

PowerApps Portals – Customization and Development



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Contents

Objective	5
Power Platform	5
PowerApps Portals	6
Benefits of Portals	7
Portals Lifecycle	8
Trial Portal	8
SUSPENDED PORTAL	8
Deleted Portal	9
Portal Architrcture	9
PORTAL SOLUTIONS	9
PORTAL METADATA	10
PORTAL WEB APP	10
POWER APPS PORTALS CAPABILITIES	11
Components of Portals	12
WEBPAGES	12
PAGE TEMPLATES	13
REWRITE	13
WEB	13
WEB FILES	14
ENTITY LISTS	14
ENTITY FORMS	15
Web page customization	15

WYSIWYG EDITOR	15
WORK WITH TEMPLATES	16
Additional use cases.....	16
PROVIDE SELF-SERVICE SUPPORT	17
BUILD A SALES PIPELINE	17
EMPOWER EMPLOYEES	17
ENGAGE MOBILE WORKFORCE	17
Portals Web API	18
SECURITY WITH THE PORTALS WEB API	18
Work with Liquid templates.....	19
Authentication in PowerApps Portals.....	20
OPEN REGISTRATION	20
LOCAL AUTHENTICATION, REGISTRATION, AND OTHER SETTINGS	21
FORGOT PASSWORD OR PASSWORD RESET	22
User management in Portals	22
CONFIGURE CONTACTS	22
INVITE CONTACTS	23
Web roles for portals	24
TABLE PERMISSIONS	24
GLOBAL ACCESS TYPE	25
CONTACT ACCESS TYPE	25
ACCOUNT ACCESS TYPE	25
SELF-ACCESS TYPE	26

PARENTAL ACCESS TYPE..... 26

Conclusion..... 27

Objective

Power Apps portals provide a great way to allow internal and external audiences to view and interact with data from Microsoft Dataverse or Dynamics 365. Through the Power Apps interface, you can build an anonymous or authenticated website that provides them with a branded, personalized, self-service experience. Power Apps portals come with a variety of preconfigured portal solutions that target diverse audiences.

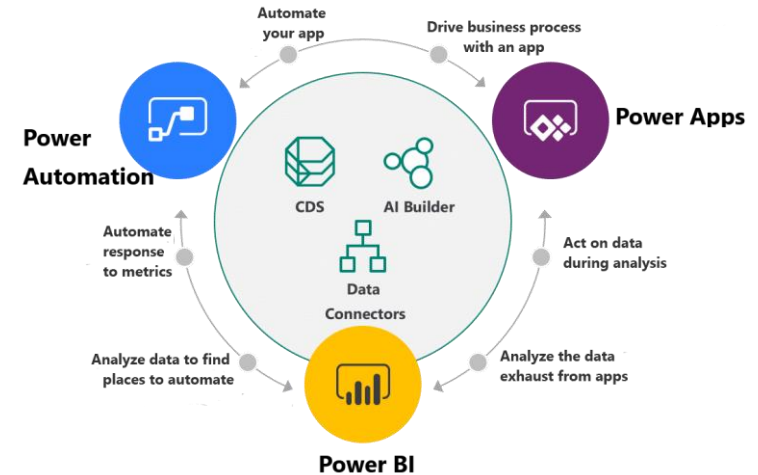
Power Apps portals provide a common set of core features to app makers to build powerful portal applications. Numerous Power Apps features map directly to Microsoft Dynamics 365 apps that are specific to particular business requirements and external audiences

Power Platform

Microsoft Power Platform is a line of business intelligence, app development, and app connectivity software applications. Microsoft developed the Power Fx low-code programming language for expressing logic across the Power Platform. It also provides integrations with GitHub and Teams.

- Power Apps
- Power Automate
- Power BI
- Power VA

Power Apps provides a rapid low code development environment for building custom apps for business needs. It has services, connectors, and a scalable data service and app platform (Microsoft Dataverse) to allow simple integration and interaction with existing data. **Power Automate** lets users create automated workflows between applications and services. It helps automate repetitive business processes such as communication, data collections, and decision approvals. **Power BI** (Business Intelligence) is a business analytics service that delivers insights for



analyzing data. **Power Virtual Agents** enables anyone to create powerful chatbots using a guided, no-code graphical interface, without the need for data scientists or developers.

Among the programs listed above, there are cross cutting features which enable Microsoft Power Platform to be leveraged to its full potential.

