Next Step To Accelerate Data Processing In Trading Environments

Open Day Deutsche Börse 2017
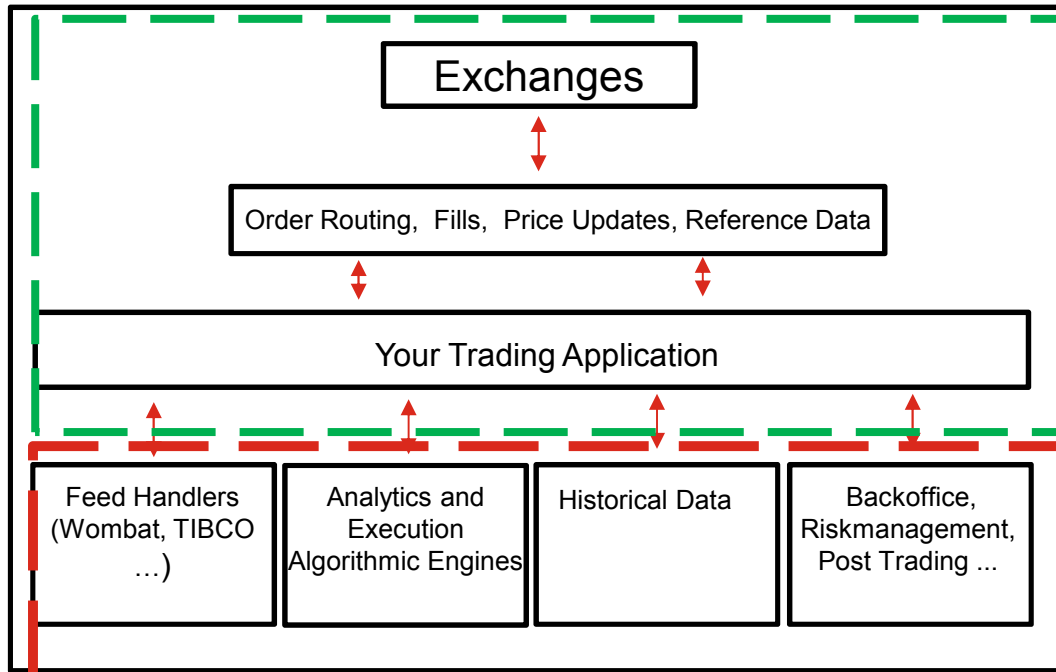## Torsten Welke
Director, Ecosystem & Software Partnerships Central Europe

The Data Infrastructure Software Company

Agenda

- Status Quo

- Is this the way to go forward?

- Think different!

- Our product = Your Solution

- DataCore Company Background

- Questions

Status Quo

- Accelerate exchange connectivity was the very first step to reduce latency between Trading locations and Exchanges
  - **Solution: Increase Network Bandwidth** ✅

- Second step: The reduction of the physical distance between the trading locations and the exchanges followed
  - **Solution: Establish Co-Location**

- Growing of data and different sources influences decisions on our today's business. Data mining and data wrangling becomes crucial
  - **Solution: Reduce data processing time**

Next Step!

Improve data processing to achieve best value for trading decisions

Is this the way to go forward?

Change Processes? ~~not likely!~~

Change Applications? ~~not likely!~~

Change/Add Hardware? ~~most likely!~~

- Ongoing task in case of improvements, but mostly well established in todays professional environments

- Part of company's release management, but limited to given hardware and software (OS) technology

- Mostly latest technology like flash or in-memory is in place, but is limited to available industry standard.

Maximize utilization by using of unused computing resources….

Think different!

