The Ultimate SharePoint Performance Guide!

Configuring SharePoint, SQL and Office 365 for maximum performance

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FOREWORD
By Christian Buckley, Founder of CollabTalk

Technology has made the world a smaller place, changing how we communicate, collaborate, and connect. One of the major shifts has been the move toward distributed teams. To remain competitive and to attract the best candidates from around the world, many companies have made remote working the norm -- and Office 365 has quickly become one of the leading cloud-based solutions to help these organizations communicate and collaborate more efficiently and cost effectively.

While the technology has certainly advanced, one of the issues we tend to overlook as end users is the the performance of our own systems and network. We often attribute slow response rates, poor video and audio quality, and other performance issues with the application, forgetting that how we configure our solutions and optimize our networks can directly impact our user experience.

Early in my career, I worked within the telecommunications industry at a time when some of the first fiber optic networks were beginning to roll out around the country. Working closely with our engineering teams, I learned an important lesson about the “last mile” of any phone or internet network: you might have high-speed fiber running down your street, but the connection from your home to the street is likely the same old copper line that was installed 15 years earlier. In other words, unless the connection from your house to that fiber line has also been upgraded, your quality of service will remain at the speed of that old copper line.

Microsoft has made “cloud-first, mobile-first” their priority when innovating. In addition, they are extending their Office 365 and Azure footprint by building new data centers all over the world. They’re essentially building out the most advanced enterprise communication and collaboration “fiber network” in the world, but there is still tuning and optimization to be done to take advantage of this new capability. Performance management is much like upgrading that old copper line.

As organizations move toward the digital workplace, and as teams become increasingly distributed, optimizing your applications and maximizing performance will become even more important -- not only as a one-time activity, but as an ongoing operational activity. Gokan and Vlad have organized a fantastic resource with this book for tuning your SharePoint, SQL, and Office 365 environments. While much of this information is available through Microsoft’s various support sites and documentation, this book compiles the essentials into a single volume, providing you with everything you need to know to upgrade that “last mile” of your platform, and maximize your performance.

I view this as essential reading for all SharePoint administrators and operations teams.

Christian Buckley
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SOFTWARE CONSIDERATIONS

• **Page File Size**: Microsoft recommends that you either allow the system to manage the page file size or to set it at 150% of the size of the physical RAM. In a real-world scenario where your virtual machine has 24 GB of RAM; your page file size should be at least 36GB.

  Use a dedicated drive for the page file: By doing this, it will ensure that Windows will no wait to another application to finish using the hard disk before it can read data from the page file.

  An old advice also, that I see a lot of customers using, is to manually set paging to a fixed upper and lower size: 4096 or similar. That way you incur less paging.

  **How do you adjust?** Start > Settings > Control Panel > System > Performance Tab > Change

• **Power Options**: In some cases, you may experience degraded overall performance when running with the default (Balanced) power plan. One of the workarounds is to switch to the **High-Performance** power plan and this should be always set.

  This will disable dynamic performance scaling on the platform

  Platform is always under a heavy load

  **How do you adjust?**

  Start > Control Panel > Power Options

• **Performance Options**: The Visual Effects tab allows you to optimize the visual effects for the menus, toolbars, windows and the taskbar. The more effects that are enabled, the more resources your computer will use. You may choose whenever you want, but please be sure to uncheck what is not necessary.

  **How do you adjust?**

  Computer > Properties > Advanced system settings > Performance > Settings > Visual Effects
Auto growth

The auto growth is your insurance policy if your current database size has been reached. Instead of making the database read only and stopping users from writing to it, SQL allows you to set by how much you want your database to grow when the database size has been reached. By default, for the data files is set at only 64 MB, but that is not optimal at all. Why? Imagine you are 10 MB away from your size, and your users uploads a few documents in your SharePoint site in the morning that take 250 MB of space. Your SQL will have to grow 4 different times in order to be able to put the document in the database. That adds tasks to the SQL which will make it slower for the user. Now you might ask, but if we put it at a bigger number, ex: 200MB, won't the user have to wait for it to grow 200MB before being able to write his document? Yes, that's true, however if you have setup Instant File Initialization, this growth will be almost instant, so shouldn't be noticeable to the user. I suggest setting the Auto Growth in MB and not in % because it allows you to monitor and know exactly by how much it will grow. We recommend setting the Auto growth at about 50% of the Initial Size of the database. In the screenshot below I have configured the Initial Database size for my database file at 1024 MB with a 512 MB Auto growth, and the log files at 256 MB with a 128 MB Auto growth.

