



POV

Hassle-Free SharePoint Upgrade

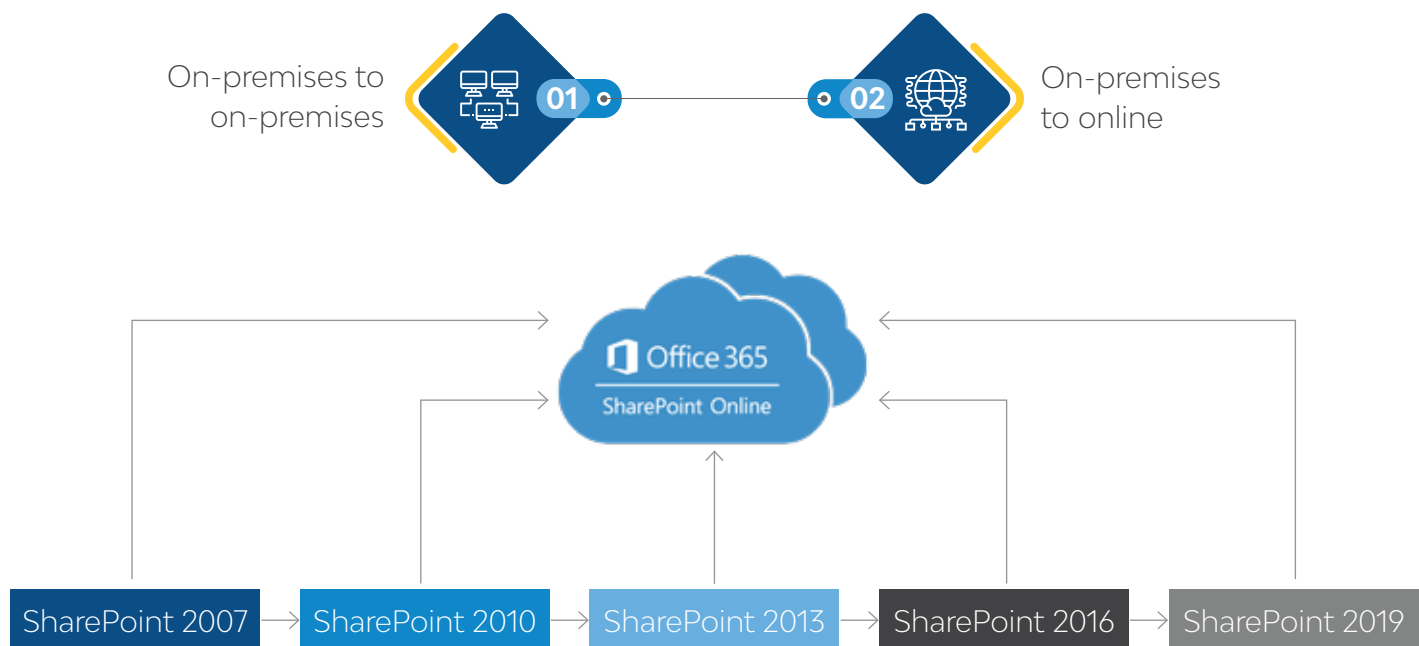
SharePoint is the most widely used document management and collaboration tool developed by Microsoft. It is used as a secure place to store, organize, share, and access information from any device.

Why is a SharePoint upgrade required?

SharePoint adds many new features with every new release that improves and meets modern business standards, for example Modern UI, Drag and Drop to upload documents from your computer library, Enterprise Search, etc. Likewise, it is depreciating many older features such as sandboxed solutions, InfoPath forms, and SharePoint Designer Workflow. This makes moving from the older version to the newer version of SharePoint essential, to fully leverage all new functionalities and stay with today's standards.

Types of SharePoint Upgrades

There are two types of SharePoint upgrades:



This article will help you to upgrade SharePoint On-Premises from a lower version to a higher version and upgrade SharePoint On-Premises to SharePoint Online.

