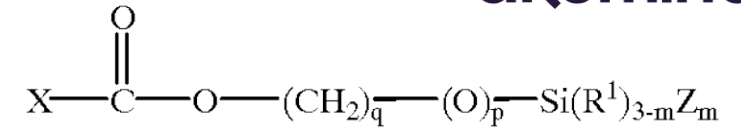


“WAIT ... WHAT?!” SHAREPOINT ONLINE (SPO) EDITION



Sean P. McDonough
Senior Solution Architect and Consultant
Akumina, Inc.

A BIT ABOUT ME ...



Started professional career as a polymer chemist for Procter & Gamble

- Transitioned within P&G to Information Systems

Developing software professionally since mid '90s

Focus has been primarily on SharePoint since 2004

Became a Microsoft MVP in 2016 (Office Apps & Services)



Nowadays, I work for Akumina, Inc.

- Senior Solution Architect and Consultant

Still have Bitstream Foundry going

- Good way to organize my professional activities
- Educational and non-profit technical services



SESSION OVERVIEW

- A bit about “born on” dates
- The creation of this session
- A brief history of (SharePoint) time
- Historical Baggage
- Oddities and Other Stuff
- Q&A throughout
- Wrap-up and contact info

CHECKLIST



A BIT ABOUT “BORN ON” DATES



A BIT ABOUT “BORN ON” DATES



- This is Microsoft 365 (M365) and SharePoint Online (SPO)
- Microsoft refers to these services as “evergreen services.”
- That carries some implications ...
- Some of the information I’m going to share has a “shelf life.”

A BIT ABOUT “BORN ON” DATES (CONTINUED)



Please don't look me up in five years and send me “fan mail” because I presented something that is no longer accurate due to a SharePoint (Online) service change. You may laugh, but it ~~will happen~~ *has happened!*



In the top-left corner, there are two overlapping geometric shapes: a magenta shape and a yellow triangle pointing downwards.

THE CREATION OF THIS SESSION

A teal-colored line graphic in the bottom-right corner, consisting of a horizontal line that curves downwards and then continues as a diagonal line.

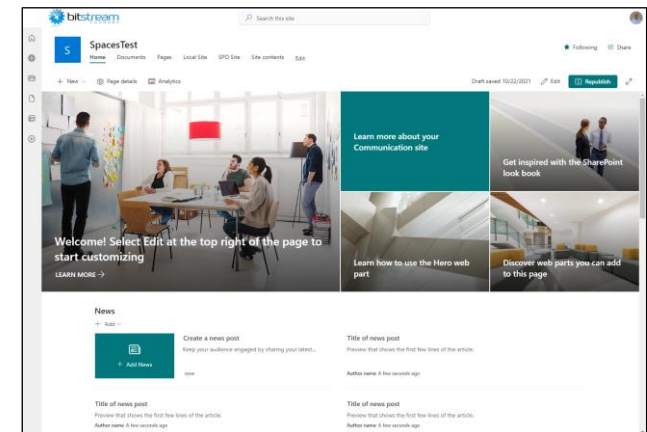
WHY THIS SESSION?

I've been working with SharePoint for ~20 years

- A lot has changed in the last two decades.
- The reasons for some behaviors and limitations aren't known to those new(er) to the platform.
- Understanding SharePoint's roots helps with the "why" regarding some of these items.

I have experience in many of the facets and technologies used in/by SharePoint.

- Started as an SP developer in the 2003 days.
- I became an administrator out of need.
- I've always been primarily a plumber (not a painter).



A decorative graphic in the top-left corner consisting of a purple shape and a yellow triangle.

A BRIEF HISTORY OF (SHAREPOINT) TIME

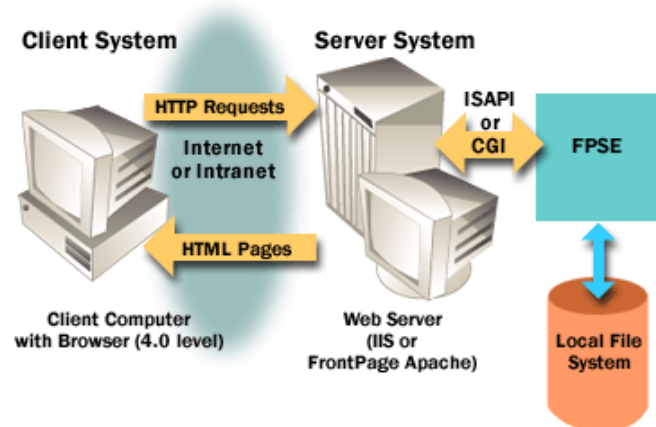


SHAREPOINT PORTAL SERVER 2001

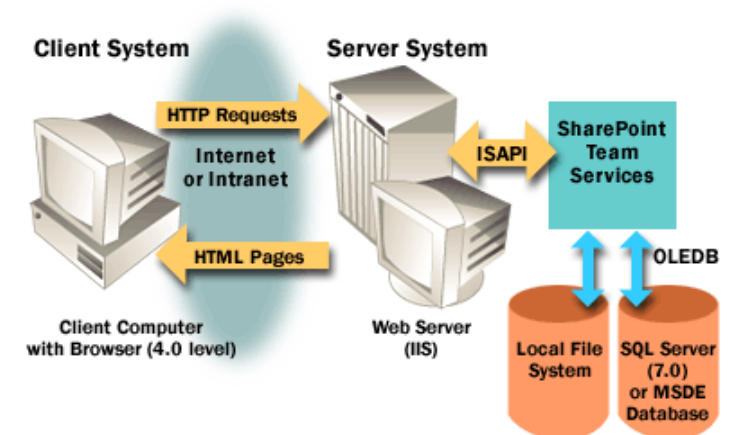
SPS 2001 and SharePoint Team Services 1.0 (free version)

- Where FrontPage Server 2002 Extensions debuted.
- Introduced us to the lists, libraries, and the humble web part.
- Document collaboration was a cornerstone.
- Ran on Internet Information Server (IIS) and utilized SQL Server or MSDE

FrontPage Server Extensions Architecture



SharePoint Team Services Architecture



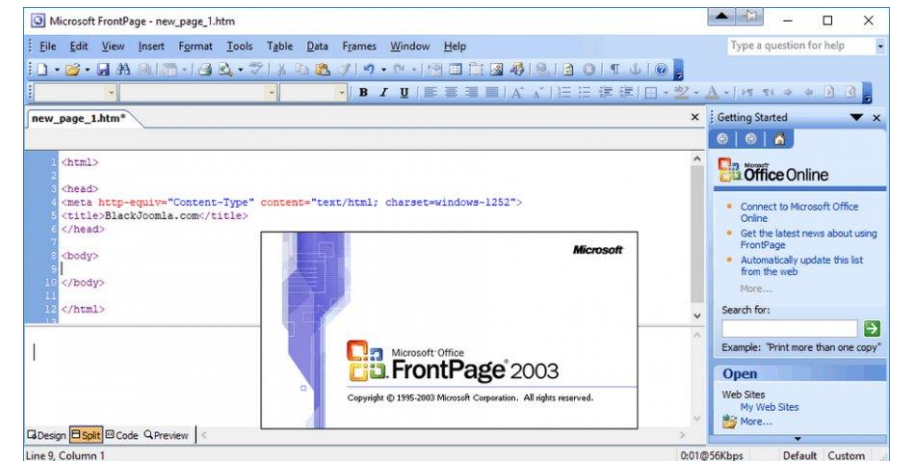
SHAREPOINT PORTAL SERVER 2003

SPS 2003 and Windows SharePoint Services (WSS) v2 (free version)

- Version of SP that first surfaced to visibility for many orgs.
- Introduced us to FrontPage 2003 and its associated extensions.
- Architectural improvements over 2001.
- I've still seen this release in use within the last couple of years.

