Microsoft

Workshop Power Platform for Administrators

Power Platform Environments

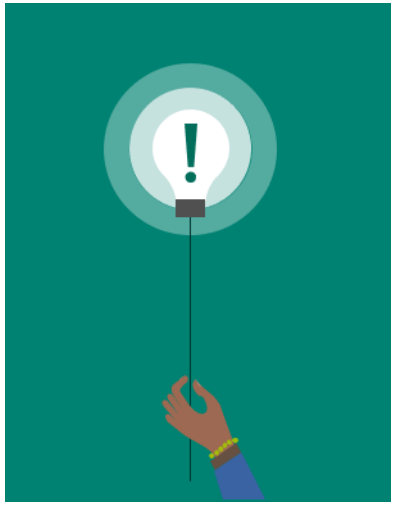
Learning Units covered in this Module

- Understanding Environments
- Environment Storage Capacity
- Environment Security
- Managing Environments

Objectives

After completing this module, you will be able to:

- Understand what Power Platform environments are
- Understand Environments storage capacity requirements and limits
- What security roles are available for Power Platform administration
- Basics about Dataverse security model and most important security roles
- How environment backup/restore/recovery works
- Lifecycle of Dataverse for Teams environment



Understanding Environments

Power Platform Environment

Definition:

Container to store, manage, and share your organization's business data, apps, flows, chatbots, and other Power Platform resources

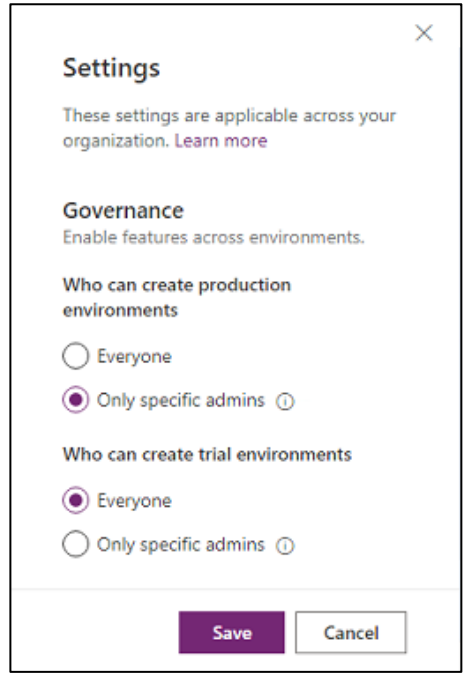
Serves as a container to separate apps that might have different roles, security requirements, or target audiences

Key facts:

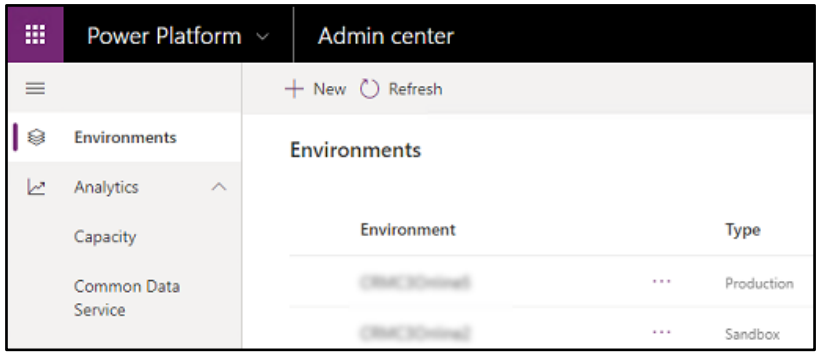
- Every tenant has a Default environment where all licensed Power Apps and Power Automate users can create apps & flows.
- Tied to a geographic location
- Different types of environment exists
- Can have either **zero** or **one** Dataverse database

Security tips:

- Non-default environments offer more permission controls.
- Non-default environment creation can be restricted to specific admins.
- Non-default and non-developer environments with Dataverse can restrict access to a specific AAD security group.



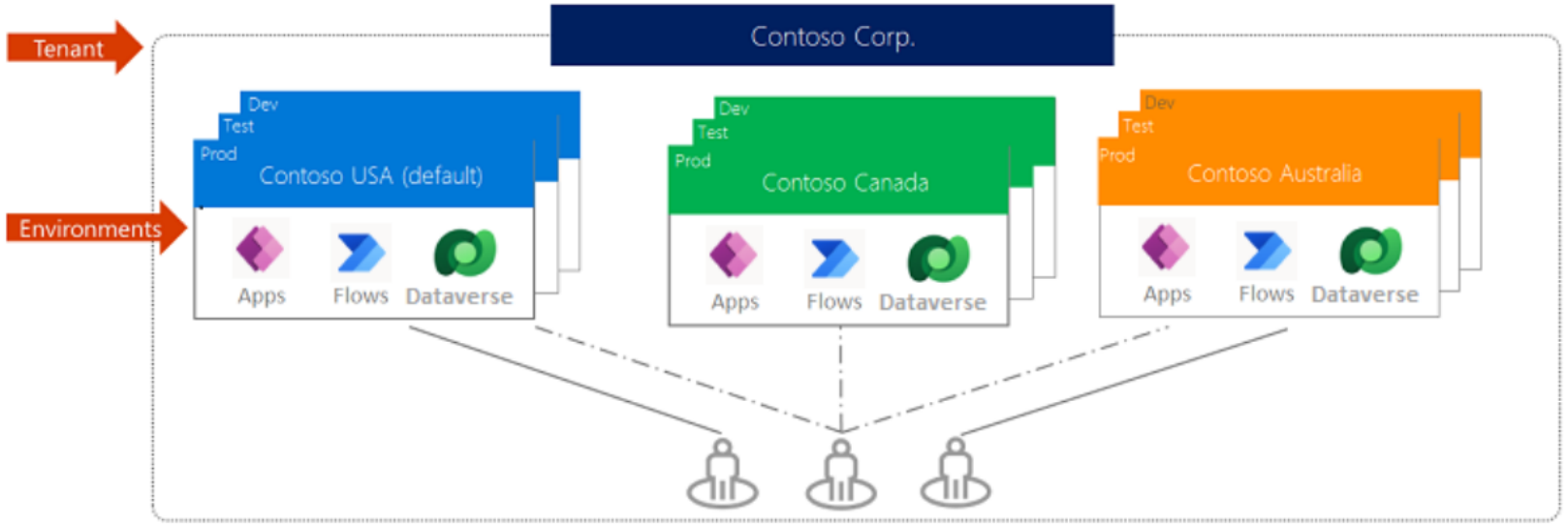
Controlling environment creation in the admin center.

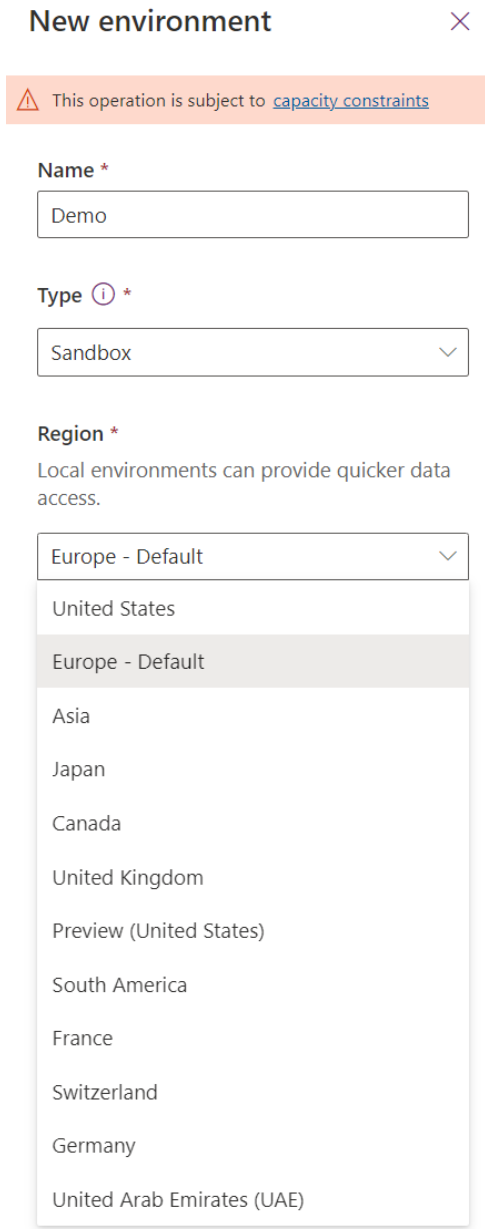


List of environments in the admin center.

Environment Scope

- Created under an Azure Active Directory tenant, and its resources can only be accessed by users within that tenant
- Any resources created in environment like apps, flows, connections, Dataverse database etc. are bound to datacenters in the geographic location selected for an environment
- Also, an app for example, created in the environment is only permitted to connect to the data sources that are also deployed in that same environment, including connections, gateways, flows, and Dataverse databases.





Environment Types

More details in upcoming slides

Type	Creator	Description
Default	Auto-created	A single default environment is automatically created for each tenant and shared by all users (who are Environment Makers).
Production	Licensed user, subject to tenant level setting	This is intended to be used for permanent work in an organization. Production environments are what you should use for any environments on which you depend.
Sandbox	Licensed user, subject to tenant level setting	Sandbox environments are used for development and testing, separate from production.
Trial	Licensed user, subject to tenant level setting	Trial environments are intended to support short-term testing needs and are automatically cleaned up after a short period of time.
Developer	Licensed user	Developer environments are created by users who have the free Power Platform Developer Plan license. They're special environments intended only for use by the owner
Dataverse for Teams	Auto-created	Dataverse for Teams environments are automatically created for a Team in Teams when you create an app in Teams using the Power Apps app for the first time or install a Power Apps app from the app catalog.
Support	Microsoft support engineer	It is an environment created in your tenant by Microsoft under your direct instructions, for purposes of preventing, detecting, or repairing problems affecting the operation of your online service.

Default environment

Definition:

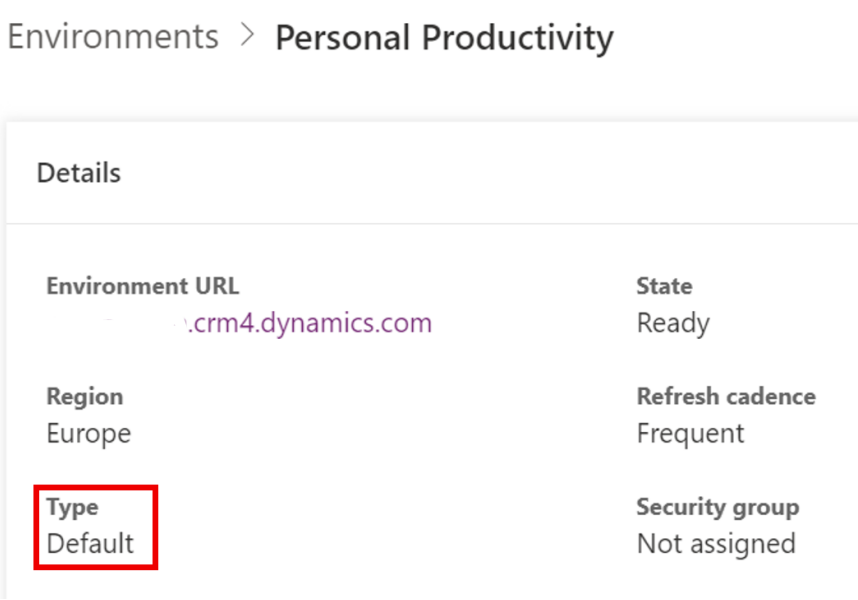
A single default environment is automatically created for each tenant and is shared by all users in the tenant (who are Environment Makers). Learn more here.

