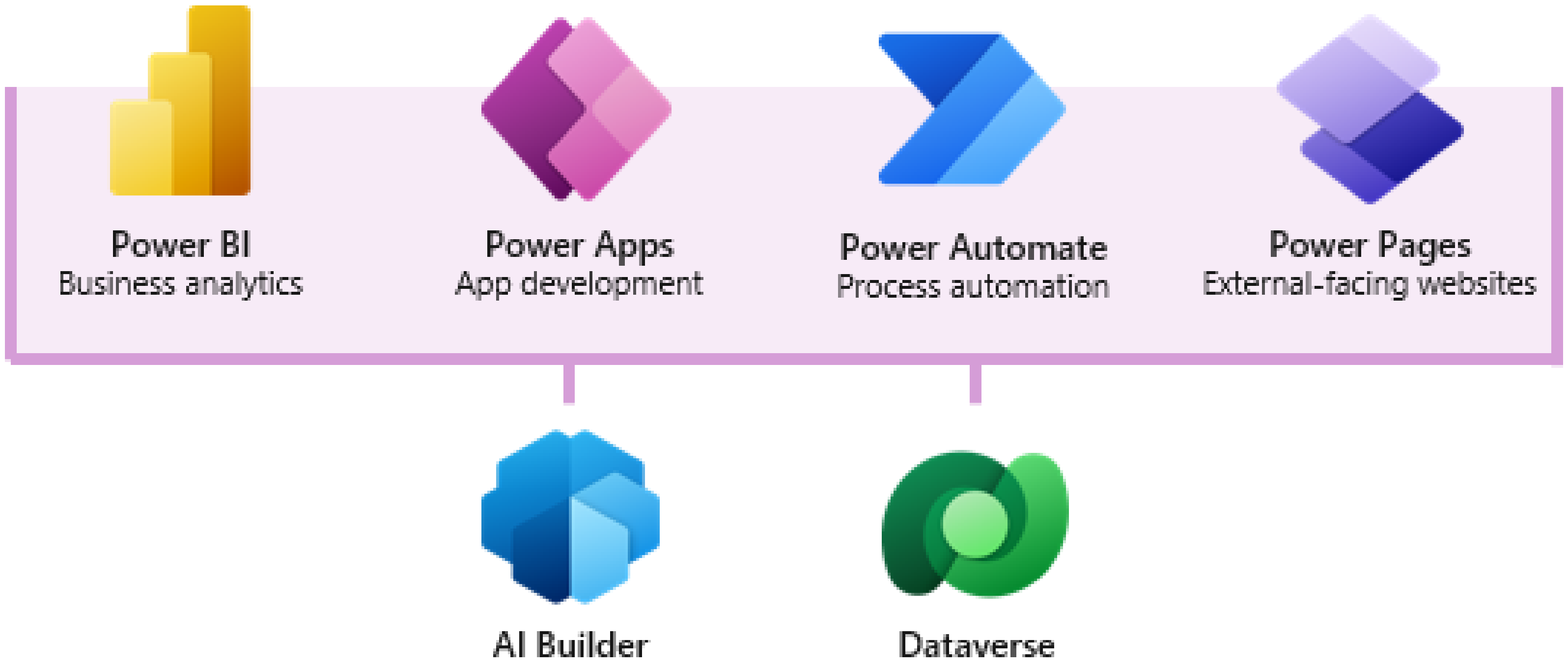
Module 1:
Introduction to the Power Platform

- What is the Microsoft Power Platform
- Model-driven apps
- Dataverse
- Environments
- Environment types
- Create and manage environments

Introduction to the Power Platform (and Environments)

Microsoft Power Platform

The low code platform that spans Microsoft 365, Azure, Dynamics 365, and standalone apps.



What is the Power Platform

Power Apps

- Model-Driven Apps
- Canvas Apps
- Portal Apps

Power Automate

Power Virtual Agents

Power BI

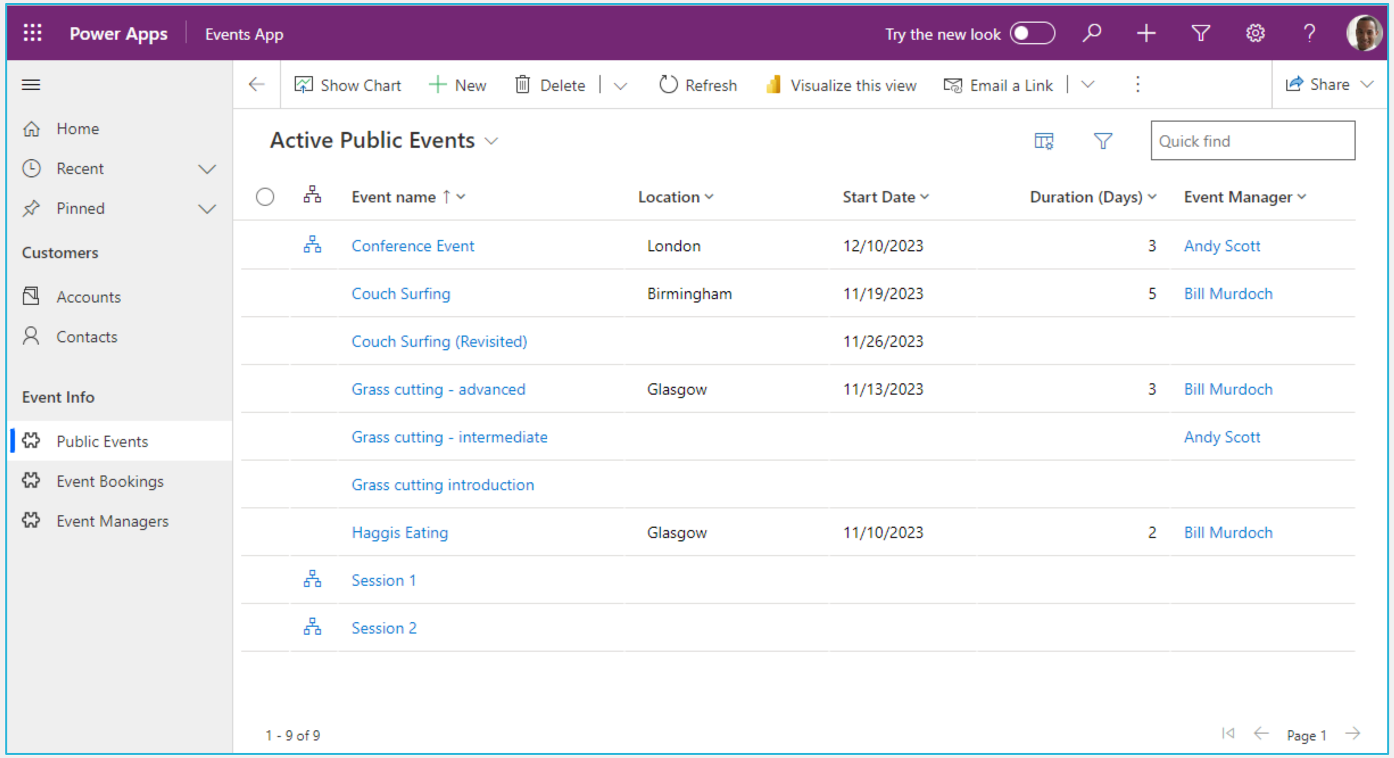
Microsoft Dataverse

Model-driven Apps

- Add dashboards, forms, views and charts with little or no code.
- Components you add determines the layout

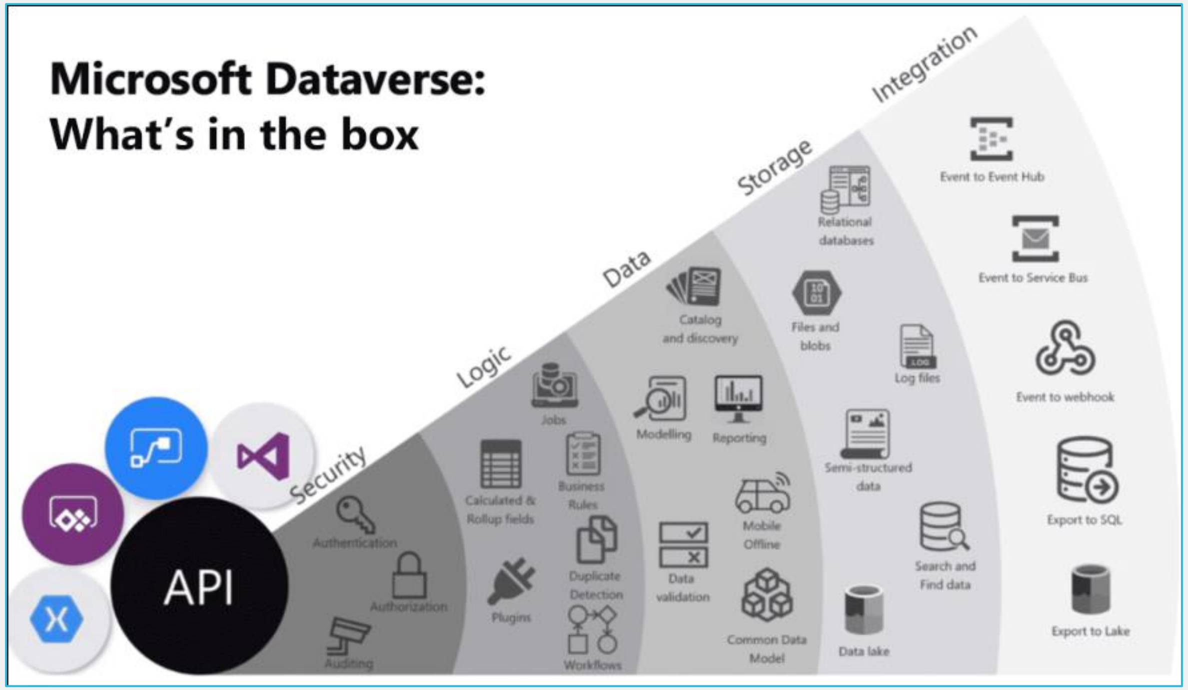
- Design Phases

1. Model your business data
2. Define your business processes
3. Build the app



Dataverse

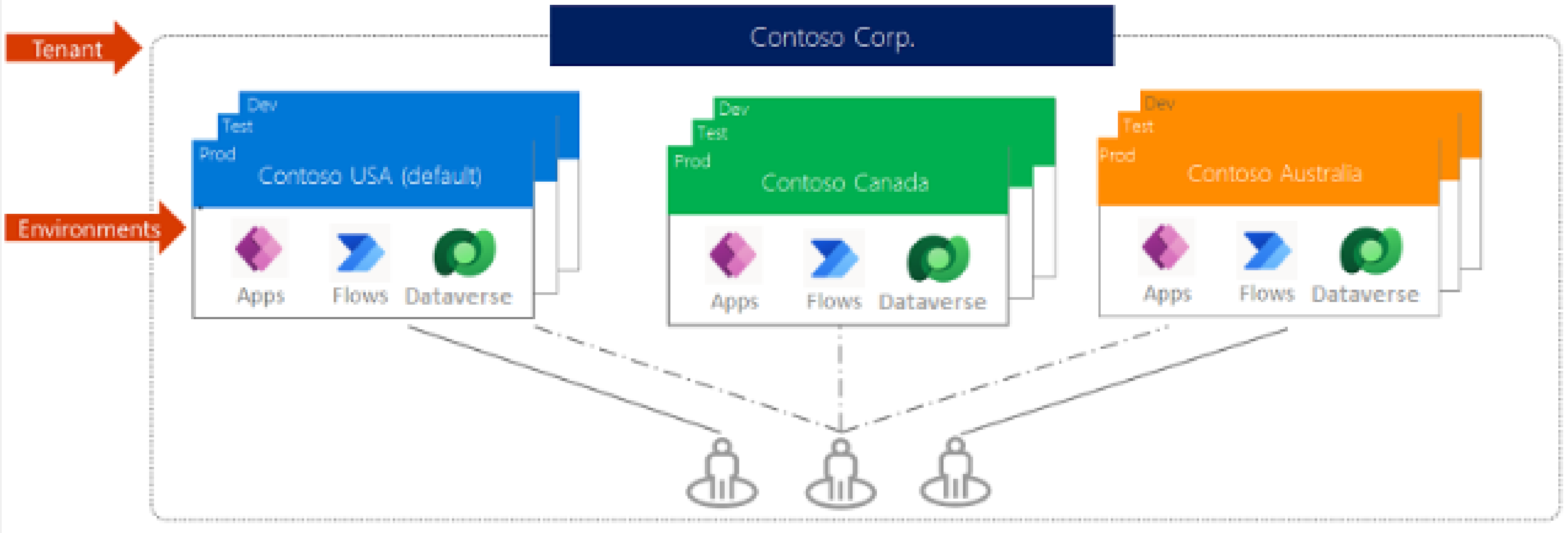
- Cloud-based data storage service
- Set of tables with rows and columns
- Includes standard tables (CDM)



Security	Logic	Data	Storage	Integration
• Authentication with Entra ID • Authorization to row and column level	• Duplicate detection • Business rules • Workflows	• Modelling • Reporting • Validation	• In the Azure cloud • Do not need to worry about location or scaling	• APIs • Eventing • Data Export

Environments

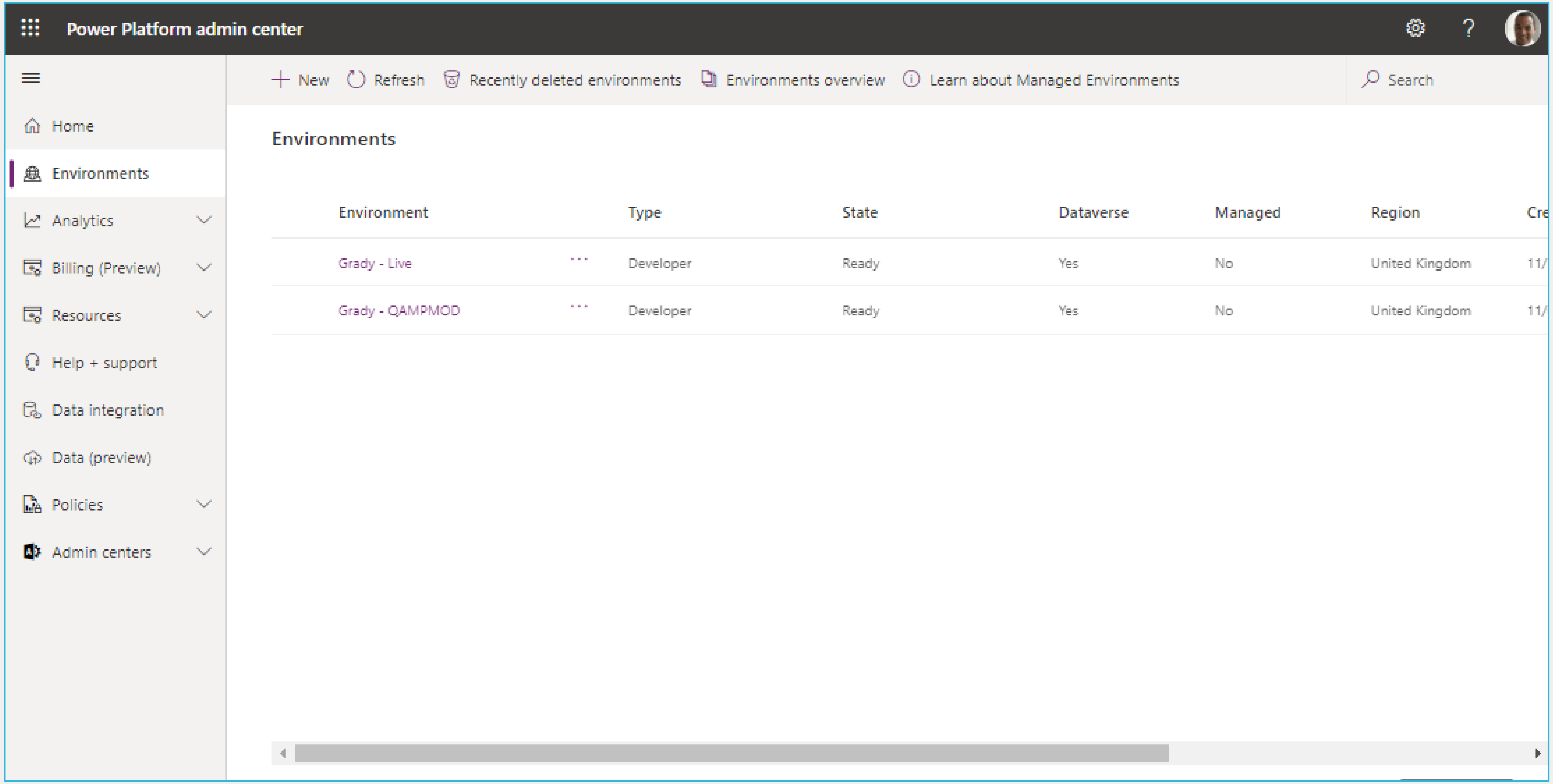
- Created under an Entra ID tenant
- Bound to a geographical location
- Create a manage a Dataverse instance
- Also manage
  - User access
  - Security settings



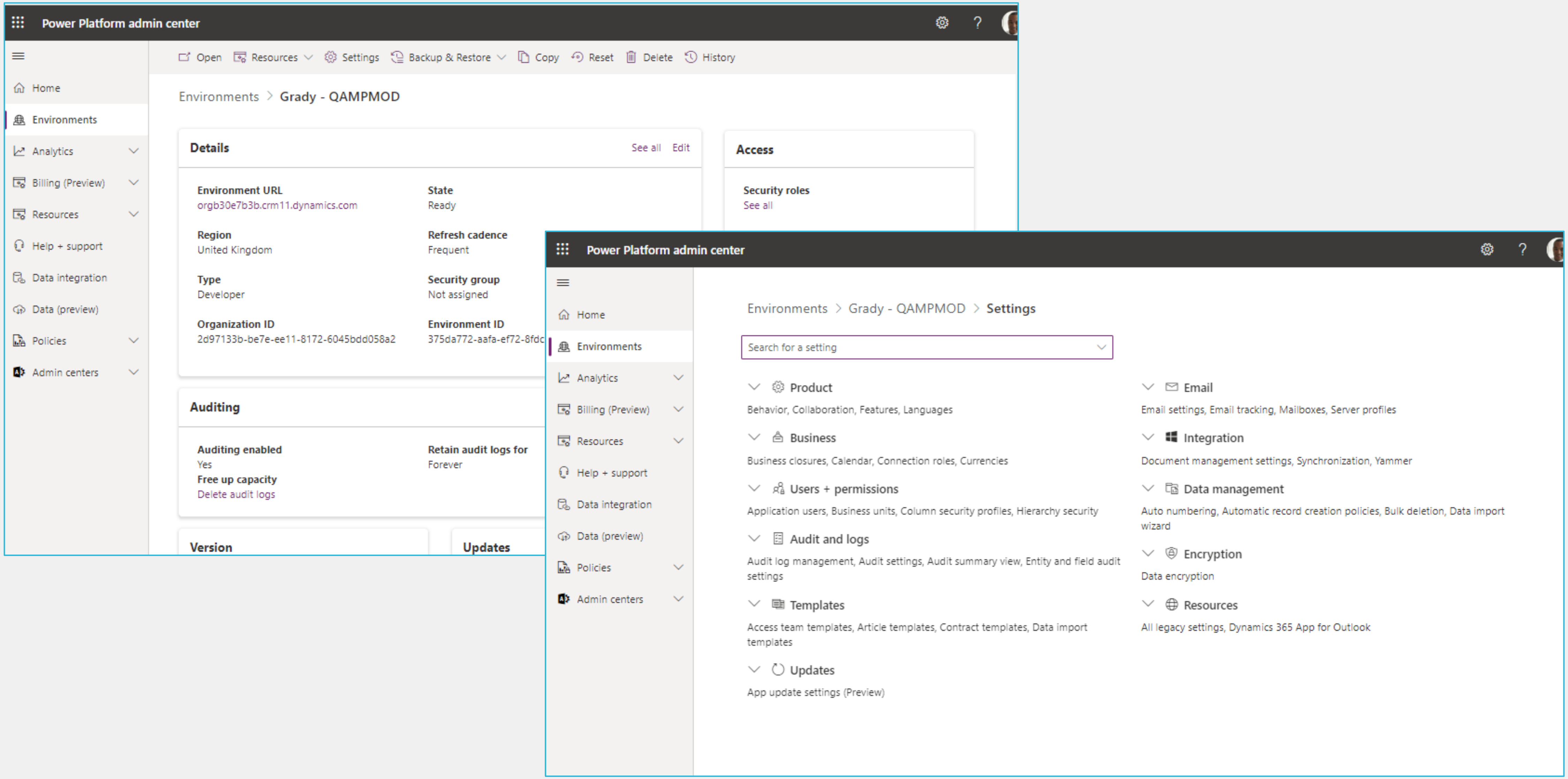
Environment Types

- Production
  - Intended to be used for permanent work
- Default
  - Special type of production environment
  - All licensed users have access
  - Can not be deleted
  - Can not be backed up
  - Can be renamed (personal productivity)
- Sandbox
  - Non-production
  - Offers features such as copy and reset
- Trial
  - Short term testing
  - Expire after 30 days
- Developer
  - Use the Developer Plan license
  - Cannot use Security groups for membership

Create and manage an environment (1/2)



Create and manage an environment (2/2)



Lab 1 (Page 14)

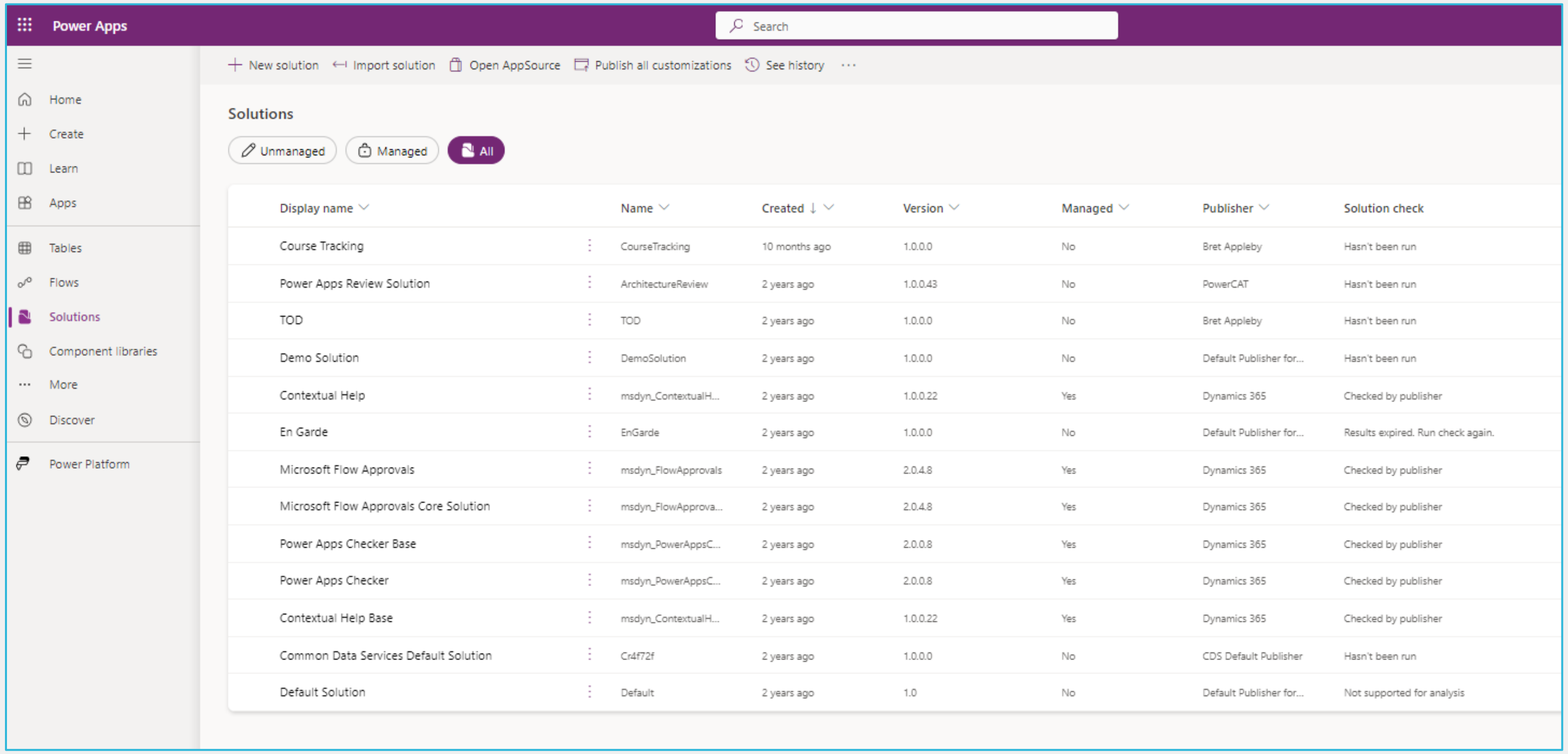
- Configuring the Power Platform Environment

1. Create a new environment (if necessary)
2. Explore the settings of the environment

Module 2: Power Platform Environments & Solution Management

Power Platform Solution Management

Solution Overview

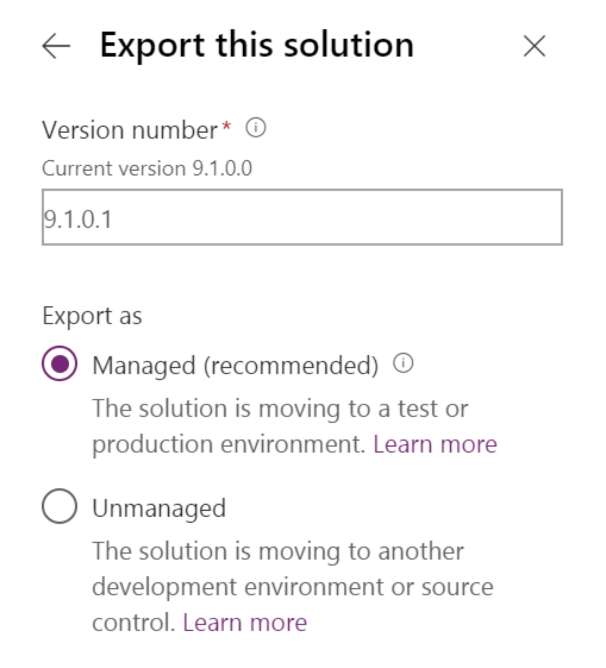


Solution Properties

Display Name

Cannot be changed

Used for file name of exported Solution package



Version Number

- Up to four numbers separated by decimals
- Major.Minor.Build.Release
- Major Number = Major Product number
- Minor: Solution Version
- Build: Patch Version
- Release: Your revision change (updated automatically each time the Solution is exported)

Solution benefits

1. **Work on just the components that you need** to without any distraction or confusion from everything else in the system.