Customization was possible but wasn't easy.

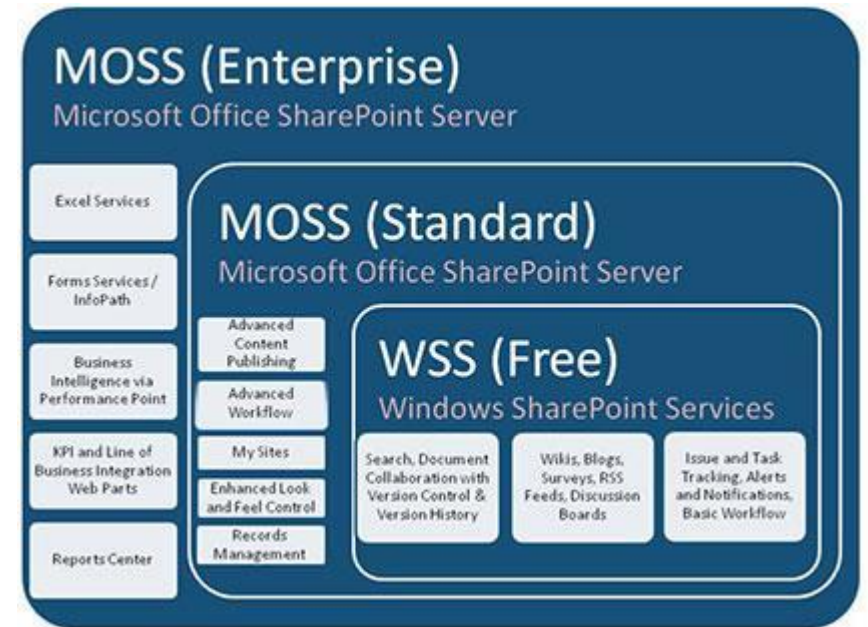
- You had to develop directly against WSSv2 and the SharePoint Server Object Model.
- This “full-trust” development typically deployed through an MSI.
- FrontPage 2003 allowed customization, but it easy to get into trouble.



MICROSOFT OFFICE SHAREPOINT SERVER 2007

MOSS 2007 and Windows SharePoint Services (WSS) v3 (free version)

- Introduced Shared Service Providers (SSPs) and other architectural improvements.
- Also introduced devs to the Feature and Solution Framework — alas, without any VS support. We needed community help on that!
- Integrated Microsoft Content Management Server 2002 and its publishing infrastructure (a.k.a., the PRIME API).
- Gave us the ability to create internet-facing public sites that didn't require authentication and supported unique hostnames and "vanity URLs."
- FrontPage broke into two products: Microsoft Expression Web Designer 2007 and SharePoint Designer 2007

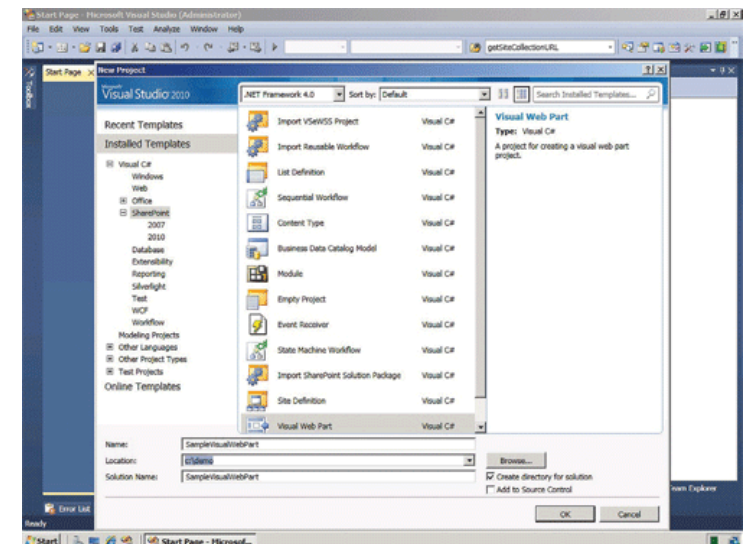
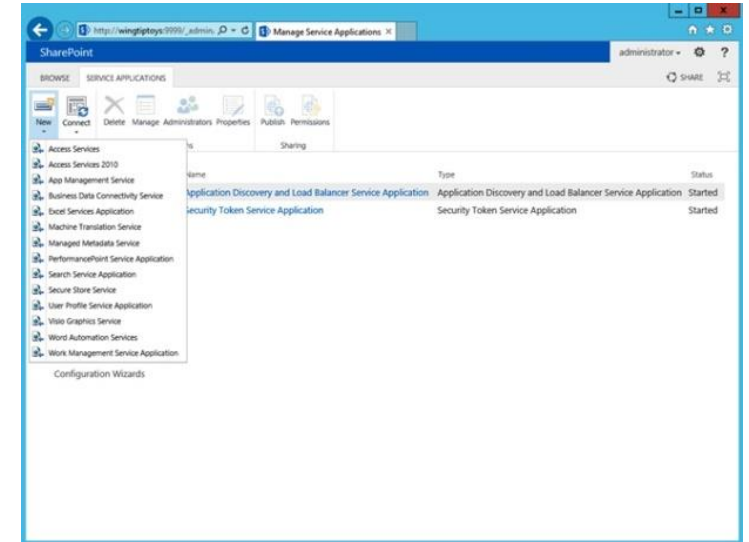


And who can remember all the licensing fun? "For Internet Sites" (FIS) licenses, MOSS Standard or Enterprise, and more!

MICROSOFT SHAREPOINT SERVER 2010

Goodbye MOSS and WSS, Hello [SP2010](#) and [SharePoint Foundation 2010](#)!

- Ideas behind 2007's SSPs were improved and extended with the new [Service Application Framework](#).
- Developers received integrated [Visual Studio support](#) for Features and Solution Packaging (FINALLY!)
- It's worth mentioning the growing popularity of [BPOS](#) as this time and what it would grow into ...
- It's also worth noting that in the SP2010 timeframe, Microsoft acquired [Fast Search and Transfer for \\$1.2B](#).
- And of course, what would a SharePoint release be without a new release of [SharePoint Designer \(2010\)](#).



