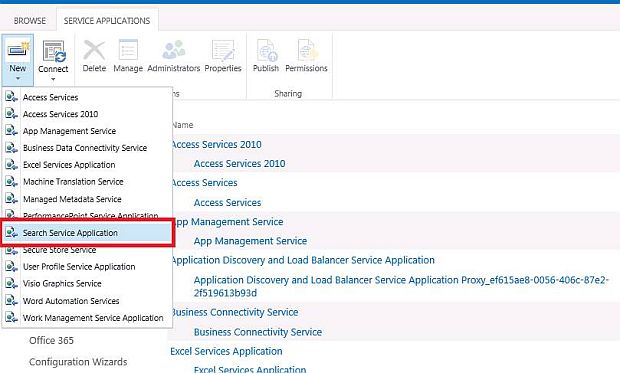
1. SharePoint Services or Service applications in SharePoint

Use of SharePoint Service applications:

SharePoint Server includes a set of service applications that you can use to **shareservices** across web applications. In some cases, you can also share service applications across farms. You can manage service applications by using the SharePoint Central Administration website **or** by using Windows PowerShell 3.0



Access Services: Access Services in SharePoint Server 2013 are service applications that enable you to share two types of Access 2013 solutions on the web.

Access Services 2010:

**Access Services 2010** is a service application that allows users to modify and publish in SharePoint 2013 an Access web database that was previously created in SharePoint Server 2010. The Access client is not required to use the published web database.

What's new for Access Services in SharePoint Server 2010?

Access Services is a service application of Microsoft SharePoint Server 2010 that allows users to edit, update, and create linked Microsoft Access 2010 databases that can be viewed and manipulated by using an internet browser, the Access client, or a linked HTML page.

IT professionals and end users can use Access Services to allow the use of Access applications inside a Web browser, to publish and share information across teams, and to create and modify applications where no Access client is available.

**Access Services allows you to create, edit, and save Access databases in the following ways:**

**By allowing instantiation** of a Microsoft SharePoint Server database on any computer that can connect to and has permission to use Access Services on a networked computer running SharePoint Server.

**By allowing the creation,** publishing, and sharing of a SharePoint Server Web database from any computer that can connect to and has permission to publish to a computer that is running SharePoint Server and that has Access 2010 installed.

**By allowing the download,** modification, and republishing of modified data in an Access Web application from any computer that has Access 2010 installed and can connect to a computer running SharePoint Server.

App management Services:

Excel Services:

Excel Services is a business intelligence tool in SharePoint Server 2013 that allows you to share data-connected workbooks across an organization. Excel Services is a shared service that you can use to publish Excel workbooks on SharePoint Server 2013.

**Excel Services consists of Excel** Calculation Services, the Excel Web Access Web Part, and Excel Web Services for programmatic access. It supports sharing, securing, managing, and using Excel 2013 workbooks in a browser by providing the following:

**Global settings** for managing workbooks, that include settings for security, load balancing, session management, memory utilization, workbook caches, and external data connections.

**Trusted file locations** (that allow you to define which document libraries are trusted by Excel Services) together with session management, workbook size, calculation behavior, and external data settings of workbooks stored in those locations.

Machine Transition Services:

Microsoft Visual Studio 2010 provides a State Machine Workflow template that enables you to build workflow solutions for Microsoft SharePoint 2010 by using a graphical design surface. Unlike sequential workflows, which transition from activity to activity, state machine workflows transition from state to state.

PerformancePoint Services

PerformancePoint Services is a SharePoint service application. It enables users to create business intelligence (BI) dashboards that provide insight into an organization's performance. You can create custom reports, filters, tabular data sources, and scorecard transforms to extend the native functionality of PerformancePoint Services. For example, you can create a custom report visualization that is optimized for the medical industry and then integrate it into a reusable vertical solution.

Secure Store Service

The Secure Store Service is an authorization service that runs on SharePoint Server. The Secure Store Service provides a database that is used to store credentials. These credentials usually consist of a user identity and password, but can also contain other fields that you define. For example, SharePoint Server can use the Secure Store database to store and retrieve credentials for access to external data sources. The Secure Store Service provides support for storing multiple sets of credentials for multiple back-end systems.

This service is running on an application server and providing the authorization. The Secure Store Service provides a database that is used to store credentials. The Secure Store Service provides support for storing multiple sets of credentials for multiple back-end systems.