SharePoint Upgrade Planning

Planning is key to the success of SharePoint upgrades. Before starting the SharePoint upgrade, you need to list the following and prepare your plan accordingly:

- ▶ Inventory of source SharePoint environment.
- ▶ Data to be migrated, and data that is redundant.
- ▶ Where and how data is to be migrated.
- ▶ Users, permission levels, groups, documents, items, and managed metadata that need to be migrated to destination.

Inventory

In the SharePoint upgrade plan, your first step is to prepare an inventory report to identify essential data, analyze and classify it, and remove or archive data that is no longer required.

Also, if there is sensitive data, then plan based on your business compliance standards and migrate it to an appropriate location on the target destination.

The inventory report provides the total assets of your SharePoint Farm as seen in the sample report below. You can use these reports to customize your migration behavior by choosing the required data to be migrated, removing irrelevant data, and deciding how your data should be organized at the target destination. The inventory report helps to plan the content migration accordingly.

Sample inventory report

Sr No	Site Collection URL	Number of Subsites	Size (GB)	Content Database	Number of Documents	Number of Users	Number of Groups	Number of Customized Features	Number of Workflows	Customized webpart Count	Number of Customized Template Sites	Site Administrators	SharePoint Version	Number of Infopath	Last Modified Date
1	www.mysite.sharepoint.com	1	10.20	WSS_Content_SP1	223	200	8	4	7	8	0	Admin1; Admin2	2013	3	12-03-2018
2	www.mysite.sharepoint.com/sites/firstsite	3	60.32	WSS_Content_firstsite	321	324	9	3	9	4	1	Admin1; Admin2	2013	5	16-06-2017
3	www.mysite.sharepoint.com/sites/secondsite	7	89.43	WSS_Content_secondsite	543	546	10	8	14	7	3	Admin1; Admin2	2013	8	01-04-2019



Pre-migration analysis

Pre-migration analysis helps you detail possible errors and warnings that might occur at the time of migration before the actual migration.

Using this report, you can analyze and identify the customizations you need and whether they will work on the SharePoint version you are planning to upgrade to or whether you need to update to a newer SharePoint version. Based on this you can estimate the timeline.

With pre-migration analysis you can assess what items can fail at the time of migration and reasons for their failure. This will enable you to fix all possible errors before actual migration so that your SharePoint upgrade can run smoothly without any issues or failures.

You can use a PowerShell script or use a migration tool to do the pre-migration analysis, which typically produces information shown below.

Summary Report of SharePoint Site Collection Details

Site Collection URL	Size (GB)	Site Owner	Last Modified Date	Unsupported webpart Pages Count	Content Editor Webpart pages count	Number of Infopath	Number of Subsites	Number of SharePoint Designer Workflows	Number of Other/Customize Workflows
www.mysite.sharepoint.com	10.20	Owner1; Owner2	12-03-2018	8		3	1	7	4
www.mysite.sharepoint.com/sites/firstsite	60.32	Owner1; Owner2	16-06-2017	4		5	3	9	3
www.mysite.sharepoint.com/sites/secondsite	89.43	Owner1; Owner2	01-04-2019	7		8	7	14	8

Custom Solutions/Content Editor Webpart/Unsupported pages Assessment

Web URL	Page URL	Display Title	Is Visible	Webpart Type
www.mysite.sharepoint.com	/Pages/welcome.aspx	Details	TRUE	Microsoft.SharePoint.WebPartPages.ContentEditorWebPart
www.mysite.sharepoint.com/sites/firstsite	/Pages/default.aspx	Untitled	TRUE	Microsoft.SharePoint.WebPartPages.ContentEditorWebPart
www.mysite.sharepoint.com/sites/firstsite	/Pages/home.aspx	Excel Services	TRUE	Microsoft.Office.Excel.WebUI.ExcelWebRenderer
www.mysite.sharepoint.com/sites/firstsite	/Pages/docpage.aspx	Excel Web Access	TRUE	Microsoft.Office.Excel.WebUI.ExcelWebRenderer
www.mysite.sharepoint.com/sites/secondsite	/Pages/default.aspx	Untitled	TRUE	Microsoft.SharePoint.WebPartPages.XsltListViewWebPart
www.mysite.sharepoint.com/sites/secondsite	/Pages/chart.aspx	Chart	TRUE	Microsoft.SharePoint.WebPartPages.XsltListViewWebPart

