



# Databases Going Virtual?

## Identifying the Best Database Servers for Virtualization

By Confio Software

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Many companies are turning to virtualization in order to reduce overall datacenter costs. At the same time, many companies seem confused as to which database servers are good virtual candidates, and which ones are not.

How do you know which of your database servers is a candidate to be virtualized? What are the key measurements you should be aware of before deciding to convert a physical box to virtual?

With any database server you have the standard set of possible bottlenecks: CPU, disk I/O, memory, and network. If you are considering virtualizing your database servers then you will first need to start gathering metrics for all of those standard bottlenecks. Once you have this information you will be able to then go about the process of deciding which servers are candidates, which servers should be left physical, and how to best migrate and group your guests onto your new hosts.

### **Gather your data**

The first step is to start gathering the metrics that are applicable to the standard bottlenecks. Given the abundance of performance measurements that are available today, it is important for you to focus on the handful that will help you the most when it comes to deciding if a server is a candidate for virtualization. The specific measurements are as follows:

- % O/S CPU Utilization
- Disk Physical Reads/Second
- Disk Physical Writes/Second
- % Buffer Cache Hit Ratio

For a proper network measurement, you can choose to measure the response time it takes for a simple select statement (i.e., SELECT 1) to return a result. It is recommended that you gather your metrics over a considerable period of time (days or weeks). If you were to only gather measurements for a few hours then you are not going to have enough data to make an informed decision.

### **Select candidates**

Once you have your measurements you can decide if a server is a candidate for virtualization. You do this by analyzing your results to see if they exceed any known recommended performance thresholds. For example, if you find that the CPU utilization for your server is greater than 80% on average, then that server would not be considered a good candidate for virtualization.

You can continue on, analyzing your other metrics in a similar fashion and look for possible performance bottlenecks. If you find that your database server exceeds any recommended thresholds then you will want to take corrective action prior to any migration process. Also something to keep in mind is that disk I/O issues can often be the result of memory pressure.

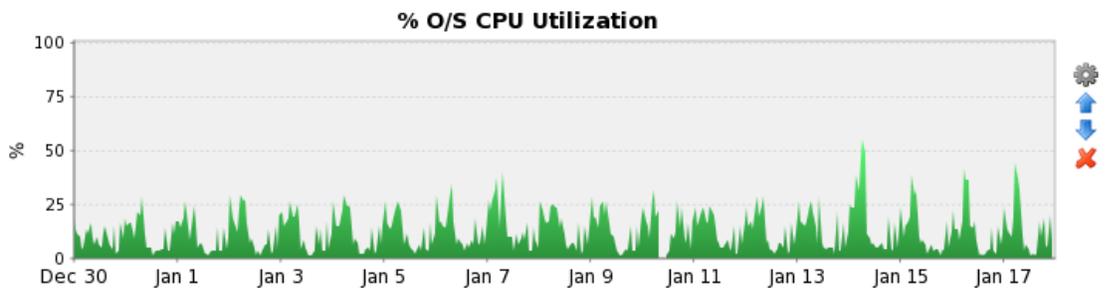
In fact, it is often at this stage of the process that you will find yourself taking the time to tune the performance of the server prior to any migration. And at that point you will want to gather your metrics

again, but you will have a rough idea as to how much usage that physical box will require once it is virtualized.

The end result of these measurements is that you will then have the ability to map out how the new virtual guests on top of your host servers. You will be able to see if you can carve our four, six, or more guests onto one host, or if you will need to limit yourself to fewer than four guests because one of the servers requires a high amount of disk throughput.

### CPU utilization

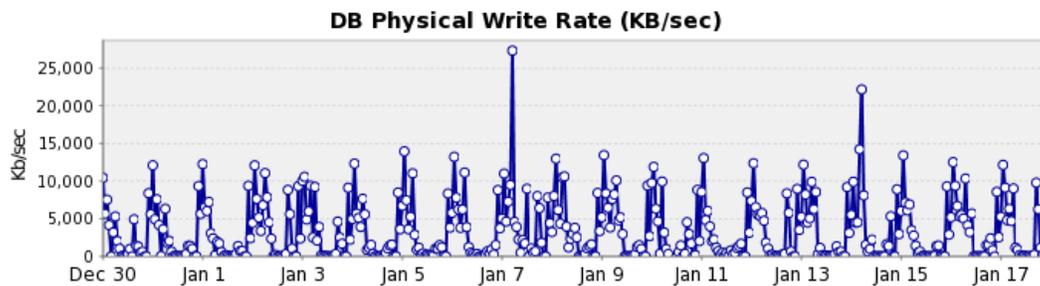
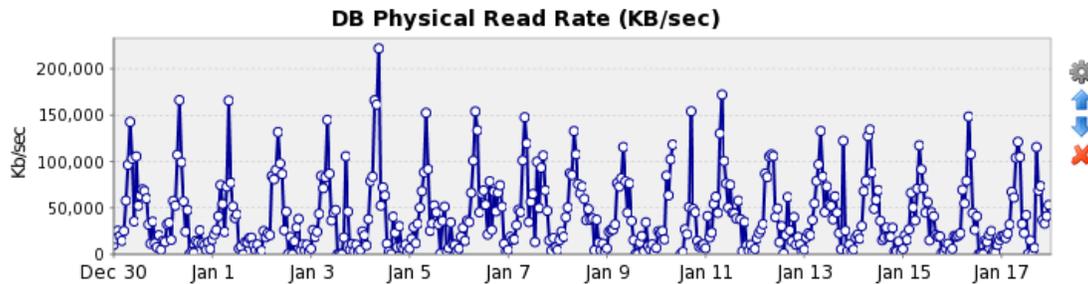
With SolarWinds Database Performance Analyzer (DPA) VM option, you can easily see the overall CPU utilization for your database server.



