(out)

```
##
                                 reads.in reads.out
## F3D0_S188_L001_R1_001.fastq
                                     7793
                                               7113
## F3D1_S189_L001_R1_001.fastq
                                     5869
                                               5299
## F3D141_S207_L001_R1_001.fastq
                                     5958
                                               5463
## F3D142_S208_L001_R1_001.fastq
                                     3183
                                               2914
## F3D143 S209 L001 R1 001.fastq
                                     3178
                                               2941
                                               4312
## F3D144_S210_L001_R1_001.fastq
                                     4827
```

Apprentissage des erreurs

DAD2 calcul un model d'erreurs a partir des données de séquençage. On applique cette méthode sur les reads fw puis reverse

```
errF <- learnErrors(filtFs, multithread=TRUE)</pre>
```

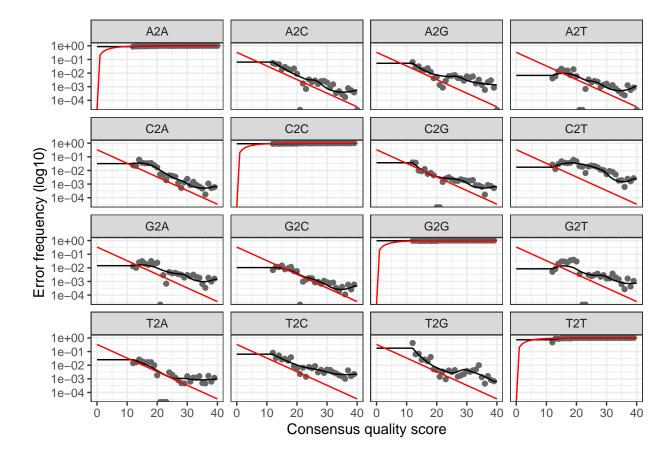
33514080 total bases in 139642 reads from 20 samples will be used for learning the error rates.

```
errR <- learnErrors(filtRs, multithread=TRUE)</pre>
```

22342720 total bases in 139642 reads from 20 samples will be used for learning the error rates.

```
plotErrors(errF, nominalQ=TRUE)
```

- ## Warning: Transformation introduced infinite values in continuous y-axis
- ## Warning: Transformation introduced infinite values in continuous y-axis



dadaFs <- dada(filtFs, err=errF, multithread=TRUE)</pre>

Sample 1 - 7113 reads in 1979 unique sequences.

```
## Sample 2 - 5299 reads in 1639 unique sequences.
## Sample 3 - 5463 reads in 1477 unique sequences.
## Sample 4 - 2914 reads in 904 unique sequences.
## Sample 5 - 2941 reads in 939 unique sequences.
## Sample 6 - 4312 reads in 1267 unique sequences.
## Sample 7 - 6741 reads in 1756 unique sequences.
## Sample 8 - 4560 reads in 1438 unique sequences.
## Sample 9 - 15637 reads in 3590 unique sequences.
## Sample 10 - 11413 reads in 2762 unique sequences.
## Sample 11 - 12017 reads in 3021 unique sequences.
## Sample 12 - 5032 reads in 1566 unique sequences.
## Sample 13 - 18075 reads in 3707 unique sequences.
## Sample 14 - 6250 reads in 1479 unique sequences.
## Sample 15 - 4052 reads in 1195 unique sequences.
## Sample 16 - 7369 reads in 1832 unique sequences.
\#\# Sample 17 - 4765 reads in 1183 unique sequences.
## Sample 18 - 4871 reads in 1382 unique sequences.
## Sample 19 - 6504 reads in 1709 unique sequences.
## Sample 20 - 4314 reads in 897 unique sequences.
dadaRs <- dada(filtRs, err=errR, multithread=TRUE)</pre>
## Sample 1 - 7113 reads in 1660 unique sequences.
## Sample 2 - 5299 reads in 1349 unique sequences.
## Sample 3 - 5463 reads in 1335 unique sequences.
## Sample 4 - 2914 reads in 853 unique sequences.
## Sample 5 - 2941 reads in 880 unique sequences.
## Sample 6 - 4312 reads in 1286 unique sequences.
## Sample 7 - 6741 reads in 1803 unique sequences.
## Sample 8 - 4560 reads in 1265 unique sequences.
## Sample 9 - 15637 reads in 3414 unique sequences.
## Sample 10 - 11413 reads in 2522 unique sequences.
## Sample 11 - 12017 reads in 2771 unique sequences.
## Sample 12 - 5032 reads in 1415 unique sequences.
## Sample 13 - 18075 reads in 3290 unique sequences.
## Sample 14 - 6250 reads in 1390 unique sequences.
## Sample 15 - 4052 reads in 1134 unique sequences.
## Sample 16 - 7369 reads in 1635 unique sequences.
\#\# Sample 17 - 4765 reads in 1084 unique sequences.
## Sample 18 - 4871 reads in 1161 unique sequences.
## Sample 19 - 6504 reads in 1502 unique sequences.
## Sample 20 - 4314 reads in 732 unique sequences.
dadaFs[[2]]
## dada-class: object describing DADA2 denoising results
## 113 sequence variants were inferred from 1639 input unique sequences.
## Key parameters: OMEGA_A = 1e-40, OMEGA_C = 1e-40, BAND_SIZE = 16
```

Aligner les R1 et les R2 en 1 contigs

```
mergers <- mergePairs(dadaFs, filtFs, dadaRs, filtRs, verbose=TRUE)
```

```
## 6551 paired-reads (in 106 unique pairings) successfully merged out of 6907 (in 199 pairings) input.
## 5025 paired-reads (in 100 unique pairings) successfully merged out of 5188 (in 156 pairings) input.
## 4973 paired-reads (in 80 unique pairings) successfully merged out of 5268 (in 166 pairings) input.
## 2595 paired-reads (in 52 unique pairings) successfully merged out of 2756 (in 109 pairings) input.
## 2553 paired-reads (in 60 unique pairings) successfully merged out of 2785 (in 119 pairings) input.
## 3622 paired-reads (in 53 unique pairings) successfully merged out of 4103 (in 157 pairings) input.
## 6079 paired-reads (in 81 unique pairings) successfully merged out of 6515 (in 198 pairings) input.
## 3961 paired-reads (in 90 unique pairings) successfully merged out of 4384 (in 188 pairings) input.
## 14231 paired-reads (in 143 unique pairings) successfully merged out of 15358 (in 351 pairings) input
## 10526 paired-reads (in 120 unique pairings) successfully merged out of 11166 (in 279 pairings) input
## 11156 paired-reads (in 137 unique pairings) successfully merged out of 11799 (in 298 pairings) input
## 4329 paired-reads (in 84 unique pairings) successfully merged out of 4788 (in 180 pairings) input.
## 17431 paired-reads (in 153 unique pairings) successfully merged out of 17812 (in 272 pairings) input
## 5850 paired-reads (in 81 unique pairings) successfully merged out of 6095 (in 159 pairings) input.
## 3716 paired-reads (in 86 unique pairings) successfully merged out of 3894 (in 147 pairings) input.
## 6865 paired-reads (in 99 unique pairings) successfully merged out of 7193 (in 187 pairings) input.
## 4430 paired-reads (in 67 unique pairings) successfully merged out of 4605 (in 127 pairings) input.
## 4574 paired-reads (in 100 unique pairings) successfully merged out of 4736 (in 172 pairings) input.
## 6094 paired-reads (in 109 unique pairings) successfully merged out of 6314 (in 172 pairings) input.
## 4269 paired-reads (in 20 unique pairings) successfully merged out of 4281 (in 28 pairings) input.
```

```
# Inspect the merger data.frame from the first sample
head(mergers[[1]])
##
## 1 TACGGAGGATGCGAGCGTTATCCGGATTTATTGGGTTTAAAGGGTGCGCAGGCGGAAGATCAAGTCAGCGGTAAAATTGAGAGGCTCAACCTCTTCGA
## 2 TACGGAGGATGCGAGCGTTATCCGGATTTATTGGGTTTAAAGGGTGCGTAGGCGGCCTGCCAAGTCAGCGGTAAAATTGCGGGGCTCAACCCCGTACA
## 3 TACGGAGGATGCGAGCGTTATCCGGATTTATTGGGTTTAAAGGGTGCGTAGGCGGGCTGTTAAGTCAGCGGTCAAATGTCGGGGCTCAACCCCGGCCT
## 4 TACGGAGGATGCGAGCGTTATCCGGATTTATTGGGTTTAAAGGGTGCGTAGGCGGGCTTTTAAGTCAGCGGTAAAAATTCGGGGCTCAACCCCGTCCG
## 5 TACGGAGGATGCGAGCGTTATCCGGATTTATTGGGTTTAAAGGGTGCGCAGGCGGACTCTCAAGTCAGCGGTCAAATCGCGGGGCTCAACCCCGTTCC
## 6 TACGGAGGATGCGAGCGTTATCCGGATTTATTGGGTTTAAAGGGGTGCGTAGGCGGATGCCAAGTCAGCGGTAAAAAAAGCGGTGCTCAACGCCGTCGA
     abundance forward reverse nmatch nmismatch nindel prefer accept
## 1
           579
                                   148
                     1
                              1
           470
                              2
## 2
                     2
                                   148
                                               0
                                                      0
                                                              2
                                                                  TRUE
## 3
           449
                             4
                                   148
                                               0
                                                      0
                                                                  TRUE
                     3
                                                              1
                             3
                                                      0
## 4
           430
                     4
                                   148
                                               0
                                                                  TRUE
## 5
           345
                              6
                                   148
                                               0
                                                      0
                     5
                                                                  TRUE
## 6
           282
                                   148
                                                                  TRUE
seqtab <- makeSequenceTable(mergers)</pre>
dim(seqtab)
## [1] 20 293
# Inspect distribution of sequence lengths
table(nchar(getSequences(seqtab)))
##
## 251 252 253 254 255
   1 88 196
seqtab.nochim <- removeBimeraDenovo(seqtab, method="consensus", multithread=TRUE, verbose=TRUE)</pre>
## Identified 61 bimeras out of 293 input sequences.
dim(seqtab.nochim)
## [1] 20 232
1-sum(seqtab.nochim)/sum(seqtab)
## [1] 0.03573702
il y a 3,5% de chimère de sequences chimériques dans notre jeu de donnée
getN <- function(x) sum(getUniques(x))</pre>
track <- cbind(out, sapply(dadaFs, getN), sapply(dadaRs, getN), sapply(mergers, getN), rowSums(seqtab.n
# If processing a single sample, remove the sapply calls: e.g. replace sapply(dadaFs, getN) with getN(d
colnames(track) <- c("input", "filtered", "denoisedF", "denoisedR", "merged", "nonchim")</pre>
rownames(track) <- sample.names</pre>
head(track)
```

```
input filtered denoisedF denoisedR merged nonchim
## F3D0
            7793
                      7113
                                 6996
                                            6978
                                                    6551
                                                             6539
## F3D1
            5869
                      5299
                                 5227
                                            5239
                                                    5025
                                                             5014
## F3D141
            5958
                      5463
                                 5339
                                            5351
                                                    4973
                                                             4850
## F3D142
            3183
                      2914
                                 2799
                                            2833
                                                    2595
                                                             2521
## F3D143
                      2941
                                 2822
                                            2868
                                                    2553
                                                             2519
            3178
## F3D144
            4827
                      4312
                                 4146
                                            4224
                                                    3622
                                                             3483
```

wget https://zenodo.org/record/3986799/files/silva_nr99_v138_train_set.fa.gz

```
## --2020-11-24 21:14:15-- https://zenodo.org/record/3986799/files/silva_nr99_v138_train_set.fa.gz
## Resolving zenodo.org (zenodo.org)... 137.138.76.77
## Connecting to zenodo.org (zenodo.org)|137.138.76.77|:443... connected.
## HTTP request sent, awaiting response... 200 OK
## Length: 137973851 (132M) [application/octet-stream]
Saving to: 'silva_nr99_v138_train_set.fa.gz.1'
##
##
  OK ..... .... .....
                        0% 7.43M 18s
##
  50K ......
                        0% 13.6M 14s
##
  0% 6.63M 16s
##
  0% 12.3M 14s
##
  200K ......
                        0% 10.3M 14s
                        0% 90.1M 12s
##
  250K ......
##
  300K ......
                        0% 96.9M 10s
##
  0% 18.7M 10s
##
  0% 90.0M 9s
##
  450K ......
                        0% 27.0M 9s
##
  0% 93.2M 8s
##
                        0%
  104M 7s
##
  0%
                         108M 7s
##
  650K ......
                        0% 31.4M 7s
  ##
                        0%
                         102M 6s
  ##
                        0% 45.6M 6s
##
  0% 48.1M 6s
##
  0% 96.7M 6s
##
  900K ......
                        0% 87.9M 5s
##
  0% 56.4M 5s
##
 0% 85.6M 5s
 0% 34.8M 5s
##
##
 0% 58.0M 5s
##
 0%
                         105M 5s
##
 1200K .....
                        0% 37.7M 5s
 1250K ......
                        0%
##
                         101M 5s
##
 1% 59.7M 5s
##
 1350K ......
                        1% 74.6M 4s
##
 1400K .....
                        1% 42.1M 4s
##
 1450K ......
                        1% 55.2M 4s
##
 1% 45.6M 4s
 ##
                        1%
                         130M 4s
##
 1600K ......
                        1% 61.6M 4s
##
 1%
                         124M 4s
##
 1% 49.6M 4s
##
 110M 4s
```

1% 87.9M 4s

1800K

##

##	1850K	1% 111M 4s
##	1900K	1% 65.1M 4s
##	1950K	1% 46.7M 4s
##	2000K	1% 92.9M 4s
##	2050K	1% 49.5M 4s
##	2100K	1% 114M 4s
##	2150K	1% 121M 3s
##	2200K	1% 79.3M 3s
##	2250K	1% 88.9M 3s
##	2300K	1% 73.5M 3s
##	2350K	1% 102M 3s
##	2400K	1% 85.4M 3s
##	2450K	1% 128M 3s
##	2500K	1% 39.7M 3s
##	2550K	1% 113M 3s
##	2600K	1% 115M 3s
##	2650K	2% 119M 3s
##	2700K	2% 37.4M 3s
##	2750K	2% 128M 3s
##	2800K	2% 57.9M 3s
##	2850K	2% 98.0M 3s
##	2900K	2% 70.5M 3s
##	2950K	2% 53.1M 3s
##	3000K	2% 98.5M 3s
##	3050K	2% 74.4M 3s
##	3100K	2% 88.3M 3s
##	3150K	2% 135M 3s
##	3200K	2% 87.5M 3s
##	3250K	2% 90.8M 3s
##	3300K	2% 44.5M 3s
##	3350K	2% 64.6M 3s
##	3400K	2% 115M 3s
##	3450K	2% 144M 3s
##	3500K	2% 121M 3s
##	3550K	2% 36.0M 3s
##	3600K	2% 20.8M 3s
##	3650K	2% 83.1M 3s
##	3700K	2% 30.2M 3s
##	3750K	2% 43.0M 3s
##	3800K	2% 38.8M 3s
##	3850K	2% 57.6M 3s
##	3900K	2% 65.0M 3s
##	3950K	2% 119M 3s
##	4000K	3% 105M 3s
##	4050K	3% 84.6M 3s
##	4100K	3% 61.5M 3s
##	4150K	3% 71.7M 3s
##	4200K	3% 60.0M 3s
##	4250K	3% 53.3M 3s
##	4300K	3% 36.4M 3s
##	4350K	3% 93.1M 3s
##	4400K	3% 43.6M 3s
##	4450K	3% 82.4M 3s
##	4500K	3% 91.3M 3s

		-04 - 4 - 4
##	4550K	3% 94.1M 3s
##	4600K	3% 88.4M 3s
##	4650K	3% 102M 3s
##	4700K	3% 20.5M 3s
##	4750K	3% 99.5M 3s
##	4800K	3% 108M 3s
##	4850K	3% 70.3M 3s
##	4900K	3% 106M 3s
##	4950K	3% 107M 3s
##	5000K	3% 7.94M 3s
##	5050K	3% 33.4M 3s
##	5100K	3% 34.7M 3s
##	5150K	3% 71.6M 3s
##	5200K	3% 34.5M 3s
##	5250K	3% 60.6M 3s
##	5300K	3% 70.5M 3s
##	5350K	4% 62.9M 3s
##	5400K	4% 56.9M 3s
##	5450K	4% 67.0M 3s
##	5500K	4% 87.7M 3s
##	5550K	4% 86.1M 3s
##	5600K	4% 92.0M 3s
##	5650K	4% 87.3M 3s
##	5700K	4% 18.6M 3s
##	5750K	4% 94.6M 3s
##	5800K	4% 79.1M 3s
##	5850K	4% 95.2M 3s
##	5900K	4% 62.2M 3s
##	5950K	4% 97.1M 3s
##	6000K	4% 57.5M 3s
##	6050K	4% 102M 3s
##	6100K	4% 69.0M 3s
##	6150K	4% 110M 3s
##	6200K	4% 73.6M 3s
##	6250K	4% 57.4M 3s
##	6300K	4% 46.8M 3s
##	6350K	4% 118M 3s
##	6400K	4% 63.5M 3s
##	6450K	4% 123M 3s
##	6500K	4% 119M 3s
##	6550K	4% 109M 3s
##	6600K	4% 15.7M 3s
##	6650K	4% 67.6M 3s
##	6700K	5% 40.4M 3s
##	6750K	5% 118M 3s
##	6800K	5% 91.2M 3s
##	6850K	5% 88.3M 3s
##	6900K	5% 108M 3s
##	6950K	5% 127M 2s
##	7000K	5% 103M 2s
##	7050K	5% 13.1M 3s
##	7100K	5% 55.1M 3s
##	7150K	5% 109M 3s
##	7200K	5% 105M 3s

