10987 SQL Server Performance and Optimization

Supplemental Diagrams

Module 2

Latency Factors

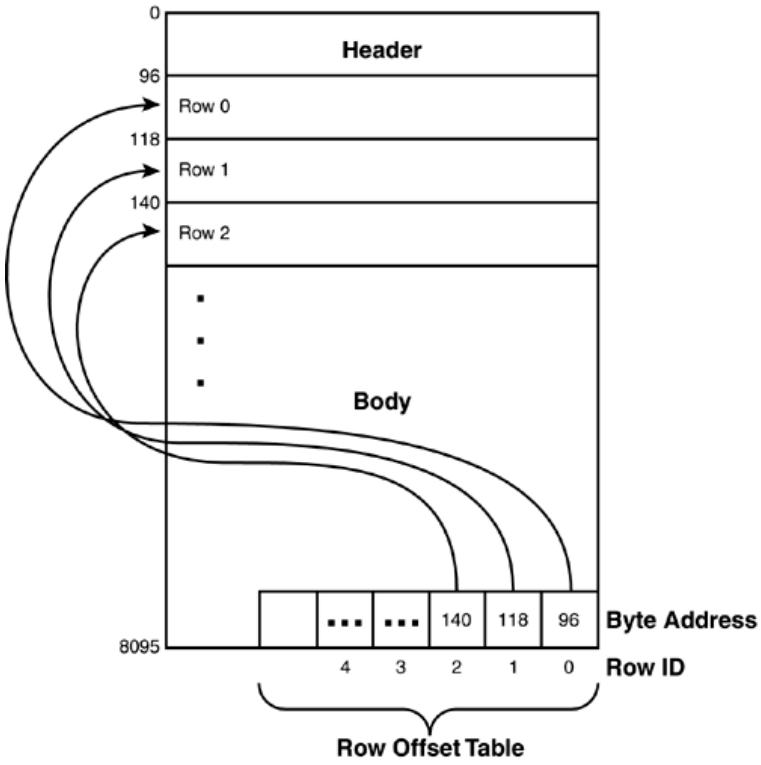
Log Files	OLTP Data Files	OLAP Data Files
• 1-5 ms • Ideally 1 ms for cached arrays	• 4-20 ms • Ideally 10 ms or less	• 30 ms or less • Latency can vary based on activity

