

Directions EMEA 2010

19 – 21 May 2010, Prague

The NAV Partner Community

<http://www.directionsemea.com>

The only NAV focus conference !

Dynamics NAV & SQL Server Tips & Tricks - Indexes

Jörg A. Stryk

Download Slides, Scripts & Templates:

<http://dynamicsuser.net/blogs/stryk/archive/2010/05/20/directions-emea-2010-nav-sql-performance-indexes.aspx>

About Jörg Stryk



MS Dynamics NAV (Navision) since 1997
(MCBMSS)

MS SQL Server since 2003
(MCP, MCPS)

100% focus on „**NAV/SQL Performance Optimization**“

STRYK System Improvement (since 2006, Certified Dynamics NAV Solution Provider)
Worldwide support of MS Dynamics Partners & Customers

Microsoft Most Valuable Professional
(MVP MS Dynamics NAV)



Book:	<i>“NAV/SQL Performance Field Guide”</i>	(ISBN 978-3-8370-1442-6)
Software:	<i>“NAV/SQL Performance Toolbox”</i>	http://www.stryk.info/toolbox.html
Blog:	<i>“NAV/SQL Performance – My Two Cents”</i>	http://dynamicsuser.net/blogs/stryk/
MSDynamicsWorld.com:	<i>“NAV/SQL Quickies”</i>	http://msdynamicsworld.com/column/sql-server/nav-sql-quickie

- **Index Optimization**
 - Understanding Indexes
 - SQL Server Profiling (Basics)
 - Working with Indexes
 - Designing Indexes
 - Maintaining Indexes

The Basics



Key = **Constraint** on a record or field



Index = „**Balanced Tree**“ structure to find records

C/SIDE Server	SQL Server
ISAM	Relational
Sorting Data Retrieval SIFT Management	Data Retrieval

