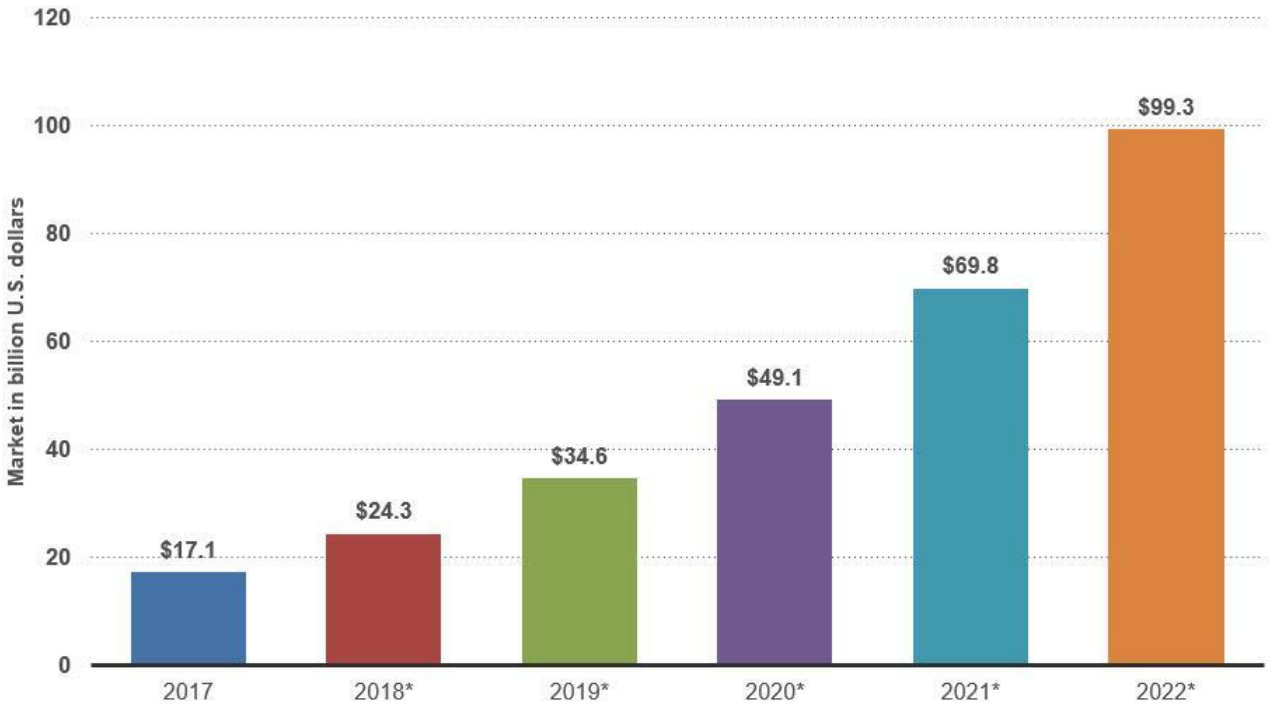
Use of Big Data Analytics Jobs is Growing

Big Data and Hadoop Market Size Forecast Worldwide 2017-2022

Size of Hadoop and Big Data Market Worldwide From 2017 To 2022 (in billion U.S. dollars)