2. **Compartmentalise** the project: have different solutions for different parts of the Project.

3. Solutions, when ready, may be **exported** with all components inside ready to move to a live production environment.

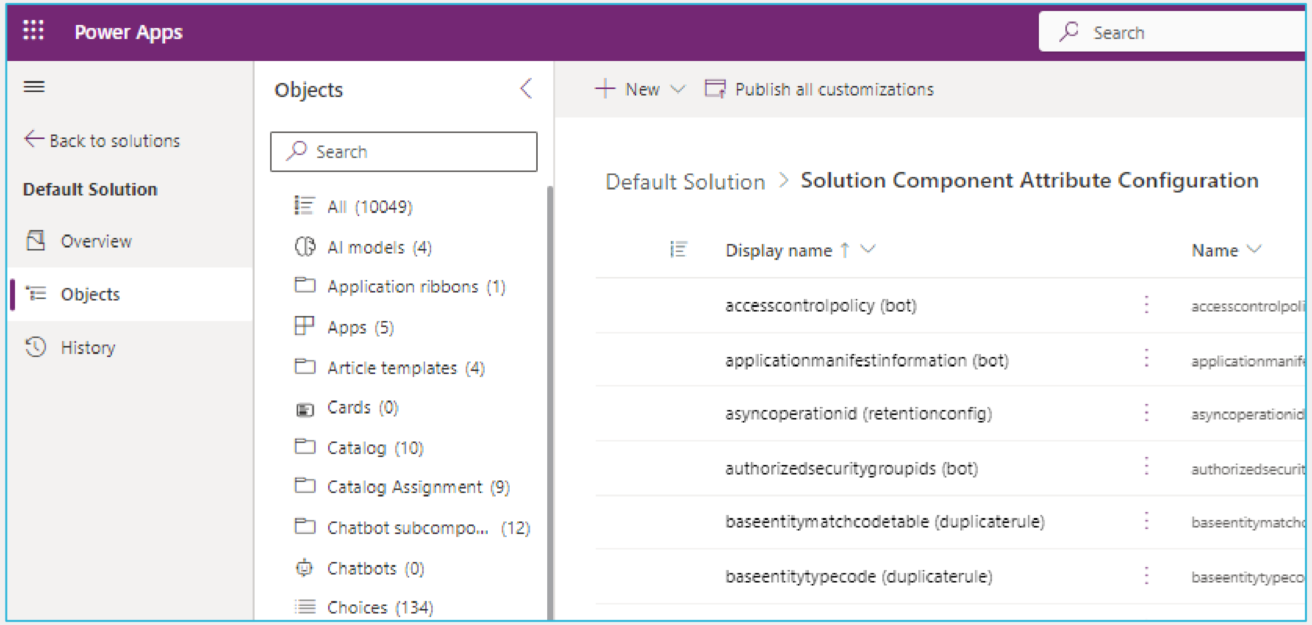
4. Your exported solution will only contain the components that you have selected. Your solution will be smaller and more manageable than if you export the whole system solution.

5. Your saved exported solution becomes part of your change control records.

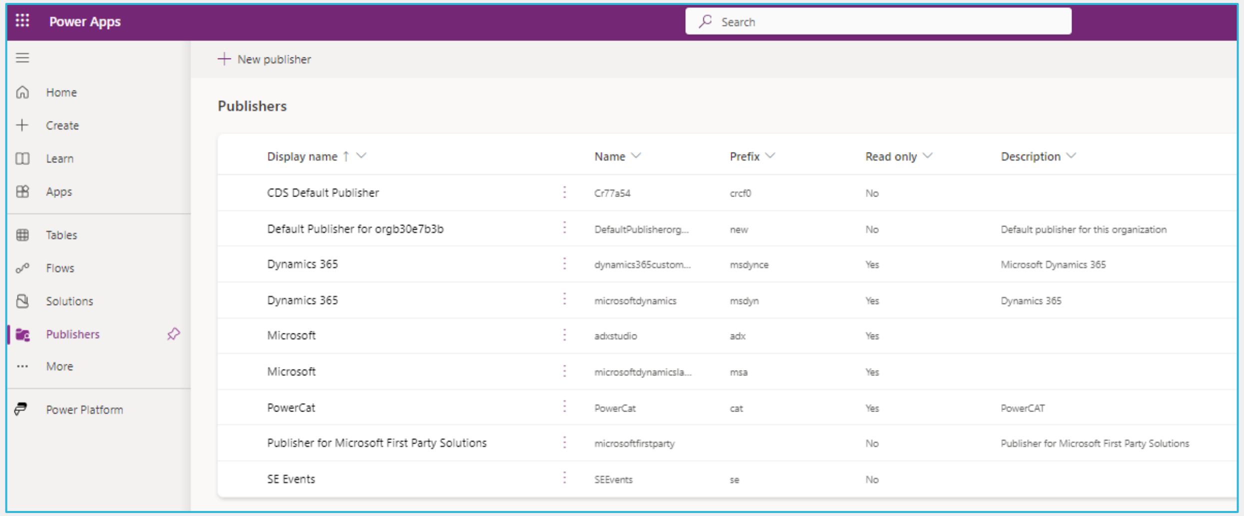
The Default & Common Data Services Default solutions

- Not recommended to work directly in the default solution.

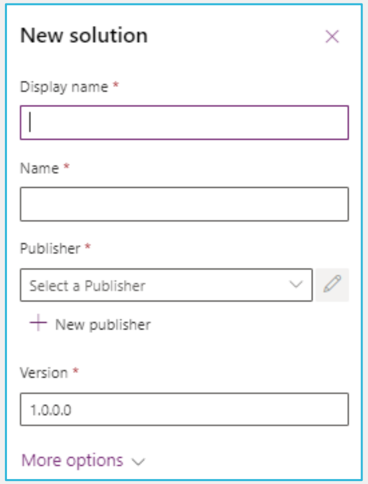
- Initially empty
- Contains components changed and created directly from the Power Apps Maker portal

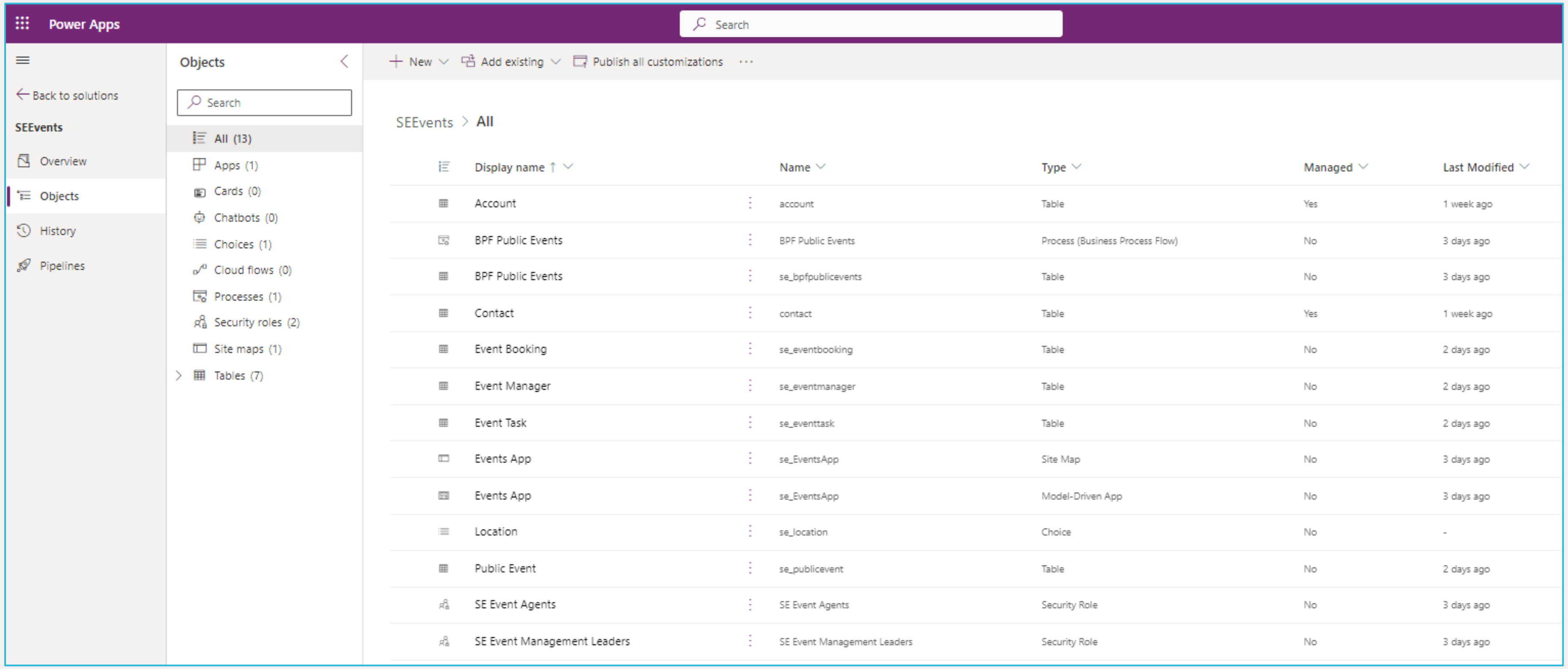


Publishers


Power Apps
Search
New publisher
Home
Create
Learn
Apps
Tables
Flows
Solutions
Publishers
More
Power Platform
Publishers
Display name
Name
Prefix
Read only
Description
CDS Default Publisher
Cr77a54
crcf0
No
Default Publisher for orgb30e7b3b
DefaultPublisherorg...
new
No
Default publisher for this organization
Dynamics 365
dynamics365custom...
msdynce
Yes
Microsoft Dynamics 365
Dynamics 365
microsoftdynamics
msdyn
Yes
Dynamics 365
Microsoft
adxstudio
adx
Yes
Microsoft
microsoftdynamicsla...
msa
Yes
PowerCat
PowerCat
cat
Yes
PowerCAT
Publisher for Microsoft First Party Solutions
microsoftfirstparty
No
Publisher for Microsoft First Party Solutions
SE Events
SEEvents
se
No

Create a solution





Exporting Solutions

- Managed
- Read only
- Should be used in test and production environments
- Can be removed cleanly

- Unmanaged
- Editable
- Used during development
- When published components pushed into the Default solution
- Can not be removed cleanly

Lab 2 (Page 23)

Create a Publisher & Solution

1. Create a new solution named SE Events
2. Create a new publisher named SE
3. Add tables to the solution
4. Export the solution as unmanaged

Module 3: Customising Tables

Dataverse Tables

- Tables in Dataverse
- Creating a table
- Primary Column
- Custom table types
- Record ownership
- Table advanced options
- Deleting a custom table

Tables in Dataverse

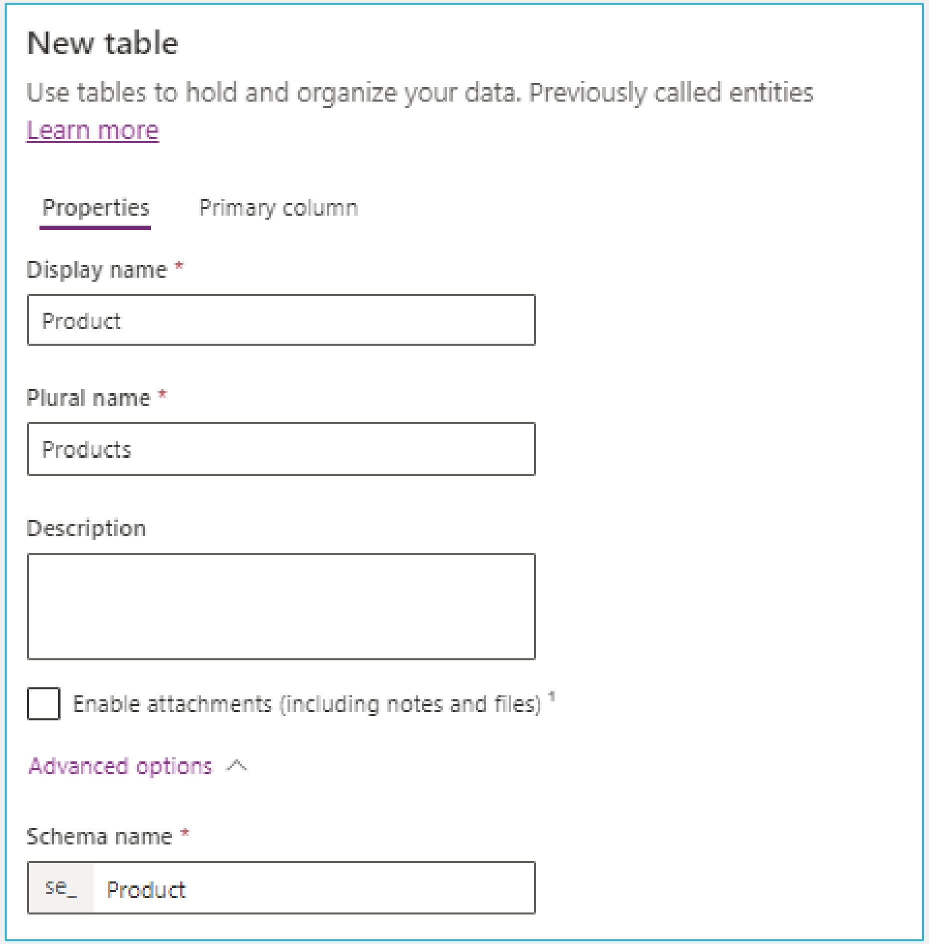
- System
- Automatically created
- Most are hidden (by default) from UI
- Provide built-in system functionality

- Standard
- Automatically created
- Comply with the Common Data Model
- Can be customised
- Can not be deleted

- Custom
- None by default
- Create to store the records needed

Creating a Table

- Display Name
- Plural Name
- Schema Name (cannot be changed after creation)



Primary Column

- Used to identify each record in the table
  - Does not need to be unique as there is a GUID for this
- Business required (by default)
- Used in list views to click through to get the record's form
- Also used when looking up records from another table
- Defaults to "Name"
- May want to change it to something more descriptive
- Can not be changed after the table is created

QA

Custom Table Types

- Standard
- Used to store data
- Can be added to the navigation in model-driven apps

- Activity
- Store interactions with other tables (e.g. phone call)
- Large number of default ones
- Appear in the timeline on model-driven app forms

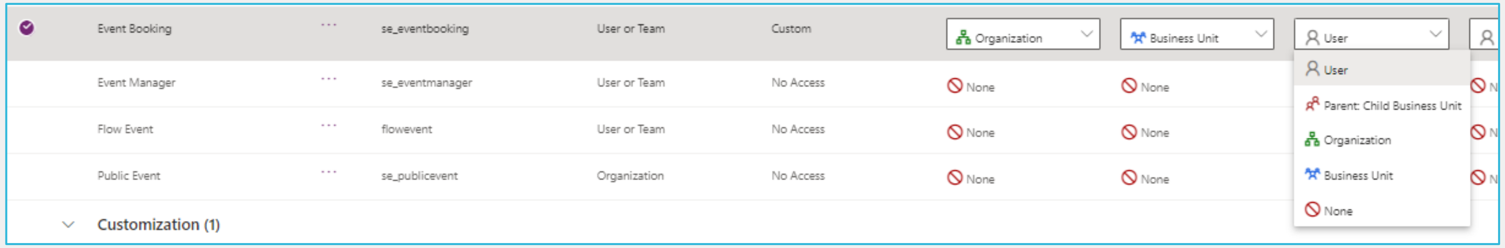
- Virtual
- Connect to data from an external data source

- Elastic
- Designed for large data sets (Powered by Azure Cosmo DB)
- Flexible schema
- Automatic removal of data after a time period
- Can ingest tens of millions rows of data every hour

Record Ownership

User or Team

- Actions that can be performed can be controlled at the user level



Organization

- Access to the data is controlled at the organization level

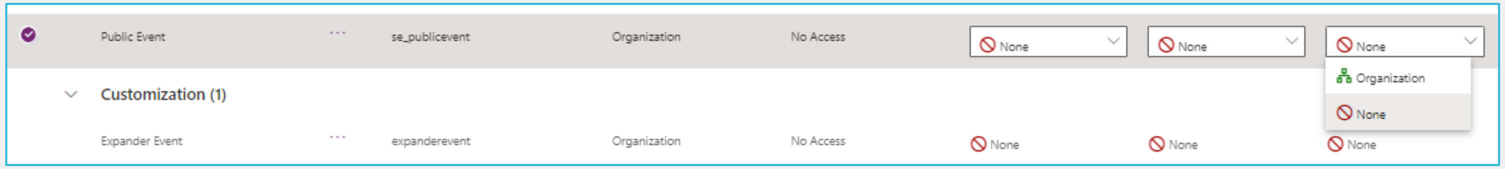


Table Advanced Options – For this table

Setting	Description
Apply duplicate detection rule	Apply (customisable) rules that will prevent duplicate records being created.
Track changes*	Detects what data has changed since synchronization. Required for tables available offline, should be enabled if data synchronised from external source
Provide custom help	Provide an external URL for help information
Audit changes to its data	When enabled, audits all columns by default. Auditing must be enabled for the environment.
Leverage quick-create form if available	Simpler create form
Enable long term retention	Table can be included in data retention configuration (will move certain records to long term storage)

* Can not be turned off if enabled

Table Advanced Options – Make this table an option when

Setting	Description
Creating a new activity*	Creates relationships with the activity tables
Doing a mail merge	Enable the ability to generate Office Word merged documents from this table
Setting up SharePoint document management	Allow documents attached to this table to be stored in SharePoint instead of Dataverse

* Can not be turned off if enabled

Table Advanced Options – Rows in this table

Setting	Description
Can have connections*	Create "fuzzy relationships". Used to link two records (not tables). Define connection roles (e.g. "friend").
Can have a contact email*	Adds an email column to the table and a link to the ActivityParty table (tracks recipient role e.g. ToRecipient, CCRecipient)
Have an access team	Creates an access Team for this table
Can be linked to feedback*	Creates a relationship with the Feedback table
Appear in search results	
Can be taken offline	(Also requires change tracking to be enabled)
Can be added to a queue*	Creates a relationship with the Queues table. (Provides an ordered list for records to be processed).

* Can not be turned off if enabled

Deleting a custom table

- Any dependencies must be considered first

Failed to delete Table (Access Team). Object dependencies exist, please review before deleting.

Dependent objects (2)

You cannot delete **Access Team** while the following objects depend on it.

Display name ↑	Name	Object type
Demo Test App	Demo Test App	Site Map
Demo Test App	test_DemoTestApp	Model-driven App

Dependent objects (20) Required objects (0)

You cannot delete **Access Team** while the following objects depend on it.

Display name ↑	Name	Object type
business_unit_test_accessteam	business_unit_test_accessteam	Entity Relationship
Demo Test App	Demo Test App	Site Map
Demo Test App	test_DemoTestApp	Model-driven App
lk_test_accessteam_createdby	lk_test_accessteam_createdby	Entity Relationship
lk_test_accessteam_createdonbehalfby	lk_test_accessteam_createdonbehalfby	Entity Relationship

Lab 3 – Creating Custom Tables (Page 34)

1. Create the Public Event Table
2. Create the Event Booking Table
3. Enable Advanced options

Module 4: Creating & Customising Columns

- Columns overview
- Column data types
- Column behaviours
- "Required" setting
- Advanced settings
- Calculated columns
- Rollup columns

- *Customizing columns*

Columns overview

- A way to store a discrete piece of information within a table.
- Columns have types (Text, Number, Date and time)

- Single line of text
- Multiple lines of text
- Number
- Date and Time
- Lookup
- Choice
- Currency
- Autonumber
- File
- Formula

Column data types

Single line of text

- Up to 4000 characters
- Formats
- Email – validates as an email address. Rendered as a mailto link in the column
- Phone number – Validated as a phone number Rendered as a link that can be used for a Teams call
- Rich Text – Allows the use of markup tags to format the text
- Text – Plain text in displayed in a single line
- Text Area – Displays as a multiline scrollable text box
- Ticker symbol – Will display as link that will open to show a quote for the stock ticker symbol
- URL – Validated as a URL. Rendered as a link.

Multiple lines of text

- Initially up to 2000 characters
- Can be increased to 1,048,576 characters
- Formats
- Text – Plain text
- Rich Text - Allows the use of markup tags to format the text

Whole Number

- A number without a decimal point (integers)
- Formats
- None – Can have a maximum and minimum value
- Duration – Data is stored as a whole number of minutes. Data is displayed as duration options (1 minute, 15 minutes, 2 hours etc.)
- Time Zone – Displays as a drop-down box of time zones
- Language – Displayed as a drop-down box of (installed) languages

QA

Decimal and Float

- Decimal – 10 points of precision
- Float – 5 points of precision

Date and Time

Formats

- Date and Time
- Date only - Does not display the time portion

Behaviour

- User Local – Displayed in the current user's local time
- Date Only – Time portion is always 12:00AM
- Time-Zone Independent – Displayed without time zone conversion

Lookup

- Creates a link (1:N relationship) between the table and another table.
- Types
- Lookup – You specify which table to create a relationship with
- Customer – Uses the Account and Contact tables

Choice

A list of options the user can pick from

Types

- Choice
  - Definable list
  - Can allow single or multiple values to be selected
  - Can be a local or (synced with) a global choice
- Yes/no
  - Two options to pick from
  - Display names can be changed

Currency

- A money value for any currencies configured for the environment
- Adds four (two for subsequent currency columns) when added.

Column Name	Purpose
<prefix>_<columnname>	The value entered by the user
<prefix>_<columnname>_base	The value after it is converted into the base currency of the organisation
Currency	Lookup column
Exchangerate	The exchange rate that is applied to the record when it is created or recalculated

QA

Autonumber

- Automatically generate alphanumeric strings when the record is created.