10987 SQL Server Performance and Optimization

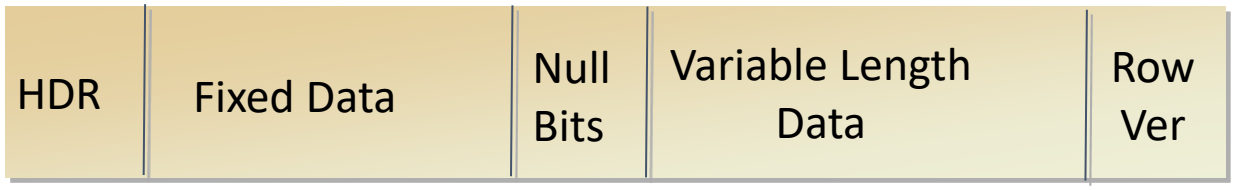
Supplemental Diagrams

Module 3

Page Layout



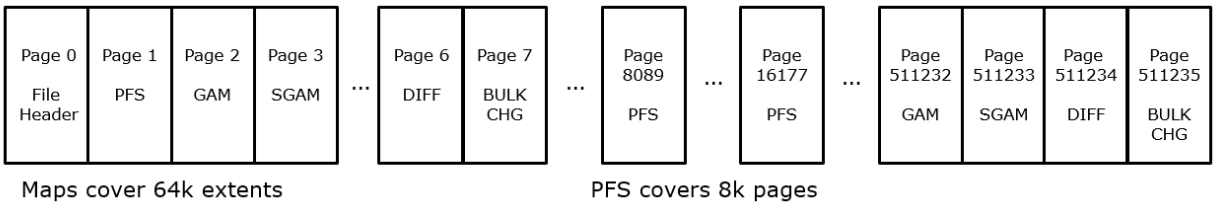
Row layout



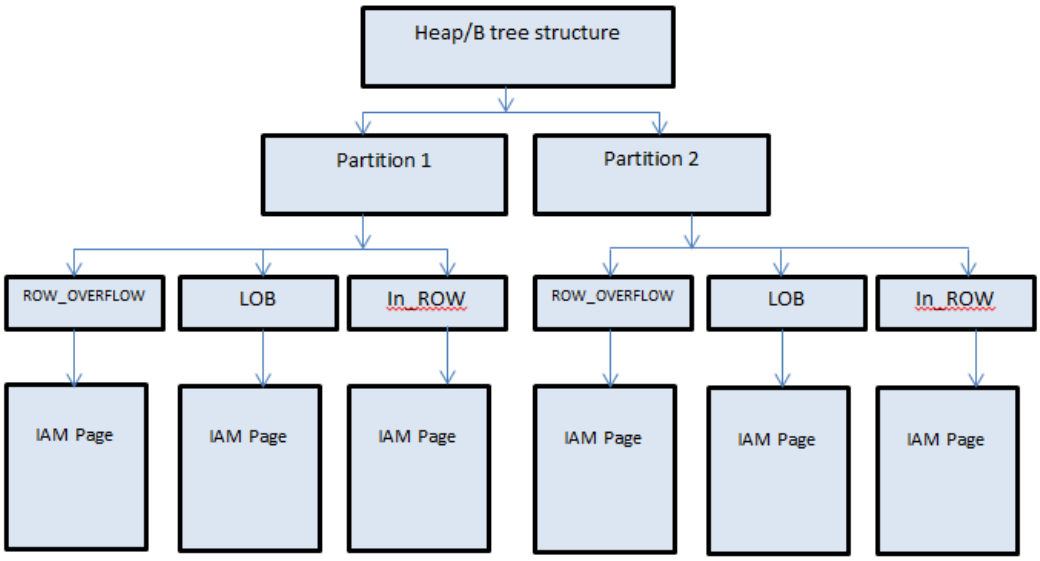
10987 SQL Server Performance and Optimization

