

# Assessing Your Indexing Strategy

Presented by

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## ABOUT TIM

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**WRITE LESS...**

# Our Agenda

**I**ndexes at  
**10,000'**

**T**ools & **C**ode

**G**UIDs

**F**ill **F**actor

**C**lustering

**K**ey **C**hoices

**U**sage **R**evue

# Indexes at 10,000'

**Level-Setting... at a high level.**

What is an index?

Heaps, clustered and non-clustered indexes

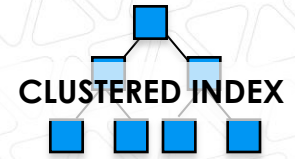
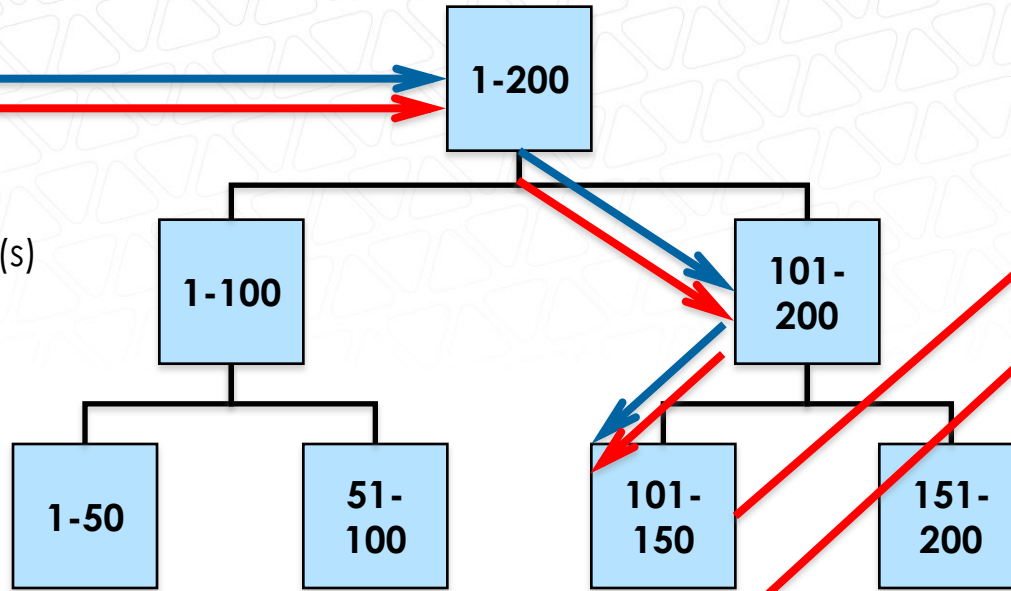
Differences between clustered & non-clustered indexes

Scans v. Seeks v. Lookups

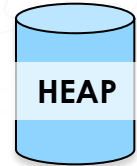
SELECT foo, col\_1, col2  
FROM ...  
WHERE foo = 123;

Intermediate Level(s)

Leaf Level



-OR-



## CLUSTERED INDEXES

data rows here in  
clustered key-sorted  
order

## NON-CLUSTERED INDEXES

only NC keys stored here in NC  
index order along with row pointer  
to "actual" row data (and any  
included columns' data.)

# Indexes at 10,000'

## **The Intermediate Level(s)**

Contains copy of “key data” from the index.

Must be able to uniquely identify an entry on a page in the leaf level

# Indexes at 10,000'

## Seeks

Singleton

Range Scan

It's not always about replacing scans with seeks...

# Tools & Code

**For assessing index usage, internals, composition and health**

`dm_db_index_usage_stats`

`dm_db_index_operational_stats`

`dm_db_index_physical_stats`

Ola Hallengren ([ola.hallengren.com](http://ola.hallengren.com)) SQL Server Maintenance Solution

system catalog views (`sys.indexes`, `sys.objects`, `sys.all_columns..`)

system compatibility views (`dbo.sysindexes`)

# Usage Review

## Tools

dm\_db\_index\_usage\_stats  
scans + seeks + lookups > updates  
system catalog and compatibility views

## Question to Answer

What indexes are causing most unnecessary overhead?

# Demo Time

# Clustering Key Choices

## Tools

dm\_db\_index\_usage\_stats  
dm\_db\_index\_physical\_stats  
system catalog and compatibility views

## Questions to Answer

Is the right clustering key being used?  
Are there any heaps that would benefit from a clustered index?

# Demo Time

# Fill Factor

## Tools

dm\_db\_index\_operational\_stats

page splits using leaf\_allocation\_count column

Command\_Log Table (Ola Hallengren)

frequency of index maintenance operations

## Questions to Answer

Are there fill factors that should be adjusted?

Are there global settings that harm us?

# Demo Time

# GUIDS

## Tools

dm\_db\_index\_operational\_stats: for page splits

Command\_Log Table (Ola Hallengren)

frequency of index maintenance operations

## Questions to Answer

Are there any GUID-based clustered indexes?

Are they harmful?

# Demo Time

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**Q & A TIME**

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