Workflows Assessment

Site Collection URL	Object URL	Workflow Name	Workflow Type
www.mysite.sharepoint.com/sites/firstsite	www.mysite.sharepoint.com/sites/firstsite/WorkflowTasks	Workflow1	SharePoint Designer
www.mysite.sharepoint.com/sites/firstsite	www.mysite.sharepoint.com/sites/firstsite/MyList	Workflow2	Nintex
www.mysite.sharepoint.com/sites/secondsite	www.mysite.sharepoint.com/sites/secondsite/UserList	Workflow1	SharePoint Designer
www.mysite.sharepoint.com/sites/secondsite	www.mysite.sharepoint.com/sites/secondsite/CustomList	Workflow2	SharePoint Designer

Large File Information

Parent URL	File Name	File Extension	Size (MB)
www.mysite.sharepoint.com/DocLib1	Video11.mp4	mp4	104.44
www.mysite.sharepoint.com/sites/firstsite/DocLib1	Video22.mp4	mp4	230.76
www.mysite.sharepoint.com/sites/firstsite/DocLib2	Video33.mp4	mp4	104.44
www.mysite.sharepoint.com/sites/secondsite/DocLib1	Video44.mp4	mp4	56.93
www.mysite.sharepoint.com/sites/secondsite/DocLib2	Video55.mp4	mp4	96.65

Features Information

Site URL	Feature ID	Display Name	Dependency ID
www.mysite.sharepoint.com	9bd81423-58f2-40ff-9073-c3d29108de28	9bd81423-58f2-40ff-9073-c3d29108de28	
www.mysite.sharepoint.com/sites/firstsite	ed8ed5f3-6634-4d6d-bfdd-6a575369eb49	ApplicationListInstances1	
www.mysite.sharepoint.com/sites/firstsite	ddd29ca4-e5e7-4564-bd45-74674aa1efb9	ApplicationListInstances2	ed8ed5f3-6634-4d6d-bfdd-6a575369eb49
www.mysite.sharepoint.com/sites/secondsite	9adceg65-e117-438b-80ee-f42901813a9d	PlanningListInstances1	
www.mysite.sharepoint.com/sites/secondsite	abc6caa8-96d5-4619-af9d-98f3d85q328a	PlanningListInstances2	9adceg65-e117-438b-80ee-f42901813a9d

InfoPath forms Information

Site Collection URL	List Title	List URL	Content Type Name
www.mysite.sharepoint.com	List11	www.mysite.sharepoint.com/List11	Issue
www.mysite.sharepoint.com/sites/firstsite	List22	www.mysite.sharepoint.com/sites/firstsite/List22	Item
www.mysite.sharepoint.com/sites/firstsite	List33	www.mysite.sharepoint.com/sites/firstsite/List33	Item
www.mysite.sharepoint.com/sites/secondsite	List44	www.mysite.sharepoint.com/sites/secondsite/List44	Item
www.mysite.sharepoint.com/sites/secondsite	List55	www.mysite.sharepoint.com/sites/secondsite/List55	Item

Selecting the best fit approach for SharePoint upgrade

Selecting the best approach for SharePoint upgrade is a difficult and a time-consuming task. You can use the Approach Selection Matrix given below to select the recommended approach between a content-based and tools-based (Sharegate/AvePoint Fly) one.