Type

- String prefixed
- Date prefixed
- Custom – combination of:
  - Literal text
  - DateTime values
  - Number sequence
  - Random string

File

- Add file(s) to the record
- Type
- File – Multiple files up to the maximum size
- Image – An image (you can only have one image column per table)

Formula

- Output of an expression written in PowerFX

- Formula Suggestions – AI tool to help write the expression

Supported data types	Not currently supported (use Calculated fields)
Text	Currency
Decimal number	Whole number
Choice Yes/No (Boolean)	Choice (option sets)
Datetime	

Status & Status Reason

- Capture Status of a row
- Status – State of the row (Active / Inactive)
- Status Reason – Reason linked to a specific status

Status	Status Reason
Active	In Progress On hold Waiting
Inactive	Cancelled Completed

Behaviours

- Control how the value is calculated
- Different options available for different data types
- Behaviour types
- Simple – No calculation
- Calculated – Calculated value based on other columns in the table
- Rollup – Calculated value based on other tables

Required

- Optional – Nothing happens
- Business recommended – Visual indication that the field is important. Can save the record if not populated
- Business required – Visual indication that the field is important. Can <u>not</u> save the record if not populated

QA

Advanced Settings

Setting	Explanation
IME Mode	Can be used to quickly enter Chinese, Japanese and Korean characters
Enable column security	Can set a higher level of security on the column (field)
Enable auditing	Also needs to be enabled on table and in the environment
Appears in dashboard's global filter	Column appears as a filter in the interactive experiences dashboard
Sortable	Column appears as an option for sorting in the interactive experiences dashboard

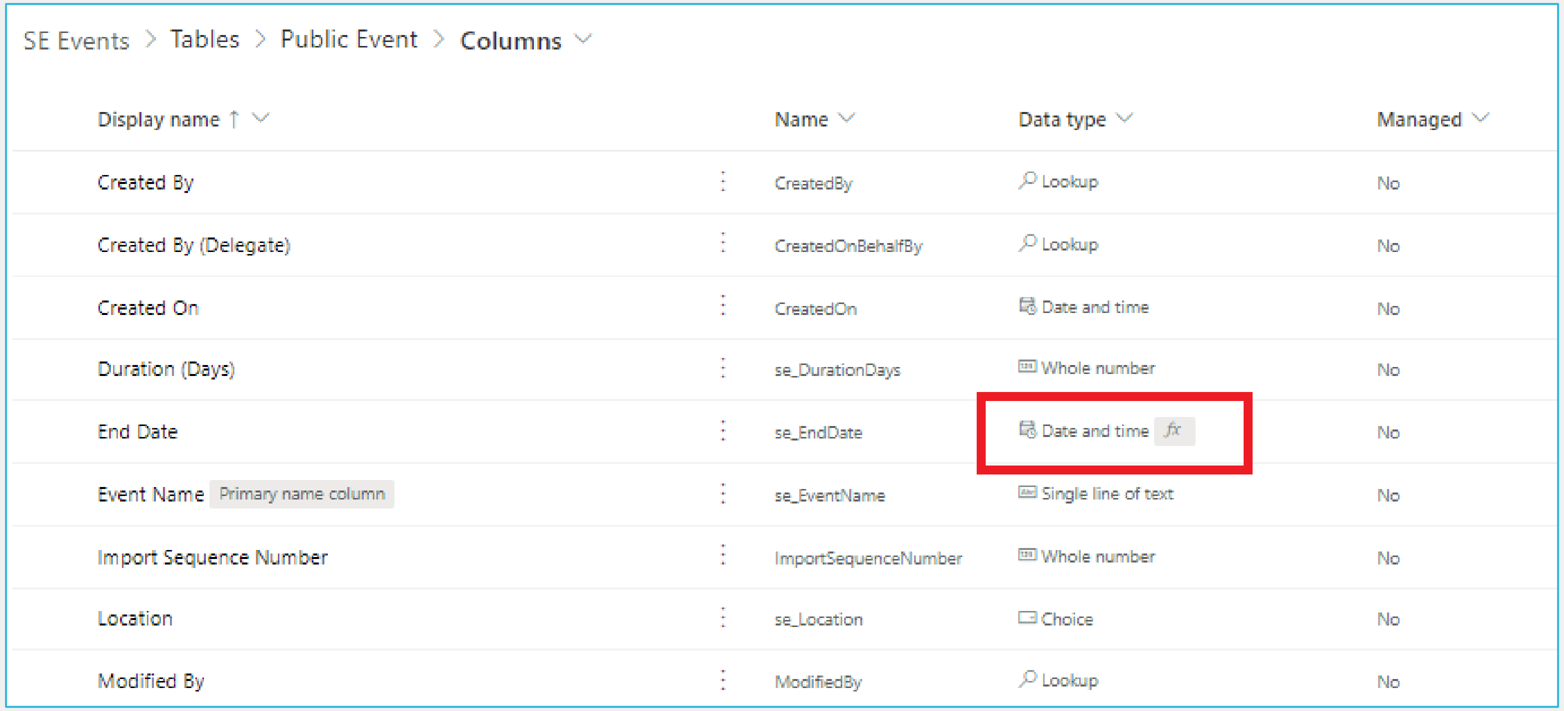
Lab 4a (Page 54)

- Create Additional Columns for the Public Event and Event Booking Tables

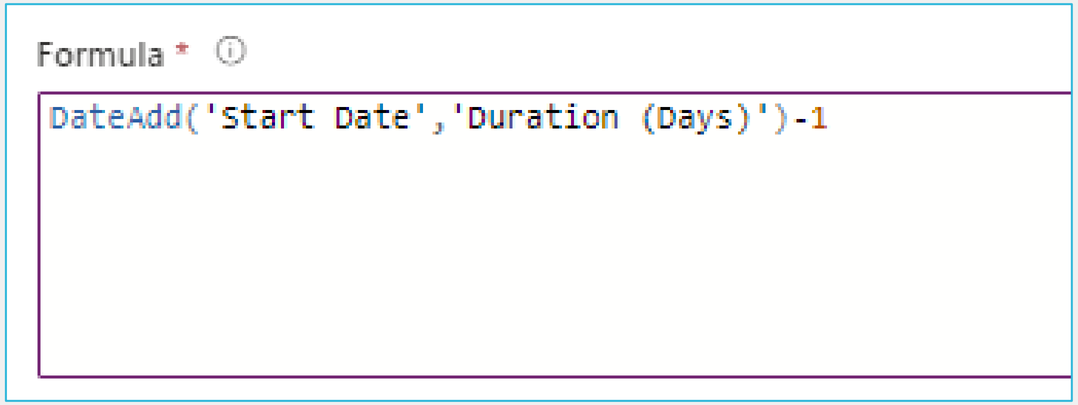
1. Create the following columns in the Public Event Table:
   - Location
   - Duration
   - Start Date
2. Create the following columns in the Event Booking Table
   - Customer
   - Public Event Booked
   - Date Booked
   - Discount Amount
   - Event Price

Formula Columns

- Calculated value
- Uses Power Fx


SE Events > Tables > Public Event > Columns

Display name	Name	Data type	Managed
Created By	CreatedBy	Lookup	No
Created By (Delegate)	CreatedOnBehalfBy	Lookup	No
Created On	CreatedOn	Date and time	No
Duration (Days)	se_DurationDays	Whole number	No
End Date	se_EndDate	Date and time *fx*	No
Event Name Primary name column	se_EventName	Single line of text	No
Import Sequence Number	ImportSequenceNumber	Whole number	No
Location	se_Location	Choice	No
Modified By	ModifiedBy	Lookup	No



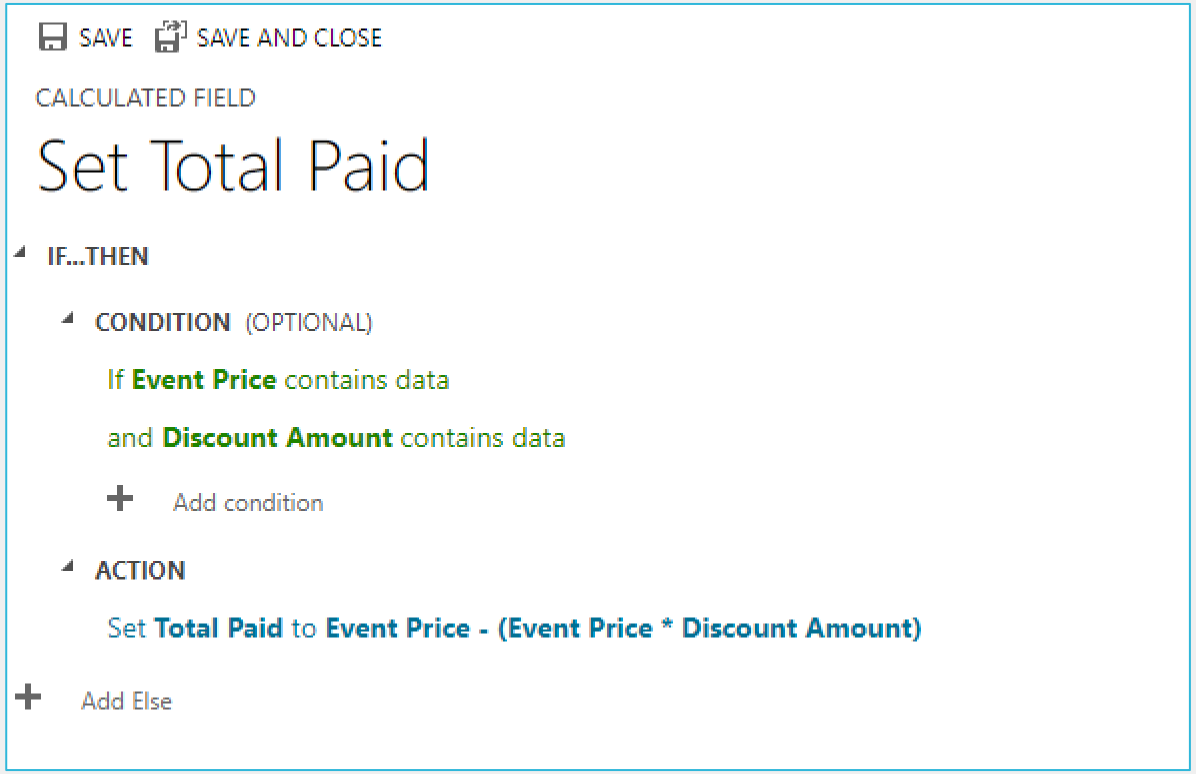
Formula Columns

- Supported Data Types
- Text
- Decimal Number
- Choice Yes/No (Boolean)
- Datetime

- Non-supported Data Types (use Calculated Fields)
- Currency
- Whole Number
- Choice

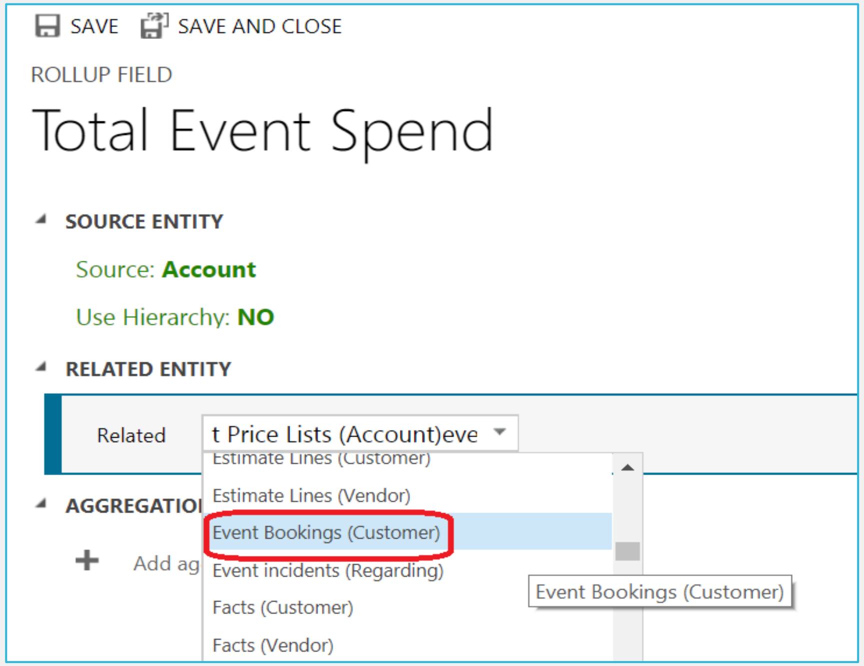
Calculated Columns

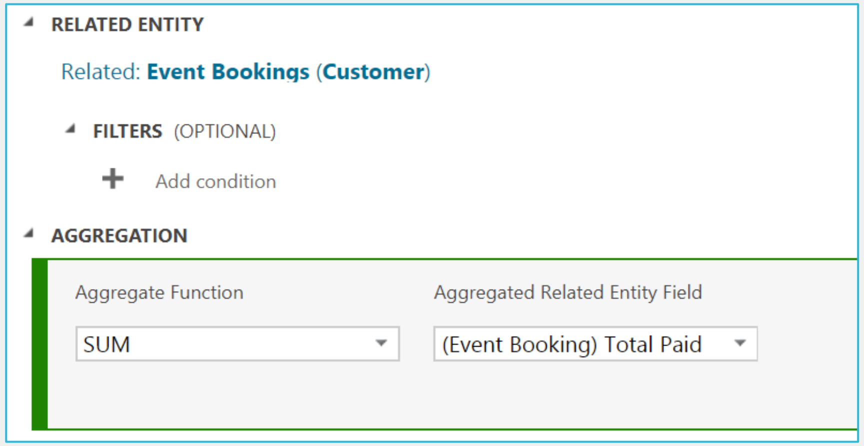
- Calculate value based on other columns in the table
- Behavior - Calculated



Rollup Columns

- Calculate value based on an aggregation of values in another table
- E.g. Total spend based on individual purchases
- Not calculated in real-time (scheduled process)





QA

Lab 4b (Page 61)

- Creating a Formula Column

1. Create an end date calculated column based on the start date and duration columns
2. Create a total paid calculated column based on the price and discount amount columns

Lab 4c (Page 67)

- Creating a Rollup Column (if time permits)

1. Create a Total Event Spend column in the Accounts Table

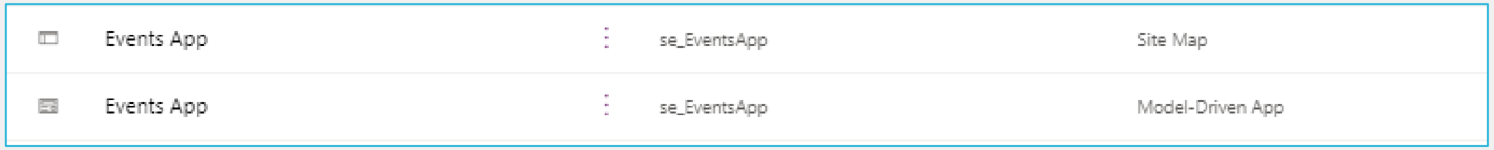
Module 5: Model-Driven Apps

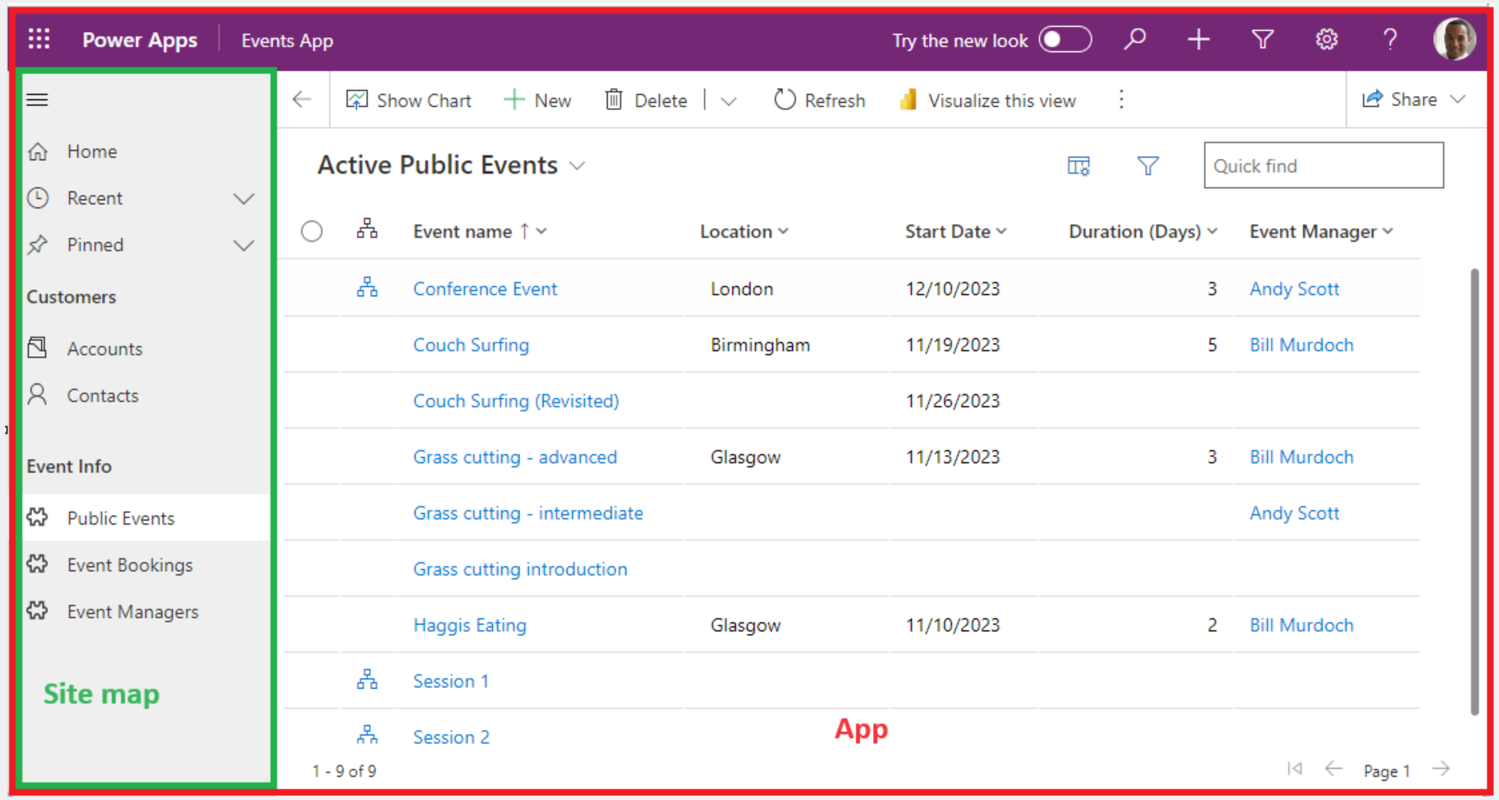
- Apps and Site Map
- Understanding the Site Map
- Areas and Navigation options
- Groups
- Sub Areas (Pages)
- Controlling Forms and Views
- App settings
- Sharing an app

Model-driven app

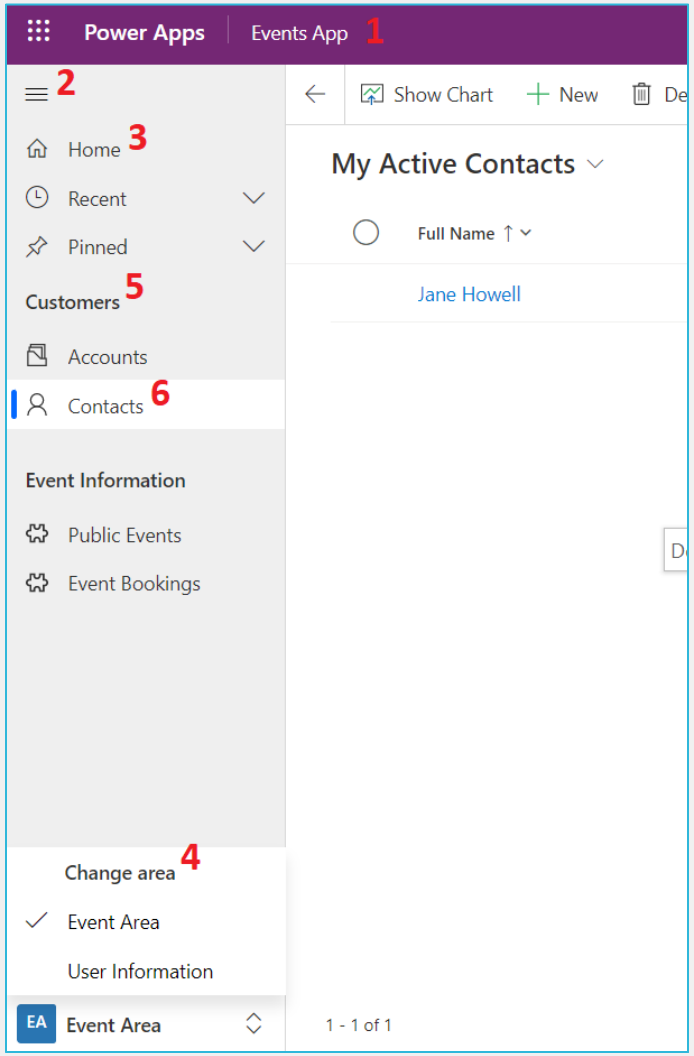
Apps and site map

- A model-drive app will have two objects: an app and a site map.





Understanding the Site Map

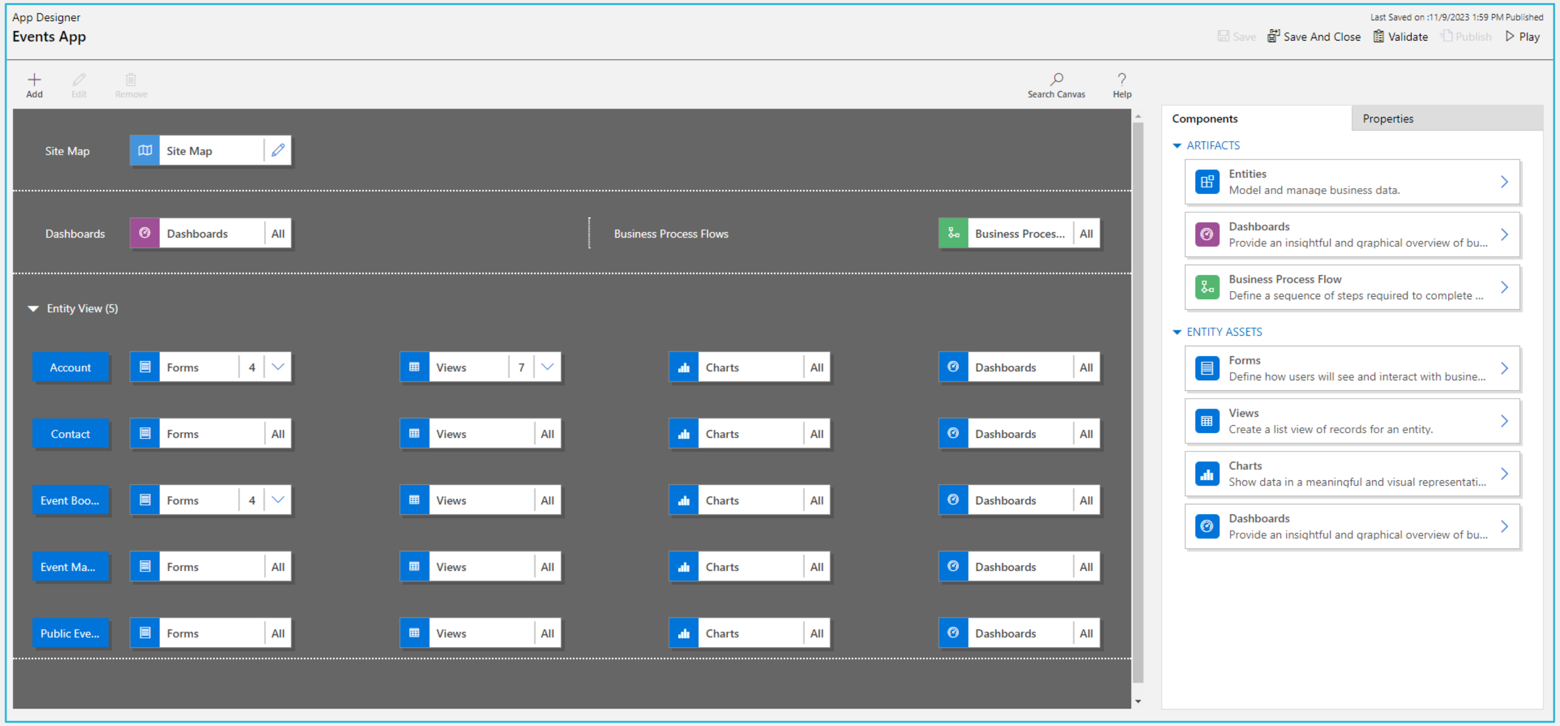


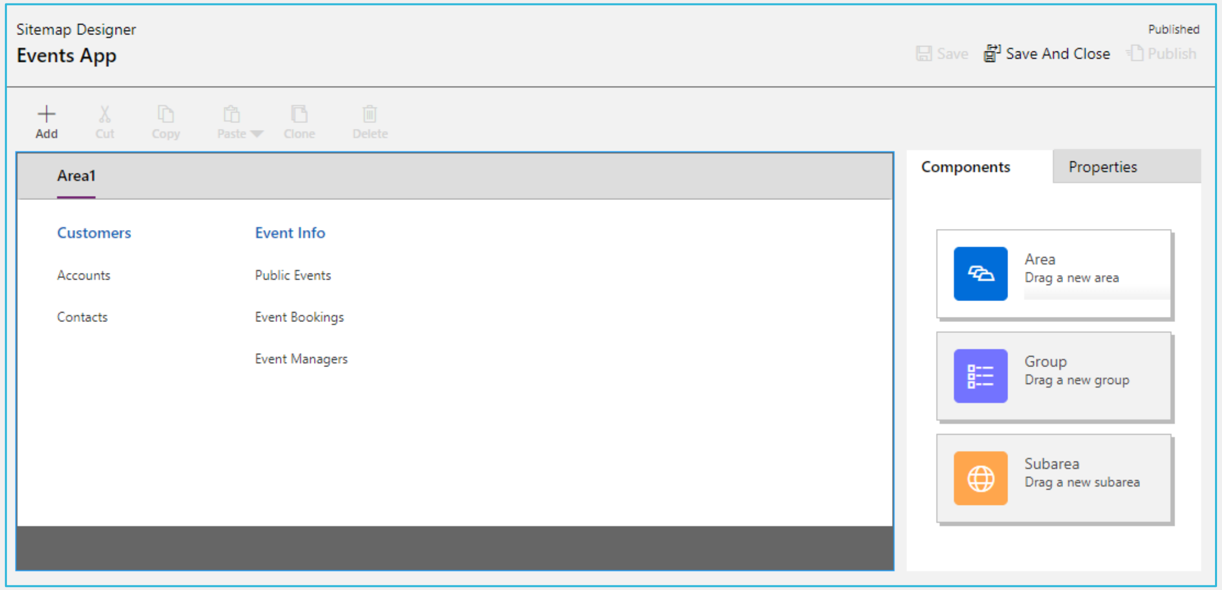
Site maps have Areas, Groups and Subareas (pages)