Key facts:

- Whenever a new user creates their first Power App or Power Automate flow, they're automatically added to the Environment Maker role.
- Default is not for development of critical apps.
- Can't be disabled or deleted
- You can't backup and restore the default environment.
- Limited to 32 GB of storage capacity

Security tips:

- Rename the environment to make the purpose of that environment self-explanatory like "**Personal Productivity**"
- Configure a Data Loss Prevention (DLP) policy to control the connectors that can be used by apps and flows in the default environment.



Sandbox environment

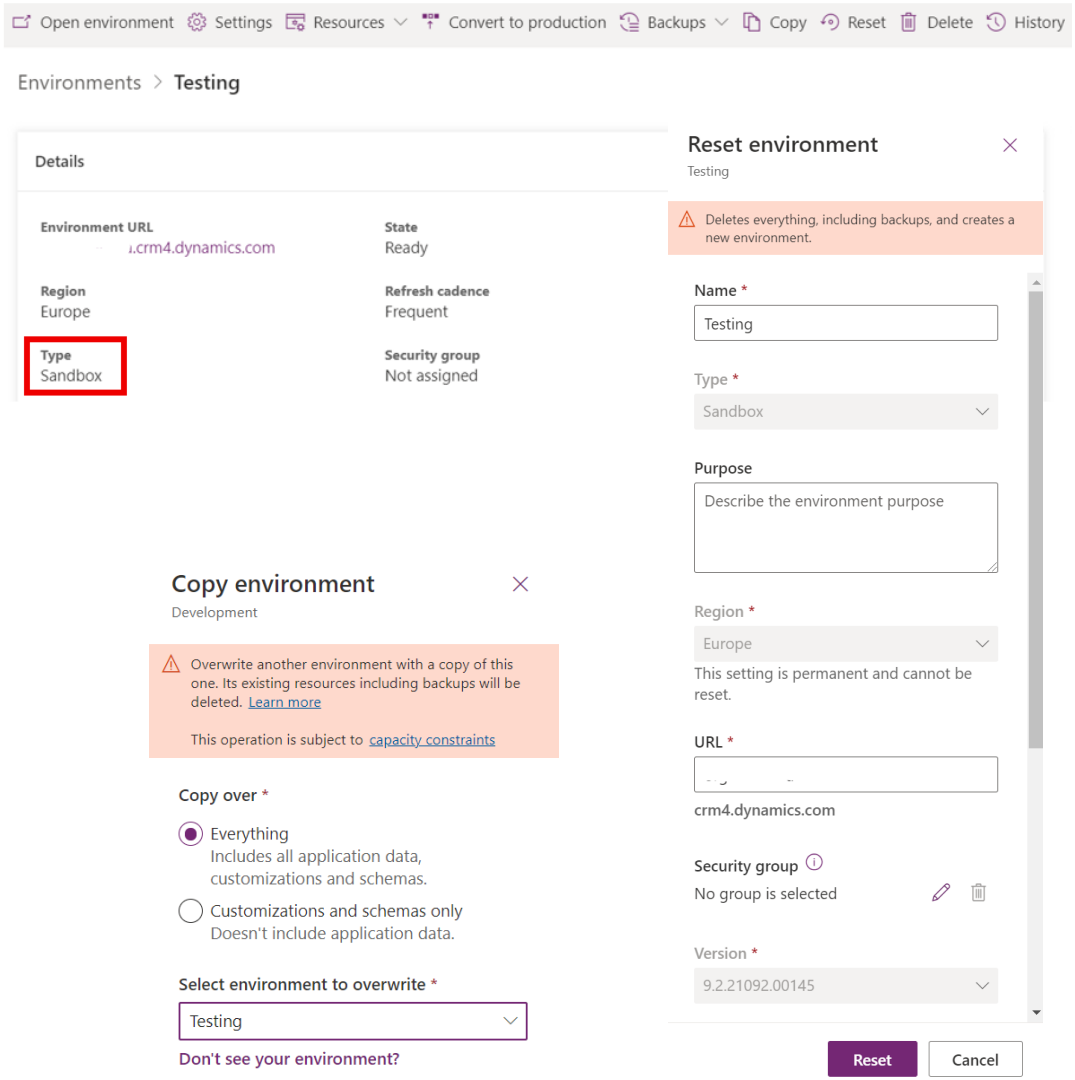
Definition:

- Is any non-production environment of Microsoft Dataverse

- Isolated from production, a sandbox environment is the place to safely develop and test application changes with low risk. Learn more here.

Key facts:

- Can be converted to Production environment
- Possible to create own backups along system backups and restore backups 7 days back in time (28 days if any Dynamics 365 app is deployed to environment)
- **Copy** Dynamics 365 customer engagement apps (Sales, Customer Service, Field Service, Marketing, and Project Service Automation), and all data between environments
- **Reset** to delete and reprovision it
  - If environment has AAD Security Group defined, then you need to set a new group during the reset.
  - Consider a reset when you want to: Create a new project, free up storage or remove personal data.



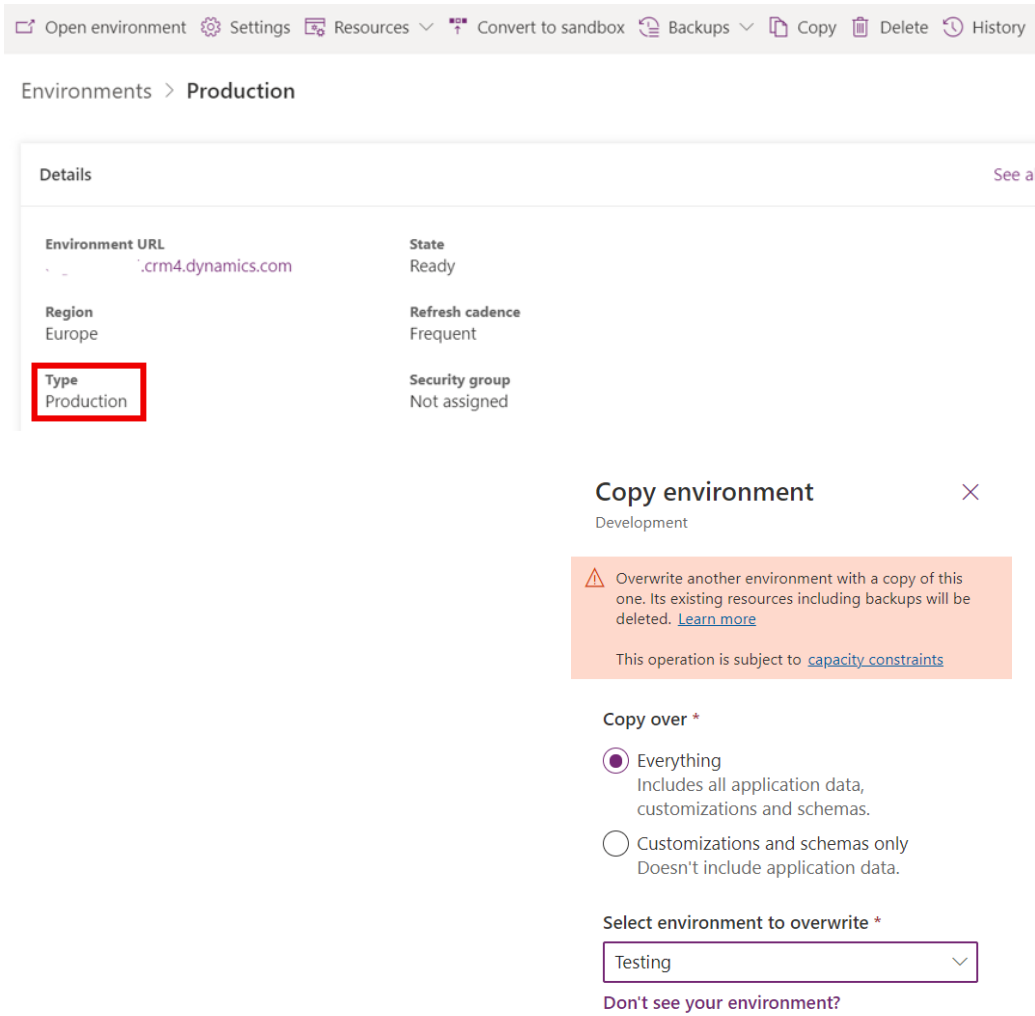
Production environment

Definition:

Environment for resources like apps, flows, chatbots etc. which are meant to be released target audience e.g., end users of a Power App

Key facts:

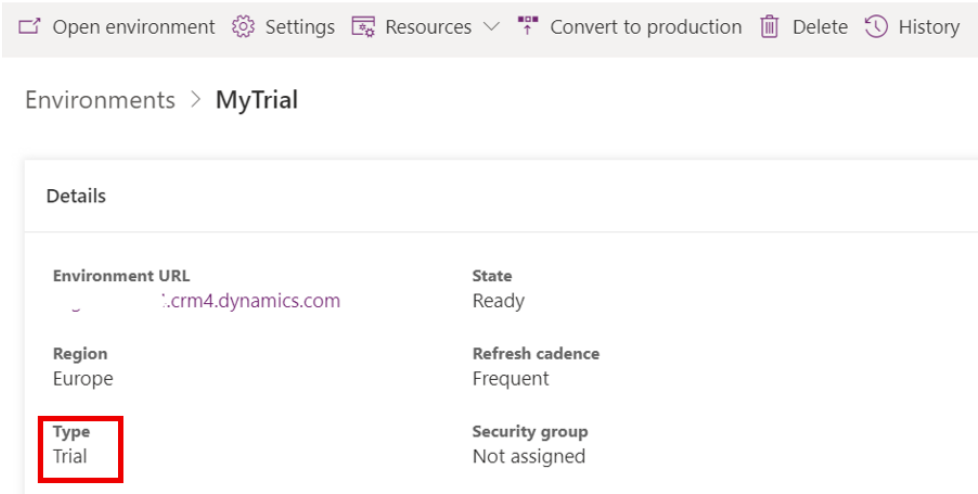
- Can be converted to Sandbox environment
- Possible to create own backups along system backups and restore backups 7 days back in time (28 days if any Dynamics 365 app is deployed to environment)
- **Copy** Dynamics 365 customer engagement apps (Sales, Customer Service, Field Service, Marketing, and Project Service Automation), and all data between environments



Trial environment

Definition:

Using trial environments, companies can try out new features and solutions. Learn more here.



