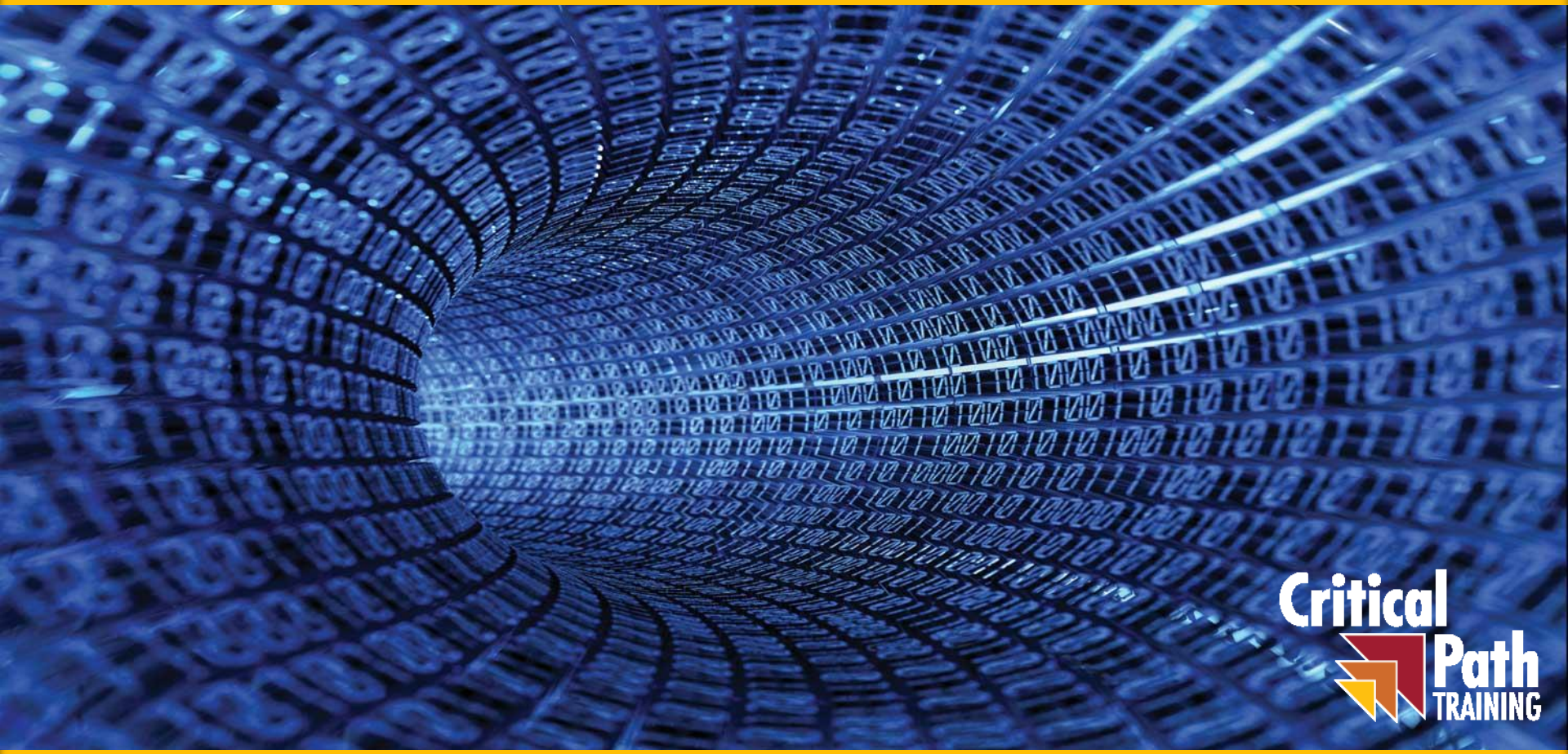
Managing Application Lifecycle with PowerApps and Flow



Best Resource for Learning PowerApps ALM

- Administering a PowerApps Enterprise Deployment
  - Whitepaper by David Yack of Colorado Technology Consultants
  - https://aka.ms/powerappsadminwhitepaper

Microsoft

Administering a PowerApps Enterprise Deployment

Whitepaper

Summary: This is a technical whitepaper outlining considerations for planning, deploying and managing an enterprise PowerApps deployment.

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Published: July 2018

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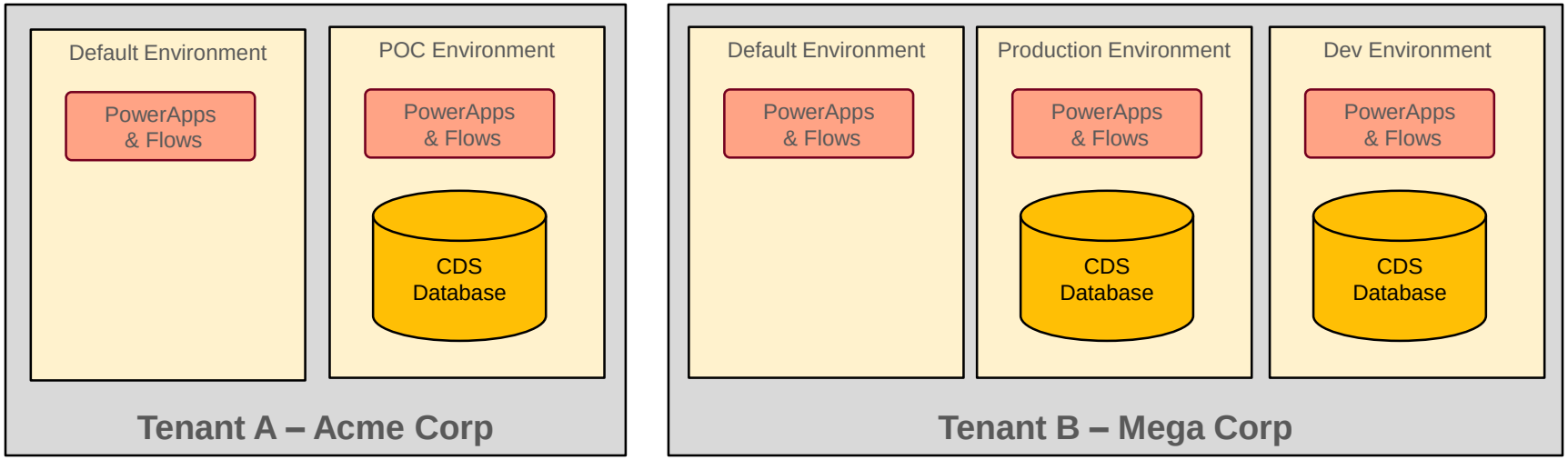
Agenda

- Understanding Environments
- Configuring Data Loss Prevention Policies
- Sharing and Versioning Canvas Apps and Flows
- Exporting and Importing Canvas Apps and Flows
- Installing and Configuring an On-Premises Data Gateway
- Packaging and Deploying Custom Solutions

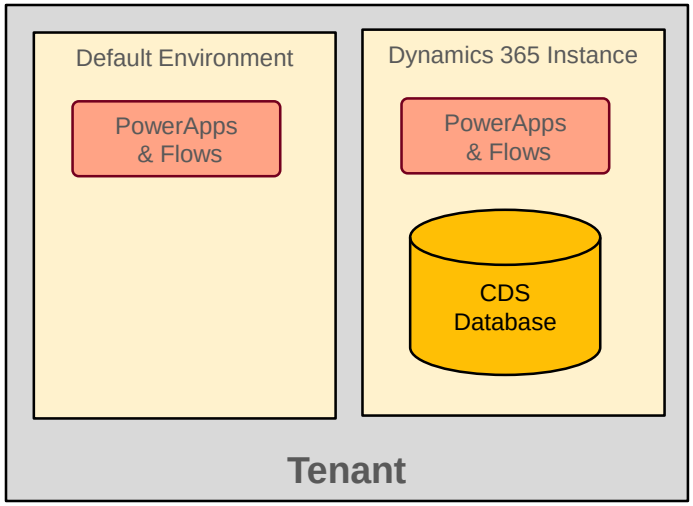
What is an Environment?

- Environment is container for PowerApps, Flow and CDS database
  - Each environment and its resources exist within a geographic region
  - Environment resources include PowerApps, Flows and CDS database
  - Environment represents a governance and security boundary
  - Every tenant is provisioning with a default environment
  - New environment can be provisioned with or without a CDS database



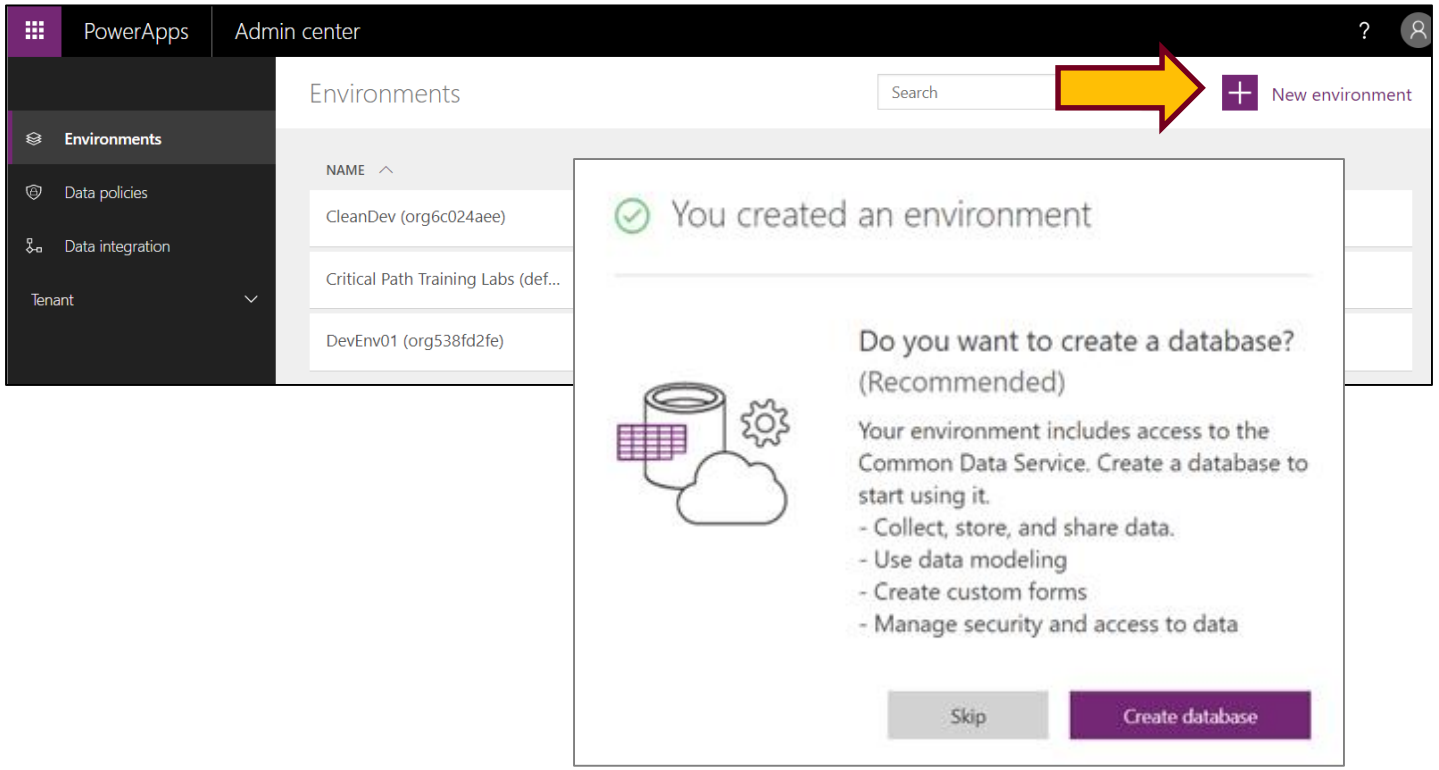
PowerApps and Dynamics 365 Convergence

- As of Dynamics 365 version 9
  - Dynamics 365 instance = PowerApps Environment with CDS DB