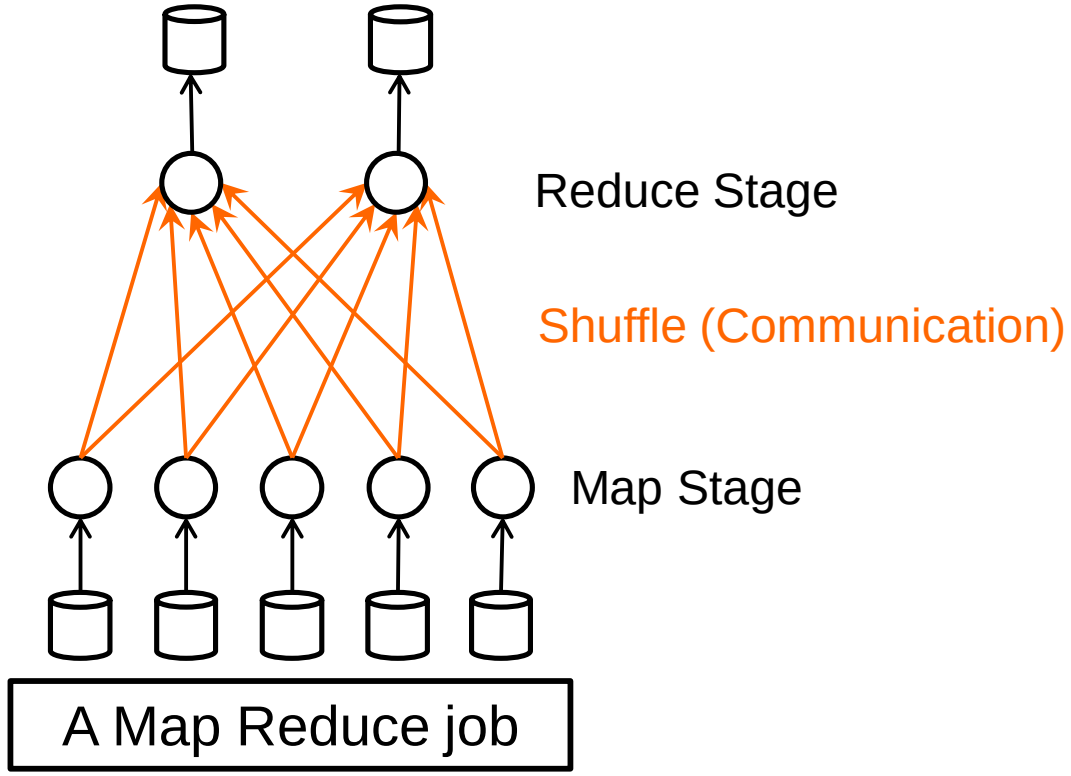




statista

Impact of communication on job performance

Facebook jobs spend **25%** **time** in communication![1]



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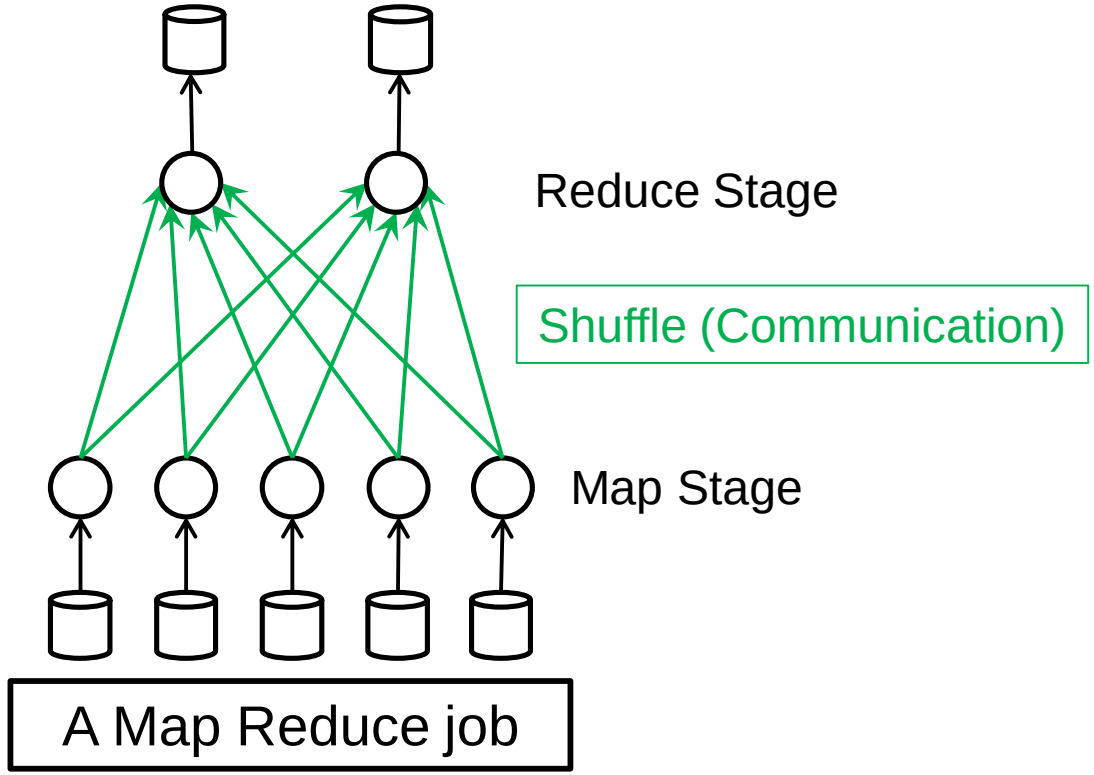

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Coflow abstraction (HotNets-XI)

[2] Hotnets 2012, Coflow: a networking abstraction for cluster application, Mosharaf Choudhary, Ion Stoica

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Collection of all flows that share the same goal