Location	Purpose
1	Click to change the app
2	Collapse / expand the site map
3	Home, Recent and Pinned views
4	Change the area
5	Group
6	Subarea

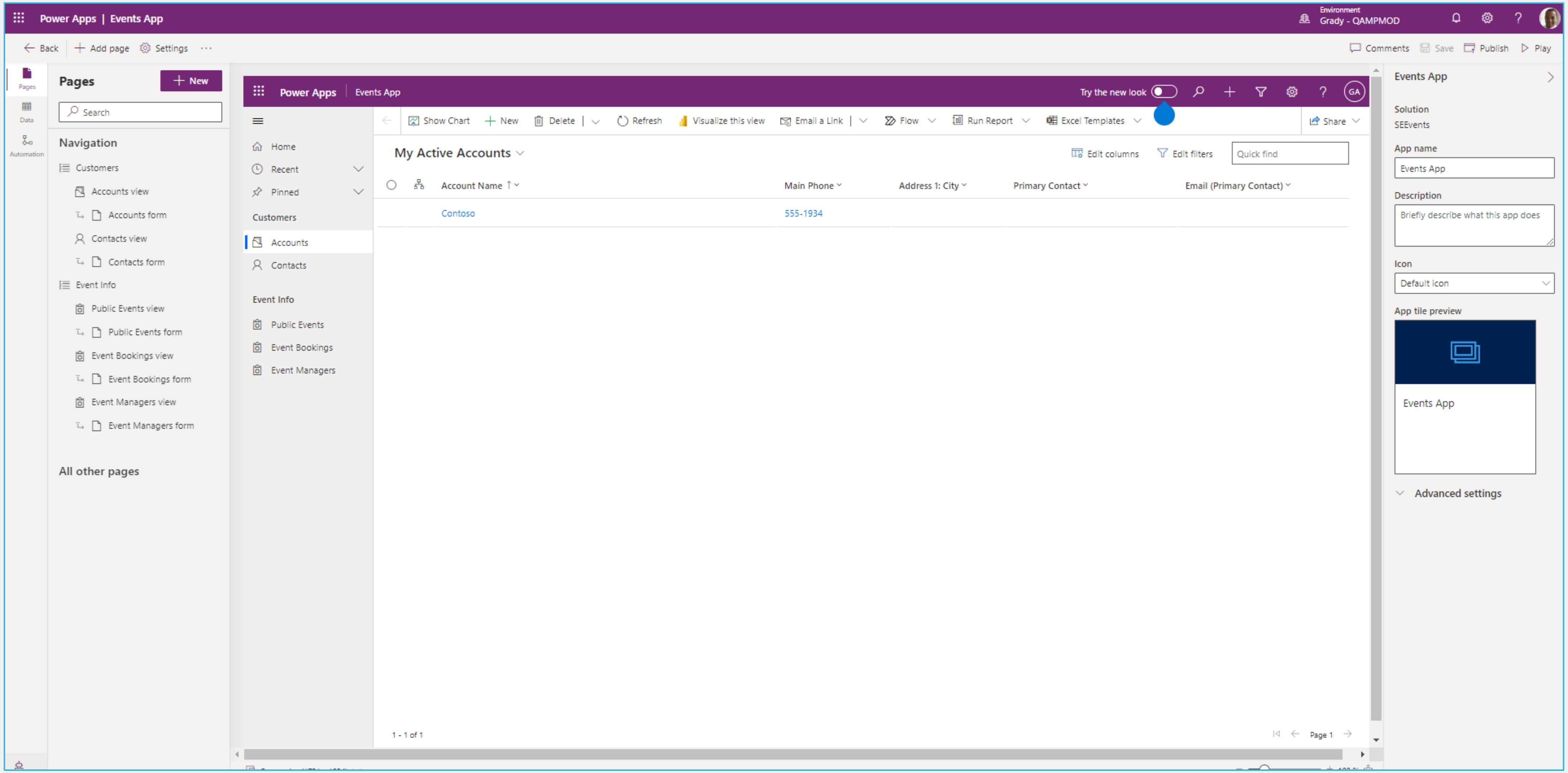
Classic editor

- The app and the site map had their own interfaces to edit them

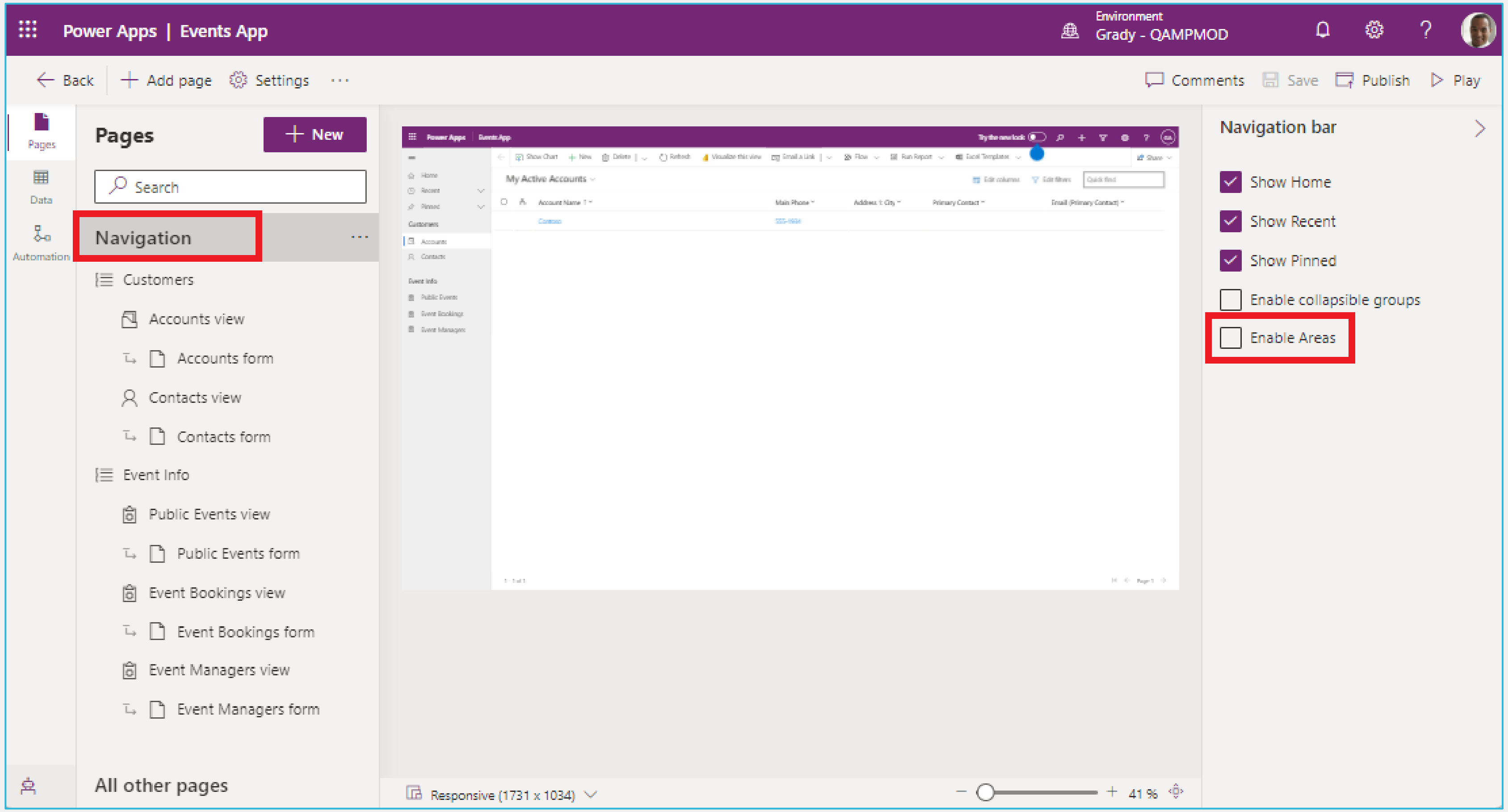




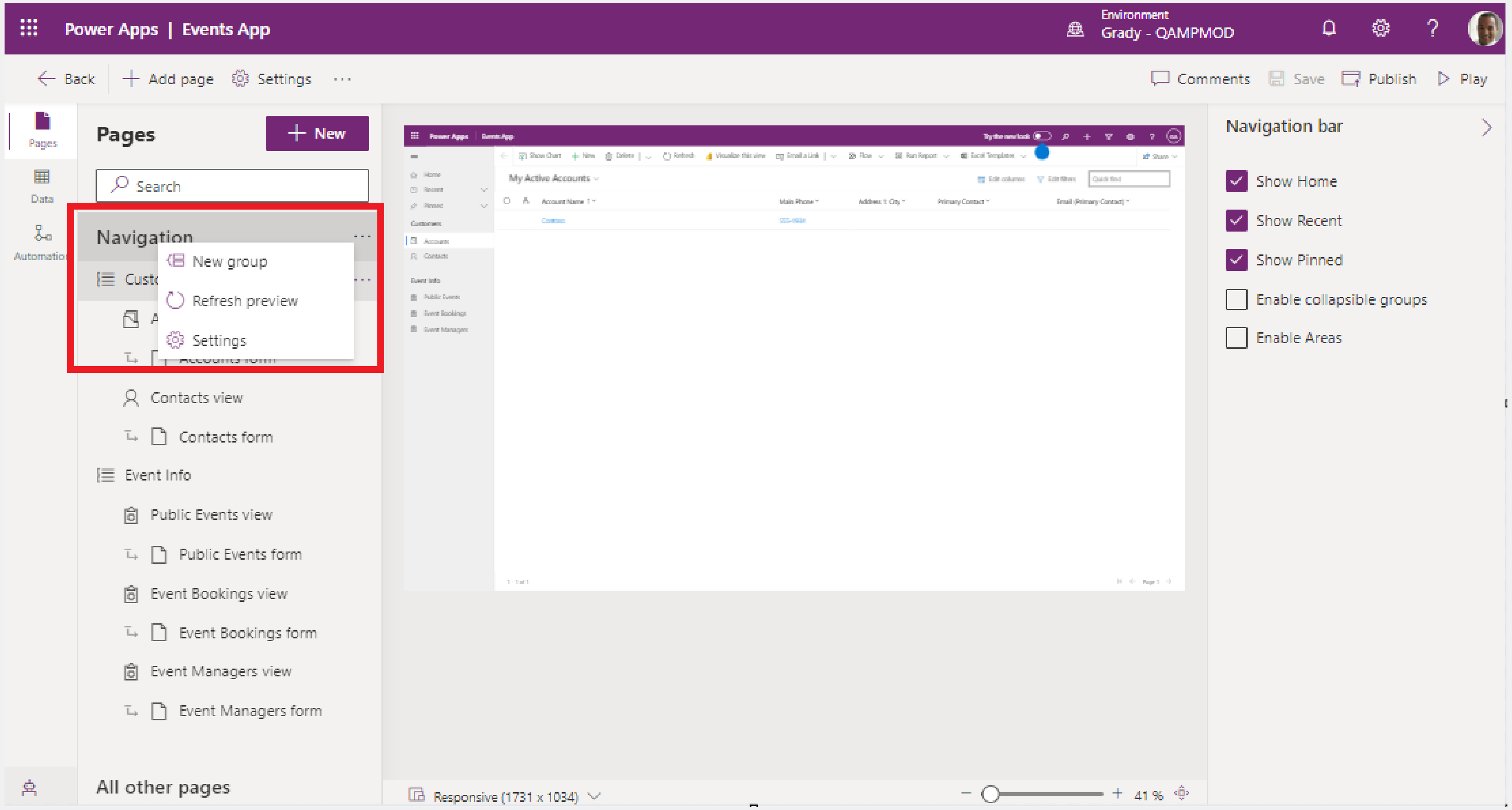
Modern Editor



Areas and Navigation options

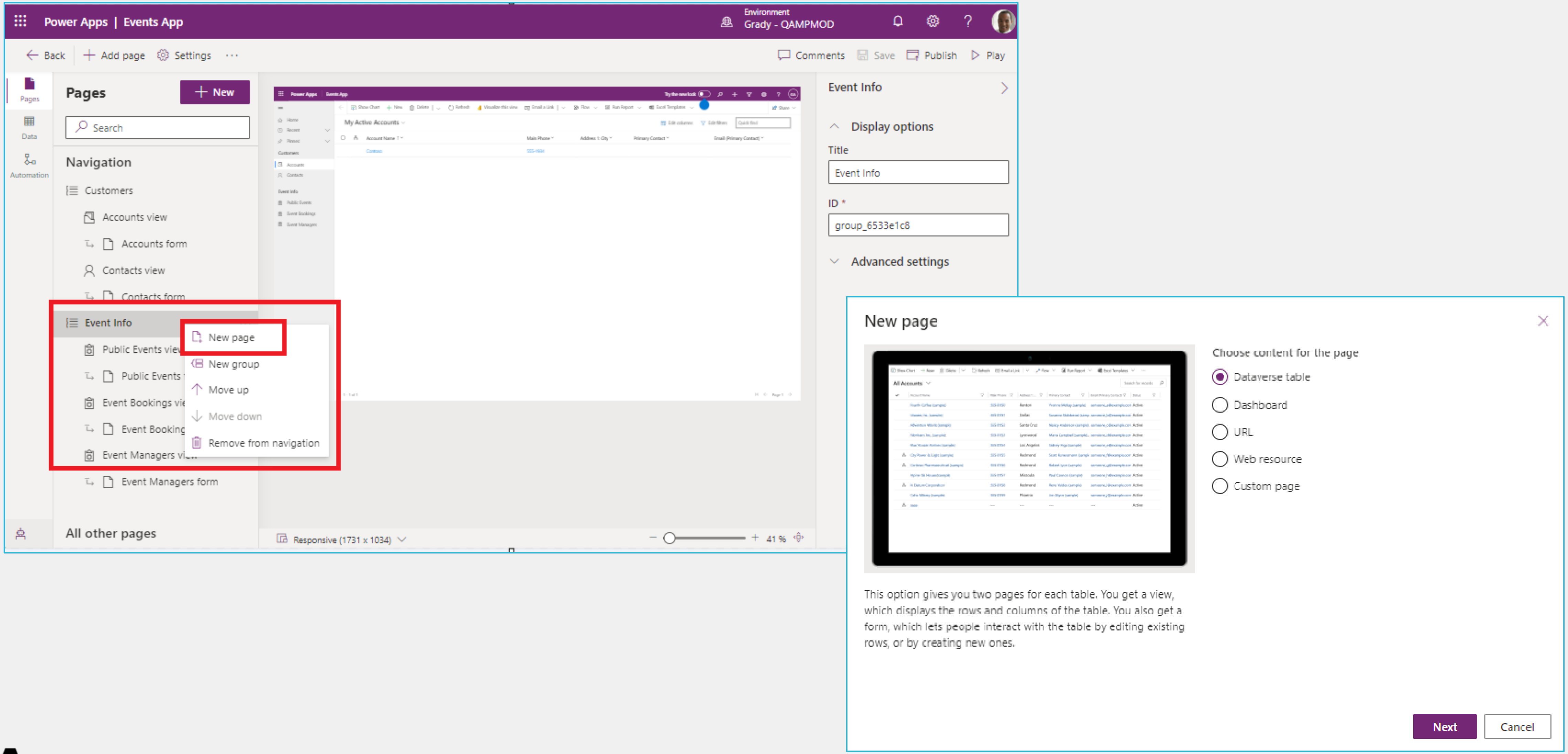


Groups



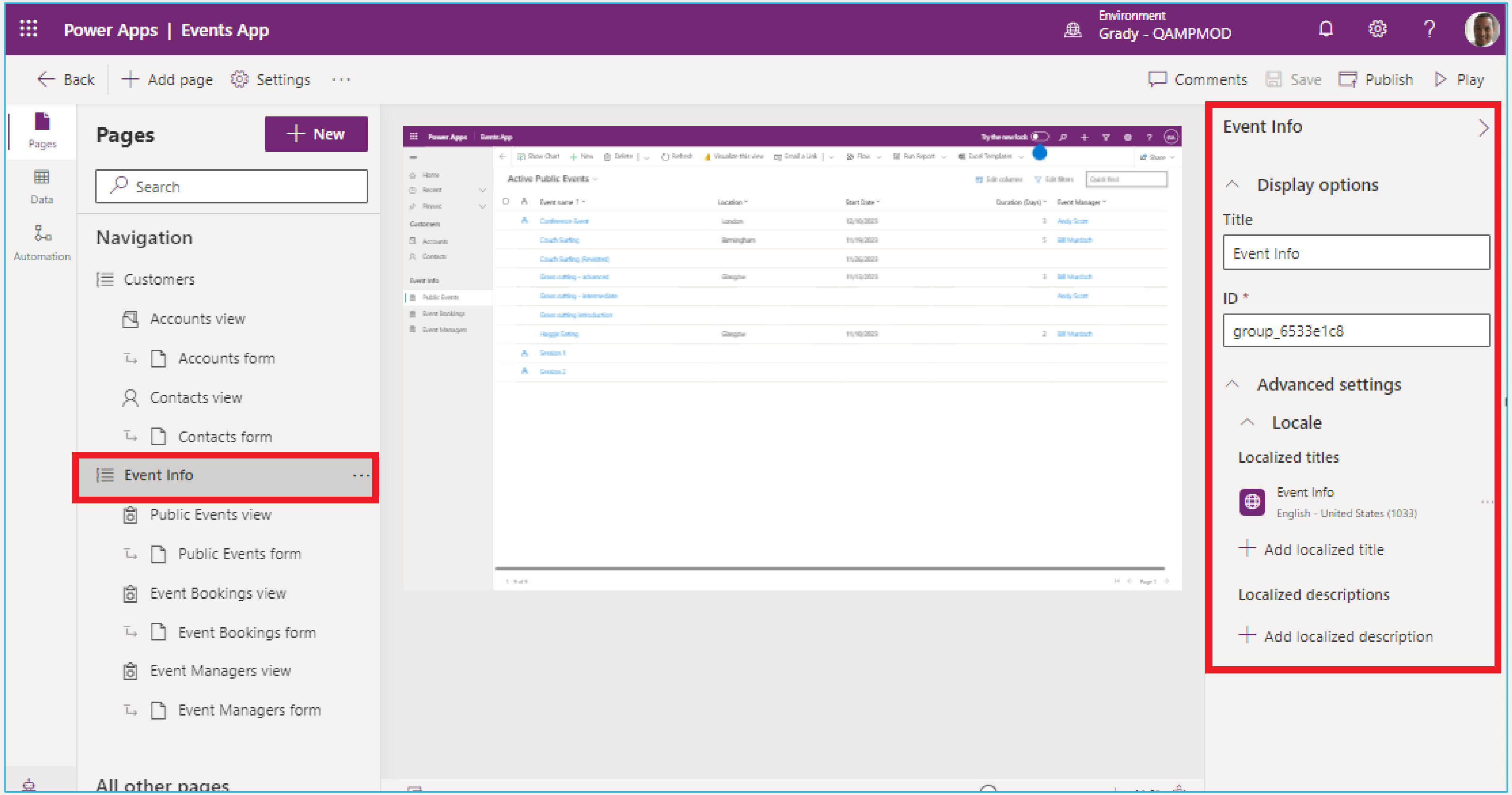
Power Apps | Events App
Environment
Grady - QAMPMOD
Back
Add page
Settings
Comments
Save
Publish
Play
Pages
Data
Automation
Pages
New
Search
Navigation
New group
Refresh preview
Settings
Contacts view
Contacts form
Event Info
Public Events view
Public Events form
Event Bookings view
Event Bookings form
Event Managers view
Event Managers form
All other pages
Navigation bar
Show Home
Show Recent
Show Pinned
Enable collapsible groups
Enable Areas
Responsive (1731 x 1034)
41 %

Subarea


Power Apps | Events App
Environment
Grady - QAMPMOD
Back
Add page
Settings
Comments
Save
Publish
Play
Pages
Data
Automation
Pages
New
Search
Navigation
Customers
Accounts view
Accounts form
Contacts view
Contacts form
Event Info
Public Events view
Public Events form
Event Bookings view
Event Bookings form
Event Managers view
Event Managers form
New page
New group
Move up
Move down
Remove from navigation
All other pages
Responsive (1731 x 1034)
41 %
Event Info
Display options
Title
Event Info
ID *
group_6533e1c8
Advanced settings
New page
Choose content for the page
Dataverse table
Dashboard
URL
Web resource
Custom page
This option gives you two pages for each table. You get a view, which displays the rows and columns of the table. You also get a form, which lets people interact with the table by editing existing rows, or by creating new ones.
Next
Cancel