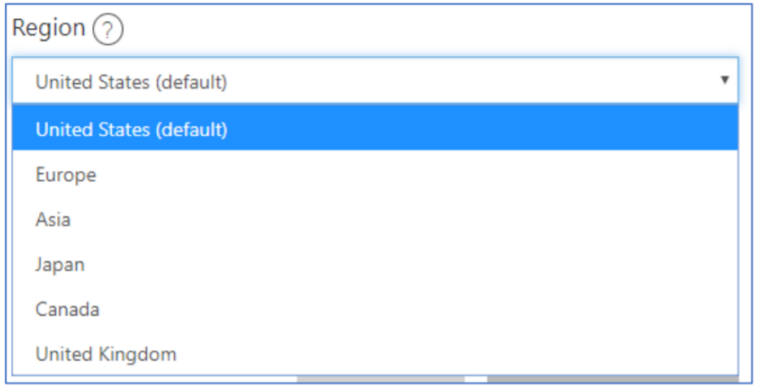
Managing Environments

- Environments managed in PowerApps Admin Center
  - You can view existing environments and configure security and access
  - You can create new environments
  - When creating an environment, you can optionally include CDS database



Environmental Regions

- Environment is created in specific region
  - You can choose at create time
  - All app components and CDS DB stored in region

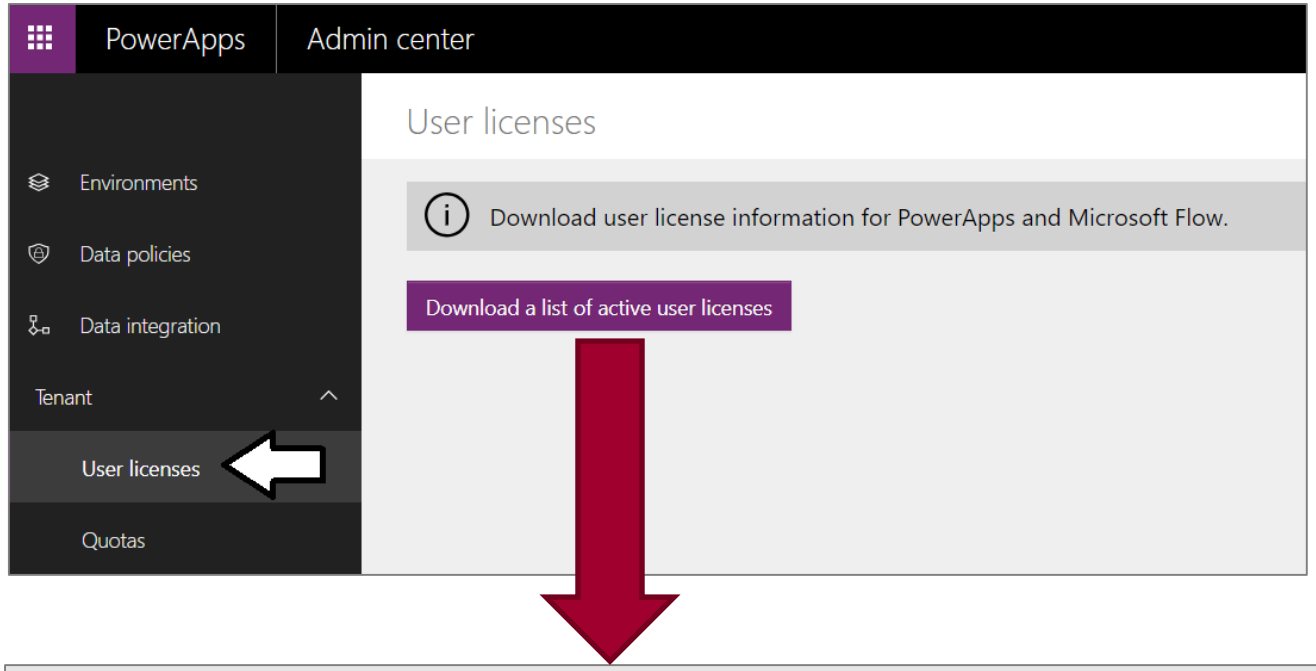


  - Issues to consider when creating environment
    - Create environment close to where users are located
    - Create environment in region required for data residency

Admin Licensing with PowerApps and Flow

License Type	User/License Management	PowerApps Admin Portal	Manage Environments	Data Loss Policies	Dynamics 365 Admin Center
Global Admin with P2	Yes	Full access	Full access	Full access	Full access
Global Admin without P2	Yes	View DPL Policies and admin reports	No	Create global policies for all environments	Can View CDS instances
User Manager Role with P2	Yes	View Environments that are owned	Manage owned environments	Create policies for owned environments	No access
User Manager Role without P2	Yes	No access	No	No access	No access
Dynamics Admin Role with P2	View Only	View Environments that are owned	Manage owned environments	Create policies for owned environments	Full access
Dynamics Admin Role without P2	View Only	No access	No	No access	No access

Viewing User Licenses



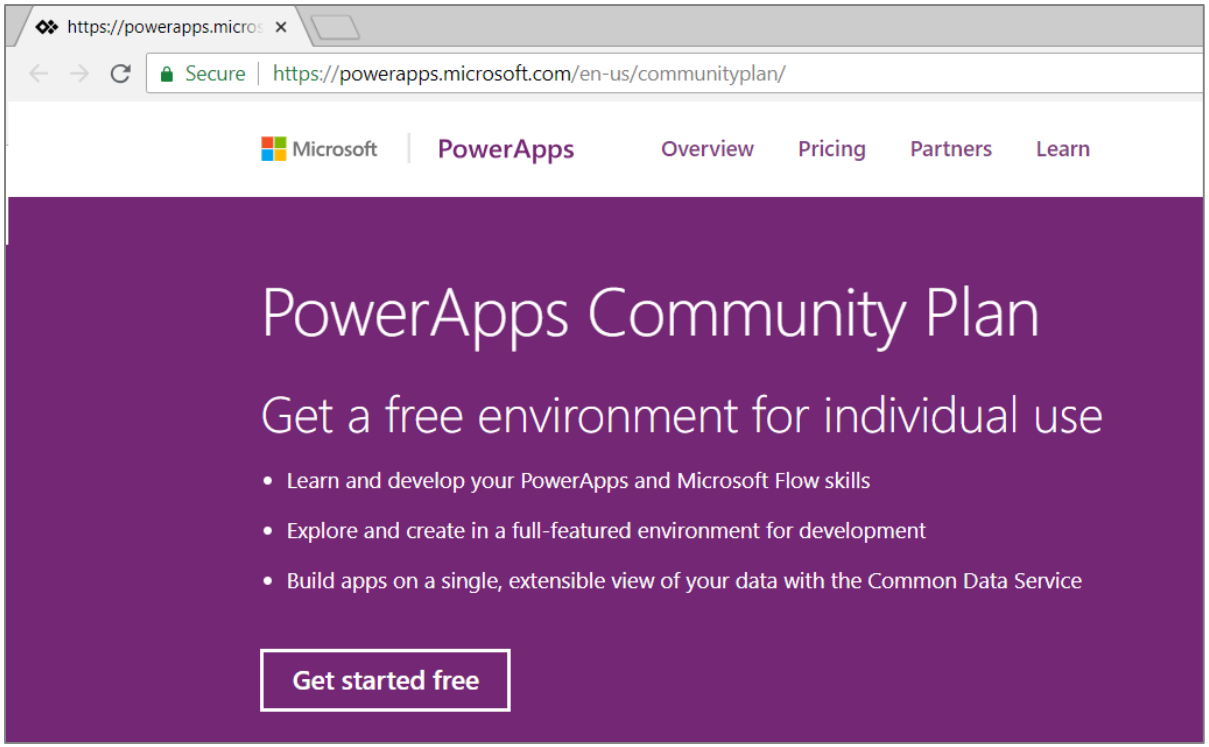
	A	B	C	D	E	F
1	User Name	Email Address	Service	License	License Assigned Date	Is Trial
2	Stu Dent	student@pbibc0820.onmicrosoft.com	PowerApps Plan 2	Microsoft PowerApps Plan 2	8/23/2018 13:23	FALSE
3	Stu Dent	student@pbibc0820.onmicrosoft.com	Flow for Office 365	Office 365 Enterprise E5	8/18/2018 22:21	FALSE
4	Stu Dent	student@pbibc0820.onmicrosoft.com	Flow Free	Microsoft Flow Free	8/23/2018 18:13	TRUE
5	Stu Dent	student@pbibc0820.onmicrosoft.com	Flow Plan 2	Microsoft PowerApps Plan 2	8/23/2018 13:23	FALSE
6	Stu Dent	student@pbibc0820.onmicrosoft.com	PowerApps for Office 365	Office 365 Enterprise E5	8/18/2018 22:21	FALSE
7	James Bond	jamesb@pbibc0820.onmicrosoft.com	PowerApps Plan 2	Microsoft PowerApps Plan 2	8/24/2018 18:29	FALSE
8	James Bond	jamesb@pbibc0820.onmicrosoft.com	Flow for Office 365	Office 365 Enterprise E5	8/21/2018 17:38	FALSE
9	James Bond	jamesb@pbibc0820.onmicrosoft.com	Flow Plan 2	Microsoft PowerApps Plan 2	8/24/2018 18:29	FALSE
10	James Bond	jamesb@pbibc0820.onmicrosoft.com	PowerApps for Office 365	Office 365 Enterprise E5	8/21/2018 17:38	FALSE

Types of Environments

- Production
  - used for permanent work in an organization
- Default
  - Special type of production environment
- Sandbox
  - Non-production environment with environment reset feature
- Trial
  - Temporary environment used to support short term testing
- Developer
  - Environment created with the Community Plan license
  - Only supports a single user

PowerApps Community Plan

- PowerApps Community Plan offers free environment
  - Used to build solutions for PowerApps, Flows and CDS for Apps
  - Environment only allows for a single user
  - Sign up at https://powerapps.microsoft.com/en-us/communityplan/