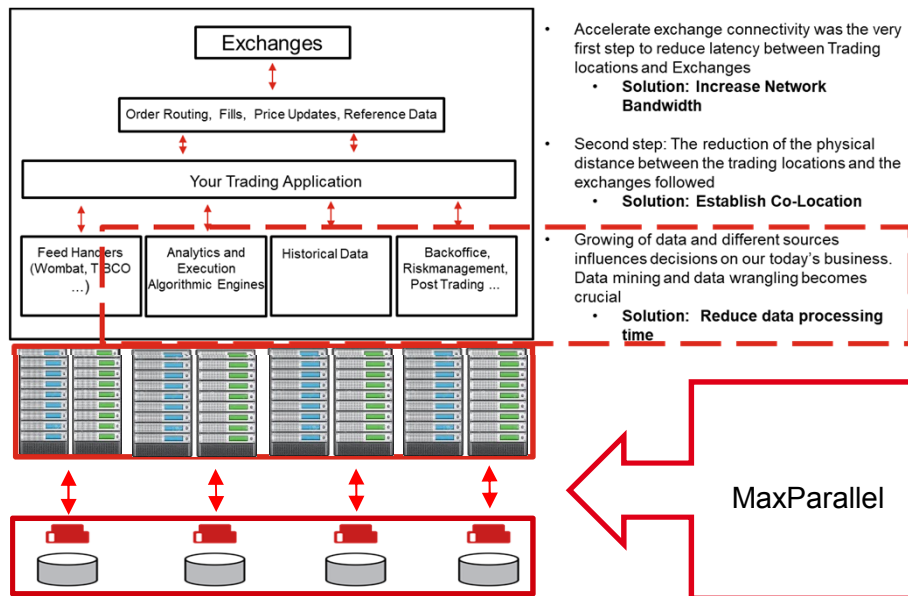## We believe our product

- ….will generate a higher throughput by using multiple CPUs (multi-core) idle time to run processes in parallel

- …. can process high velocity transactions and analyze enormous amounts of data
  in a fraction of the time without any additional hardware costs

- ….will enrich your Analytics and Execution Algorithmic Engines due to faster processing of repository data and back-office data

- ….will improve the workload of your existing hardware components

- ….will positively influence your hardware budget planning

Software-defined Technology is the key to leverage hardware

DataCore Software

Our Product = Your Solution

MaxParallel technology leverages and fully utilizes high-powered multi-core servers in your environment

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- **No** re-coding or re-engineering of applications

- **No** reliance on costly High-Performance Computing (HPC) clusters

- **No** exotic hardware

- **No** dependence on massive public cloud resources

- **No** complex or lengthy migration to In-memory Computing models
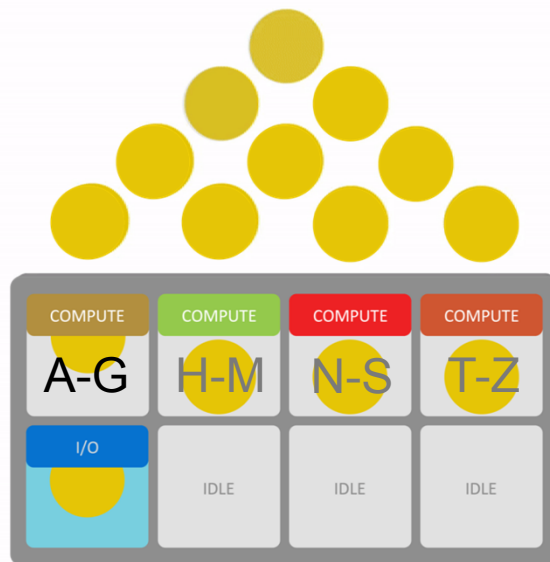
- **No** expensive development / risk

MaxParallel technology is a easy to use solution for your data processing

Our Product = Your Solution

How MaxParallel in your environment

Two technical slides….

