



redhat.

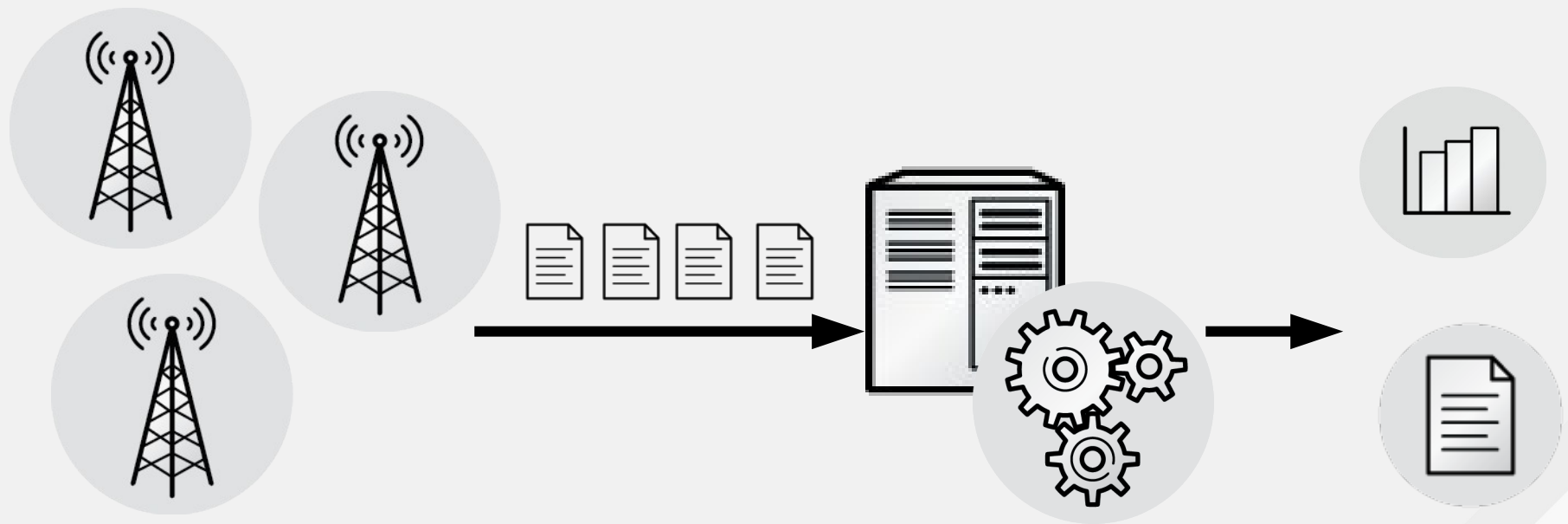
JBoss DataGrid MapReduce Demo

Pablo Szuster
Integration SME, LATAM
pszuster@redhat.com

Scenario

Traditional way

Telecommunications company wants to batch-process CDRs (charging data records) coming from their antennas to generate billing and statistical information.

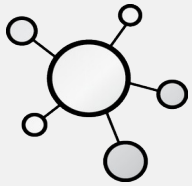


Batch processing - Traditional way

- ✖ Not flexible
- ✖ Difficult to scale
 - ✖ Batch windows are never big enough
- ✖ Big & expensive hardware/software

Batch processing - DataGrid way

Distributed execution



Highly and dynamically scalable
(vertical and horizontal)