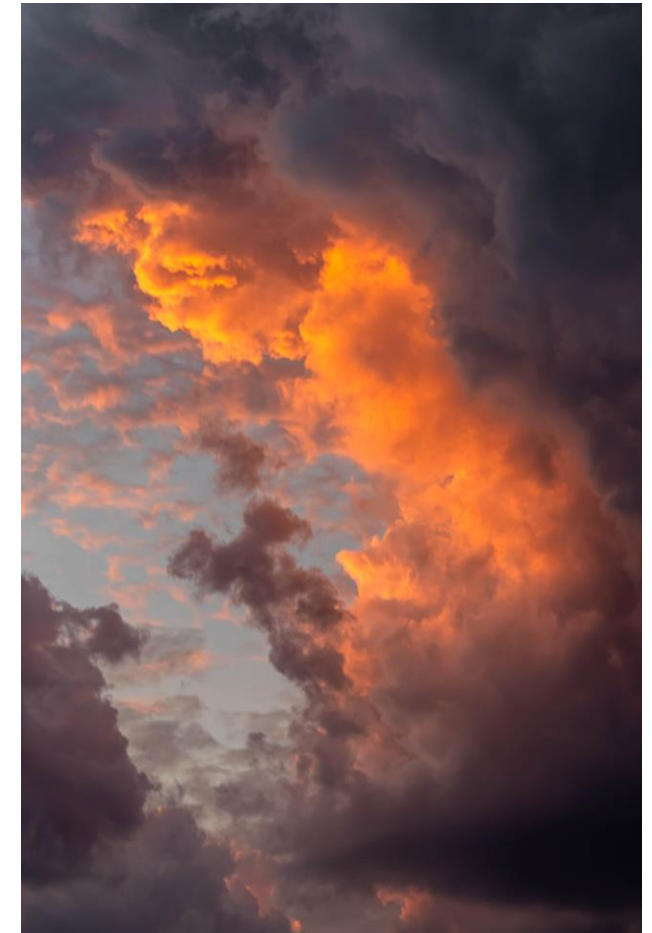
MICROSOFT SHAREPOINT SERVER 2013

SP 2013 and SPF 2013

- SharePoint gets a new search engine based on its acquisition of Fast a few years earlier.
- The last version of SharePoint Designer (2013) is released.
- The world briefly goes silent when Microsoft announces its new Cloud App Model for SharePoint and the loss of focus for Full-Trust solutions.

The new Cloud App Model had a profound effect on SharePoint development and customization.

- The cloud app model made it clear that Microsoft saw the future in cloud-centric terms, and thus the full-trust model was basically deprecated. Upgrades to the cloud involved significant dev challenges for some.
- Microsoft was wrangling with the growth of SharePoint Online (SPO) usage and Office 365 adoption (later to become Microsoft 365). They were eating their own dogfood and learning a lot of operational lessons as a result.



MICROSOFT SHAREPOINT SERVER 2016+



[SP 2016](#), [SP 2019](#), and [SharePoint Online \(SPO\)](#)

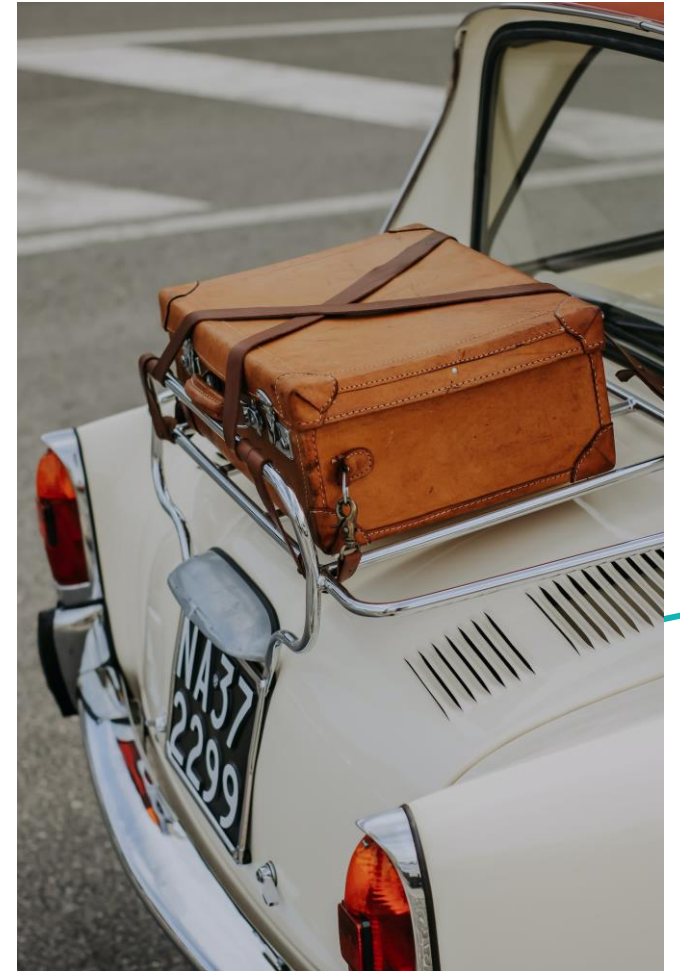
- We're firmly in the era of [Microsoft's cloud-first approach](#) to SharePoint.
- Microsoft reaffirms on-prem isn't going away, but their primary focus is on the cloud and SPO.
- Over the last decade, SPO adoption has grown each year.
- Organizations that swore they'd never go to SPO are now in the cloud.

M365's pace of updates [is dizzying](#) compared with the "old" service pack and cumulative update release cycle for SharePoint on-prem.

- Workflows are either no longer functional (2010) or deprecated (2013).
- We're living in the world of [modern](#) SharePoint these days.
- No more SharePoint Designer; we have the [Power Platform](#).
- SharePoint is underneath the hood all over (Teams, OneDrive, etc.)



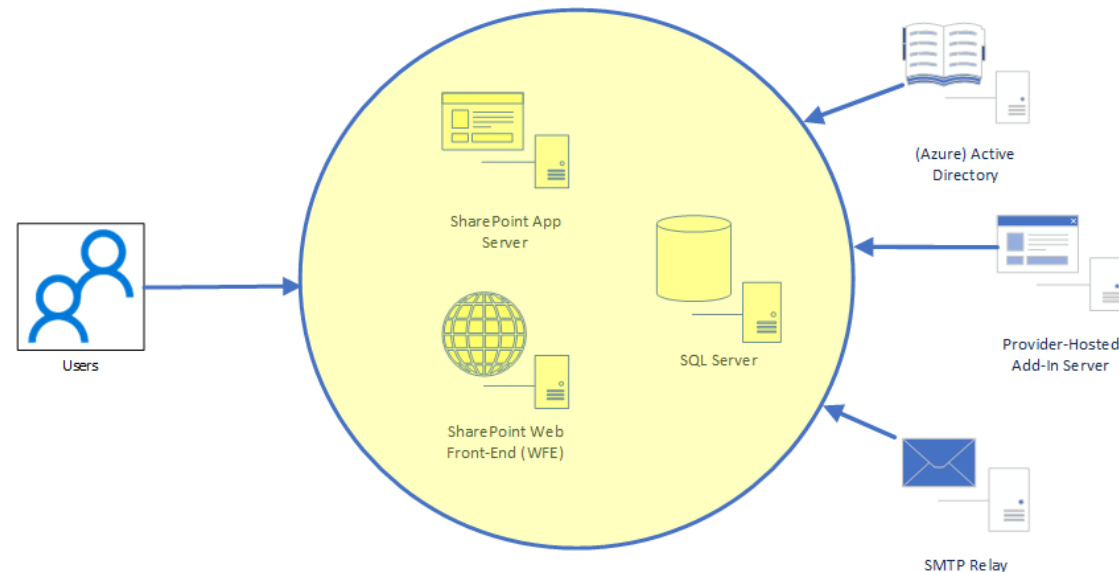
HISTORICAL BAGGAGE



HISTORICAL TIES

Many of SharePoint's oddities tie back to previous releases and the technologies used to build them.

