



White Cube

Consultoria e Treinamento

SQL Server Performance Tuning Performance Tuning, General Overview

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Agenda

Day 1 to 3:

- Make some conferences with you to understand your problem
- Capturing of your infrastructure
- Implementation of our performance tools
- Best practice checks
- Monitoring and data gathering

Day 4 to 7

- SQL Server analysis, like index usage and long running queries
- Monitoring and data gathering
- First discussion and presentation of already identified issues

Day 8 to 10

- Application analysis
- Data interpretation
- Documentation
- Final presentation of results and our recommendations

Deliverables

- We analyze your configuration, sizing, architecture and the performance of your environment.
- We identify the causes, why your system is under performing and work out recommendations for actions to take.
- We provide specific recommendations to optimize your existing or coming environment.

What to think about?

- **Identifying problematic SQL queries**
- **Analyzing a query execution plan**
- **Evaluating the effectiveness of the current indexes**
- **Avoiding bookmark lookups**
- **Evaluating the effectiveness of the current statistics**
- **Analyzing and resolving fragmentation**
- **Optimizing execution plan caching**
- **Analyzing and avoiding stored procedure recompilation**
- **Minimizing blocking and deadlocks**
- **Analyzing the effectiveness of cursor use**
- **Applying performance-tuning processes, tools, and optimization techniques to optimize SQL workload**

The performance Tuning Process

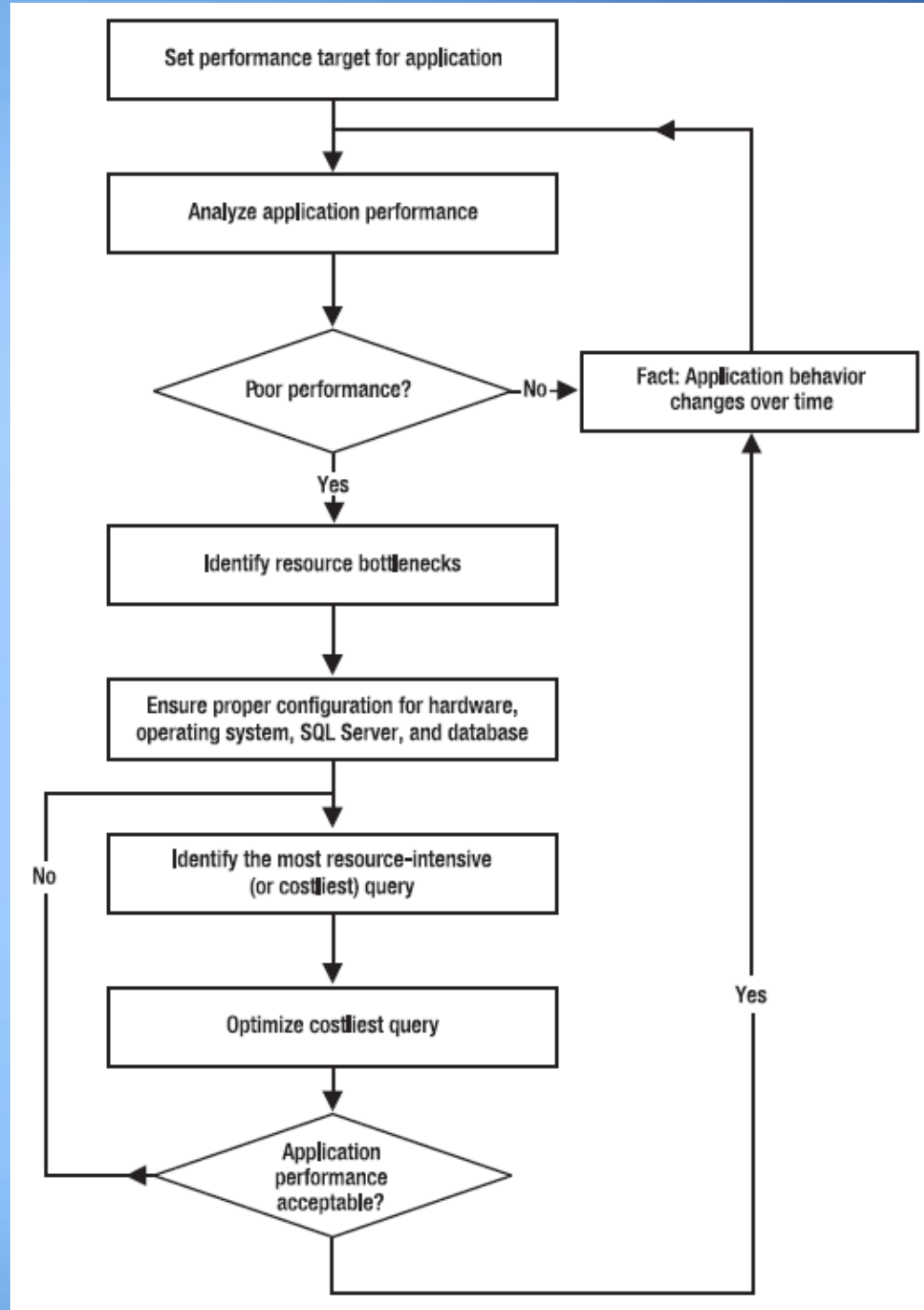
You should be asking yourself the following general questions during the performance analysis. If any of these factors is not configured properly, then the overall system performance may suffer.