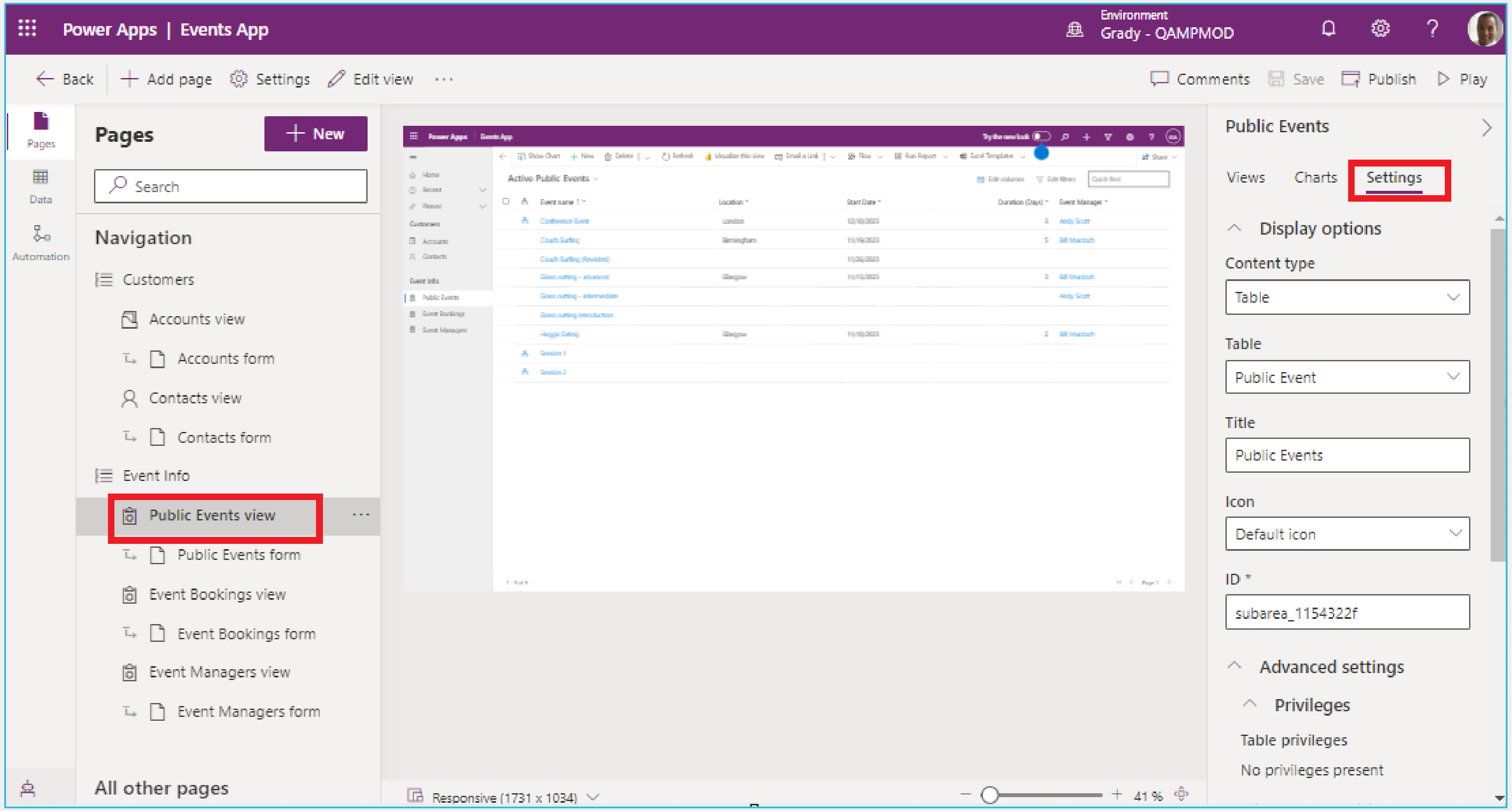
Area / Groups settings

- Select area or group then use properties pane

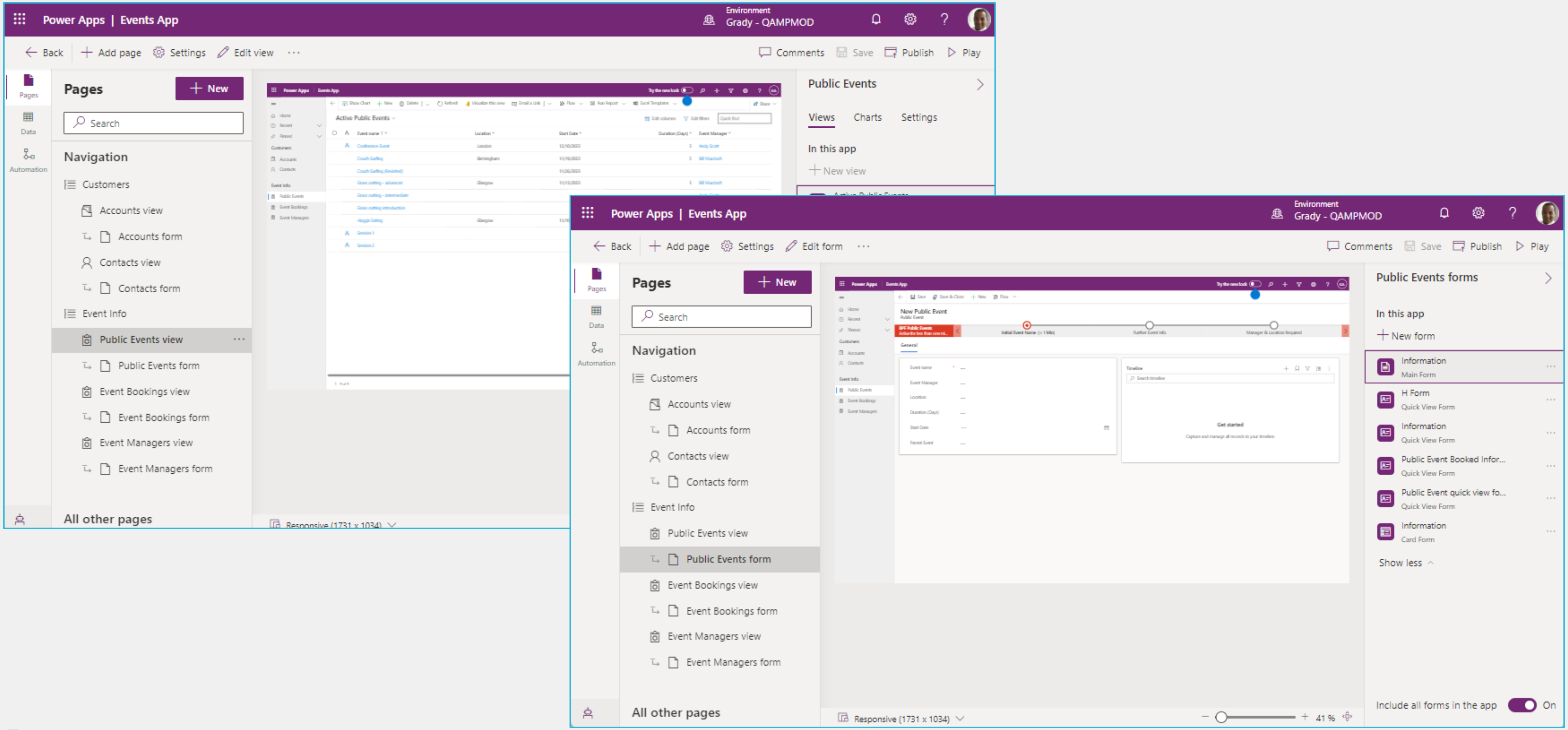


Sub-area (Page) properties

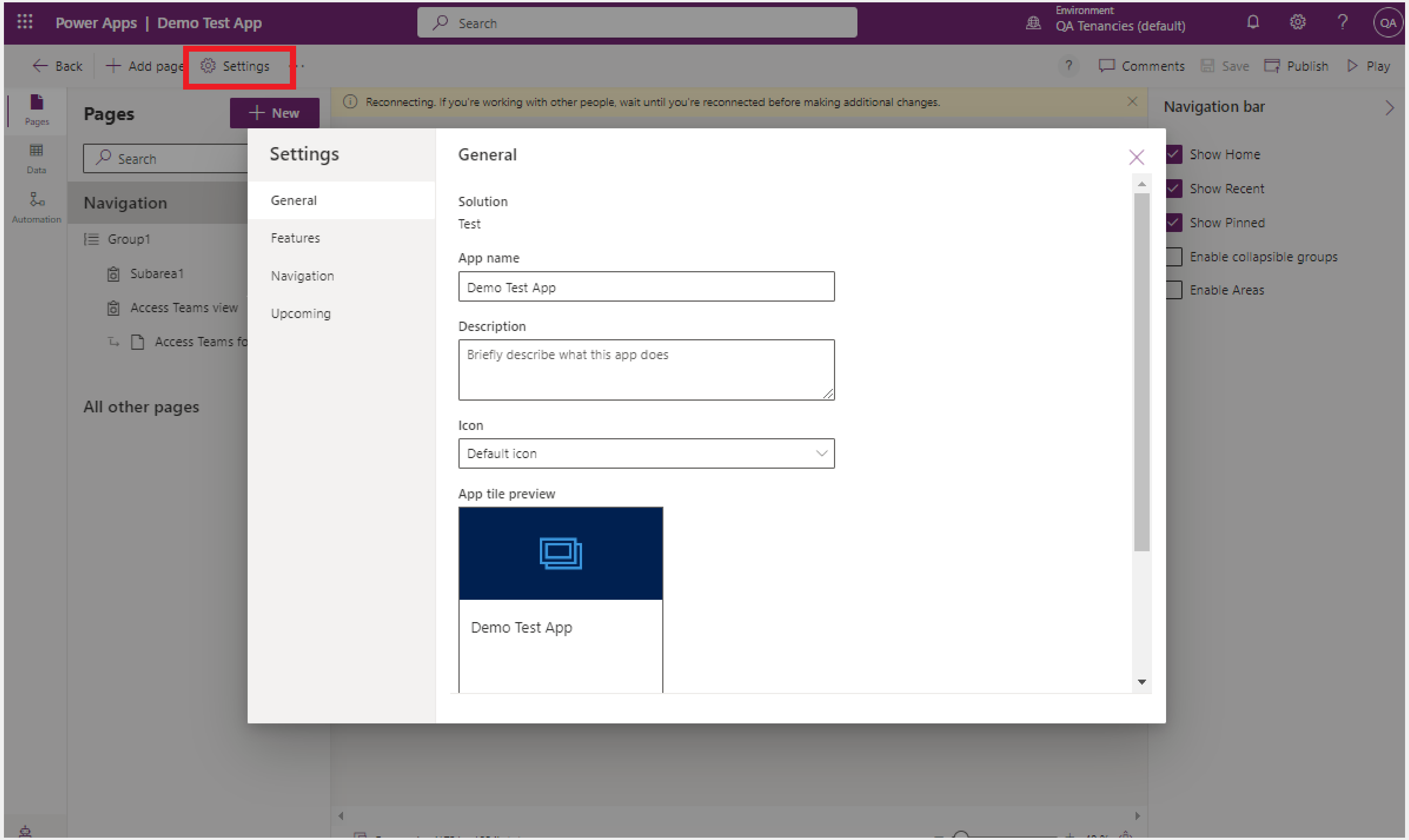
- Select page view node
- Select the Settings tab in the properties pane



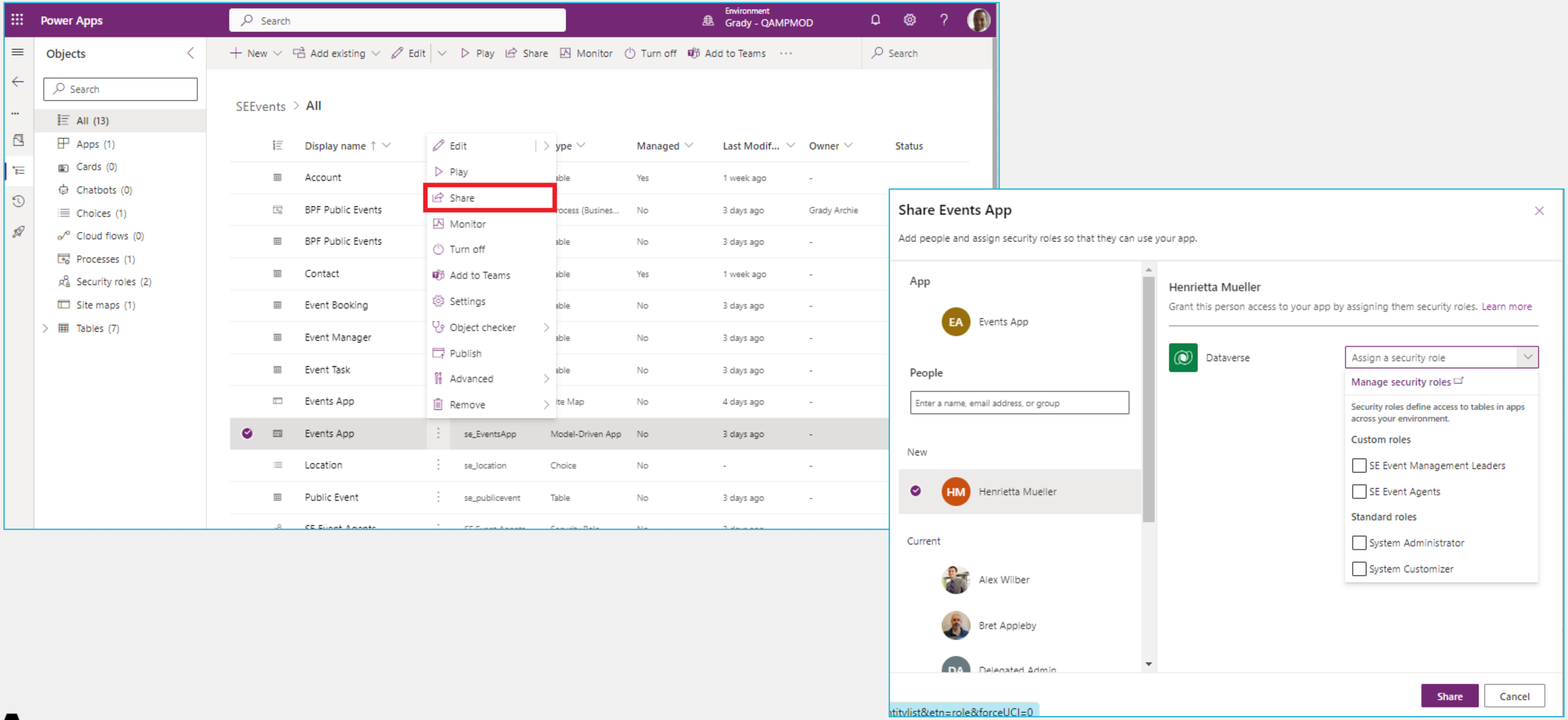
Controlling Forms and Views



App settings



Sharing an app



Lab 5 (Page 81)

- Create a Model-Driven App

1. Create a new Model-Driven App named Events App
   - Create a new grouping named Customers
   - Create a new subareas for Accounts and Contacts
   - Create another grouping named Event Information
   - Create new subareas for Public Events and Event Bookings
2. Save, Publish and Test the new App

Module 6: Establishing Relationships

Identify the different supported relationship types

- 1 to Many
- Many to Many

1 to Many Relationship behaviour

- Referential
- Referential restrict delete
- Parental
- Custom

Many to Many Relationship

- Native many to many
- Manual many to many

Relationships

QA

Relationship Introduction

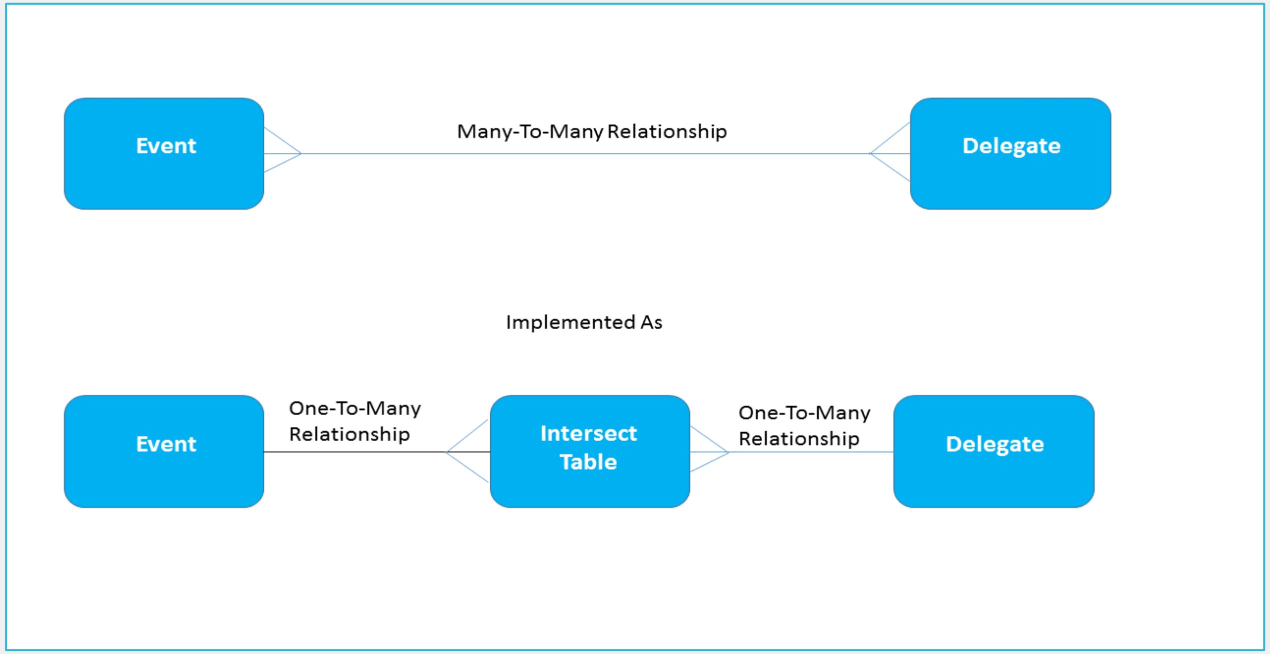
- Allows records in one table to be linked to records in a different table.
- E.g. A person (Contact) works for a company (Account)
- Allows us to look-up and report on related information
- There are many default relationships that get created in Dataverse

Relationship Types: One-To-Many

- Aka 1:N and parent-child
- The primary record (parent) can be linked to multiple records (child records). E.g. Once account can have multiple contacts.
- On the related (child) table, it will be represented as a lookup column
- If you are in the child table, create it as a Many-to-one relationship

Relationship Types: Many-To-Many

- The primary record can be linked to multiple related records
- The related records can also be linked to multiple primary records
  - Native - Creates a link table
  - Manual – Manually create a third (intersect) table and create 1:N relationships with it from both the other tables



Relationship behaviour (1/2)

- What happens to a record when something is changed to a linked record
- Activities covered
- Delete – A record is deleted
- Assign – A new owner is set on the record
- Share – A record is shared with new users
- Unshare – Sharing is removed from some users
- Reparent – Setting or changing the parent of a record in a relationship (E.g. moving a contact from one account to another)

Relationship behaviour (2/2)

Parental

- The action performed on the primary record is also performed on the related records

Referential

- The default
- Actions are not performed on related records
- Delete behaviour
  - Remove Link
  - Restrict (prevent the delete from occurring)

Custom

- *Delete*
  - Cascade All
  - Remove Link
  - Restrict
- *Assign, Share, Unshare & Reparent*
  - Cascade All
  - Cascade Active
  - Cascade User-Owned
  - Cascade None

Lab 6a (Page 95)

- Create and Modify a 1:N Relationship

1. Create a new table named Event Manager
   - Add columns to the table
2. Create a 1:N relationship between Event Manager and Public Events
3. Change the behaviour of the relationships to restrict deletions

Lab 6b (Page 100)

- Create a N:N Relationship

1. Create a N:N relationship between Event Booking and Contact
2. Test the new relationship

Module 7: Form Customisation

Forms overview

Form types

Form layout

Securing forms

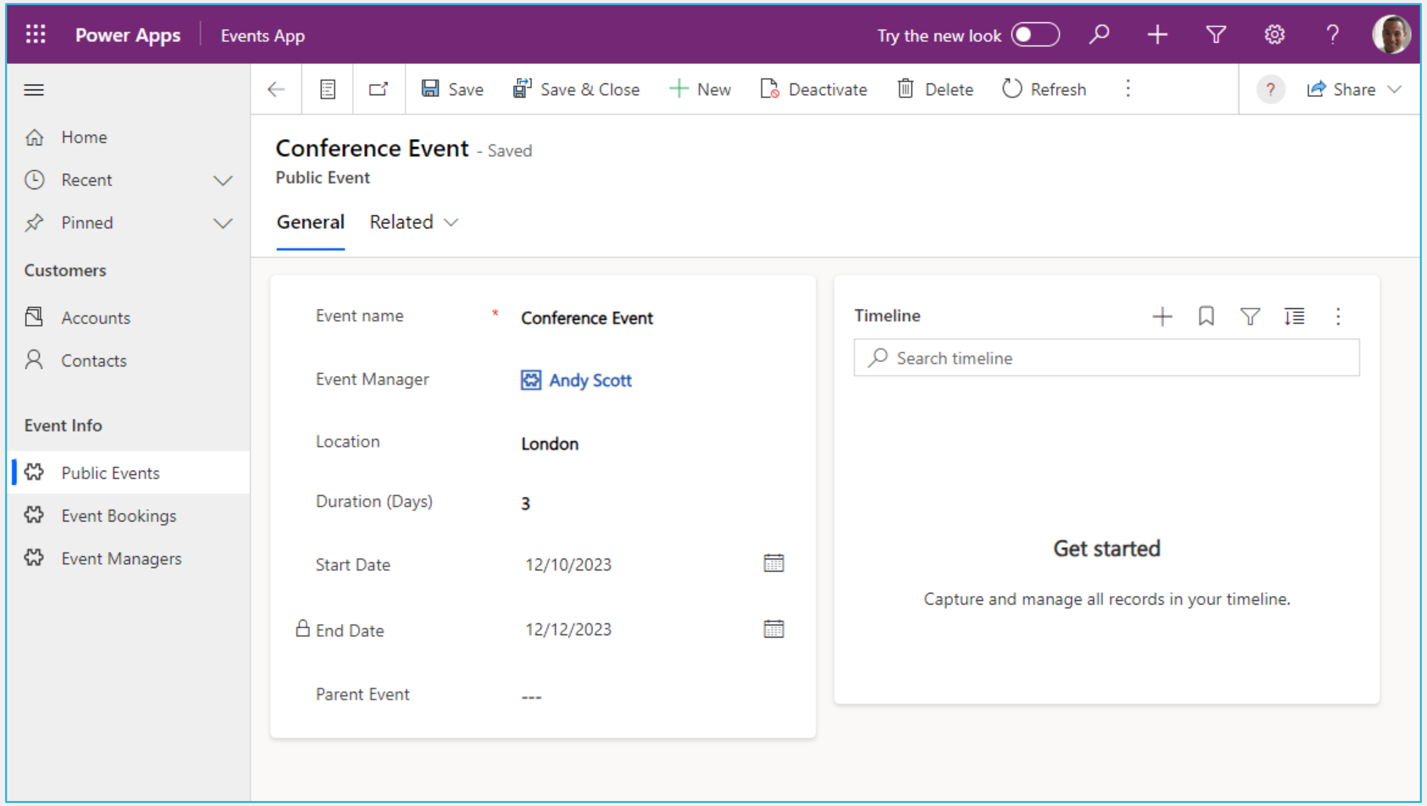
Forms

Forms overview

- Used to capture and display data
- Can be customised
- Form types
  - Main Form
  - Quick View Form
  - Quick Create Form (must be enabled on table)
  - Card Form
- May have multiple forms of each type, can control through app settings or security roles

Main form

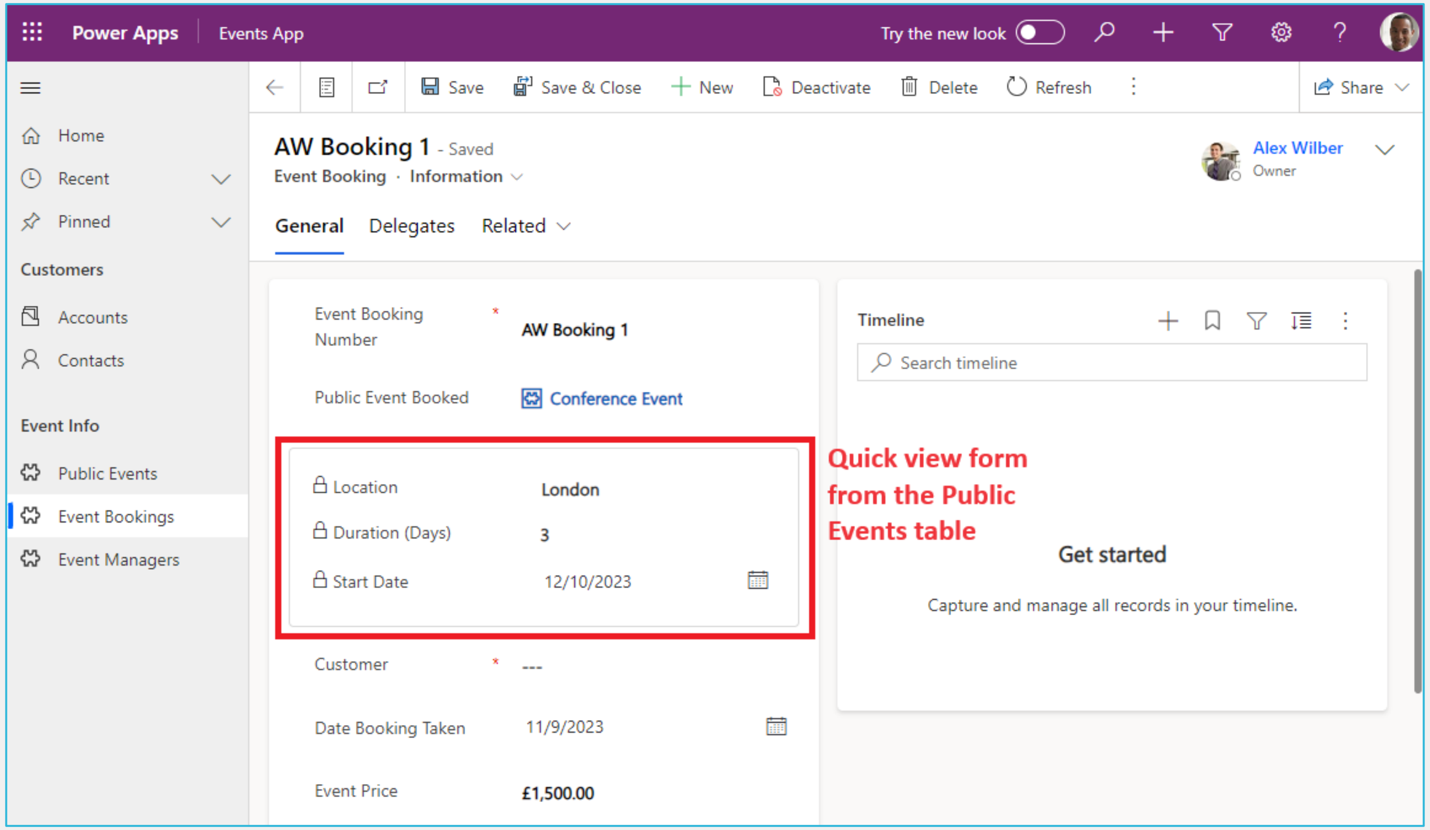
- Default user experience when interacting with a record in a model-drive app