Problem: Choke point causes major slow-downs

Parallel
Computing
on
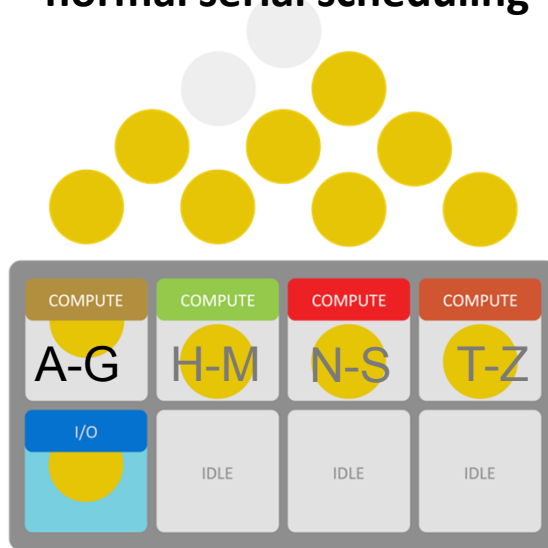8-core
Server

Serial I/O processing

- Only one thread can read and write data at a time

- Other threads must wait their turn

- Little work gets done

- CPUs wasted

- Adding more load on idle cores exacerbates delays

Materially Faster Data Access & Full Use of Cores

<u>Before</u>
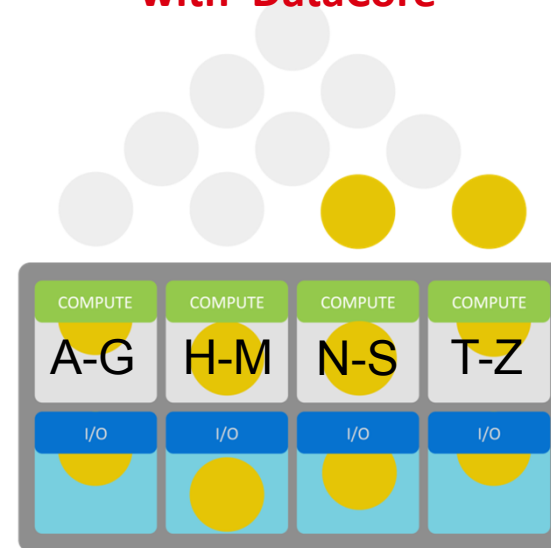
**Delays & waste caused by
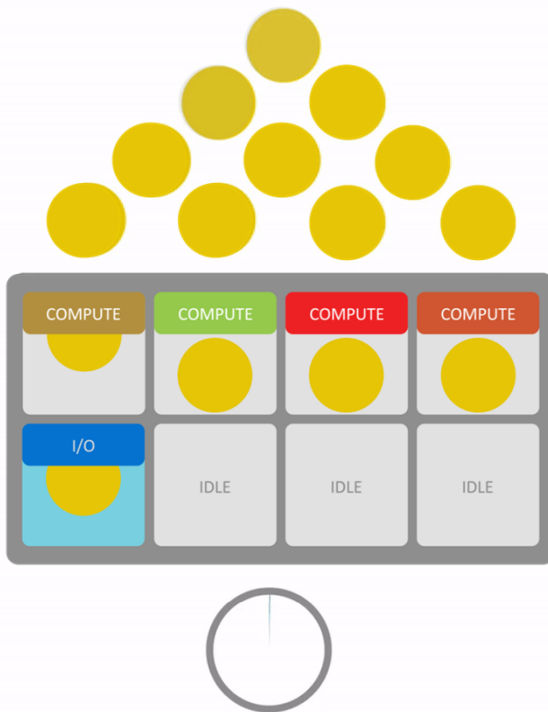normal serial scheduling**