- That's why we did our whirlwind tour of the past first. 😊
- Just so we're all on the same page, when I talk about a SharePoint Farm, this is what I'm talking about.



“ICEBERG, DEAD AHEAD!”

Objects get garbage collected (GC'd) by the .NET runtime. With GC, memory is released.

SPSite, SPWeb, etc.

- .NET managed objects you know and love. ❤️

.NET Managed Code and Wrappers

SPRequest

- The lowest level of managed code to which we're exposed.

COM uses reference counting, so if a .NET managed call to `Dispose()` is not made for each object, the reference counts don't get decremented. This leads to memory leaks.

SPRequestInternal

- COM Object
- Here be monsters!

“Legacy” COM Objects and Win32 Internals

A.K.A. “The Part of the Iceberg you can't see beneath the surface.”

- Have you ever wondered why you're supposed to [call `Dispose\(\)` on SharePoint objects](#) you use?
- SharePoint has strong tie-ins to many legacy [COM](#) implementations and underpinnings.
- At the end of the day, it comes down to differences in [how objects are destroyed](#).
- Today's bonus developer buzz-phrase: .NET utilizes [Non-Deterministic Finalization](#)

WHAT'S IN A NUMBER?

As it turns out, a lot. 😊

I've got some numbers to ask you about.

- How many of you are familiar with the number "5,000?" I expect quite a few of you.
- Maybe less familiar is the number 12. Any takers or guesses what I'm talking about?



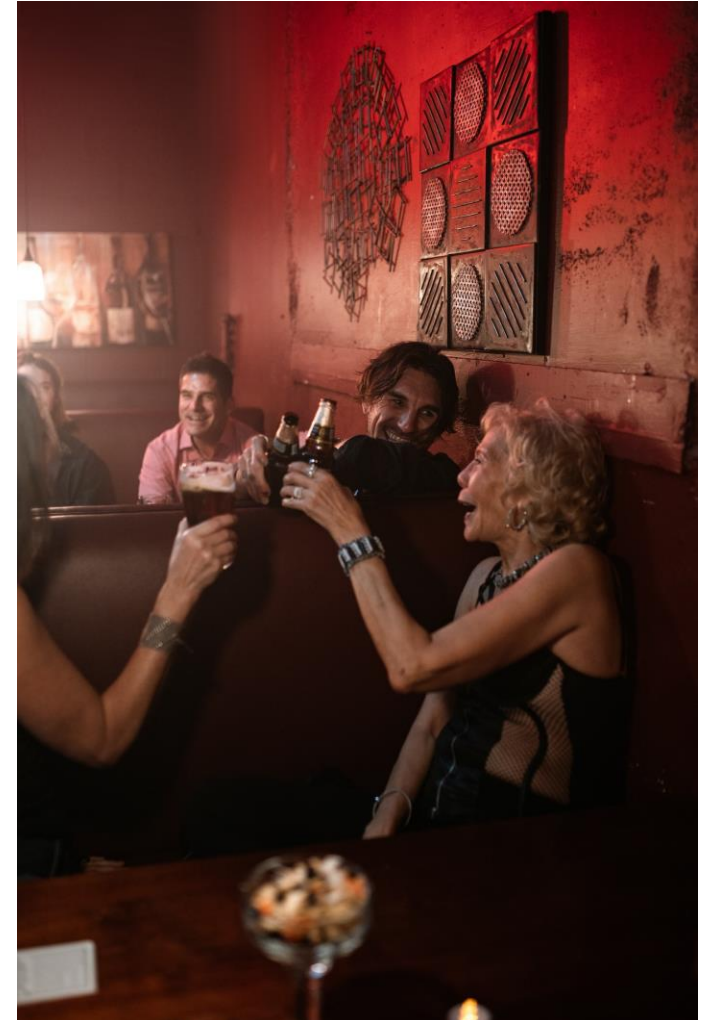
Worry not! All will be revealed soon enough.

THE NUMBER 5,000

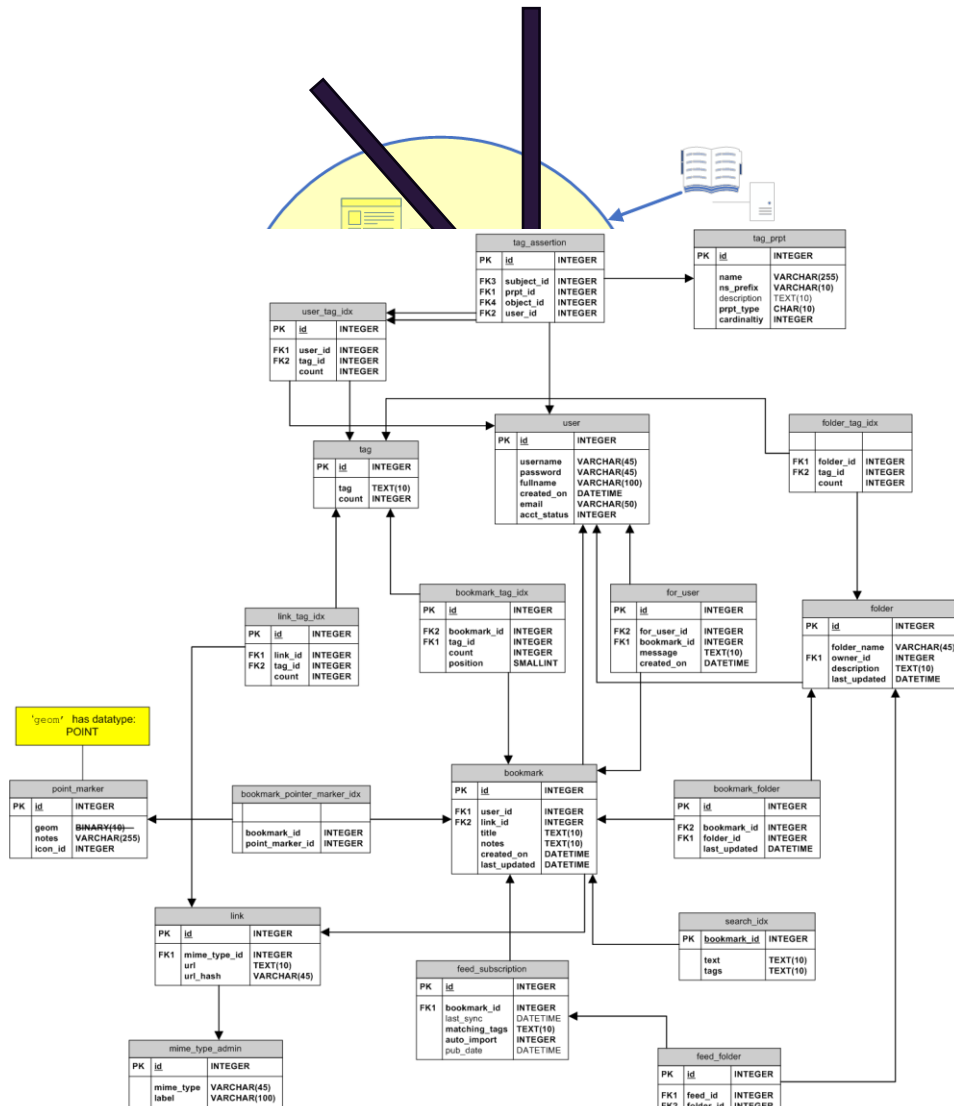
We are talking about the maximum number of items that can appear in a view or be returned by a query without paging or row limits.