Auto Create Statistics

Do not enable auto-create statistics on a server that hosts SQL Server and SharePoint Server. Enabling auto-create statistics is not supported for SharePoint Server. SharePoint Server configures the required settings during provisioning and upgrade. Manually enabling auto-create statistics on a SharePoint database can significantly change the execution plan of a query. The SharePoint databases either use a stored procedure that maintains the statistics (proc_UpdateStatistics) or rely on SQL Server to do this. This can be changed from the Model database properties, in the Options tab.

Instant File Initialization

We have already covered the benefits of Instant File Initialization in the Server Configuration – Service Accounts section of this chapter, but if you did not turn it on when installing SQL Server, you can still turn it on post-configuration. To turn it on, you first need to find the account that runs the SQL Server Database Engine service for your instance. You can find this by opening Services.msc and looking for the service named SQL Server <Name of your SQL Instance>. In the screenshot below, the account running the Database Engine is Globomantics\sql_engine.

We then need to open up Local Security Policy, navigate to Local Policies and User Rights Management. You then need to add the account that we noted down earlier.
SOME OTHER TECHNIQUES
Using sprites to speed up image loading in SharePoint Online

An image sprite is an image that contains many other smaller images. By using CSS (Absolute positioning) you select a part of the composite image to display on a part of the page. Basically, you move a single image around the page instead of loading multiple images. SharePoint Online uses sprites to display its various icons so use the same technique!

Already seen this image from somewhere? If the answer is yes, then you already know sprites! If the answer is no, have a look here: https://support.office.com/en-us/article/Image-optimization-for-SharePoint-Online-c7ed02a-f6fa-4f91-9a20-cba01dad28ef?ui=en-US&rs=en-US&ad=US

Speed up page downloads by using SharePoint image renditions

Image Renditions were one of the new capabilities of SharePoint 2013 that can help you improve the user experience of your website by optimizing images, and they also are available in SharePoint Online. The image renditions are available for every image that is uploaded to a library in that site collection. For example, designers can create an image rendition to display thumbnail images and another image rendition to display banner images.

When an image is added to a page, the author can specify the image rendition to use on that image. Authors can also crop the image rendition to specify the portion of the image to use in the image rendition. The correct image size is displayed when the page is rendered. Image Renditions basically allows you to serve up different versions of images based on pre-defined image dimensions. If an image is fixed by CSS, the full resolution image is still loaded. In this case the file size can be reduced by using image renditions. https://msdn.microsoft.com/en-us/library/office/jj720398.aspx

Delay loading images and JavaScript in SharePoint Online

By default, modern Internet browsers such as Internet Explorer, Google Chrome or Mozilla Firefox pre-fetch images when loading an HTML page. This is a good thing as images are hot in the cache; but can cause the page to be unnecessarily slow. The images can block the browser from loading the visible part of the page. To work around this problem, you can use JavaScript to skip loading the images first. https://support.office.com/en-us/article/Delay-loading-images-and-JavaScript-in-SharePoint-Online-74d327e5-755f-4135-b9a5-7b79578c1bf9

Improve page load times by delaying image loading in SharePoint Online pages by using JavaScript

A final technique that I want to share with you is that you can use JavaScript to prevent a web browser from pre-fetching images. This speeds up overall document rendering. To do this you remove the value of the src attribute from the <img> tag and replace it with the path to a file in a data attribute. https://support.office.com/en-gb/article/Delay-loading-images-and-JavaScript-in-SharePoint-Online-74d327e5-755f-4135-b9a5-7b79578c1bf9