AI Builder lets users and developers add AI capabilities to the workflows and Power Apps they create and use. **Microsoft Dataverse** is a scalable data service and app platform which lets users securely store and manage data from multiple sources and integrate that data in business applications using a common data model to ensure ease and consistency to users. **Connectors** enable you to connect apps, data, and devices in the cloud. Consider connectors the bridge across which information and commands travel.

PowerApps Portals

Power Apps Portals is part of the Microsoft Power Platform and enables businesses to create low-code, responsive, personalized websites that allow users (both internal and external) to interact with selective Dynamics 365 data and capabilities.

- Power Apps makers can now create a powerful new type of experience: external-facing websites.
- These external-facing websites allow
 - Users outside their organizations to sign in with a wide variety of identities.
 - Users to create and view data in Microsoft DataVerse.
 - To even browse content anonymously.
- The full capabilities of Dynamics 365 Portals, previously offered only as an add-on to customer engagement apps are now available standalone in Power Apps.
- After the launch of Power Apps portals, all Dynamics 365 Portals are now referred to as **Power Apps portals**.



BENEFITS OF PORTALS

- PowerApps portal enables anonymous or commercial authentication providers like LinkedIn, Microsoft, Facebook, and Google to offer internal and external users' safe access to your data.
- With customizable portal templates and responsive themes, you can easily match websites to the look and feel of your branding.
- Using an intuitive interface and step-by-step instructions, external users and collaborators may build and manage the content.
- No code is needed.
- Bringing data from your applications into Microsoft DataVerse.
- Let users interrelate with data whenever and wherever they want.

We provide consulting services for Power Apps Portals to all tech companies and bring decades of combined Microsoft consulting experience.

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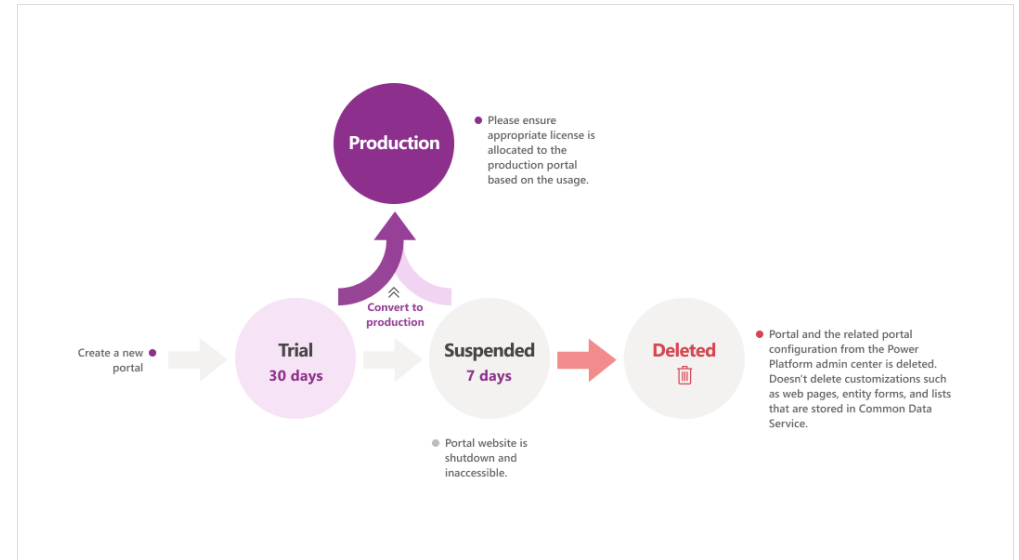


PORTALS LIFECYCLE

- A portal is always created as a trial which expires after 30 days.
- A trial portal is useful for trying out its capabilities at no cost.
- After it expires, the portal is suspended and shut down.
- Seven days after it's suspended, the trial portal is deleted.
- An administrator can convert a trial or suspended portal to a production portal.
- A trial portal cannot be converted to a production portal in a trial environment.

Trial Portal

- Every portal begins as a trial portal that expires after 30 days.
- It can be converted to a production portal from the Power Apps Portals admin center.
- To convert a trial portal to a production portal, the environment should have required add-ons for external users or a license for internal users.



SUSPENDED PORTAL

- PowerApps portals admin center keeps showing notifications about the expiration of trial portal
- If not converted to production portal within this period, portal is shut down and placed in suspended status.
- Once expired, the portal can't be accessed.
- However, it can still be converted to production within seven days of suspension.