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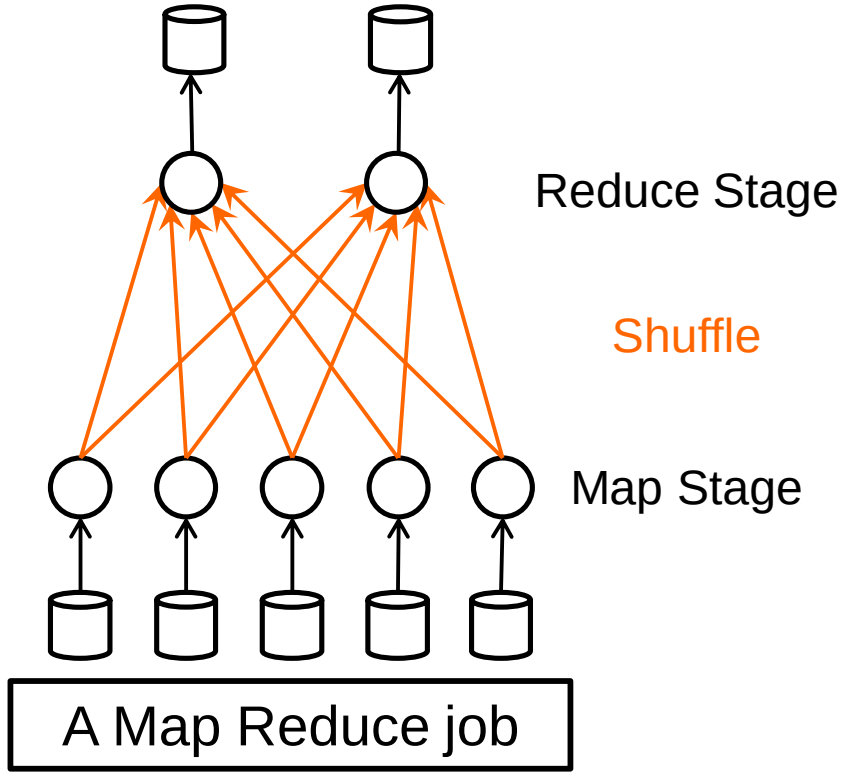

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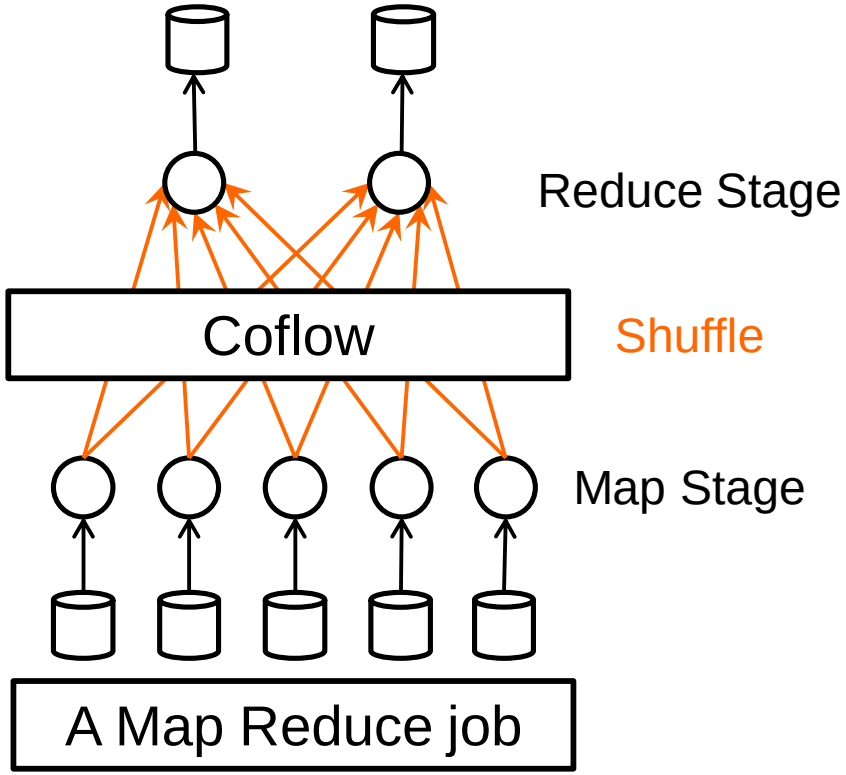

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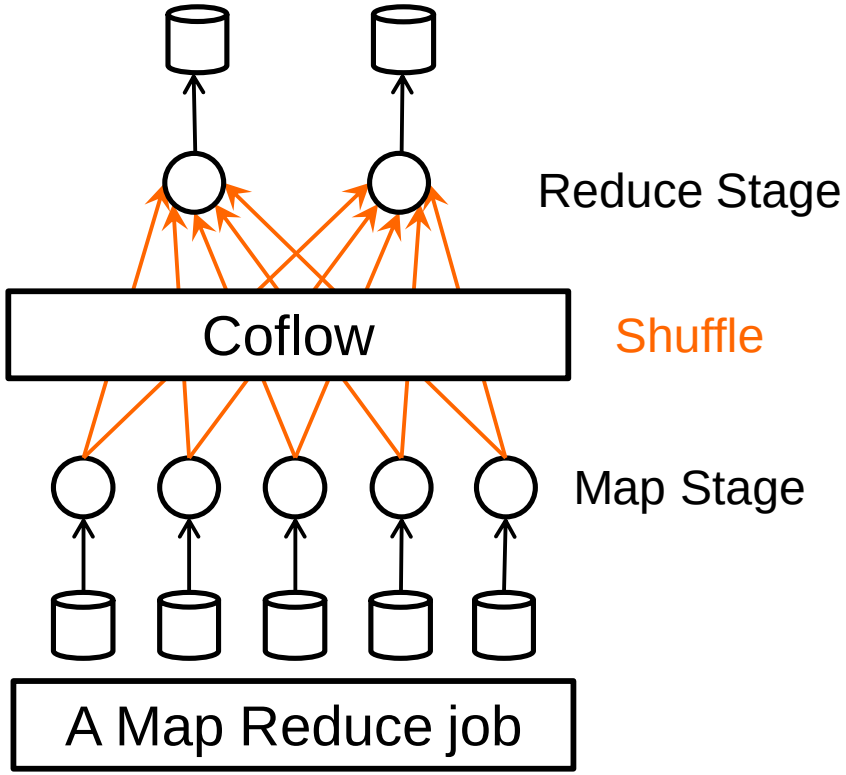
Collection of all flows that share the same goal