- Is any other resource-intensive application running on the same server?
- Is the hardware subsystem capable of withstanding the maximum workload?
- Is SQL Server configured properly?
- Is the database connection between SQL Server and the database application efficient?
- Does the database design support the fastest data retrieval (and modification for an updatable database)?
- Is the user workload, consisting of SQL queries, optimized to reduce the load on SQL Server?
- What processes are causing the system to slow down as reflected in the measurement of various wait states?
- Does the workload support the maximum concurrency?

Iterating the Process

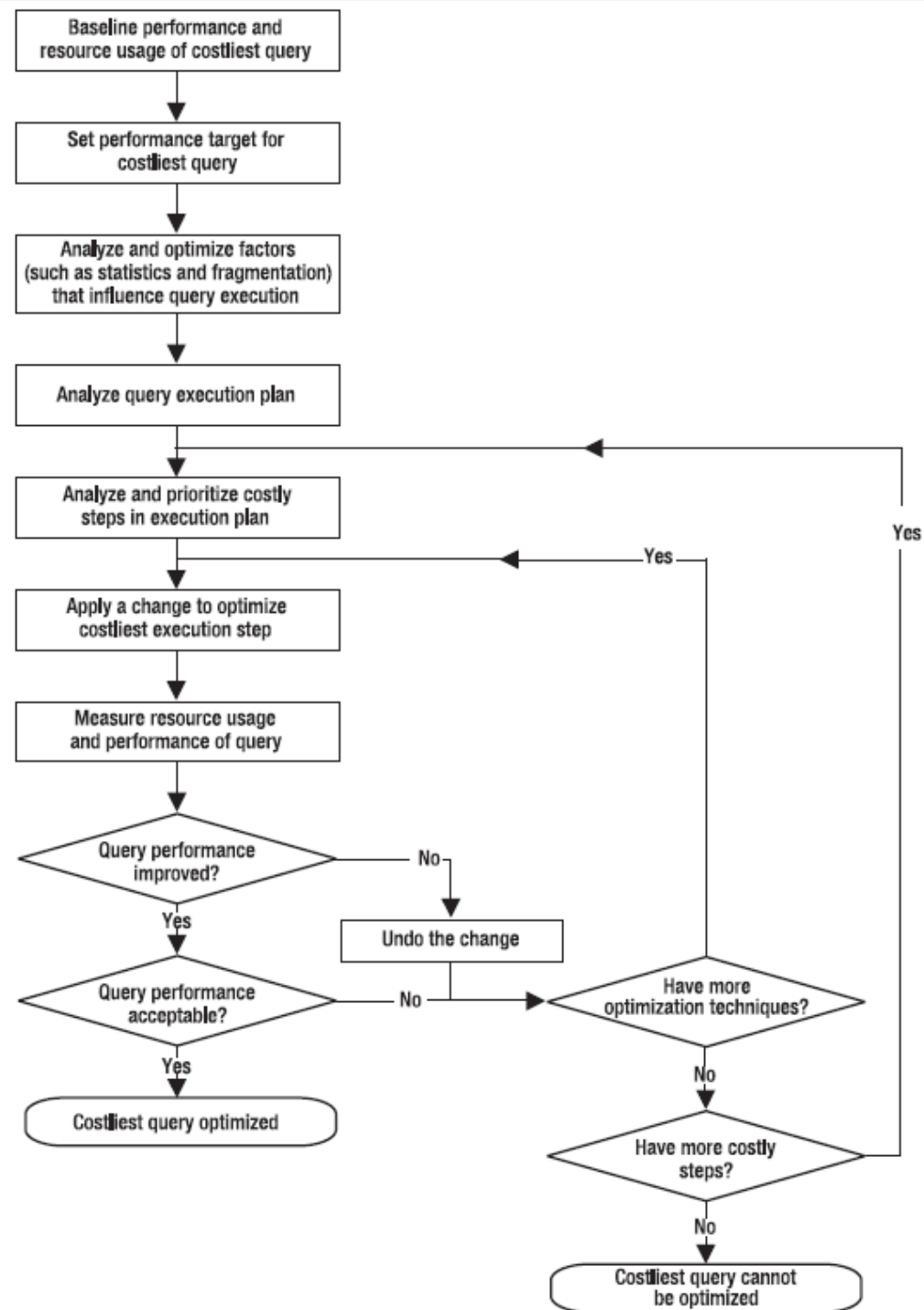
Performance tuning is an iterative process, where you identify major bottlenecks, attempt to resolve them, measure the impact of your changes, and return to the first step until performance is acceptable.