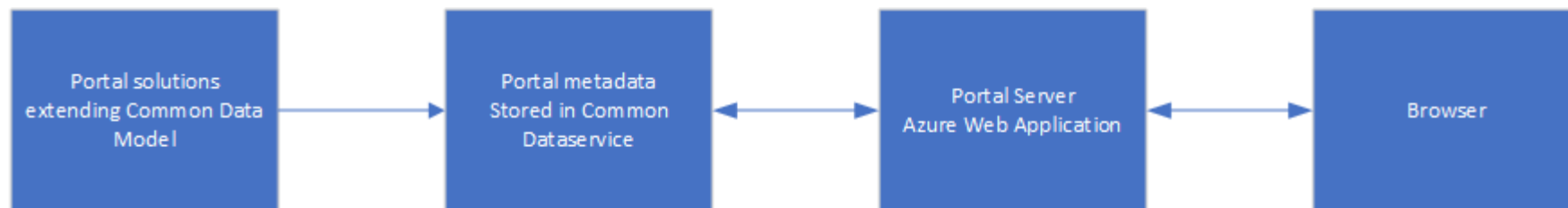
Deleted Portal

- The portal is deleted if not converted to production within seven days of suspension.
- The portal data remains in the environment.
- The space taken by the portal is released.
- That space can be used to create a new portal.

PORTAL ARCHITECTURE

A Microsoft PowerApps Portal that is provisioned in a Dataverse environment is composed of three main components

- Portal solutions
- Portal metadata
- Portal web app



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PORTAL SOLUTIONS

Numerous Dataverse solutions are installed in the environment.

- These solutions contain a model-driven portal management app, entities, forms, views, and processes to store and manage the portal metadata.
- Additional solutions are installed to enable the functionality of specific templates.

- Solutions contain several actions, workflows, and plug-ins that are deployed to automate the creation of specific portal records and assist with the management of portal users.

PORTAL METADATA

- Power Apps portal metadata will describe the
 - portal website
 - webpages
 - web templates
 - content snippets
 - entity forms
 - entity lists
 - site settings
 - configuration data.
- A portal maker can add, modify, or delete portal metadata to specifically configure a portal application by using the Power Apps portals Studio
- The Portal Management app and the legacy front-side editing tools can also be used.

PORTAL WEB APP

- A Microsoft Azure web app is configured to run the portal site by using portal solutions and metadata.
- The web app is automatically configured in the same region as the Common Data Service environment.
- This web app is accessible through the unique URL that is specified during the provisioning process.
- The web app is not customizable.
- Portal administrators have several configuration options available to them
- For example, they can configure the portal web app to capture detailed diagnostics logs for troubleshooting purposes.

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



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POWER APPS PORTALS CAPABILITIES

All the differentiating features of Power Apps are also the features of Portals including the following

- Centralized management
- Common Data Model
- Roles and permissions
- Forms and views
- Business rules
- Declarative workflows and actions
- Plug-in architecture
- Integration with other services
- DataVerse extensibility
- Audit

Following table describes key capabilities of portals

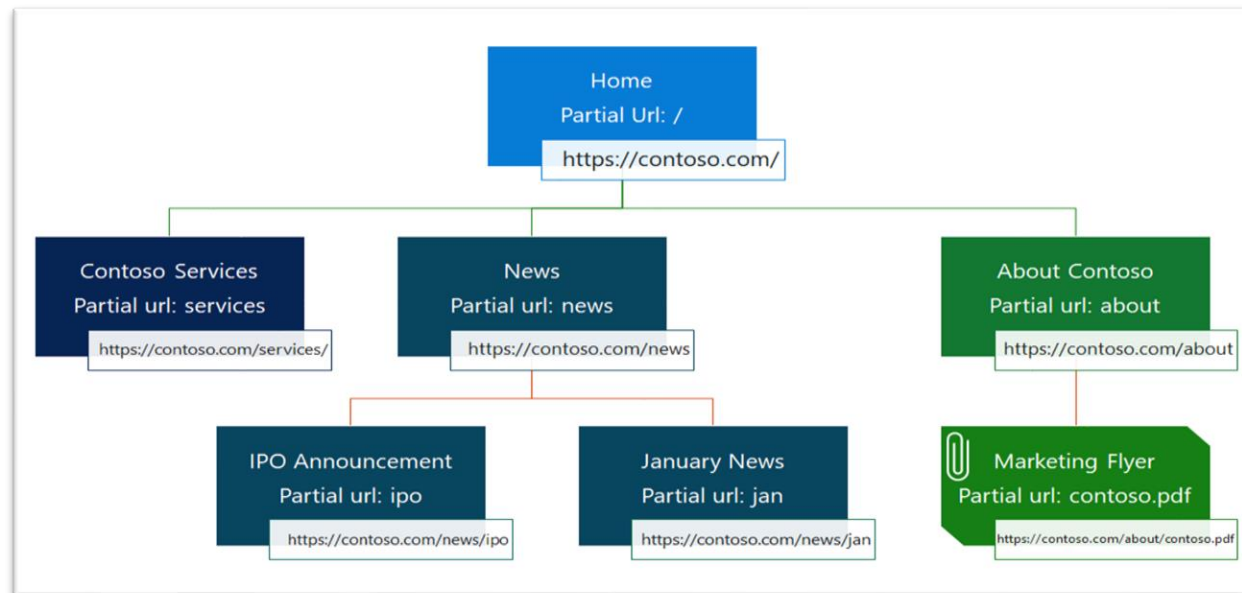
POWER APPS PORTALS CAPABILITIES		
Capability icon	Capability	Description
	Content	Seamless, responsive, and customizable web design for any user on any device. Full tracking and context are available because Common Data Service is the operating system for all interactions.
	Functionality	Quickly build more secure, functional websites to interact with Common Data Service with no coding required. Track customer interactions across all channels and capture them in a custom Power Apps or Dynamics 365 instance.
	Extensibility	Use powerful Microsoft Power Platform business processes that are natively extended through the web front end. Integrate portals with other systems like SharePoint or Power BI. Extend portals with custom development to cater to complex scenarios.
	Security	All data that is used to build portal content is protected more through the Common Data Service security model. Power Apps portals extend this model to help secure and tailor the content for the target audiences who are not Common Data Service users.