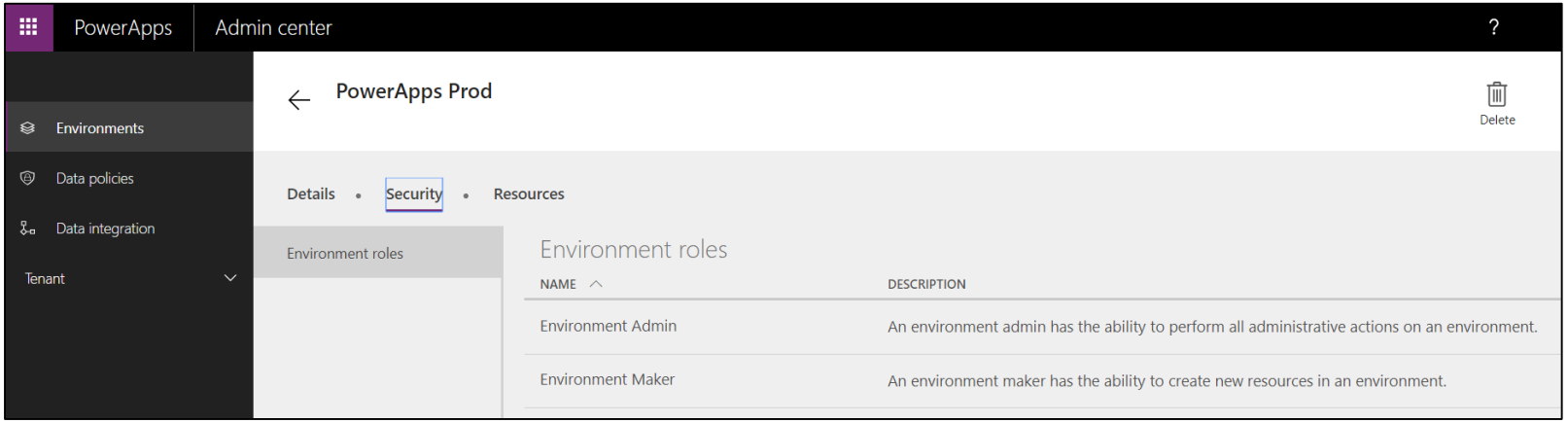


Default Environment

- Each tenant has default environment created in nearest Azure region
  - Default environment can’t be disabled or deleted
  - Default environment automatically adds all tenant users to maker role
  - You can't remove users from maker role of default environment
  - Default environment provides self-service app & flow building to all licensed users
- Default environment does not yet support adding CDS database
  - Microsoft plans to eventually remove this limitation
- Default environment currently only place you can create gateway
  - Therefore, default environment only place to access on-premises data
  - Microsoft plans to eventually remove this limitation

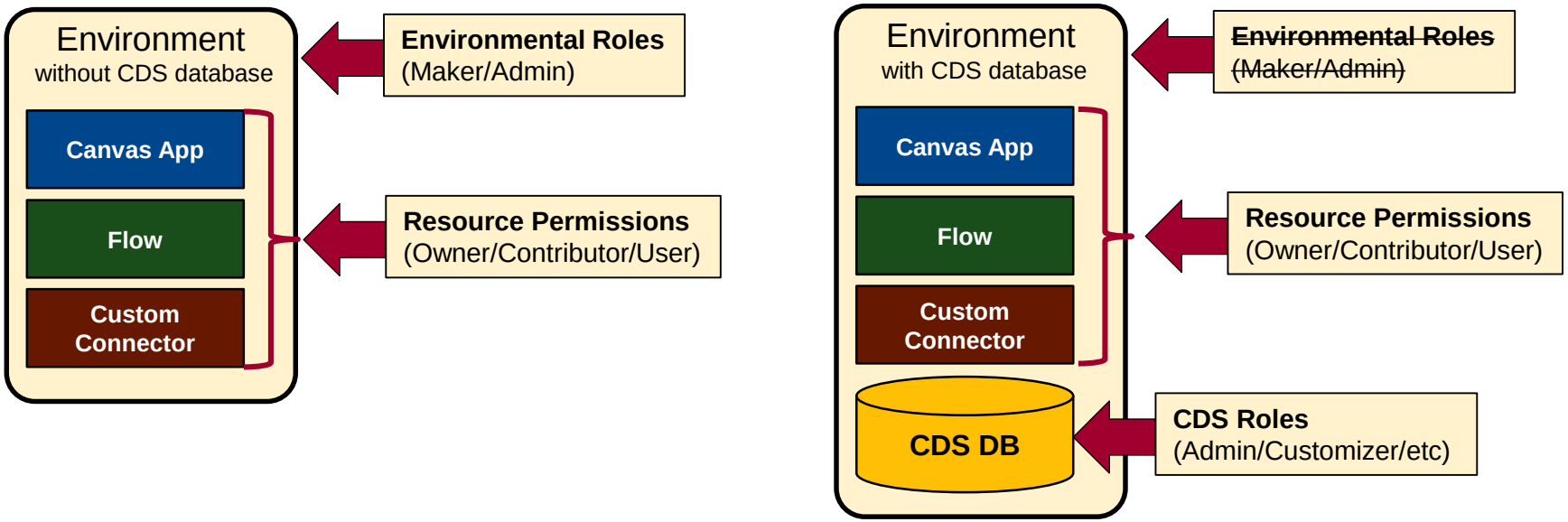
Environment Security Roles (No CDS)

- Environment Administrator
  - Manage environment by adding/removing users
  - Creating the CDS database instance
  - Viewing and managing all resources in environment
  - Configure Data Loss Prevention policies
- Environment Maker
  - Create and share canvas apps and flows
  - Create and share connections and custom connectors
  - Create gateways and build connections through gateways



CDS Security Roles

- Environment requires CDS database to support…
  - Using and customizing standard entities
  - Creating custom entities
  - Creating model-driven applications
- Environment with CDS database has different security model
  - Security model switches from Environment roles to CDS roles



CDS Database Roles

- System Administrator
  - Environment Admin promoted to System Administrator
  - Complete ability to customize and administer environment
  - Full read-write access to data in the database.
- System Customizer
  - Full permission to customize the environment
- Environment Maker
  - Create new apps, connections, gateways and flows
- Common Data Service User
  - Ability to run apps but no ability to customize the system
  - This role is commonly copied to make custom security roles
- Delegate
  - Special role to give a user permission to Act on behalf of another user

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Data Loss Prevention Policies

- **Data is critical in an organization's success**
  - It needs to be readily available for decision-making
  - Needs to be protected so it's not shared with audiences that should not have access to the data

- **Data Loss Prevention (DLP) Policies**
  - PowerApps provides a way to protect your data by providing the ability to create and enforce policies
  - You can define which consumer services/connectors specific business data may be shared with

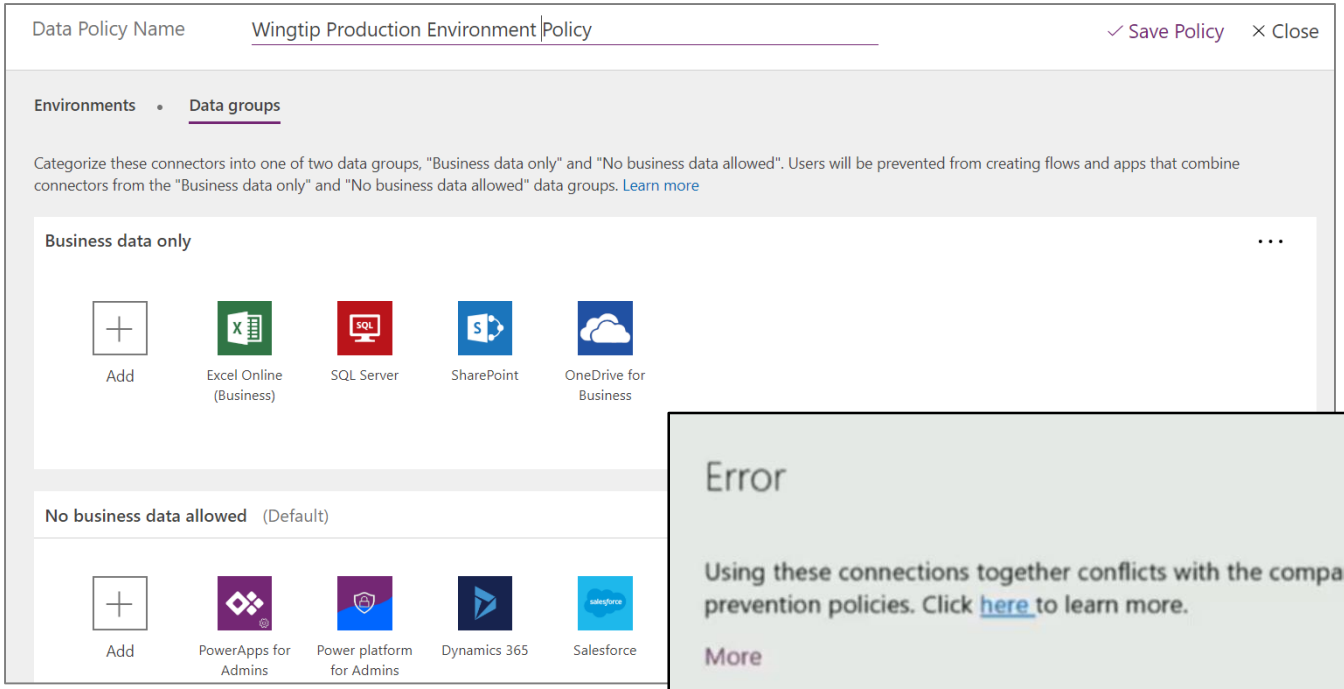
Data Loss Prevention Policies

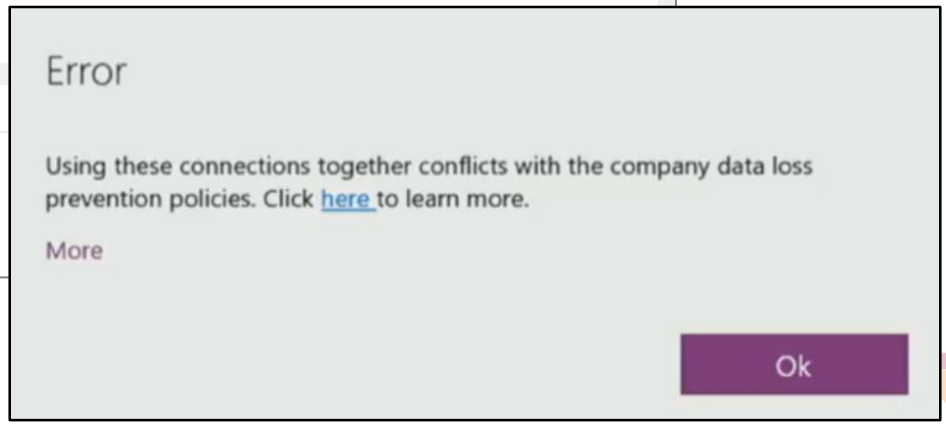
- **Benefits of a DLP policy**
  - Ensures data is managed in a uniform manner across the organization.
  - Prevents important business data from being accidentally published to services such as social media sites.

- **Example:** Prevent business data stored in SharePoint from being automatically published to a Twitter feed.
  - Create a DLP policy that blocks SharePoint data from being used as the source for tweets.

