Generating Efficient Execution Plans for Vertically Partitioned XML Databases

Research paper review by

QING Pei, Edward	11500811g
LO Wing Yi, Wing	11523479g
SHAO Shuai, Philip	11552402g

April 10, 2012

What ?

Why ?

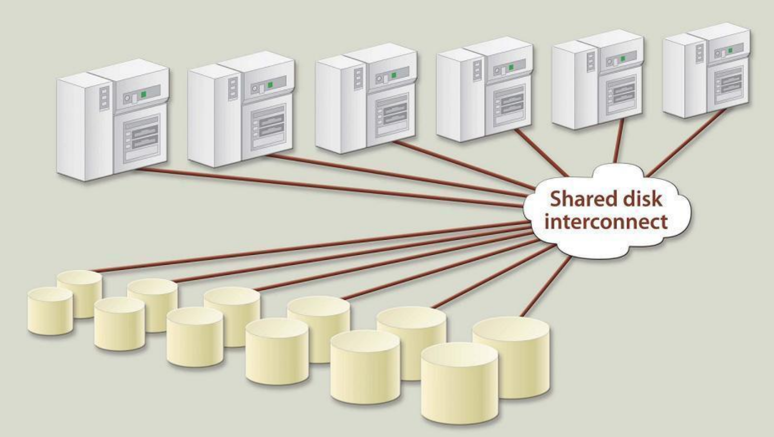
How ?

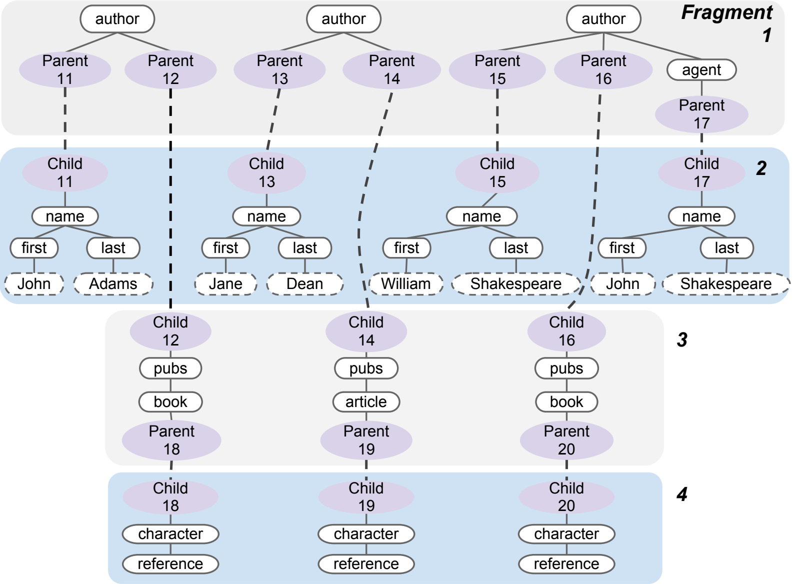
What ?

Query Processing

	Centralized	**Distributed**
RDBMS	✔	✔
XML	✔	***This paper***

XML in the Cloud





Why ?

Distributed architecture leads to **Different** execution plans

For a single query, the **order** in which *joins* are performed results in various time consumed.

Response time
=
local execution time
+
joining time

local execution time

snip(i): the number of document subtrees accessed by the local plan at *fragment i*

smaller snip(i) preferred

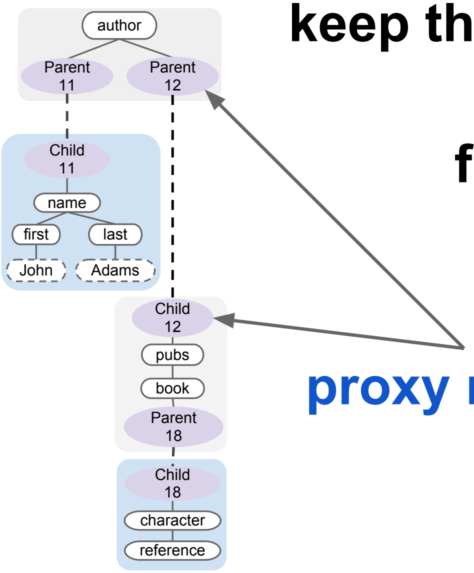
joining time

card(i): the number of tuples that are returned by the local plan when evaluated at *fragment i*

smaller card(i) preferred

Which plan has the ***minimum*** response time?