QA

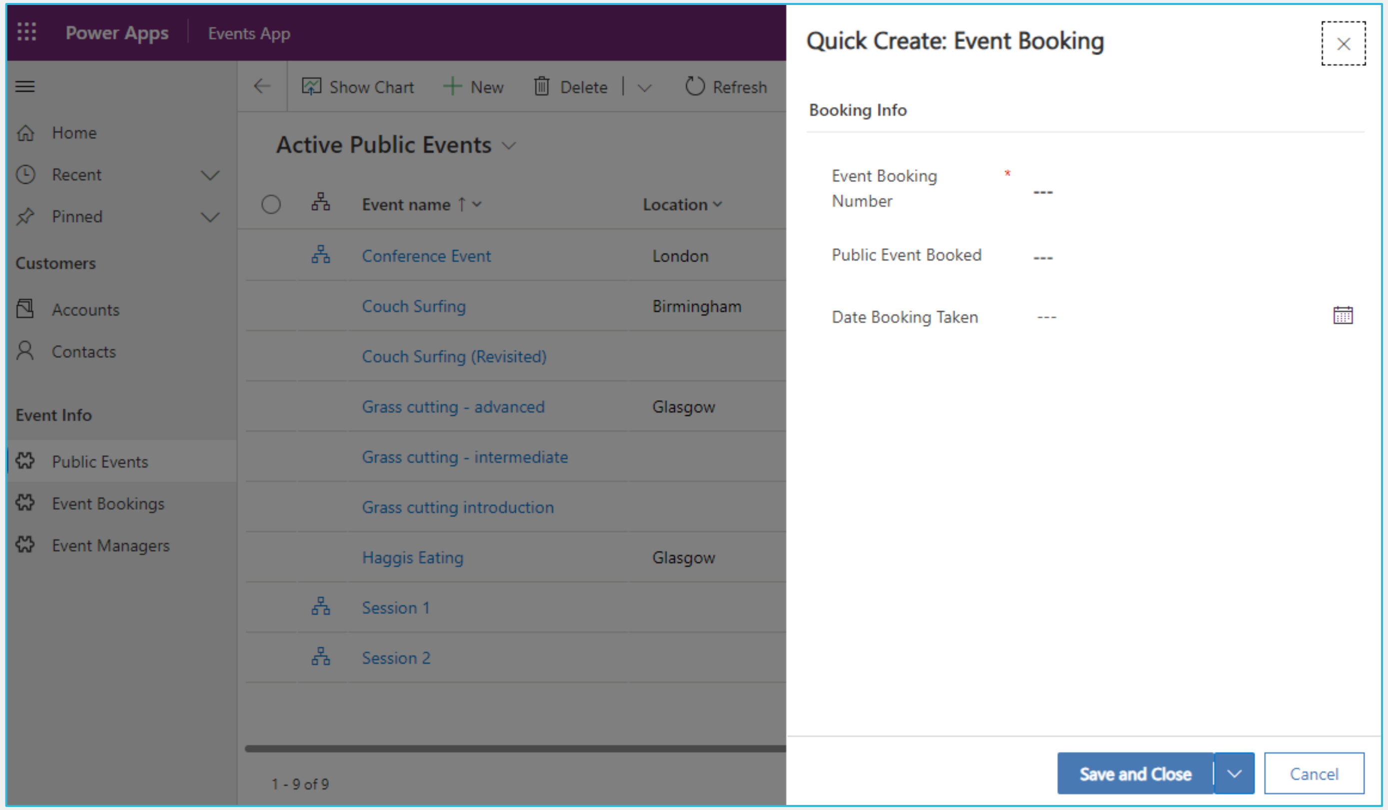
Quick view form

- Embedded into a main form and show related read-only information



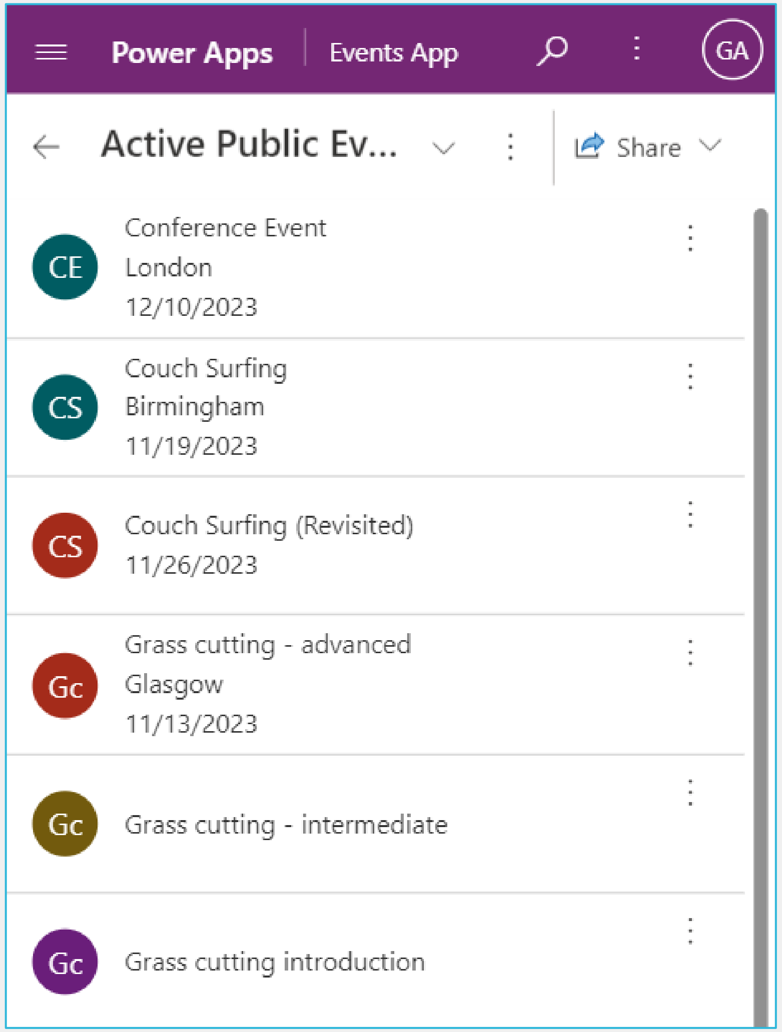
Quick create form

- Simplified version of the main form, used for in-context record creation without having to switch tables.
- Create button on navigation bar
- From a subgrid



Card

- Small forms typically used for mobile experiences (instead of view)

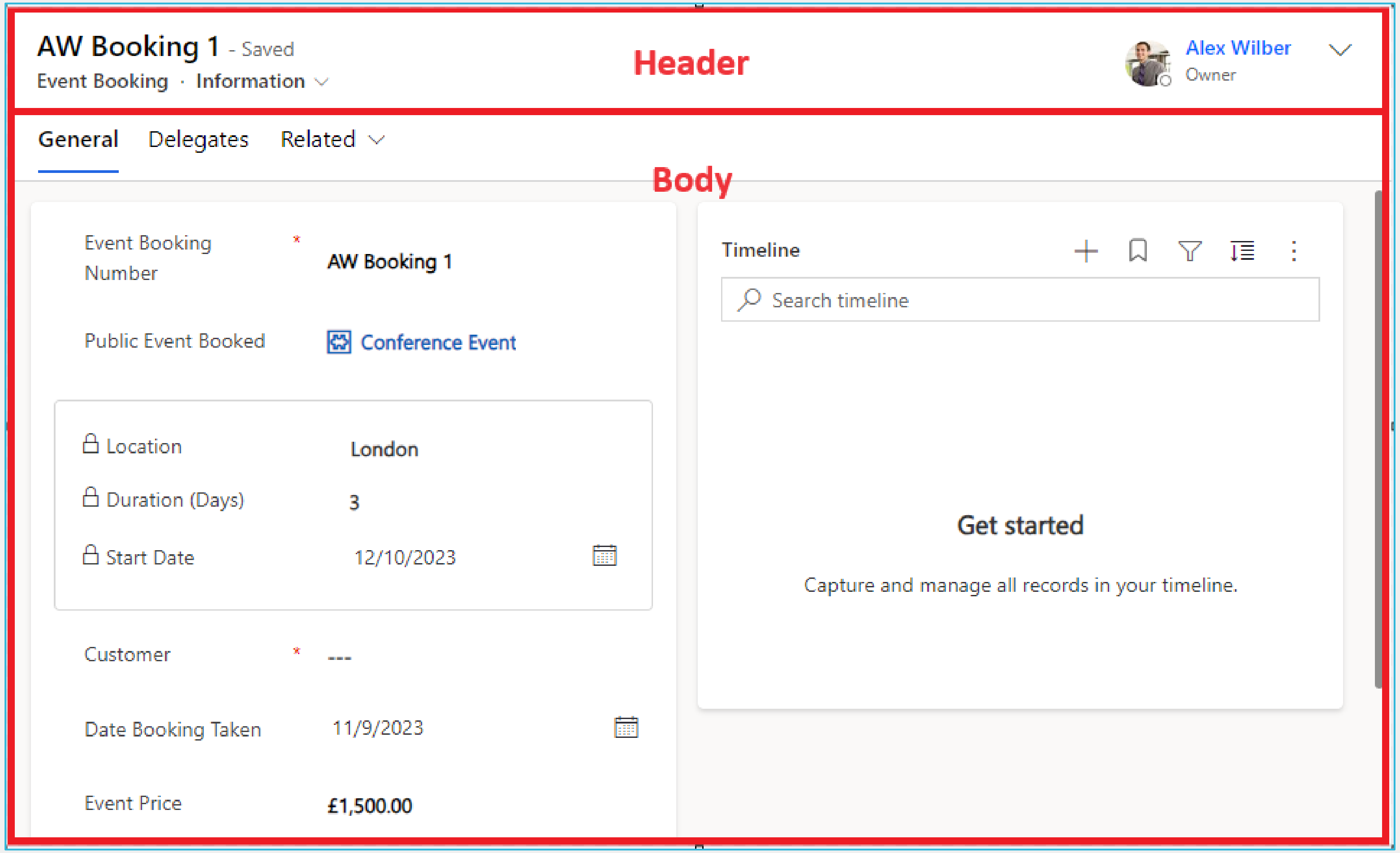


Lab 7a (Page 107)

- Create a Quick Create Form

1. Create a new Quick Create form in the Event Booking Table
2. Save, Publish and Test the new form

Layout of a Form (1/3)



Layout of a Form (2/3) – The Header

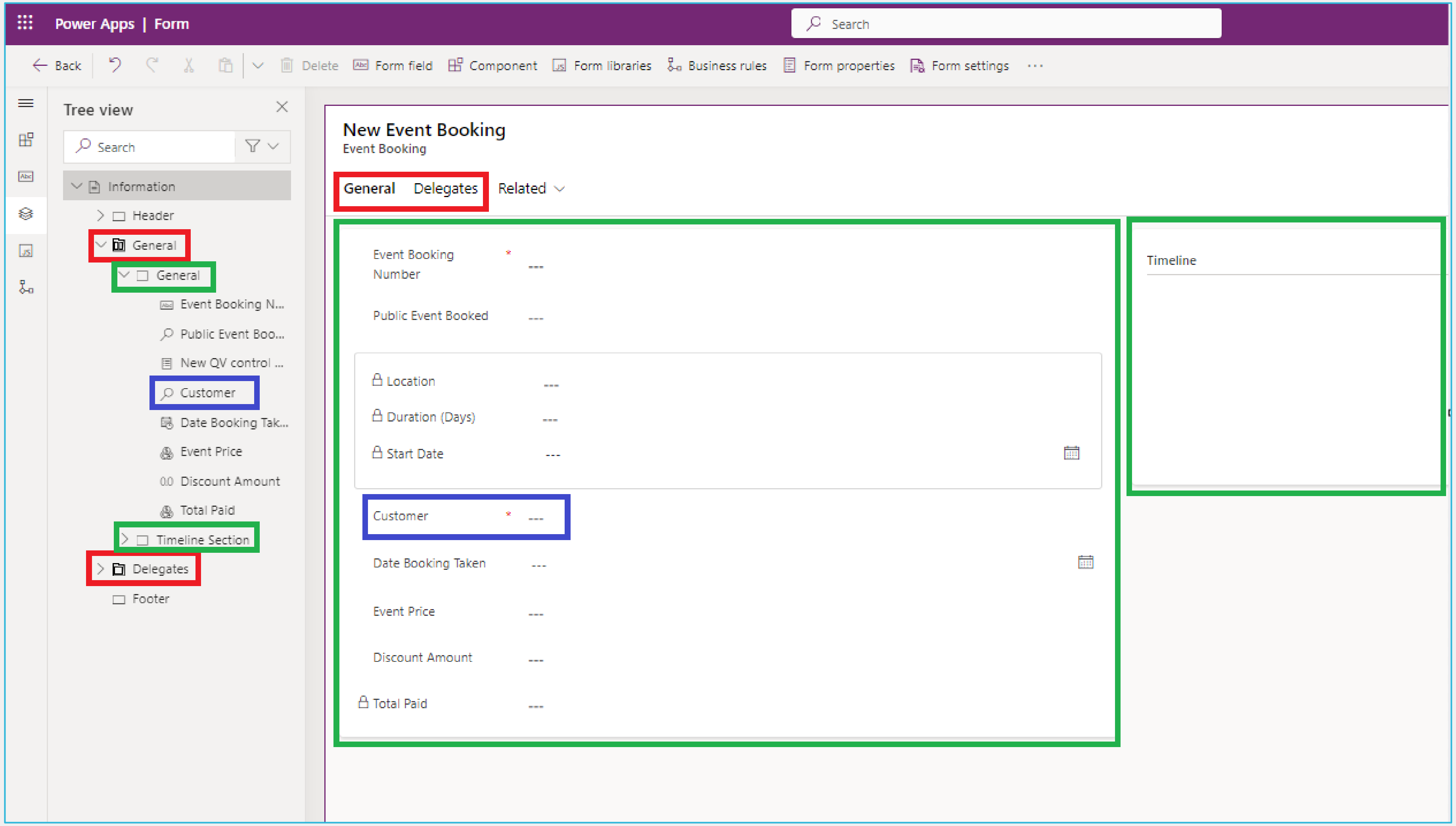
Shows

- Record name
- Saved state
- Table Name
- Form Name (can be used to switch forms)

Additional fields and web resources (graphics) can be added

Layout of a Form (3/3) – The body

- Hierarchy
- Tabs
- Sections
- Fields and controls



Fields and controls

- Table columns – Basic information from the table
- Column components – custom ways of interacting with the data (e.g. star ratings). Different ones can be configured for different clients (mobile, web etc)
- Subgrids – to display related records
- Timeline – to interact with activities
- Spacer – filling space to align things

Lab 7b (Page 122) Also do 7c & 7d

- Form Customisation

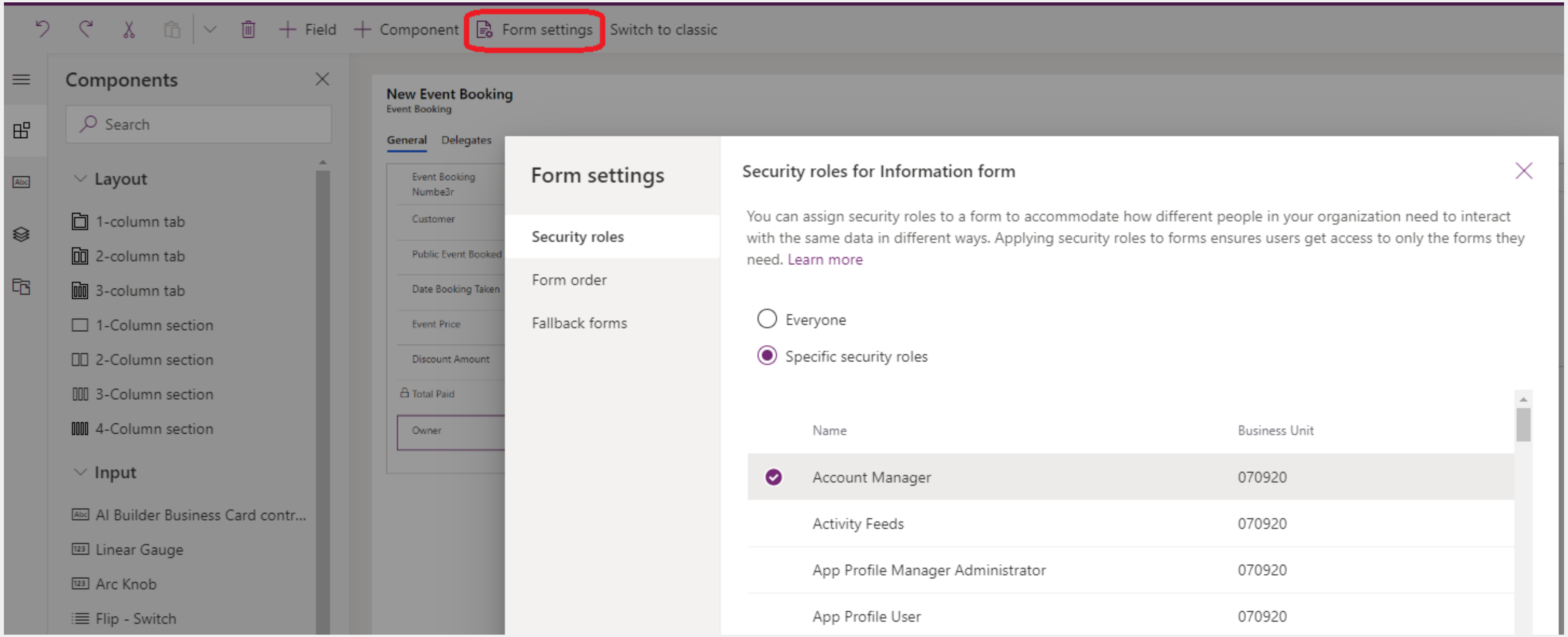
1. Modify the main form from pubic events
   - Change the timeline to not show notes
   - Add custom columns
   - Change the duration column to use a number input
2. Modify the form from event bookings
   - Add created by column to the header
   - Add custom columns
   - Move the owner column to the header
   - Add a new 1 column-wide tab to the form
   - Insert a subgrid to the new tab
3. Save, Publish and Test both forms

Lab 7c (page 130)

- Quick View Form

1. Add a new Quick View Form to the Public Event Table
   - Add columns to the form
2. Modify the Event Bookings Main Form to show the Quick View Form
   - Add a tab to the Form
   - Insert the Quick View Form
3. Save, Publish and Test the forms

Securing multiple forms



Lab 7d (page 133)

- Securing an Additional Form (do in your own time)

1. Add an additional main form to the Event Booking Table
   - Remove any delegate information from the form
   - Name the form “Event Booking Basics”
2. Save, Publish and Test the forms

Module 8: Introduction to Business Rules

- Business Rules introduction
- Conditions
- Actions
- Business Rules Designer

Business Rules Introduction

- Apply conditional logic to the data in the table

- Scope
- Table (Entity)
- All forms
- Specific form

- Business rules are evaluated
- When the form is loaded
- When a value changes in a column included as a condition in the rule

QA

Conditions

Define the columns (fields) that will cause the rule to be triggered

May have multiple conditions

Type (what we are comparing to)

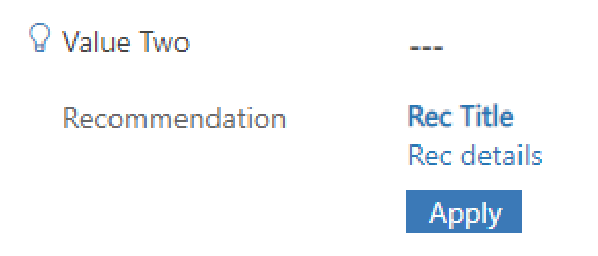
- Field
- Value
- Formula (numeric columns only)

Operators

- Equals
- Does not equal
- Is greater than
- Is greater than or equal to
- Is less than
- Is less than or equal to
- Does not contain data
- Contains data

Actions

- Recommendation
- Display recommendation text
- Allow a allow to be applied

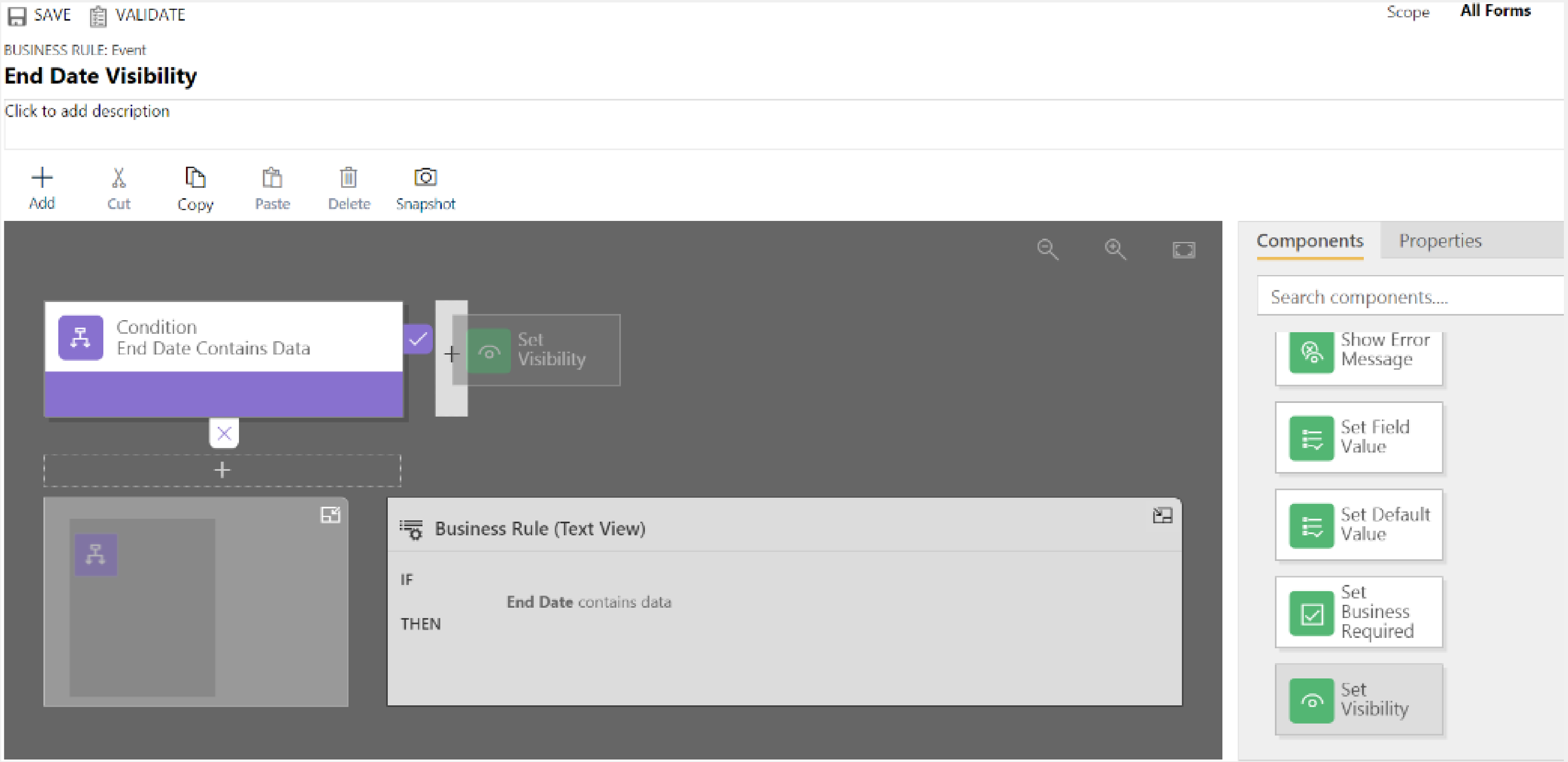


- Lock / Unlock columns

- Show error message

- Set column value
- Set default value
- Set business required
- Set visibility

Business Rule Designer



Lab 8 (page 143)

- Create a Business Rule

1. Create a Business Rule for the Public Event Table
   - Configure it to set visibility for the end date column to not show until populated
2. Save, Activate and Test the Rule

Module 9: Creating, Maintaining & Customising Views

Overview

System views

Public views

Views

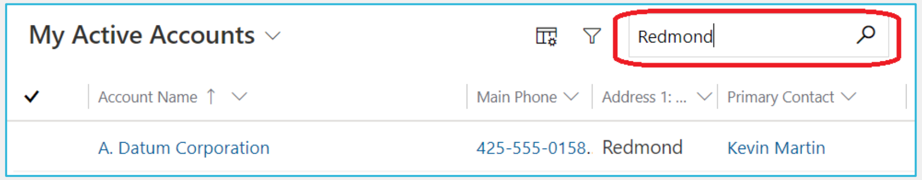
Overview

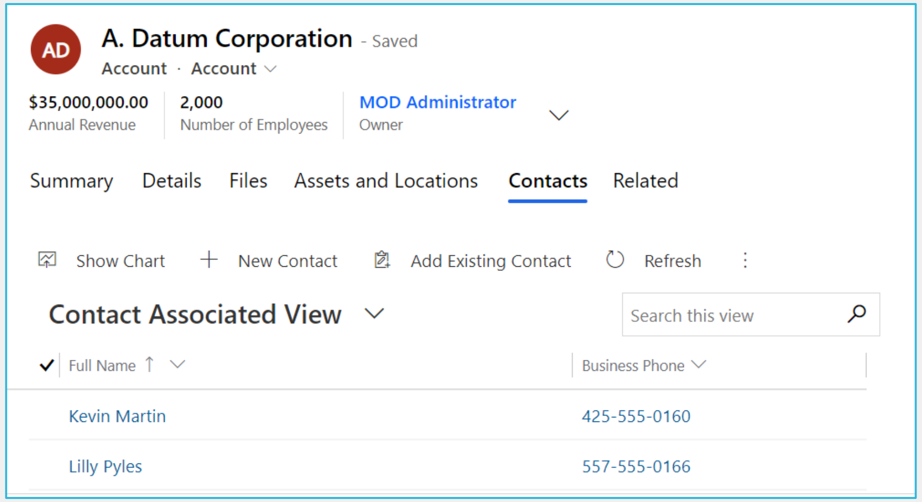
- An ordered collection of rows from a table
- Determined by an underlying query
- View control
  - Which rows to display
  - Which columns to display
  - The order the rows are displayed
- Types
  - System
  - Personal
  - Public