➔ **Make only one change at a time.**



Optimization of the costliest query

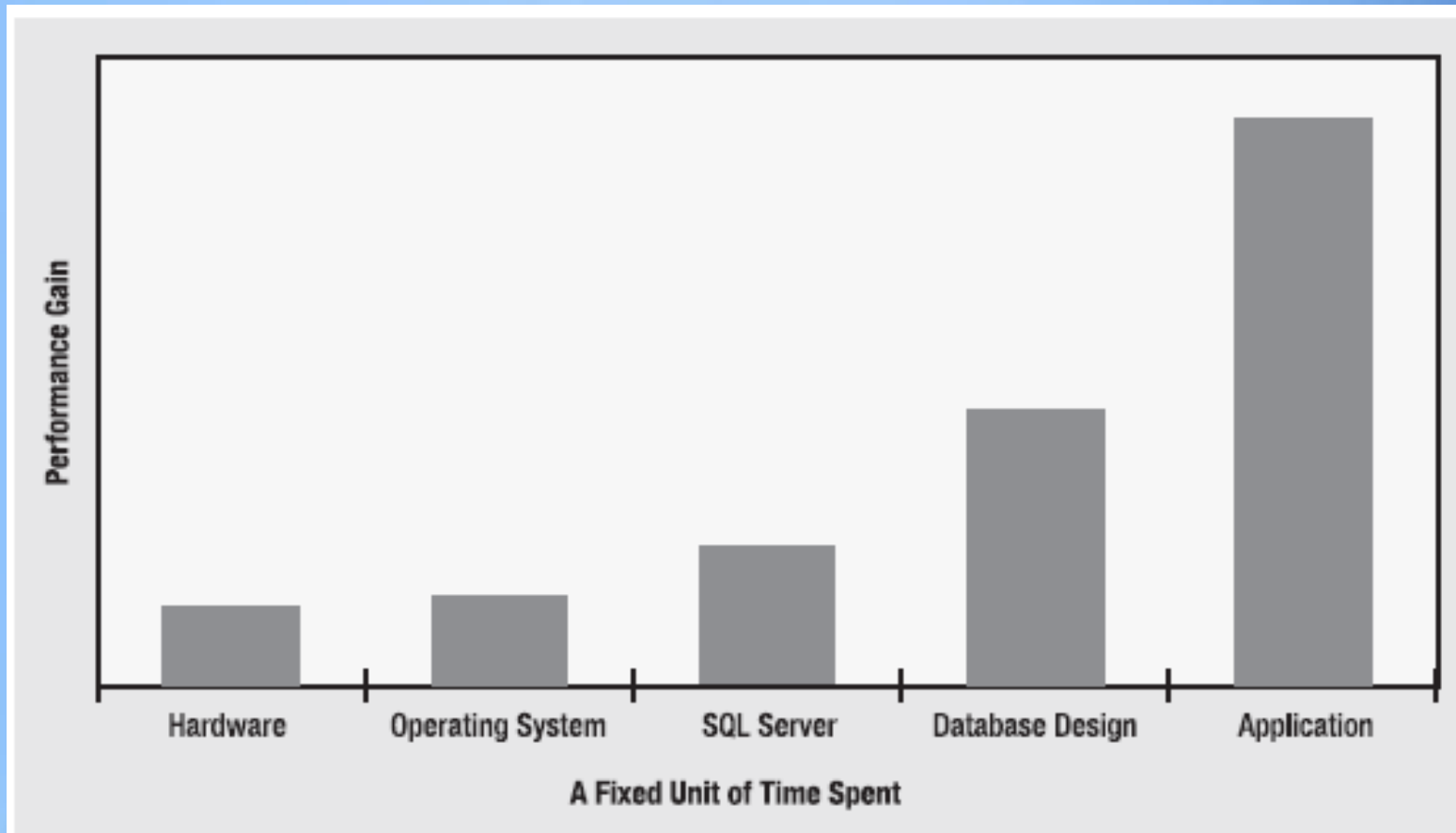
You can see that the steps to optimize the costliest query make for a complex process, which also requires multiple iterations to troubleshoot the performance issues within the query and apply one change over time.