Data Loss Prevention (DLP) Policies

- DLP policies determine of what connectors can be used
  - Allowed connectors configured as **Business data only**
  - Disallowed connectors classified as **No business data allowed**





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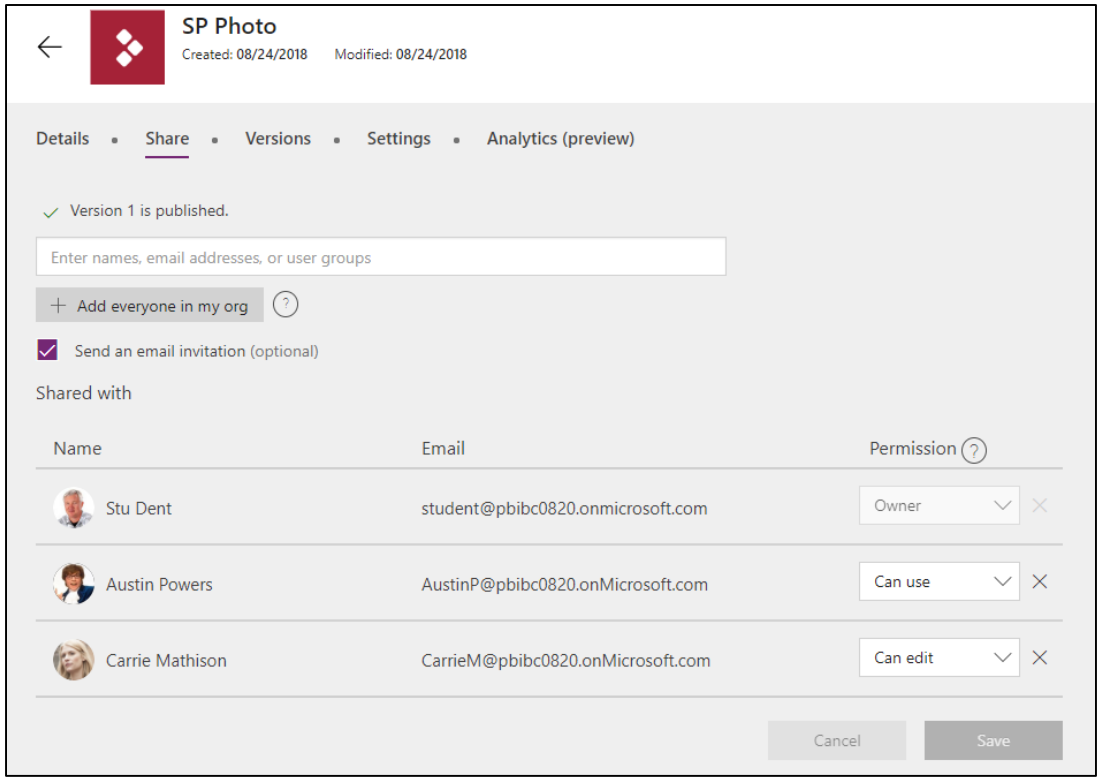
Configuring User Access to Apps & Flows

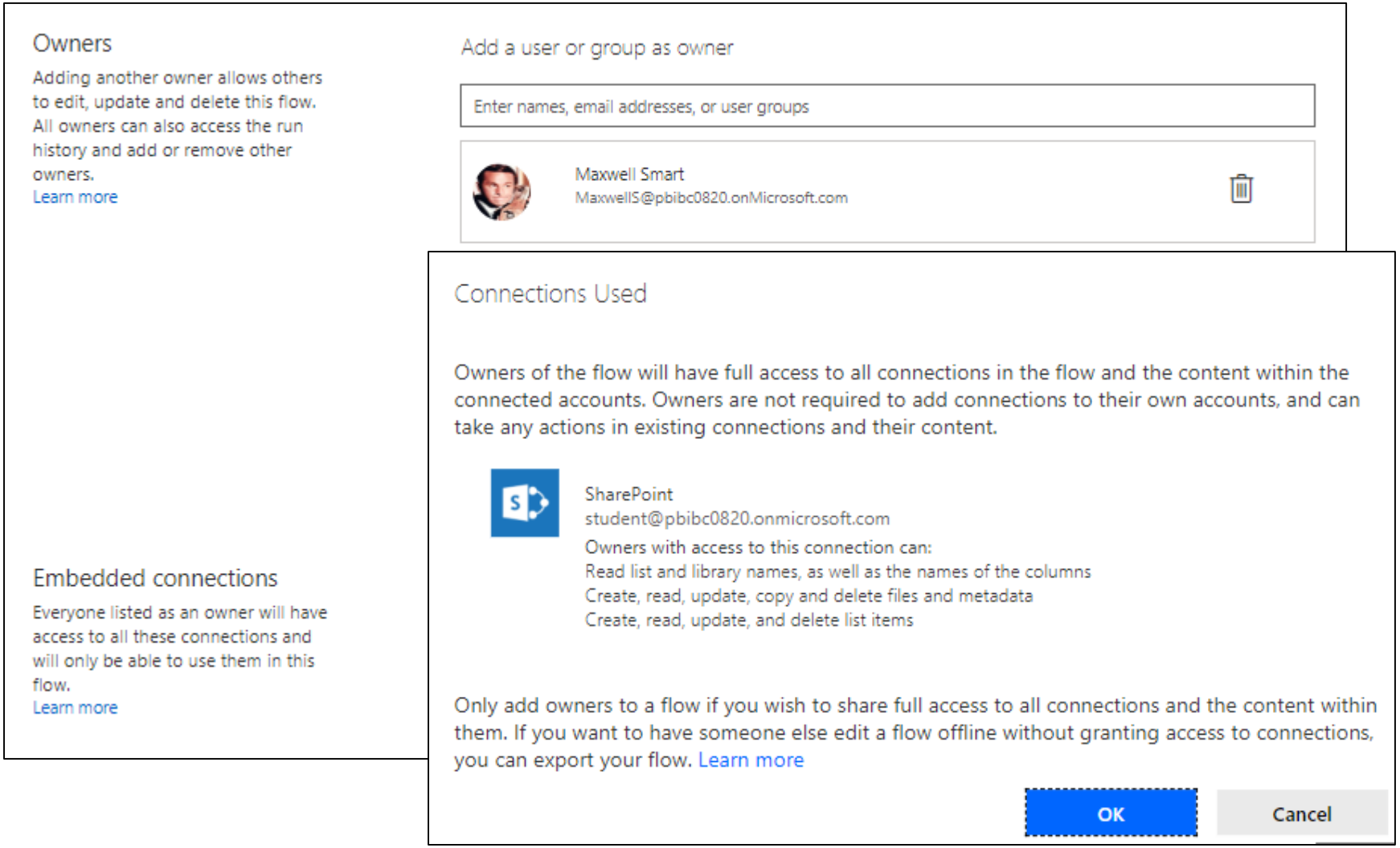
- Sharing apps differs between these scenarios
  - App is a canvas app
  - App is a model-driven app
- For canvas apps
  - Shared with users, Azure AD Groups or entire org
- For model-driven apps
  - Shared by adding user to a CDS security role

Sharing PowerApps

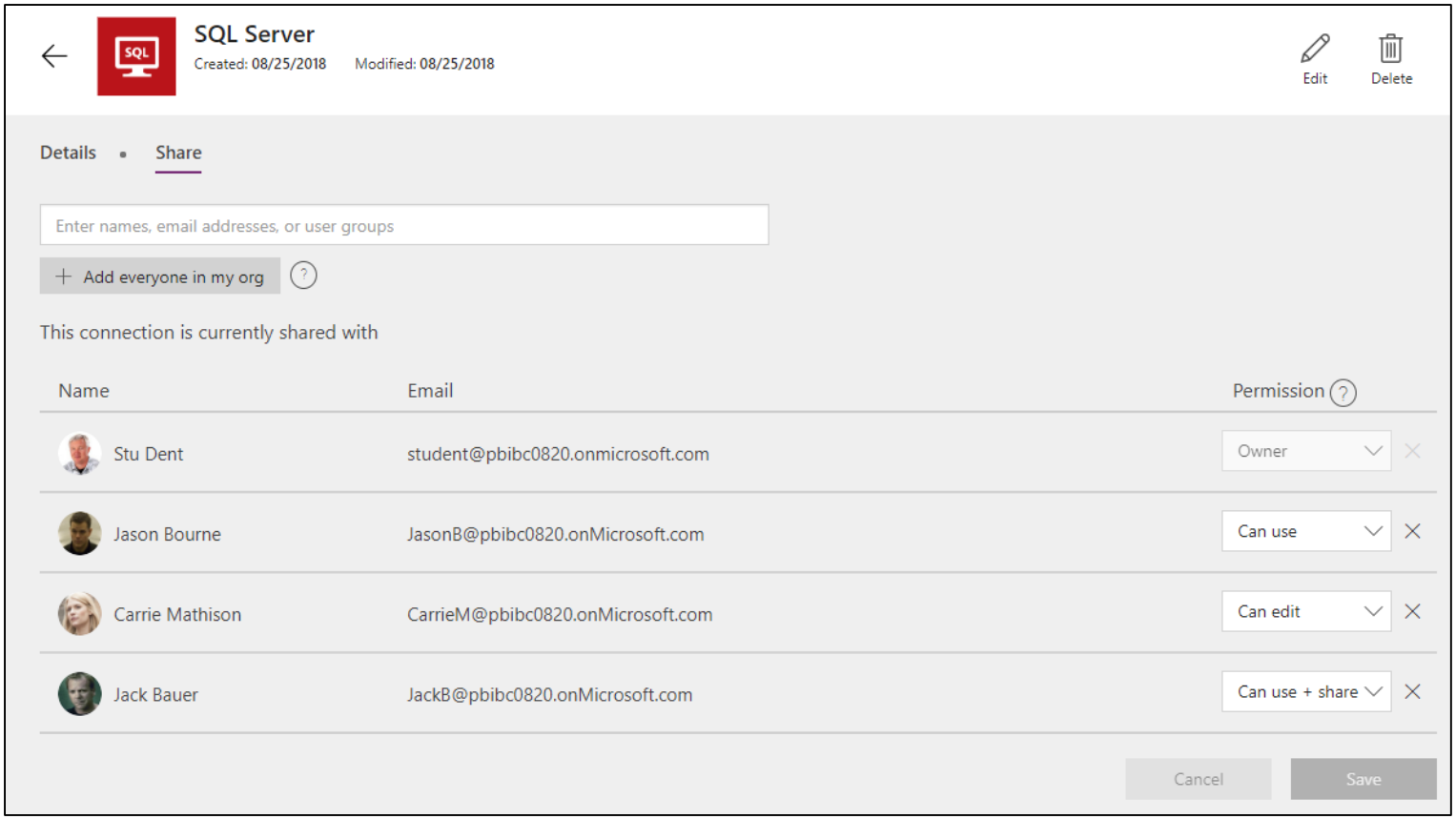
- There are 3 level of app permissions:
  - **Can Use**: Users/groups can run the app but cannot edit or share the app
  - **Can Edit**: Users/groups can run, edit publish and share the app
  - **Owner**: Can Edit permission + ability to add other contributors



Sharing a Flow



Sharing a Connection



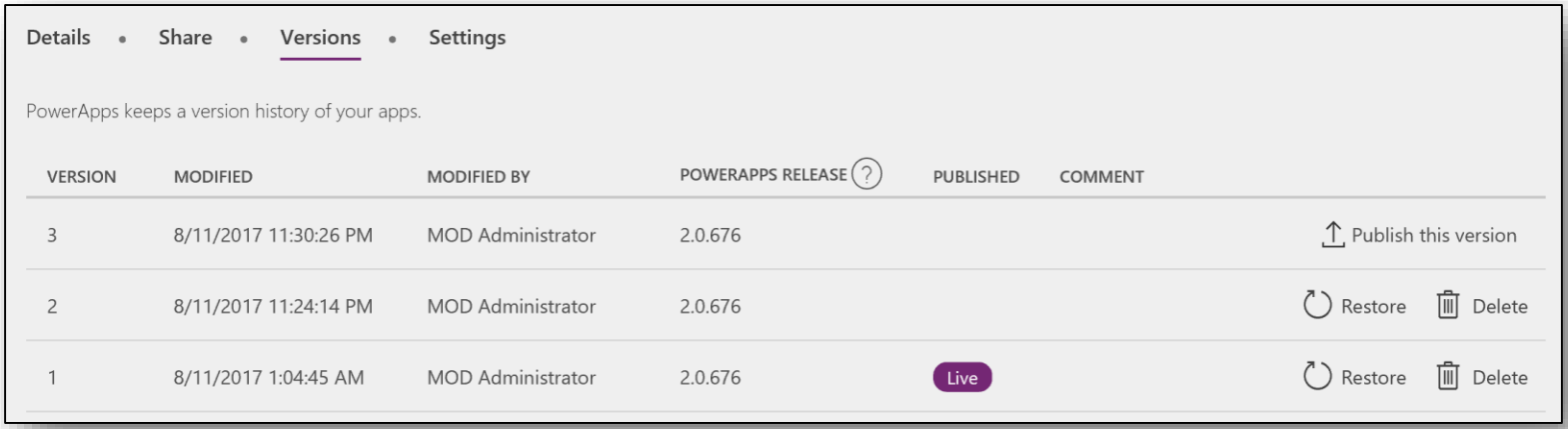
Application Players

- Application players used by consumers to run apps
  - Can be used to run both canvas apps or model-drive apps
  - Apps available to user discovered at **web.powerapps.com**
  - Dynamics 365 users see apps at **home.dynamics.com**