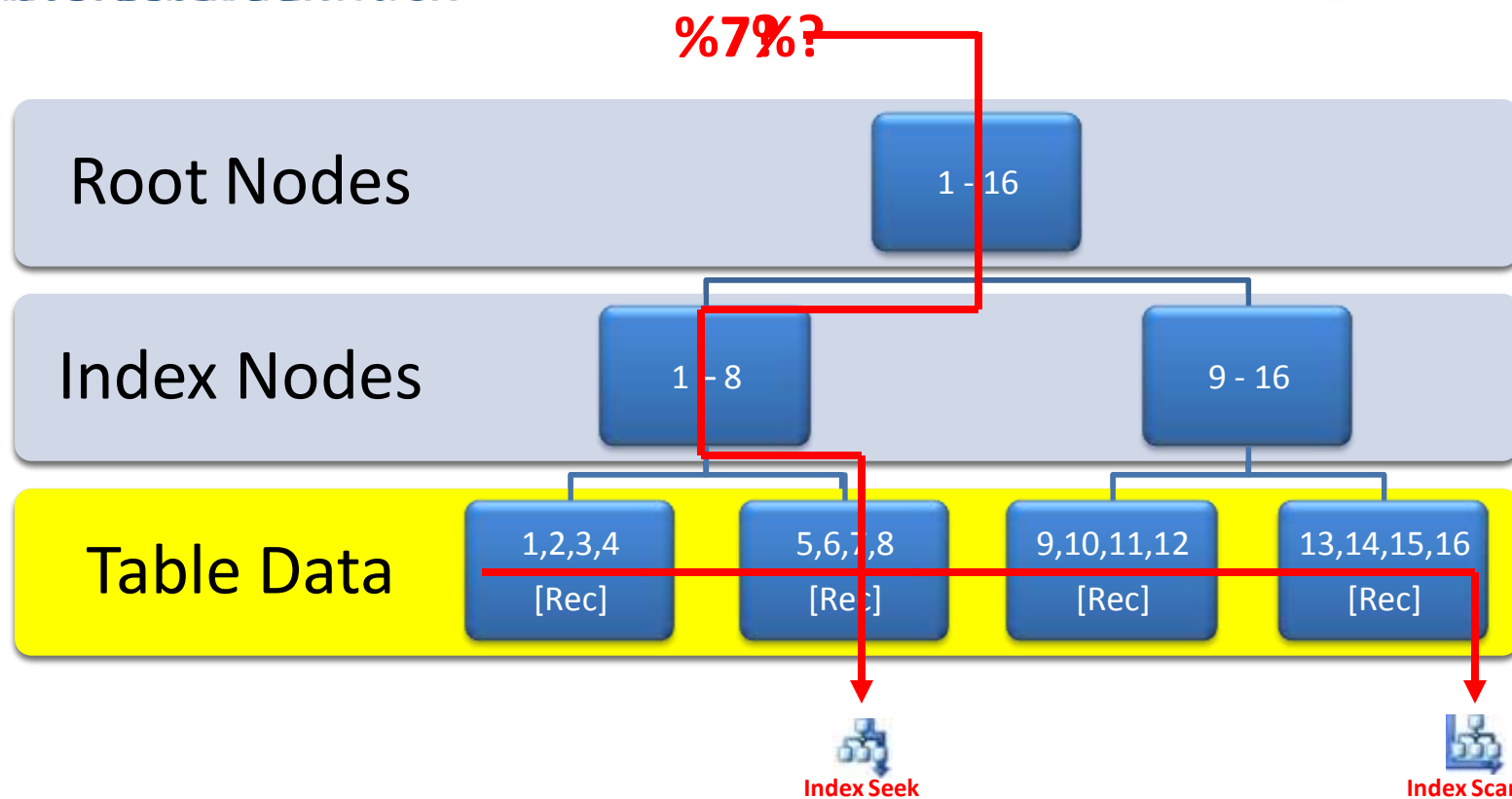
Demo

- **Understanding Indexes**



Index Types

Clustered Index



From „Key“ to „Index“

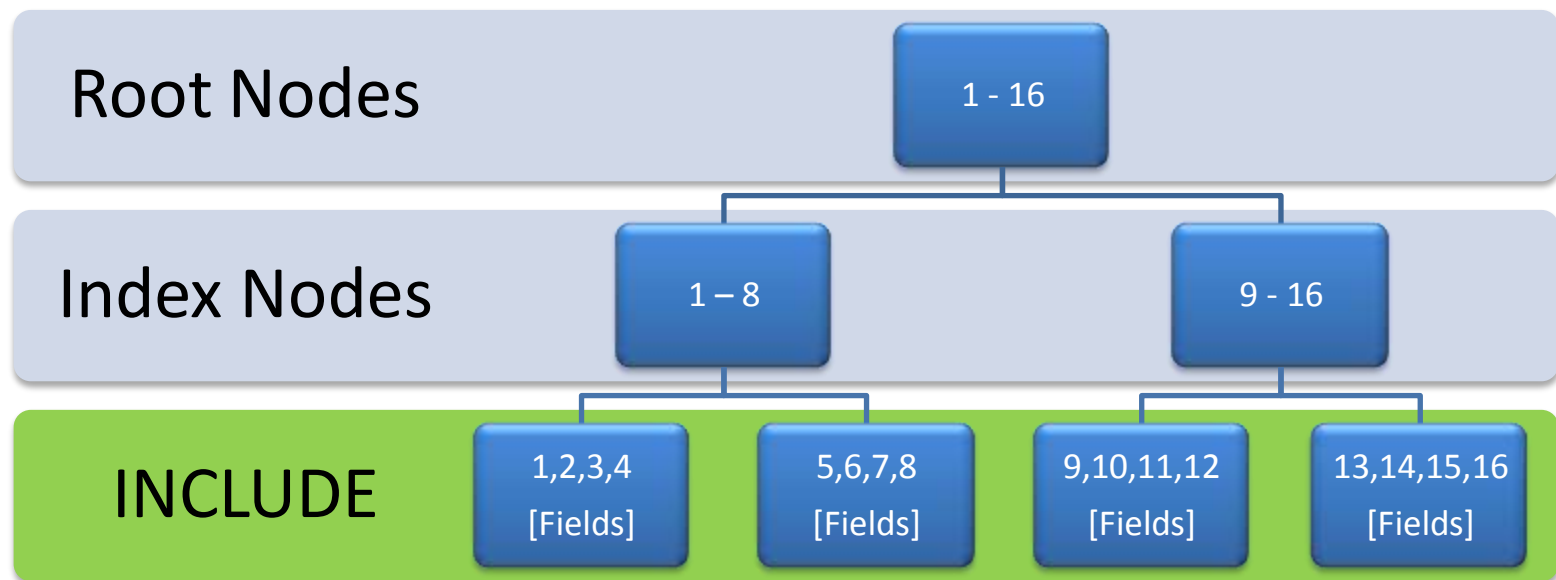
C/SIDE	SQL Server	Example (Customer)	
Primary Key	Primary Key Clustered Index	No.	...\$Customer\$0: No_
Secondary Key	Unique Non-Clustered Index	Search Name	\$1 (UNIQUE): Search Name, No_
Table Relation	Foreign Key (Maintain Relations)	Country Code	...\$Customer\$FK\$T18 _F35\$T9
n/a	Non-Clustered Index with INCLUDEs		