Runs on commodity (cheap) hardware



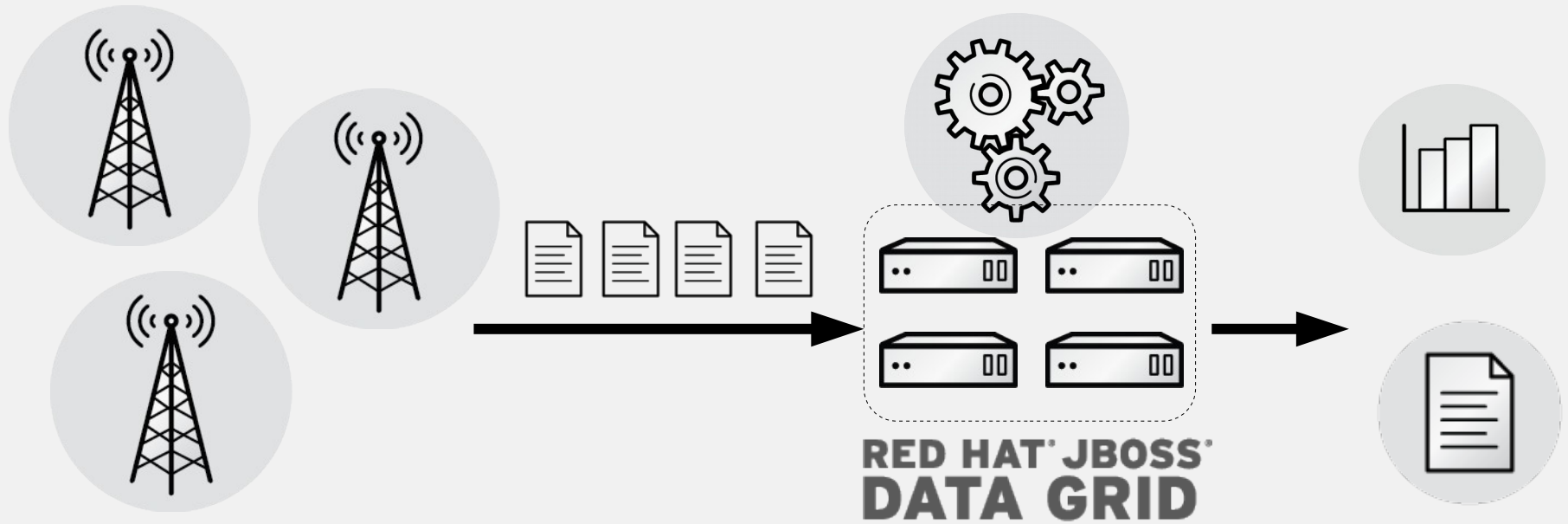
Highly performant (in-memory, parallel)