Coflow Completion Time (CCT):

Completion time of its last flow

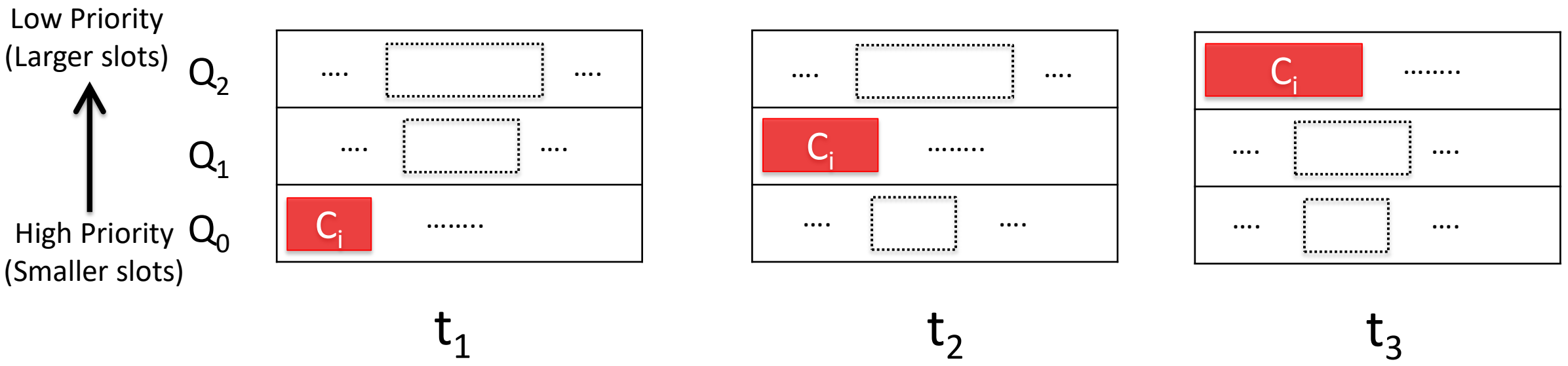


Coflow Scheduling Problem

- Coflow scheduling problem
  - Minimize average Coflow Completion Time (CCT)

State-of-the-art Online Coflow Schedulers

Saath (CoNEXT'17), Graviton (HotCloud'16) and Aalo (Sigcomm'15)



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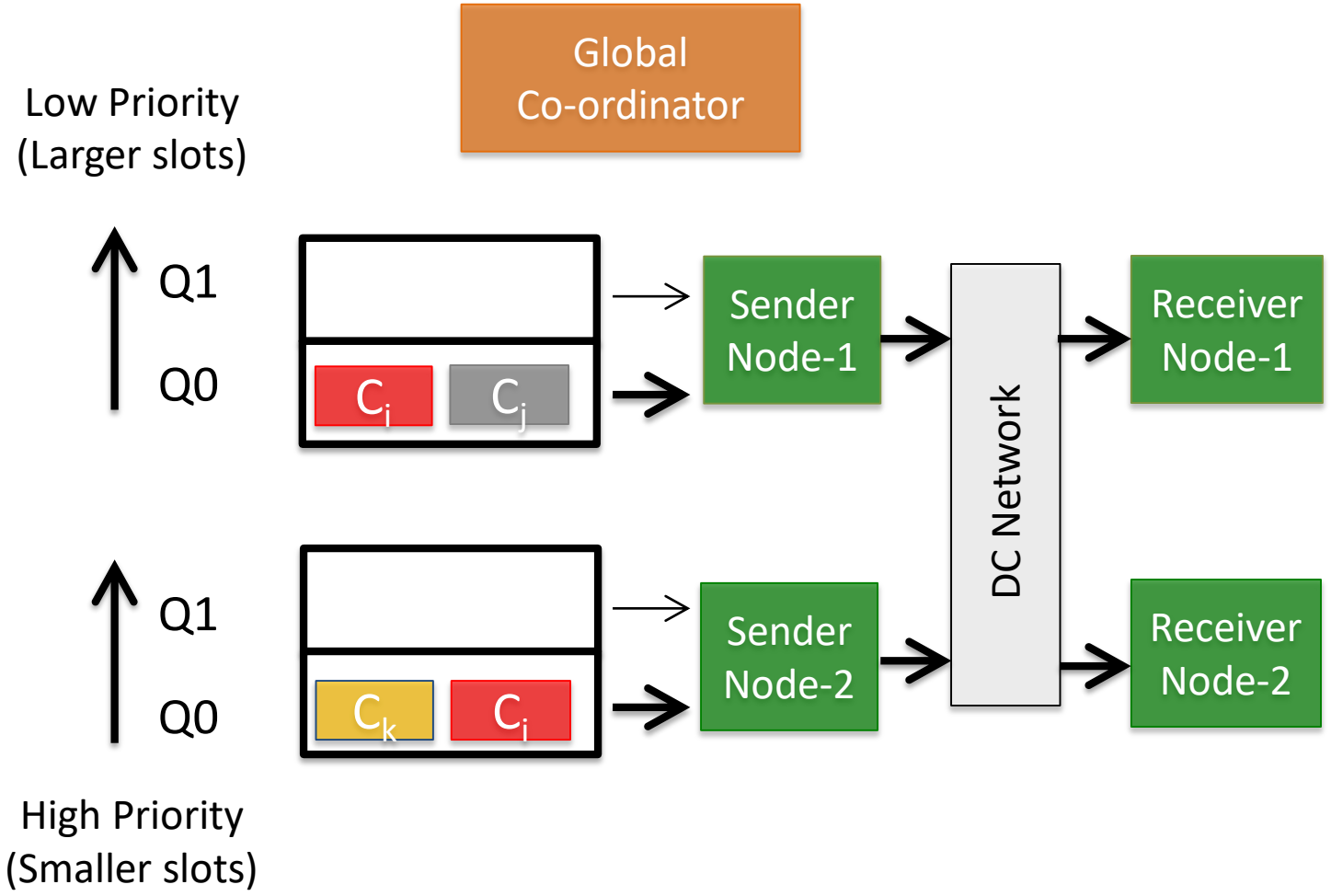