COMPONENTS OF PORTALS

Portals have following core components

WEBPAGES

- Most of a portal's content is represented by webpages.
- A webpage represents a particular URL in a portal's website.
- It is one of the core entities of the portal's content management system.
- Through parent and child relationships to other webpages, this entity forms the hierarchy of a website, that is, its site map.
- Webpages also form the basis for including other, specialized entity types in the portal site map.
- They include web files, shortcuts, forums, ideas, and blogs.
- Each of these records has a relationship with a parent page.
- This relationship defines the URL and where the entries are located on the portal site map.
- There is also the option to add different components to the webpage like headers etc.



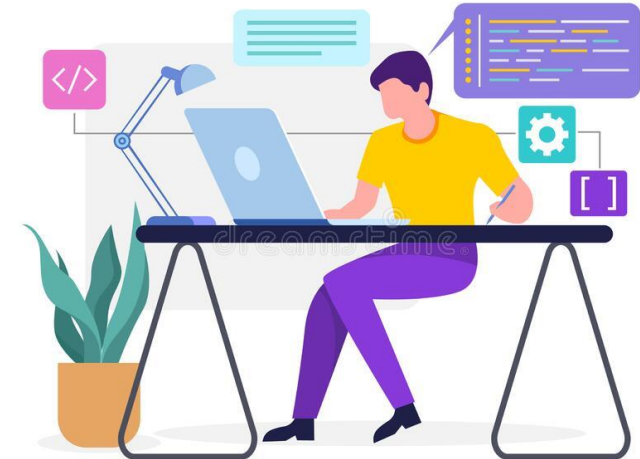
PAGE TEMPLATES

A webpage record does not define how the page looks when it is rendered on the portal. Instead, it's linked to the Page template record that defines the layout and the behavior. The two types of templates that can be used in Power Apps portals are:

- Rewrite
- Web

REWRITE

- These templates use specialized server-side processing
- Specific to the behavior that is required by some of the components such as
 - Polls
 - Forums
- These templates are also used to handle special pages such as
 - An error page
 - Site map
 - Search
- You can't create new or edit existing rewrite templates



WEB

- The linked layout template defines how the content of the page is rendered for output.
- These templates can be edited as required.

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WEB TEMPLATE

- Web templates use liquid templating language to define how the content is processed and rendered.
- Templates are flexible.
- A template can reuse other templates for parts of the content.
- A template can also be based on another template, extending the base functionality.
- Web templates can be used to define
 - An entire webpage,
 - A part of a page,
 - Common elements such as the site header and footer.
- This approach creates a consistent appearance throughout the portal and helps make it easy to modify the appearance.
- Existing web templates can be edited in the Portals Studio.