Performance X Price

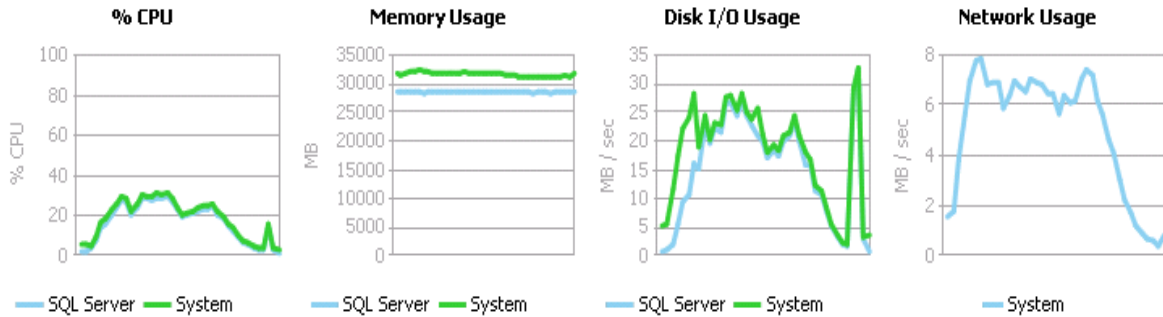
What are the Performance Targets?
“Good Enough” tuning?
Got a Performance BaseLine?

Where to Focus Efforts?