Two types of trial environments:

- **Trial (standard)** - Allow users to try new features and quickly build low-code and no-code applications and processes.
- **Trial (subscription-based)** - Companies can use to develop larger, multiuser, and multiple-department solutions and perform proof-of-concept reviews. Tenant admins can add a trial (subscription-based) environment to their tenant.

Key facts:

- Users with eligible license like Power Apps per User can create **one** trial environment at a time
- Does not consume paid capacity of the tenant
- Can be converted to Production environment
- Will be automatically deleted after 30 days but can be extended for additional 30 days and 7 days before environment is set to expire
- Only one extension is allowed per trial environment.

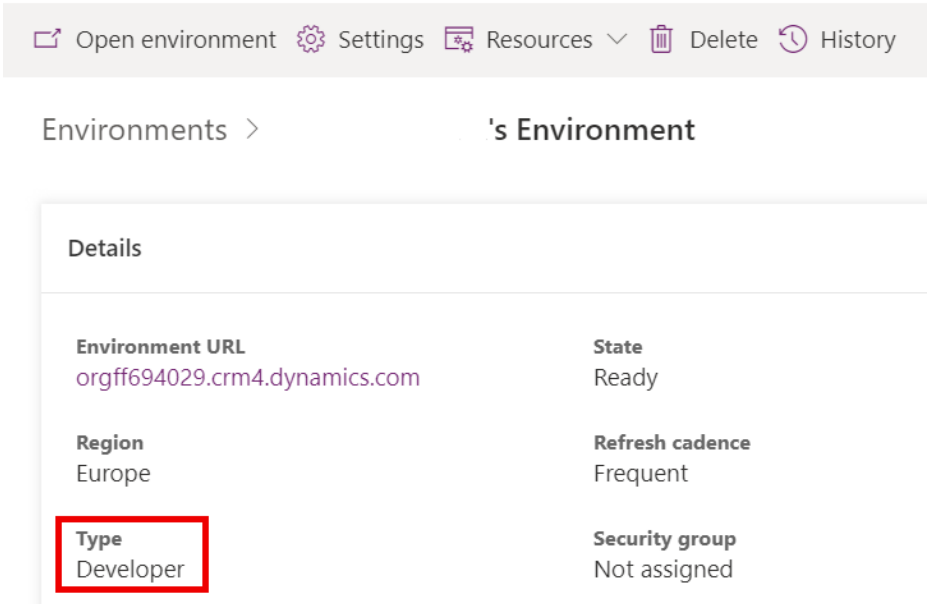
Developer environment

Definition:

You get a free developer environment to develop and test apps, including support for premium and custom connectors and Dataverse. Learn more here.

Key facts:

- Create apps and flow and share and collaborate on these solutions with others.
- Connect to any data source by using OOB connectors or by creating custom connectors.
- Use a fully managed, scalable data platform with Dataverse
- Create more environments to exercise application lifecycle management (coming soon).
- Export the solutions you create in your developer environment and publish them on Microsoft AppSource, so your customers can test-drive them.
- Not meant for production use
- Environment capacity limits are:
  - Flow runs/month – 750
  - Database size – 2GB



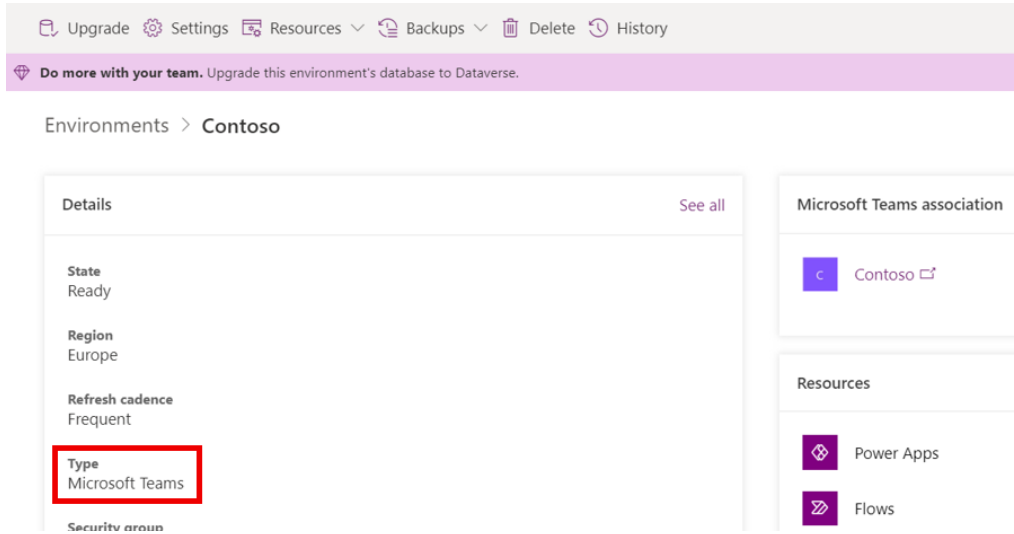
Dataverse for Teams environment

Definition:

Is automatically created for the selected team when you create an app or bot in Microsoft Teams or install a Power Apps app from the app catalog for the first time.

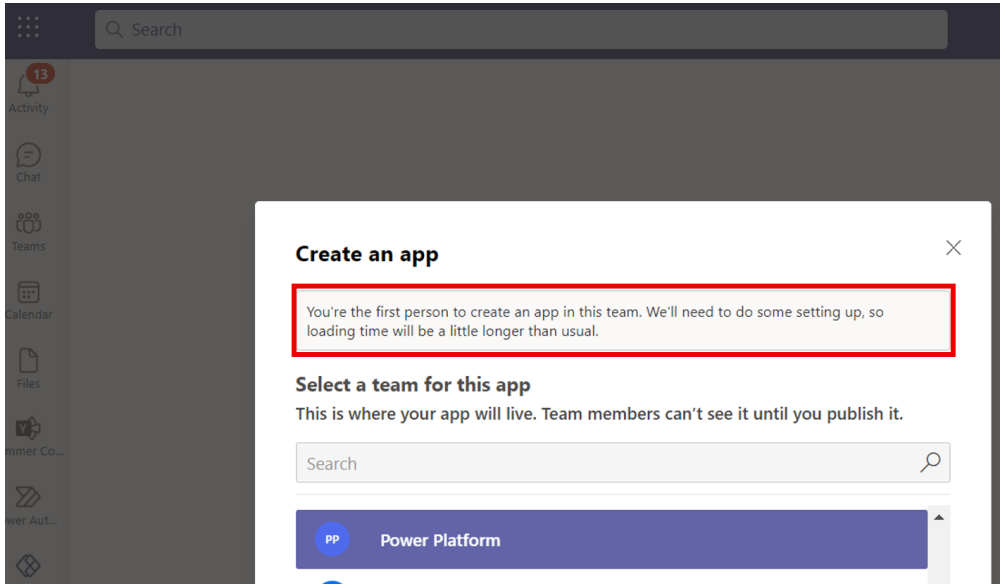
Each team can have **one** environment, and all data, apps, bots, and flows created with the Power Apps app inside a team are available from that team's Dataverse for Teams database.

Learn more here.



Key facts:

- Available as part of select Microsoft 365 subscription like E3/E5
- Possible to create own backups along system backups and restore backups 7 days back in time
- Team guests can access apps, bots, flows, and data but not able to make or edit apps-only discover and run
- Dataverse for Teams database ("light version" of Dataverse) can be upgraded to full version of Dataverse



Dataverse for Teams restrictions

- Teams can invite guests who can discover & run apps, bots, flows, and access data in the Dataverse for Teams DB within their Team. However, they won't be allowed to install, make, or edit apps.
- Dataverse for Teams Apps will only be accessible in Teams and Teams Mobile, regardless of the user's license.
- For any standalone Power Apps or Power Automate usage, which includes API access as well, the Dataverse for Teams schema will need to be promoted to Dataverse.
- No direct API access or pro developer experience will be provided, and only Power Apps embedded within the Teams client will be able to access the runtime.
- Apps created in Microsoft Teams that use Dataverse for Teams will be accessible outside of Microsoft Teams in a web browser if you have a trial or standalone Power Apps license. However, note the following:
  - Apps not displayed in make.powerapps.com or Power Apps mobile app
  - The only way to run these apps is to launch them in a web browser from Teams using Go to website or Open in browser in the Power Apps mobile app.
  - When run outside of Teams, the Teams integration object’s values won’t be available.

Create an environment

You can create environments in the Power Platform Admin Center (PPAC), PowerShell, or using Power Platform Management Connectors in Power Apps and Flows.

Environment can be created either with or without Dataverse database.

NOTE! These do not apply for Dataverse for Teams environments

To create an environment, all the following must be **true:**

- The user has a license that allows environment creation.
- Environment creation is allowed in tenant level for users (if not then allowed only for Global, Power Platform or Dynamics Admin).
- For production and sandbox environments, the tenant must have at least 1GB of database storage capacity available.
- For trial (standard) environments, the user needs a license providing per-user entitlement for trial environments (refer to the table above). This applies to tenant-level admins, as well.
- For trial (subscription-based) environments, each offer-based trial (also known as "admin trial") subscription entitles the tenant to three subscription-based trial environments. Only tenant-level admins are able to provision trial (subscription-based) environments.

License	Trial	Production
Microsoft 365 Plans	No	No
Dynamics 365 Teams Plans	No	No
Power Platform Developer Plan	No	No
Dynamics 365 trial	Yes (one)	No
Dynamics 365 Plans	Yes (one)	Yes
Power Apps plan	Yes (one)	Yes
Power Apps trial	Yes (one)	Yes
Power Virtual Agents trial plan	Yes	No
Power Virtual Agents plan	No	Yes

NOTE! Global and Power Platform Administrators can create environments without any license

Demonstration

Create a trial environment with Dataverse database

Environment Storage Capacity

Understand Environment & Dataverse capacity

- All environments with or without Dataverse will consume at least 1GB capacity.
- Power Platform admin center contains a page for viewing and managing Power Platform capacity.
- Available storage capacity is a condition for creating additional environments or increasing Dataverse data storage capacity.
- Possibility to also buy additional Dataverse storage capacity in 1GB increments

Power Apps Default Capacity per tenant	Default per user	Default per app	Accrued per user	Accrued per app
Dataverse Database capacity	10GB	5GB	250MB	50MB
Dataverse File capacity	20GB	20GB	2GB	400MB
Dataverse Log capacity	2GB	2GB	-	-

Power Automate Default Capacity per tenant	Default per user	Default per flow	Accrued per user	Accrued per flow
Dataverse Database capacity	10GB	5GB	250MB	50MB
Dataverse File capacity	20GB	2GB	2GB	200MB
Dataverse Log capacity	2GB	200MB	-	-

Power Virtual Agents Default Capacity per tenant	Default per tenant
Dataverse Database capacity	10GB
Dataverse File capacity	20GB
Dataverse Log capacity	2GB

Database Capacity
Store and manage entity definitions and data

File Capacity
Manage attachments, files, photos and videos

Log capacity
Record data changes over time for analysis & reporting purposes

Example of tenant capacity

- The first subscription of Power Apps (10GB) OR Power Automate (10GB) OR Power Virtual Agents (10GB) OR Dynamics 365 Customer Engagement provides the one-time default capacity entitlement for the tenant.
- Additional subscriptions do not add to the tenant's default capacity.
- When additional subscriptions are added to the tenant, additional Dataverse capacity may accrue to the tenant.