- This is a very common boundary that organizations encounter.
- No, it's not the maximum number of items that can be in a list.
- In the on-prem days, admins would just raise the threshold limit.
- There are numerous documented ways to work around (or with) the limit.
- A short bit about happy hour settings ...

You may be aware of why the threshold exists (i.e., to help with performance). But have you ever thought: what is so special about the number 5,000?



THE NUMBER 5,000



This is one of the rare occasions where I'll tell you it's not SharePoint's fault.

- Yes I'm serious. And no – I'm not joking.
- This one belongs to another farm member: SQL Server SQL Server operations
- Almost all of SharePoint's user data is stored in SQL Server ... and most of it is centralized in a table or two.
- To read data, SQL Server typically performs row-level locking to maximize concurrency while ensuring data integrity.
- When 5,000 or more items are requested at once, SQL Server promotes the lock to a *table level lock*.
- This has the effect of halting all other query actions until the big one completes.
- Net effect: massive bottleneaking and drag on performance.

THE DIRTY DOZEN

The number “12” refers to the maximum number of lookup columns in a view or executed query.

- This is sort of like the 5,000 item view threshold, but we’re talking about columns.
- As with the list view threshold, we can certainly have more than 12 lookup columns in a list – we just need to be selective about how many we try to work with at once.

What’s a “lookup column?” The following all count:

- Person/Group columns
- Lookup columns (cross-list)
- Managed Metadata columns



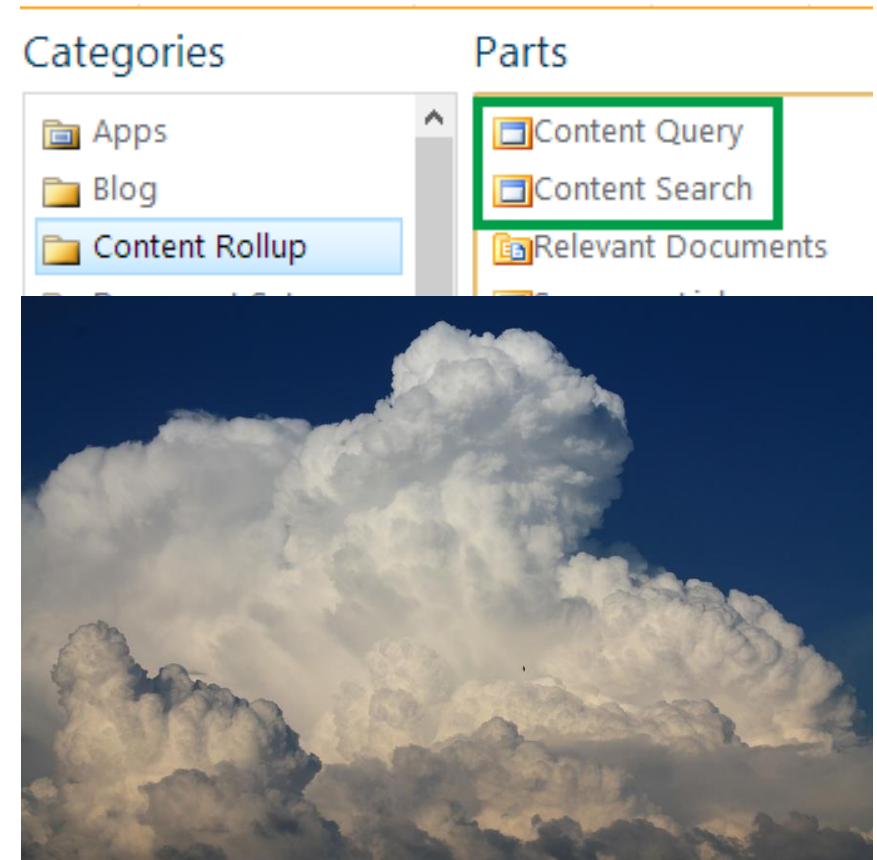
This limitation is one of the primary reasons I try to talk organizations out of doing *everything* with Managed Metadata columns. Choice fields are less glamorous these days, but they don’t have the extra overhead and limitations of Managed Metadata fields. And they’re easier to build with – just ask any developer.

PLUMBING, PART ONE

Have you ever wondered why Microsoft steers us away from [Content By Query Web Part \(CQWP\)](#) usage in SharePoint Online? Or why structured navigation is universally looked down upon?


- Both of these things worked just fine in the on-prem world.
- CQWP was every power-user's Swiss Army Knife.
- Is the cloud really that different from on-prem?
(hint: that was a leading question).