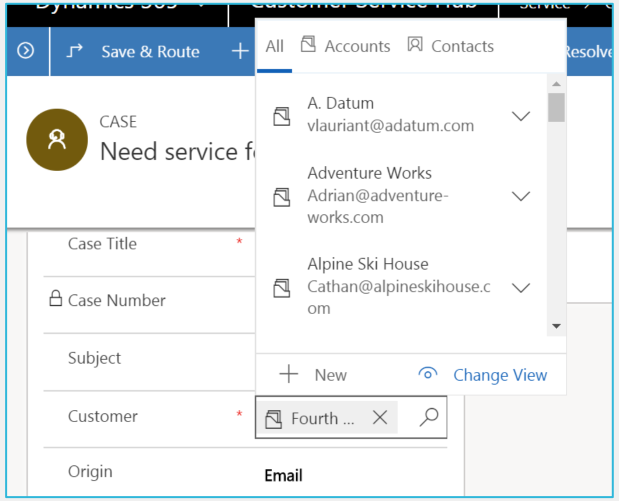
System Views

Advanced Find View
Quick Find View
Associated View
Lookup view

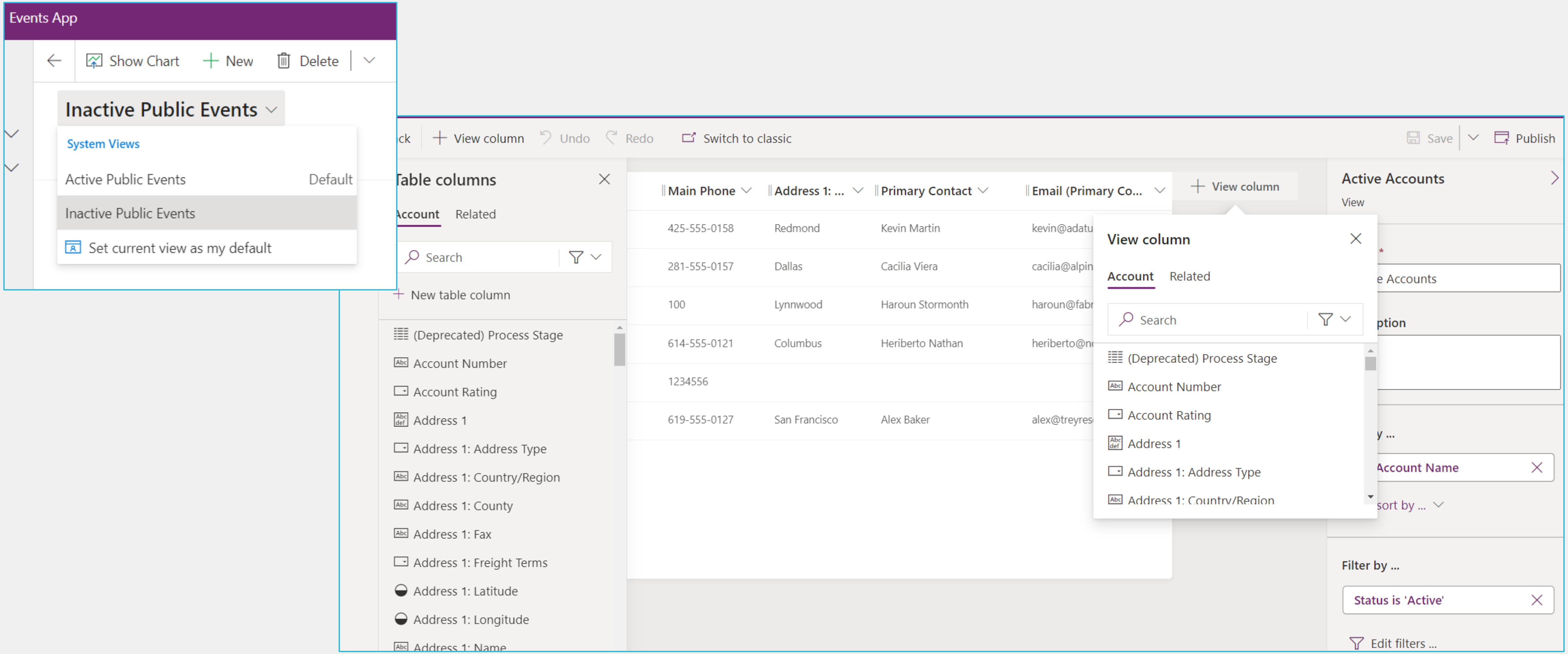
Automatically created
Can be edited but not deleted







Creating Public Views



Lab 9 (page 159)

- Modify the Quick Find View and Create a New Public View

1. Edit the Quick Find View
   - Add the Customer, Event Booked and Date Booked Column
   - Order the columns appropriately
   - Save and publish the View
2. Create a new Public View
   - Edit the Active Event Booking view
   - Filter to show the last 7 days worth of Events
   - Save and Publish the view

Module 10: Advanced Model-Driven App Components

Page Components

Model-Driven App Requirements

Advanced app components

Model-Driven App Requirements

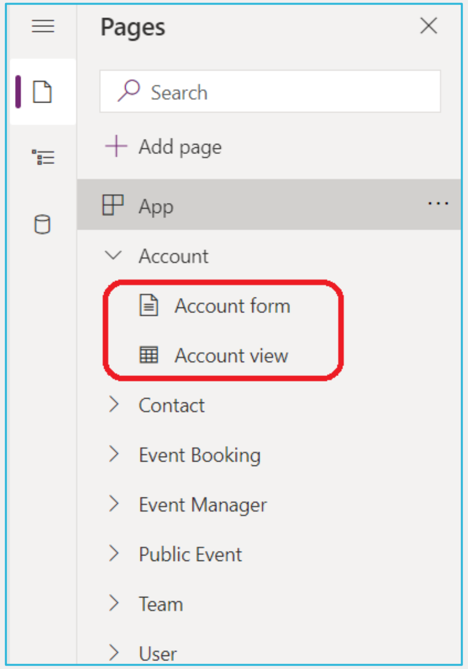
Below are the requirements needed to build Model-driven Apps:

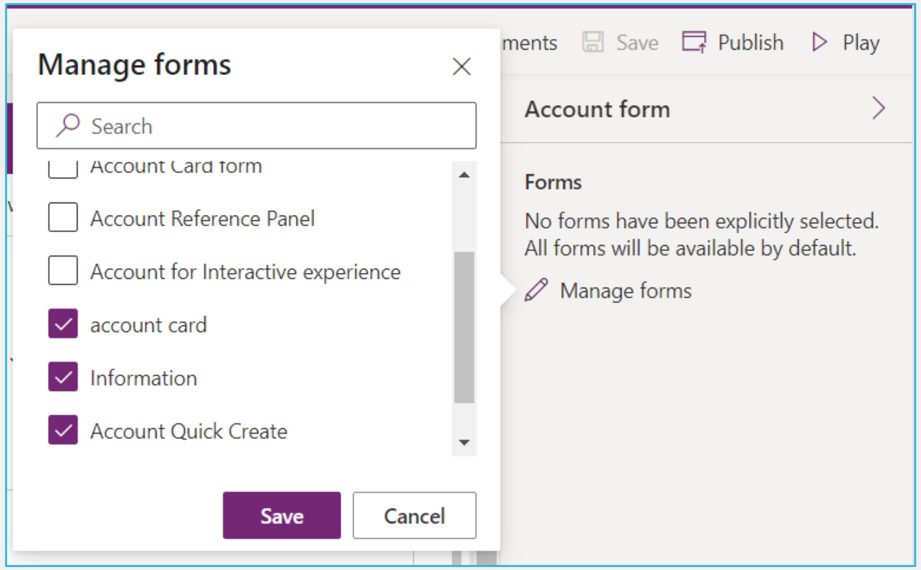
- Microsoft Power Apps License
- Capacity to create a Microsoft Power Platform environment
- A Microsoft Power Platform environment
- A Dataverse database within the environment
- Privileges for the maker to work as a system customiser or environment maker in the environment where the model-driven app is to be built
- At least one table
- At least one column within the table*
- At least one table view to display the records*
- At least one table form to enter data*

*this will be created by default when a table is created

Page components

- Control which forms and views from the table are available to the app
- By default, all are available





Lab 10 (page 170)

- Enhance you Model-Driven App

1. Edit the Model-Driven App to restrict the Account App to certain forms and views

Module 11 - Business Process Flows

BPF Overview

BPF Components

BPF Permissions

Business Process Flows (BPF)

BPF Overview

- Guide the user stage by stage through a business process
- Can trigger workflows (on entry/exit of stage)
- Can add a cloud flow (Power Automate) as a step

BPF Components

Stages

- Logic grouping of steps, actions and flows
- Associated with a table
- If a new stage is associated with a different table, the tables must have 1:N relationship

Data Steps

- Columns that should be completed at this stage.
- Can be marked as required within the stage

Workflows and Flows

- Trigger a workflow (deprecated) or Power Automate flow

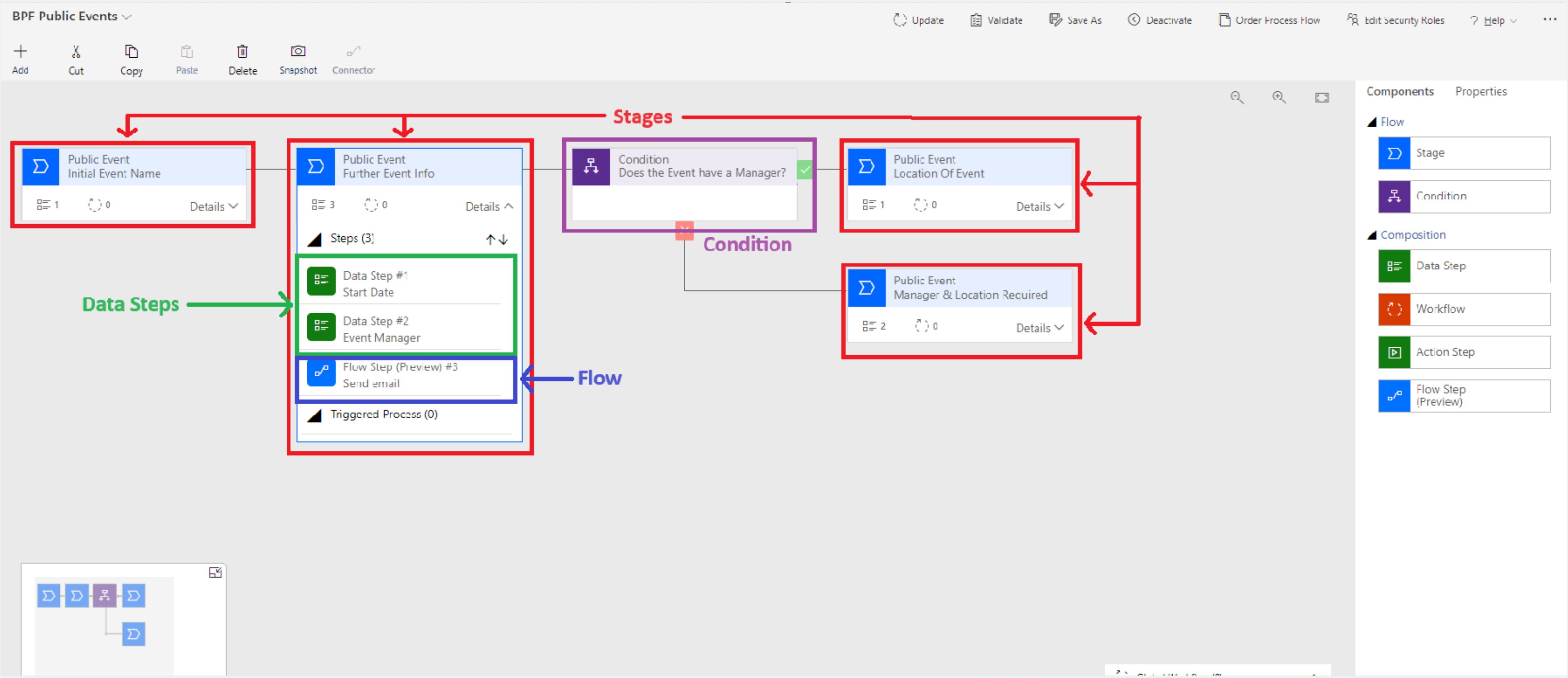
Action Steps

- Call a custom action created in Dataverse

Conditions

- Provides branching logic

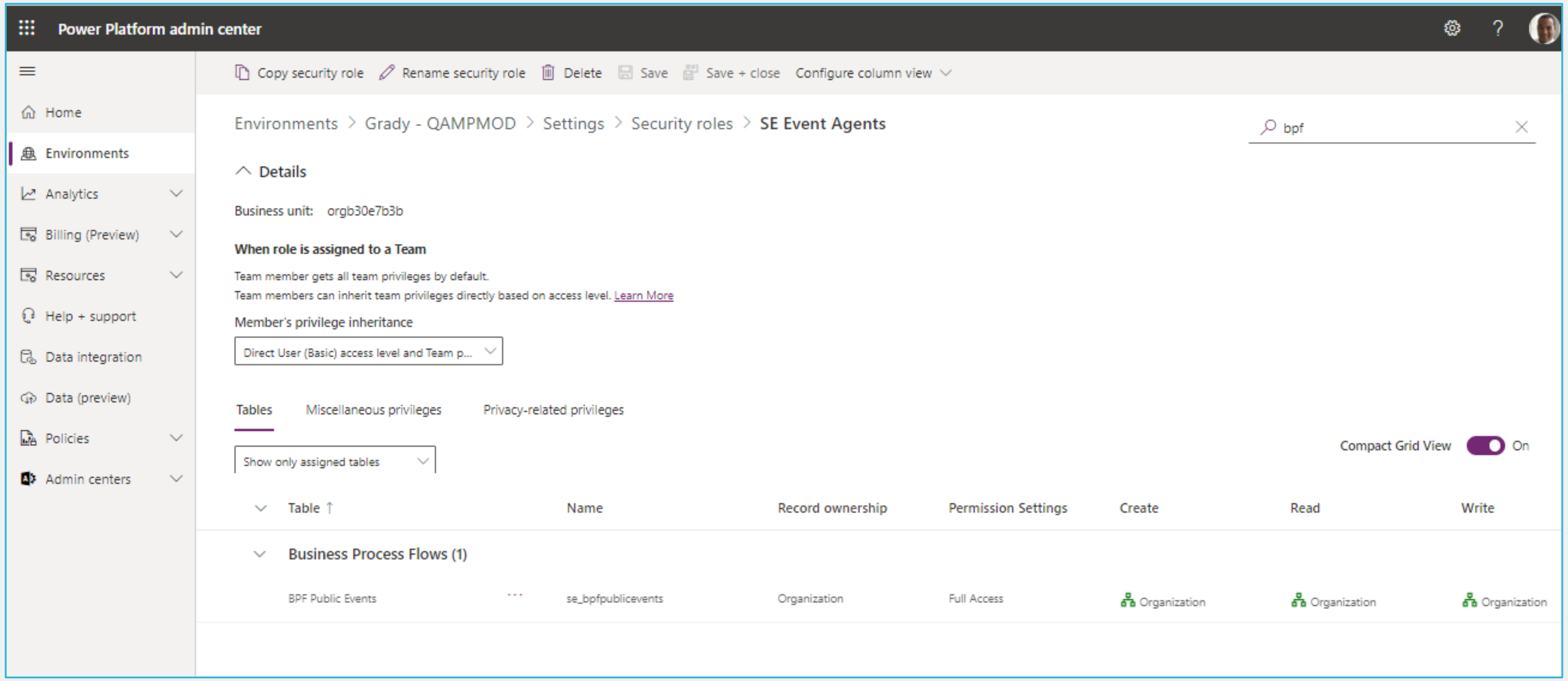
BPF Components



QA

BPF Permissions

- Table is created with same name as flow
- Assign permissions to the table to allow users to run the flow
- Flow is dependent on the table
- Table should be added to the solution before attempting to export the solution



Lab 11 (page 182)

- Create a Business Process Flow

1. Add a business process flow with a condition to the event
2. Test to check that the business process flow works as expected.

Module 12: Security Model: User Management

- Adding Users – overview
- Requirements for adding users
- Ways a user can be added to an environment
- Settings after adding a user

Users

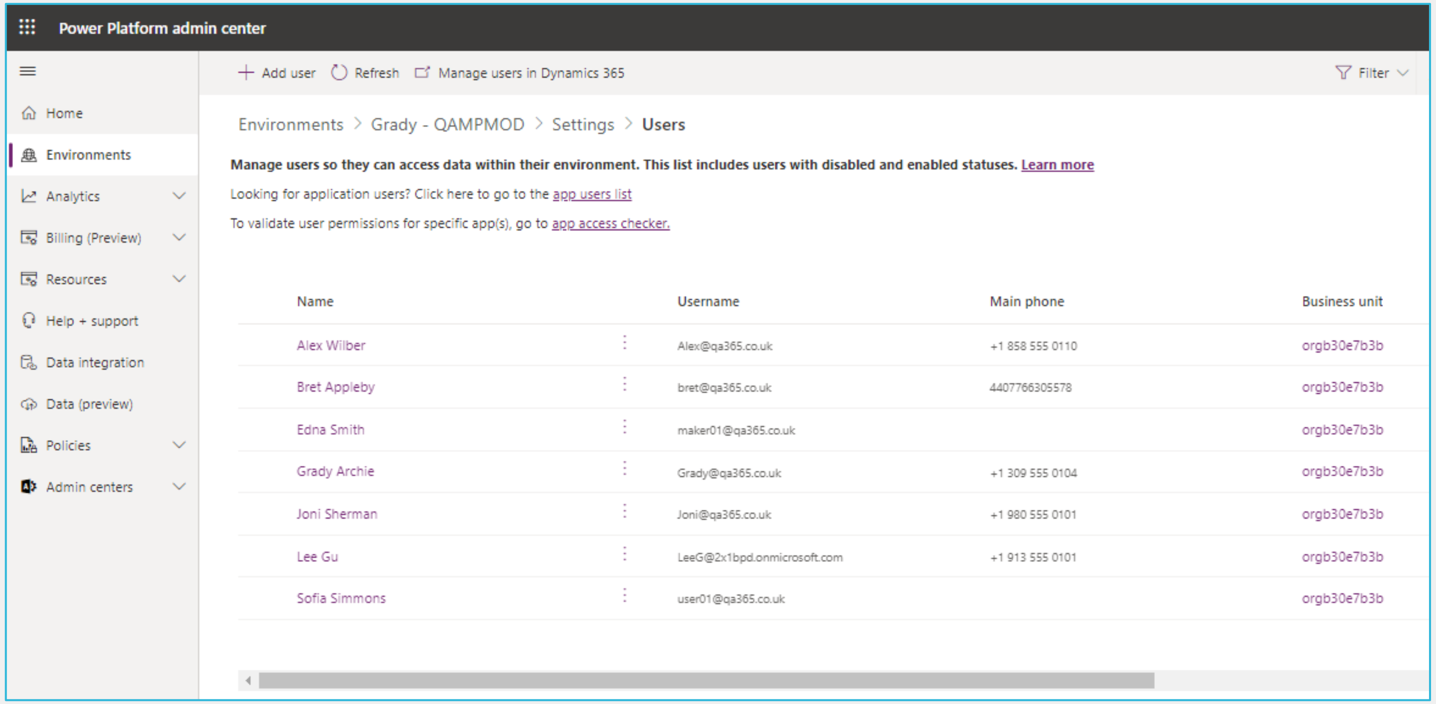
QA

Adding Users - Overview

- Before a user can access resources in the environment, they must be added to that environment

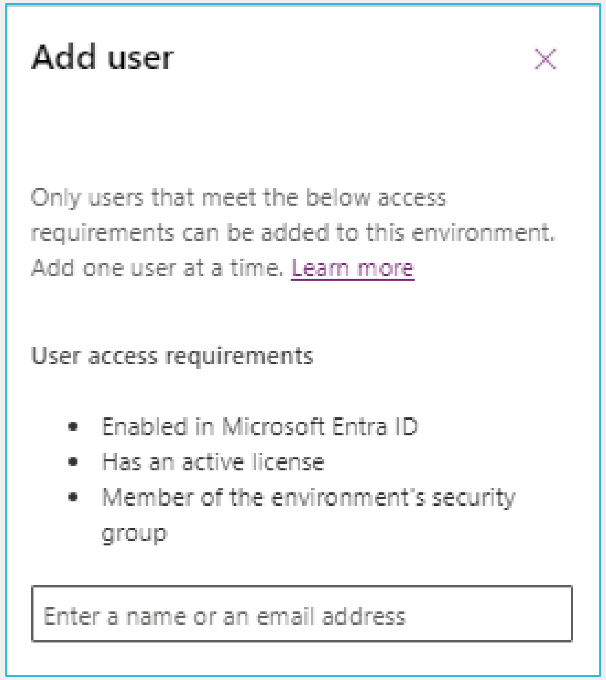
- Adding a user does not grant any rights to resources in the environment.

- Once added to the environment can be given roles or added to teams (which can grant rights)



Requirements for adding users

- The user must:
- Be enabled in Microsoft Entra ID
- Have an active license
- Be a member of the environment's security group (if one specified)



Ways a user can be added to an Environment

Automatically

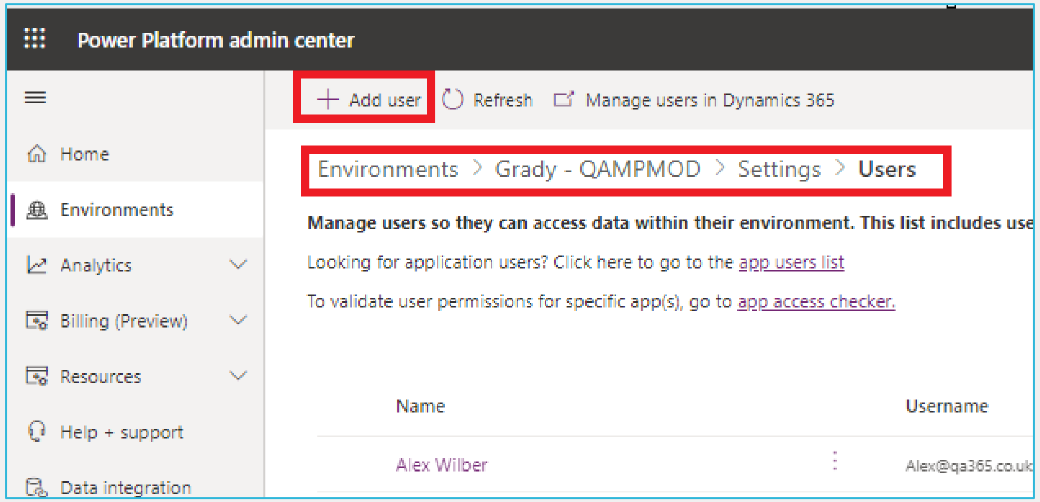
- Done on a schedule
- Can take a long time (especially if membership not controlled through a security group)

Just-in-time

- Users added automatically as they access the environment (usually through a URL to an app)

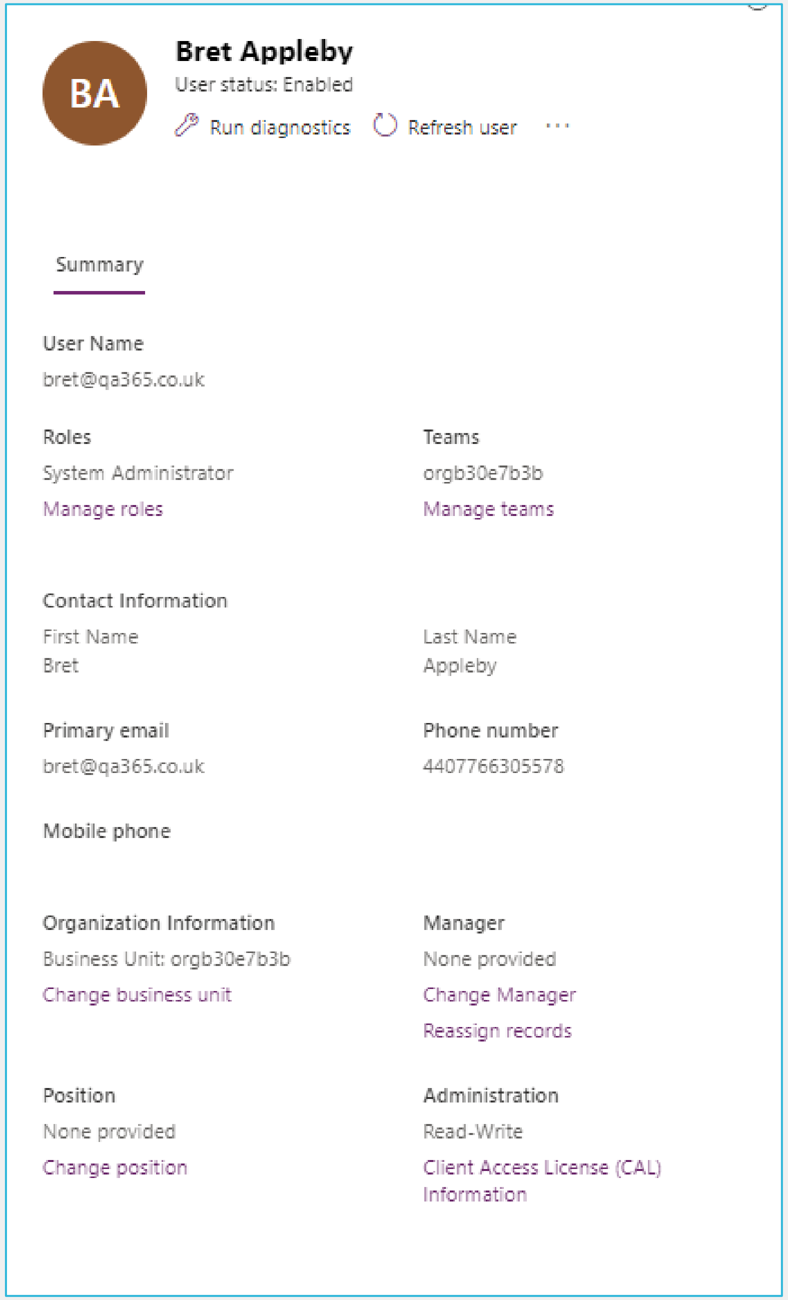
Manually

- Using the Power Platform Admin center



Settings after Adding a User

- After the user is added, the following settings can be configured.
- Roles – Common way to assign permissions
- Teams – Additional way to assign permissions
- Business Unit – Change place in the hierarchy
- Manager – Should be in same or parent business unit