Example:

Let's assumed that a new customer starts by purchasing 10 Power Apps per user licenses and 20 Power Apps per app licenses. In this case, the total tenant wide pooled capacity will be as follows:

Default and Accrued Capacity Allocation	Default/ tenant	Accrued/10 Enterprise USL	Total Tenant wide capacity
Dataverse Database Capacity	10GB	10*250MB + 20*50MB = 3.5GB	10GB + 3.5GB = 13.5GB
Dataverse File Capacity	20GB	10*2GB + 20*400MB = 28GB	20GB+28GB = 48 GB
Dataverse Log Capacity	2GB	NA	2GB

Capacity enforcement

Example 1 - Overage

Database storage is over capacity, overage enforcement

Type	Entitled	Consumed
Database	100 GB	110 GB
Log	10 GB	5 GB
File	400 GB	200 GB

This tenant is 10 GB over in database usage. Despite having 200 GB excess file storage, the tenant is considered to be in **deficit**.

This tenant should free up storage or purchase more capacity.

Capacity enforcement

Example 2 - Overage

Log storage is over capacity, overage enforcement

Type	Entitled	Consumed
Database	100 GB	95 GB
Log	10 GB	20 GB
File	400 GB	200 GB

This tenant is 10 GB over in log usage and has only 5 GB available in database capacity; the tenant is considered to be in **deficit**.

This tenant should free up storage or purchase more capacity.

Capacity enforcement

Example 3 - Overage

File storage is over capacity, overage enforcement

Type	Entitled	Consumed
Database	100 GB	20 GB
Log	10 GB	5 GB
File	200 GB	290 GB

This tenant is 90 GB over in file usage. Despite having 85 GB available (80 GB database + 5 GB log) in storage capacity; the tenant is considered to be in **deficit**.

This tenant should free up storage or purchase more capacity.

Capacity enforcement

Example 4 - **No** Overage

Log storage is over capacity

Type	Entitled	Consumed
Database	100 GB	80 GB
Log	10 GB	20 GB
File	400 GB	200 GB

This tenant is 10 GB over in log usage but has 20 GB available in database capacity. Therefore, the tenant **isn't in deficit**.

Note that file storage excess entitlement can't be used to compensate deficits in log or database storage.

Dataverse for Teams Capacity Limits

- The consumption **won't** count towards the tenant's capacity limits.
- We'll provide a pool of capacity for Dataverse for Teams environments, which will be separate from the tenant's Dataverse capacity pool.
- Each Dataverse for Teams environment provides 2 GB of combined database and file storage, with a portion of this amount reserved for system use (about 512MB).

Unit	Service limit
Dataverse for Teams environments	5 environments, + 1 additional environment for every 20 eligible Microsoft 365 user licenses. Should more instances be needed, consider deleting unused environments or upgrading environments to Dataverse. Customers with more than 200,000 eligible Microsoft 365 seats should contact their Microsoft representative.
Max Dataverse for Teams environment storage per tenant	10 GB + Dataverse for Teams environments × 2 GB (up to a maximum of 19.5 TB). The 2 GB storage limit can't be extended further. Should more storage be needed, consider upgrading environments to Dataverse.
Max Dataverse for Teams environments API calls	API requests in Microsoft Power Platform consist of various actions that a user makes across various products. For more information about API calls and the per-user limits available, go to Microsoft Power Platform request entitlements.

Dataverse for Teams capacity

Environment Enforcement

- At 80% of the limit, the **Microsoft Teams users** will see in the Microsoft Teams maker experience a message informing them the capacity limit is about to be reached. At this point, customers are encouraged to either reduce storage usage or contact their admin for other options.

- At 100% of the limit, any existing apps, chatbots, and flows will continue to work, and existing apps can be updated. However, new apps, bots, flows, and tables can't be created or installed as a result of having reached the capacity limit.

Dataverse for Teams capacity

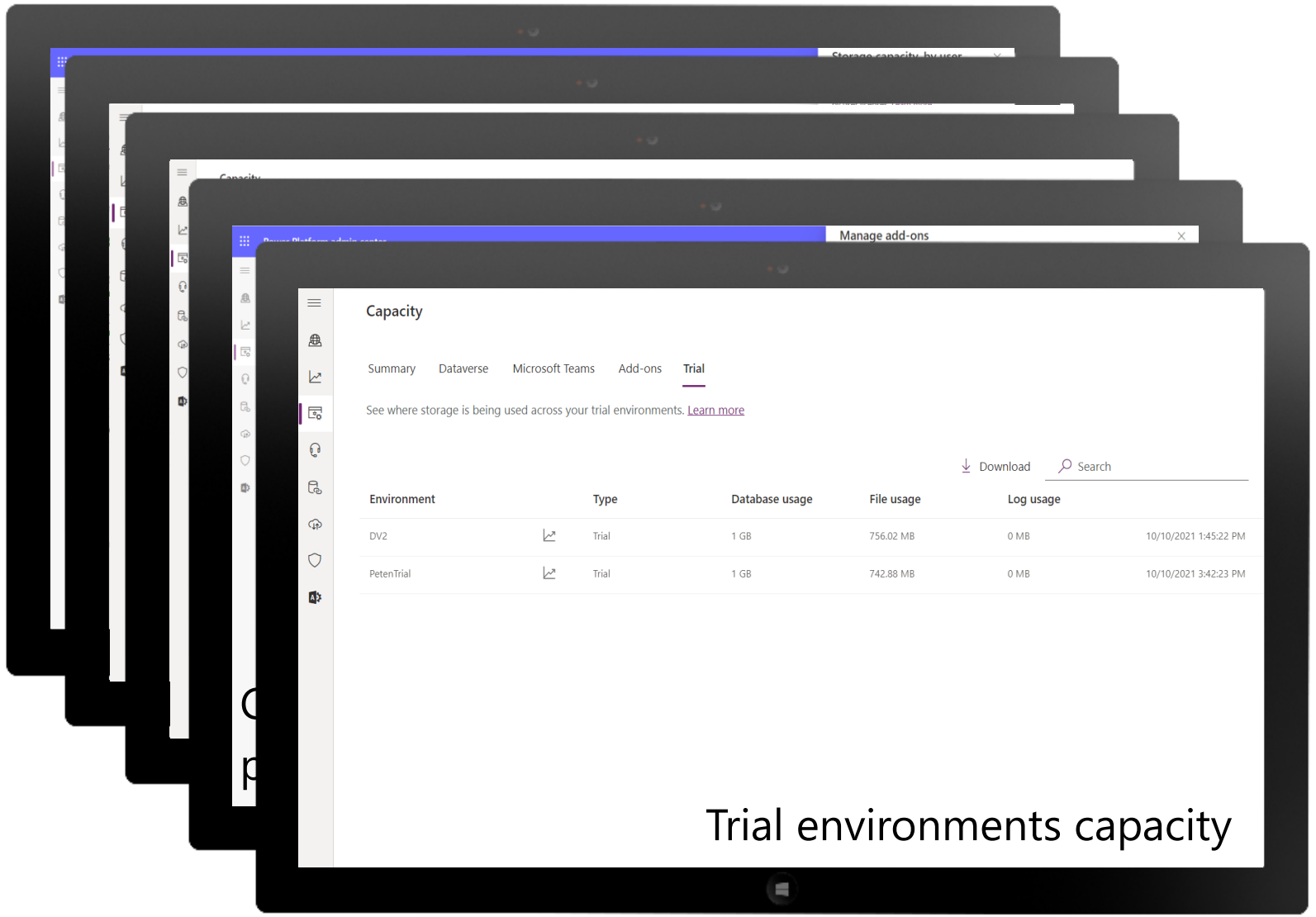
Tenant Enforcement

- At 80% of the limit, a notification that capacity is reaching its limit will be sent to the **tenant admins** (Global, Dynamics & Power Platform). The admin will be encouraged to consider reducing storage usage or upgrading some of the Dataverse for Teams environments.

- At 100% of the limit, the creation of new Dataverse for Teams environments will be blocked. Any users attempting to create a new Dataverse for Teams environment will be prompted to contact the tenant admin as the result of the capacity limit being reached. Additionally, new apps, chatbots, flows, and tables won't be allowed to be created or installed in any existing Dataverse for Teams environment.

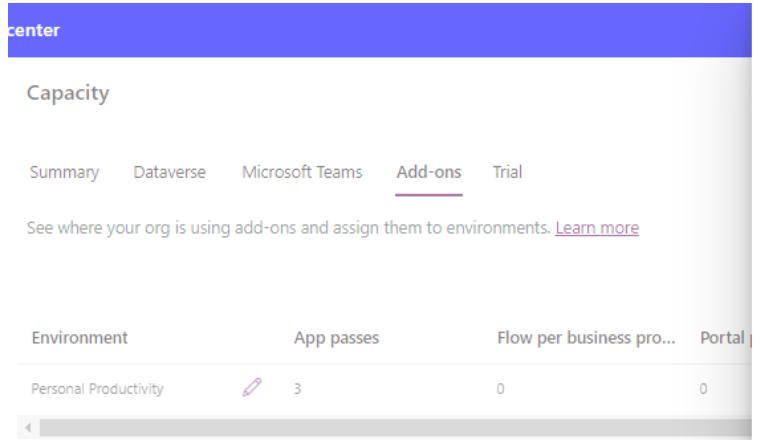
Tenant and environment level capacity reports

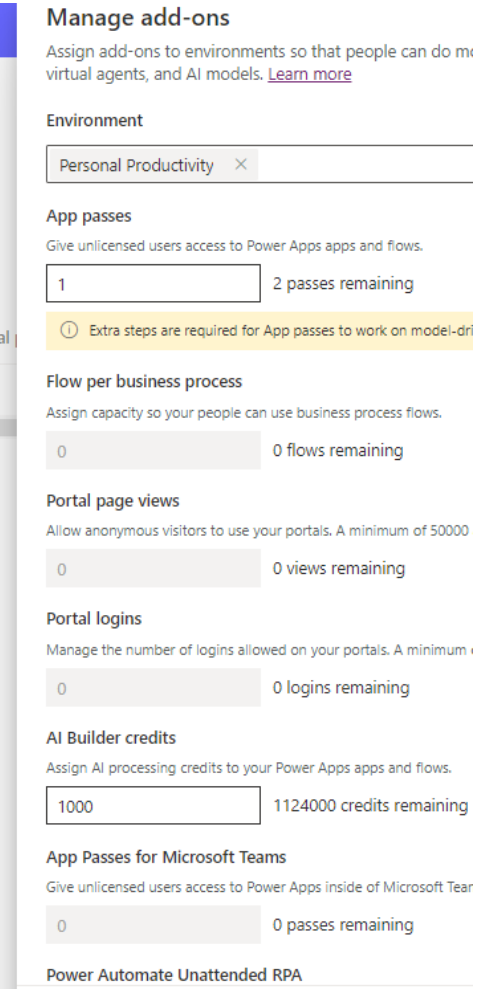
More about capacity analytics in Monitoring & Analytics module