WEB FILES

- Web files provide access to inline or downloadable content.
- Though similar to webpages with similar properties, web files do not use templates.
- Instead, when the file is requested, the attached content is delivered.
- The content can be stored as a Note with an attachment.
- It can also be stored in Microsoft Azure Blob storage.
- Using Azure storage requires additional configuration, but it is more cost-efficient if the organization deals with numerous documents.
- Web files are used to deliver content such as documents for example, an annual report.
- They are also used to store essential site content like Cascading Style Sheets (CSS) and JavaScript files.
- Images that are displayed on portal webpages can also be stored as web files.

ENTITY LISTS

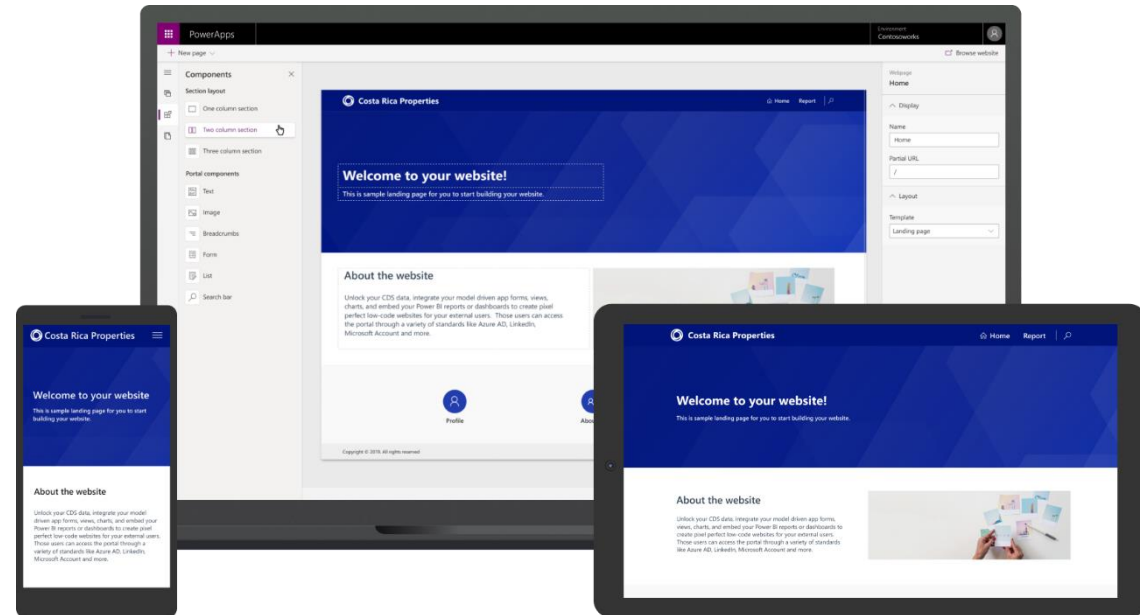
- Entity lists define how the list of DataVerse records is displayed on portal pages.
- They are defined by one or more model-driven Power Apps views.
- They include functionality like filtering and sorting.
- Entity lists can also have actions associated with them to enable Create/Edit/Read abilities and to trigger workflows.
- Display formats include traditional grid lists, calendar, or map, and spreadsheet download.

ENTITY FORMS

- Entity forms add the ability for portal pages to interact with records in a specific entity.
- It is done by using a model-driven Power Apps form definition as a layout template.
- Form mode can be read-only, insert, or edit.
- This mode defines if the form is used to generate a layout, capture the data, or provide full editing capabilities by using the Common Data Service entity record.

Examples of the types of capabilities that are defined in Form mode include:

- Informational pages about employees, products, or any other DataVerse entity.
- Data capture from either anonymous or authenticated users, for example, using a Contact us page to record leads in Dynamics 365 Sales or using a survey page to collect product feedback from customers.
- Support pages that provide read-write access to the customers' cases.
- Profile self-management for customers.
- An alternative user interface for employees that provide required functionality without the need to deploy canvas-based Power Apps.
- Any other scenario where data from Dataverse needs to be accessed, displayed, captured, and processed by using the portal.

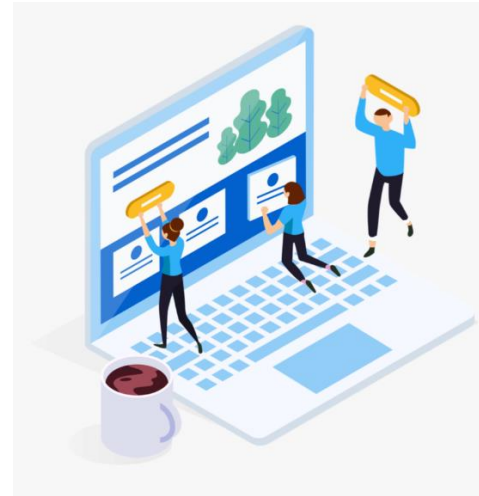


WEB PAGE CUSTOMIZATION

WYSIWYG EDITOR

After adding the required webpages and managing their hierarchy in the sitemap, you can add various components. The WYSIWYG (What You See Is What You Get) editor allows you to add and edit the required components on the canvas easily. You can add and edit the following components on the canvas:

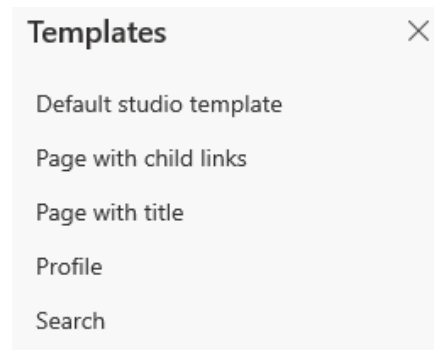
- Sections
 - One column section
 - Two columns section
 - Three columns section
- Components
 - Text
 - Image
 - IFrame
 - Form
 - List
 - Breadcrumb
 - Custom menu
 - Use code editor
 - Power BI



WORK WITH TEMPLATES

The built-in templates are available according to the portal you provision. You can edit the templates by using the code editor. For example, the following built-in templates are available when you provision a DataVerse starter portal:

- Default studio template
- Page with title
- Page with child links



ADDITIONAL USE CASES

Some additional use cases for companies using Portals are as follows

PROVIDE SELF-SERVICE SUPPORT

- When a company's business is growing, rather than having to employ extra staff in call centers.
- The company could use Power Apps portals to add self-service capabilities to their business website.
- This will allow the customers to
 - Search knowledge articles
 - Engage with other customers
 - Find answers
 - Create support cases when needed (that go directly into Dynamics 365 Customer Service), all without any interaction with company's resources.



BUILD A SALES PIPELINE

- When a lead fills out a Contact us form on company's website, this information is recorded in Dynamics 365 Sales.
- This record can then become part of the company's sales pipeline automatically.

EMPOWER EMPLOYEES

- When an employee needs a new computer, they can fill out an online form
- This information will be recorded in DataVerse.
- The helpdesk staff can immediately access and process this information.

ENGAGE MOBILE WORKFORCE

- Empower agents on any device, wherever they work.
- Field technicians can process and complete work orders in the field, instantly updating Dynamics 365 Field Service.



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PORTALS WEB API

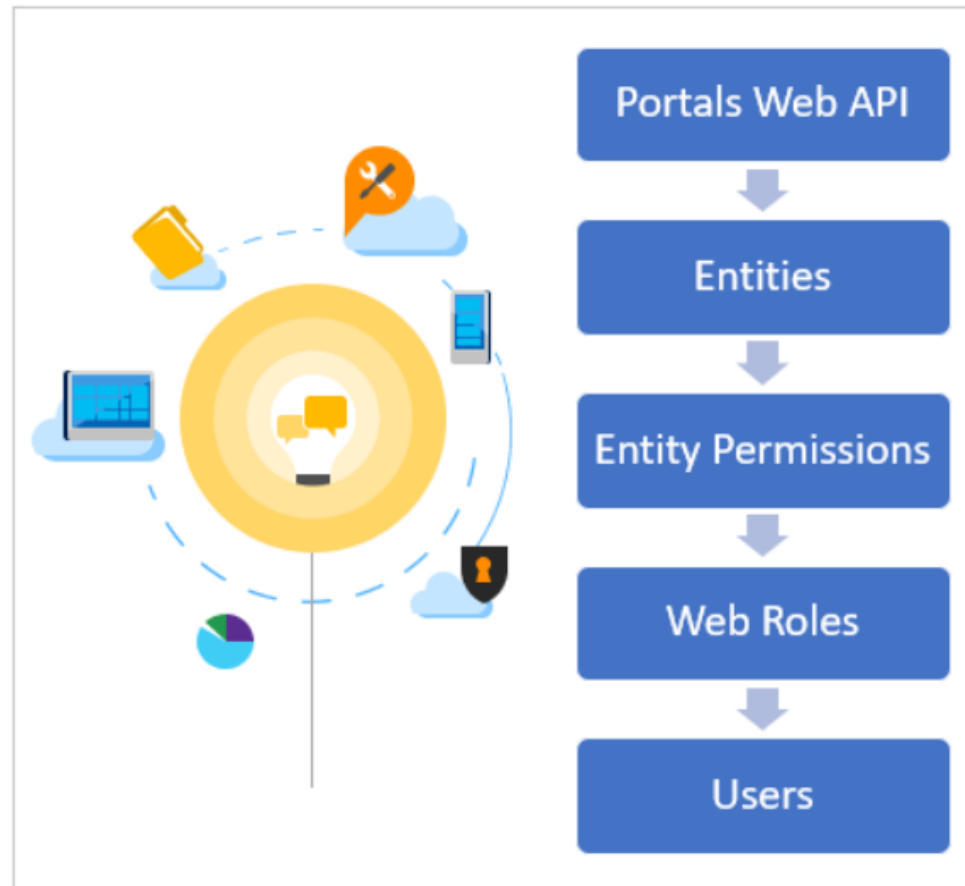
The portals Web API enables building a richer user experience inside Power Apps portals pages.