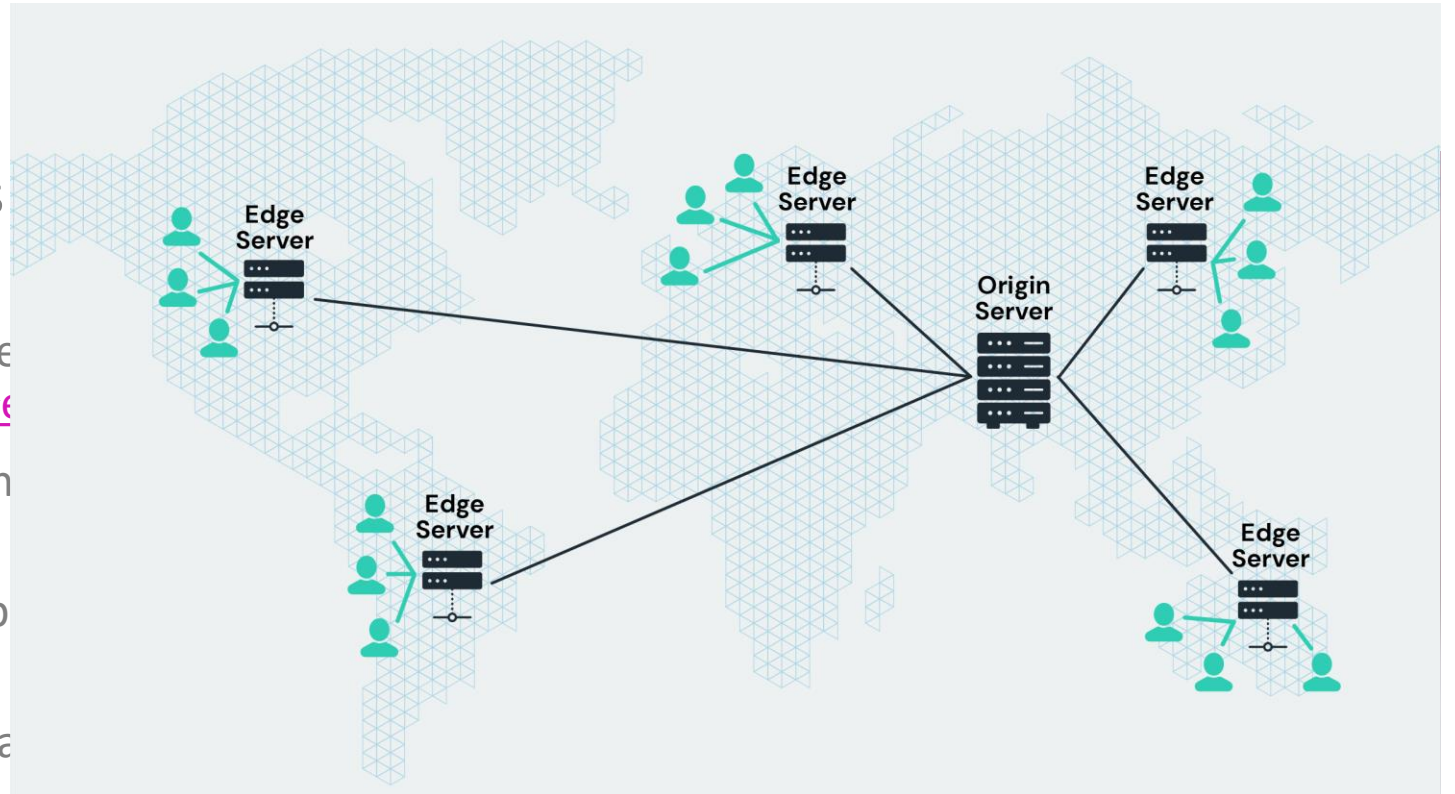
In certain ways, the cloud is dramatically different from on-prem. Code generally runs the same, but the nature of the cloud shifts the operational conditions dramatically in some cases.



SHOW ME THE CACHE!

Caching and cache effectiveness on the AKamai specific scale.

- The COWP structural navigation, and search on-prem used SharePoint  the M365 environment provides for our use with SharePoint Online.
- For all intents and purposes, SPO doesn't use traditional SharePoint sense.
- One solution is to leverage Search to spin an already constructed index.
- Content Search Web Part (CSWP) for class



SPO has been adapting and evolving to make maximum use of caches that are available to it nowadays.

- We're talking about Content Delivery Networks (CDNs) to be clear.
- CDNs are now used pervasively across SharePoint Online *modern sites*, as well as M365 in general.

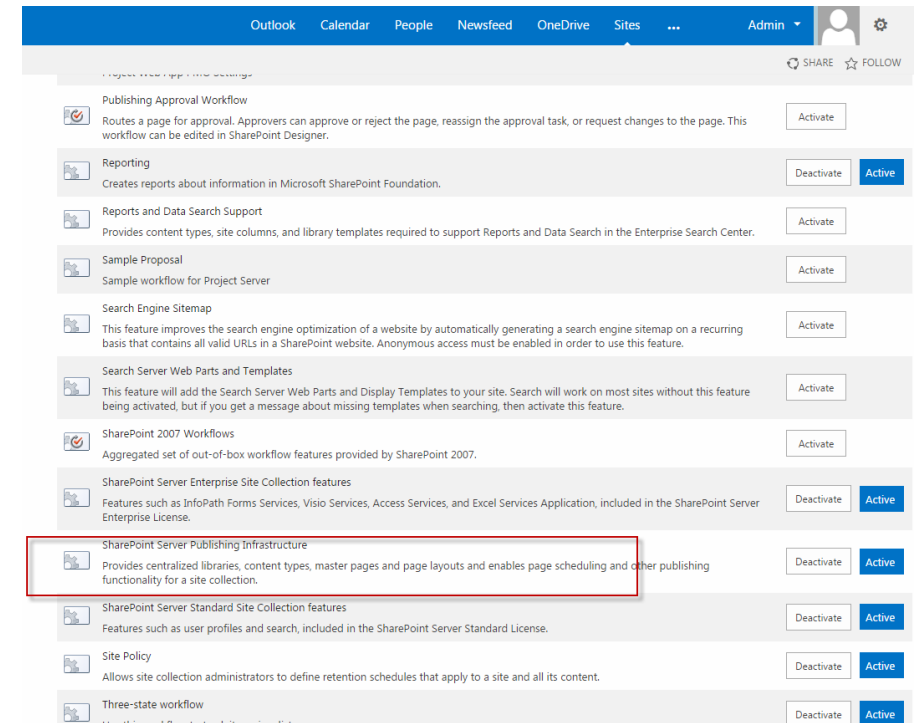


WHILE WE'RE TALKING CLASSIC & MODERN

Honest question: how many of you really don't want to give up your classic sites and the [SharePoint Publishing Infrastructure](#)?

For those who resist dropping these, allow me to offer:

- Classic is the way of the past, while modern is the future – meaning Microsoft development effort is aimed at modern, not classic.
- Publishing on modern sites [isn't even supported](#) nowadays.
- Modern was developed with SPO and the cloud in mind, and so modern sites make excellent use of CDNs, lighter pages, fewer SPO calls, and other optimizations.
- Publishing features are supplied through SharePoint's [PublishingHttpModule](#). Simply turning on the publishing infrastructure incurs overhead on every single call in the *hundreds of milliseconds*.



ODDITIES AND OTHER STUFF



TAKING OUT THE TRASH



Interestingly enough, SharePoint Online has not one but *two* different trash bins / recycle bins.

- When you delete content from SPO, it first goes to the end-user recycle bin which, as the name applies, is accessible to each user.
- When content gets deleted from the end-user recycle bin, it is moved to the site collection recycle bin (now known as the second-stage recycle bin).
- Content can change recycle bins through explicit deletion or policy action.
- At the site collection level, only a site collection admin can restore from the site collection / second-stage recycle bin.
- Once content ages-out of the site collection recycle bin or is removed as a result of policy action, it's gone forever.

Accidentally deleted your site itself? For 93 days after deletion, your admin can recover your site so that nothing is lost.

WHAT EXACTLY IS YOUR NAME?

SharePoint has (potentially) a lot of different names for a single field:

Property	Required?	Description
DisplayName	No	Optional Text . The displayed name for a field. There is no restriction on use of spaces. Maximum length is 255 characters.
Name	Yes	The internal name of the field. The name must be unique with respect to the set of fields in a list or website. SharePoint Foundation will amend the value if necessary to guarantee its uniqueness; otherwise it does not change for the lifetime of the field definition.
StaticName	No	Contains an internal name of the field that might not be unique within a field collection. However, unlike the Name attribute, which might be amended to ensure its uniqueness, the value of the StaticName attribute is assigned to the field exactly as you have defined it. You can later use this value in code to get a reference to the field by calling the TryGetFieldByStaticName method.
Title	No	Contains the title of the field that is displayed in the user interface.
XName	No	Used internally in XML forms to identify fields that have been added, deleted, or modified. This attribute is not intended for public use.

WHAT EXACTLY IS YOUR NAME?