Caution:

Using the „SQL Index“ property in a wrong way might cause severe performance degradation!

The only fail-safe (?) way: Copy „Key“ to „SQL Index“ 1:1
(this just removes the UNIQUE-ness and the trailing PK fields)

Non-Clustered Index

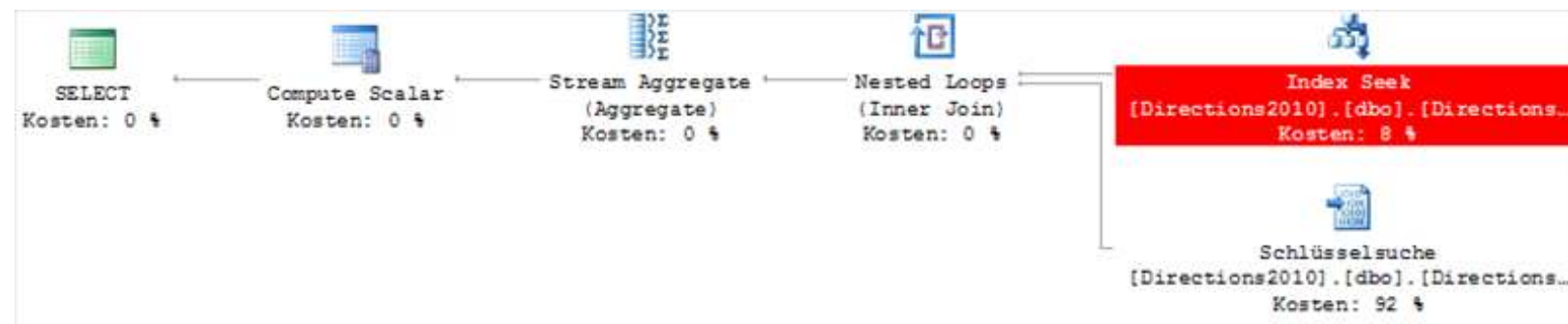


Demo

- **SQL Profiling & QEP**
- **Working with Indexes**
- **Designing Indexes**
- **Selectivity**
- **Statistics**
- **Maintenance**









Query Execution Plans








Query Execution Plans

<http://msdn.microsoft.com/en-us/library/ms175913.aspx>

Operators that are executed in parallel are displayed with the following parallel process icon above the operator. 

Icon	Operator
	Bookmark Lookup
	Clustered Index Scan
	Clustered Index Seek
	Constant Scan
	Filter

Icon	Operator
	Nonclustered Index Scan
	Nonclustered Index Seek
	Sort
	Table Scan
	Top

Summary



- Identify “bad queries” with SQL Profiler
- Analyze TRC file and QEP
- Implement optimized indexes (NAV or SQL)
- Verify Index Usage
- Remove unused indexes
- Maintain Indexes & Statistics

- The NAV/SQL Performance Field Guide
- Performance Troubleshooting Guide
- SQL Server Option Resource Kit
- Installation & System Management
- Application Designer's Guide

**Numerous Websites, Communities, Forums,
BLOGS, etc.!**

<http://www.stryk.info>

<http://dynamicsusers.net>

<http://www.mibuso.com>

<http://www.msynamics.de>

<http://www.sql-server-performance.com>

<http://www.sqlservercentral.com>

<http://dynamicsuser.net/blogs/stryk/>

http://blogs.msdn.com/microsoft_dynamics_nav_sustained_engineering/

http://blogs.msdn.com/nav_developer/

<http://blogs.msdn.com/nav/>

<http://blogs.msdn.com/mssqlisv/>



20.5.2010, 11:30:00

Jörg A. Stryk

STRYK System Improvement

<http://www.stryk.info>
contact@stryk.info

BLOG: <http://dynamicsuser.net/blogs/stryk/>