- You can use the Web API to perform
 - Create
 - Read
 - Update
 - Delete operations across all Microsoft DataVerse tables from your portals pages.
- For example, you can
 - Create a new account
 - Update a contact
 - Change the table permissions for a product by using the portals Web API instead of the Portal Management app.



SECURITY WITH THE PORTALS WEB API

- Record-based security to individual records in portals can be configured by using table permissions.
- The portals Web API accesses table (entity) records.
- It also follows the table permissions given to users through the associated web role.
- Column permissions can be configured to further define privileges to individual columns within a table while using the portals Web API.



WORK WITH LIQUID TEMPLATES

Liquid is an open-source template language integrated into portals. It can be used to add dynamic content to pages, and to create a wide variety of custom templates. Using Liquid, you can:

- Add dynamic content directly to the Copy field of a webpage or the content of a content snippet.
- Store source content by using web templates, entirely through configuration within Power Apps, for use throughout the Power Apps portals content management system.
- Render a website header and primary navigation bar, entirely through configuration within Power Apps.
- Make changes to the pages through the code snippet area available at `</>`.
- Create logic and control flow for templates using tags that are denoted by `{% and %}`
- Display anything on the screen using `{{ and }}`.

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AUTHENTICATION IN POWERAPPS PORTALS

In Power Apps portals, each authenticated portal user is associated with a contact record in Microsoft DataVerse.

- Portal users must be assigned to web roles to gain permissions beyond unauthenticated users.
- To configure permissions for a web role, configure its webpage access and website access control rules.
- Portals allows portal users to sign in with their choice of an external account based on ASP.NET Identity.
- Though not recommended, portals also allow a local contact membership provider-based account for users to sign in.



OPEN REGISTRATION

- Portal administrators have several options for controlling account sign-up behavior.
- Open registration is the least restrictive sign-up configuration, where the portal allows a user account to be registered by providing a user identity.

- Alternative configurations might require users to provide an invitation code or valid email address to register with the portal.
- Whatever the registration configuration, both local and external accounts participate equally in the registration workflow.
- Users can choose which type of account they want to register.



[LOCAL AUTHENTICATION, REGISTRATION, AND OTHER SETTINGS](#)

The portals feature provides authentication functionality built on the ASP.NET Identity API. ASP.NET Identity is in turn built on the OWIN framework, which is also an important component of the authentication system. The services provided include:

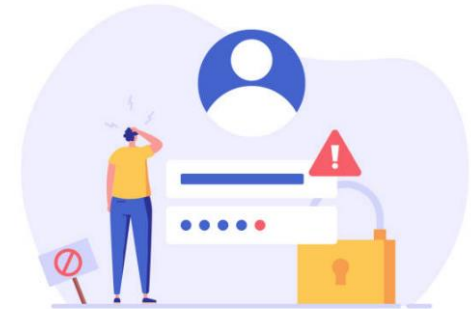
- Local (username/password) user sign-in
- External (social provider) user sign-in through third-party identity providers
- Two-factor authentication with email
- Email address confirmation
- Password recovery
- Invitation code sign-up for registering prepopulated contact records

FORGOT PASSWORD OR PASSWORD RESET

Returning visitors who require a password reset (and have previously specified an email address on their user profile) can request a password reset token to be sent to their email account. A reset token allows its owner to choose a new password. The token can also be abandoned, leaving the user's original password unmodified.

Related process: Send a password reset to a contact

- Customize the email in the workflow as necessary.
- Submit the email to invoke the process.
- The visitor is prompted to check email.
- The visitor receives the password reset email with instructions.
- The visitor returns to the reset form.
- The password reset is complete.