In day-to-day operations, we really only care about two of these name-related properties in SharePoint Online:

- the **DisplayName**
- the **Name** (also called **Internal Name**)

When you create a column/field in SharePoint and choose its name, it gets assigned to the **Name** property and then copied to the **DisplayName** property.

- If the **Name** isn't unique, it will have additional characters added to make it unique.
- The **DisplayName** can be (and often is) changed once the **Name** is created, but **Name** properties are fixed.
- If you're a developer or a Power Platform practitioner, you normally care more about **Name** values, as this is how we identify target fields for action.
- The **DisplayName** is just the "friendly" name.
- There's nothing wrong with leaving the **DisplayName** set to the **Name**, but there are considerations around [special character encoding](#).

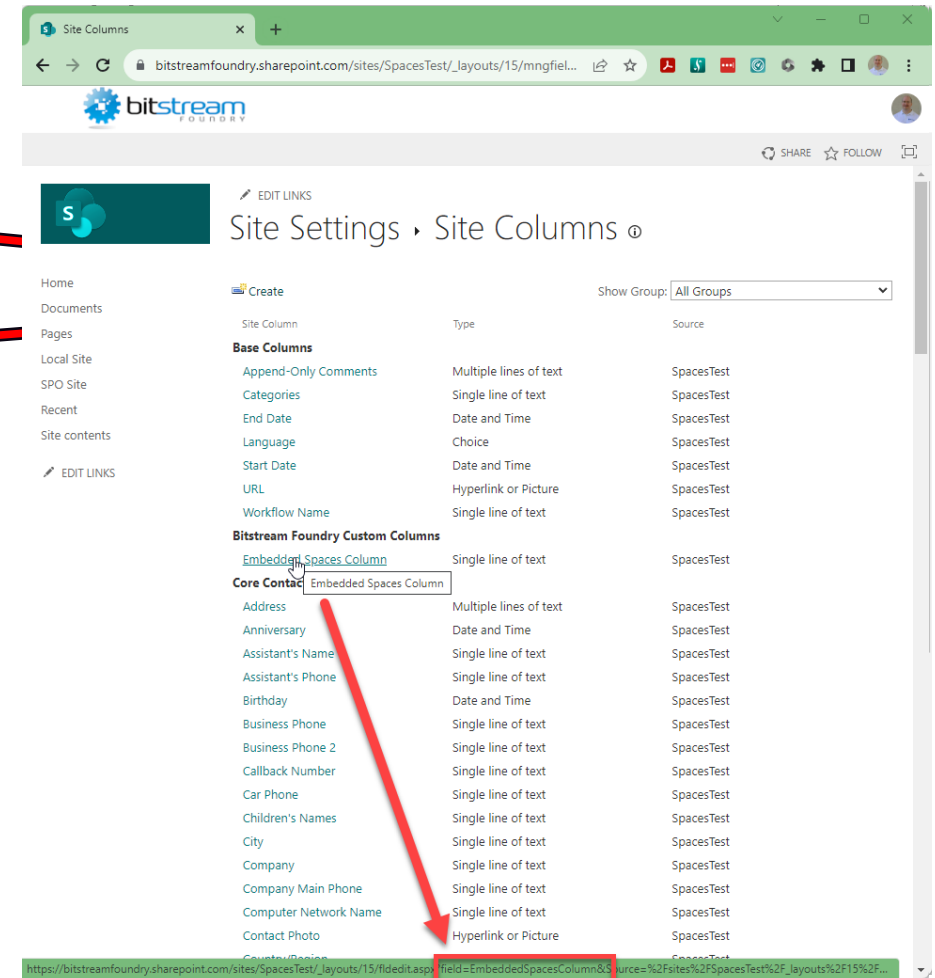
WHAT EXACTLY IS YOUR NAME?

Recommendations:

- When creating columns/fields, create them with a **Name** that excludes special characters (including spaces) for easy referencing.
- Once created, change the **DisplayName** for the field to match how you want it to actually appear.
- This advice goes for site naming, as well as general naming in SharePoint.

How do I determine a column's **Name** when I am shown its **DisplayName**?

- I hover over column's name and then note name that appears in the **field=<Name>** part of the URL that appears along the bottom of the browser window.
- You could also pluck the name from the address bar after you've followed the column link.



ENDLESSLY SEARCHING ...

A common question that comes up at least once on someone's SharePoint journey is this:

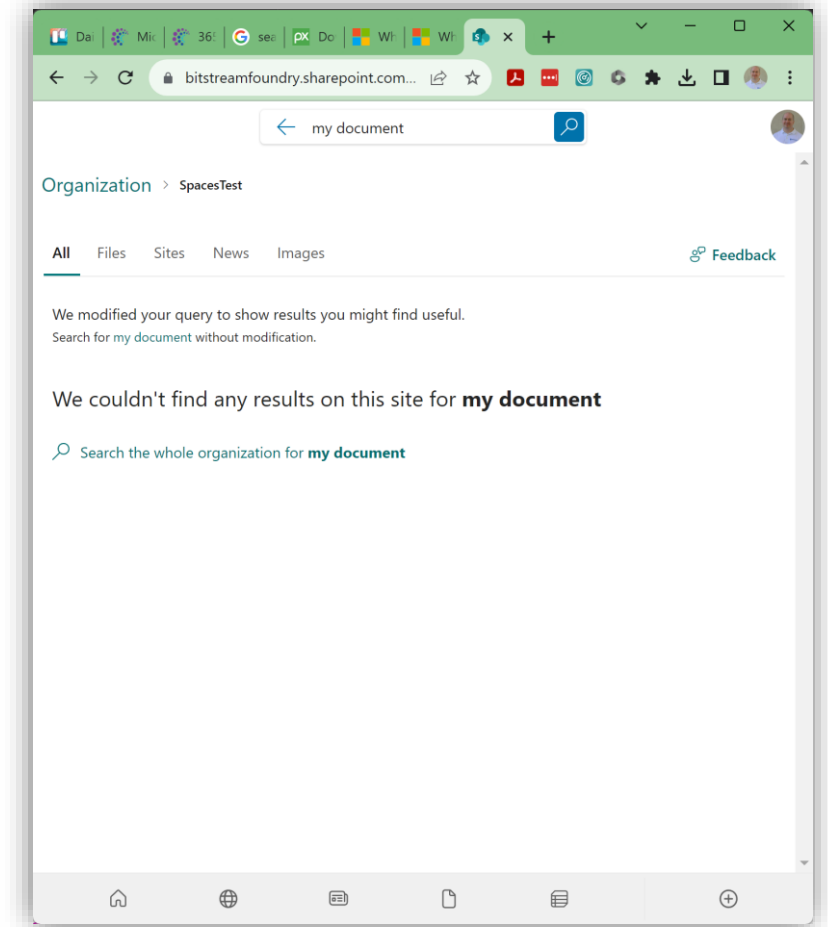
Why won't Search return the documents I want. I typed 'xyz' and I have a file named 'xyz.doc', but it's not coming back!?!?



ENDLESSLY SEARCHING ...