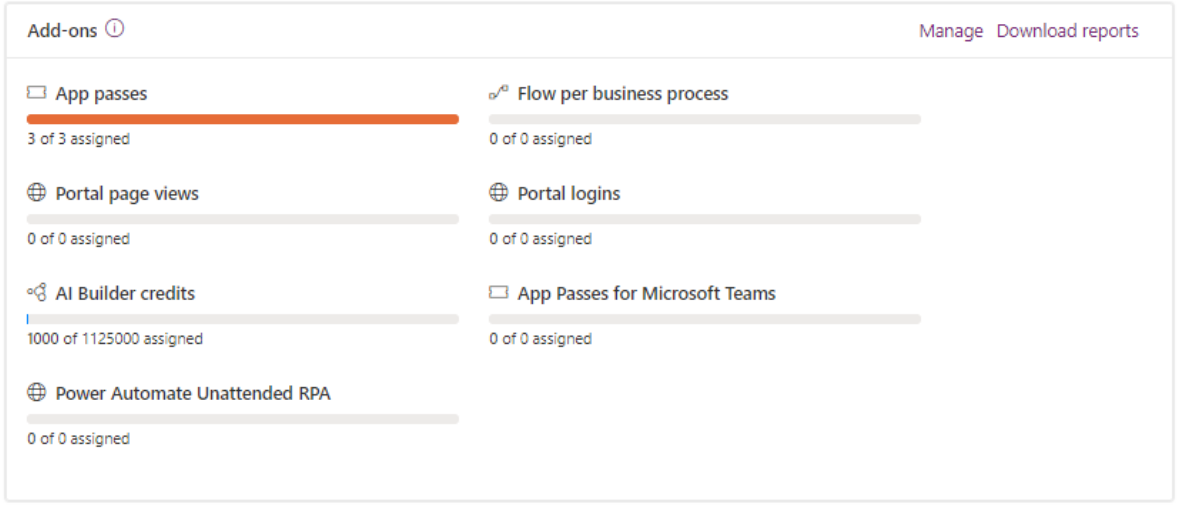


Add-on Capacity Management

- If your organization has purchased capacity Add-ons, you have to allocate that capacity to any environment where you want to use it.
- Organization Add-on capacity summary information is visible in PPAC > Capacity > Summary page.
- You can assign Add-Ons to environments in PPAC > Capacity > Add-ons where you also see environment level assignments.





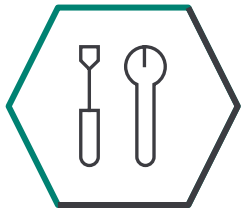


Environment Security

Tenant level service admin roles

Global Admin

Full administration to all services in tenant



Power Platform Admin
Dynamics 365 Admin

Power Platform Admin role

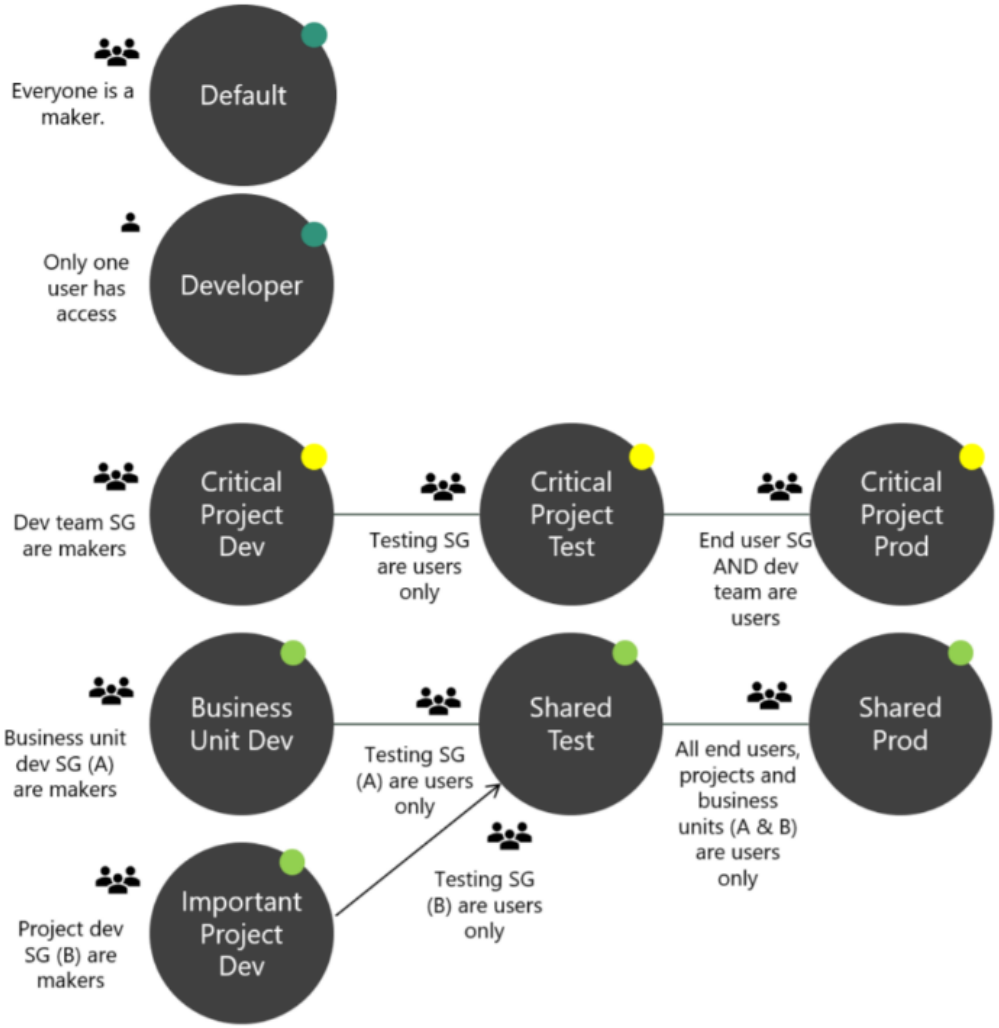
Delegated Admin

Full administration to all services in tenant

Used for partners to provide support to customers

Full support for Power Platform

Strategy for establishing secure environments

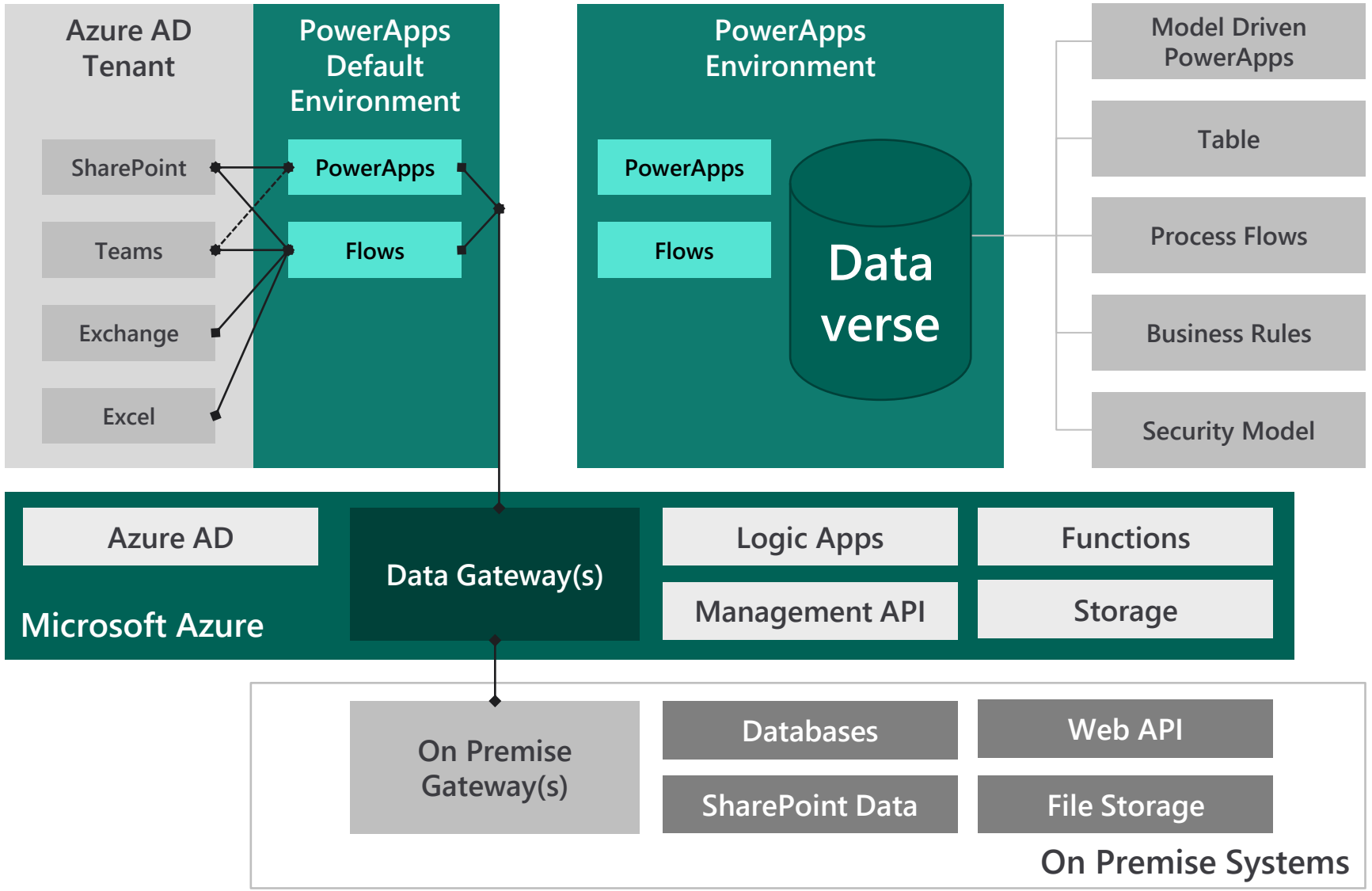


Visual representation of an environment strategy at work.