This view helps you to easily see just how busy the server is, and will allow for you to better align this server as a guest along with others on a virtual host.

### Disk I/O

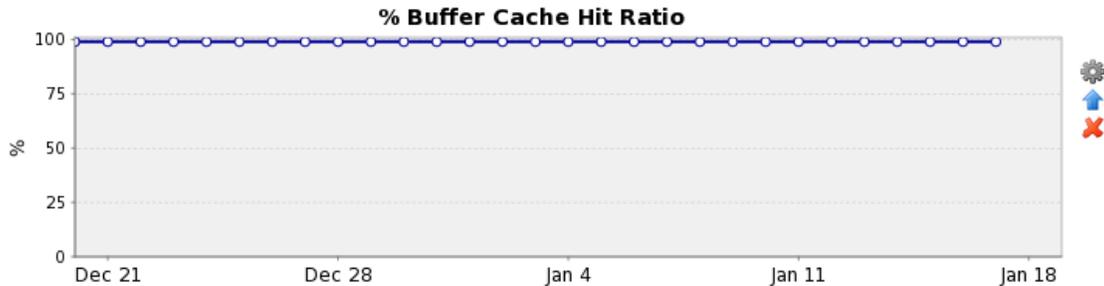
With DPA VM Option, you can easily see the overall throughput for both physical read and writes per second for your database server.



These measurements will give you an understanding of the amount of disk activity for your server, giving you an opportunity to better align this database server as a guest on a corresponding host. You can easily see the peaks and valleys and can also drill down to see the actual time of the day when the usage occurs.

## Memory

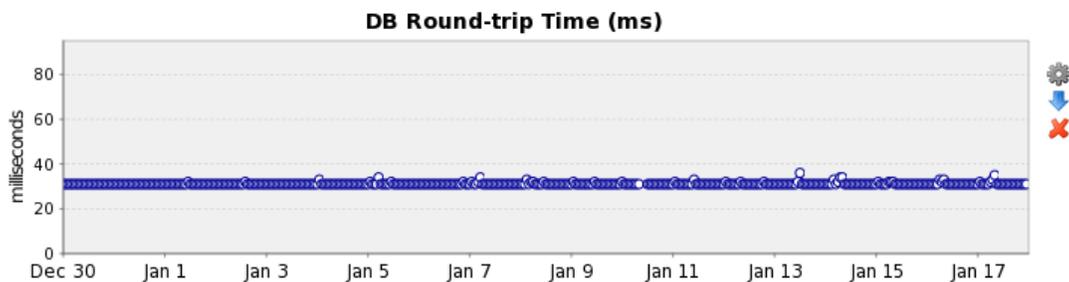
With DPA VM Option, you can easily see if your database server is suffering from memory pressure.



If your buffer cache hit ratio is too low, then you may not have enough memory currently and it is something you will want to address prior to any virtualization effort. If you see a sudden drop, or spike, in your buffer cache hit ratio then you can use DPA VM Option to drill down into the specific statements that caused the spike, allowing you to tune your server prior to a migration.

## Network

An often overlooked aspect for virtualization is network utilization. With DPA VM Option you can easily see the round-trip time gathered. If network latency is an issue you will have an opportunity to see that prior to any physical to virtual migration.



You can use this information to better understand your current environment and then compare and contrast to the virtual database servers after it has been deployed.

## Summary

Ignite can help you determine if your database server is a candidate for virtualization, just by examining the information displayed in a handful of reports you get right out of the box. And if any report leads you to believe that your instance is *not* a candidate, then Ignite will allow for you to drill down to the offending

statements and offer you the opportunity to tune the performance of the server in order to make it acceptable for a virtualization effort.

### **About Confio Software**

Confio Software, now a part of the SolarWinds family, builds award-winning database performance analysis tools for DBAs and developers. SolarWinds Database Performance Analyzer (formerly Confio Ignite) improves the productivity and efficiency of IT organizations. By resolving problems faster, speeding development cycles, and squeezing more performance out of expensive database systems, Database Performance Analyzer makes DBA and development teams more productive and valuable to the organization. Customers worldwide use our products to improve database performance on Oracle, SQL Server, Sybase and DB2 on physical and virtual machines. For more information, please visit:

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