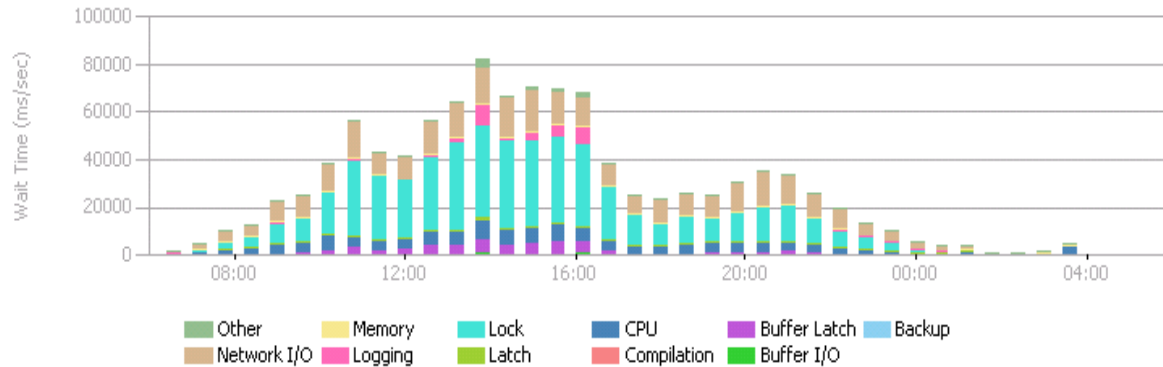


The performance BaseLine

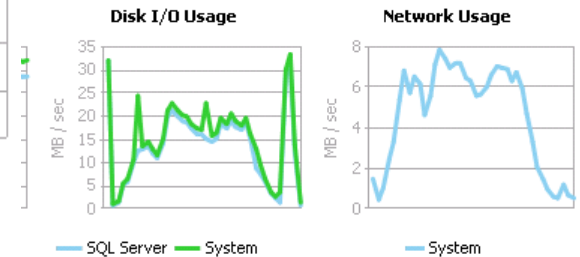
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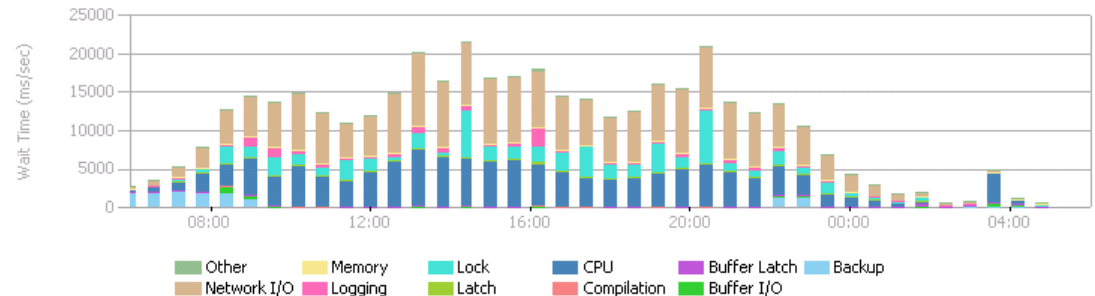
SQL Server Waits