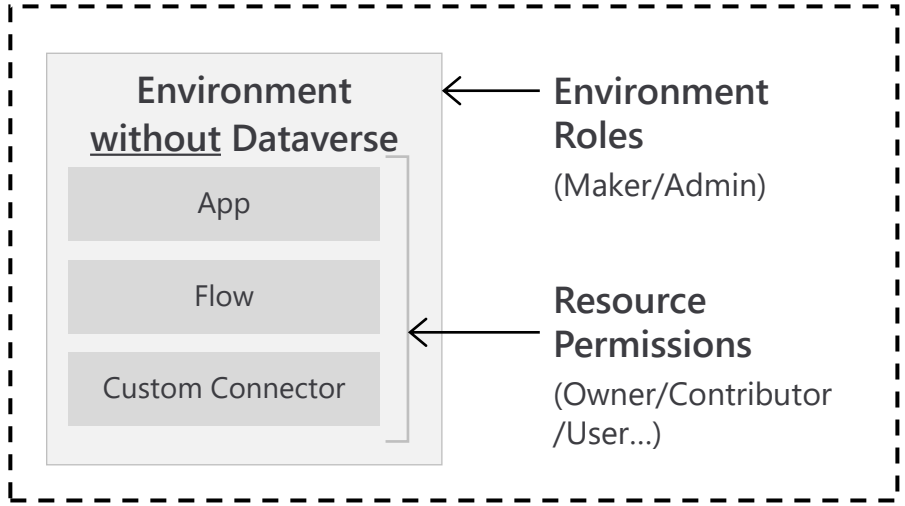
Security checklist (learn more here):

- ✓ Assign your admins the Power Platform service admin role.
- ✓ Restrict the creation of net-new trial and production environments to admins.
- ✓ Treat the default environment as a 'Personal productivity' environment.
- ✓ Establish a process for requesting access to or creation of environments.
  - Dev/Test/Production environments for specific business groups/ applications.
  - Individual-use environments for POCs and trainings.
- ✓ Establish Tenant and Environment level Data Loss Prevention (DLP) policies (discussed in more detail in DLP module)

Looking inside environments



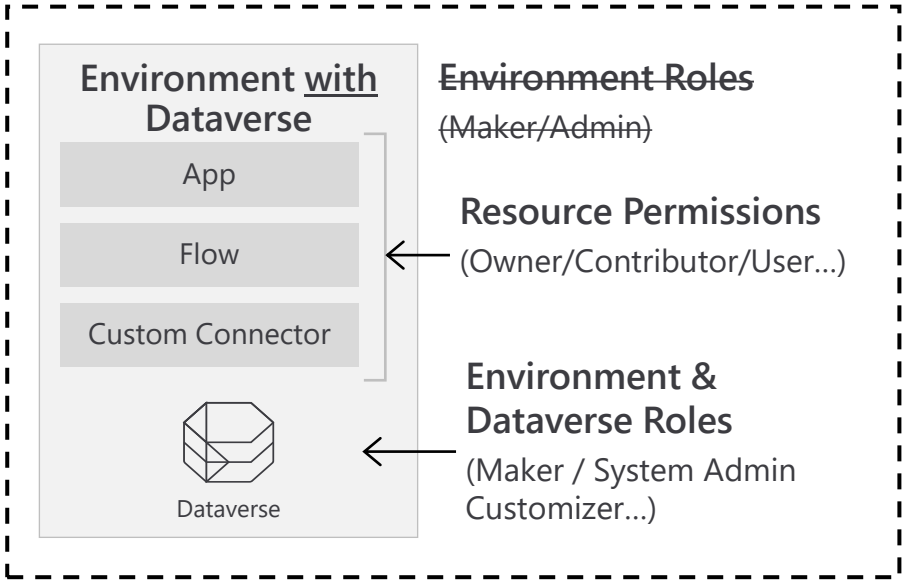
Environment security and access control



Environment Admin can perform all administrative actions like

- View/manage resources
- Add/remove a user or group from roles
- Create DLP policies
- Provision Dataverse database to envs

Environment Maker can create resources within an environment and distribute apps and flows they build using share functionality.

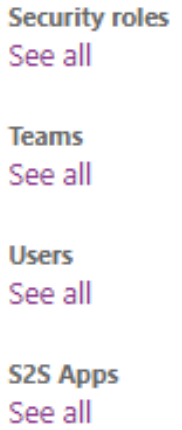


Once a Dataverse database has been created, the Dataverse security roles take over for controlling security.

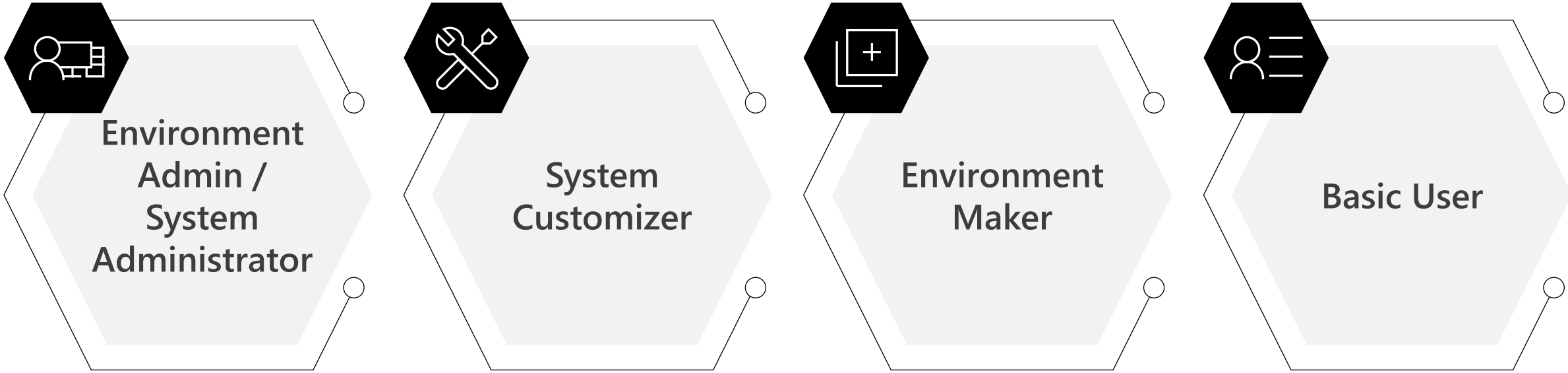
Access to resources are controlled using

- Dataverse security roles
- Resource permissions for apps/flows/custom connectors/etc.

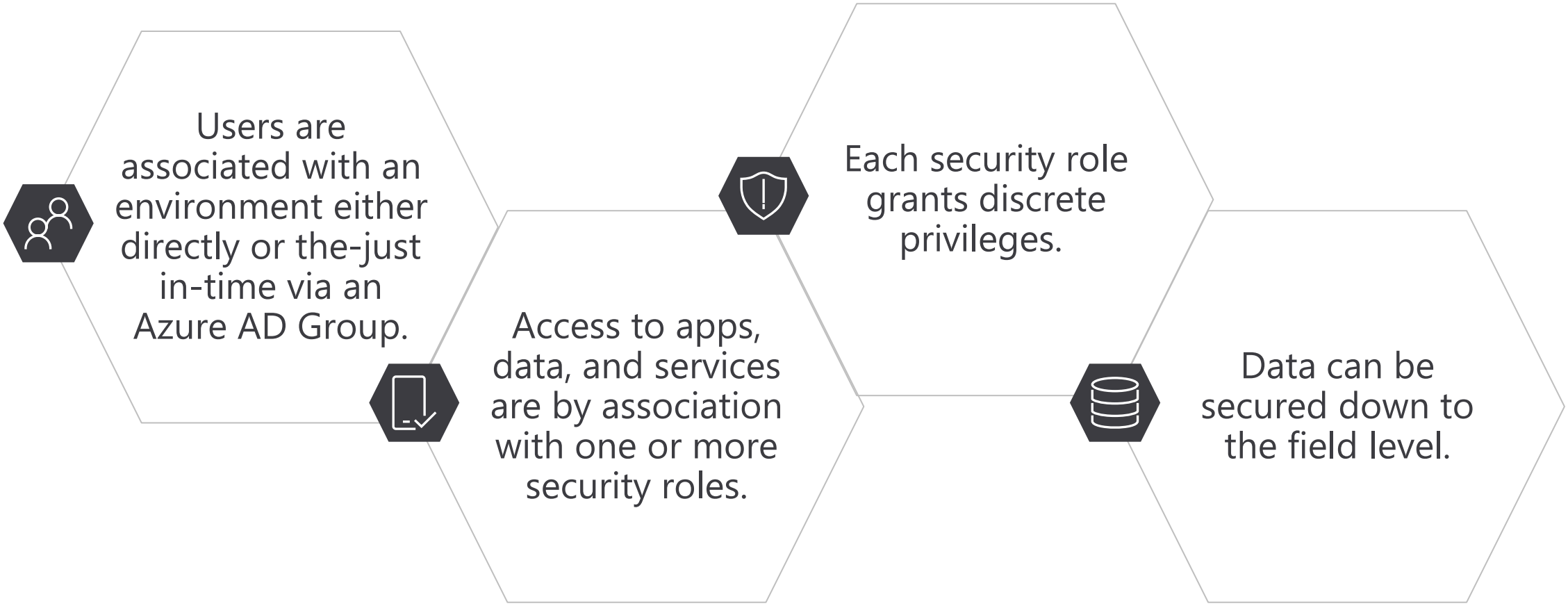
Learn more about Dataverse security roles from here



