

Monitoring Usage and Performance part1

Sure! Let's talk about the importance of monitoring database performance at different levels.

Monitoring database performance is like keeping an eye on a car to ensure it runs smoothly. Just as a car has various parts that need to work well together—like the engine, tires, and fuel system—databases have different levels that need monitoring. These levels include the infrastructure (the underlying hardware and software), the platform (the database system itself), the queries (the requests made to the database), and the users (the people using the database). By checking each of these levels, you can spot potential problems before they become serious issues, just like a mechanic checks all parts of a car to prevent breakdowns.

For example, imagine you're baking a cake. You need to monitor the oven temperature, the mixing of ingredients, the baking time, and even how the cake looks as it rises. If you only check one part, like the oven, you might end up with a cake that's burnt on the outside but raw on the inside. Similarly, monitoring all levels of a database ensures everything is functioning well, leading to better performance and happier users.

Monitoring usage and performance

Need key performance indicators (KPIs) to measure database usage and performance

More commonly referred to as 'metrics'

Metrics enable DBAs to optimize organizations' databases for best performance

Regular monitoring also useful for operations, availability, and security

- You need to use the appropriate tools to monitor your database and effectively monitor its performance. But regardless of which monitoring tools you use, the relevant information is obtained by using several key performance indicators, or KPIs, which are more commonly referred to as 'metrics.' Database performance is measured by using these key database performance metrics, which enable database admins to effectively optimize their organizations' databases for best performance. Apart from monitoring for performance reasons, regular monitoring is also useful for operations, availability, and security purposes.

Monitoring at multiple levels

Ultimate goal of monitoring is to identify and prevent issues from adversely affecting database performance

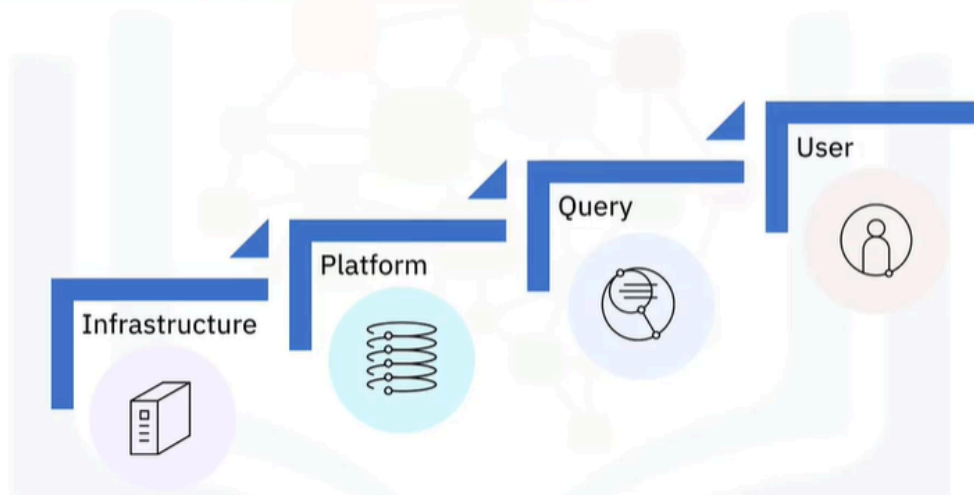
Issues might be caused by:

- Hardware
- Software
- Network connections
- Queries
- Something else

Database monitoring should be multilevel

- The ultimate goal of monitoring is to identify and prevent issues from adversely affecting database performance. However, some issues that occur may be caused by your hardware, or perhaps your software, or possibly your network connections, or even the queries that you execute, or some other unknown factor. The point is, issues can arise in several areas of your database environment. Therefore, to efficiently and successfully monitor the usage and performance of your databases, you need to monitor at several distinct levels within your database environment.

Monitoring at multiple levels



- The four monitoring levels are: The infrastructure level, the platform (or instance) level, the query level, and the user (or session) level.

Monitoring at multiple levels

Underlying infrastructure components:

- OS
- Servers
- Storage hardware
- Network components

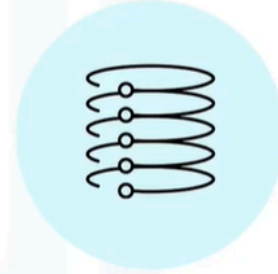


- So, first, there's the infrastructure level. It's vital that all the underlying infrastructure components, such as operating systems, servers, storage hardware resources, and network components be working efficiently under the hood of the database platform and the queries.

Monitoring at multiple levels

Managing Db2,
PostgreSQL, MySQL, or
any other RDBMS

Offers holistic insight
into all elements
necessary for consistent
database performance



Platform

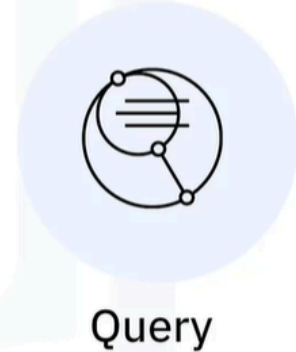
- Next, there's the instance or database platform level. Irrespective of whether you're handling relational database systems such as Db2, PostgreSQL, MySQL, or any other flavor of relational database system for that matter, or if you're managing a combination of more than one of them together, each platform is a consideration in terms of performance. Database monitoring at the platform level is crucial because it offers holistic insight into all the elements necessary to maintain consistent database performance.

Monitoring at multiple levels

LOB apps repeatedly run queries against database

Most bottlenecks due to inefficient query statements:

- Cause latency
- Mishandle errors
- Diminish query throughput and concurrency



- Next, is the query level. Typically your line-of-business applications will be repeatedly running queries against your database instances, and then formatting and returning the relevant results of those queries to your users. The majority of bottlenecks that might occur at this level will primarily be due to inefficient query statements that may cause latency, mishandle errors and diminish query throughput and concurrency.

Monitoring at multiple levels

Most misleading monitoring level

What if no users are complaining?

No complaints DOES NOT mean no issues



User/session

- And lastly, we have the user or session level – This level can often be the most misleading monitoring level of them all, because if your users are complaining about something not working, then you can just obtain further information about the issue they are having, investigate it, and hopefully fix it. But what if your users aren't currently complaining about things not working? Can you just assume that everything is running fine, put your feet up, and relax? Unfortunately, no. Just because there may not be an issue right now, doesn't mean that there won't be one just around the corner.

Monitoring at multiple levels

Successful monitoring happens continually and proactively:

- Monitoring *nirvana* is achieved when you identify issues before users are aware of them

Monitoring at all levels is crucial to maintaining SLAs:

- High availability
- High uptime
- Low latency

- Truly successful monitoring means constantly monitoring the usage, performance, and behavior of your database system in a proactive and continuous manner. The 'nirvana' of database monitoring is achieved when you proactively identify issues before your users are even aware of them. Monitoring at all four of these levels is crucial to maintaining service level agreements (or SLAs), such as high availability, high uptime, and low latency for your databases.

Summary

In this video, you learned that:

- Database performance measured by using key performance indicators (metrics)
- Metrics enable DBAs to optimize databases for best performance
- Successful database performance monitoring means monitoring at multiple levels
- You should monitor at the infrastructure, platform, query, and user levels