SQL Server
Database

<u>After</u>

**"It's Quicker in Parallel"
with DataCore**

COMPUTE	COMPUTE	COMPUTE	COMPUTE
A-G	H-M	N-S	T-Z
I/O	IDLE	IDLE	IDLE

8 cores / 5 busy / 3 idle

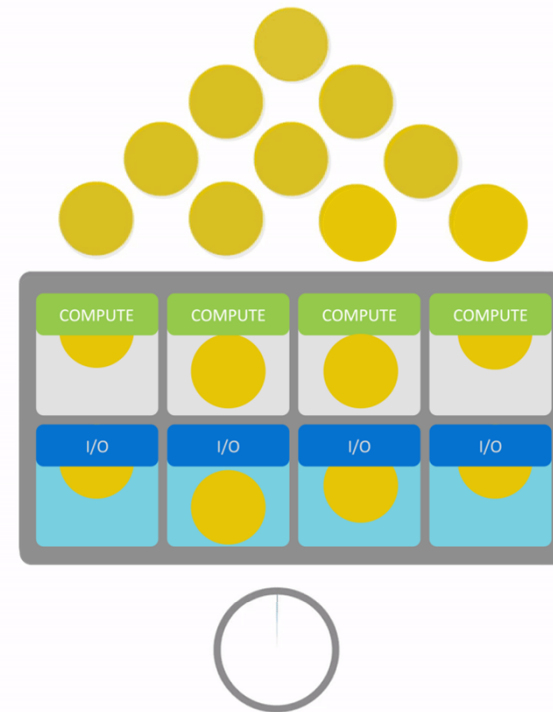| COMPUTE	COMPUTE	COMPUTE	COMPUTE
A-G	H-M	N-S	T-Z
I/O	I/O	I/O	I/O

8 cores / all put to work

DataCore Software

Effects on System Response, Workloads and Time

Serial data access

Parallel data access with DataCore

Concurrent tasks

Fastest I/O Stack on the Planet

World Record SPC-1 Database Workload Results

	Product	SPC-1 IOPS	Total Price	Response Time (Milliseconds)	$ per SPC-1 IOPS
	SPC-1 TOP 10 by Performance				
1	DataCore Parallel Server (2-node FC External)	5,120,098.98	$506,525.24	0.28	$0.10
2	Huawei OceanStor™ 18800 V3	3,010,007.37	$2,370,763.89	0.92	$0.79
3	Hitachi Virtual Storage Platform G1000 (with Hitachi Accelerated Flash)	2,004,941.89	$2,003,803.84	0.96	$1.00
3	HP XP7 Storage (OEM o HDS VSP)	2,004,941.89	$1,972,095.28	0.96	$0.98
4	DataCore Parallel Server (Single node hyper-converged)	1,510,090.52	$136,758.88	0.10	$0.09
5	Kaminario K2 (K2F00000700)	1,239,898.00	$997,348.00	2.95	$0.80
6	DataCore SANsymphony (2-Node HA-FC Hyper-converged)	1,201,961.83	$115,142.76	0.22	$0.10
7	Huawei OceanStor™ 18800	1,005,893.43	$2,794,971.80	5.17	$2.78
8	IBM Power 780 server (with SSDs)	780,081.02	$3,557,709.00	18.9	$4.56
9	NetApp® FAS8080 EX (All-Flash FAS)	685,281.71	$1,897,999.00	1.23	$2.77
10	Huawei OceanStor™ 6800 V3	650,987.88	$1,488,036.50	3.36	$2.29

Proven. Globally.

DataCore™ SOFTWARE

30,000+ LICENSES DEPLOYED WORLDWIDE

At 10,000+ Customer Sites	10th Gen Product

Companies in all Industries & Sizes

Software-Defined Storage

Hyper-converged Infrastructure

Parallel I/O Technology

Main Offices
- Australia
- France
- Germany
- Japan
- UK
- USA

Questions?

Further Information via:
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User Spotlight

Objectives Achieved

„We chose the most painful stock level and pricing runs, and the outcome in our test is really insane! Those time savings are unbelievable and we are looking forward to getting this software into production.“

- Time to re-evaluate warehouse stock levels and recalculate best prices **shortened from 60 seconds down to 6 seconds**
- Inventory transfer times **reduced from 29 seconds to 2 seconds**
- Gross earnings per supplier calculations trimmed **from 73 seconds down to less than a second**

More than 300,000 product items in the SQL Server 2012 database. Between 1,000 and 60,000 entries involved in daily inventory transfers.

Rapidly changing inventory levels and cost recalculations among 80+ tire distributors were taking far too long for TyreWorld to determine optimal drop ship prices to entice their online customers. This drove them to search for next generation hardware and software solutions that could shave time off each transaction. Following the addition of MaxParallel software to their SQL Server environment, they concluded:

„DataCore MaxParallel for SQL Server can change our business over night.“

Manuel Hanke (IT Manager)