		-04
##	7250K	5% 85.1M 3s
##	7300K	5% 64.6M 2s
##	7350K	5% 127M 2s
##	7400K	5% 62.9M 2s
##	7450K	5% 108M 2s
##	7500K	5% 89.3M 2s
##	7550K	5% 46.9M 2s
##	7600K	5% 35.3M 2s
##	7650K	5% 109M 2s
##	7700K	5% 48.1M 2s
##	7750K	5% 133M 2s
##	7800K	5% 59.8M 2s
##	7850K	5% 113M 2s
##	7900K	5% 107M 2s
##	7950K	5% 78.2M 2s
##	8000K	5% 75.2M 2s
##	8050K	6% 73.9M 2s
##	8100K	6% 45.2M 2s
##	8150K	6% 49.3M 2s
##	8200K	6% 35.4M 2s
##	8250K	6% 101M 2s
##	8300K	6% 98.3M 2s
##	8350K	6% 115M 2s
##	8400K	6% 31.3M 2s
##	8450K	6% 92.1M 2s
##	8500K	6% 95.8M 2s
##	8550K	6% 106M 2s
##	8600K	6% 97.3M 2s
##	8650K	6% 77.7M 2s
##	8700K	6% 50.0M 2s
##	8750K	6% 47.6M 2s
##	8800K	6% 49.3M 2s
##	8850K	6% 24.4M 2s
	8900K	
##		
##	8950K 9000K	6% 68.9M 2s
##	9050K	6% 110M 2s
##		6% 137M 2s
##	9100K	6% 62.2M 2s
##	9150K	6% 61.2M 2s
##	9200K	6% 91.8M 2s
##	9250K	6% 89.5M 2s
##	9300K	6% 68.1M 2s
##	9350K	6% 65.0M 2s
##	9400K	7% 52.2M 2s
##	9450K	7% 114M 2s
##	9500K	7% 112M 2s
##	9550K	7% 49.4M 2s
##	9600K	7% 104M 2s
##	9650K	7% 83.6M 2s
##	9700K	7% 49.7M 2s
##	9750K	7% 65.1M 2s
##	9800K	7% 86.1M 2s
##	9850K	7% 93.0M 2s
##	9900K	7% 134M 2s

шш	9950K	7% 112M 2s
##		
##	10000K	
##	10050K	. 70
##	10100K	
##	10150K	
##	10200K	. 70
##	10250K	
##	10300K	7% 76.0M 2s
##	10350K	
##	10400K	7% 78.5M 2s
##	10450K	7% 56.2M 2s
##	10500K	7% 34.3M 2s
##	10550K 10550K	7% 65.6M 2s
##	10600K	7% 113M 2s
##	10650K	7% 105M 2s
##	10700K	7% 58.0M 2s
##	10750K	8% 132M 2s
##	10800K	8% 122M 2s
##	10850K	8% 53.1M 2s
##	10900K	8% 113M 2s
##	10950K	8% 134M 2s
##	11000K	8% 54.5M 2s
##	11050K	8% 101M 2s
##	11100K	8% 147M 2s
##	11150K	8% 74.1M 2s
##	11200K	8% 99.2M 2s
##	11250K	8% 163M 2s
##	11300K	8% 98.8M 2s
##	11350K	8% 60.8M 2s
##	11400K	8% 122M 2s
##	11450K	8% 52.9M 2s
##	11500K	8% 120M 2s
##	11550K	8% 138M 2s
##	11600K	8% 64.4M 2s
##	11650K	8% 125M 2s
##	11700K	8% 149M 2s
##	11750K	8% 52.2M 2s
##	11800K	8% 159M 2s
##	11850K	8% 102M 2s
##	11900K	8% 59.6M 2s
##	11950K	
##	12000K	8% 47.4M 2s
##	12050K	8% 167M 2s
##	12100K	9% 69.9M 2s
##	12150K	9% 50.8M 2s
##	12200K	9% 100M 2s
##	12250K	9% 116M 2s
##	12300K	9% 77.3M 2s
##	12350K	9% 52.6M 2s
##	12400K	9% 64.1M 2s
##	12450K	9% 70.9M 2s
##	12500K	9% 93.2M 2s
##	12550K	
##	12600K	

шш	100501				0%	00 CM	0-
##						92.6M	
##			• • • • • • • • • • • • • • • • • • • •			114M	
##			• • • • • • • • • • • • • • • • • • • •			44.8M	
##			• • • • • • • • • • • • • • • • • • • •			71.OM	
##					- 70	54.9M	
##						76.0M	
##			• • • • • • • • • • • • • • • • • • • •			75.5M	
##						131M	
##						57.6M	
##		 	• • • • • • • • • • • • • • • • • • • •	 	9%		
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##		 		 	9%		
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##			• • • • • • • • • •			93.6M	
##			• • • • • • • • • •			86.3M	
##						125M	
##							2s
##							2s
##						166M	2s
##						141M	2s
##	13650K	 		 	10%	144M	2s
##	13700K	 		 	10%	156M	2s
##						166M	2s
##	13800K	 		 	10%	176M	2s
##	13850K	 		 	10%	140M	2s
##	13900K	 		 	10%	9.56M	2s
##	13950K	 		 	10%	117M	2s
##	14000K	 		 	10%	134M	2s
##	14050K	 		 	10%	117M	2s
##	14100K	 		 	10%	129M	2s
##	14150K	 		 	10%	170M	2s
##	14200K	 		 	10%	150M	2s
##	14250K	 		 	10%	172M	2s
##	14300K	 		 	10%	34.4M	2s
##							
##	14400K	 		 	10%	39.7M	2s
##	14450K	 		 	10%	65.9M	2s
##	14500K	 		 	10%	49.2M	2s
##							
##	14600K	 		 	10%	44.8M	2s
##	14650K	 		 	10%	54.0M	2s
##	14700K	 		 	10%	74.1M	2s
##	14750K	 		 	10%	95.2M	2s
##	14800K	 		 	11%	38.9M	2s
##	14850K	 		 	11%	104M	2s
##							
##							
##							
##	15050K	 		 	11%	69.1M	2s
##	15100K	 		 	11%	103M	2s
##	15150K	 		 	11%	100M	2s
##	15200K	 		 	11%	69.8M	2s
##							
##	15300K	 		 	11%	35.2M	2s

##	15350K			
##	15400K			• •
##	15450K			• •
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##	15550K			• •
##	15600K			• •
##	15650K			• •
##	15700K	 	 	11% 54.1M 2s
##	15750K			
##	15800K			
##	15850K			
##	15900K			• • •
##	15950K	 	 	11% 48.4M 2s
##	16000K	 	 	11% 49.1M 2s
##	16050K	 	 	11% 82.6M 2s
##	16100K	 	 	11% 71.1M 2s
##	16150K	 	 	12% 62.5M 2s
##	16200K	 	 	12% 68.3M 2s
##	16250K	 	 	12% 44.1M 2s
##	16300K	 	 	12% 64.8M 2s
##	16350K	 	 	12% 46.6M 2s
##	16400K	 	 	12% 110M 2s
##	16450K	 	 	12% 60.2M 2s
##	16500K	 	 	12% 64.2M 2s
##	16550K	 	 	12% 52.6M 2s
##	16600K	 	 	12% 43.3M 2s
##	16650K	 	 	12% 101M 2s
##	16700K	 	 	12% 60.4M 2s
##	16750K	 	 	12% 93.6M 2s
##	16800K	 	 	12% 88.0M 2s
##	16850K	 	 	12% 88.2M 2s
##	16900K	 	 	12% 85.7M 2s
##	16950K	 	 	12% 108M 2s
##	17000K	 	 	12% 77.3M 2s
##	17050K	 	 	12% 103M 2s
##	17100K	 	 	12% 90.3M 2s
##	17150K	 	 	12% 97.5M 2s
##	17200K	 	 	12% 91.2M 2s
##	17250K	 	 	12% 116M 2s
##	17300K	 	 	12% 26.0M 2s
##	17350K	 	 	12% 54.8M 2s
##	17400K	 	 	12% 34.7M 2s
##	17450K			
##	17500K	 	 	13% 64.6M 2s
##	17550K			
##	17600K	 	 	13% 63.6M 2s
##	17650K			• •
##	17700K			
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##	17800K			• •
##	17850K			• •
##	17900K			
##	17950K			
##	18000K			

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##	18050K					
##	18100K					
##	18150K					
##	18200K					
##	18250K					
##	18300K					
##	18350K					
##	18400K					
##	18450K					
##	18500K	 	 	13%	63.4M	2s
##	18550K	 	 	13%	70.OM	2s
##	18600K	 	 	13%	68.8M	2s
##	18650K	 	 	13%	84.2M	2s
##	18700K					
##	18750K	 	 	13%	73.7M	2s
##	18800K	 	 	13%	68.3M	2s
##	18850K	 	 	14%	58.8M	2s
##	18900K	 	 	14%	77.7M	2s
##	18950K	 	 	14%	65.2M	2s
##	19000K	 	 	14%	66.7M	2s
##	19050K	 	 	14%	76.3M	2s
##	19100K	 	 	14%	75.3M	2s
##	19150K	 	 	14%	57.OM	2s
##	19200K	 	 	14%	66.8M	2s
##	19250K	 	 	14%	116M	2s
##	19300K	 	 	14%	94.2M	2s
##	19350K	 	 	14%	107M	2s
##	19400K	 	 	14%	110M	2s
##	19450K	 	 	14%	90.OM	2s
##	19500K	 	 	14%	102M	2s
##	19550K	 	 	14%	124M	2s
##	19600K	 	 	14%	4.29M	2s
##	19650K	 	 	14%	45.6M	2s
##	19700K	 	 	14%	73.8M	2s
##	19750K	 	 	14%	39.9M	2s
##	19800K	 	 	14%	56.4M	2s
##	19850K	 	 	14%	80.7M	2s
##	19900K	 	 	14%	67.4M	2s
##	19950K	 	 	14%	65.1M	2s
##	20000K	 	 	14%	88.7M	2s
##	20050K	 	 	14%	82.1M	2s
##	20100K					
##	20150K	 	 	14%	86.8M	2s
##	20200K					
##	20250K					
##	20300K					
##	20350K					
##	20400K					
##	20450K					
##	20500K					
##	20550K					
##	20600K					
##	20650K					
##	20700K					
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	20750K		4 = 0/ 0	NE 0M	^
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##	20800K				
##	20850K				
##	20900K				
##	20950K				
##	21000K				
##	21050K				
##	21100K				
##	21150K				
##	21200K	 	 15% 7	0.8M	2s
##	21250K				
##	21300K				
##	21350K				
##	21400K	 	 15% 5	55.8M	2s
##	21450K	 	 15% 6	32.4M	2s
##	21500K	 	 15% 6	32.6M	2s
##	21550K	 	 16%	103M	2s
##	21600K	 	 16% 1	2.3M	2s
##	21650K	 	 16% 6	35.2M	2s
##	21700K	 	 16% 7	9.7M	2s
##	21750K	 	 16% 6	35.4M	2s
##	21800K	 	 16% 6	31.5M	2s
##	21850K	 	 16% 6	9.5M	2s
##	21900K	 	 16% 5	5.7M	2s
##	21950K	 	 16% 5	MO.0	2s
##	22000K	 	 16% 9	95.1M	2s
##	22050K	 	 16% 8	88.9M	2s
##	22100K	 	 16% 8	34.3M	2s
##	22150K	 	 16% 9	99.3M	2s
##	22200K	 	 16% 6	9.2M	2s
##	22250K	 	 16%	101M	2s
##	22300K	 	 16% 7	2.3M	2s
##	22350K	 	 16% 5	8.8M	2s
##	22400K	 	 16% 9	95.9M	2s
##	22450K	 	 16% 9	8.6M	2s
##	22500K	 	 16% 9	7.7M	2s
##	22550K	 	 16%	106M	2s
##	22600K	 	 16% 3	3.9M	2s
##	22650K	 	 16%	117M	2s
##	22700K	 	 16% 9	92.1M	2s
##	22750K	 	 16% 4	18.OM	2s
##	22800K	 	 16% 9	94.5M	2s
##	22850K				
##	22900K				
##	22950K				
##	23000K				
##	23050K			108M	
##	23100K			118M	
##	23150K			101M	
##	23200K			108M	
##	23250K			119M	
##	23300K			102M	
##	23350K				
##	23400K				
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##	23450K			• •
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##	23650K			• •
##	23700K		 	17% 71.1M 2s
##	23750K			• •
##	23800K			• •
##	23850K		 	17% 93.2M 2s
##	23900K		 	17% 104M 2s
##	23950K		 	17% 122M 2s
##	24000K		 	17% 114M 2s
##	24050K		 	17% 66.7M 2s
##	24100K		 	17% 58.1M 2s
##	24150K		 	17% 23.7M 2s
##	24200K		 	17% 74.8M 2s
##	24250K		 	18% 120M 2s
##	24300K		 	18% 111M 2s
##	24350K		 	18% 30.4M 2s
##	24400K		 	18% 64.7M 2s
##	24450K		 	18% 102M 2s
##	24500K		 	18% 84.6M 2s
##	24550K		 	18% 39.2M 2s
##	24600K			• •
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##	26000K			
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##	26100K	• • • • • • • • • • • • • • • • • • • •	 •	19% 39.5M 2s

	26150K		4.00/	07 FW	0
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##	26200K				
##	26250K				
##	26300K				
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##	26400K				
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##	26600K				
##	26650K				
##	26700K				
##	26750K				
##	26800K				
##	26850K				
##	26900K				
##	26950K				
##	27000K				
##	27050K				
##	27100K				
##	27150K				
##	27200K				
##	27250K				
##	27300K				
##	27350K				
##	27400K				
##	27450K				
##	27500K				
##	27550K	 	 20%	85.9M	2s
##	27600K	 	 20%	96.0M	2s
##	27650K	 	 20%	59.0M	2s
##	27700K				
##	27750K				
##	27800K				
##	27850K				
##	27900K	 	 20%	75.1M	2s
##	27950K				
##	28000K	 	 20%	73.6M	2s
##	28050K	 	 20%	99.2M	2s
##	28100K	 	 20%	40.6M	2s
##	28150K	 	 20%	41.6M	2s
##	28200K	 	 20%	73.3M	2s
##	28250K				
##	28300K	 	 21%	39.2M	2s
##	28350K				
##	28400K				
##	28450K	 	 21%	89.4M	2s
##	28500K				
##	28550K				
##	28600K	 	 21%	77.7M	2s
##	28650K				
##	28700K	 	 21%	94.7M	2s
##	28750K				
##	28800K	 	 21%	72.9M	2s

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##							
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##							
##	29300K	 		 	21%	88.4M	2s
##	29350K	 		 	21%	110M	2s
##							
##	29450K	 		 	21%	93.7M	2s
##	29500K	 		 	21%	82.6M	2s
##	29550K	 		 	21%	72.7M	2s
##	29600K	 		 	22%	37.0M	2s
##	29650K	 		 	22%	101M	2s
##	29700K	 		 	22%	107M	2s
##	29750K	 		 	22%	105M	2s
##	29800K	 		 	22%	108M	2s
##	29850K	 		 	22%	139M	2s
##	29900К	 		 	22%	95.7M	2s
##	29950K	 		 	22%	121M	2s
##	30000К	 		 	22%	69.3M	2s
##	30050K	 		 	22%	25.9M	2s
##							
##							
##	30200K	 		 	22%	66.1M	2s
##	30250K	 		 	22%	107M	2s
##	30300K	 		 	22%	95.4M	2s
##	30350K	 		 	22%	88.5M	2s
##	30400K	 		 	22%	100M	2s
##	30450K	 		 	22%	15.8M	2s
##	30500K	 		 	22%	93.1M	2s
##	30550K	 		 	22%	136M	2s
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##	21300V	 		 	∠3/₀	TOZII	25

	31550K			00%	4051	0
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##	31600K					
##	31650K					
##	31700K					
##	31750K					
##	31800K					
##	31850K					
##	31900K					
##	31950K					
##	32000K	 	 	23%	96.3M	2s
##	32050K	 	 	23%	5.38M	2s
##	32100K					
##	32150K	 	 	23%	25.5M	2s
##	32200K	 	 	23%	107M	2s
##	32250K	 	 	23%	48.9M	2s
##	32300K	 	 	24%	80.0M	2s
##	32350K	 	 	24%	118M	2s
##	32400K	 	 	24%	108M	2s
##	32450K	 	 	24%	132M	2s
##	32500K	 	 	24%	7.06M	2s
##	32550K	 	 	24%	15.5M	2s
##	32600K	 	 	24%	83.1M	2s
##	32650K	 	 	24%	28.5M	2s
##	32700K	 	 	24%	58.6M	2s
##	32750K	 	 	24%	62.8M	2s
##	32800K	 	 	24%	48.5M	2s
##	32850K	 	 	24%	82.5M	2s
##	32900K	 	 	24%	70.2M	2s
##	32950K	 	 	24%	76.7M	2s
##	33000K	 	 	24%	51.2M	2s
##	33050K	 	 	24%	93.3M	2s
##	33100K	 	 	24%	73.4M	2s
##	33150K	 	 	24%	114M	2s
##	33200K	 	 	24%	42.4M	2s
##	33250K	 	 	24%	45.7M	2s
##	33300K	 	 	24%	30.4M	2s
##	33350K	 	 	24%	86.4M	2s
##	33400K	 	 	24%	59.7M	2s
##	33450K	 	 	24%	79.6M	2s
##	33500K	 	 	24%	83.9M	2s
##	33550K	 	 	24%	96.5M	2s
##	33600K	 	 	24%	5.80M	2s
##	33650K	 	 	25%	81.5M	2s
##	33700K	 	 	25%	71.7M	2s
##	33750K	 	 	25%	43.3M	2s
##	33800K	 	 	25%	79.3M	2s
##	33850K					
##	33900K	 	 	25%	60.6M	2s
##	33950K	 	 	25%	93.7M	2s
##	34000K					
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##	36950K					
##	37000K					
##	37050K					
##	37100K	 	 	27%	71.4M	2s
##	37150K					
##	37200K	 	 	27%	60.9M	2s
##	37250K	 	 	27%	94.OM	2s
##	37300K	 	 	27%	56.5M	2s
##	37350K	 	 	27%	100M	2s
##	37400K	 	 	27%	95.5M	2s
##	37450K	 	 	27%	73.9M	2s
##	37500K	 	 	27%	90.1M	2s
##	37550K	 	 	27%	72.5M	2s
##	37600K	 	 	27%	76.2M	2s
##	37650K					
##	37700K	 	 	28%	98.9M	2s
##	37750K	 	 	28%	63.2M	2s
##	37800K	 	 	28%	59.5M	2s
##	37850K	 	 	28%	43.7M	2s
##	37900K	 	 	28%	43.6M	2s
##	37950K	 	 	28%	64.5M	2s
##	38000K	 	 	28%	72.5M	2s
##	38050K	 	 	28%	58.2M	2s
##	38100K	 	 	28%	76.1M	2s
##	38150K	 	 	28%	85.7M	2s
##	38200K	 	 	28%	47.6M	2s
##	38250K	 	 	28%	70.1M	2s
##	38300K	 	 	28%	69.OM	2s
##	38350K	 	 	28%	51.6M	2s
##	38400K	 	 	28%	50.2M	2s
##	38450K	 	 	28%	70.3M	2s
##	38500K	 	 	28%	72.7M	2s
##	38550K	 	 	28%	83.3M	2s
##	38600K	 	 	28%	83.2M	2s
##	38650K	 	 	28%	86.8M	2s
##	38700K	 	 	28%	76.2M	2s
##	38750K	 	 	28%	112M	2s
##	38800K	 	 	28%	90.3M	2s
##	38850K	 	 	28%	33.2M	2s
##	38900K	 	 	28%	48.8M	2s
##	38950K	 	 	28%	61.9M	2s
##	39000K	 	 	28%	87.4M	2s
##	39050K	 	 	29%	112M	2s
##	39100K	 	 	29%	35.6M	2s
##	39150K	 	 	29%	94.2M	2s
##	39200K	 	 	29%	107M	2s
##	39250K	 	 	29%	90.7M	2s
##	39300K	 	 	29%	80.2M	2s
##	39350K	 	 	29%	52.5M	2s
##	39400K	 	 	29%	70.3M	2s
##	39450K	 	 	29%	55.5M	2s
##	39500K	 	 	29%	59.8M	2s
##	39550K	 	 	29%	22.2M	2s
##	39600K	 	 	29%	55.1M	2s