Drawback of Learning by Priority Queue

- This approach in essence is “try-and-miss”
- Every coflow starts from highest priority queue and sends a fixed amount of data (try)
- If it is not able to finish (miss) it is demoted to a lower priority queue.
- The above process repeats.

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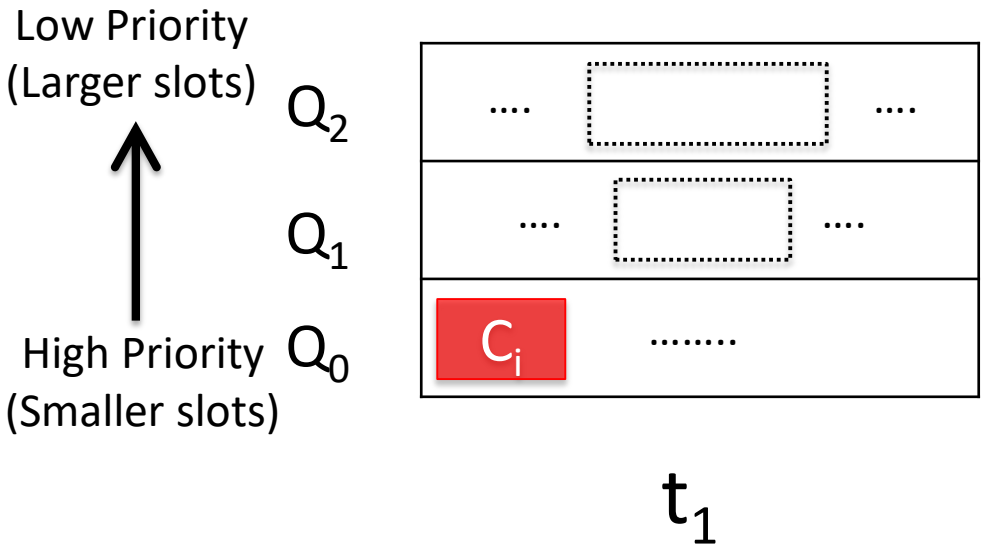

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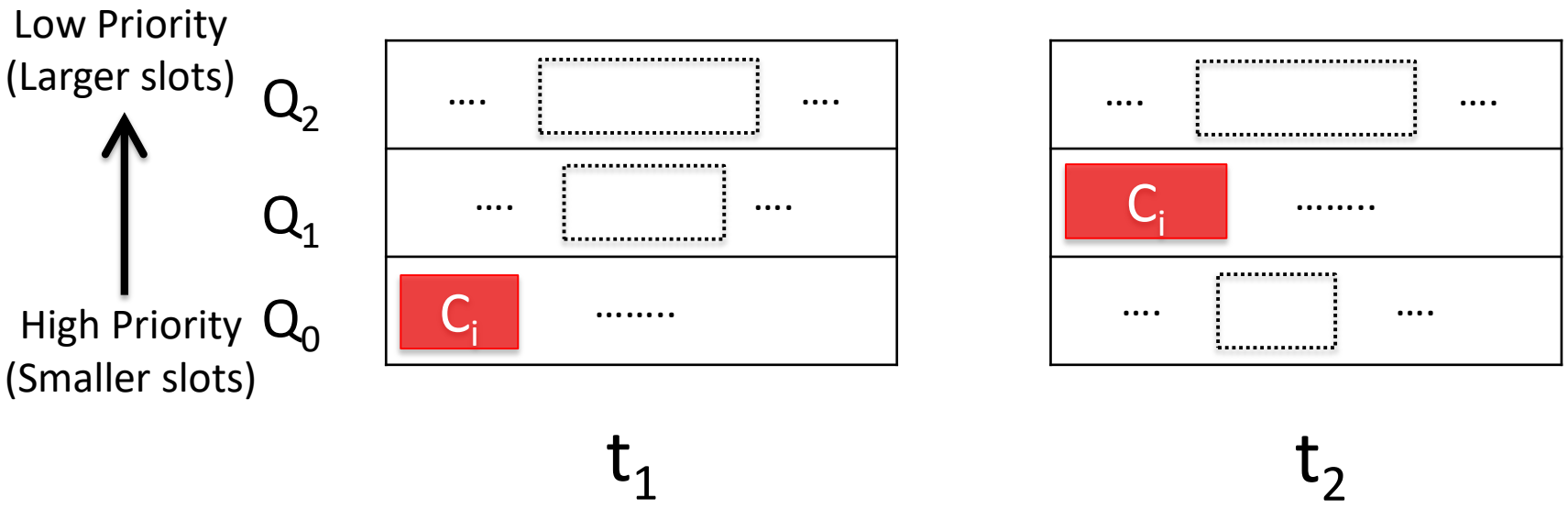