The main usage of this service includes Excel Services, Visio Services, PerformancePoint, Business Connectivity Services (BCS), Power Pivot, etc.

For example, when we are connecting Excel with external data sources, it needs to pass the user credentials like user name and password. These type of scenarios we can solve with configure an unattended service account for the external data access.

Word Automation Services

Word Automation Services is a SharePoint Service Application that is used for server-side conversion of documents that are supported by Microsoft Word. A few new features like on demand file conversion and support for converting streams are introduced in Word Automation Service in SharePoint 2013.

In simplest terms, Word Automation Services takes the "Save As…" functionality of the Word client application and replicates it for the server. Specifically, Word Automation Services provides the following capabilities:

* Opens documents that Word can open, including:
  + Open XML File Format documents (.docx, .docm, .dotx, .dotm).
  + Word 97-2003 documents (.doc, .dot).
  + Rich Text Format files (.rtf).
  + Single File Web Pages (.mht, .mhtml).
  + Word 2003 XML Documents (.xml).
  + Word XML Document (.xml).
* Supports all automatic tasks that execute when a document opens, such as:
  + Updating the Table of Contents, the Table of Authorities, and index fields.
  + Recalculating all field types.
  + XML mapping.
  + Merging of [alternate format chunks](https://msdn.microsoft.com/en-us/library/documentformat.openxml.wordprocessing.altchunk(office.14).aspx).
  + Setting the compatibility mode of the document to the latest version or to previous versions of Word.
* Saves documents types that Word can save. This list is identical to the previous list of files that the Word Automation Services can open, but also includes the following types:
  + Portable Document Format (PDF) files.
  + XML Paper Specification (XPS) files.

With Word Automation Services, tasks that previously required you to run the Word client application can now be automated to run unattended in a more reliable and scalable way than in previous solutions.

Vision Graphic services:

Visio Services lets users share and view Visio diagrams. It also enables data-connected Visio diagrams to be refreshed and updated from various data sources.

Visio Services runs as a SharePoint Server service application. It uses the Visio Graphics Service which runs under the Front-end server role.

**Use and benefits of Visio Services**

**Using Visio Services**, you can render Visio diagrams in a Web browser. This lets users view Visio documents without having Visio or the Visio Viewer installed on the local computer. This also allows diagrams to be viewed on mobile devices.

Basic exploration and navigation of these rendered diagrams are supported within the Visio Web Access Web Part. Page designers can configure the user interface and functionality of the Web Part.

**Visio Services** can also refresh the data and recalculate the visuals of a Visio diagram hosted on a SharePoint site. This enables published diagrams to refresh connections to various data sources and to update affected data graphics and text fields.

**Visio diagrams** can be published to SharePoint Server by using Visio Professional, Visio Premium, or Visio Pro for Office 365.

1. Search Service application Configuration and Search Web parts.

SharePoint 2013 provides a strong and capable search engine, which has two search engines "SharePoint Search" and "FAST Search" combined into one. SharePoint 2013 has ambitions to provide search across a wider range of content, like documents, videos, images, contents, etc.

* **Create Managed Accounts**

Manager account created using “Central Administration” security option.

Register managed accounts.

* **Create Search Service application,**

For creating search service application click on “Central Administration’s” application management 🡪 Manage service applications.

Create the search service and select the managed account.

* **Configure Search Service application.**

You configure a Search service application on the Search Administration page for that service application.

**Ref**: <https://www.c-sharpcorner.com/UploadFile/Roji.Joy/enterprise-search-configuration-in-sharepoint-2013/>

<https://www.c-sharpcorner.com/article/sharepoint-2013-how-to-create-custom-search-verticals/>

1. Managed Meta Data service application configuration.

[**https://www.c-sharpcorner.com/article/manage-metadata-service-application/**](https://www.c-sharpcorner.com/article/manage-metadata-service-application/)

**Managed Metadata** provides a central location to store metadata (Information about data) and content types that can be used across site collections and web applications. Managed Metadata publishes a term store and content types and Managed metadata connection consumes these term stores and content types in SharePoint.

By creating a managed metadata service and specifying a site collection as the content type hub, you can share all content types in the site collection content type gallery.

Content Type hub

**https://www.c-sharpcorner.com/article/how-to-create-and-use-content-type-hub-in-sharepoint/**

**Content Type Syndication** is new feature that is part of the Managed Metadata service in SharePoint 2010. It solves a long-standing problem from SharePoint 2007, which is how do I create an enterprise library of content types and synchronize them amongst many different site collections. We often had to design and build solutions to work around this issue in SharePoint 2007, but now we have something that we can use out of the box. It's may not seem super intuitive in terms of setting this little gem up though, so use this document as a guide to get you moving in the right direction.