Key out-ot-the-box security roles you need to know

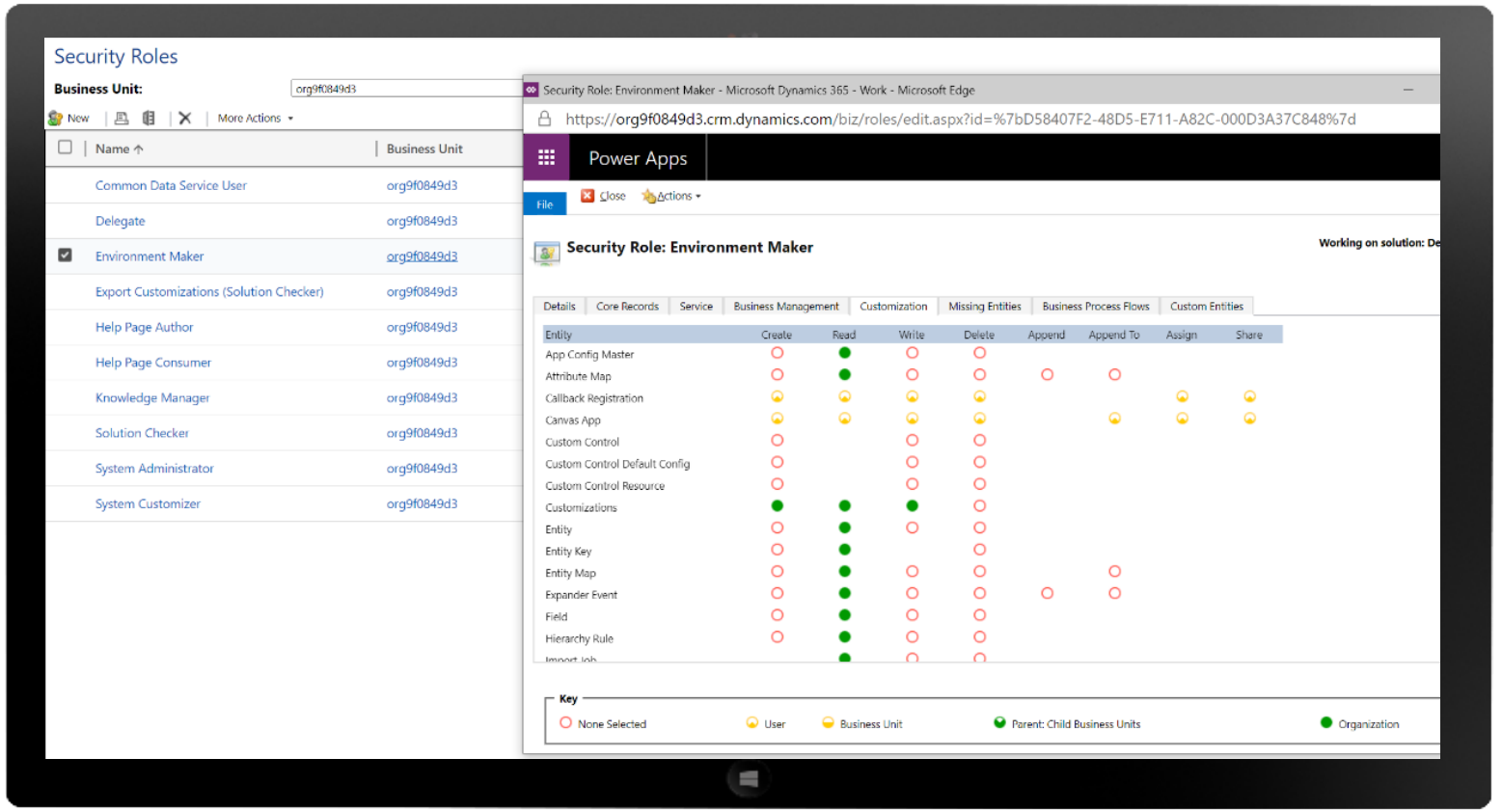


Security with Dataverse in an environment



Customizing Security Roles

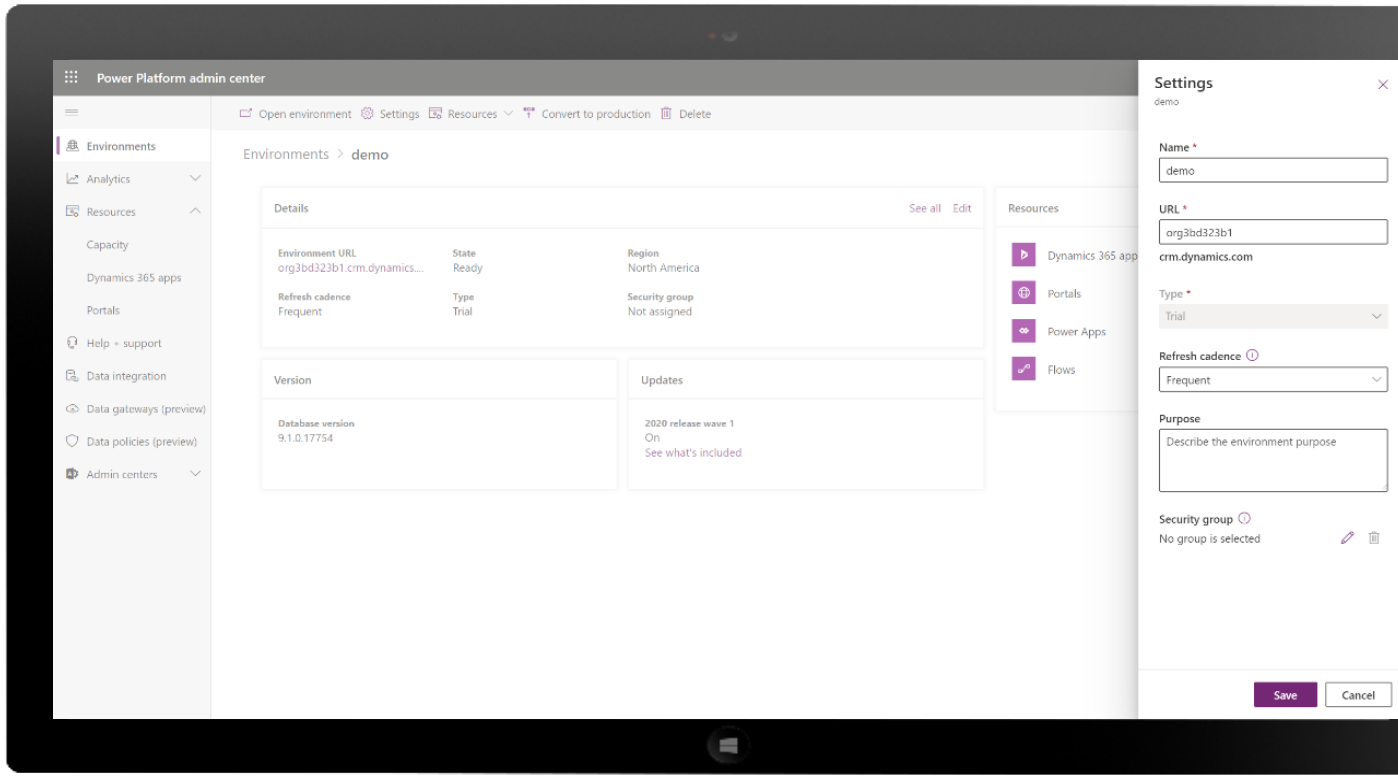
If your app uses a custom table, its privileges must be explicitly granted in a security role before your app can be used. You can either add these privileges in an existing security role or create a custom security role.



Controlling User Access to Dataverse environments

If your company has multiple Dataverse environments, you can use Azure AD security and Microsoft 365 groups to control which licensed users can be a member of an environment.

- If you do not specify a security group, all users who have a Dataverse license, will be added to the environment.
- When a security group is associated with an existing environment with users, all users in the environment that are not members of the group will be disabled.



Dataverse for Teams environment user access

- Every team in Teams is linked 1:1 to a Microsoft 365 group.
- Two user membership types: **owners** and **members**.
- Members can be users from the customer's own tenant or from a guest tenant.
- Any user management (addition, removal, user type change) made in a team will be reflected in the Microsoft 365 group and vice versa.
- Access to a Dataverse for Teams environment and its resources (apps, data) will be restricted to users in the Team.
- The Microsoft 365 Group linked to a team will be automatically associated with the Dataverse for Teams environment, restricting access to users of that Microsoft 365 group.
- This Microsoft 365 Groups association with the Dataverse for Teams environment won't be editable until the environment is promoted to Dataverse.

Dataverse for Teams role assignments

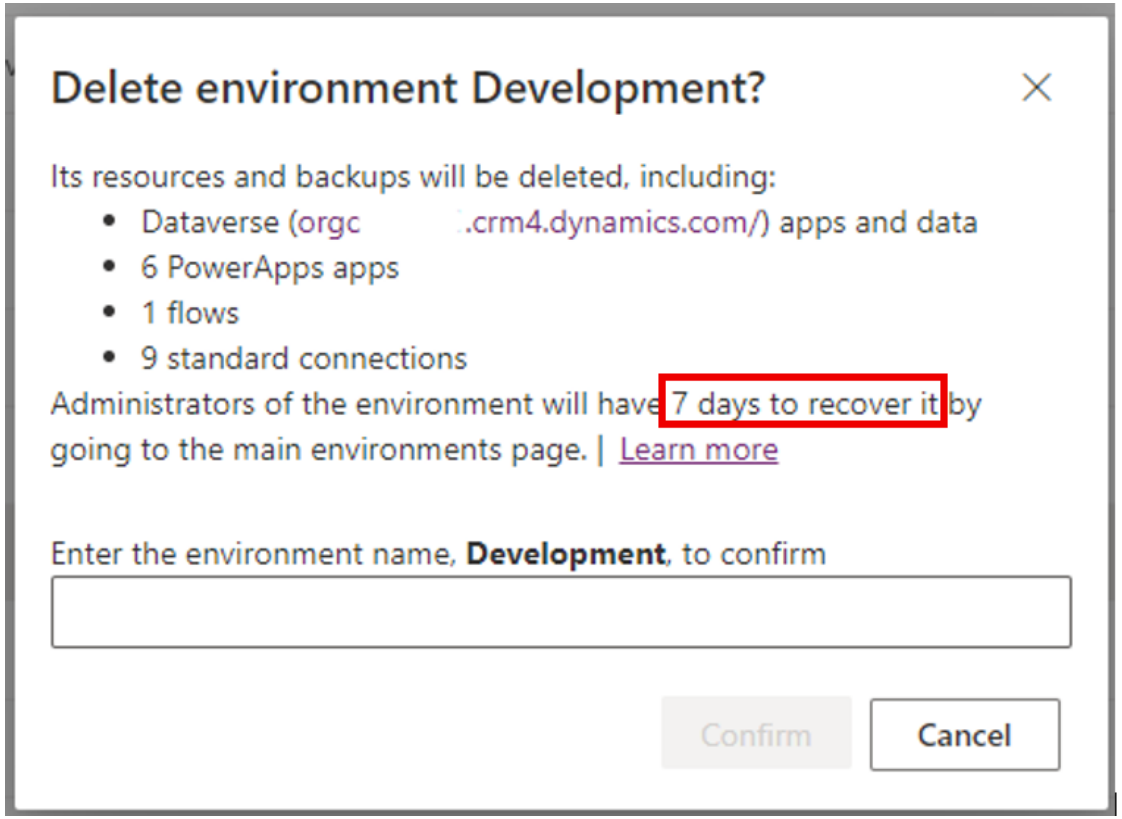
Persona	Security role auto-assigned	Description
Teams owner	System Administrator	• Manage Team's membership and settings • Full access to the environment's apps, resources, and data. • Perform environment maintenance tasks in PPAC
Teams member	Teams Member	View env's resources, run all apps and resources, and create or update their own resources. Full data access
Teams guest	Teams Guest	• Can view and run all resources in the team • By default, guests have full access to records they create and don't have access to other users' records.
GA / PP Admins	System Administrator	• Can perform environment maintenance tasks such as backup and restore in all DVfT environments • They need **not** be owners or members of the team, but through their tenant-level admin privileges they System Administrator privileges with R/W access mode to Dataverse for Teams environments.
Dynamics 365 admin	System Administrator*	These admins need to be owners or members of the team to have System Administrator–level privileges to manage the health and maintenance of the environment.
Colleagues with access	Basic User	• Users of the same tenant who aren't in the team but have been invited to run apps in the team • By default, no access to data but can be granted based on the app or resources that they need to run (will automatically remove M365 Group association from Dataverse for Teams environment)

*System Administrator if owner in the team; System Administrator and Teams Member if they are a member in the team.
No access if they aren't an owner or member in the team.