1. Approach Selection Matrix

Approach for SharePoint Upgrade	Upgrade Type	Version	Complexity	Data Size	Easy to Use	Weightage Sum
	10	8	6	4	2	
Content Based	0	0	1	1	0	10
Tools Based (Sharegate)	1	1	1	1	0.5	29
Tools Based (FLY)	1	1	1	0	1	26

2. Category Recommendation Table: (0 - Not Recommended, 1 - Recommended)

Approach for SharePoint Upgrade	Upgrade Type		Complexity			Data Size		Destination SharePoint Version	
	On-premises to On-premises	On-premises to Online	Vanilla / Semi-Complex	Customized / Complex (Classic to Classic)	Customized / Complex (Classic to Modern)	Medium Data Size (< 1 TB)	Large Data Size (>= 1 TB)	Next Version of Source SharePoint (On-premises)	*SharePoint Online / More higher Version of Source SharePoint (On-premises)*
Content Based	1	0	1	1	0	1	1	1	0
Tools Based (Sharegate)	1	1	1	1	0	1	1	0	1
Tools Based (FLY)	1	1	1	1	1	1	0	0	1

How to use the Approach Selection Matrix

Fill the Approach Selection Matrix, as defined value (0 or 1) in the Category Recommendation Table (above).

Get the weightage sum of each approach in the Approach Selection Matrix using the equation below.

Recommended Weightage Sum = Sum of each category weightage X approach recommendation.

Whichever weightage sum of approach is higher, is the recommended approach for migration.

For example, let us say you need to upgrade SharePoint 2013 to SharePoint Online. If the SharePoint 2013 Farm contains only plain vanilla sites and the data size is more than 1 TB, after filling the Approach Selection Matrix and calculating weightage sum, the best recommended approach would be tools-based (Sharegate) with weightage sum of 29.

How to fill the Approach Selection Matrix in examples shown below:

Upgrade Type: As defined in the Category Recommendation Table, for On-Premises to Online upgrade.

Content-Based 0

Tools-Based (Sharegate/Fly) 1

Version: As defined in the Category Recommendation Table for SharePoint Online.

Content-Based 0

Tools-Based (Sharegate/Fly) 1

Complexity: As defined in Category Recommendation Table, for vanilla sites.

Content-Based 1

Tools-Based (Sharegate/Fly) 1

Data Size: As defined in the Category Recommendation Table for data size over 1 TB.

Content-Based/Tools-Based (Sharegate) 1

Tools-Based (Fly) 0

Note: As each SharePoint upgrade is unique and has its own challenges, it is recommended that you perform a detailed pre-migration analysis for each upgrade to choose the best approach.

Challenges in implementation

You will need to address the following challenges in a SharePoint upgrade:

▶ Managing large data size

If you are planning to migrate more than 1 TB data, you need to analyze the content database size of each data site collection.

- If none of the content database sizes is more than 100 GB, you can divide the site collections (equally in size) in phases and make a phase-wise migration plan.
- If one or more content database sizes exceed 100 GB, break the content database into small data sizes by creating a separate content database for each site collection or subsite. Then make a phase-wise migration plan.

▶ Managing multilingual applications

Identify which languages are used in the source SharePoint Farm and install the language pack on new SharePoint Farm accordingly. Also replicate all resource files of different languages from source SharePoint to the new SharePoint server.

▶ Training users

Familiarize the users with the new environment, the changes to look and feel, new functionality, and so on. Create a detailed user manual to help the users better understand the UI, features, and functionality of the new SharePoint site.

▶ Communicating the SharePoint upgrade plan across the organization

- Send regular e-mail notifications about the SharePoint upgrade plan or broadcast the message with the URL of the detailed SharePoint upgrade plan on existing SharePoint site, including the reasons for the change and the value it brings to users. Also provide detailed information on features that will no longer be available, and the new SharePoint UI.
- Provide notifications of the following changes/references which need to be updated by the users:
 - URL changes
 - Bookmarks
 - Document references
- Share estimated timelines for SharePoint upgrade.