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##	39900K	 		 	29%	71.4M	2s
##	39950K	 		 	29%	81.7M	2s
##	40000K	 		 	29%	85.3M	2s
##	40050K	 		 	29%	54.3M	2s
##	40100K	 		 	29%	36.3M	2s
##	40150K	 		 	29%	81.7M	2s
##	40200K	 		 	29%	62.2M	2s
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##	41650K	 		 	30%	101M	2s
##	41700K	 		 	30%	38.9M	2s
##	41750K	 		 	31%	93.0M	2s
##	41800K	 		 	31%	70.3M	2s
##							
##	41900K	 		 	31%	75.3M	2s
##	41950K	 		 	31%	64.4M	2s
##	42000K	 		 	31%	73.4M	2s
##	42050K	 		 	31%	93.4M	2s
##	42100K	 		 	31%	99.8M	2s
##	42150K	 		 	31%	79.0M	2s
##	42200K	 		 	31%	89.0M	2s
##	42250K	 		 	31%	86.6M	2s
##	42300K	 		 	31%	58.0M	2s

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##	42600K						31%	$80.4\mathtt{M}$	2s
##	42650K						31%	104M	2s
##	42700K						31%	62.8M	2s
##	42750K						31%	64.6M	2s
##	42800K						31%	87.3M	2s
##	42850K						31%	92.2M	2s
##	42900K						31%	77.4M	2s
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##	45000K	• • • • • • • • • • • • • • • • • • • •	• • • • • • • • • • • • • • • • • • • •	• • • • • • • • • • • • • • • • • • • •	• • • • • • • • • • • • • • • • • • • •	• • • • • • • • • • • • • • • • • • • •	33%	103M	2s

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##	45300K	 		 	33%	99.0M	2s
##	45350K	 		 	33%	102M	2s
##	45400K	 		 	33%	108M	2s
##	45450K	 		 	33%	113M	2s
##	45500K	 		 	33%	78.7M	2s
##	45550K	 		 	33%	123M	2s
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##							1s
##	46850K	 		 	34%	117M	1s
##	46900K	 		 	34%	120M	1s
##	46950K	 		 	34%	28.4M	1s
##	47000K	 		 	34%	37.2M	1s
##	47050K	 		 	34%	32.2M	1s
##	47100K	 		 	34%	74.2M	1s
##	47150K	 		 	35%	98.0M	1s
##	47200K	 		 	35%	79.6M	1s
##	47250K	 		 	35%	95.OM	1s
##	47300K	 		 	35%	101M	1s
##	47350K	 		 	35%	85.2M	1s
##	47400K	 		 	35%	100M	1s
##	47450K	 		 	35%	147M	1s
##	47500K	 		 	35%	137M	1s
##	47550K	 		 	35%	153M	1s
##	47600K	 		 	35%	24.6M	1s
##	47650K	 		 	35%	106M	1s
##	47700K	 		 	35%	87.0M	1s

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##								103M	1s
##									1s
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##	48000K						35%	49.7M	1s
##	48050K						35%	149M	1s
##	48100K						35%	98.2M	1s
##	48150K						35%	95.9M	1s
##	48200K						35%	83.0M	1s
##	48250K						35%	96.5M	1s
##	48300K						35%	94.8M	1s
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##				• • • • • • • • • • • • • • • • • • • •				143M	
##	49550K	• • • • • • • • • • • • • • • • • • • •	• • • • • • • • • • • • • • • • • • • •		• • • • • • • • • • • • • • • • • • • •	• • • • • • • • • • • • • • • • • • • •	36%	126M	1s
##				• • • • • • • • • • •				108M	1s
##							70	134M	1s
##								114M	1s
##	49750K						36%	164M	1s
##	49800K						36%	114M	1s
##	49850K						37%	110M	1s
##	49900K						37%	125M	1s
##	49950K						37%	144M	1s
##								123M	1s
##								156M	
##									
##	50150K						37%	91.4M	1s
##	50200K						37%	90.8M	1s
##	50250K						37%	127M	1s
##	50300K						37%	116M	1s
##									
##	50400K						37%	105M	1s

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##	50700K .						37%	97.7M	1s
##	50750K .						37%	40.2M	1s
##	50800K .						37%	100M	1s
##	50850K .						37%	82.6M	1s
##	50900K .						37%	79.7M	1s
##	50950K .						37%	66.9M	1s
##	51000K .						37%	120M	1s
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##				• • • • • • • • • • • • • • • • • • • •				113M	
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##	53100K .	• • • • • • • • • •	• • • • • • • • • •	• • • • • • • • • • • • • • • • • • • •	• • • • • • • • • • • • • • • • • • • •	• • • • • • • • • • • • • • • • • • • •	39%	146M	ıs

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##	53500K .	 		 	39%	21.9M	1s
##	53550K .	 		 	39%	60.3M	1s
##	53600K .	 		 	39%	141M	1s
##	53650K .	 		 	39%	27.2M	1s
##	53700K .	 		 	39%	144M	1s
##	53750K .	 		 	39%	164M	1s
##	53800K .	 		 	39%	145M	1s
##	53850K .	 		 	40%	140M	1s
##	53900K .	 		 	40%	137M	1s
##	53950K .	 		 	40%	170M	1s
##	54000K .	 		 	40%	146M	1s
##	54050K .	 		 	40%	15.0M	1s
##	54100K .	 		 	40%	113M	1s
##	54150K .	 		 	40%	146M	1s
##	54200K .	 		 	40%	101M	1s
##	54250K .	 		 	40%	147M	1s
##	54300K .	 		 	40%	93.4M	1s
##	54350K .	 		 	40%	113M	1s
##	54400K .	 		 	40%	110M	1s
##	54450K .	 		 	40%	109M	1s
##	54500K .	 		 	40%	108M	1s
##	54550K .	 		 	40%	70.3M	1s
##	54600K .	 		 	40%	62.3M	1s
##	54650K .	 		 	40%	72.6M	1s
##	54700K .	 		 	40%	20.5M	1s
##	54750K .	 		 	40%	120M	1s
##	54800K .	 		 	40%	41.5M	1s
##	54850K .	 		 	40%	116M	1s
##	54900K .	 		 	40%	123M	1s
##	54950K .	 		 	40%	146M	1s
##	55000K .	 		 	40%	113M	1s
##	55050K .	 		 	40%	104M	1s
##	55100K .	 		 	40%	111M	1s
##	55150K .	 		 	40%	138M	1s
##	55200K .	 		 	41%	95.4M	1s
##	55250K .	 		 	41%	123M	1s
##	55300K .	 		 	41%	90.7M	1s
##	55350K .	 		 	41%	99.4M	1s
##	55400K .	 		 	41%	80.3M	1s
##	55450K .	 		 	41%	85.6M	1s
##	55500K .	 		 	41%	88.8M	1s
##	55550K .	 		 	41%	128M	1s
##	55600K .	 		 	41%	136M	1s
##	55650K .	 		 	41%	136M	1s
##	55700K .	 		 	41%	139M	1s
##	55750K .	 		 	41%	138M	1s
##	55800K .	 		 	41%	138M	1s

	55850K			4 4 9/	00 41	
##						
##	55900K					
##	55950K					
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##	56100K					
##	56150K					
##	56200K					
##	56250K	 	 	41%	145M	1s
##	56300K	 	 	41%	37.6M	1s
##	56350K	 	 	41%	62.5M	1s
##	56400K	 	 	41%	69.5M	1s
##	56450K	 	 	41%	66.4M	1s
##	56500K	 	 	41%	82.1M	1s
##	56550K	 	 	42%	103M	1s
##	56600K	 	 	42%	53.7M	1s
##	56650K	 	 	42%	158M	1s
##	56700K	 	 	42%	91.0M	1s
##	56750K	 	 	42%	95.0M	1s
##	56800K	 	 	42%	39.8M	1s
##	56850K	 	 	42%	60.9M	1s
##	56900K	 	 	42%	78.9M	1s
##	56950K	 	 	42%	100M	1s
##	57000K					
##	57050K	 	 	42%	37.5M	1s
##	57100K					
##	57150K					
##	57200K	 	 	42%	90.4M	1s
##	57250K	 	 	42%	114M	1s
##	57300K	 	 	42%	119M	1s
##	57350K	 	 	42%	62.4M	1s
##	57400K	 	 	42%	119M	1s
##	57450K	 	 	42%	142M	1s
##	57500K	 	 	42%	41.9M	1s
##	57550K	 	 	42%	117M	1s
##	57600K	 	 	42%	122M	1s
##	57650K	 	 	42%	42.5M	1s
##	57700K				128M	
##	57750K	 	 	42%	97.2M	1s
##	57800K	 	 	42%	34.2M	1s
##	57850K					
##	57900K	 	 	43%	119M	1s
##	57950K	 	 	43%		
##	58000K	 	 	43%		
##	58050K					
##	58100K				111M	
##	58150K					
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##	58550K				113M	
##	58600K				118M	
##	58650K					
##	58700K				112M	
##	58750K					
##	58800K				110M	1s
##	58850K				133M	
##	58900K				50.1M	1s
##	58950K				118M	
##	59000K				92.7M	1s
##	59050K				123M	
##	59100K	 	 	43%	67.9M	1s
##	59150K	 	 	/ 0	108M	
##	59200K	 	 	43%	56.4M	1s
##	59250K	 	 	44%	129M	1s
##	59300K	 	 	44%	55.9M	1s
##	59350K	 	 	44%	117M	1s
##	59400K	 	 	44%	116M	1s
##	59450K	 	 	44%	102M	1s
##	59500K	 	 	44%	79.3M	1s
##	59550K	 	 	44%	99.8M	1s
##	59600K	 	 	44%	129M	1s
##	59650K	 	 	44%	130M	1s
##	59700K	 	 	44%	133M	1s
##	59750K	 	 	44%	51.3M	1s
##	59800K	 	 	44%	76.1M	1s
##	59850K	 	 	44%	150M	1s
##	59900K	 	 	44%	111M	1s
##	59950K	 	 	44%	43.3M	1s
##	60000K	 	 	44%	118M	1s
##	60050K	 	 	44%	98.5M	1s
##	60100K	 	 	44%	137M	1s
##	60150K	 	 	44%	120M	1s
##	60200K	 	 	44%	103M	1s
##	60250K				87.2M	1s
##	60300K				121M	
##	60350K				107M	1s
##	60400K					1s
##	60450K	 	 	44%	123M	1s
##	60500K					1s
##	60550K				136M	
##	60600K				50.1M	1s
##	60650K				108M	
##	60700K	 	 	45%	107M	1s
##	60750K				136M	
##	60800K				122M	
##	60850K					
##	60900K				120M	
##	60950K				106M	
##	61000K				112M	
##	61050K				116M	
##	61100K				116M	
##	61150K				137M	
##	61200K				126M	
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##	61250K					
##	61300K				101M	
##	61350K				104M	
##	61400K					
##	61450K				89.1M	1s
##	61500K				101M	1s
##	61550K				108M	1s
##	61600K				121M	1s
##	61650K				113M	1s
##	61700K				133M	1s
##	61750K				124M	1s
##	61800K	 	 	 45%	114M	1s
##	61850K	 	 	 45%	106M	1s
##	61900K	 	 	 45%	134M	1s
##	61950K	 	 	 / 0	129M	
##	62000K					
##	62050K	 	 	 46%	93.5M	1s
##	62100K	 	 	 46%	36.6M	1s
##	62150K	 	 	 46%	74.9M	1s
##	62200K	 	 	 46%	100M	1s
##	62250K	 	 	 46%	73.2M	1s
##	62300K	 	 	 46%	61.2M	1s
##	62350K	 	 	 46%	146M	1s
##	62400K	 	 	 46%	142M	1s
##	62450K	 	 	 46%	93.6M	1s
##	62500K	 	 	 46%	30.3M	1s
##	62550K	 	 	 46%	103M	1s
##	62600K	 	 	 46%	34.7M	1s
##	62650K	 	 	 46%	130M	1s
##	62700K	 	 	 46%	26.1M	1s
##	62750K	 	 	 46%	86.7M	1s
##	62800K	 	 	 46%	95.5M	1s
##	62850K	 	 	 46%	124M	1s
##	62900K	 	 	 46%	61.5M	1s
##	62950K	 	 	 46%	40.5M	1s
##	63000K	 	 	 46%	103M	1s
##	63050K	 	 	 46%	102M	1s
##	63100K	 	 	 46%	112M	1s
##	63150K	 	 	 46%	107M	1s
##	63200K	 	 	 46%	75.1M	1s
##	63250K	 	 	 46%	91.7M	1s
##	63300K	 	 	 47%	94.7M	1s
##	63350K	 	 	 47%	26.8M	1s
##	63400K	 	 	 47%	82.7M	1s
##	63450K	 	 	 47%	114M	1s
##	63500K	 	 	 47%	105M	1s
##	63550K	 	 	 47%	125M	1s
##	63600K	 	 	 47%	117M	1s
##	63650K	 	 	 47%	111M	1s
##	63700K	 	 	 47%	14.8M	1s
##	63750K	 	 	 47%	103M	1s
##	63800K	 	 	 47%	21.4M	1s
##	63850K	 	 	 47%	113M	1s
##	63900K	 	 	 47%	49.2M	1s

##	63950K					
##	64000K					
##	64050K				148M	1s
##	64100K				130M	
##	64150K				151M	1s
##	64200K				113M	
##	64250K					
##	64300K					
##	64350K					
##	64400K					
##	64450K					
##	64500K					
##	64550K	 	 	47%	37.6M	1s
##	64600K					
##	64650K					
##	64700K					
##	64750K					
##	64800K	 	 	48%	89.5M	1s
##	64850K	 	 	48%	119M	1s
##	64900K	 	 	48%	104M	1s
##	64950K	 	 	48%	108M	1s
##	65000K	 	 	48%	96.0M	1s
##	65050K	 	 	48%	88.9M	1s
##	65100K	 	 	48%	35.1M	1s
##	65150K	 	 	48%	125M	1s
##	65200K	 	 	48%	33.4M	1s
##	65250K	 	 	48%	81.4M	1s
##	65300K	 	 	48%	85.6M	1s
##	65350K	 	 	48%	111M	1s
##	65400K	 	 	48%	139M	1s
##	65450K	 	 	48%	120M	1s
##	65500K	 	 	48%	122M	1s
##	65550K	 	 	48%	50.3M	1s
##	65600K	 	 	48%	36.0M	1s
##	65650K	 	 	48%	113M	1s
##	65700K	 	 	48%	112M	1s
##	65750K	 	 	48%	81.2M	1s
##	65800K	 	 	48%	92.1M	1s
##	65850K	 	 	48%	83.2M	1s
##	65900K	 	 	48%	134M	1s
##	65950K	 	 	48%	135M	1s
##	66000K	 	 	49%	17.5M	1s
##	66050K	 	 	49%	131M	1s
##	66100K	 	 	49%	31.2M	1s
##	66150K	 	 	49%	107M	1s
##	66200K	 	 	49%	57.4M	1s
##	66250K	 	 	49%	113M	1s
##	66300K	 	 	49%	82.8M	1s
##	66350K	 	 	49%	98.8M	1s
##	66400K	 	 	49%	112M	1s
##	66450K	 	 	49%	130M	1s
##	66500K	 	 	49%	65.0M	1s
##	66550K	 	 	49%	103M	1s
##	66600K	 	 	49%	110M	1s