Supplemental Diagrams

Allocation Bit Map File Layout



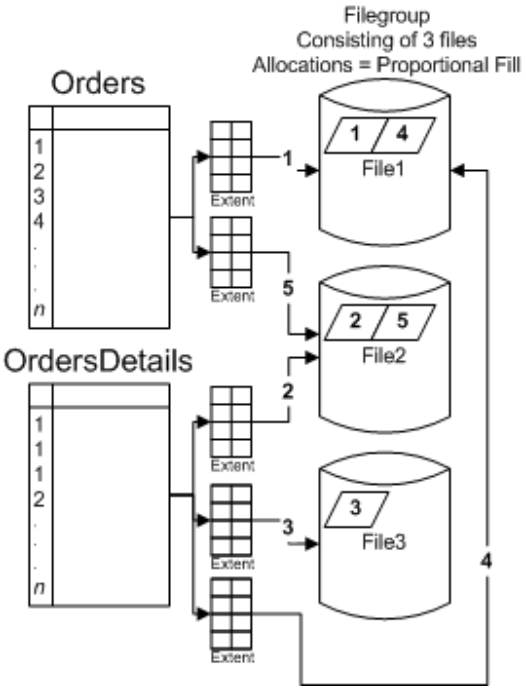
Page Allocation Units



10987 SQL Server Performance and Optimization

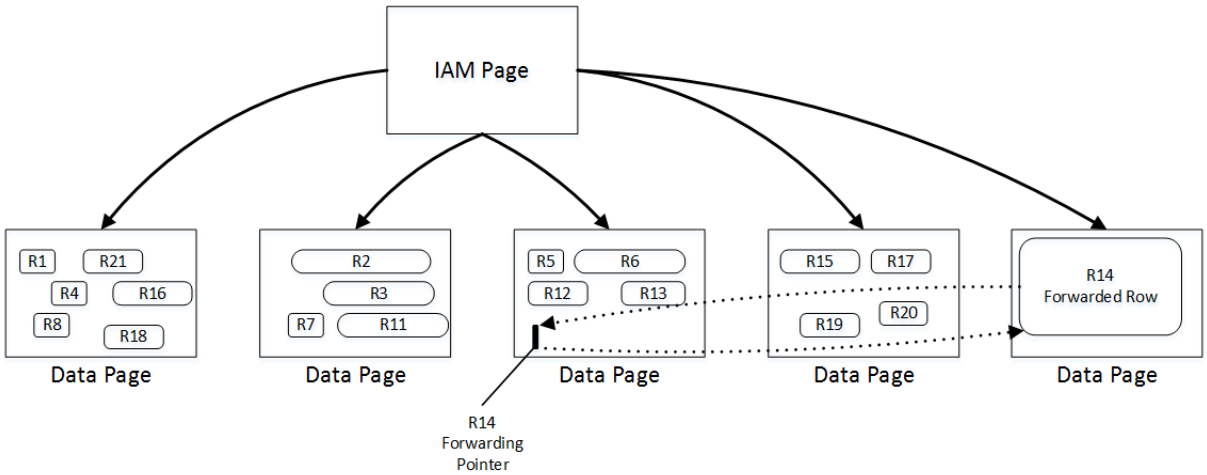
Supplemental Diagrams

Allocation with Data Files



Module 6