▶ Managing users in multiple geographical locations

You will need to take into consideration users from different locations and time zones while managing the SharePoint upgrade. Plan the downtime of migration activity in such a manner that it will have a minimum impact on different time zone users.

Destination Environment Readiness

Finding the best SharePoint environment is a difficult task. The following will help you to find the best fit for your destination SharePoint environment.

Due diligence of existing SharePoint environment:

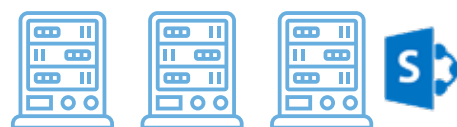
- ▶ Analyze the existing SharePoint server topology for
 - Number of Web front-end servers.
 - Number of application servers.
 - Number of Office Online servers.
 - Number of SQL servers.
 - Verifying hardware of the servers like CPU, RAM, Storage, etc.
- ▶ Analyze potential problems in the existing environment such as optimizing each workflow/process running time.
- ▶ Get statistics (traffic KPIs like sessions, concurrent users, average time spent, page load time, etc.) of SharePoint server by using Google analytics or Microsoft Clarity.
- ▶ Analyze the future growth of the SharePoint server.

SharePoint MinRole topology

Front-end



Distributed Cache



Application Server



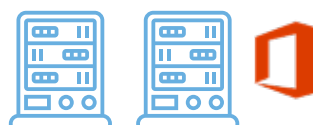
Search



SQL Server



Office Online Server



▶ **Front-End**

Service applications, services, and components that server user requests belong to front-end Web servers. These servers are customized for low latency.

▶ **Application**

Service applications, services, and components that serve back-end requests (such as background job or search crawl requests) belong to application servers. These servers are customized for high throughput.

▶ **Distributed Cache**

Service applications, services, and components required for a distributed cache belong here.

▶ **Search**

Service applications, services, and components required for searching belong here.

▶ **Custom**

Custom service applications, services, and components that do not integrate with MinRole belong to custom servers. The farm administrator has full control over which service instances can run on the server assigned to the custom role.

▶ **Office Online Server**

Opens/runs MS office files (Word, Excel, PowerPoint) in the browser without using client applications of MS Office.

▶ **Back End**

SQL server is required to maintain content databases and service application databases.

Implementation of destination environment

▶ Create the VMs as per the analysis done in due diligence and future growth of the usage:

- Number of front-end servers
- Number of application servers
- Search server
- Office Online servers
- SQL servers
- Upgrade the hardware configuration

▶ Meet SharePoint's networking requirements

▶ Optimize your new SharePoint server's performance

- ▶ Configure necessary application services
- ▶ Configure network load balancers
- ▶ Create and configure service accounts
- ▶ Configure DNS
- ▶ Make necessary anti-virus configurations

Content Migration

Plan the approach of the SharePoint upgrade based on the analysis so far. Follow these best practices for content migration to make your SharePoint upgrades seamless and hassle-free:

- ▶ Identify which custom solution will not work in the new SharePoint server and verify if any alternative option is available in new SharePoint server. It will help decide the rebuild of the custom solution.
- ▶ When content migration is in progress, do not make any changes either in source or destination. This disrupts the entire flow of the migration, wherein source and destination do not tend to be the same after migration.
- ▶ Build the utility tool which helps to migrate easily, faster, and reduce the manual work.

For example, if you are migrating similar classic pages to modern pages and some classic pages' webparts are not supported by the migration tool, you can analyze and identify unsupported webparts and availability of their alternative options in the modern page. You can develop the utility tool accordingly to help reduce manual work and time.

- ▶ Make it a practice to do pre- and post-migration checks; pre-migration checks to see whether the content is good to go for migration, and post-migration checks to ensure the content migrated is the same as in source.
- ▶ You can split the big site collection into smaller site collections and can also merge unnecessary subsites into the site collection.