##	66650K					
##	66700K					
##	66750K					
##	66800K					
##	66850K					1s
##	66900K					
##	66950K					
##	67000K				81.3M	1s
##	67050K				113M	1s
##	67100K				105M	1s
##	67150K				107M	1s
##	67200K				134M	
##	67250K					
##	67300K	 	 	49%	31.5M	1s
##	67350K				101M	
##	67400K	 	 	50%	30.5M	1s
##	67450K	 	 	50%	106M	1s
##	67500K	 	 	50%	44.3M	1s
##	67550K	 	 	50%	85.5M	1s
##	67600K	 	 	50%	101M	1s
##	67650K	 	 	50%	124M	1s
##	67700K	 	 	50%	134M	1s
##	67750K	 	 	50%	127M	1s
##	67800K	 	 	50%	133M	1s
##	67850K	 	 	50%	14.5M	1s
##	67900K	 	 	50%	12.0M	1s
##	67950K	 	 	50%	136M	1s
##	68000K	 	 	50%	136M	1s
##	68050K	 	 	50%	109M	1s
##	68100K	 	 	50%	100M	1s
##	68150K	 	 	50%	128M	1s
##	68200K	 	 	50%	96.4M	1s
##	68250K	 	 	50%	118M	1s
##	68300K	 	 	50%	131M	1s
##	68350K				133M	1s
##	68400K				80.4M	1s
##	68450K					
##	68500K					
##	68550K	 	 	50%	112M	1s
##	68600K					1s
##	68650K					1s
##	68700K					
##	68750K					
##	68800K					1s
##	68850K	 	 	51%	135M	1s
##	68900K					
##	68950K					
##	69000K				112M	
##	69050K					
##	69100K				129M	
##	69150K					
##	69200K					
##	69250K				105M	
##	69300K					
		 	 	O ± /0	3	

##						122M	
##						122M	
##			• • • • • • • • • • • • • • • • • • • •			147M	
##			• • • • • • • • • • • • • • • • • • • •			132M	
##			• • • • • • • • • • • • • • • • • • • •			100M	
##			• • • • • • • • • • • • • • • • • • • •			143M	
##			• • • • • • • • • • • • • • • • • • • •			135M	
##			• • • • • • • • • • • • • • • • • • • •				
##			• • • • • • • • • • • • • • • • • • • •			143M	
##			• • • • • • • • • • • • • • • • • • • •			111M	
##							
##							
##		 		 	70	138M	1s
##		 		 	70	120M	1s
##		 		 	70	150M	
##						55.2M	1s
##		 		 	/ 0	105M	1s
##						146M	
##							
##	70300K	 		 	52%	36.6M	1s
##	70350K	 		 	52%	91.2M	1s
##	70400K	 		 	52%	98.6M	1s
##	70450K	 		 	52%	86.4M	1s
##	70500K	 		 	52%	21.8M	1s
##	70550K	 		 	52%	94.1M	1s
##	70600K	 		 	52%	90.6M	1s
##	70650K	 		 	52%	110M	1s
##	70700K	 		 	52%	137M	1s
##	70750K	 		 	52%	35.0M	1s
##	70800K	 		 	52%	105M	1s
##	70850K	 		 	52%	111M	1s
##	70900K	 		 	52%	94.9M	1s
##	70950K	 		 	52%	119M	1s
##	71000K	 		 	52%	33.7M	1s
##	71050K	 		 	52%	101M	1s
##	71100K	 		 	52%	68.1M	1s
##	71150K	 		 	52%	113M	1s
##	71200K	 		 	52%	93.2M	1s
##	71250K	 		 	52%	24.0M	1s
##	71300K	 		 	52%	78.6M	1s
##	71350K	 		 	52%	96.5M	1s
##	71400K	 		 	53%	107M	1s
##	71450K	 		 	53%	79.2M	1s
##	71500K	 		 	53%	75.5M	1s
##	71550K	 		 	53%	115M	1s
##	71600K	 		 	53%	130M	1s
##	71650K	 		 	53%	84.2M	1s
##	71700K	 		 	53%	94.2M	1s
##	71750K	 		 	53%	43.0M	1s
##							
##							
##							
##							1s
##							1s

##						165M	
##			• • • • • • • • • • • • • • • • • • • •			147M	
##			• • • • • • • • • • • • • • • • • • • •		•		
##			• • • • • • • • • • • • • • • • • • • •			156M	
##			• • • • • • • • • • • • • • • • • • • •			152M	
##			• • • • • • • • • • • • • • • • • • • •			142M	
##			• • • • • • • • • • • • • • • • • • • •			163M	
##			• • • • • • • • • • • • • • • • • • • •			146M	
##			• • • • • • • • • • • • • • • • • • • •			146M	
##			• • • • • • • • • • • • • • • • • • • •			126M	
##			• • • • • • • • • • • • • • • • • • • •				
##			• • • • • • • • • • • • • • • • • • • •				
##						82.9M	1s
##		 		 	/ 0	109M	
##						44.7M	1s
##						100M	
##							
##						89.7M	1s
##	72950K	 		 	54%	131M	1s
##	73000K	 		 	54%	102M	1s
##	73050K	 		 	54%	78.3M	1s
##	73100K	 		 	54%	72.7M	1s
##	73150K	 		 	54%	102M	1s
##	73200K	 		 	54%	10.9M	1s
##	73250K	 		 	54%	122M	1s
##	73300K	 		 	54%	123M	1s
##	73350K	 		 	54%	89.3M	1s
##	73400K	 		 	54%	106M	1s
##	73450K	 		 	54%	122M	1s
##	73500K	 		 	54%	91.5M	1s
##	73550K	 		 	54%	122M	1s
##	73600K	 		 	54%	114M	1s
##	73650K	 		 	54%	117M	1s
##	73700K	 		 	54%	115M	1s
##	73750K	 		 	54%	70.0M	1s
##	73800K	 		 	54%	32.1M	1s
##	73850K	 		 	54%	55.3M	1s
##	73900K	 		 	54%	49.5M	1s
##	73950K	 		 	54%	50.9M	1s
##	74000K	 		 	54%	78.5M	1s
##	74050K	 		 	54%	75.3M	1s
##	74100K	 		 	55%	82.0M	1s
##	74150K	 		 	55%	138M	1s
##	74200K	 		 	55%	43.2M	1s
##	74250K	 		 	55%	117M	1s
##	74300K	 		 	55%	114M	1s
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##					138M	
##	74800K				115M	
##	74850K				117M	
##	74900K				110M	
##	74950K				120M	
##	75000K				102M	
##	75050K				120M	
##	75100K				118M	
##	75150K				108M	
##	75200K					
##	75250K					
##	75300K					
##	75350K					
##	75400K					
##	75450K				113M	
##	75500K					
##	75550K					
##	75600K				100M	_~
##	75650K				112M	
##	75700K					1s
##	75750K					
##	75800K					
##	75850K					
##	75900K					
##	75950K					
##	76000K					1s
##	76050K					
##	76100K					1s
##	76150K	 	 	56%	108M	1s
##	76200K	 	 	56%	103M	1s
##	76250K	 	 	56%	39.3M	1s
##	76300K	 	 	56%	80.8M	1s
##	76350K					
##	76400K	 	 	56%	77.7M	1s
##	76450K	 	 	56%	69.2M	1s
##	76500K	 	 	56%	89.3M	1s
##	76550K	 	 	56%	96.9M	1s
##	76600K	 	 	56%	49.7M	1s
##	76650K	 	 	56%	116M	1s
##	76700K	 	 	56%	91.9M	1s
##	76750K	 	 	56%	118M	1s
##	76800K	 	 	57%	35.6M	1s
##	76850K	 	 	57%	103M	1s
##	76900K	 	 	57%	75.2M	1s
##	76950K	 	 	57%	128M	1s
##	77000K	 	 	57%	83.0M	1s
##	77050K	 	 	57%	86.4M	1s
##	77100K	 	 	57%	37.5M	1s
##	77150K	 	 	57%	102M	1s
##	77200K	 	 	57%	51.8M	1s
##	77250K					
##	77300K	 	 	57%	86.2M	1s
##	77350K	 	 	57%	137M	1s
##	77400K	 	 	57%	91.8M	1s

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##							
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##							
##							
##	78250K	 		 	58%	55.6M	1s
##	78300K	 		 	58%	80.3M	1s
##	78350K	 		 	58%	85.2M	1s
##	78400K	 		 	58%	73.9M	1s
##	78450K	 		 	58%	129M	1s
##	78500K	 		 	58%	93.8M	1s
##	78550K	 		 	58%	126M	1s
##	78600K	 		 	58%	66.7M	1s
##	78650K	 		 	58%	101M	1s
##	78700K	 		 	58%	99.1M	1s
##	78750K	 		 	58%	169M	1s
##	78800K	 		 	58%	72.0M	1s
##	78850K	 		 	58%	123M	1s
##	78900K	 		 	58%	138M	1s
##	78950K	 		 	58%	63.8M	1s
##	79000K	 		 	58%	47.9M	1s
##	79050K	 		 	58%	81.9M	1s
##	79100K	 		 	58%	88.9M	1s
##	79150K	 		 	58%	92.2M	1s
##	79200K	 		 	58%	77.OM	1s
##	79250K	 		 	58%	120M	1s
##	79300K	 		 	58%	89.9M	1s
##	79350K	 		 	58%	138M	1s
##	79400K	 		 	58%	115M	1s
##	79450K	 		 	59%	113M	1s
##	79500K	 		 	59%	75.5M	1s
##	79550K	 		 	59%	53.4M	1s
##	79600K	 		 	59%	95.2M	1s
##	79650K	 		 	59%	104M	1s
##	79700K	 		 	59%	113M	1s
##	79750K	 		 	59%	51.9M	1s
##	79800K	 		 	59%	92.7M	1s
##	79850K	 		 	59%	144M	1s
##	79900K	 		 	59%	145M	1s
##	79950K	 		 	59%	8.46M	1s
##	80000K	 		 	59%	85.7M	1s
##	80050K	 		 	59%	23.0M	1s
##	80100K	 		 	59%	42.8M	1s

##	80150K						
##	80200K						
##	80250K					149M	
##	80300K					113M	
##	80350K					142M	1s
##	80400K					138M	1s
##	80450K					137M	1s
##	80500K					113M	1s
##	80550K					165M	1s
##	80600K					134M	
##	80650K						
##	80700K						
##	80750K						
##	80800K	 			60%	31.1M	1s
##	80850K	 			60%	116M	1s
##	80900K	 			60%	98.9M	1s
##	80950K	 			60%	101M	1s
##	81000K	 			60%	89.1M	1s
##	81050K	 			60%	137M	1s
##	81100K	 			60%	95.3M	1s
##	81150K	 			60%	131M	1s
##	81200K	 			60%	39.5M	1s
##	81250K	 			60%	110M	1s
##	81300K	 			60%	124M	1s
##	81350K					152M	1s
##	81400K					113M	1s
##	81450K					138M	
##	81500K	 			60%	108M	1s
##	81550K					135M	1s
##	81600K					128M	1s
##	81650K					177M	
##	81700K					103M	
##	81750K						
##	81800K						
##	81850K						
##	81900K						
##	81950K						
##	82000K						
##	82050K						
##	82100K						
##	82150K						
##	82200K						
##	82250K						
##	82300K						
##	82350K						
##	82400K						
##	82450K						
##	82500K					121M 108M	
	82550K					151M	
##							
##	82600K					137M	
##	82650K						
##	82700K					111M	
##	82750K						
##	82800K	 	• • • • • • • • • •	• • • • • • • • • •	61%	96.3M	IS

				• •		
##	82850K					
##	82900K				124M	1s
##	82950K				101M	1s
##	83000K				105M	
##	83050K	 	 	61%	47.0M	1s
##	83100K	 	 	61%	87.8M	1s
##	83150K	 	 	61%	124M	1s
##	83200K	 	 	61%	46.6M	1s
##	83250K	 	 	61%	73.8M	1s
##	83300K	 	 	61%	48.7M	1s
##	83350K	 	 	61%	118M	1s
##	83400K	 	 	61%	86.3M	1s
##	83450K	 	 	61%	57.2M	1s
##	83500K	 	 	62%	66.9M	1s
##	83550K	 	 	62%	102M	1s
##	83600K	 	 	62%	82.6M	1s
##	83650K	 	 	62%	119M	1s
##	83700K	 	 	62%	25.5M	1s
##	83750K	 	 	62%	111M	1s
##	83800K	 	 	62%	108M	1s
##	83850K	 	 	62%	115M	1s
##	83900K	 	 	62%	52.7M	1s
##	83950K	 	 	62%	34.7M	1s
##	84000K	 	 	62%	71.3M	1s
##	84050K	 	 	62%	124M	1s
##	84100K	 	 	62%	140M	1s
##	84150K					1s
##	84200K	 	 	62%	103M	1s
##	84250K	 	 	62%	86.4M	1s
##	84300K	 	 	62%	45.1M	1s
##	84350K	 	 	62%	67.3M	1s
##	84400K	 	 	62%	86.4M	1s
##	84450K					
##	84500K					
##	84550K				101M	
##	84600K				112M	
##	84650K					
##	84700K					1s
##	84750K					
##	84800K					1s
##	84850K					1s
##	84900K					
##	84950K					
##	85000K					
##	85050K					
##	85100K					
##	85150K				127M	
##	85200K					
##	85250K				119M	
##	85300K					
##	85350K					
##	85400K				118M	
##	85450K					
##	85500K					
11		 	 	00%	10211	10

шш	85550K			C 20%	110M	1 -
##	85600K					
##						
##	85650K					
##	85700K					
##	85750K					
##	85800K					
##	85850K					
##	85900K					
##	85950K					
##	86000K					
##	86050K					1s
##	86100K					
##	86150K		 	 63%	45.9M	1s
##	86200K		 	 64%	24.7M	1s
##	86250K		 	 64%	117M	1s
##	86300K		 	 64%	18.8M	1s
##	86350K		 	 64%	123M	1s
##	86400K		 	 64%	75.5M	1s
##	86450K		 	 64%	92.9M	1s
##	86500K		 	 64%	77.8M	1s
##	86550K		 	 64%	80.5M	1s
##	86600K		 	 64%	96.0M	1s
##	86650K		 	 64%	120M	1s
##	86700K		 	 64%	109M	1s
##	86750K		 	 64%	5.84M	1s
##	86800K					
##	86850K					
##	86900K		 	 64%	41.6M	1s
##	86950K					
##	87000K					
##	87050K					
##	87100K					
##	87150K				130M	
##	87200K				119M	
##	87250K				107M	
##	87300K				110M	
##	87350K				176M	
##	87400K				141M	
##	87450K				164M	
##	87500K					
	87550K					
##	87600K					
##	87650K					
##	87700K					
##						
##	87750K					
##	87800K					
##	87850K					
##	87900K					
##	87950K					
##	88000K					
##	88050K				118M	
##	88100K					
##	88150K					
##	88200K	• • • • • • • • • • • • • • • • • • • •	 •	 65%	117M	1s

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##							
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##	88650K .	 		 	65%	48.2M	1s
##	88700K .	 		 	65%	81.2M	1s
##	88750K .	 		 	65%	119M	1s
##	88800K .	 		 	65%	51.9M	1s
##	88850K .	 		 	65%	141M	1s
##	88900K .	 		 	66%	116M	1s
##	88950K .	 		 	66%	30.7M	1s
##	89000K .	 		 	66%	107M	1s
##	89050K .	 		 	66%	124M	1s
##	89100K .	 		 	66%	101M	1s
##	89150K .	 		 	66%	105M	1s
##	89200K .	 		 	66%	119M	1s
##	89250K .	 		 	66%	108M	1s
##	89300K .	 		 	66%	109M	1s
##	89350K .	 		 	66%	106M	1s
##	89400K .	 		 	66%	91.2M	1s
##	89450K .	 		 	66%	121M	1s
##	89500K .	 		 	66%	115M	1s
##	89550K .	 		 	66%	133M	1s
##	89600K .	 		 	66%	46.1M	1s
##	89650K .	 		 	66%	46.1M	1s
##	89700K .	 		 	66%	52.4M	1s
##	89750K .	 		 	66%	93.4M	1s
##	89800K .	 		 	66%	117M	1s
##	89850K .	 		 	66%	150M	1s
##	89900K .	 		 	66%	49.2M	1s
##	89950K .	 		 	66%	31.0M	1s
##	90000К .	 		 	66%	54.3M	1s
##	90050K .	 		 	66%	141M	1s
##	90100K .	 		 	66%	83.3M	1s
##							
##							
##							
##							
##	90350K .	 		 	67%	122M	1s
##	90400K .	 		 	67%		
##							
##	90500K .	 		 	67%		
##							
##							
##						125M	
##							
##							
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##							
##							
	· · · •	 		 •	. , ,		

##	000501/					67%	126M	1
##							126M	
##								
							113M	
##								
##								
##							112M	
##			• • • • • • • • • • • • • • • • • • • •				116M	
##			• • • • • • • • • • • • • • • • • • • •					
##			• • • • • • • • • • • • • • • • • • • •				121M	_~~
##								
##								
##		 				,,	119M	
##							75.6M	1s
##							138M	1s
##							156M	1s
##							129M	1s
##							101M	1s
##	91800K	 				68%	140M	1s
##	91850K	 				68%	121M	1s
##	91900K	 				68%	43.5M	1s
##	91950K	 				68%	38.9M	1s
##	92000K	 				68%	54.0M	1s
##	92050K	 				68%	57.1M	1s
##	92100K	 				68%	60.4M	1s
##	92150K	 				68%	57.4M	1s
##	92200K	 				68%	72.8M	1s
##	92250K	 				68%	93.8M	1s
##	92300K	 				68%	76.9M	1s
##	92350K	 				68%	89.6M	1s
##	92400K	 				68%	74.4M	1s
##	92450K	 				68%	142M	1s
##	92500K	 				68%	112M	1s
##	92550K	 				68%	137M	1s
##	92600K	 				68%	114M	1s
##							44.5M	1s
##								
##								
##							126M	
##								
##								
##								
##								
##								
##							111M	
##								
##							119M	
##							140M	
##							140M	
##							103M	
##							133M 132M	
##			• • • • • • • • • •				147M	
##			• • • • • • • • • • • • • • • • • • • •				142M	
##			• • • • • • • • • •				156M	
##	93600K	 	• • • • • • • • • • • • • • • • • • • •	• • • • • • • • • •	• • • • • • • • • •	69%	143M	IS