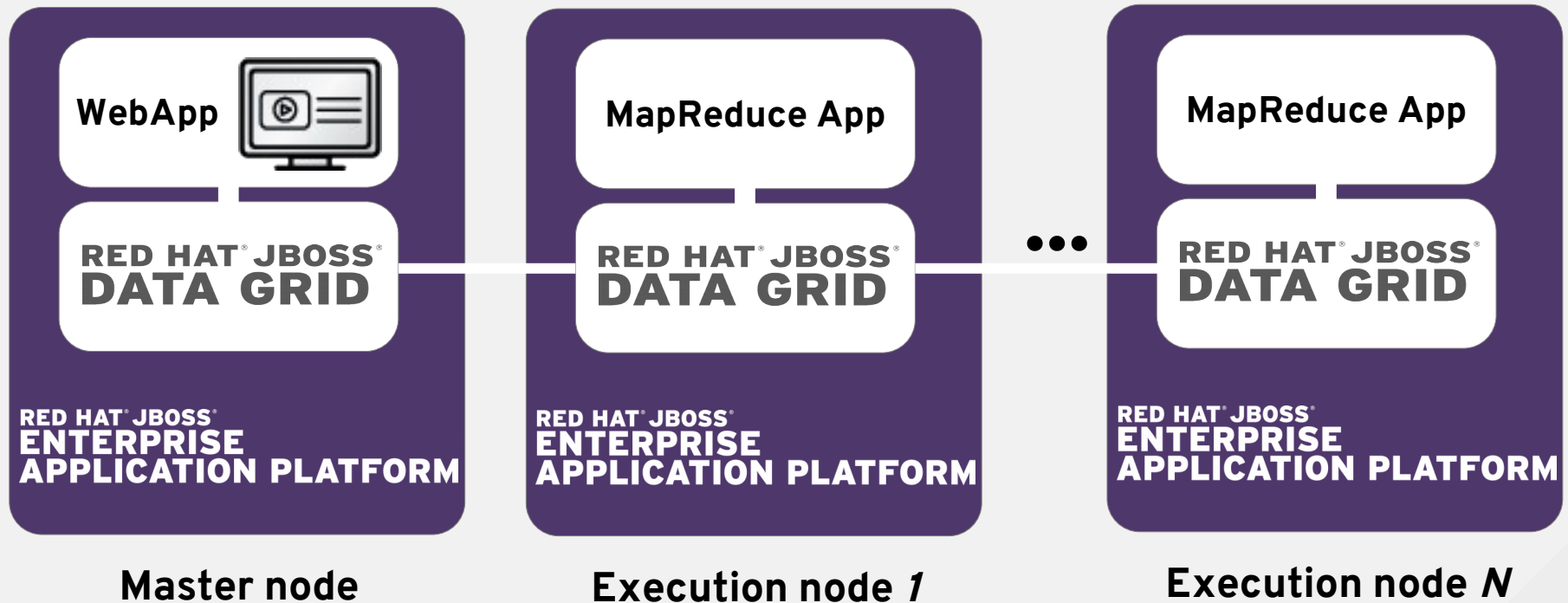
Fault tolerant

Scenario

DataGrid way

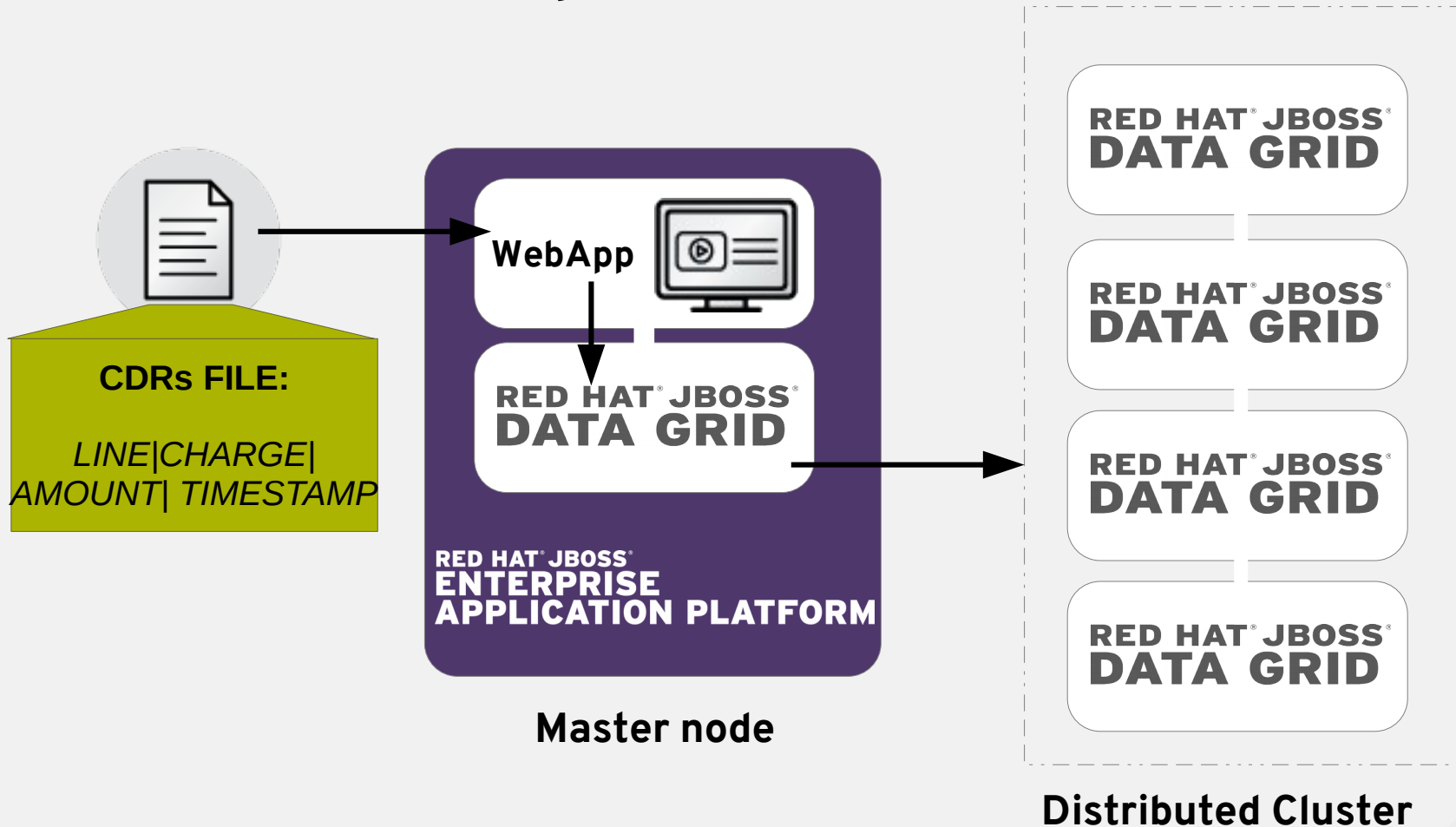