Content database approach

You can upgrade the content database only up one level of SharePoint—i.e., upgrade the content database of SharePoint 2010 to SharePoint 2013, but not from SharePoint 2010 to SharePoint 2016.

You can use this approach while doing an on-premises to on-premises SharePoint upgrade:

1. Take a backup of the content database from source SharePoint server.

2. Copy backup to destination SharePoint server.

3. Create Web application on new SharePoint server.

4. Create site collection on new SharePoint server.

5. Stop all timer jobs for the new application using the following command:

```
Get-SPTimerJob-webapplication http://applicationname:1000/ | select name | Out-File "c:\timerjobfile.txt"-Append-Encoding ascii  
ForEach ($tmrjob in (Get-Content "c:\timerjobfile.txt"))  
{Get-SPTimerJob-Identity $tmrjob | Disable-SPTimerjob}
```

Note: Before running the above command, you need to add all timer job names in timerjobfile.txt.

6. Dismount database using the following command:

```
Dismount-SPContentDatabase "<ContentDB>"
```

7. Restore copied database using SQL server "Restore Database" option.

8. Mount database back to application using following command:

```
Mount-SPContentDatabase <Content Database Name>-DatabaseServer <DatabaseServerName>-  
WebApplication <Web App URL>
```

9. Start the timer jobs related to Web application again using the following command:

```
For Each ($tmrjob in (Get-Content c:\timerjobfile.txt)) {Get-SPTimerJob-Identity $tmrjob |  
Enable-SPTimerjob}
```

10. Do the visual upgrade if you are migrating from SharePoint 2010 to SharePoint 2013.

11. Deploy custom solutions on destination SharePoint server.

Tools-based approach

If the SharePoint upgrade is being planned from on-Premises to online, then the only approach is to use a tool.

Many content migration tools are available in the market such as Sharegate Tool, AvePoint Fly Tool, SharePoint Migration Tool (SPMT). You can pick as per your requirements. Follow these steps for tools-based migration:

- ▶ Install the tools and run test job.
- ▶ Complete or stop running workflows about to be migrated.
- ▶ Plan and delete/archive unused data.
- ▶ List your existing contents.
- ▶ Map the data.
- ▶ Migrate at good speed.
- ▶ Incremental migration—set the source environment as read-only before the final incremental.
- ▶ Verify the error/exception log.
- ▶ Validate the migrated data.

Post content migration

Before announcing the go-live of new SharePoint environment, make sure everything is ready. Just because you performed migration with standard migration tools, do not assume everything got migrated successfully. The important step after every migration is to perform a post-migration check to determine if everything got migrated without any issues.

- ▶ Validate moved content in destination by comparing it with source and ensure everything got migrated as in source.
- ▶ Validate the enhancements and objects that were rebuilt.
- ▶ Proactively check the log on new SharePoint environment to avoid any issue.
- ▶ Test/run all workflows.
- ▶ Run a full crawl of the migrated content.
- ▶ Create an FAQ and user manual and share with users for better understanding of new environment.

- ▶ Provide contact details in the migration notification to the user for hypercare support.
- ▶ Check user permissions. Make sure that it is easy for users to access the new environment and redirect them if they try to access the old one.

Make It Simple

SharePoint adds various new features with every new release that improves and meets modern business standards and requirements. Therefore, it becomes absolutely necessary to continuously upgrade your existing SharePoint environment. Upgrading SharePoint is always challenging. However, with proper planning and execution, upgrades can be made simple and hassle-free.

About the Author



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Arpan has 16+ years of delivery and consulting experience in Microsoft Technologies. He is currently responsible for delivering SharePoint Solutions for North America based Manufacturing clients. His areas of expertise include Application Architecture Design, and Custom Intranet Site Development.

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