USER MANAGEMENT IN PORTALS

CONFIGURE CONTACTS

After filling out the basic information for a contact, go to the web authentication tab on the portal contact form to configure a contact by using local authentication. To configure a contact for portals by using local authentication, follow these instructions:

- Enter a username.
- On the command ribbon, go to More Commands > Change Password.

Complete the change password workflow, and the necessary fields will be automatically configured. When you have done this, your contact will be configured for your portals.

INVITE CONTACTS

- Use the invitation feature of portals to invite contacts to your portal through automated email(s) created in your Microsoft DataVerse.
- The people you invite receive an email, fully customizable by you, with a link to your portal and an invitation code.
- This code can be used to gain special access configured by you.
- With this feature you have the ability to:
 - Send Single or Group Invitations
 - Specify an expiry date if desired
 - Specify a user or portal contact as the inviter if desired
 - Automatically assign the invited contact(s) to an account upon invite redemption
 - Automatically execute a workflow upon invite redemption
 - Automatically assign the invited contact(s) to a Web Role(s) upon redemption
- Invitation redemption can be accomplished using any of our many authentication options.
- The user will adopt any settings provided by the administrator upon redemption.
- An Invite Redemption Activity will be created for the Invite and Contact.

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WEB ROLES FOR PORTALS

- After a contact has been configured to use the portal, it must be given one or more web roles.
- These web roles allow contacts to perform any special actions or access any protected content on the portal.
- For example, to access a restricted page, the contact must be assigned to a role to which read for that page is restricted to.
- To publish new content, the contact must be placed in a role which is given content publishing permissions.



TABLE PERMISSIONS

- To apply security in portals to individual records, use table permissions.
- You add table permissions to web roles so you can define roles in your organization.
- These roles correspond logically to the privileges and concepts of record ownership and access.
- Remember that a given contact can belong to any number of roles, and a given role can contain any number of table permissions.



GLOBAL ACCESS TYPE

- If a Table Permission record with Read rights is granted to a role that has the Global access type, any contact in that role will have access to all records of the defined table.
- For example, they can see all leads, all accounts, and so on.
- This permission will be automatically respected by any lists.
- Will essentially show all records according to the Microsoft DataVerse views that have been defined for that list.
- Further, if a user attempts to access a record via a basic form that they don't have access to, they'll receive a permission error.

CONTACT ACCESS TYPE

With Contact access type, a signed-in user in the role for which the permission record is defined will have the rights granted by that permission only for records that are related to that user's Contact record via a defined relationship.

- On a list, this access type means that a filter will be added to whatever Microsoft DataVerse views are surfaced by that list.
- This only retrieves records directly linked to the current user.
- Depending on the scenario, this relationship can be thought of as ownership or management rights.

ACCOUNT ACCESS TYPE

With Account access type, a signed-in user in the role for which the permission record is defined will have the rights granted by that permission only for records that are related to that user's Parent Account record via a defined relationship.

- This access type means that the list will only show the records of the selected table that are associated to the user's Parent Account.
- For example, if a table permission allows Read access to a Lead table with the Account access type, the user having this permission can view all the leads of only the Parent Account of the user.

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SELF-ACCESS TYPE

- Self-access type allows you to define the rights a user has to their own Contact (Identity) record.
- Users can use basic forms or advanced forms to make changes to their own Contact record linked with their profile.
- The default profile page has a special built-in form that allows any user to change their basic contact info, and opt in or out of marketing lists.
- If this form is included in your portal (which it is by default), users won't require this permission to use it.
- However, they'll require this permission to use any custom basic forms or advanced forms that target their User Contact record.

PARENTAL ACCESS TYPE

In the most complex case, permissions are granted for a table that's a relationship away from a table for which a Table Permission record has already been defined. This permission is actually a Child record of the Parent Table Permission.

- The Parent Permission record defines a permission and access type for a table.
- That table might be related to a Contact (if there's Contact access type) or globally defined.
- With that permission in place, a Child permission is created that defines a relationship from another table to the table defined in the parent relationship.

CONCLUSION

Power Apps portals extends Microsoft Dataverse access to external audiences such as customers, employees, or partners. This access allows businesses to extend and scale their operations as they reduce call center costs, manual processing, and resolution times while simultaneously improving user satisfaction, transparency, and scale of operations.

Power Apps portals provide a great way for an external audience to view and interact with data from Dynamics 365 and custom Microsoft Dataverse applications. Portals should be a consideration as a pillar in an organization's overall web strategy. Power Apps portals can be quickly provisioned to serve a variety of different audiences and workloads.



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