##	93650K					
##	93700K					
##	93750K					
##	93800K					
##	93850K					
##	93900K					
##	93950K					
##	94000K					
##	94050K					
##	94100K					1s
##	94150K					
##	94200K					
##	94250K					
##	94300K					
##	94350K					1s
##	94400K					
##	94450K					
##	94500K					1s
##	94550K	 	 	70%	105M	1s
##	94600K	 	 	70%	103M	1s
##	94650K					
##	94700K	 	 	70%	87.3M	1s
##	94750K					
##	94800K	 	 	70%	59.5M	1s
##	94850K	 	 	70%	98.4M	1s
##	94900K	 	 	70%	87.3M	1s
##	94950K	 	 	70%	112M	1s
##	95000K	 	 	70%	93.0M	1s
##	95050K	 	 	70%	128M	1s
##	95100K	 	 	70%	76.9M	1s
##	95150K	 	 	70%	136M	1s
##	95200K	 	 	70%	108M	1s
##	95250K	 	 	70%	54.7M	1s
##	95300K	 	 	70%	97.7M	1s
##	95350K	 	 	70%	88.2M	1s
##	95400K	 	 	70%	72.4M	1s
##	95450K	 	 	70%	142M	1s
##	95500K	 	 	70%	32.4M	1s
##	95550K	 	 	70%	93.7M	1s
##	95600K	 	 	70%	85.8M	1s
##	95650K	 	 	71%	114M	1s
##	95700K	 	 	71%	86.2M	1s
##	95750K	 	 	71%	68.0M	1s
##	95800K	 	 	71%	73.2M	1s
##	95850K	 	 	71%	108M	1s
##	95900K	 	 	71%	94.1M	1s
##	95950K	 	 	71%	133M	1s
##	96000K	 	 	71%	57.1M	1s
##	96050K	 	 	71%	66.3M	1s
##	96100K	 	 	71%	58.6M	1s
##	96150K	 	 	71%	136M	1s
##	96200K	 	 	71%	118M	1s
##	96250K	 	 	71%	129M	1s
##	96300K	 	 	71%	85.9M	1s

##	96350K					
##	96400K				131M	
##	96450K				164M	
##	96500K					
##	96550K				166M	1s
##	96600K				127M	1s
##	96650K				145M	
##	96700K				61.9M	1s
##	96750K				122M	1s
##	96800K				101M	
##	96850K				37.OM	1s
##	96900K	 	 	 71%	101M	1s
##	96950K	 	 	 / 0	134M	1s
##	97000K				133M	
##	97050K					
##	97100K				50.5M	1s
##	97150K				111M	
##	97200K	 	 	 72%	31.1M	1s
##	97250K	 	 	 72%	119M	1s
##	97300K	 	 	 72%	101M	1s
##	97350K	 	 	 72%	45.2M	1s
##	97400K	 	 	 72%	77.8M	1s
##	97450K	 	 	 72%	138M	1s
##	97500K	 	 	 72%	85.5M	1s
##	97550K	 	 	 72%	75.5M	1s
##	97600K	 	 	 72%	97.1M	1s
##	97650K	 	 	 72%	138M	1s
##	97700K	 	 	 72%	114M	1s
##	97750K	 	 	 72%	35.4M	1s
##	97800K	 	 	 72%	103M	1s
##	97850K	 	 	 72%	145M	1s
##	97900K	 	 	 72%	27.5M	1s
##	97950K	 	 	 72%	123M	1s
##	98000K	 	 	 72%	89.4M	1s
##	98050K	 	 	 72%	137M	1s
##	98100K	 	 	 72%	137M	1s
##	98150K	 	 	 72%	149M	1s
##	98200K	 	 	 72%	129M	1s
##	98250K	 	 	 72%	162M	1s
##	98300K	 	 	 72%	56.5M	1s
##	98350K	 	 	 73%	114M	1s
##	98400K	 	 	 73%	21.2M	1s
##	98450K	 	 	 73%	107M	1s
##	98500K	 	 	 73%	113M	1s
##	98550K	 	 	 73%	133M	1s
##	98600K	 	 	 73%	113M	1s
##	98650K	 	 	 73%	177M	1s
##	98700K	 	 	 73%	139M	1s
##	98750K	 	 	 73%	144M	1s
##	98800K	 	 	 73%	128M	1s
##	98850K	 	 	 73%	111M	1s
##	98900K				100M	
##	98950K				134M	1s
##	99000К				21.4M	1s

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##		• • • • • • • • • • • • • • • • • • • •				
##						
##						
##					70.5M	1s
##					133M	1s
##					146M	1s
##					140M	1s
##					134M	1s
##					116M	1s
##					110M	
##	99700K	 	 	 74%	89.6M	1s
##	99750K	 	 	 74%	119M	1s
##	99800K	 	 	 74%	108M	1s
##					148M	1s
##	99900K	 	 	 74%	137M	1s
##	99950K	 	 	 74%	64.5M	1s
##	100000K	 	 	 74%	135M	1s
##	100050K	 	 	 74%	128M	1s
##	100100K	 	 	 74%	95.0M	1s
##	100150K	 	 	 74%	86.2M	1s
##	100200K	 	 	 74%	130M	1s
##	100250K	 	 	 74%	163M	1s
##	100300K	 	 	 74%	96.7M	1s
##	100350K	 	 	 74%	112M	1s
##	100400K	 	 	 74%	105M	1s
##	100450K	 	 	 74%	166M	1s
##	100500K	 	 	 74%	146M	1s
##	100550K	 	 	 74%	145M	1s
##	100600K	 	 	 74%	60.5M	1s
##	100650K	 	 	 74%	88.6M	1s
##	100700K	 	 	 74%	80.0M	1s
##	100750K	 	 	 74%	77.3M	1s
##	100800K	 	 	 74%	96.2M	1s
##	100850K	 	 	 74%	96.9M	1s
##	100900K	 	 	 74%	63.5M	1s
##	100950K	 	 	 74%	68.9M	1s
##	101000K	 	 	 74%	97.0M	1s
##	101050K	 	 	 75%	122M	1s
##	101100K	 	 	 75%	83.5M	1s
##	101150K	 	 	 75%	5.77M	1s
##	101200K	 	 	 75%	55.1M	1s
##	101250K	 	 	 75%	33.9M	1s
##	101300K	 	 	 75%	60.3M	1s
##	101350K	 	 	 75%	35.8M	1s
##	101400K	 	 	 75%	56.2M	1s
##	101450K	 	 	 75%	64.8M	1s
##	101650K			75%	οο ο _Μ	1s
	1010001	 	 	 10%	09.01	_~~

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##	102300K	 		 	75%	72.2M	1s
##	102350K	 		 	75%	99.6M	1s
##	102400K	 		 	76%	61.3M	1s
##	102450K	 		 	76%	52.2M	1s
##	102500K	 		 	76%	71.2M	1s
##	102550K	 		 	76%	101M	1s
##	102650K	 		 	76%	87.3M	0s
##	102700K	 		 	76%	50.2M	0s
##	102750K	 		 	76%	72.4M	0s
##	102800K	 		 	76%	78.8M	0s
##	102850K	 		 	76%	131M	0s
##	102900K	 		 	76%	91.0M	0s
##	102950K	 		 	76%	75.9M	0s
##	103000K	 		 	76%	99.4M	0s
##	103050K	 		 	76%	50.6M	0s
##	103100K	 		 	76%	75.0M	0s
##	103150K	 		 	76%	94.2M	0s
##	103200K	 		 	76%	71.3M	0s
##	103250K	 		 	76%	56.0M	0s
##	103300K	 		 	76%	67.2M	0s
##	103350K	 		 	76%	71.1M	0s
##	103400K	 		 	76%	58.9M	0s
##	103450K	 		 	76%	108M	0s
##	103500K	 		 	76%	78.6M	0s
##	103550K	 		 	76%	60.7M	0s
##	103600K	 		 	76%	69.7M	0s
##	103650K	 		 	76%	85.3M	0s
##	103700K	 		 	77%	90.9M	0s
##	103750K	 		 	77%	126M	0s
##	103800K	 		 	77%	21.3M	0s
##	103850K	 		 	77%	104M	0s
##	103900K	 		 	77%	86.3M	0s
##	103950K	 		 	77%	75.0M	0s
##	104000K	 		 	77%	80.9M	0s
						110M	
						66.4M	0s
						101M	
						101M	
						108M	

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						81.8M	0s
						117M	
						30.0M	0s
##	105250K	 		 	78%	108M	0s
##	105300K	 		 	78%	$66.4\mathtt{M}$	0s
##	105350K	 		 	78%	87.3M	0s
##	105400K	 		 	78%	80.8M	0s
##	105450K	 		 	78%	102M	0s
##	105500K	 		 	78%	64.1M	0s
##	105550K	 		 	78%	88.8M	0s
##	105600K	 		 	78%	86.0M	0s
##	105650K	 		 	78%	118M	0s
##	105700K	 		 	78%	102M	0s
##	105750K	 		 	78%	63.2M	0s
##	105800K	 		 	78%	75.9M	0s
##	105850K	 		 	78%	85.8M	0s
##	105900K	 		 	78%	85.2M	0s
##	105950K	 		 	78%	103M	0s
##	106000K	 		 	78%	47.4M	0s
##	106050K	 		 	78%	66.0M	0s
##	106100K	 		 	78%	50.5M	0s
##	106150K	 		 	78%	74.8M	0s
##	106200K	 		 	78%	52.1M	0s
##	106250K	 		 	78%	85.1M	0s
##	106300K	 		 	78%	70.2M	0s
##	106350K	 		 	78%	53.4M	0s
##	106400K	 		 	79%	66.4M	0s
##	106450K	 		 	79%	107M	0s
##	106500K	 		 	79%	68.2M	0s
##	106550K	 		 	79%	80.6M	0s
##	106600K	 		 	79%	78.5M	0s
##	106650K	 		 	79%	77.8M	0s
##	106700K	 		 	79%	70.2M	0s
						105M	
						105M	

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##	108150K		 	 	80%	81.2M	0s
##	108200K		 	 	80%	64.4M	0s
##	108250K		 	 	80%	97.8M	0s
##	108300K		 	 	80%	69.5M	0s
##	108350K		 	 	80%	79.9M	0s
##	108400K		 	 	80%	64.5M	0s
##	108450K		 	 	80%	80.9M	0s
##	108500K		 	 	80%	78.6M	0s
##	108550K		 	 	80%	102M	0s
##	108600K		 	 	80%	64.9M	0s
##	108650K		 	 	80%	78.1M	0s
##	108700K		 	 	80%	62.4M	0s
##	108750K		 	 	80%	74.1M	0s
##	108800K		 	 	80%	81.3M	0s
##	108850K		 	 	80%	107M	0s
##	108900K		 	 	80%	79.3M	0s
##	108950K		 	 	80%	115M	0s
##	109000K		 	 	80%	91.8M	0s
##	109050K		 	 	80%	79.3M	0s
##	109100K		 	 	81%	82.6M	0s
##	109150K		 	 	81%	90.9M	0s
##	109200K		 	 	81%	78.0M	0s
##	109250K		 	 	81%	73.7M	0s
##	109300K		 	 	81%	79.8M	0s
							0s
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##	110050K	 	 		81%	99.8M	0s
##	110100K	 	 		81%	72.6M	0s
##	110150K	 	 		81%	84.8M	0s
##	110200K	 	 		81%	90.8M	0s
##	110250K	 	 		81%	97.1M	0s
##	110300K	 	 		81%	94.6M	0s
##	110350K	 	 		81%	85.2M	0s
		• • • • • • • • • • • • • • • • • • • •					
##	111200K	 	 		82%	71.0M	0s
##	111250K	 	 		82%	71.6M	0s
##	111300K	 	 		82%	63.7M	0s
##	111350K	 	 		82%	70.2M	0s
##	111400K	 	 		82%	67.8M	0s
##	111450K	 	 		82%	87.6M	0s
##	111500K	 	 		82%	88.5M	0s
##	111550K	 	 		82%	75.3M	0s
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##	112500K	 	 	• • • • • • • • • • • • • • • • • • • •	83%	110M	0s

шш	1105507				02%	10 <i>C</i> M	0-
		• • • • • • • • • • • • • • • • • • • •				123M	~~
						115M	
						110M	0s
						120M	0s
##	112900K	 		 	83%	106M	0s
##	112950K	 		 	83%	118M	0s
##	113000K	 		 	83%	112M	0s
##	113050K	 		 	83%	79.2M	0s
##	113100K	 		 	83%	97.7M	0s
##	113150K	 		 	84%	100M	0s
##	113200K	 		 	84%	93.4M	0s
							0s
						165M	~~
						131M	
						123M	
		• • • • • • • • • • • • • • • • • • • •					
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		• • • • • • • • • • • • • • • • • • • •					
##	114300K	 		 	84%	62.9M	0s
##	114400K	 		 	84%	58.7M	0s
##	114450K	 		 	84%	83.9M	0s
##	114500K	 		 	85%	145M	0s
##	114550K	 		 	85%	99.1M	0s
##	114600K	 		 	85%	52.0M	0s
##	114650K	 		 	85%	92.3M	0s
##	114700K	 		 	85%	102M	0s
##	114750K	 		 	85%	157M	0s
##	114800K	 		 	85%	36.4M	0s
##	114850K	 		 	85%	114M	0s
##	114900K	 		 	85%	95.6M	0s
						154M	
##	115000K	 		 	85%	109M	0s
##	115050K	 		 	85%	166M	
##	115100K	 		 	85%		
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##			• • • • • • • • • • • • • • • • • • • •				
			• • • • • • • • • • • • • • • • • • • •			115M	
##			• • • • • • • • • • • • • • • • • • • •				
##			• • • • • • • • • • • • • • • • • • • •			133M	
##			• • • • • • • • • • • • • • • • • • • •			154M	
##			• • • • • • • • • • • • • • • • • • • •			138M	
##			• • • • • • • • • • • • • • • • • • • •			174M	
##						150M	
##			• • • • • • • • • • • • • • • • • • • •				
##						128M	
##						113M	
##							
##						122M	
##						119M	
##						70.8M	0s
##						174M	
##						161M	• •
						94.8M	0s
						107M	0s
						138M	0s
						107M	0s
						126M	0s
##	116400K	 		 	86%	130M	0s
						125M	0s
##	116500K	 		 	86%	146M	0s
##	116550K	 		 	86%	18.5M	0s
##	116600K	 		 	86%	123M	0s
##	116650K	 		 	86%	168M	0s
##	116700K	 		 	86%	162M	0s
##	116750K	 		 	86%	134M	0s
##	116800K	 		 	86%	167M	0s
##	116850K	 		 	86%	124M	0s
##	116900K	 		 	86%	105M	0s
##	116950K	 		 	86%	176M	0s
##	117000K	 		 	86%	28.8M	0s
##	117050K	 		 	86%	60.3M	0s
##	117100K	 		 	86%	28.1M	0s
##	117150K	 		 	86%	23.2M	0s
##	117200K	 		 	87%	74.7M	0s
##	117250K	 		 	87%	49.1M	0s
##	117300K	 		 	87%	143M	0s
##	117350K	 		 	87%	25.7M	0s
##	117400K	 		 	87%	62.3M	0s
##	117450K	 		 	87%	137M	0s
##	117500K	 		 	87%	149M	0s
##	117550K	 		 	87%	171M	0s
##	117600K	 		 	87%	166M	0s
##	117650K	 		 	87%	146M	0s
##	117700K	 		 	87%	177M	0s
##	117750K	 		 	87%	138M	0s
##	117800K	 		 	87%	94.8M	0s
##	117850K	 		 	87%	154M	0s
##	117900K	 		 	87%	117M	0s

	= . =			o=0/		_
					130M	
		• • • • • • • • • • • • • • • • • • • •			137M	
					110M	
					99.1M	0s
					110M	
					26.9M	0s
					108M	
					90.2M	0s
##	118400K	 	 	 87%	122M	0s
##	118450K	 	 	 87%	157M	0s
##	118500K	 	 	 87%	116M	0s
##	118550K	 	 	 88%	130M	0s
##	118600K	 	 	 88%	180M	0s
##	118650K	 	 	 88%	166M	0s
##	118700K	 	 	 88%	142M	0s
##	118750K	 	 	 88%	190M	0s
##	118800K	 	 	 88%	63.1M	0s
##	118850K	 	 	 88%	123M	0s
##	118900K	 	 	 88%	141M	0s
##	118950K	 	 	 88%	85.3M	0s
##	119000K	 	 	 88%	110M	0s
##	119050K	 	 	 88%	115M	0s
##	119100K	 	 	 88%	134M	0s
##	119150K	 	 	 88%	63.9M	0s
##	119300K	 	 	 88%	92.8M	0s
##	119350K	 	 	 88%	190M	0s
##	119400K	 	 	 88%	163M	0s
##	119450K	 	 	 88%	151M	0s
##	119500K	 	 	 88%	64.1M	0s
##	119550K	 	 	 88%	160M	0s
					94.4M	0s
					119M	
					129M	0s
					114M	
		 	 	 70	155M	
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##	120000V	 	 	 03/	1 Z Z I'l	υS

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##	121000K	 	 	 89%	139M	0s
##	121050K	 	 	 89%	157M	0s
##	121100K	 	 	 89%	65.9M	0s
##	121150K	 	 	 89%	134M	0s
##	121200K	 	 	 89%	129M	0s
##	121250K	 	 	 90%	68.4M	0s
##	121300K	 	 	 90%	89.4M	0s
##	121350K	 	 	 90%	137M	0s
##	121400K	 	 	 90%	79.3M	0s
##	121450K	 	 	 90%	68.5M	0s
##	121500K	 	 	 90%	60.4M	0s
##	121550K	 	 	 90%	96.7M	0s
##	121600K	 	 	 90%	127M	0s
##	121650K	 	 	 90%	197M	0s
##	121700K	 	 	 90%	59.9M	0s
##	121750K	 	 	 90%	141M	0s
##	121800K	 	 	 90%	167M	0s
						0s
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						0s
##	122000K	 	 	 90%	120M	0s
##	122050K	 	 	 90%	192M	0s
##	122100K	 	 	 90%	62.2M	0s
##	122150K	 	 	 90%	91.7M	0s
##	122200K	 	 	 90%	133M	0s
##	122250K	 	 	 90%	54.8M	0s
					135M	
					148M	
					183M	
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		 	 	 70	182M	
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##	1200001	 	 	 J 1 /₀	7.111	OD