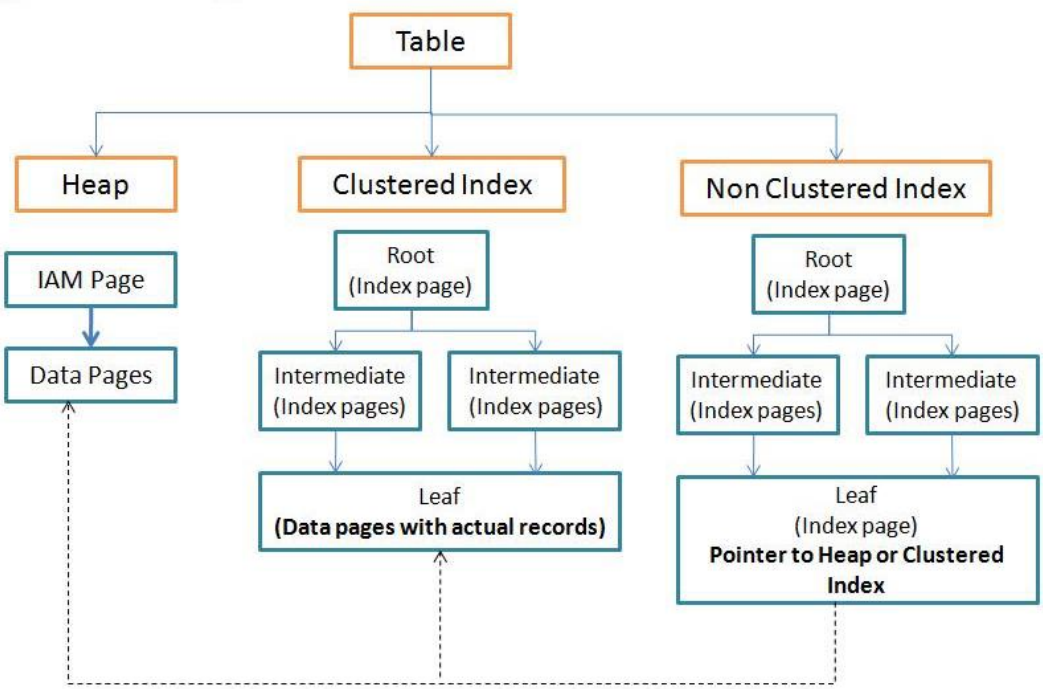
Heap Internals



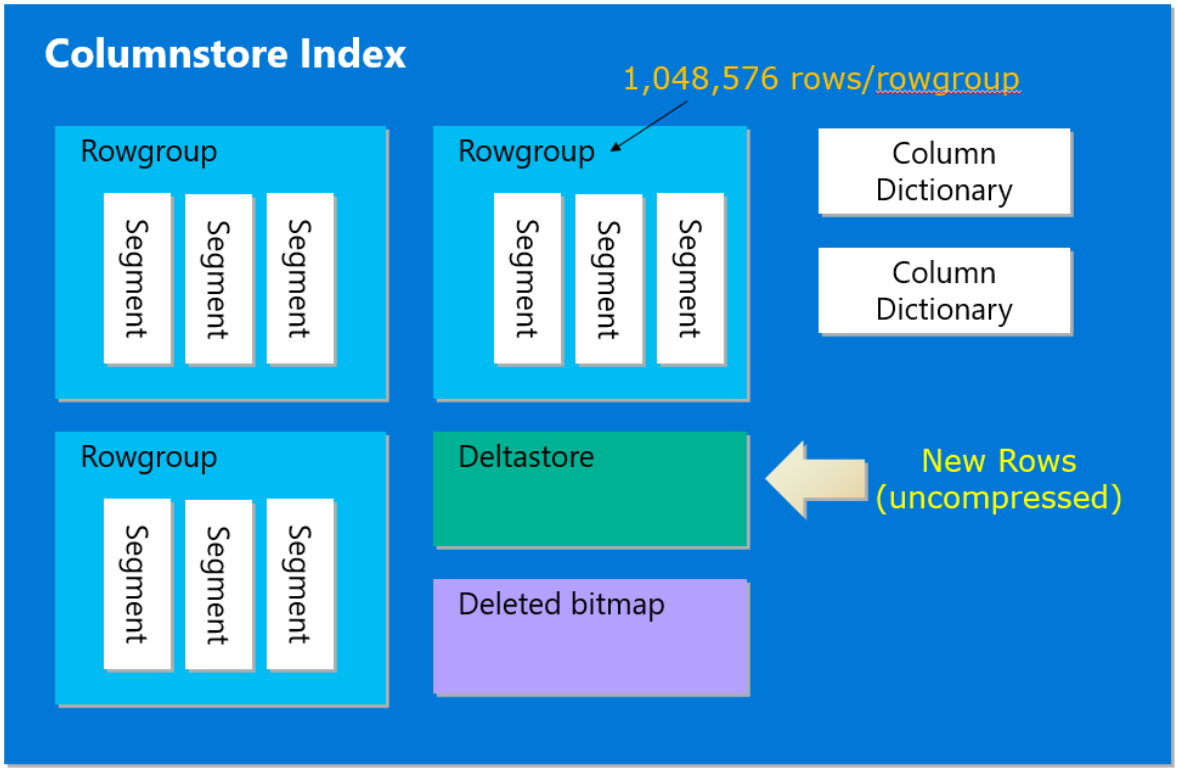
10987 SQL Server Performance and Optimization

Supplemental Diagrams

Index Structure



Columnstore Index Internals



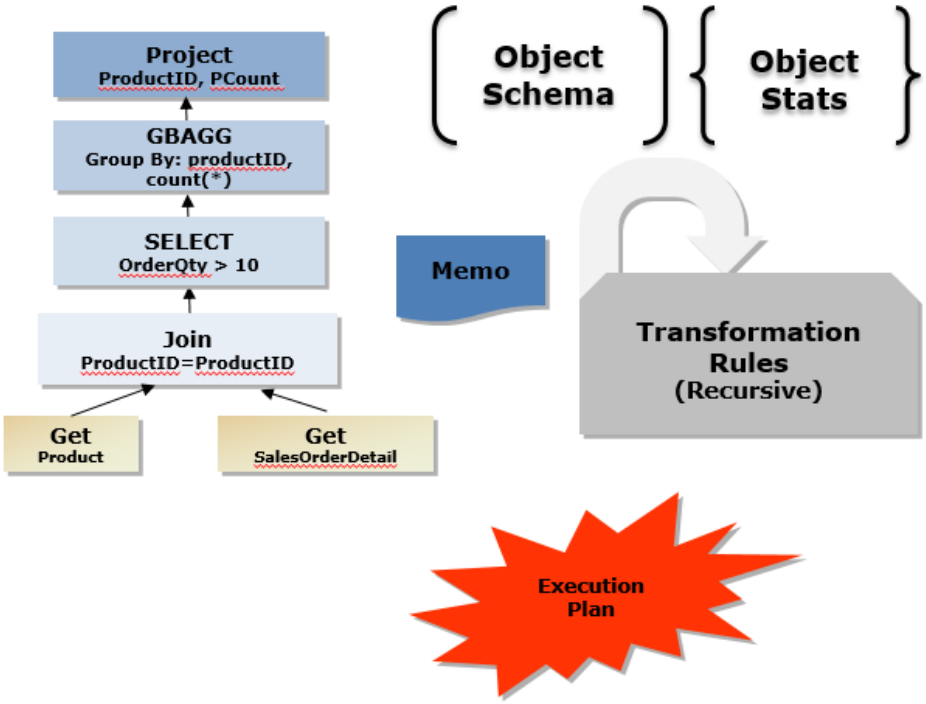
10987 SQL Server Performance and Optimization