Managing Environments

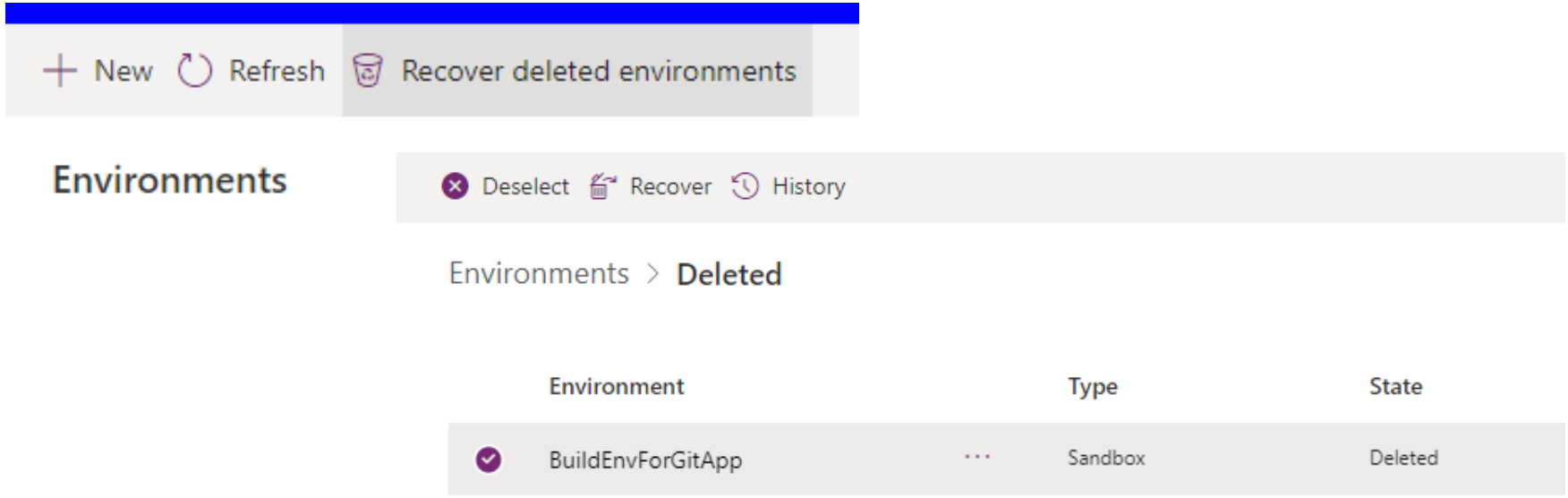
Delete Environment

- You can delete an environment to recover storage space and to remove Personally Identifiable Information (PII)
- In Power Platform Admin Center open environments list, select an environment and click Delete.
- NOTE: You **can't** delete the default environment.



Recover Environment

- You can recover a deleted environment within 7 days of deletion in PPAC or using PowerShell Recover-AdminPowerAppEnvironment.
- Available storage capacity might be required in order to successfully recover an environment depending on the type of environment being recovered.



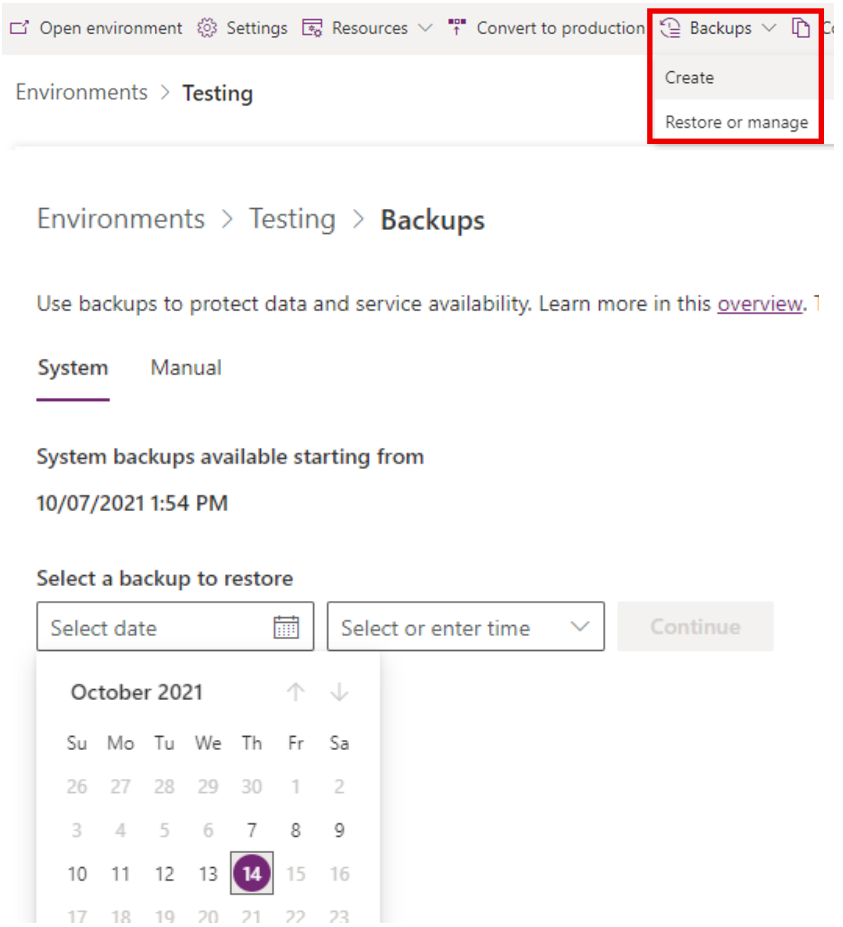
Backup and Restore Environments

System backups:

- All your environments except Trial environments are backed up
- System backups occur continuously
- The underlying technology used is Azure SQL Database
- Production backups with database are retained 7 days or if at least one D365 application installed then 28 days
- Sandbox backups are retained for 7 days
- You must restore an environment to the same region in which it was backed up.
- When an environment is restored onto itself, audit logs are **not** deleted.

Manual backups:

- You can manually backup Production and Sandbox environments.
- You can't back up the default environment.
- Production backups are retained 7 days or if at least one D365 application installed then 28 days.
- Sandbox backups are retained for 7 days.



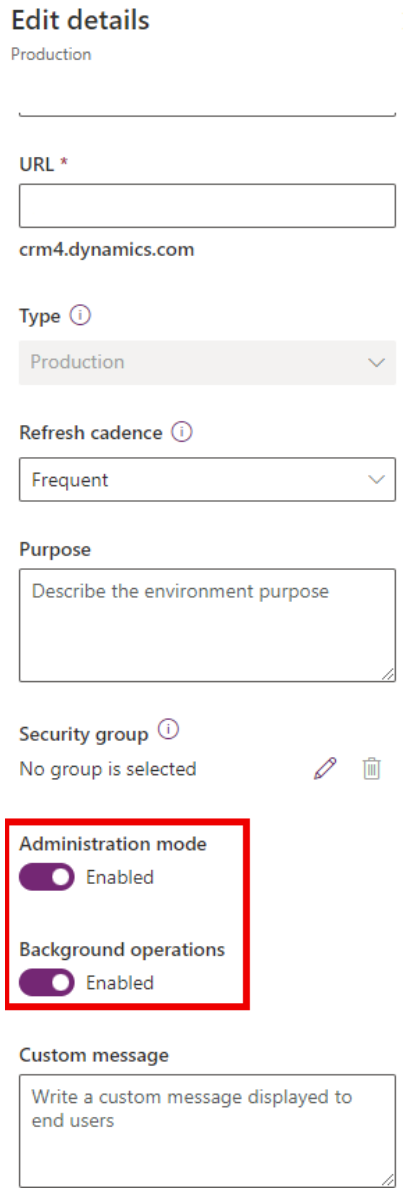
Dataverse for Teams environment lifecycle

- Environment name is the same as the Team name.
- You can filter the list of environments in the Power Platform admin center to show just Dataverse for Teams environments.
- Lifetime of the environment will be tied to the Team it was created in.
- If you promote an environment to Dataverse (full version), the 1:1 mapping isn't guaranteed because the environment can now be used by applications outside of Teams.
  - ➢ The promoted environment is bound by the lifecycle rules associated with the Power Apps license and the configuration of the environment.

Operations	Feature description
Backup	Automated backups and labeled backups can be taken. Admins can view them in the Power Platform admin center. Backups will be available for up to 7 days.
Restore	Only point-in-time restores to the same environment will be possible. Note: if the environment has been upgraded, the point-in-time restore will only be available starting from the moment it was upgraded.
Copy	Not available by default for Dataverse for Teams environments.
Create	Only through Microsoft Teams. Note: these Dataverse for Teams environments will be limited to a 1:1 mapping to the Microsoft Teams team it was created in and bound to the Microsoft 365 group associated with the team.
Delete	The environment can be deleted by the team owner. Note: th environment will be deleted automatically if the team it was created in is also deleted.
Reset	Not available by default for Dataverse for Teams environments.
Upgrade	Unlocks all the functionality of Dataverse services for the environment.

Environment Administration Mode

- Environment can be set to **Administration mode** which allows only users in System Administrators and System Customizers roles to login to environment.
- Supported in Sandbox, Production, and Trial (subscription-based) environments
- This is useful when you want to make operational changes and not have regular users affect your work and have your work affect end users (non-admins).
- Possible to also disable all asynchronous **Background operations,** such as workflows and Exchange sync



Move Environment

You can use the Tenant-to-Tenant Migration feature to request to have an environment in one tenant moved to another tenant. To do so submit a support request.

- Possibility to move one or multiple environments
- You will need to create a temporary environment or environments in the destination tenant, depending on how many source environments you are migrating.
- Source environment type and destination environment type must match.

After moving environments to another tenant:

- The environment ID in the target tenant cannot be set to the same environment ID as in the source tenant. This is not supported.
- The org URL, org ID, and the name do not change.
- Security group mapping is handled as part of the manual tenant to tenant migration process. At the very least, a replacement (or removal) will be needed because the security group won't exist with the same ID in the new Azure AD tenant.

Questions?

Lab Setup

Follow the steps below to setup workshop lab environment:

1. Every workshop attendee will be having a dedicated demo tenant along with virtual machines environment to perform upcoming labs.
2. Use Edge Chromium or Chrome web browser to navigate to http://aka.ms/lod
3. Click on Sign in then select **Microsoft Account**
4. Sign-in using Microsoft personal account (other email service account can also work) – don't use business email.
5. Select **WorkshopPlus** menu item then click on My Training
6. Click on **Redeem training key** (course instructor will share the key)
7. In loaded page, scroll to **Lab** section then select **Workshop labs title link** to launch it.
8. In virtual labs environment select **Resources** tab and the open **ContosoGateway** server.
9. In **Resources** tab, you can find also the **Office 365 Credentials** you need to sign into your own lab tenant.

Provisioning Power Platform environment

Provisioning Dataverse for Teams environment