Demo Architecture



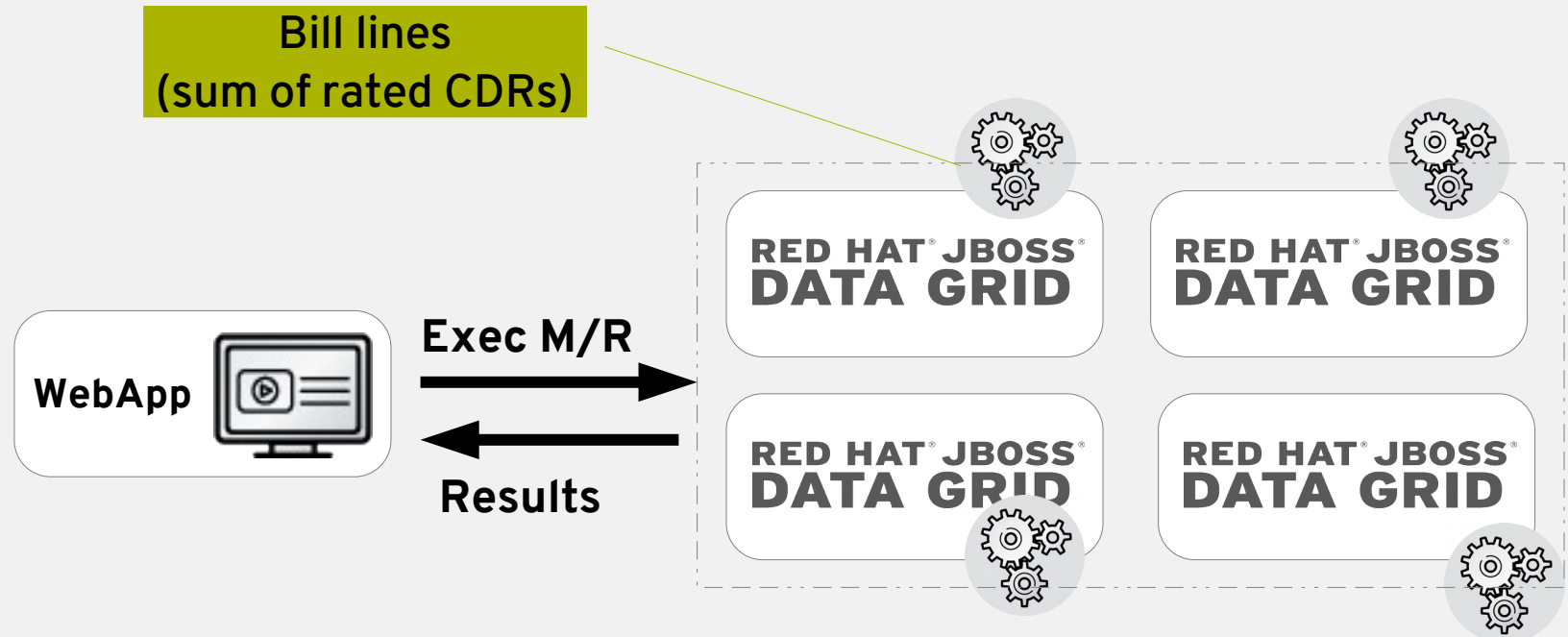
Demo Architecture (Step 1)