SharePoint 2010 now introduces a new feature called Content Type Hubs. Content Type Hub is a central location where you can manage and publish your content types – so now web applications can subscribe to this hub and pull down the published content types from the hub.

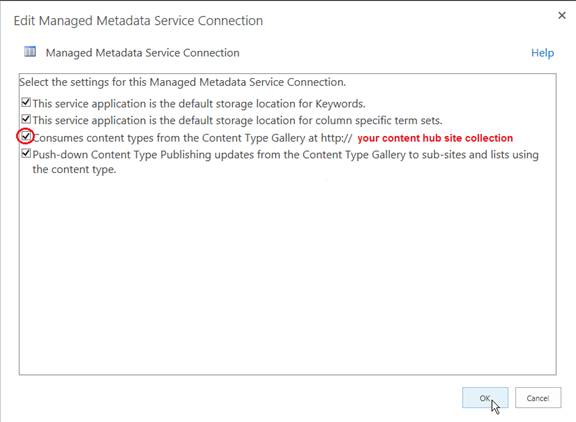
**Content Type Syndicate Hub-->** Activate this site collection feature for making site collection as a content type hub. These centralized content type hub is accessible for all site collection through the SP Farm.

**If Managed Metadata Service Application is not configured** then visit this article to configure it first. And associate Managed Metadata Service connection with your web application.

Go to Central Administration -->Application Management--> Manage service application (Under Service Applications),

Single Click on MetadataServiceApp row-->Properties.

Enter your Content Type Hub site collection URL in Content Type hub.



Now your Content Type Hub Site Collection is registered with Managed Metadata Service Application.

**Now let’s consume this Content Type in another site collection.**

I have already created site collection. If you don’t have another site collection then create new one.

Go to your site collection (In my case it is Metadata Test Site Collection)

Gearbox-->Site settings--> Content Type Publishing (Under Site Collection Administration)

1. Configuring User profile services.

The User Profile service is a shared service in SharePoint Server that provides a central location for configuring and managing user profiles. This article contains required information and procedures for configuring a User Profile service application

The User Profile service stores information about users in a central location. It enables My Sites, social computing features such as social tagging and newsfeeds, and creating and distributing profiles across multiple sites and farms.

**The User Profile service application**

**The User Profile service application in** SharePoint Server provides a central location where service administrators configure and administer the following features:

**User profiles - contain detailed information** about people in an organization. A user profile organizes and displays all of the properties related to each user, together with social tags, documents, and other items related to that user.

**Profile synchronization -** provides a reliable way to synchronize groups and user profile information that is stored in the SharePoint Server profile database together with information that is stored in Active Directory Directory Services.

In SharePoint Server 2013, you can synchronize directly with other directories across the enterprise.

In SharePoint Server 2016, you can synchronize with other directories by using an external identity manager such as Microsoft Identity Manager 2016.

**Audiences - enables organizations** to target content to users based on their job or task, as defined by their membership in a SharePoint Server group or distribution list, by the organizational reporting structure, or by the public properties in their user profiles.

**My Site Host - a dedicated site** for hosting My Sites. A My Site Host is needed in order to deploy the social features of SharePoint Server.

**My Site - a personal site** that gives users in your organization a central location to manage and store documents, links, and information about colleagues.

**Social tags and notes -** enables users to add social tags to documents, to other SharePoint Server items, and to other items, such as external web pages and blog posts. Users can also leave notes on profile pages of a My Site or any SharePoint Server page. Administrators can delete all tags for employees when they leave the company or remove a tag they do not want.

**Related service applications**

The User Profile service application relies on other service applications to implement the full range of social computing features in SharePoint Server. These related service applications include the following:

**Managed metadata service -** makes it possible to use managed metadata and share content types across site collections and web applications. Configure the managed metadata service before you configure the User Profiles service application.

**Search Service application -** needed to enable the People Search feature.

Configuring user profile service

<https://www.c-sharpcorner.com/article/setup-and-start-the-sharepoint-2013-user-profile-service/>

https://www.c-sharpcorner.com/UploadFile/Roji.Joy/how-to-configure-user-profile-service-and-my-site-in-sharepo/

What is my Site in SharePoint? How to configure it.