SharePoint and Microsoft Search obey a set of rules when returning search results, so start some basic checks:

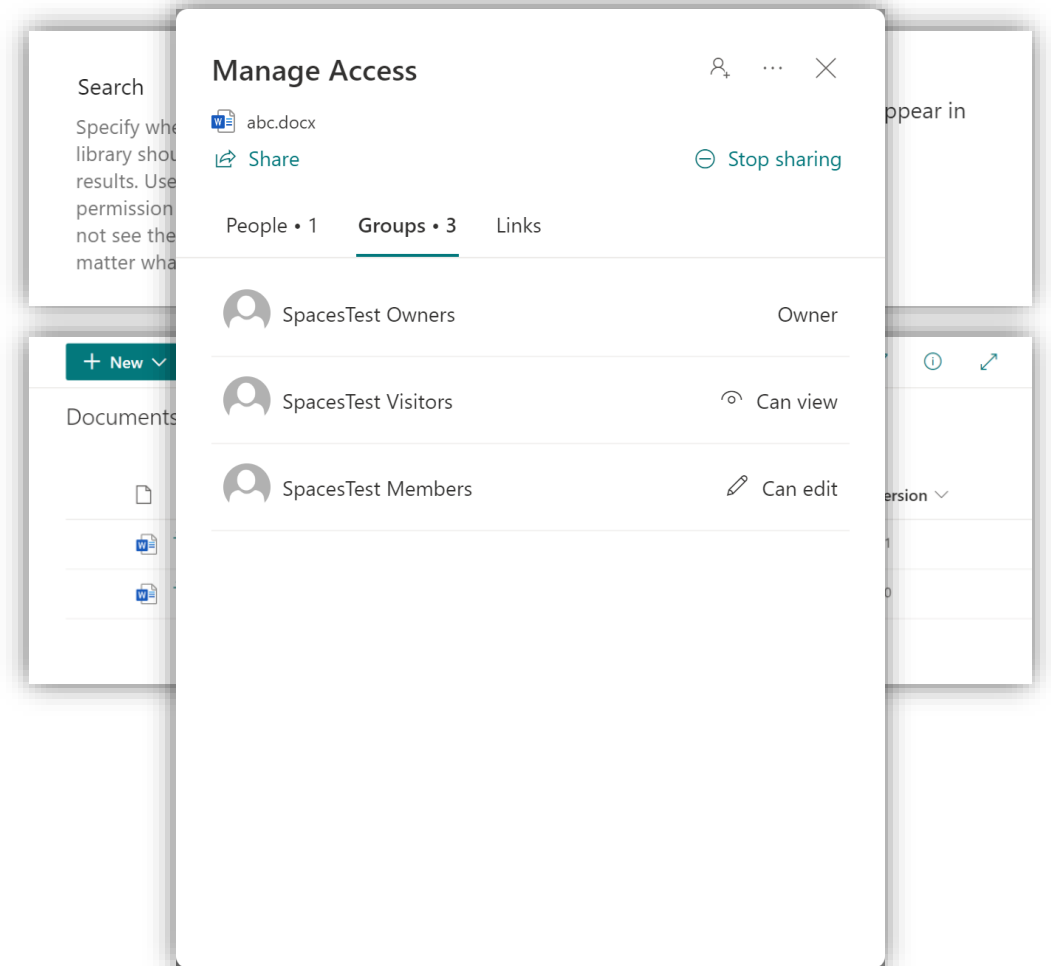
- Is the text you're providing to Search "findable" for Search?
- If your Search term(s) are findable, is your query looking in the right place (e.g., Title versus Filename)?
- Has Search actually crawled your list or library yet?



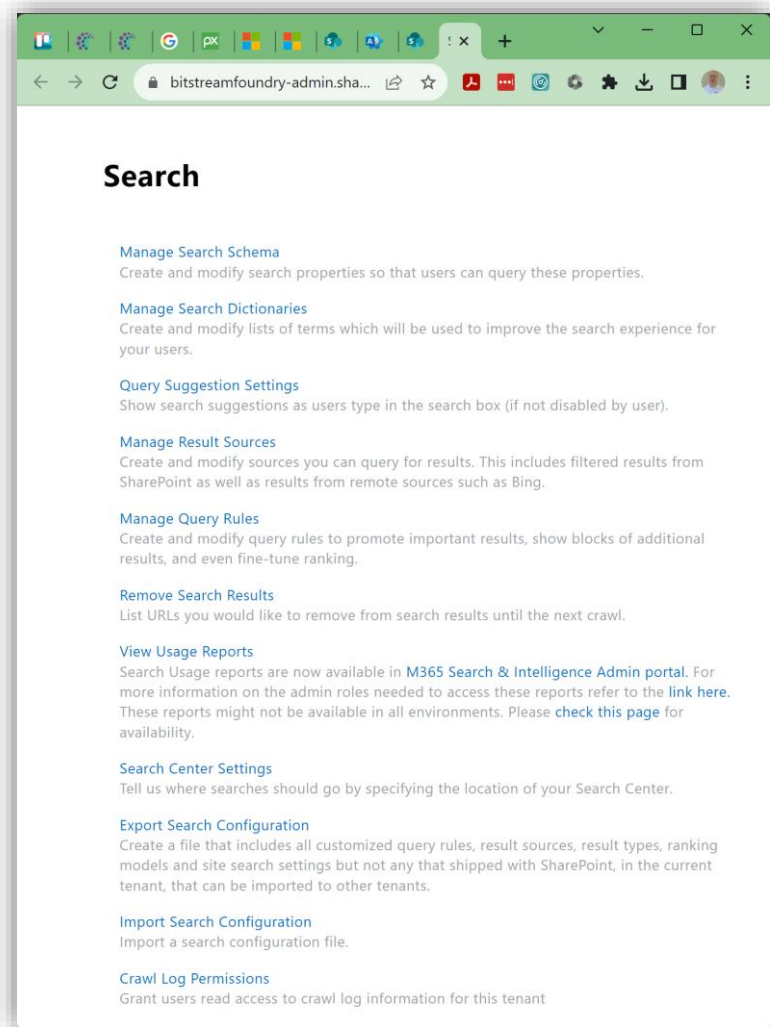
ENDLESSLY SEARCHING ...

Okay, so you're certain you should be able to get your content based on data you have. What else could be going on?

- Are contents for the associated list or library being shown in Search Results?
- Do you have a major version of your document published? Search can't see minor versions.
- Does the person attempting to find something actually have permissions to at least read it?



ENDLESSLY SEARCHING



I checked all of that, and I still don't know what's wrong?

- There are other things to check, but they will likely require a knowledgeable SharePoint administrator or tenant administrator.
- The content may be omitted at the tenant level
- Query rules and/or result sources may be affecting Search results.

Search *does work*, and it works more reliably once we understand the factors that can affect its performance and results returned.

Thank you

Final
Questions?



Decorative graphic elements in the top-left corner consisting of a magenta shape and an orange triangle.A teal-colored line graphic in the bottom-right corner that forms a partial frame or corner shape.

WRAP-UP AND CONTACT INFO

How was the session?

Search for **365 EduCon** in the App Store or Google Play

Fill out the Session Surveys in the **365 EduCon App** and be eligible to win **PRIZES!**





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Blog: <https://SharePointInterface.com/>

About: <https://spmcdonough.com/>

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