Sudden SQL Slowness

Have you ever been on a web site trying to do something that normally is very fast and all of a sudden it starts running forever?  There are many reasons why something like this could happen but this talk focuses on one common reason for a sudden slowdown in something you are doing on the web.  Knowing why the slowdown occurred will help you because if you have to call some sort of help desk you will know how to help narrow down the problem.  This reason for a sudden slowdown relates to the database language called SQL, and it relates to how web sites that use SQL can unexpectedly change from fast to slow.

First, let's talk about SQL.  SQL is a database query language.  A database is just a collection of information such as names, addresses, and dollar amounts.  A payroll system may store the amounts of each paycheck in a database.  A database query language is a way to read and write from or to a database.  For example, you might query the sum of all paychecks for the past month or you might want to add new entries for the most recent payroll run.  SQL has become the standard query language that companies build into most of the web sites that you use both in the office and at home.  It has become so widely accepted because of one key feature – it lets you tell the database what you want to do without saying how to do it.  Earlier database systems required more programming to accomplish the same task.  With SQL new web sites can be rolled out more quickly because web site designers can define how they want their application to interact with the database without saying exactly how it should be done.

I've already said that SQL's greatest strength comes from it allowing people to say what they want to do with the database without saying how to do it.  But, as powerful as SQL is it has a critical weakness, namely that sometimes the database picks a really slow way to run a query even though another much faster way exists.  Even worse, over time a SQL database can suddenly change how it chooses to run a query from a really fast way to a very slow method.  As good as the different SQL databases are they have their limits and as databases and queries grow larger and more complex the likelihood that a database will suddenly switch to a slow way to run a query grows rapidly.  No matter how expensive and sophisticated your database software is there will always be many queries that it just can't figure out how to run efficiently.  When a SQL database suddenly switches to a slow way to run a query, it doesn't realize it is doing so because it just doesn't have the information it needs to predict that the new way to run it is a lot slower than the old way.

So, I'm sure you are asking yourself why I'm telling you this about SQL.  What can you do if you are using some web site and suddenly something that was really fast starts running slow?  How does it help you to know that it could be a SQL query behind the scenes that could run fast but now is being run super slow?  Knowing that your sudden slowness could be caused by SQL you should try to narrow down as much as possible when the change in speed occurred and exactly what feature of the web site suddenly became slow.  The more specific you can be the easier it will be for some technical support person to track down which SQL is the real problem.  Think about two things.  First, was it a sudden change or gradual?  If it is a SQL issue, it will be sudden.  If there was a sudden change then narrow down as exactly as possible when the change occurred.  Second, are everything or many things slow, or is one

specific function slow and everything else normal?  If it is only one specific thing, then again you are looking at a likely SQL issue.

To summarize, SQL is a powerful widely used database query language embedded in most web sites you use.  SQL's power comes from letting developers specify what they want to do with a database without saying how it should be done.  Sometimes there is a very slow and a very fast way to run the same query and the database suddenly switches from fast to slow.  If you work with technical support to resolve a SQL issue you can help most by figuring out as close a possible when the slowness began and narrowing down as much as possible which part of the web site started being slow.