Load data into de grid



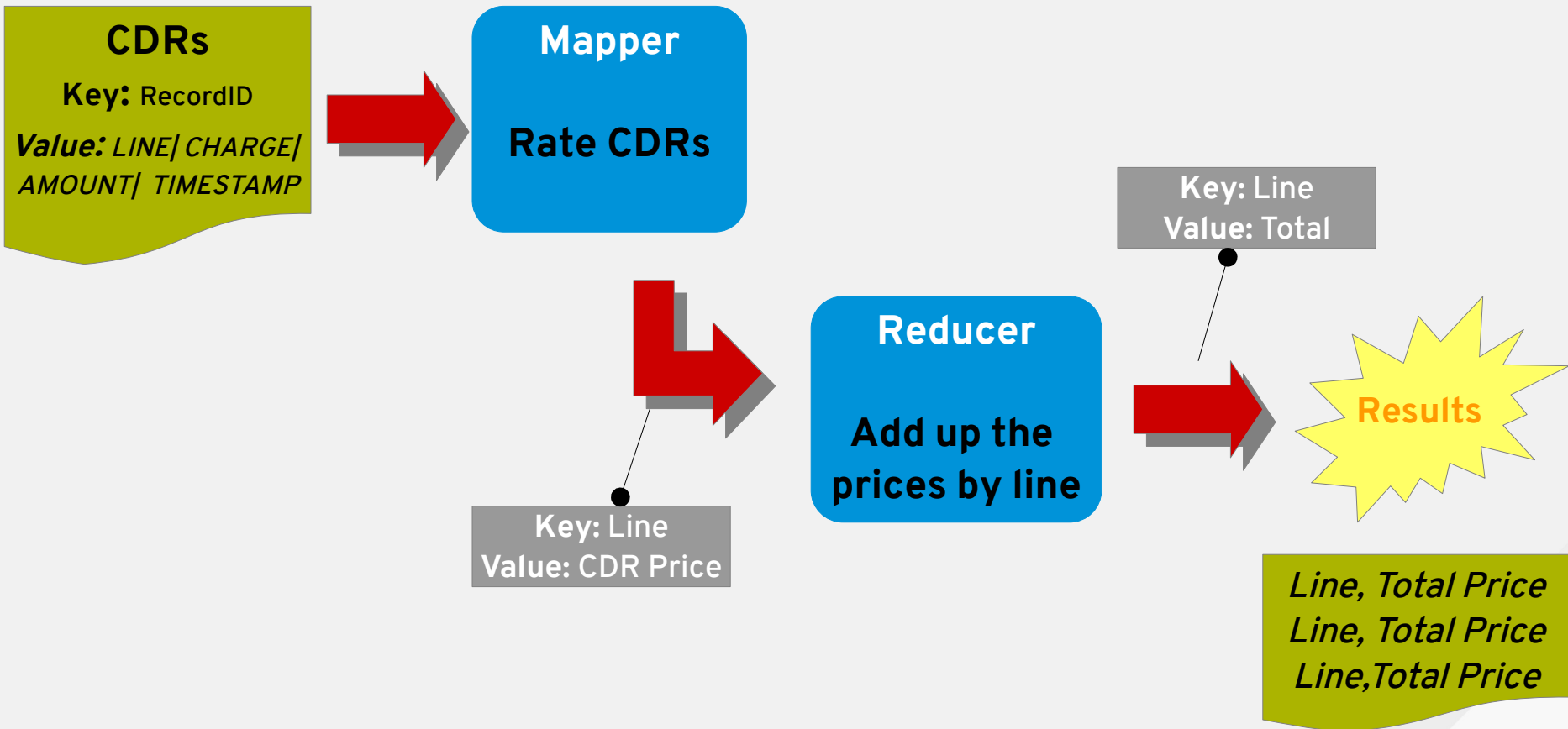
Demo Architecture (Step 2)

Run M/R Job



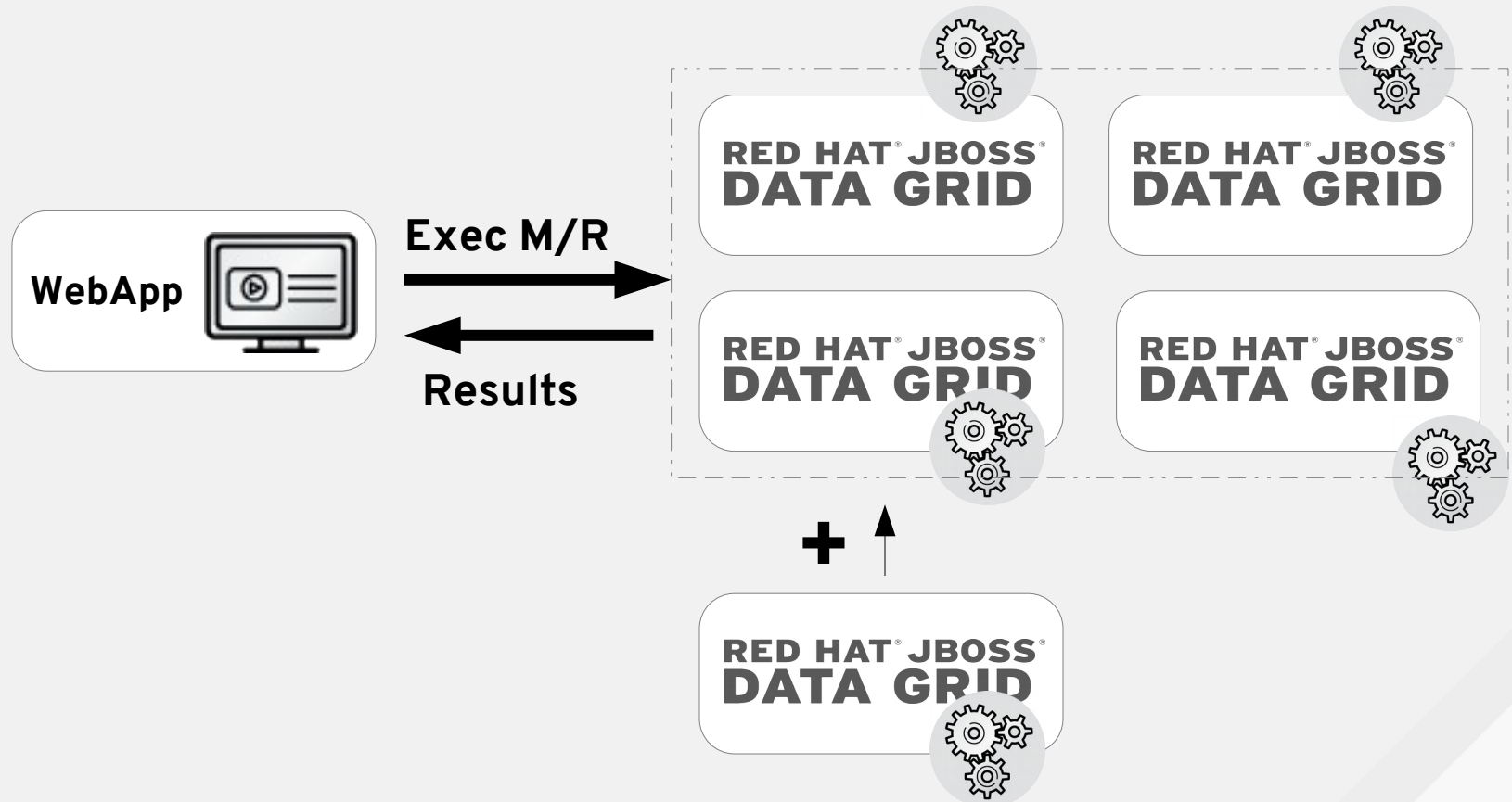
Demo Architecture (Step 2)