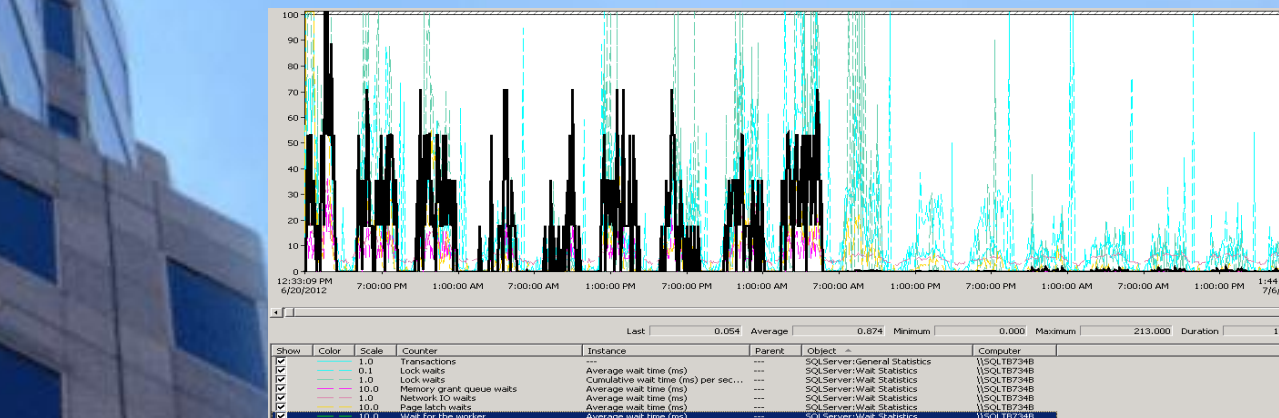
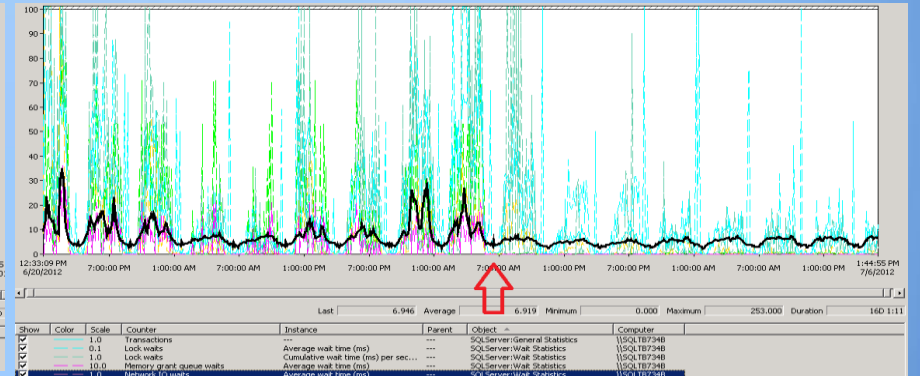
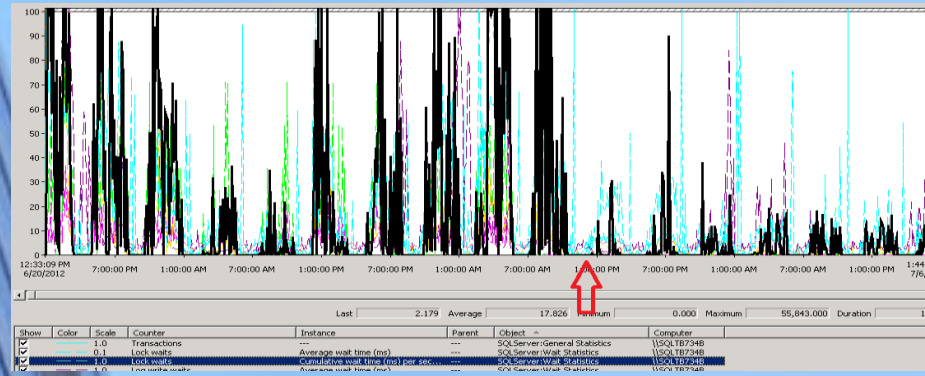
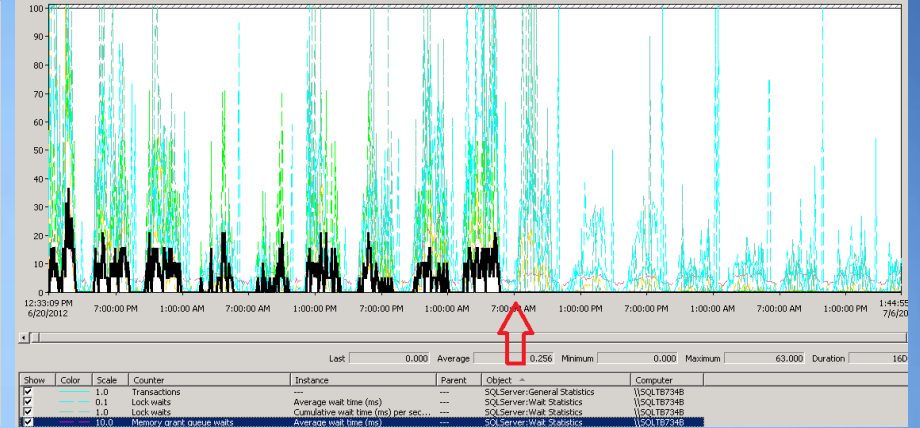
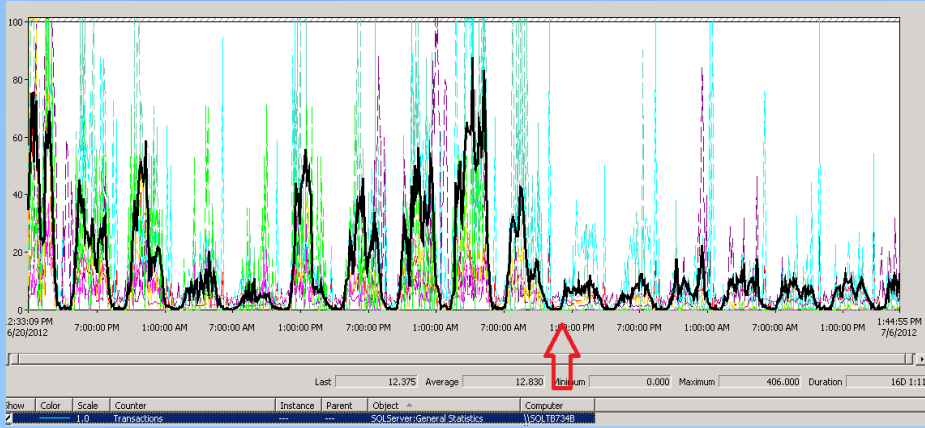
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SQL Server Waits



The BaseLine, Before and After



SQL Server Performance Killers

Once you have optimized the hardware, operating system, and SQL Server settings, the main performance killers in SQL Servers are as follows:

- Poor Indexing
- Inaccurate statistics
- Excessive blocking and deadlocking
- Non-set-based operations, usually T-SQL cursors
- Poor query design
- Poor database design
- Excessive fragmentation
- Nonreusable execution plans
- Poor execution plans, usually caused by parameter sniffing
- Frequent recompilation of execution plans
- Improper use of cursors
- Improper configuration of the database log
- Excessive use or improper configuration of tempdb



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