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						0s
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					128M	0s
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					146M	0s
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##	124450K	 	 	 92%	126M	0s
##	124500K	 	 	 92%	91.3M	0s
##	124550K	 	 	 92%	150M	0s
##	124600K	 	 	 92%	138M	0s
					132M	
##	124700K	 	 	 92%	96.1M	0s
##	124750K	 	 	 92%	112M	0s
##	124800K	 	 	 92%	76.1M	0s
##	124850K	 	 	 92%	148M	0s
##	124900K	 	 	 92%	131M	0s
##	124950K	 	 	 92%	184M	0s
##	125000K	 	 	 92%	126M	0s
##	125050K	 	 	 92%	80.6M	0s
##	125100K	 	 	 92%	128M	0s
##	125150K	 	 	 92%	213M	0s
##	125200K	 	 	 92%	76.1M	0s
##	125250K	 	 	 92%	186M	0s
##	125300K	 	 	 93%	128M	0s
##	125350K	 	 	 93%	165M	0s
##	125400K	 	 	 93%	64.9M	0s
					159M	
##	125500K	 	 	 93%	75.8M	0s
##	125550K	 	 	 93%	174M	0s
##	125600K	 	 	 93%	173M	0s
##	125650K	 	 	 93%	94.3M	0s
##	125700K	 	 	 93%	127M	0s
##	125750K	 	 	 93%	141M	0s
##	125800K	 	 	 93%	93.8M	0s
##	125850K	 	 	 93%	135M	0s
##	125900K	 	 	 93%	135M	0s
##	125950K	 	 	 93%	146M	0s
##	126000K	 	 	 93%	76.9M	0s

	4000000			00%	4000	^
					136M	
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					133M	0s
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					64.7M	0s
					141M	0s
					142M	0s
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##	127400K	 	 	 94%	115M	0s
##	127450K	 	 	 94%	137M	0s
##	127500K	 	 	 94%	146M	0s
##	127550K	 	 	 94%	79.1M	0s
					129M	0s
##	127650K	 	 	 94%	139M	0s
##	127700K	 	 	 94%	113M	0s
					166M	0s
##	127800K	 	 	 94%	141M	0s
##	127850K	 	 	 94%	174M	0s
##	127900K	 	 	 94%	145M	0s
##	127950K	 	 	 94%	147M	0s
##	128000K	 	 	 95%	81.7M	0s
##	128050K	 	 	 95%	135M	0s
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##	128150K	 	 	 95%	150M	0s
##	128200K	 	 	 95%	152M	0s
##	128250K	 	 	 95%	84.8M	0s
##	128300K	 	 	 95%	146M	0s
##	128350K	 	 	 95%	177M	0s
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##	128450K	 	 	 95%	212M	0s
##	128500K	 	 	 95%	134M	0s
##	128550K	 	 	 95%	86.6M	0s
##	128600K	 	 	 95%	87.1M	0s
					146M	
					114M	0s

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						177M	
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						137M	0s
##	129850K	 		 	96%	157M	0s
##	129900K	 		 	96%	111M	0s
##	129950K	 		 	96%	106M	0s
##	130000K	 		 	96%	92.4M	0s
##	130050K	 		 	96%	142M	0s
##	130100K	 		 	96%	136M	0s
##	130150K	 		 	96%	133M	0s
##	130200K	 		 	96%	122M	0s
##	130250K	 		 	96%	146M	0s
##	130300K	 		 	96%	134M	0s
##	130350K	 		 	96%	162M	0s
##	130400K	 		 	96%	129M	0s
##	130450K	 		 	96%	181M	0s
##	130500K	 		 	96%	146M	0s
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##	130750K	 		 	97%	123M	0s
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##	132400K	 		 	98%	134M	0s
##	132450K	 		 	98%	173M	0s
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##	132600K	 		 	98%	101M	0s
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##	132850K	 		 	98%	156M	0s
##	132900K	 		 	98%	143M	0s
##	132950K	 		 	98%	121M	0s
##	133000K	 		 	98%	141M	0s
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##	133100K	 		 	98%	119M	0s
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##	133200K	 		 	98%	118M	0s
##	133250K	 		 	98%	111M	0s
##	133300K	 		 	98%	151M	0s
##	133350K	 		 	99%	139M	0s
##	133400K	 		 	99%	125M	0s
##	133450K	 		 	99%	211M	0s
##	133500K	 		 	99%	142M	0s
##	133550K	 		 	99%	139M	0s
##	133600K	 		 	99%	197M	0s
##	133650K	 		 	99%	69.8M	0s
##	133700K	 		 	99%	124M	0s
##	133750K	 		 	99%	102M	0s
##	133800K	 		 	99%	117M	0s
##	133850K	 		 	99%	134M	0s
						155M	
						127M	
						151M	
						133M	
						126M	

```
## 134150K ...... 99%
## 134200K ..... 99%
                                                160M Os
## 134250K ..... 99%
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                                                120M 0s
## 134350K ..... 99%
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## 134600K ...... 99%
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## 134700K ..... .... ..... .....
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                                            100%
## 2020-11-24 21:14:18 (67.6 MB/s) - 'silva_nr99_v138_train_set.fa.gz.1' saved [137973851/137973851]
taxa <- assignTaxonomy(seqtab.nochim, "~/silva_nr99_v138_train_set.fa.gz", multithread=TRUE)
taxa.print <- taxa # Removing sequence rownames for display only
rownames(taxa.print) <- NULL</pre>
head(taxa.print)
##
     Kingdom
             Phylum
                       Class
                                 Order
                                            Family
## [1,] "Bacteria" "Bacteroidota" "Bacteroidia" "Bacteroidales" "Muribaculaceae"
## [2,] "Bacteria" "Bacteroidota" "Bacteroidia" "Bacteroidales" "Muribaculaceae"
## [3,] "Bacteria" "Bacteroidota" "Bacteroidia" "Bacteroidales" "Muribaculaceae"
## [4,] "Bacteria" "Bacteroidota" "Bacteroidia" "Bacteroidales" "Muribaculaceae"
## [5,] "Bacteria" "Bacteroidota" "Bacteroidia" "Bacteroidales" "Bacteroidaceae"
## [6,] "Bacteria" "Bacteroidota" "Bacteroidia" "Bacteroidales" "Muribaculaceae"
##
     Genus
## [1,] NA
## [2,] NA
## [3,] NA
## [4,] NA
## [5,] "Bacteroides"
## [6,] NA
wget https://zenodo.org/record/3986799/files/silva_species_assignment_v138.fa.gz
## --2020-11-24 21:16:54-- https://zenodo.org/record/3986799/files/silva_species_assignment_v138.fa.gz
## Resolving zenodo.org (zenodo.org)... 137.138.76.77
## Connecting to zenodo.org (zenodo.org)|137.138.76.77|:443... connected.
## HTTP request sent, awaiting response... 200 OK
## Length: 81840166 (78M) [application/octet-stream]
## Saving to: 'silva_species_assignment_v138.fa.gz.3'
##
##
     OK ...... 0% 7.30M 11s
##
    50K ...... 0% 12.7M 8s
##
    100K ...... 0% 14.0M 7s
##
    150K ...... 0% 9.62M 8s
##
    0% 82.0M 6s
##
    250K ..... 0% 12.0M 6s
##
    300K ..... 0% 75.6M 6s
```

##	SEON	 0% 29.6M 5s
##		 0% 29.6M 5S
##		 0% 38.0M 4s
##		 0% 38.0M 48
##		0% 19.0M 5s
##		 0% 64.7M 4s
##		 0% 41.4M 4s
##		 0% 60.1M 4s
##		1% 35.8M 4s
##		 1% 48.0M 4s
##		1% 86.4M 4s
##		 1% 54.4M 3s
##		 1% 86.7M 3s
##		 1% 63.4M 3s
##		 1% 88.1M 3s
##		 1% 48.6M 3s
##		 1% 85.5M 3s
##		 1% 81.0M 3s
##		 1% 72.7M 3s
##		 1% 48.4M 3s
##		 1% 80.1M 3s
##		 1% 49.0M 3s
##		 1% 66.0M 3s
##		 1% 35.5M 3s
##		 2% 44.8M 3s
##		 2% 75.7M 3s
##		 2% 4.62M 3s
##		 2% 64.7M 3s
##		 2% 76.5M 3s
##		 2% 46.2M 3s
##		 2% 46.3M 3s
##		 2% 102M 3s
##		 2% 89.0M 3s
##		 2% 25.7M 3s
##		 2% 57.6M 3s
##		 2% 52.0M 3s
##		 2% 97.0M 3s
##		 2% 42.1M 3s
##		 2% 72.9M 3s
##		 2% 72.7M 2s
##		 3% 76.4M 2s
##		 3% 85.0M 2s
##		 3% 80.8M 2s
##		 3% 32.0M 2s
##		 3% 61.1M 2s
##		 3% 54.1M 2s
##		 3% 98.1M 2s
##		 3% 67.6M 2s
##		 3% 51.4M 2s
##		 3% 93.2M 2s
##		 3% 32.2M 2s
##		 3% 105M 2s
##		 3% 98.3M 2s
##	3000K	 3% 103M 2s

шш	3050K	29/ 444M 0-
##		3% 111M 2s
##	3100K	3% 61.8M 2s
##	3150K	4% 82.6M 2s
##	3200K	4% 48.7M 2s
##	3250K	4% 71.2M 2s
##	3300K	4% 94.6M 2s
##	3350K	4% 107M 2s
##	3400K	4% 48.8M 2s
##	3450K	4% 106M 2s
##	3500K	4% 88.1M 2s
##	3550K	4% 59.5M 2s
##	3600K	4% 56.2M 2s
##	3650K	4% 110M 2s
##	3700K	4% 124M 2s
##	3750K	4% 77.1M 2s
##	3800K	4% 110M 2s
##	3850K	4% 118M 2s
##	3900K	4% 74.1M 2s
##	3950K	5% 69.9M 2s
##	4000K	5% 71.0M 2s
##	4050K	5% 128M 2s
##	4100K	5% 51.8M 2s
##	4150K	5% 58.3M 2s
##	4200K	5% 87.7M 2s
##	4250K	5% 70.2M 2s
##	4300K	5% 116M 2s
##	4350K	5% 133M 2s
##	4400K	5% 127M 2s
##	4450K	5% 116M 2s
##	4500K	5% 123M 2s
##	4550K	5% 129M 2s
##	4600K	5% 28.3M 2s
##	4650K	5% 127M 2s
##	4700K	5% 124M 2s
##	4750K	6% 120M 2s
##	4800K	6% 116M 2s
##	4850K	6% 133M 2s
##	4900K	6% 122M 2s
##	4950K	6% 69.3M 2s
##	5000K	6% 69.2M 2s
##	5050K	6% 85.2M 2s
##	5100K	6% 86.7M 2s
##	5150K	6% 126M 2s
##	5200K	6% 80.0M 2s
##	5250K	6% 126M 2s
##	5300K	6% 102M 2s
##	5350K	6% 79.4M 2s
##	5400K	6% 120M 2s
##	5450K	6% 142M 2s
##	5500K	6% 134M 2s
##	5550K	7% 27.2M 2s
##	5600K	7% 63.6M 2s
##	5650K	7% 112M 2s
##	5700K	7% 125M 2s

шш	5750K	7%	110M	0-
##			119M	
##	5800K		134M	
##	5850K		5.55M	
##	5900K		62.9M	
##	5950К	. ,,	88.9M	
##	6000K		33.OM	
##	6050K	7%	60.5M	2s
##	6100K	7%	59.4M	2s
##	6150K	7%	128M	2s
##	6200K	7%	32.9M	2s
##	6250K	7%	75.9M	2s
##	6300K	7%	17.5M	2s
##	6350K	8%	81.8M	2s
##	6400K	8%	41.9M	2s
##	6450K	8%	77.3M	2s
##	6500K	8%	73.6M	2s
##	6550K	8%	110M	2s
##	6600K	8%	68.6M	2s
##	6650K	8%	112M	2s
##	6700K	8%	134M	2s
##	6750K	8%	55.2M	2s
##	6800K	8%	73.0M	2s
##	6850K	8%	44.OM	2s
##	6900K	8%	69.9M	2s
##	6950K	8%	66.1M	2s
##	7000K	8%	116M	2s
##	7050K	8%	56.0M	2s
##	7100K	8%	108M	2s
##	7150K	9%	76.3M	1s
##	7200K	9%	123M	1s
##	7250K	9%	66.3M	1s
##	7300K	9%	71.4M	1s
##	7350K	9%	110M	1s
##	7400K	9%	36.8M	1s
##	7450K	9%	73.7M	1s
##	7500K		75.8M	
##	7550K	9%	50.0M	1s
##	7600K		104M	
##	7650K	9%	81.4M	1s
##	7700K		61.3M	
##	7750K		62.6M	
##	7800K		47.1M	
##	7850K	9%	53.1M	1s
##	7900K		33.7M	
##	7950K			
##	8000K	10%	51.6M	1s
##	8050K			
##	8100K			
##	8150K			
##	8200K	10%		
##	8250K			
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##	8900K	 	 	 11%	28.4M	1s
##	8950K	 	 	 11%	129M	1s
##	9000K	 	 	 11%	110M	1s
##	9050K	 	 	 11%	37.7M	1s
##	9100K	 	 	 11%	72.8M	1s
##	9150K	 	 	 11%	132M	1s
##	9200K	 	 	 11%	81.3M	1s
##	9250K	 	 	 11%	92.9M	1s
##	9300K	 	 	 11%	71.4M	1s
##	9350K	 	 	 11%	75.6M	1s
##	9400K	 	 	 11%	63.7M	1s
##	9450K	 	 	 11%	42.0M	1s
##	9500K	 	 	 11%	116M	1s
##	9550K	 	 	 12%	40.0M	1s
##	9600K	 	 	 12%	99.1M	1s
##	9650K	 	 	 12%	66.8M	1s
##	9700K	 	 	 12%	109M	1s
##	9750K	 	 	 12%	79.3M	1s
##	9800K	 	 	 12%	70.3M	1s
##	9850K	 	 	 12%	65.8M	1s
##	9900K	 	 	 12%	52.0M	1s
##	9950K	 	 	 12%	75.7M	1s
##	10000K	 	 	 12%	82.3M	1s
##	10050K	 	 	 12%	77.3M	1s
##	10100K	 	 	 12%	11.3M	1s
##	10150K	 	 	 12%	124M	1s
##	10200K	 	 	 12%	29.4M	1s
##	10250K	 	 	 12%	53.6M	1s
##					115M	
##	10350K	 	 	 13%	147M	1s
##	10400K	 	 	 13%	16.6M	1s
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##	10600K	 	 	 13%	63.1M	1s
##	10650K	 	 	 13%	50.2M	1s
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##	11400K	 			 14%	102M	1s
##	11450K	 			 14%	80.6M	1s
##	11500K	 			 14%	27.3M	1s
##	11550K	 			 14%	29.8M	1s
##	11600K	 			 14%	23.4M	1s
##	11650K	 			 14%	152M	1s
##	11700K	 			 14%	66.0M	1s
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##	13800K	 •	• • • • • • • • • • • • • • • • • • • •	• • • • • • • • • • • • • • • • • • • •	 17%	26.3M	1s

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##	13850K					
##	13900K					
##	13950K					
##	14000K					
##	14050K					
##	14100K	 	 	17%	83.1M	1s
##	14150K	 	 	17%	97.5M	1s
##	14200K	 	 	17%	102M	1s
##	14250K	 	 	17%	110M	1s
##	14300K	 	 	17%	12.0M	1s
##	14350K	 	 	18%	86.8M	1s
##	14400K	 	 	18%	106M	1s
##	14450K					
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##	15900K					
##	15950K					
##	16000K	 	 	20%	85.9M	1s
##	16050K					
##	16100K					
##	16150K					
##	16200K					
##	16250K					
##	16300K					
##	16350K					
##	16400K					
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##	16500K	 	 	20%	50.9M	1s

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##	16800K						21%	21.3M	1s
##	16850K						21%	36.3M	1s
##	16900K						21%	53.9M	1s
##	16950K						21%	58.1M	1s
##	17000K						21%	53.8M	1s
##	17050K						21%	113M	1s
##	17100K						21%	47.6M	1s
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##								94.5M	1s
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##	19200K	• • • • • • • • • • • • • • • • • • • •	• • • • • • • • • • • • • • • • • • • •	• • • • • • • • • • • • • • • • • • • •	• • • • • • • • • • • • • • • • • • • •	• • • • • • • • • • • • • • • • • • • •	24%	105M	1s

##	19250K						
##	19300K						
##	19350K						
##	19400K						
##	19450K						
##	19500K						
##	19550K						
##	19600K						
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##	19700K						
##	19750K						
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##	20100K						
##	20150K						
##	20200K						
##	20250K						
##	20300K						1s
##	20350K						
##	20400K						1s
##	20450K						1s
##	20500K						
##	20550K					81.1M	1s
##	20600K					103M	
##	20650K					91.9M	1s
##	20700K					101M	
##	20750K						
##	20800K						
##	20850K						
##	20900K						
##	20950K						
##	21000K						
##	21050K						
##	21100K					116M	
##	21150K					118M	
##	21200K						
##	21250K					109M	
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##	21400K						
##	21450K					122M	
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##	21900K	 	• • • • • • • • • • • • • • • • • • • •	• • • • • • • • • • • • • • • • • • • •	27%	51.9M	1s