In this article we learn how to configure a user profile and My Site configuration in SharePoint 2013. In earlier versions of SharePoint, each user had a profile and a personal site (e.g., My Site). The 2013 version of SharePoint splits My Site into three sections: Newsfeed, SkyDrive, and Sites. A global navigation bar provides access to each section. These social features are tightly integrated into SharePoint 2013, so you no longer need to launch a web browser to access them.

<https://www.c-sharpcorner.com/UploadFile/Roji.Joy/how-to-configure-user-profile-service-and-my-site-in-sharepo/>

1. Business Connectivity Services configuration

**With Business Connectivity Services,** you can use SharePoint Server and Office clients as interfaces to data that doesn't live in SharePoint Server itself. Business Connectivity Services can connect to data that is available through a database, a web service, or data that is published as an OData source or many other types of external data. Business Connectivity Services does this through out-of-the box or custom connectors. The connectors, as the name implies, are the communication bridge between SharePoint Server and the external system that hosts the external data.

**Using Business Connectivity Services,** you can perform different operations on the data such as Create, Read, Update, Delete, and Query (CRUDQ). Depending on the operations that are enabled, the changes made to the data in SharePoint Server or Office can be automatically synchronized back to the external data source. You can also take the data offline to work on it, and search the external data by using SharePoint Search.

**SharePoint Server has several ways to present the external data.** Probably the most common way is to present the data in an external list. External lists look and feel like regular SharePoint lists, except that they can only display external data. If you want to integrate external data alongside other data in a list or library, you would use an external data column. An external data column is a column type that you can create and add to a SharePoint list just as you would add a Person or Group or Date and Time column, except that it is displays external data. SharePoint Server includes Business Data Web Parts for presenting and interacting with external data and apps for SharePoint, which can also use external data.

<https://docs.microsoft.com/en-us/sharepoint/administration/business-connectivity-services-overview>

<https://docs.microsoft.com/en-us/sharepoint/administration/configure-business-connectivity-services-solutions>

<https://www.codeproject.com/Articles/683749/Implementing-Business-Data-Connectivity-in-SharePo>

1. SOAP, REST Services REST Full Services and OAuth and OData

**A web service is a program** that helps us to connect two computers over the World Wide Web. Web services are the software component that supports machine to machine interaction over network. This is called interoperability which can be achieved by machine understandable format document called WSDL. WSDL is processed by SOAP and it transfers via HTTP in the form of XML.

What is SOAP Service?

It is basically a protocol which has a set of defined rules to transfer the structured information implemented through web services. SOAP uses XML format data which is platform independent so it can support all the major protocols such as HTTP, FTP, TCP, and UDP and so on.

**SOAP services follow** the standards for sending and receiving message with the unique format. Usually SOAP message contains the following information:

Request / Response Data

action to be performed

Header information

Error details if any failure messages

What is REST (Representational State Transfer)?

It is architecture based specially designed for networking applications and is used in client-server systems to send request and response. REST services are also called as RESTful APIs as it is implemented by using Hypertext Transfer Protocol (HTTP). It is GUI independent, and we can test REST APIs using SoapUI without the actual application. It follows a stateless method which means, whenever the client sends the request to the server, server does not store any data in the session.

SOAP vs. REST

* SOAP is a protocol and REST is architecture. It allows us to send SOAP envelops to REST based applications.
* REST does not depend on any specific standards as it supports various messaging formats like JSON, CSV and XML, but SOAP permits XML only.
* REST services are faster and easy to handle, light weight.
* SOAP is tied with SMTP and HTTP protocols whereas REST relies on HTTP only.
* SOAP is more secure and structured format.
* SOAP web services allow us to build the client with RESTful services.
* SOAP was introduced for distributed computing.
* After REST’s entry, it accommodated the web by its performance and scalability as it is a light weight component.
* REST is stateless whereas SOAP is a state-full specification.
* REST uses Uniform Resource Identifier (URI) and it has the methods like GET, PUT, POST and DELETE to expose their resources.
* SOAP uses named operations and interfaces to achieve its business logics.

OData

The Open Data protocol (OData) lets you access a data source, such as a database, by browsing to a specially constructed URL. ... In SharePoint, Business Connectivity Services (BCS) can communicate with OData sources, or producers, without having to code directly to the OData source

OAuth

OAuth allows users to authorize SharePoint to provide access tokens to 3rd party apps. These 3rd party apps will then use the tokens to retrieve data from the SharePoint server for that user. A token can access: a site, a resource (file, item), and for a defined duration

1. Azure Deployments
2. Power BI

**Power BI** is a Business Intelligence tool for developing reports, analytics and integration purpose. This is available both online and Desktop versions.