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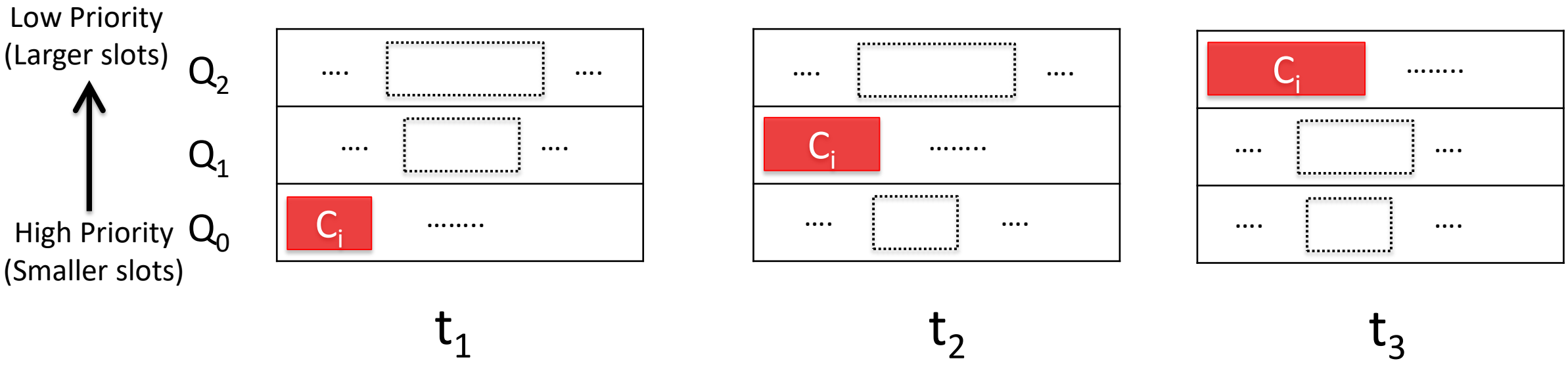
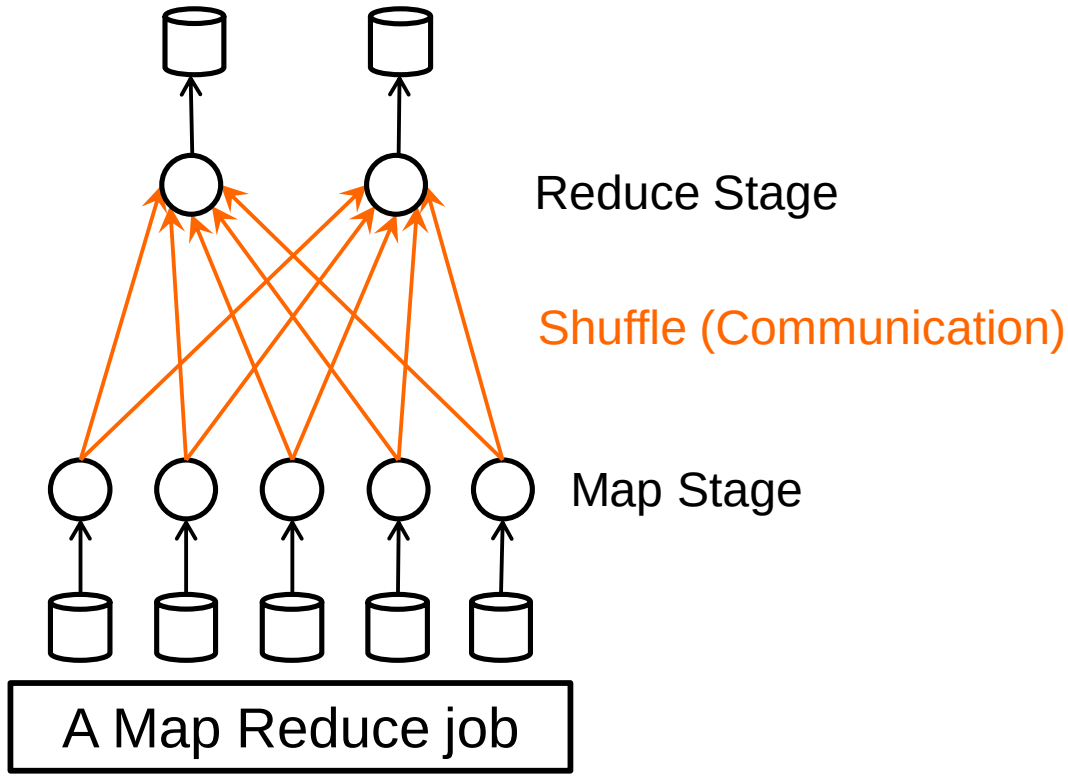