Supplemental Diagrams

Module 7

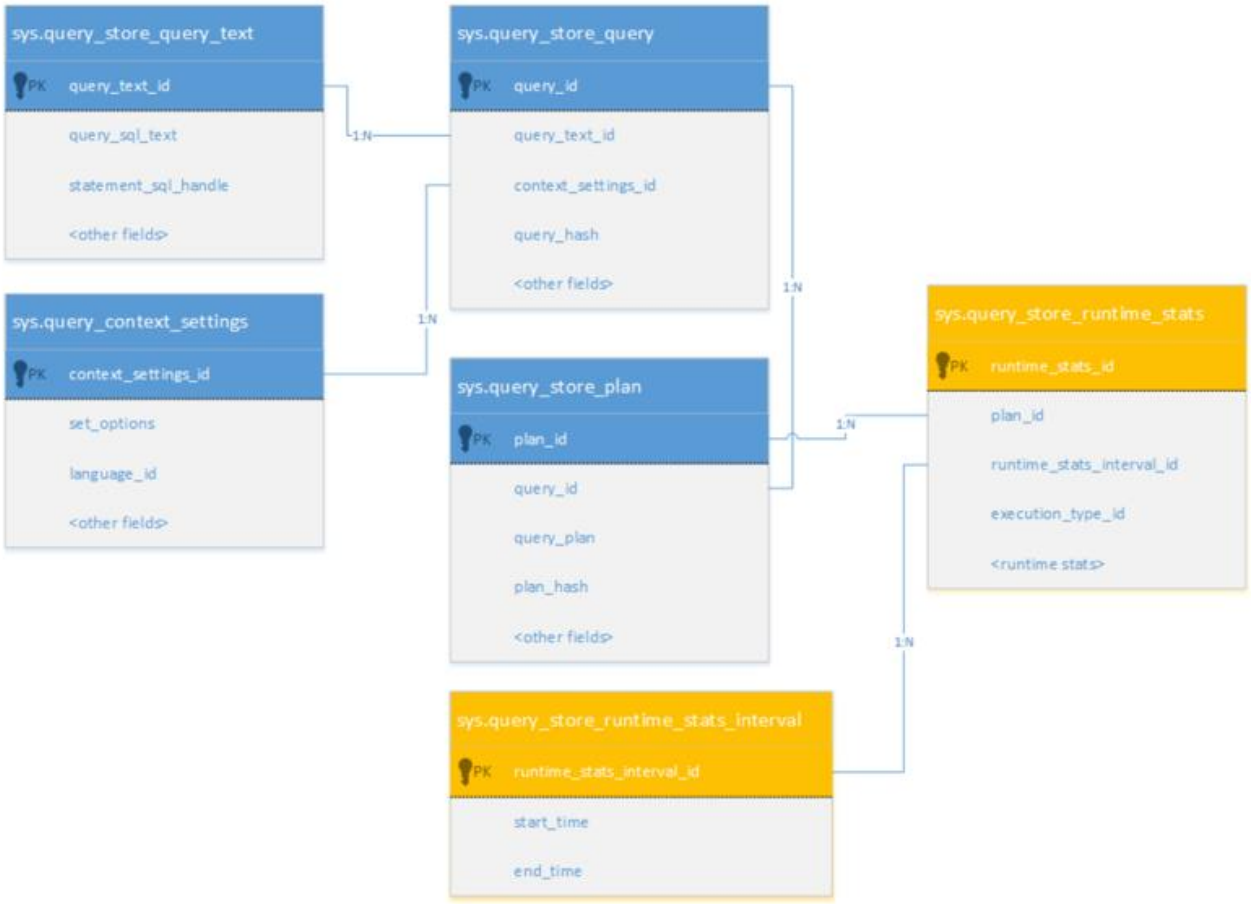
The Query Optimizer

```
SELECT pp.ProductID,
Count(*) PCount
FROM Production.Product pp
INNER JOIN Sales.SalesOrderDetail ss
            ON pp.ProductID=ss.ProductID
WHERE ss.OrderQty > 10
GROUP BY pp.ProductID
```



10987 SQL Server Performance and Optimization

Supplemental Diagrams

Module 8

Accessing Query Store Data