Run M/R Job



Demo Architecture (Step 3)

Add new nodes to the grid



Demo Instructions

1) Load CDRs into the grid

L.A. Telco

RED HAT JBOSS DATA GRID

CDRs in the Grid: 0

Record ID CDR

Cluster 'CDR_Cluster' - Nodes Available: 2

pszuster-9982 pszuster-40640

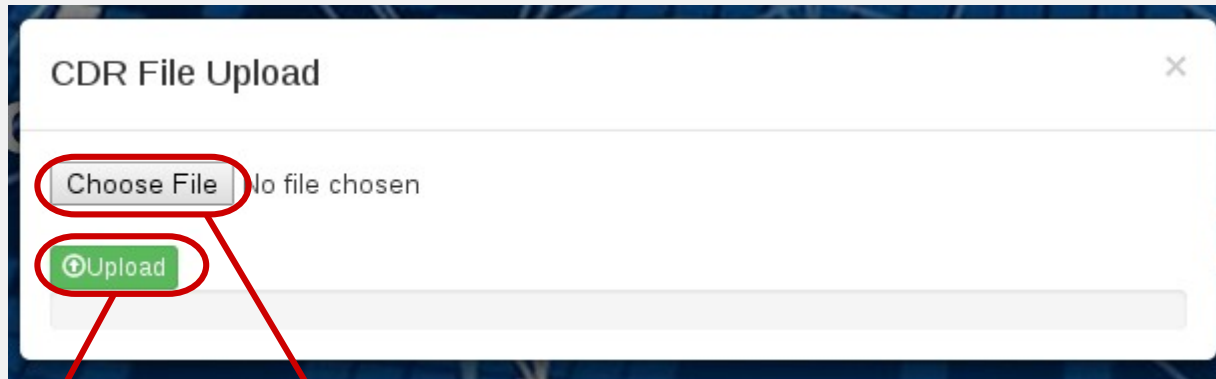
Billing Statistics

Execution Time:

Total Amount

Click

1) Load CDRs into the grid



**a) Click and select CDRs file
(projects/CDRFileGenerator)**

**b) Upload file and
when done, close
the window**

2) Run M/R Job

L.A. Telco

RED HAT® JBOSS® DATA GRID

CDRs in the Grid: 10000

📄

🔄

Record ID	CDR
0	8269480 DATA 6630 2009676
1	4712669 DATA 2677 9517244
2	9148763 DATA 8175 1579156
3	9874988 SMS 7878 7118305
4	3399451 SMS 7513 4852919

Cluster 'CDR_Cluster' - Nodes Available: 2

🖥️

pszuster-9982

🖥️

pszuster-40640

Billing

Statistics



Execution Time: 3374ms

Line	Total Amount
1143992	\$60.46
1215713	\$77.60000000000001
1230885	\$82.33
1585867	\$63.95
1620852	\$254
1661278	\$52.69