- Application players available for install on mobile devices
  - Currently, there are separate apps for canvas and model-driven
  - Microsoft plans single app for canvas and model-driven in future

App Versioning in PowerApps

- PowerApps keeps version history for apps saved to cloud
  - Accessible via https://web.powerapps.com
  - Restore, delete, and publish versions



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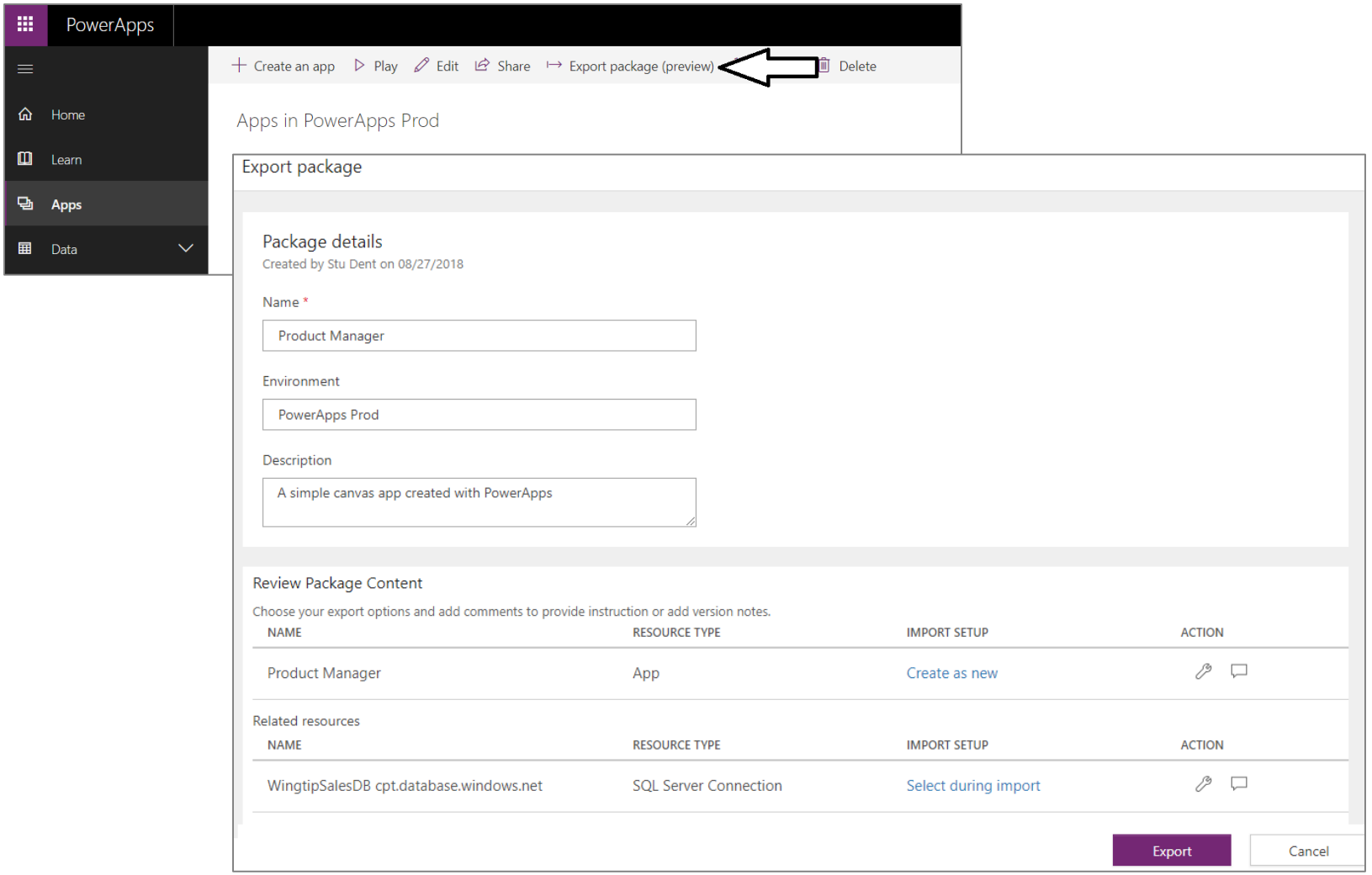
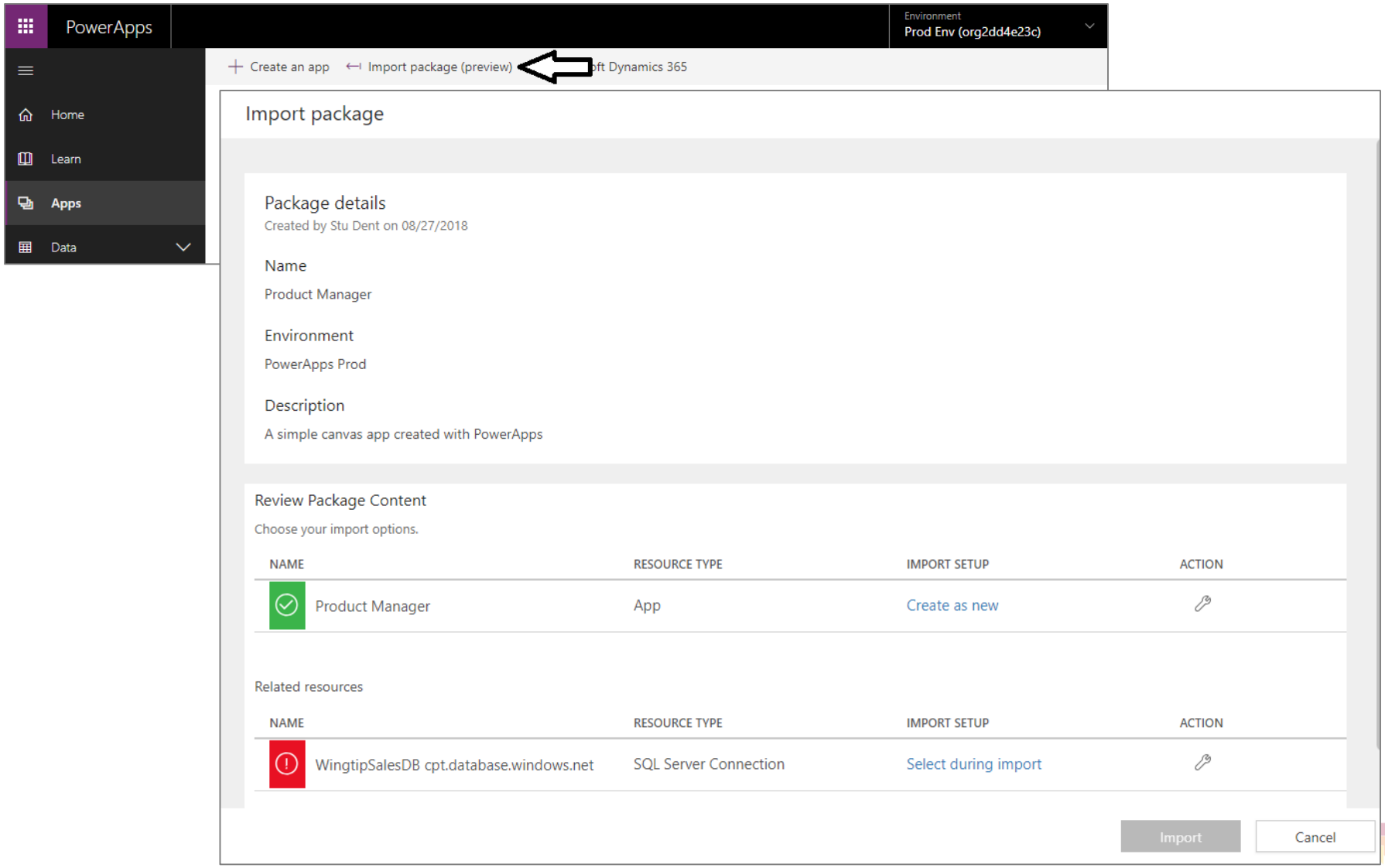
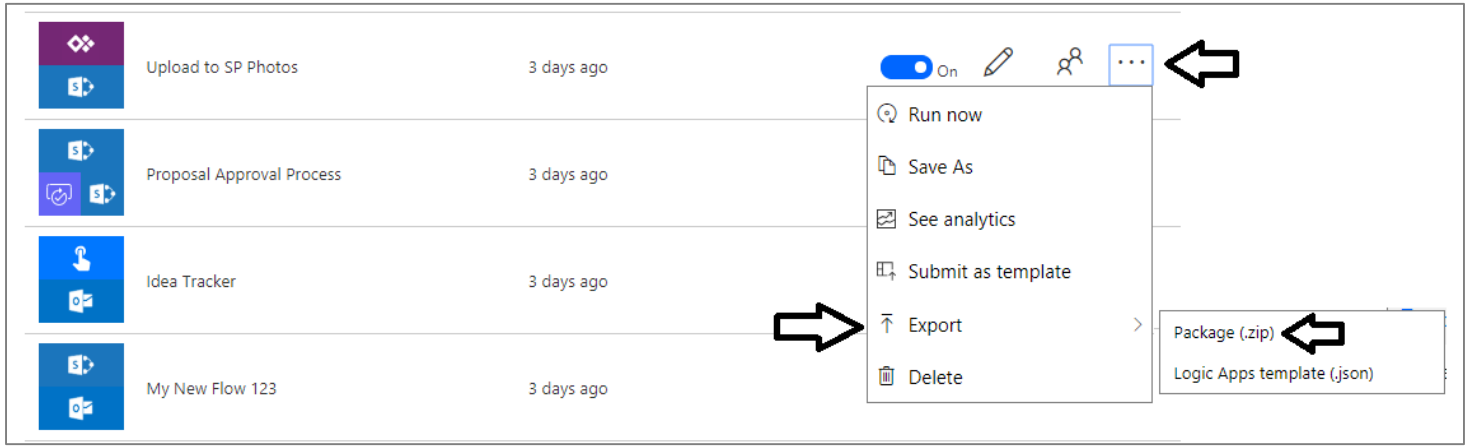
Exporting a Canvas App