**Power BI is a business analytics** service provided by Microsoft. It provides interactive visualizations with self-service business intelligence capabilities, where end users can create reports and dashboards by themselves, without having to depend on information technology staff or database administrators.

**Key components of the Power BI ecosystem comprises:**

**Power BI Desktop:** The Windows-desktop-based application for PCs and desktops.

**Power BI (Service):** The SaaS (software as a service) based online service (formerly known as Power BI for Office 365, now referred to as PowerBI.com or simply Power BI).

**Power BI Mobile Apps:** The Power BI Mobile apps for Android and iOS devices, as well as for Windows phones and tablets.

**Power BI Gateways:** Gateways used to sync external data in and out of Power BI.

**Power BI Embedded:** Power BI [REST API](https://en.wikipedia.org/wiki/REST_API) can be used to build dashboards and reports into the custom applications that serves Power BI users, as well as non-Power BI users.

**Power BI Report Server:** Provides a localized way for storing and managing Power BI reports.

**Power BI Visuals Marketplace:** A marketplace of custom visuals and R-powered visuals

1. Power Apps in SharePoint

**Microsoft Power Apps** is a new platform to create line of business mobile applications that can be built in minutes without the need of writing code (also known as No-code/Low-Code platform) or worrying about all the complexity involved in writing cross platform applications that support iOS, Android, Windows Phone, Windows and the web.

**Power Apps allows** you to easily build applications that connect to several data sources, including SQL databases, SharePoint lists, Excel Spreadsheets, Office 365, Dynamics CRM, OneDrive, Dropbox, Google Drive, Trello, Facebook, Twitter, Wunderlist, and more. But more importantly it includes a new secure business database called the Microsoft Common Data Model.

**Power Apps** provides a very powerful and yet simple experience that allows you to build applications with rich mobile capabilities such as access to Camera, GPS, etc. while providing a modeling experience as simple as Microsoft PowerPoint and providing a familiar way to express logic like Microsoft Excel.

**PowerApps Limitations as an InfoPath Alternative**

**PowerApps** is the designated replaceent for InfoPath for scenarios like custom forms on SharePoint lists. But we’ve identified some **PowerApps** limitations that make it unsuitable to replace InfoPath, for example, if you need external users, offline work, XML files, or to print or archive your forms.

<https://www.skylinetechnologies.com/Blog/Skyline-Blog/December_2017/moving-infopath-powerapps-questions-answers>

1. SharePoint Framework

**The SharePoint Framework (SPFx)** is a page and web part model that provides full support for client-side SharePoint development, easy integration with SharePoint data, and support for open source tooling. With the SharePoint Framework, you can use modern web technologies and tools in your preferred development environment to build productive experiences and apps that are responsive and mobile-ready from day one.

The SharePoint Framework works for SharePoint Online and soon also for on-premises (SharePoint 2016 Feature Pack 2).

**Key features of the SharePoint Framework include the following:**

* It runs in the context of the current user and connection in the browser. There are no iFrames for the customization (JavaScript is embedded directly to the page).
* The controls are rendered in the normal page DOM.
* The controls are responsive and accessible by nature.
* It enables the developer to access the lifecycle in addition to render, load, serialize and deserialize, configuration changes, and more.
* It is framework-agnostic. You can use any JavaScript framework that you like: React, Handlebars, Knockout, Angular, and more.
* The toolchain is based on common open source client development tools such as npm, TypeScript, Yeoman, webpack, and gulp.
* Performance is reliable.
* End users can use SPFx client-side solutions that are approved by the tenant administrators (or their delegates) on all sites, including self-service team, group, or personal sites.
* SPFx web parts can be added to both classic and modern pages.

**Why the SharePoint Framework?**

SharePoint was launched as an on-premises product in 2001. Over time, a large developer community has extended and shaped it in many ways. For the most part, the developer community followed the same patterns and practices that the SharePoint product development team used, including web parts, SharePoint feature XML, and more. Many features were written in C#, compiled to DLLs, and deployed to on-premises farms.