Click and review results (will show only the first 20)



3) Run another M/R Job

CDRs in the Grid: 10000

Record ID	CDR
0	8269480 DATA 6630 2009676
1	4712669 DATA 2677 9517244
2	9148763 DATA 8175 1579156
3	9874988 SMS 7878 7118305
4	3399451 SMS 7513 4852919
5	6881093 SMS 1338 1132619
6	6360134 SMS 7619 1823917
7	6336436 SMS 4446 7089611
8	2379588 SMS 8214 3006721
9	3450085 SMS 9908 3904719
10	9681706 SMS 7424 1805511

Cluster 'CDR_Cluster' - Nodes Available: 2 


 pszuster-40640  pszuster-677

Click and review results

Billing **Statistics**

Execution Time: 1117ms

Charge Type	Total Amount
CALL	\$852361.4500000023
DATA	\$164724.08999999982
SMS	\$8309753.5



CALL
DATA
SMS

4) Review server logs

```
16:45:54,576 INFO [stdout] (ForkJoinPool.commonPool-worker-1) Record ID: 5135 - ChargeType: SMS - Amount: 2485.5
16:45:54,576 INFO [stdout] (ForkJoinPool.commonPool-worker-5) Record ID: 1690 - ChargeType: DATA - Amount: 40.53
16:45:54,576 INFO [stdout] (ForkJoinPool.commonPool-worker-7) Record ID: 901 - ChargeType: SMS - Amount: 1867.5
16:45:54,576 INFO [stdout] (ForkJoinPool.commonPool-worker-5) Record ID: 4717 - ChargeType: CALL - Amount: 364.1
16:45:54,576 INFO [stdout] (ForkJoinPool.commonPool-worker-1) Record ID: 7798 - ChargeType: DATA - Amount: 54.89
16:45:54,576 INFO [stdout] (ForkJoinPool.commonPool-worker-5) Record ID: 1688 - ChargeType: DATA - Amount: 53.53
16:45:54,576 INFO [stdout] 16:45:54,713 INFO [stdout] (ForkJoinPool.commonPool-worker-3) Record ID: 4029 - ChargeType: SMS - Amount: 3357.0
16:45:54,576 INFO [stdout] 16:45:54,713 INFO [stdout] (ForkJoinPool.commonPool-worker-3) Record ID: 9714 - ChargeType: DATA - Amount: 98.02
16:45:54,576 INFO [stdout] 16:45:54,713 INFO [stdout] (ForkJoinPool.commonPool-worker-3) Record ID: 9719 - ChargeType: CALL - Amount: 159.4
16:45:54,576 INFO [stdout] 16:45:54,713 INFO [stdout] (ForkJoinPool.commonPool-worker-3) Record ID: 9717 - ChargeType: CALL - Amount: 235.0
16:45:54,576 INFO [stdout] 16:45:54,713 INFO [stdout] (ForkJoinPool.commonPool-worker-3) Record ID: 5371 - ChargeType: SMS - Amount: 2833.0
16:45:54,576 INFO [stdout] 16:45:54,713 INFO [stdout] (ForkJoinPool.commonPool-worker-3) Record ID: 9730 - ChargeType: DATA - Amount: 68.48
16:45:54,576 INFO [stdout] 16:45:54,713 INFO [stdout] (ForkJoinPool.commonPool-worker-3) Record ID: 5373 - ChargeType: SMS - Amount: 3194.5
16:45:54,577 INFO [stdout] 16:45:54,713 INFO [stdout] (ForkJoinPool.commonPool-worker-3) Record ID: 5374 - ChargeType: CALL - Amount: 180.8
16:45:54,577 INFO [stdout] 16:45:54,713 INFO [stdout] (ForkJoinPool.commonPool-worker-3) Record ID: 4044 - ChargeType: SMS - Amount: 3215.5
16:45:54,577 INFO [stdout] 16:45:54,713 INFO [stdout] (ForkJoinPool.commonPool-worker-3) Record ID: 9734 - ChargeType: CALL - Amount: 485.75
16:45:54,577 INFO [stdout] 16:45:54,713 INFO [stdout] (ForkJoinPool.commonPool-worker-3) Record ID: 4046 - ChargeType: DATA - Amount: 31.080000000000002
16:45:54,577 INFO [stdout] 16:45:54,714 INFO [stdout] (ForkJoinPool.commonPool-worker-3) Record ID: 5377 - ChargeType: SMS - Amount: 2503.0