Philae

- A Coflow has many flows.
- Sampling is a time proven technique to estimate average with high accuracy.



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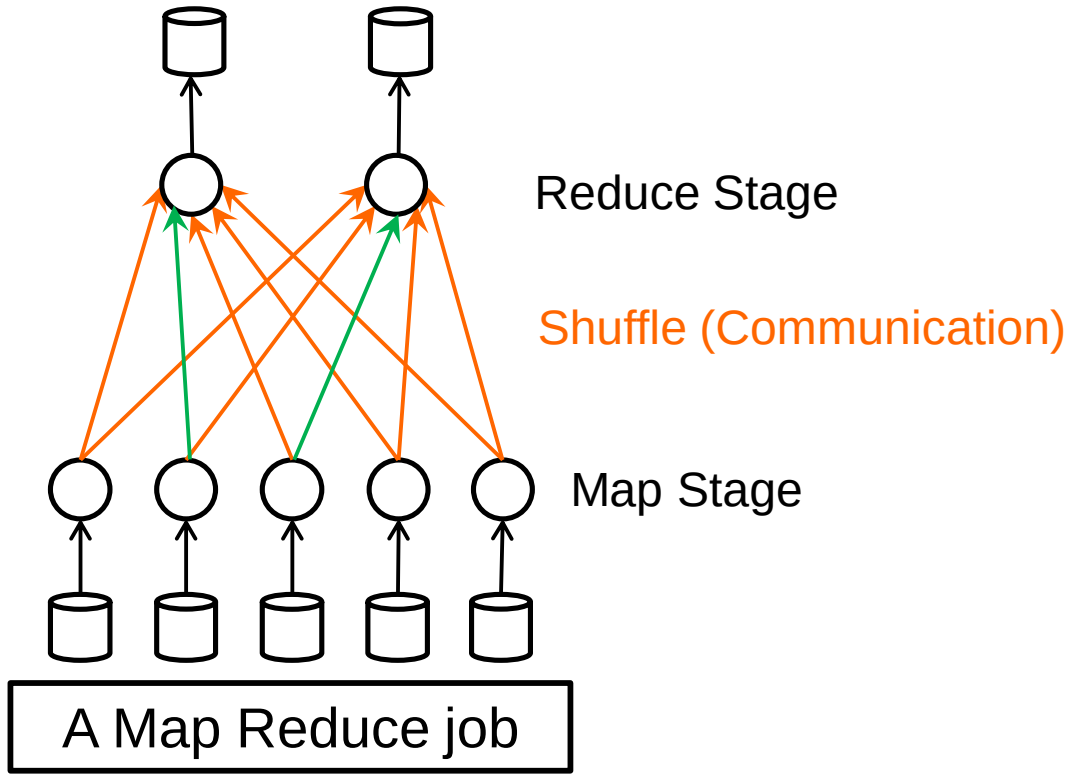
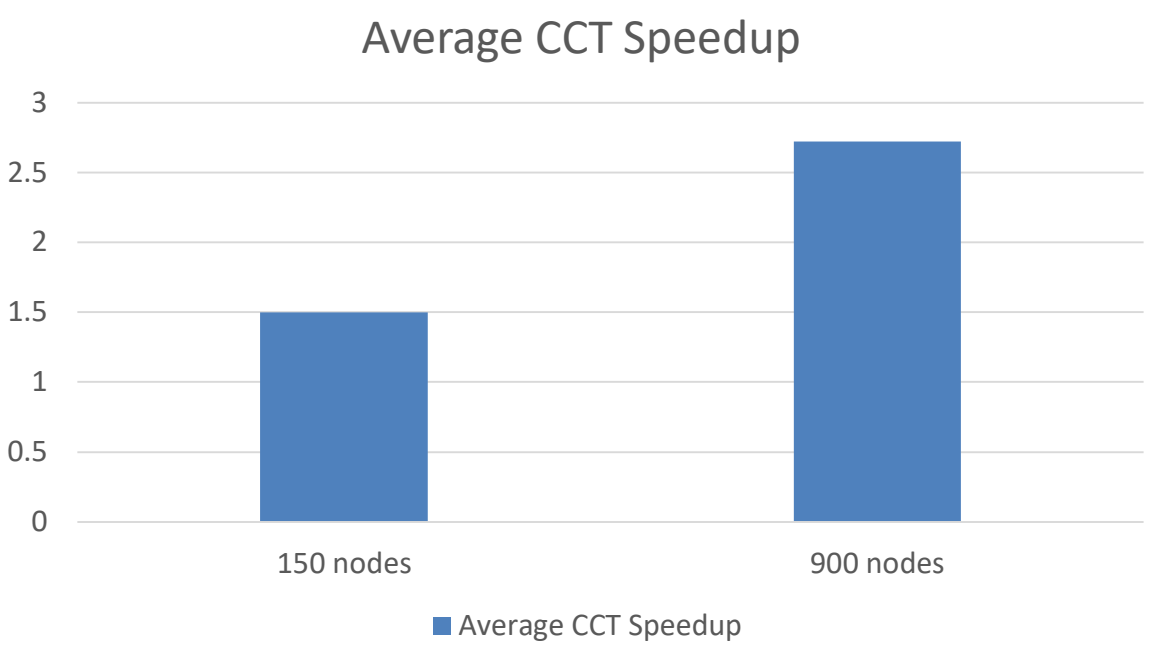
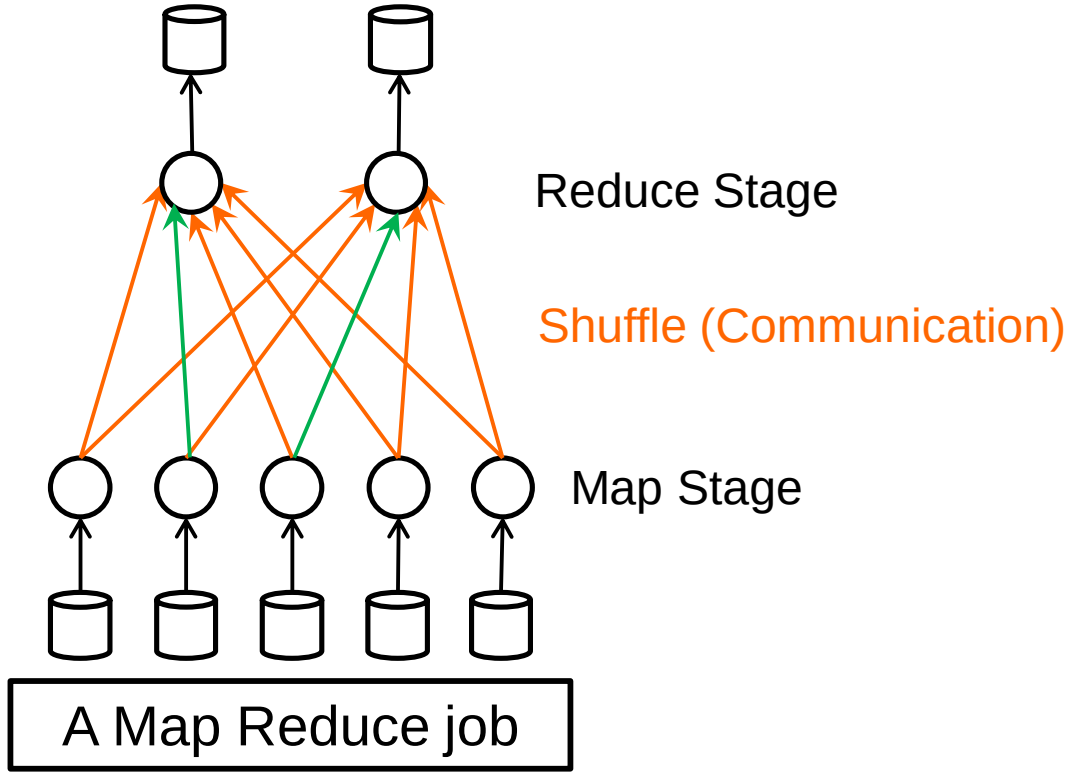


Philae


Average CCT Speedup
3
2.5
2
1.5
1
0.5
0
150 nodes
900 nodes
Average CCT Speedup

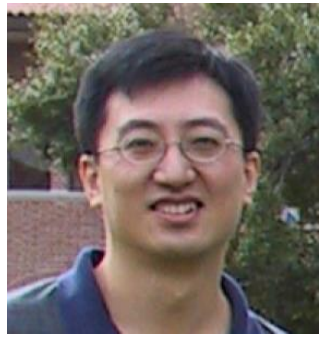

Reduce Stage
Shuffle (Communication)
Map Stage
A Map Reduce job

Philae: Your Coflow Has Many Flows Sampling Them for Fun and Speed

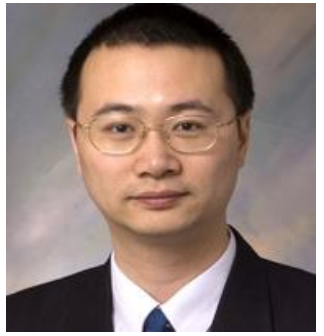
Full talk in track – II at 9:15 am on Friday July 12th.



Akshay Jajoo



Y. Charlie Hu



Xiaojun Lin

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