##					127M	
##						
##					128M	
##					40.5M	1s
##					107M	
##	22200K		 	 27%	26.2M	1s
##	22250K		 	 27%	127M	1s
##	22300K		 	 27%	107M	1s
##						
##	22400K		 	 28%	98.9M	1s
##						
##	22500K		 	 28%	81.9M	1s
##	22550K		 	 28%	76.1M	1s
##	22600K		 	 28%	101M	1s
##	22650K		 	 28%	44.6M	1s
##	22700K		 	 28%	109M	1s
##	22750K		 	 28%	22.1M	1s
##	22800K		 	 28%	75.2M	1s
##	22850K		 	 28%	35.0M	1s
##	22900K		 	 28%	125M	1s
##	22950K		 	 28%	114M	1s
##	23000K		 	 28%	90.9M	1s
##	23050K		 	 28%	110M	1s
##	23100K		 	 28%	116M	1s
##					14.6M	1s
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##						
##	23300K		 	 29%	38.7M	1s
##	23350K		 	 29%	130M	1s
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##						
##	25400K	 	 	 31%	91.9M	1s
##						
##	25500K	 	 	 31%	59.7M	1s
##	25550K	 	 	 32%	87.2M	1s
##	25600K	 	 	 32%	100M	1s
##	25650K	 	 	 32%	99.8M	1s
##	25700K	 	 	 32%	65.8M	1s
##	25750K	 	 	 32%	86.7M	1s
##	25800K	 	 	 32%	115M	1s
##	25850K	 	 	 32%	81.7M	1s
##	25900K	 	 	 32%	56.7M	1s
##	25950K	 	 	 32%	104M	1s
##	26000K	 	 	 32%	90.2M	1s
##	26050K	 	 	 32%	45.8M	1s
##	26100K	 	 	 32%	75.4M	1s
##	26150K	 	 	 32%	96.3M	1s
##	26200K	 	 	 32%	116M	1s
##	26250K	 	 	 32%	76.9M	1s
##	26300K	 	 	 32%	73.6M	1s
##	26350K	 	 	 33%	91.2M	1s
##	26400K	 	 	 33%	105M	1s
##	26450K	 	 	 33%	84.1M	1s
##	26500K	 	 	 33%	100M	1s
##	26550K	 	 	 33%	121M	1s
##	26600K	 	 	 33%	74.2M	1s
##	26650K	 	 	 33%	76.2M	1s
##	26700K	 	 	 33%	150M	1s
##	26750K	 	 	 33%	88.8M	1s
##	26800K	 	 	 33%	66.5M	1s
##	26850K	 	 	 33%	79.9M	1s
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##					107M	
##	27000K	 	 	 33%		
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##	27350K					
##	27400K					
##	27450K				106M	
##	27500K				120M	
##	27550K					
##	27600K					
##	27650K				133M	
##	27700K					1s
##	27750K					
##	27800K					
##	27850K					1s
##	27900K					
##	27950K	 	 	35%	70.2M	1s
##	28000K					
##	28050K					1s
##	28100K					
##	28150K	 	 	35%	82.1M	1s
##	28200K	 	 	35%	70.5M	1s
##	28250K	 	 	35%	102M	1s
##	28300K	 	 	35%	74.2M	1s
##	28350K	 	 	35%	66.9M	1s
##	28400K	 	 	35%	102M	1s
##	28450K	 	 	35%	109M	1s
##	28500K	 	 	35%	86.0M	1s
##	28550K	 	 	35%	110M	1s
##	28600K	 	 	35%	105M	1s
##	28650K	 	 	35%	136M	1s
##	28700K	 	 	35%	102M	1s
##	28750K	 	 	36%	100M	1s
##	28800K	 	 	36%	98.6M	1s
##	28850K	 	 	36%	99.5M	1s
##	28900K	 	 	36%	90.8M	1s
##	28950K	 	 	36%	89.2M	1s
##	29000K	 	 	36%	22.7M	1s
##	29050K	 	 	36%	70.1M	1s
##	29100K	 	 	36%	26.8M	1s
##	29150K	 	 	36%	42.7M	1s
##	29200K	 	 	36%	38.6M	1s
##	29250K	 	 	36%	95.3M	1s
##	29300K	 	 	36%	44.2M	1s
##	29350K	 	 	36%	87.1M	1s
##	29400K	 	 	36%	93.4M	1s
##	29450K	 	 	36%	95.0M	1s
##	29500K	 	 	36%	13.4M	1s
##	29550K	 	 	37%	67.0M	1s
##	29600К					
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##	29750K					
##	29800K					
##	29850K				113M	
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##	30050K					
##	30100K					
##	30150K					
##	30200K					
##	30250K					
##	30300K					1s
##	30350K					1s
##	30400K	 	 	38%	105M	1s
##	30450K	 	 	38%	55.2M	1s
##	30500K					
##	30550K					
##	30600K					
##	30650K	 	 	38%	6.48M	1s
##	30700K	 	 	38%	70.9M	1s
##	30750K	 	 	38%	105M	1s
##	30800K	 	 	38%	107M	1s
##	30850K	 	 	38%	111M	1s
##	30900K	 	 	38%	116M	1s
##	30950K	 	 	38%	116M	1s
##	31000K	 	 	38%	91.6M	1s
##	31050K	 	 	38%	76.2M	1s
##	31100K	 	 	38%	118M	1s
##	31150K	 	 	39%	66.9M	1s
##	31200K	 	 	39%	116M	1s
##	31250K	 	 	39%	110M	1s
##	31300K	 	 	39%	110M	1s
##	31350K	 	 	39%	65.7M	1s
##	31400K	 	 	39%	37.5M	1s
##	31450K	 	 	39%	70.2M	1s
##	31500K	 	 	39%	118M	1s
##	31550K	 	 	39%	117M	1s
##	31600K	 	 	39%	88.5M	1s
##	31650K	 	 	39%	52.7M	1s
##	31700K	 	 	39%	76.1M	1s
##	31750K					
##	31800K					
##	31850K	 	 	39%	63.7M	1s
##	31900K	 	 	39%	121M	1s
##	31950K	 	 	40%	70.9M	1s
##	32000K					
##	32050K	 	 	40%	78.8M	1s
##	32100K	 	 	40%	68.9M	1s
##	32150K	 	 	40%	128M	1s
##	32200K	 	 	40%	65.4M	1s
##	32250K	 	 	40%	82.1M	1s
##	32300K					
##	32350K					
##	32400K					
##	32450K					
##	32500K					
##	32550K					
##	32600K					
##	32650K					
##	32700K					
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##	32750K				130M	
##	32800K				124M	
##	32850K					
##	32900K				117M	1s
##	32950K				158M	1s
##	33000K	 	 	41%	121M	1s
##	33050K	 	 	41%	130M	1s
##	33100K	 	 	41%	123M	1s
##	33150K	 	 	41%	13.7M	1s
##	33200K	 	 	41%	116M	1s
##	33250K	 	 	41%	148M	1s
##	33300K	 	 	41%	89.0M	1s
##	33350K	 	 	41%	60.9M	1s
##	33400K	 	 	41%	127M	1s
##	33450K	 	 	41%	146M	1s
##	33500K	 	 	41%	26.0M	1s
##	33550K	 	 	42%	65.0M	1s
##	33600K	 	 	42%	18.0M	1s
##	33650K	 	 	42%	49.9M	1s
##	33700K	 	 	42%	37.8M	1s
##	33750K					
##	33800K					
##	33850K					
##	33900K					
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##	35150K					
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##	35250K					
##	35300K					1s
##	35350K					
##	35400K	 	 	44%	67.4M	1s

##	35450K					
##	35500K					
##	35550K					
##	35600K					
##	35650K					
##	35700K	 	 	44%	79.8M	1s
##	35750K	 	 	44%	83.8M	1s
##	35800K	 	 	44%	79.2M	1s
##	35850K	 	 	44%	109M	1s
##	35900K	 	 	44%	72.3M	1s
##	35950K	 	 	45%	105M	1s
##	36000K	 	 	45%	67.0M	1s
##	36050K	 	 	45%	90.4M	1s
##	36100K	 	 	45%	85.8M	1s
##	36150K	 	 	45%	88.9M	1s
##	36200K	 	 	45%	99.3M	1s
##	36250K	 	 	45%	108M	1s
##	36300K	 	 	45%	78.7M	1s
##	36350K	 	 	45%	91.1M	1s
##	36400K	 	 	45%	82.8M	1s
##	36450K	 	 	45%	101M	1s
##	36500K	 	 	45%	92.9M	1s
##	36550K	 	 	45%	119M	1s
##	36600K	 	 	45%	79.4M	1s
##	36650K					
##	36700K					
##	36750K					
##	36800K	 	 	46%	86.2M	1s
##	36850K					
##	36900K					1s
##	36950K					
##	37000K					
##	37050K					
##	37100K					
##	37150K					
##	37200K					
##	37250K					
##	37300K					
##	37350K					
##	37400K					
##	37450K					
##	37500K					
##	37550K					
##	37600K					
##	37650K					
##	37700K					
##	37750K					
##	37800K					
##	37850K					
##	37900K					
##	37950K					
##	38000K					
##	38050K					
##	38100K	 • • • • • • • • • •	 • • • • • • • • • •	4/%	92.0M	IS

##	38150K					
##	38200K					
##	38250K					
##	38300K					
##	38350K					
##	38400K				17.2M	1s
##	38450K				107M	1s
##	38500K				104M	1s
##	38550K				133M	1s
##	38600K				101M	1s
##	38650K				110M	
##	38700K					
##	38750K					
##	38800K					
##	38850K					
##	38900K					
##	38950K	 	 	48%	98.2M	1s
##	39000K	 	 	48%	101M	1s
##	39050K	 	 	48%	99.2M	1s
##	39100K	 	 	48%	102M	1s
##	39150K	 	 	49%	131M	1s
##	39200K	 	 	49%	75.3M	1s
##	39250K	 	 	49%	109M	1s
##	39300K	 	 	49%	63.6M	1s
##	39350K	 	 	49%	93.5M	1s
##	39400K	 	 	49%	52.2M	1s
##	39450K	 	 	49%	43.3M	1s
##	39500K	 	 	49%	103M	1s
##	39550K	 	 	49%	110M	1s
##	39600K	 	 	49%	50.9M	1s
##	39650K	 	 	49%	118M	1s
##	39700K	 	 	49%	87.4M	1s
##	39750K	 	 	49%	102M	1s
##	39800K	 	 	49%	74.5M	1s
##	39850K	 	 	49%	90.0M	1s
##	39900K	 	 	49%	89.8M	1s
##	39950K	 	 	50%	105M	1s
##	40000K	 	 	50%	94.9M	1s
##	40050K	 	 	50%	119M	1s
##	40100K	 	 	50%	73.9M	1s
##	40150K	 	 	50%	98.9M	1s
##	40200K	 	 	50%	38.6M	1s
##	40250K	 	 	50%	88.9M	1s
##	40300K	 	 	50%	99.0M	1s
##	40350K	 	 	50%	116M	1s
##	40400K	 	 	50%	77.9M	1s
##	40450K	 	 	50%	112M	1s
##	40500K	 	 	50%	108M	1s
##	40550K	 	 	50%	123M	1s
##	40600K	 	 	50%	99.1M	1s
##	40650K	 	 	50%	51.2M	1s
##	40700K	 	 	50%	80.6M	1s
##	40750K	 	 	51%	52.9M	1s
##	40800K	 	 	51%	87.6M	1s

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##						1s
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##						
##	41600K	 	 	 52%	112M	1s
##						
##	41700K	 	 	 52%	82.6M	1s
##	41750K	 	 	 52%	144M	1s
##	41800K	 	 	 52%	117M	1s
##	41850K	 	 	 52%	105M	1s
##	41900K	 	 	 52%	115M	1s
##	41950K	 	 	 52%	125M	1s
##	42000K	 	 	 52%	115M	1s
##	42050K	 	 	 52%	138M	1s
##	42100K	 	 	 52%	32.6M	1s
##	42150K	 	 	 52%	96.1M	1s
##	42200K	 	 	 52%	28.5M	1s
##	42250K	 	 	 52%	82.8M	1s
##	42300K	 	 	 52%	104M	1s
##	42350K	 	 	 53%	90.5M	1s
##	42400K	 	 	 53%	96.8M	1s
##	42450K	 	 	 53%	106M	1s
##	42500K	 	 	 53%	83.7M	1s
##	42550K	 	 	 53%	113M	1s
##	42600K	 	 	 53%	122M	1s
##	42650K	 	 	 53%	12.1M	1s
##	42700K	 	 	 53%	96.2M	1s
##	42750K	 	 	 53%	116M	1s
##	42800K	 	 	 53%	128M	1s
##	42850K	 	 	 53%	143M	1s
##	42900K	 	 	 53%	120M	1s
##	42950K	 	 	 53%	126M	1s
##	43000K	 	 	 53%	132M	1s
##	43050K	 	 	 53%	110M	1s
##	43100K	 	 	 53%	78.3M	1s
##	43150K	 	 	 54%	40.0M	1s
##	43200K	 	 	 54%	51.3M	1s
##	43250K	 	 	 54%	76.0M	1s
##	43300K	 	 	 54%	94.5M	1s
##	43350K	 	 	 54%	88.2M	1s
##	43400K	 	 	 54%	109M	1s
##	43450K	 	 	 54%	110M	1s
##	43500K	 	 	 54%	114M	1s

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##							
##						41.0M	1s
##						116M	
##						72.1M	1s
##						110M	1s
##						118M	1s
##	44100K	 		 	55%	121M	1s
##	44150K	 		 	55%	116M	1s
##	44200K	 		 	55%	115M	1s
##	44250K	 		 	55%	111M	1s
##	44300K	 		 	55%	136M	1s
##	44350K	 		 	55%	100M	1s
##	44400K	 		 	55%	103M	1s
##	44450K	 		 	55%	49.2M	1s
##	44500K	 		 	55%	106M	1s
##	44550K	 		 	55%	80.4M	1s
##	44600K	 		 	55%	25.9M	1s
##	44650K	 		 	55%	84.3M	1s
##	44700K	 		 	55%	128M	1s
##	44750K	 		 	56%	137M	1s
##	44800K	 		 	56%	128M	1s
##	44850K	 		 	56%	118M	1s
##	44900K	 		 	56%	113M	1s
##	44950K	 		 	56%	116M	1s
##	45000K	 		 	56%	18.1M	1s
##	45050K	 		 	56%	35.6M	1s
##	45100K	 		 	56%	36.9M	1s
##	45150K	 		 	56%	47.2M	1s
##	45200K	 		 	56%	69.2M	1s
##	45250K	 		 	56%	58.4M	1s
##	45300K	 		 	56%	109M	1s
##	45350K	 		 	56%	128M	1s
##	45400K	 		 	56%	110M	1s
##	45450K	 		 	56%	110M	1s
##	45500K	 		 	56%	113M	1s
##	45550K	 		 	57%	109M	1s
##	45600K	 		 	57%	97.8M	1s
##	45650K	 		 	57%	30.6M	1s
##	45700K	 		 	57%	113M	1s
##	45750K	 		 	57%	32.7M	1s
##	45800K	 		 	57%	115M	1s
##	45850K	 		 	57%	85.7M	1s
##	45900K	 		 	57%	117M	1s
##	45950K	 		 	57%	84.0M	1s
##	46000K	 		 	57%	101M	1s
##	46050K	 		 	57%	50.0M	1s
##	46100K	 		 	57%	118M	1s
##	46150K	 		 	57%	33.5M	1s
##	46200K	 		 	57%	107M	1s

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##					•	35.2M	1s
##		 		 	70	106M	1s
##		 		 	70	123M	1s
##		 		 	70	129M	1s
##		 		 	70	123M	1s
##						119M	1s
##		 		 	70	108M	1s
##						112M	1s
##	47150K	 		 	59%	133M	1s
##	47200K	 		 	59%	52.2M	1s
##	47250K	 		 	59%	36.0M	1s
##	47300K	 		 	59%	64.1M	1s
##	47350K	 		 	59%	48.1M	1s
##	47400K	 		 	59%	65.1M	1s
##	47450K	 		 	59%	128M	1s
##	47500K	 		 	59%	123M	1s
##	47550K	 		 	59%	107M	1s
##	47600K	 		 	59%	127M	1s
##	47650K	 		 	59%	114M	1s
##	47700K	 		 	59%	119M	1s
##	47750K	 		 	59%	118M	1s
##	47800K	 		 	59%	39.7M	1s
##	47850K	 		 	59%	70.6M	1s
##	47900K	 		 	59%	21.8M	1s
##	47950K	 		 	60%	26.0M	1s
##	48000K	 		 	60%	81.5M	1s
##	48050K	 		 	60%	105M	1s
##	48100K	 		 	60%	93.8M	1s
##	48150K	 		 	60%	77.5M	1s
##	48200K	 		 	60%	88.4M	1s
##	48250K	 		 	60%	69.0M	1s
##	48300K	 		 	60%	80.2M	1s
##	48350K	 		 	60%	76.4M	1s
##	48400K	 		 	60%	87.1M	1s
##	48450K	 		 	60%	105M	1s
##	48500K	 		 	60%	97.6M	1s
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##	48950K					
##	49000K					
##	49050K					
##	49100K					
##	49150K					
##	49200K					
##	49250K					
##	49300K					
##	49350K					
##	49400K					
##	49450K				109M	
##	49500K					
##	49550K	 	 	62%	78.9M	0s
##	49600K				111M	0s
##	49650K				104M	
##	49700K				69.3M	0s
##	49750K	 	 	62%	103M	0s
##	49800K	 	 	62%	83.4M	0s
##	49850K	 	 	62%	118M	0s
##	49900K	 	 	62%	74.5M	0s
##	49950K	 	 	62%	113M	0s
##	50000K	 	 	62%	29.8M	0s
##	50050K	 	 	62%	67.6M	0s
##	50100K	 	 	62%	61.1M	0s
##	50150K	 	 	62%	107M	0s
##	50200K	 	 	62%	71.7M	0s
##	50250K	 	 	62%	16.5M	0s
##	50300K	 	 	62%	57.0M	0s
##	50350K	 	 	63%	70.0M	0s
##	50400K	 	 	63%	79.8M	0s
##	50450K	 	 	63%	50.0M	0s
##	50500K	 	 	63%	90.5M	0s
##	50550K	 	 	63%	114M	0s
##	50600K	 	 	63%	84.0M	0s
##	50650K	 	 	63%	100M	0s
##	50700K	 	 	63%	69.2M	0s
##	50750K					
##	50800K					0s
##	50850K					
##	50900K					
##	50950K	 	 	63%	83.6M	0s
##	51000K					
##	51050K					
##	51100K					
##	51150K					
##	51200K					
##	51250K					
##	51300K					
##	51350K					
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##	51450K					
##	51500K					
##	51550K					
##	51600K					
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##	51700K					
##	51750K					
##	51800K					
##	51850K					
##	51900K					
##	51950K					
##	52000K					
##	52050K					
##	52100K	 	 	65%	56.9M	0s
##	52150K	 	 	65%	70.1M	0s
##	52200K	 	 	65%	111M	0s
##	52250K	 	 	65%	39.4M	0s
##	52300K	 	 	65%	74.9M	0s
##	52350K	 	 	65%	77.OM	0s
##	52400K	 	 	65%	94.3M	0s
##	52450K	 	 	65%	97.7M	0s
##	52500K	 	 	65%	12.6M	0s
##	52550K	 	 	65%	83.2M	0s
##	52600K	 	 	65%	95.9M	0s
##	52650K	 	 	65%	4.74M	0s
##	52700K	 	 	66%	103M	0s
##	52750K	 	 	66%	93.5M	0s
##	52800K	 	 	66%	118M	0s
##	52850K	 	 	66%	114M	0s
##	52900K	 	 	66%	106M	0s
##	52950K	 	 	66%	120M	0s
##	53000K	 	 	66%	111M	0s
##	53050K	 	 	66%	89.0M	0s
##	53100K	 	 	66%	122M	0s
##	53150K	 	 	66%	21.2M	0s
##	53200K	 	 	66%	92.7M	0s
##	53250K	 	 	66%	140M	0s
##	53300K	 	 	66%	94.1M	0s
##	53350K	 	 	66%	77.7M	0s
##	53400K	 	 	66%	126M	0s
##	53450K	 	 	66%	137M	0s
##	53500K	 	 	67%	125M	0s
##	53550K	 	 	67%	111M	0s
##	53600K	 	 	67%	123M	0s
##	53650K	 	 	67%	108M	0s
##	53700K	 	 	67%	9.46M	0s
##	53750K	 	 	67%	139M	0s
##	53800K	 	 	67%	125M	0s
##	53850K	 	 	67%	112M	0s
##	53900K	 	 	67%	106M	0s
##	53950K	 	 	67%		
##	54000K				110M	
##	54050K	 	 	67%	137M	0s
##	54100K				117M	
##	54150K				139M	
##	54200K				123M	
##	54250K				110M	
##	54300K				135M	
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##	54350K					
##	54400K					
##	54450K					
##	54500K					
##	54550K					
##	54600K					
##	54650K					
##	54700K					
##	54750K					
##	54800K				108M	
##	54850K				108M	
##	54900K	 	 	/0	114M	
##	54950K				132M	
##	55000K				128M	
##	55050K					
##	55100K					
##	55150K				133M	
##	55200K					
##	55250K				143M	
##	55300K				33.0M	0s
##	55350K				123M	
##	55400K				124M	
##	55450K				131M	
##	55500K				115M	
##	55550K				115M	
##	55600K				101M	
##	55650K				112M	0s
##	55700K				107M	
##	55750K				147M	
##	55800K					
##	55850K					
##	55900K					
##	55950K					
##	56000K					
##	56050K					
##	56100K					
##	56150K					
##	56200K					
##	56250K					
##	56300K					
##	56350K					
##	56400K					
##	56450K					
##	56500K					
##	56550K					
##	56600K					
##	56650K					
##	56700K					
##	56750K					
##	56800K					
##	56850K					
##	56900K					
##	56950K					
##	57000K	 	 	71%	78.9M	0s