16:45:54,577 INFO [stdout] 16:45:54,714 INFO [stdout] (ForkJoinPool.commonPool-worker-3) Record ID: 4047 - ChargeType: CALL - Amount: 17.85
16:45:54,577 INFO [stdout] 16:45:54,714 INFO [stdout] (ForkJoinPool.commonPool-worker-3) Record ID: 5370 - ChargeType: CALL - Amount: 17.5
16:45:54,577 INFO [stdout] 16:45:54,714 INFO [stdout] (ForkJoinPool.commonPool-worker-3) Record ID: 104 - ChargeType: DATA - Amount: 97.87
16:45:54,577 INFO [stdout] 16:45:54,714 INFO [stdout] (ForkJoinPool.commonPool-worker-3) Record ID: 105 - ChargeType: DATA - Amount: 30.85
16:45:54,577 INFO [stdout] 16:45:54,714 INFO [stdout] (ForkJoinPool.commonPool-worker-3) Record ID: 106 - ChargeType: CALL - Amount: 276.85
16:45:54,577 INFO [stdout] 16:45:54,714 INFO [stdout] (ForkJoinPool.commonPool-worker-3) Record ID: 5368 - ChargeType: SMS - Amount: 583.5
16:45:54,577 INFO [stdout] 16:45:54,714 INFO [stdout] (ForkJoinPool.commonPool-worker-3) Record ID: 9726 - ChargeType: SMS - Amount: 2881.5
16:45:54,577 INFO [stdout] 16:45:54,714 INFO [stdout] (ForkJoinPool.commonPool-worker-3) Record ID: 108 - ChargeType: CALL - Amount: 416.8
16:45:54,577 INFO [stdout] 16:45:54,714 INFO [stdout] (ForkJoinPool.commonPool-worker-3) Record ID: 4038 - ChargeType: SMS - Amount: 1027.0
16:45:54,577 INFO [stdout] 16:45:54,714 INFO [stdout] (ForkJoinPool.commonPool-worker-3) Record ID: 5369 - ChargeType: DATA - Amount: 22.79
16:45:54,577 INFO [stdout] 16:45:54,714 INFO [stdout] (ForkJoinPool.commonPool-worker-3) Record ID: 6699 - ChargeType: CALL - Amount: 402.3
16:45:54,577 INFO [stdout] 16:45:54,714 INFO [stdout] (ForkJoinPool.commonPool-worker-3) Record ID: 9727 - ChargeType: SMS - Amount: 4273.0
16:45:54,577 INFO [stdout] 16:45:54,714 INFO [stdout] (ForkJoinPool.commonPool-worker-3) Record ID: 109 - ChargeType: DATA - Amount: 38.56
16:45:54,723 INFO [stdout] 16:45:54,714 INFO [stdout] (ForkJoinPool.commonPool-worker-3) Record ID: 4039 - ChargeType: CALL - Amount: 242.10000000000002
16:45:54,723 INFO [stdout] 16:45:54,714 INFO [stdout] (ForkJoinPool.commonPool-worker-3) Record ID: 9724 - ChargeType: SMS - Amount: 3872.0
16:45:54,723 INFO [stdout] 16:45:54,714 INFO [stdout] (ForkJoinPool.commonPool-worker-3) Record ID: 9728 - ChargeType: DATA - Amount: 63.57
16:45:54,723 INFO [stdout] 16:45:54,714 INFO [stdout] (ForkJoinPool.commonPool-worker-3) Record ID: 9729 - ChargeType: CALL - Amount: 110.05000000000001
16:45:54,723 INFO [stdout] 16:45:54,723 INFO [stdout] (asyncTransportThread-2) ChargeType: SMS amount: 8309753.5
16:45:54,723 INFO [stdout] (asyncTransportThread-2) ChargeType: DATA amount: 164724.08999999982
16:45:54,723 INFO [stdout] (asyncTransportThread-2) ChargeType: CALL amount: 852361.4500000002
```

Make sure they were both working!

5) Add a new node

L.A. Telco

**RED HAT® JBOSS®
DATA GRID**

CDRs in the Grid: 0

Record ID CDR

Cluster 'CDR_Cluster' - Nodes Available: 3

pszuster-677 pszuster-33460

pszuster-38187

Click to refresh

Billing Statistics

Execution Time:

Total Amount

Run M/R jobs again



THANK YOU



plus.google.com/+RedHat



facebook.com/redhatinc



linkedin.com/company/red-hat



twitter.com/RedHatNews



youtube.com/user/RedHatVideos