How ?



keep the relation between fragments

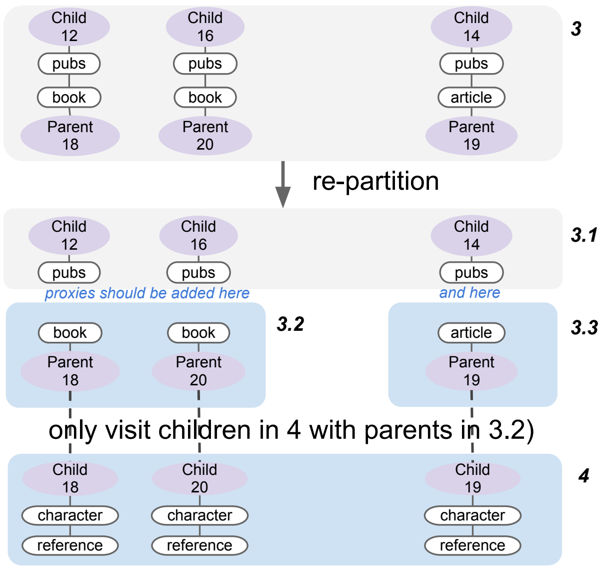
proxy nodes

Optimizing distributed plans

Optimizing distributed plans

Pushing Cross-Fragment Joins

fully works on left-deep plans



proxies should be added here

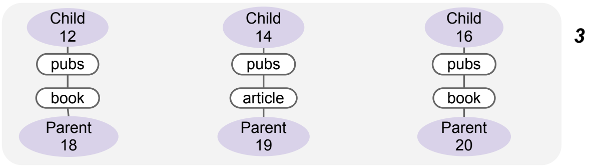
and here

only visit children in 4 with parents in 3.2)

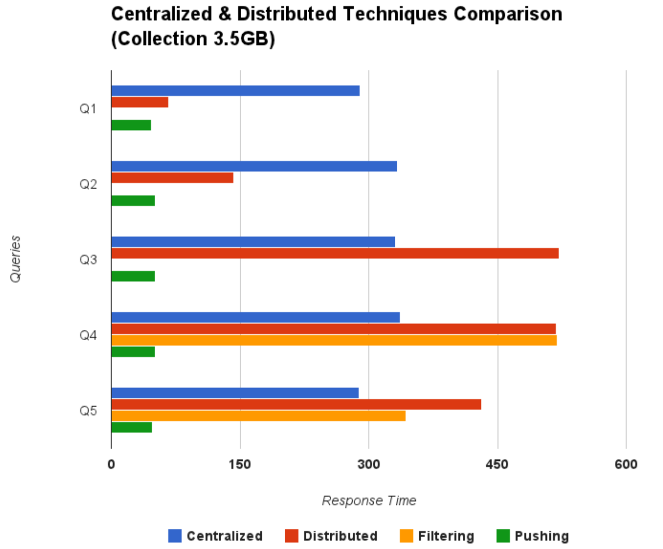
Optimizing distributed plans

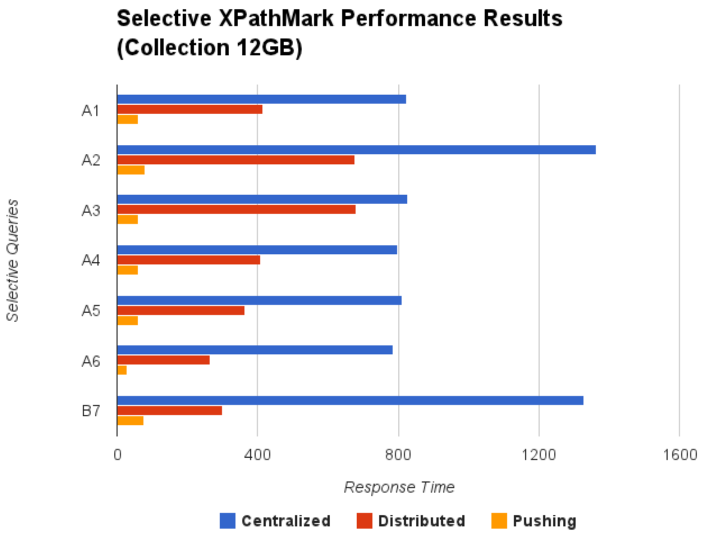
Label Path Filtering

//book//reference



Evaluation




Selective XPathMark Performance Results (Collection 12GB)

Conclusion

Greatly improves response time of querying large XML collections.

Small overhead. Choosing the fastest plan took **< 0.01** seconds.

Q & A