Importing a Canvas App



Exporting a Flow



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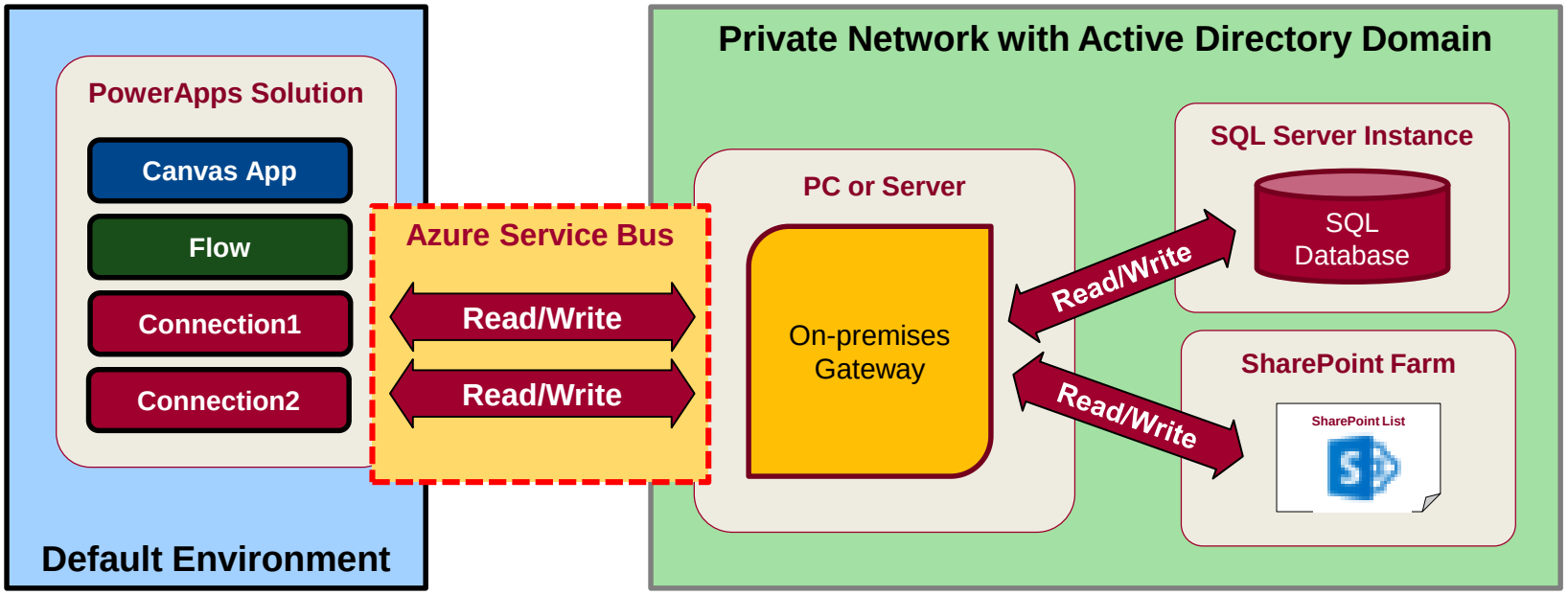
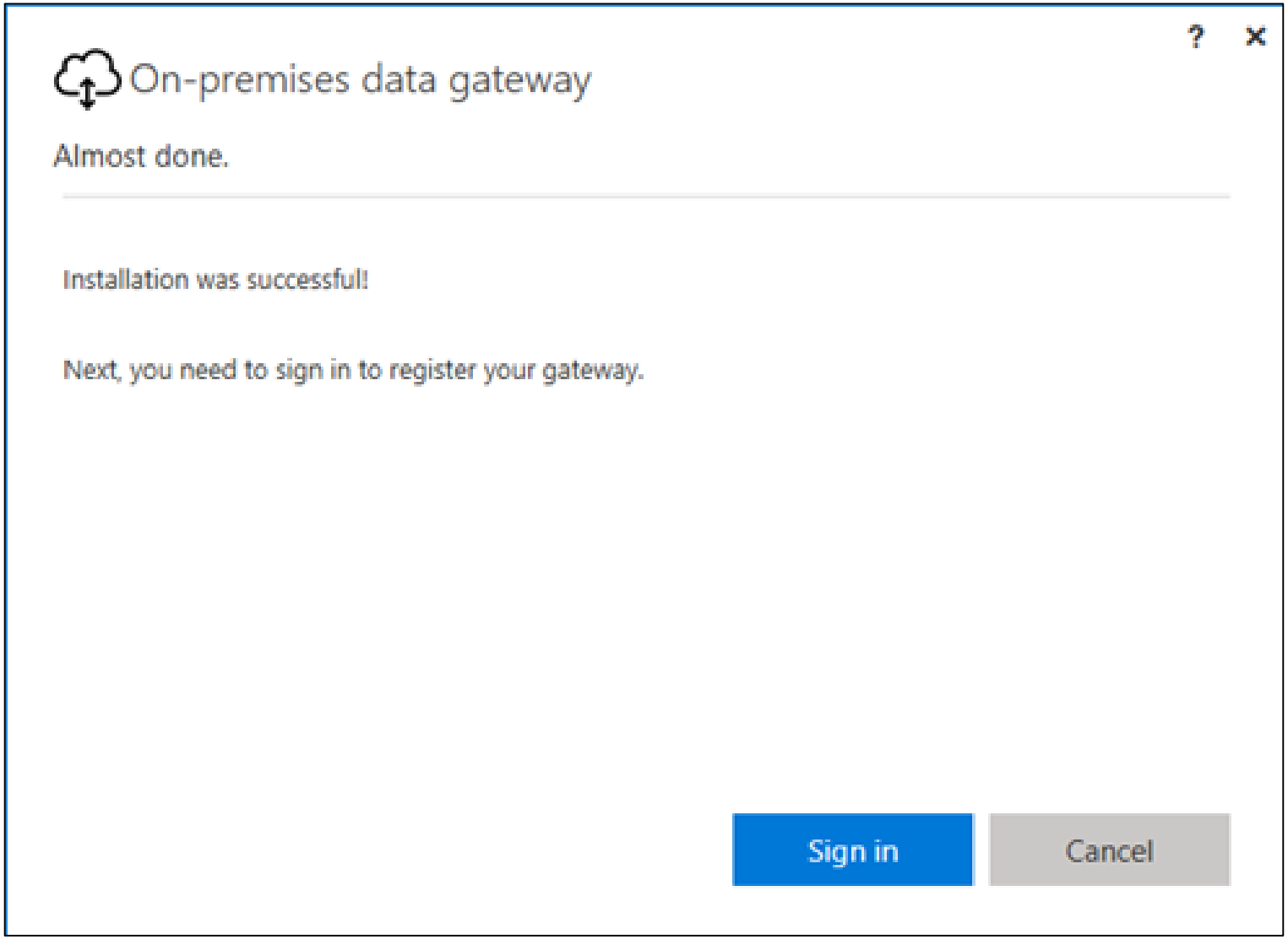
On-premises Data Gateway

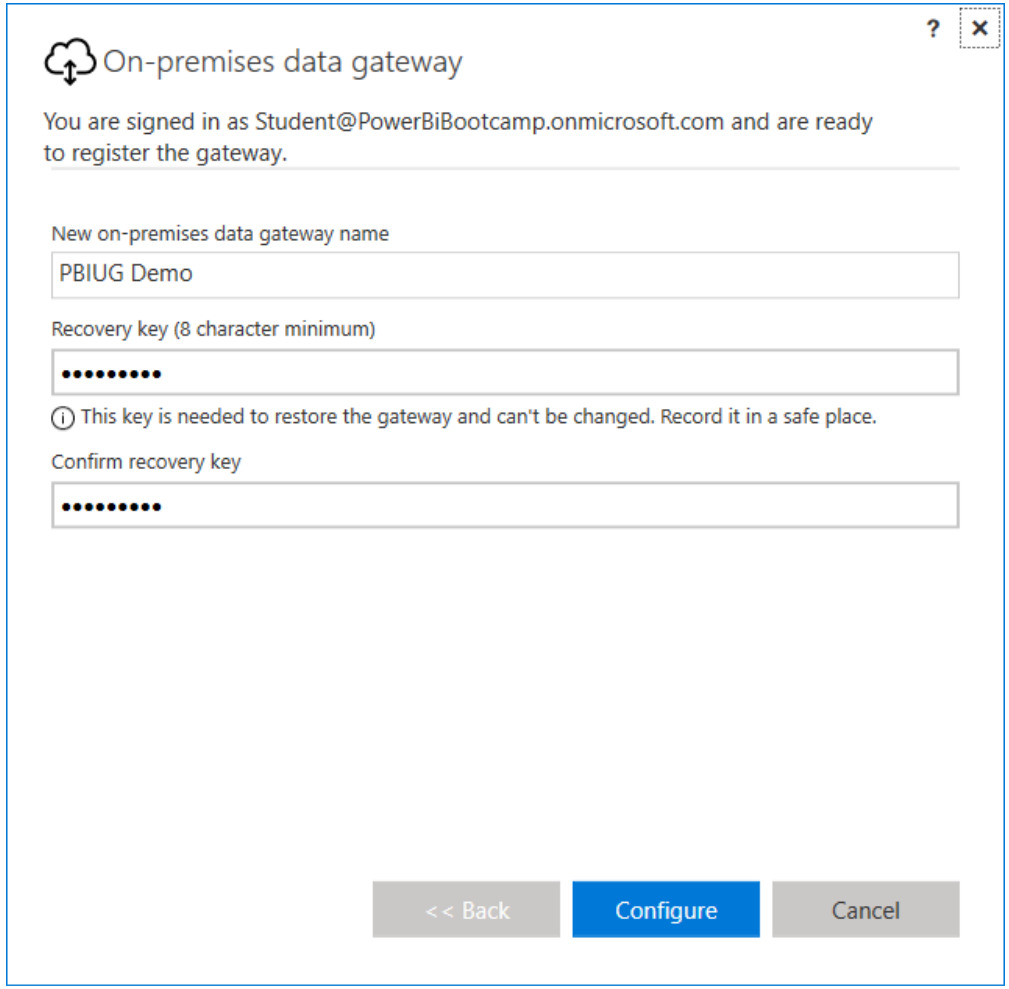
- Gateway used to connect to on-premises data sources
  - Runs on PC or server in local network
  - Used run on server joined to local Active Directory domain
  - Extracts data and returns it to Power BI service