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##	57950K .	 		 	72%	92.1M	0s
##	58000K .	 		 	72%	59.2M	0s
##	58050K .	 		 	72%	69.0M	0s
##	58100K .	 		 	72%	89.7M	0s
##	58150K .	 		 	72%	28.8M	0s
##	58200K .	 		 	72%	113M	0s
##	58250K .	 		 	72%	45.9M	0s
##	58300K .	 		 	73%	84.4M	0s
##	58350K .	 		 	73%	122M	0s
##	58400K .	 		 	73%	91.6M	0s
##	58450K .	 		 	73%	71.7M	0s
##	58500K .	 		 	73%	95.1M	0s
##	58550K .	 		 	73%	98.5M	0s
##	58600K .	 		 	73%	86.2M	0s
##	58650K .	 		 	73%	128M	0s
##	58700K .	 		 	73%	98.8M	0s
##	58750K .	 		 	73%	107M	0s
##	58800K .	 		 	73%	36.8M	0s
##	58850K .	 		 	73%	98.6M	0s
##	58900K .	 		 	73%	93.0M	0s
##	58950K .	 		 	73%	71.8M	0s
##	59000K .	 		 	73%	101M	0s
##	59050K .	 		 	73%	66.8M	0s
##	59100K .	 		 	74%	67.8M	0s
##	59150K .	 		 	74%	105M	0s
##	59200K .	 		 	74%	81.3M	0s
##	59250K .	 		 	74%	53.5M	0s
##							
##	59350K .	 		 	74%	90.8M	0s
##							
##							
##							
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##							
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##							

##	59750K					
##	59800K					
##	59850K					
##	59900K					
##	59950K				110M	
##	60000K				60.5M	0s
##	60050K				124M	0s
##	60100K					
##	60150K					
##	60200K					
##	60250K					
##	60300K					
##	60350K					
##	60400K	 	 	 75%	76.8M	0s
##	60450K				103M	0s
##	60500K				102M	0s
##	60550K	 	 	 75%	105M	0s
##	60600K	 	 	 75%	97.8M	0s
##	60650K	 	 	 75%	133M	0s
##	60700K	 	 	 76%	69.0M	0s
##	60750K	 	 	 76%	93.9M	0s
##	60800K	 	 	 76%	43.2M	0s
##	60850K	 	 	 76%	111M	0s
##	60900K	 	 	 76%	89.2M	0s
##	60950K	 	 	 76%	106M	0s
##	61000K	 	 	 76%	39.4M	0s
##	61050K	 	 	 76%	82.8M	0s
##	61100K	 	 	 76%	93.3M	0s
##	61150K	 	 	 76%	88.9M	0s
##	61200K	 	 	 76%	104M	0s
##	61250K	 	 	 76%	112M	0s
##	61300K	 	 	 76%	41.OM	0s
##	61350K	 	 	 76%	79.7M	0s
##	61400K	 	 	 76%	118M	0s
##	61450K	 	 	 76%	91.5M	0s
##	61500K	 	 	 77%	66.6M	0s
##	61550K	 	 	 77%	109M	0s
##	61600K	 	 	 77%	58.8M	0s
##	61650K	 	 	 77%	88.7M	0s
##	61700K	 	 	 77%	64.9M	0s
##	61750K	 	 	 77%	52.9M	0s
##	61800K	 	 	 77%	100M	0s
##	61850K	 	 	 77%	133M	0s
##	61900K	 	 	 77%	81.3M	0s
##	61950K	 	 	 77%	93.9M	0s
##	62000K	 	 	 77%	106M	0s
##	62050K	 	 	 77%	81.3M	0s
##	62100K	 	 	 77%	80.2M	0s
##	62150K	 	 	 77%	105M	0s
##	62200K	 	 	 77%	43.6M	0s
##	62250K	 	 	 77%	75.0M	0s
##	62300K					
##	62350K	 	 	 78%	95.6M	0s
##	62400K					

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##	62450K					139M	
##	62500K					110M	
##	62550K						
##	62600K						
##	62650K						
##	62700K						0s
##	62750K	 			78%	152M	0s
##	62800K	 			78%	55.5M	0s
##	62850K						
##	62900K	 			78%	95.0M	0s
##	62950K	 			78%	56.2M	0s
##	63000K	 			78%	72.6M	0s
##	63050K	 			78%	151M	0s
##	63100K	 			79%	78.1M	0s
##	63150K	 			79%	90.2M	0s
##	63200K	 			79%	61.3M	0s
##	63250K	 			79%	111M	0s
##	63300K	 			79%	94.1M	0s
##	63350K	 			79%	138M	0s
##	63400K	 			79%	62.5M	0s
##	63450K	 			79%	102M	0s
##	63500K	 			79%	115M	0s
##	63550K	 			79%	120M	0s
##	63600K					96.5M	0s
##	63650K					101M	
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##	65100K	 	• • • • • • • • • •	• • • • • • • • • •	81%	80.6M	0s

##	65150K					
##	65200K					
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##	65400K					
##	65450K					
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##	65550K					
##	65600K					
##	65650K					
##	65700K					
##	65750K	 	 	82%	99.9M	0s
##	65800K	 	 	82%	81.5M	0s
##	65850K	 	 	82%	109M	0s
##	65900K	 	 	82%	103M	0s
##	65950K	 	 	82%	113M	0s
##	66000K	 	 	82%	116M	0s
##	66050K	 	 	82%	144M	0s
##	66100K	 	 	82%	121M	0s
##	66150K	 	 	82%	140M	0s
##	66200K	 	 	82%	21.5M	0s
##	66250K	 	 	82%	61.3M	0s
##	66300K	 	 	83%	90.5M	0s
##	66350K	 	 	83%	113M	0s
##	66400K	 	 	83%	93.2M	0s
##	66450K	 	 	83%	102M	0s
##	66500K	 	 	83%	86.6M	0s
##	66550K	 	 	83%	97.9M	0s
##	66600K	 	 	83%	77.OM	0s
##	66650K	 	 	83%	114M	0s
##	66700K	 	 	83%	91.4M	0s
##	66750K	 	 	83%	86.7M	0s
##	66800K	 	 	83%	68.3M	0s
##	66850K					
##	66900K					
##	66950K	 	 	83%	109M	0s
##	67000K					
##	67050K	 	 	83%	109M	0s
##	67100K					0s
##	67150K					
##	67200K					
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##	67850K					
##	67900K					
##	67950K					
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##	68350K					
##	68400K	 	 	85%	51.1M	0s
##	68450K	 	 	85%	109M	0s
##	68500K	 	 	85%	76.6M	0s
##	68550K	 	 	85%	84.1M	0s
##	68600K	 	 	85%	32.1M	0s
##	68650K	 	 	85%	67.8M	0s
##	68700K	 	 	86%	95.1M	0s
##	68750K	 	 	86%	135M	0s
##	68800K	 	 	86%	113M	0s
##	68850K	 	 	86%	56.6M	0s
##	68900K	 	 	86%	82.2M	0s
##	68950K	 	 	86%	93.6M	0s
##	69000K	 	 	86%	80.3M	0s
##	69050K	 	 	86%	32.4M	0s
##	69100K	 	 	86%	88.9M	0s
##	69150K	 	 	86%	88.8M	0s
##	69200K	 	 	86%	105M	0s
##	69250K	 	 	86%	91.1M	0s
##	69300K	 	 	86%	36.9M	0s
##	69350K	 	 	86%	73.8M	0s
##	69400K	 	 	86%	95.7M	0s
##	69450K	 	 	86%	109M	0s
##	69500K	 	 	87%	70.2M	0s
##	69550K	 	 	87%	62.7M	0s
##	69600K					
##	69650K					0s
##	69700K				100M	0s
##	69750K					
##	69800K					
##	69850K					
##	69900К					
##	69950К					0s
##	70000K					
##	70050K	 	 	87%	77.OM	0s
##	70100K					
##	70150K				111M	
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##							0s
##						107M	0s
##	71700K	 		 	89%	131M	0s
##	71750K	 		 	89%	11.3M	0s
##	71800K	 		 	89%	16.5M	0s
##	71850K	 		 	89%	135M	0s
##	71900K	 		 	90%	119M	0s
##	71950K	 		 	90%	120M	0s
##	72000K	 		 	90%	135M	0s
##	72050K	 		 	90%	127M	0s
##	72100K	 		 	90%	121M	0s
##	72150K	 		 	90%	125M	0s
##	72200K	 		 	90%	131M	0s
##	72250K	 		 	90%	23.5M	0s
##	72300K	 		 	90%	115M	0s
##	72350K	 		 	90%	48.9M	0s
##	72400K	 		 	90%	38.4M	0s
##	72450K	 		 	90%	106M	0s
##	72500K	 		 	90%	91.0M	0s
##	72550K	 		 	90%	88.3M	0s
##	72600K	 		 	90%	73.6M	0s
##	72650K	 		 	90%	90.6M	0s
##	72700K	 		 	91%	87.2M	0s
##	72750K	 		 	91%	102M	0s
##	72800K	 		 	91%	66.5M	0s
##	72850K	 		 	91%	88.1M	0s
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##	73650K	 		 	92%	69.5M	0s
##	73700K	 		 	92%	91.8M	0s
##	73750K	 		 	92%	85.9M	0s
##	73800K	 		 	92%	102M	0s
##	73850K	 		 	92%	101M	0s
##	73900K	 		 	92%	76.6M	0s
##	73950K	 		 	92%	109M	0s
##	74000K	 		 	92%	89.1M	0s
##	74050K	 		 	92%	93.5M	0s
##	74100K	 		 	92%	103M	0s
##	74150K	 		 	92%	21.0M	0s
##	74200K	 		 	92%	23.4M	0s
##	74250K	 		 	92%	65.2M	0s
##	74300K	 		 	93%	50.5M	0s
##	74350K	 		 	93%	77.8M	0s
##	74400K	 		 	93%	64.6M	0s
##							
##							
##	74550K	 		 	93%	70.5M	0s
##	74600K	 		 	93%	92.2M	0s
##	74650K	 		 	93%	116M	0s
##	74700K	 		 	93%	8.95M	0s
##	74750K	 		 	93%	97.2M	0s
##	74800K	 		 	93%	28.7M	0s
##	74850K	 		 	93%	85.1M	0s
##	74900K	 		 	93%	40.3M	0s
##	74950K	 		 	93%	75.4M	0s
##	75000K	 		 	93%	73.6M	0s
##	75050K	 		 	93%	116M	0s
##							
##	75150K	 		 	94%	86.4M	0s
##	75200K	 		 	94%	77.OM	0s
##	75250K	 		 	94%	92.4M	0s
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##	76400K	 	 	 95%	33.3M	0s
##	76450K	 	 	 95%	77.5M	0s
##	76500K	 	 	 95%	78.6M	0s
##	76550K	 	 	 95%	114M	0s
##	76600K	 	 	 95%	65.9M	0s
##	76650K	 	 	 95%	105M	0s
##	76700K	 	 	 96%	68.4M	0s
##	76750K	 	 	 96%	106M	0s
##	76800K	 	 	 96%	79.3M	0s
##	76850K	 	 	 96%	103M	0s
##	76900K	 	 	 96%	102M	0s
##	76950K	 	 	 96%	105M	0s
##	77000K	 	 	 96%	9.09M	0s
##	77050K	 	 	 96%	46.8M	0s
##	77100K	 	 	 96%	53.3M	0s
##	77150K	 	 	 96%	68.8M	0s
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##						
##	77300K	 	 	 96%	64.9M	0s
##	77350K	 	 	 96%	116M	0s
##	77400K	 	 	 96%	98.5M	0s
##	77450K	 	 	 96%	130M	0s
##	77500K	 	 	 97%	65.2M	0s
##	77550K	 	 	 97%	94.1M	0s
##	77600K	 	 	 97%	87.2M	0s
##	77650K	 	 	 97%	124M	0s
##	77700K	 	 	 97%	69.9M	0s
##	77750K	 	 	 97%	87.5M	0s
##					105M	
##	77850K	 	 	 97%	82.1M	0s
##	77900K	 	 	 97%	99.2M	0s
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```
78700K ...... 98% 49.1M Os
##
  78750K ...... 98%
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  78900K ...... 98% 78.4M Os
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  78950K ...... 98%
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  79050K ...... 98% 99.8M Os
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  79100K ...... 99% 59.4M 0s
  79150K ...... 99% 98.1M Os
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  79200K ...... 99% 47.8M 0s
  79250K ...... 99% 50.5M Os
  79300K ...... 99% 70.6M Os
  79350K ...... 99% 96.2M Os
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  79400K ...... 99% 91.8M Os
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  79450K ..... 99% 56.9M Os
  79500K ...... 99% 87.8M Os
  79550K ...... 99% 33.8M Os
  79600K ...... 99% 82.1M Os
  79650K ...... 99% 87.9M Os
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  79700K ...... 99% 105M Os
##
  79750K ...... 99% 114M Os
  79800K ...... 99% 86.4M Os
##
  79850K ...... 99% 132M 0s
  100% 83.8M=1.3s
##
## 2020-11-24 21:16:56 (62.0 MB/s) - 'silva_species_assignment_v138.fa.gz.3' saved [81840166/81840166]
taxa <- addSpecies(taxa, "~/silva_species_assignment_v138.fa.gz")
taxa.print <- taxa # Removing sequence rownames for display only
rownames(taxa.print) <- NULL</pre>
head(taxa.print)
##
           Phylum
                    Class
                            Order
    Kingdom
                                      Family
## [1,] "Bacteria" "Bacteroidota" "Bacteroidia" "Bacteroidales" "Muribaculaceae"
## [2,] "Bacteria" "Bacteroidota" "Bacteroidia" "Bacteroidales" "Muribaculaceae"
## [3,] "Bacteria" "Bacteroidota" "Bacteroidia" "Bacteroidales" "Muribaculaceae"
## [4,] "Bacteria" "Bacteroidota" "Bacteroidia" "Bacteroidales" "Muribaculaceae"
 [5,] "Bacteria" "Bacteroidota" "Bacteroidia" "Bacteroidales" "Bacteroidaceae"
 [6,] "Bacteria" "Bacteroidota" "Bacteroidia" "Bacteroidales" "Muribaculaceae"
    Genus
             Species
## [1,] NA
             NΑ
## [2,] NA
             NA
## [3,] NA
             NA
## [4,] NA
             NA
## [5,] "Bacteroides"
## [6,] NA
unqs.mock <- seqtab.nochim["Mock",]</pre>
unqs.mock <- sort(unqs.mock[unqs.mock>0], decreasing=TRUE) # Drop ASVs absent in the Mock
cat("DADA2 inferred", length(unqs.mock), "sample sequences present in the Mock community.\n")
```

 $\mbox{\tt \#\#}$ DADA2 inferred 20 sample sequences present in the Mock community.

```
mock.ref <- getSequences(file.path(path, "HMP_MOCK.v35.fasta"))
match.ref <- sum(sapply(names(unqs.mock), function(x) any(grepl(x, mock.ref))))
cat("Of those,", sum(match.ref), "were exact matches to the expected reference sequences.\n")</pre>
```

Of those, 20 were exact matches to the expected reference sequences.