That architecture worked well in environments with only one enterprise, but it didn’t scale to the cloud, where multiple tenants run side-by-side. As a result, we introduced two alternative models: client-side JavaScript injection, and SharePoint Add-ins. Both of these solutions have pros and cons.

**SharePoint Framework**

Historically, we created web parts as full trust C# assemblies that were installed on the cloud servers. However, current development models for the most part involve JavaScript running in a browser making REST API calls to the SharePoint and Office 365 back-end workloads. C# assemblies don’t work in this world. We needed a new development model. The SharePoint Framework is the next evolution in SharePoint development.

1. Microsoft Flow

Microsoft Flow **is a cloud-based software tool that allows employees to create and automate workflows across multiple applications and services** without the need for developer help. Automated workflows are called flows. To create a flow, the user specifies what action should take place when a specific event occurs.

**HOW IS FLOW DIFFERENT FROM SHAREPOINT DESIGNER?**

**SharePoint Designer** is purely a SharePoint-specific tool. However, its workflow capability does not allow for easy interface with other applications. Also, creating a workflow in SharePoint Designer is not something one can do on Day 1. You really need to learn the syntax, all the quirks of SharePoint Designer and spend countless hours debugging and tweaking the code.

**Microsoft Flow,** on another hand, employs a graphical user interface that allows building workflows almost the same way you would be building them in Visio. What makes the Microsoft Flow unique is that your workflow can interact with other applications like MailChimp, DropBox, Twitter, SharePoint, and OneDrive.

1. SharePoint Migration

## Your guide to migrating to SharePoint Online

A [SharePoint migration](https://en.share-gate.com/sharepoint-migration) is, fundamentally, about moving three things. The first two are easy, the third is the tricky part:

1. **Content**: all your files, data and documents
2. **Structure**: all your customizations and workflows, plus existing permissions
3. **People**: getting employees to adapt to the new platform

### **Moving content:**

### Migrating content to SharePoint online should begin with a review of your existing libraries and data.

**The second part of content migration** is, well, the migration itself. There are [multiple](https://support.office.com/en-gb/article/Migrate-to-SharePoint-Online-d8c6ce52-f8a2-4661-97f7-45e49351bdb9?ui=en-US&rs=en-GB&ad=GB) ways you can do this:

* **Manual migration**: upload content directly to SharePoint Online by connecting your existing SharePoint libraries with SharePoint Workspace. From SharePoint Workspace, content will automatically sync with SharePoint Online.
* **Microsoft**[**FastTrack**](https://fasttrack.microsoft.com/)**:** this is Microsoft’s service to help get you into Office 365.
* **Windows**[**PowerShell**](https://technet.microsoft.com/library/mt143608.aspx): Use PowerShell cmdlets to move content from SharePoint Server sites to Office 365
* **Third-party tools like [Sharegate](https://en.share-gate.com/" \t "_blank)**: simplify the migration experience by simply copying SharePoint Lists, Libraries, Sites, Workflows, and Documents with the click of a button.

1. **Moving structures and other technical issues:**

The key issue to consider with regards to migrating SharePoint structure to the cloud is to ask whether certain features of your on-premises environment will integrate well with the cloud.

**Be aware of SharePoint Online’s limits:** There’s a full breakdown from Microsoft here. Essentially, different plans will offer you different amounts of storage and library size limits. Usually this will be more than in SharePoint on-premises, but know what you’re letting yourself in for.

**Customizations:** be aware that, in most instances, migrating your custom code to SharePoint Online isn’t really a possibility. You should therefore prepare for life without that custom code and explore the alternatives. These might be add-ins from the Microsoft store or looking at which of the (limited possibilities) for customization in SharePoint Online are interesting for you.

**Bandwidth:** It can be easy to overlook, but your bandwidth will significantly affect how fast you can migrate to SharePoint Online. Discuss with your provider before you make the move.

1. **Moving people:**

This is the trickiest part of any migration. If employees are used to SharePoint looking and feeling a certain way, they might struggle to adapt to SharePoint Online. And this is where some change management techniques will be very useful. Key practices include:

Make people aware of the changes you’re planning on making well in advance so they can prepare to adapt.

Get c-level support: if business leaders demonstrate their support for the migration, it will be harder for people to ignore.

Adoption campaigns: whether its new training, placing posters around the office or a big launch day, developing an adoption campaign so people can learn about the new platform is best practice.

Provide a strict cut-off date for the old SharePoint on-premises site. If it’s going to be closed by the first day of next month, make sure it actually is—no ifs or buts.