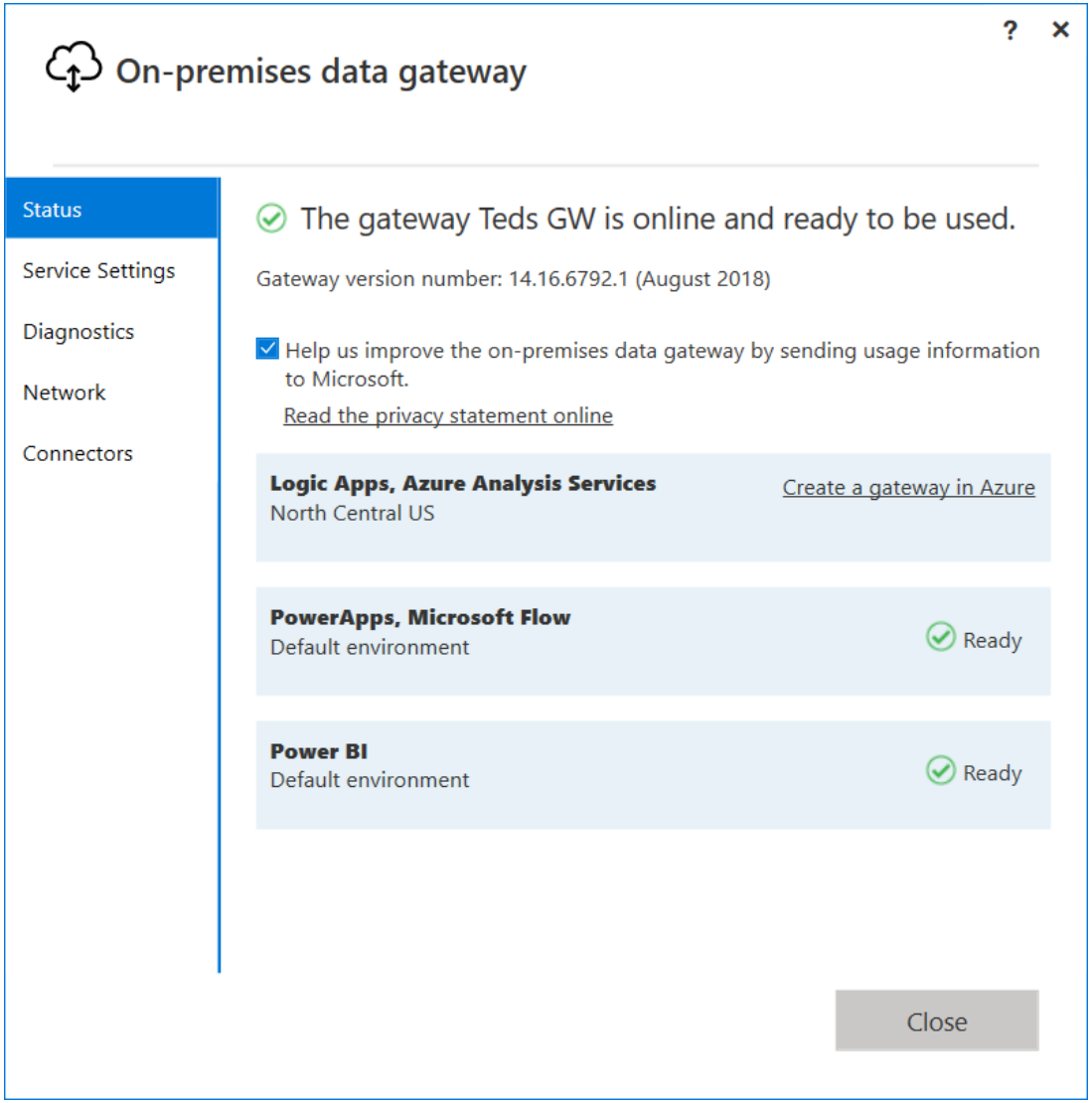
On-Premises Gateway Installation



On-prem Gateway Names & Recovery Keys



Getting the Gateway Up and Running

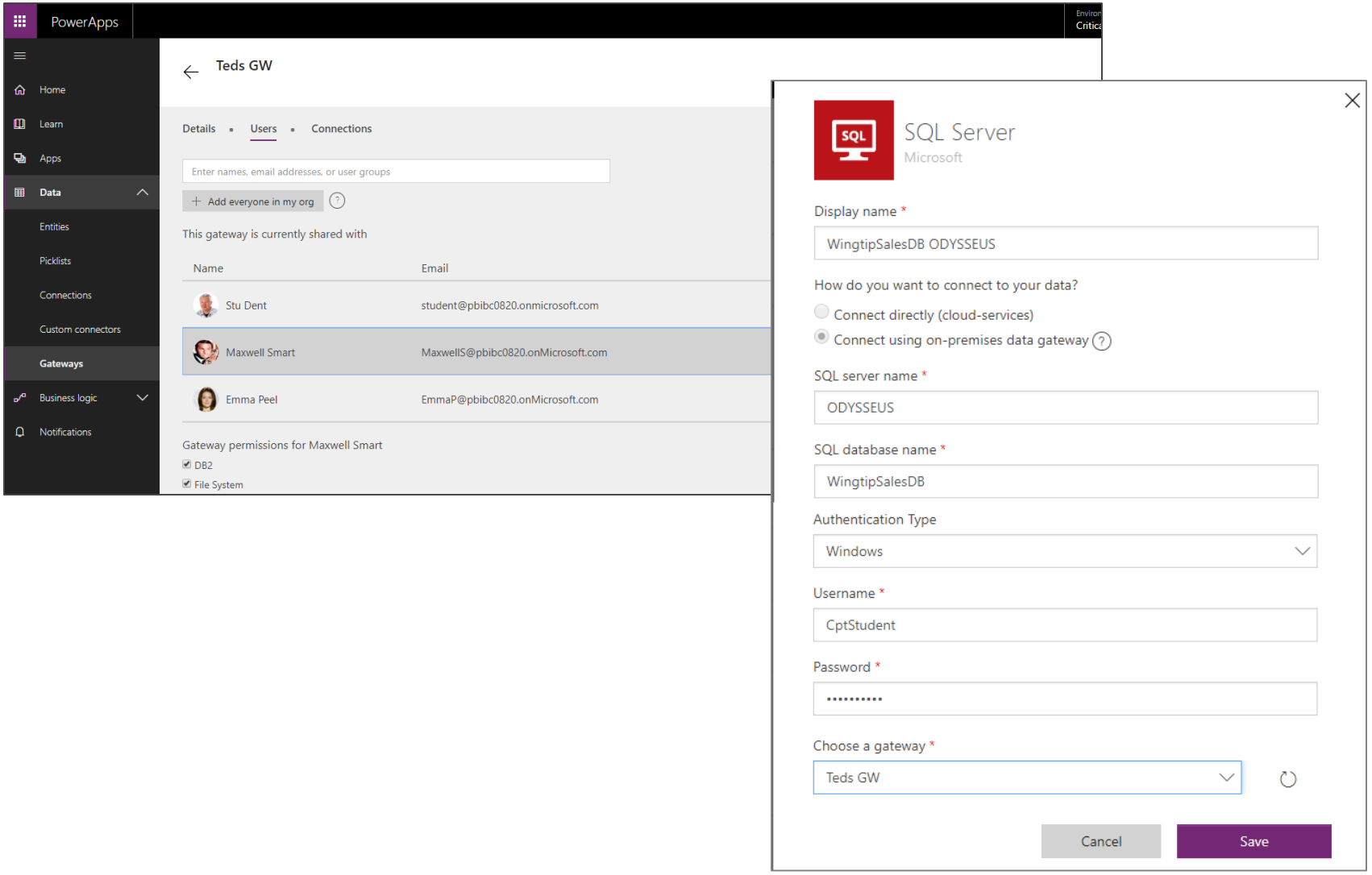


Outbound Ports – On-Premises Gateway

- Gateway communicates through outbound ports
  - Gateway does not require inbound ports

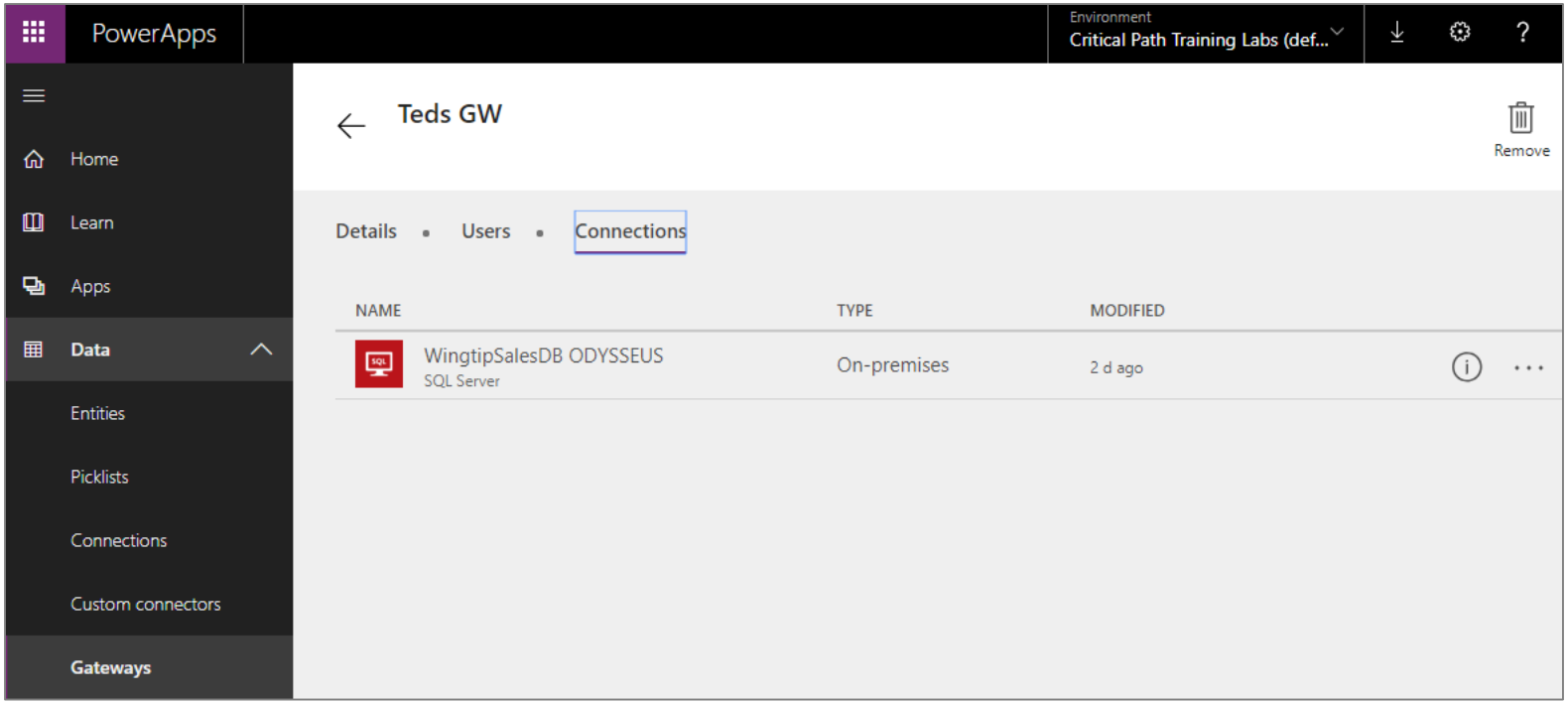
Domain names	Outbound ports	Description
*.powerbi.com	443	HTTPS
*.analysis.windows.net	443	HTTPS
*.login.windows.net	443	HTTPS
*.servicebus.windows.net	5671-5672	Advanced Message Queuing Protocol (AMQP)
*.servicebus.windows.net	443, 9350-9354	Listeners on Service Bus Relay over TCP (requires 443 for Access Control token acquisition)
*.frontend.clouddatahub.net	443	HTTPS
*.core.windows.net	443	HTTPS
login.microsoftonline.com	443	HTTPS
*.msftncsi.com	443	Used to test internet connectivity if the gateway is unreachable by the Power BI service.

Using a Gateway to Create a Connection



On-Premises Data Gateway

- On-Premises Gateway required to access on-premises data
  - Gateway used by Power BI, PowerApps, Flow and Logic Apps
  - Download installer: http://go.microsoft.com/fwlink/?LinkID=820931



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ALM Principals

- Source code system should be authoritative source
  - No reliance on a running CDS environment
  - Using branches for release management
  - Viewing and approving changes at granular level
- Developer isolation
  - All builders have their own isolated environments in which to work
- Full automation of ALM procedures
  - Create repeatable processes for build, test and deployment
  - Continuous delivery and development

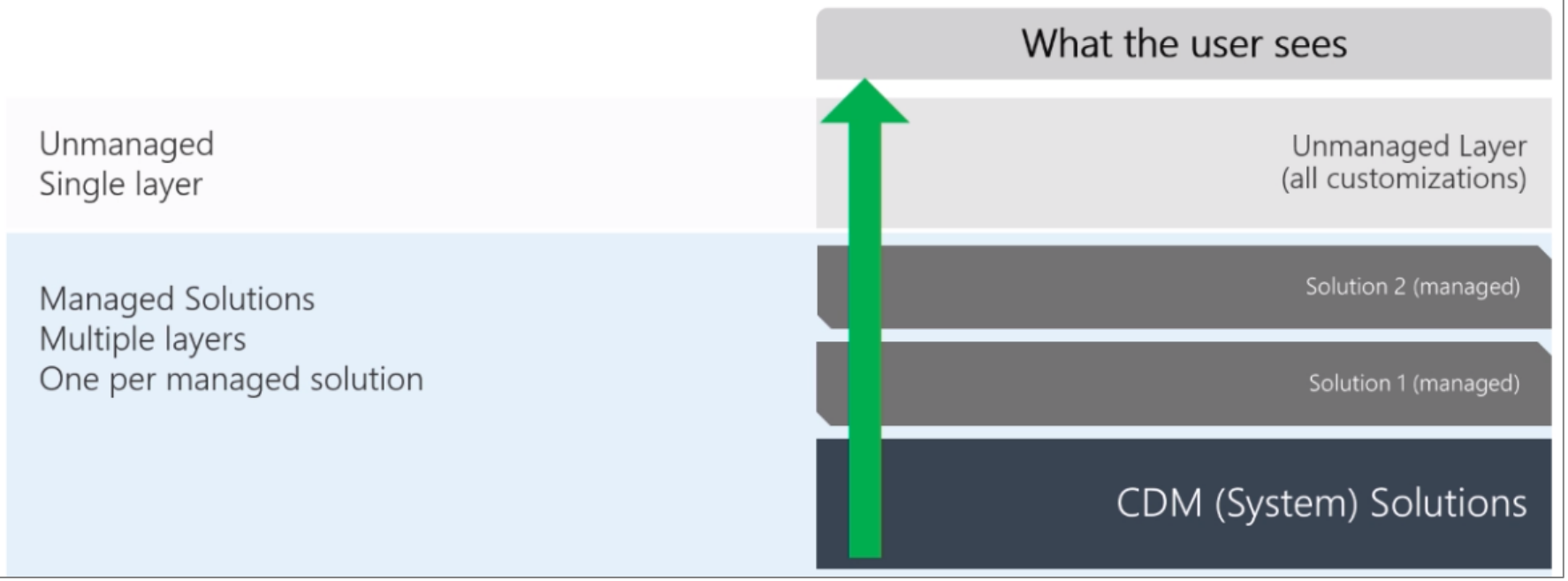
Introduction to Solutions

- Solutions used to move configuration between environments
  - Solutions used to move metadata (e.g. custom entity, model-driven apps)
  - Solutions not used to move business data itself
- Solutions can be managed or unmanaged
  - Unmanaged solutions is "open" solution which allows changes
  - Managed solutions are locked down and do not allow changes.
  - During development, you work with an unmanaged solution
  - When you export solutions, export is created as managed or unmanaged
- When you import a managed solution, it is in lockdown mode
  - You cannot modify or remove application components or customization
  - Managed solution is serviceable and upgradable
  - Uninstalling managed solution removes everything

Solution Layering in the CDS

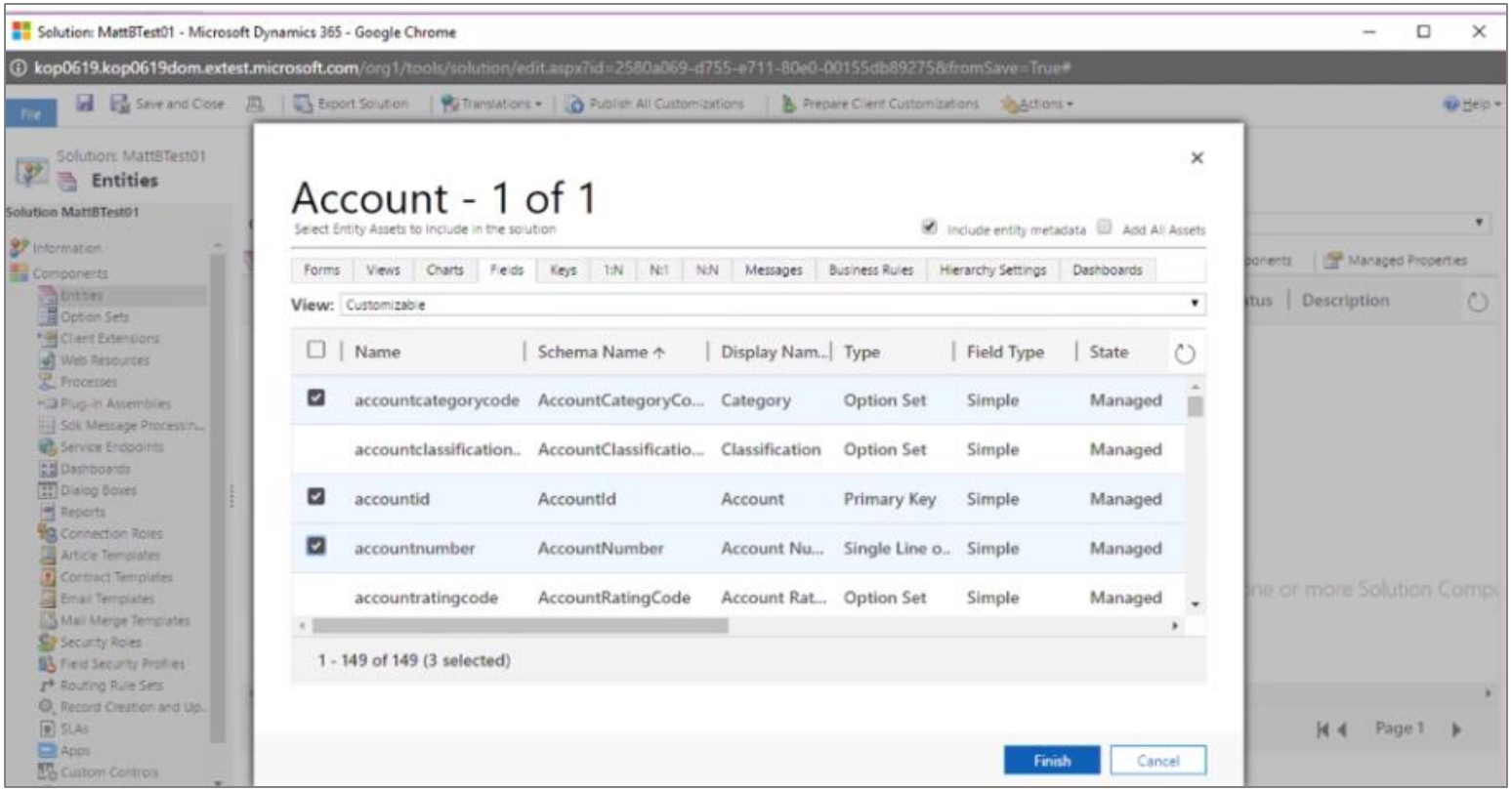
The order of installation and customization matters!

An unmanaged customization can be overridden by a managed solution in some circumstances



Solution Segmentation

- Allows for choice of adding all assets or picking specific assets



Managed Solution Actions

Update

Replaces existing solution with new components in same layer
Does not delete – unused components will remain in the system
Overwrite or keep unmanaged customizations

Patch

Create specific fixes and updates to solutions deployed as patch's
Additive only – no delete scenarios
Layers on top of parent solution, but does not impact layers above.

Upgrade

Upgrade Functionality
Remove unused assets
Run upgrade logic

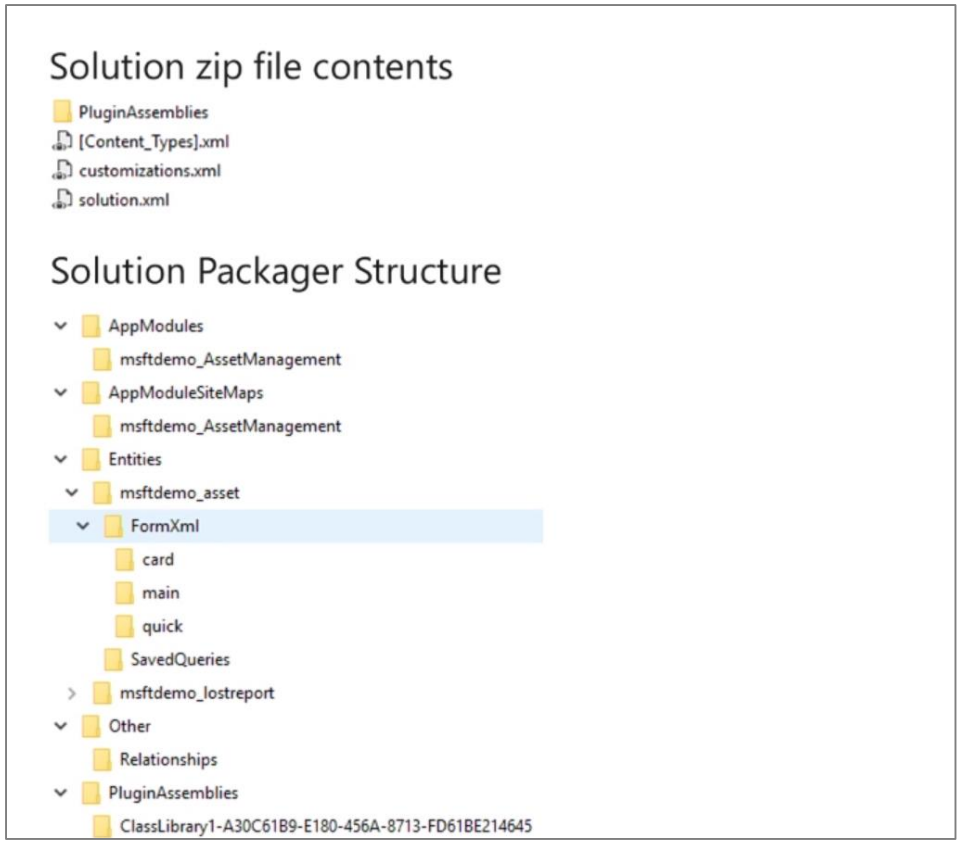
Adding Patches to a deployment

The order of installation and customization matters!

An unmanaged customization can be overridden by a managed solution in some circumstances

Solution Packager

- Used to store the solution zip components in organized folder structure
- Make source control and differencing much easier
- Allows for both unmanaged and managed files to be in source control



Installing Solutions

- Solutions can depend on other solutions
  - You can't install solution until you install dependencies
- How do you install solutions?
  - Solution Manager
  - Package Deployer tool
- Package deployer tool
  - can be run interactively
  - can be run from PowerShell
  - can be run by installing from AppSource marketplace

Installing Unmanaged Solutions

- When you import an unmanaged solution…
  - changes merged in with other unmanaged changes
  - Unmanaged solutions cannot be removed as a unit
  - Merged changes removed by manually removing items
  - administrator must publish unmanaged changes to have any non-schema (e.g. display labels) changes be visible to other users

Summary

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