Lab 12 (page 191)

- Adding Users

1. Using the Power Platform Admin Center add four new users
2. Ensure all users are given a Microsoft Power Apps Developer license and an Office 365 E5 license

Module 13: Security Model: Business Units

- The Building blocks of Dataverse security
- Business Unit overview
- Business Unit hierarchy
- Creating Business Units
- Enable, disable and delete business units
- Moving Users & Teams between Business Units

Business Units

The building blocks of Dataverse security

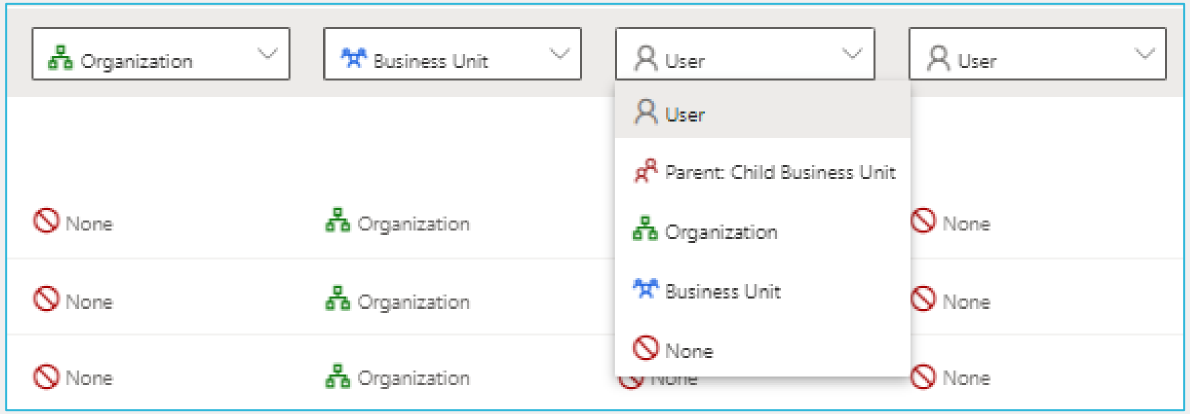
- Business Units
- Security Roles
- Teams

Business Unit overview

- A Business Unit is a container which can contain
  - Users
  - Teams
  - Records owned by those Users and Teams

- Business Units can be set up in a hierarchy

- Permissions can be set on tables to only display records from the users Business Unit (or their Business Unit and child Business Units)



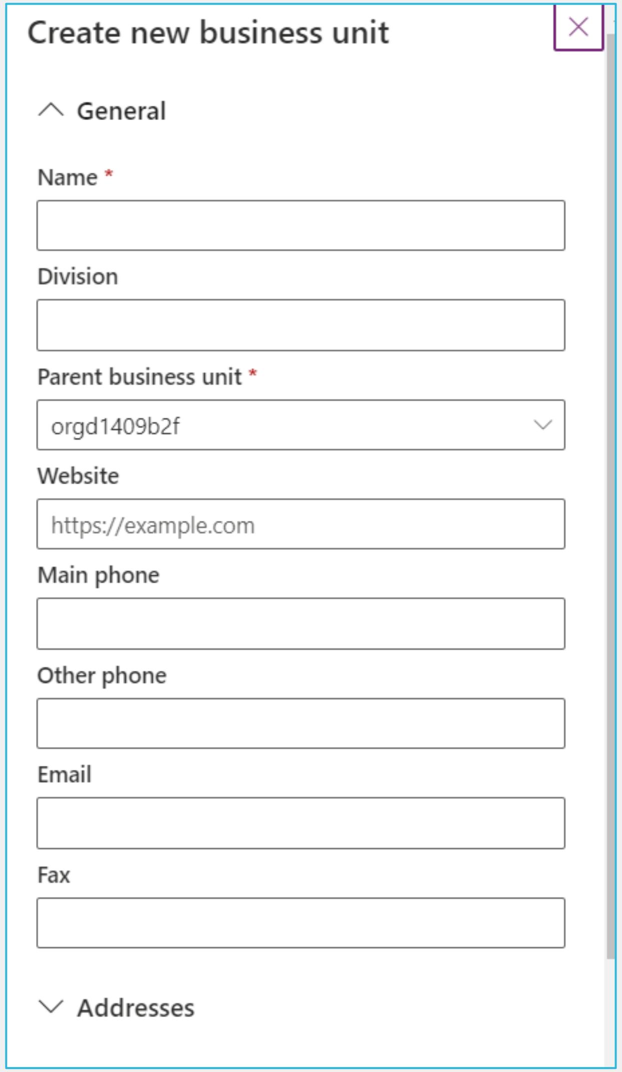
Business Unit Hierarchy

By default, will only have one (the root) Business Unit.

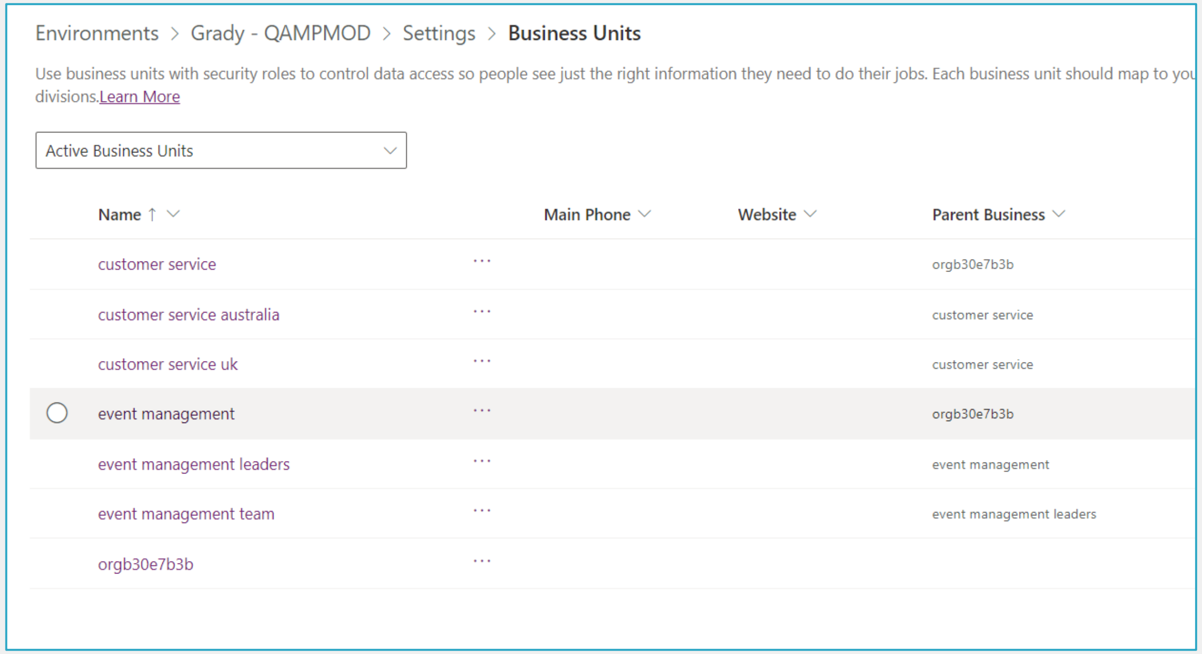
- Automatically created
- Has name of the organisation (e.g. orgb30e7b3b)
- Can not be deleted
- Can not be disabled
- Will initially contain all users added to the environment

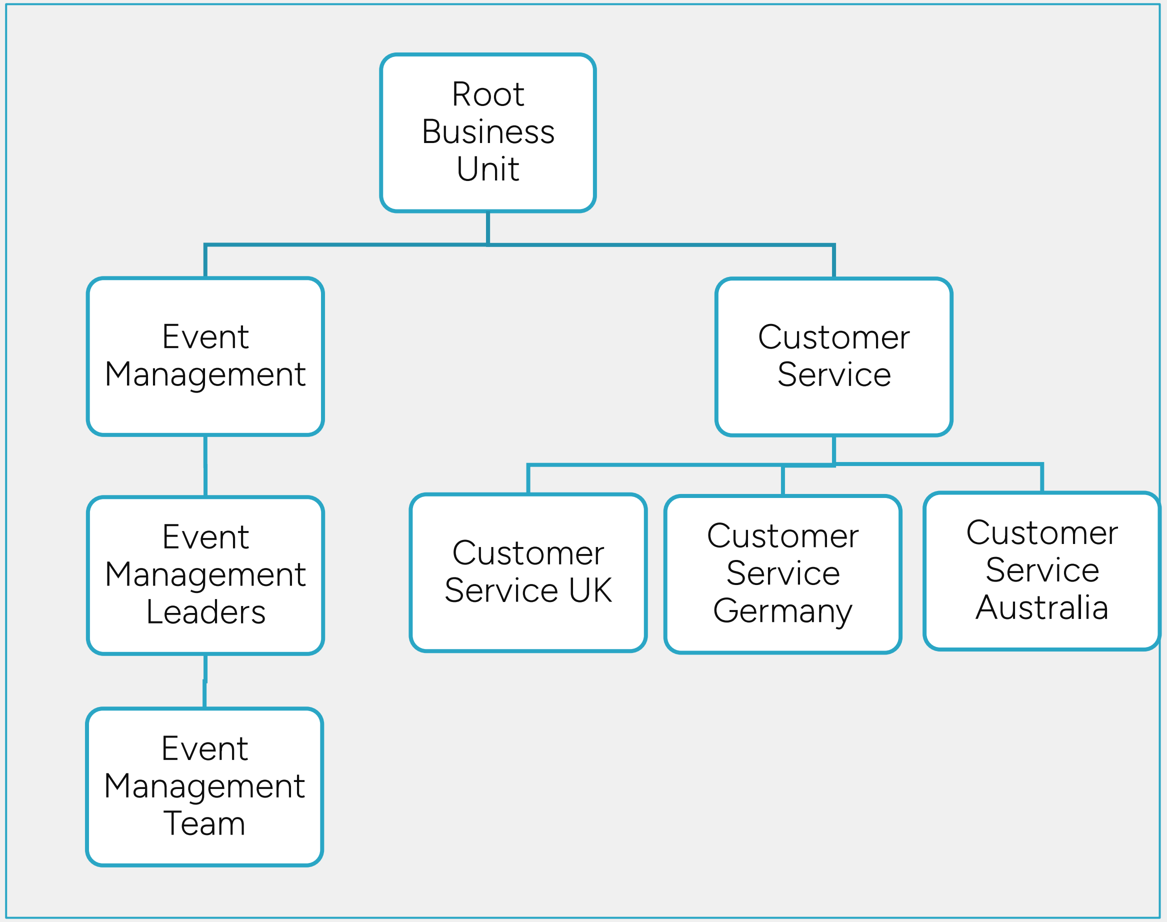
Can create additional Business Units

- New Business Units must have a parent – therefore forming a hierarchy



Creating Business Units





QA

Enable, disable and delete Business Units

A Business Unit may be disabled

- Also disables child Business Units
- Also disables users

Enabling a Business unit does not enable users in that Business Unit

To access Dataverse, the user must be enabled and in an enabled Business Unit

A disabled, empty Business Unit (no child Business Units, Users or Teams other than the default team) may be deleted

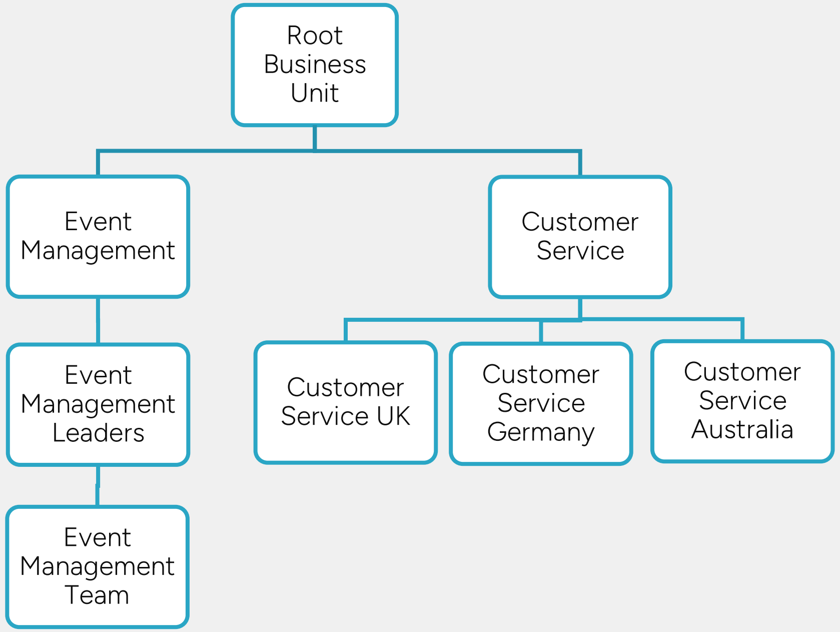
Moving Users & Teams between Business Units

- All security roles are removed
- Must be reassigned after the move

Lab 13 (page 200)

- Creating Business Unit Structure

1. Create two child Business Units below the Root Business Units
2. Create child Business Units below the newly created Business Units to create a hierarchical structure in the picture



Module 14: Security Model: Security Roles

- The building blocks of Dataverse security
- Security Roles overview
- Default security roles
- Special roles
- Privileges and Access levels
- Copy and modify security roles

Security Roles

The building blocks of Dataverse security

- Business Units
- Security Roles
- Teams

Security Roles overview

Security roles

- Are a collection of privileges
- Can be associated with users, and Dataverse teams

Users can be assigned multiple roles (directly or indirectly), and permissions are cumulative

Security roles are created in a Business Unit

- Child Business Units inherit a read-only copy of the security roles
- Updating the originating security role will automatically update the inherited child security roles.

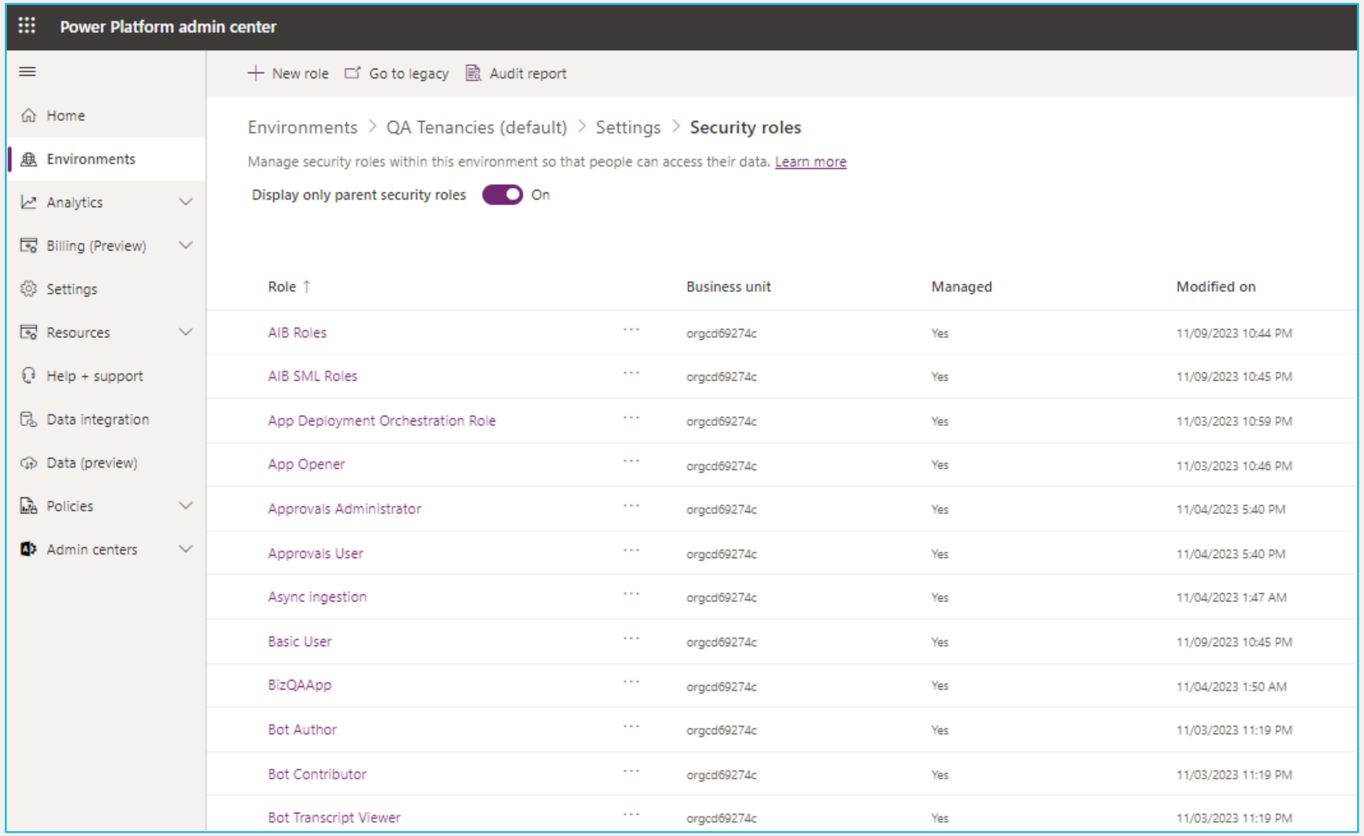
Users and teams can only be assigned roles from their Business unit

Recommended that all roles are created in the root Business Unit

- Roles created in the root Business Unit may be added to solutions

Default Security Roles

- A number of default security roles exist
- It is recommended that these are copied before changes are made and assigned to Users and Teams



Special Roles

System Administrator

- Highest level role
- Full permissions
- Automatically granted full permissions to new custom tables
- At least one user must have this role

System Customizer

- User level access to system tables (including accounts and contacts)

System Administrator	System Customiser
Organisation level access to all system (Out of Box) tables	User level access to all system tables
May not be customised	May be customised
No restriction to any table	Restricted access (Create/Delete) to Plugin assembly, SDK Message Processing Steps, Service endpoints, Web resource, System Job, Calendar, Business Closer, Business Unit, Currency, Security Role, Team, User Impersonation, Override Created On, Enable/Disable User, Audit Partition, Bulk Delete

QA

Privileges and Access Levels

Privileges describe actions that a user can take:
Create Read Write Delete Assign
Append AppendTo Share

Access levels define the 'scope' of the privilege.
Five Access Levels:

- None
- User
- Business Unit
- Parent Child Business Unit
- Organisation

Miscellaneous Privileges:

- None
- Organisation

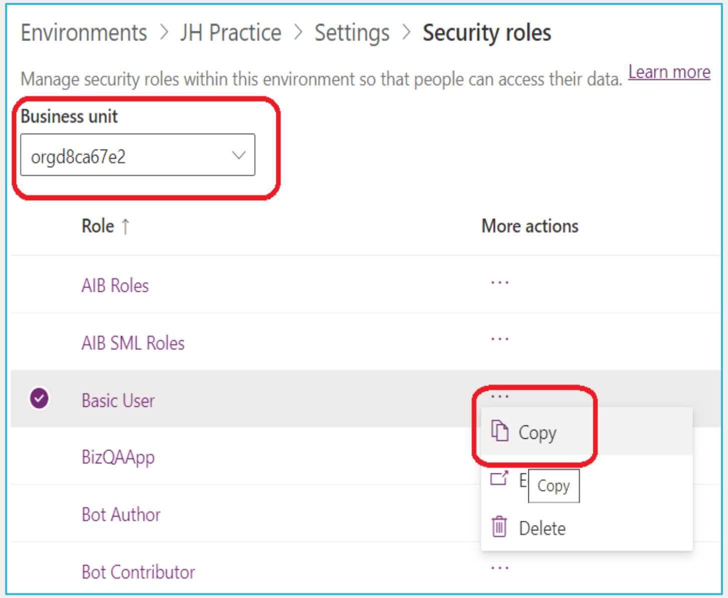
Privileges and Access Levels

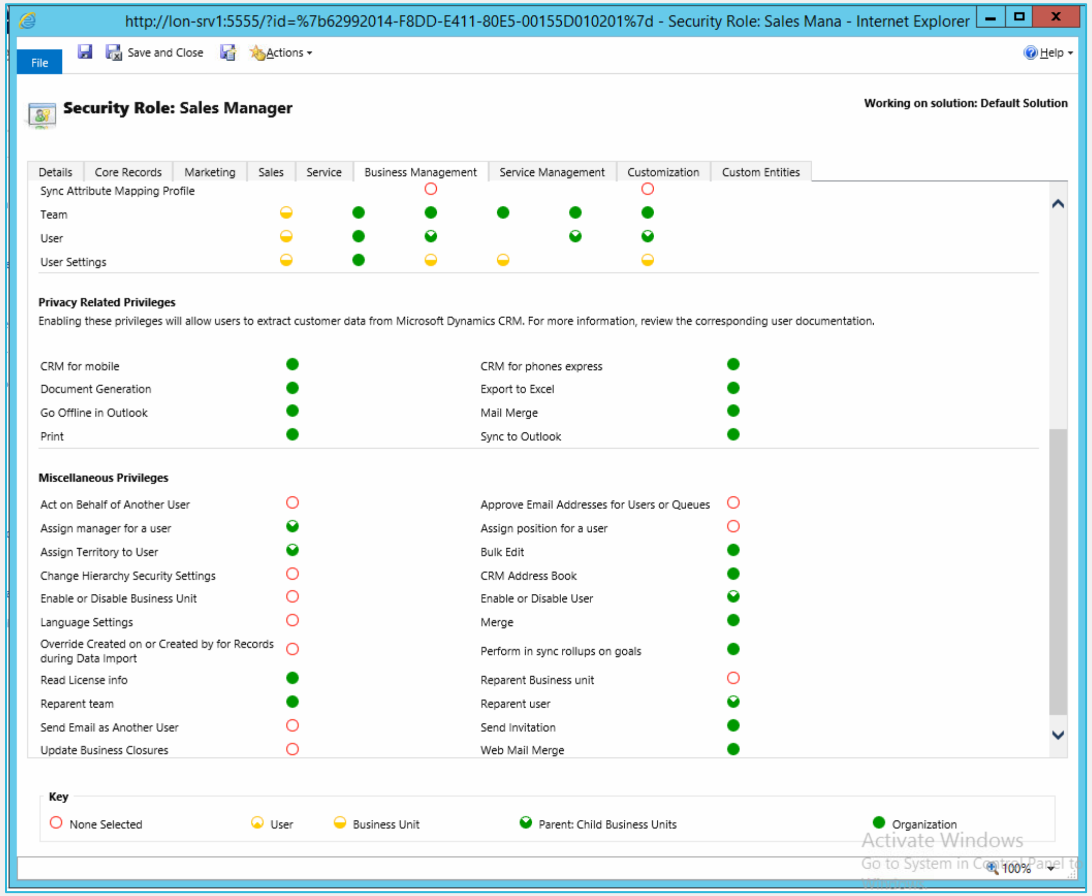
Privilege	Description
Create	The user can create records of the Table
Read	The user can read records of the Table
Write	The user can update data for records of the Table
Delete	The user can delete records of the Table
Append	The user can attach this Table to other records
Append To	The user can attach other records to this Table
Assign	The user can make other Users or Teams the owner of this Table
Share	The user can share records of the Table with other Users or Teams

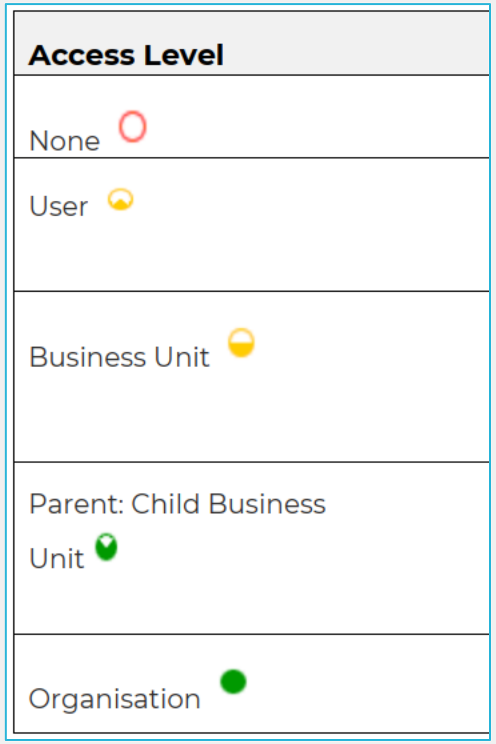
Access Level	Description
None	The user does not have the privilege
User	The user has the privilege for the records they own, and for the records that are shared with the user (either directly or through Team Membership)
Business Unit	The user has the privilege on all records that are owned by members of his or her Business Unit. However, the user does not have the permission on records that are owned by members of child Business Units
Parent: Child Business Unit	The user has the privilege on all records that are owned by members of his or her Business Unit, and all records owned by members of child Business Units to any depth
Organisation	The user has the privilege on all records in the organisation

QA

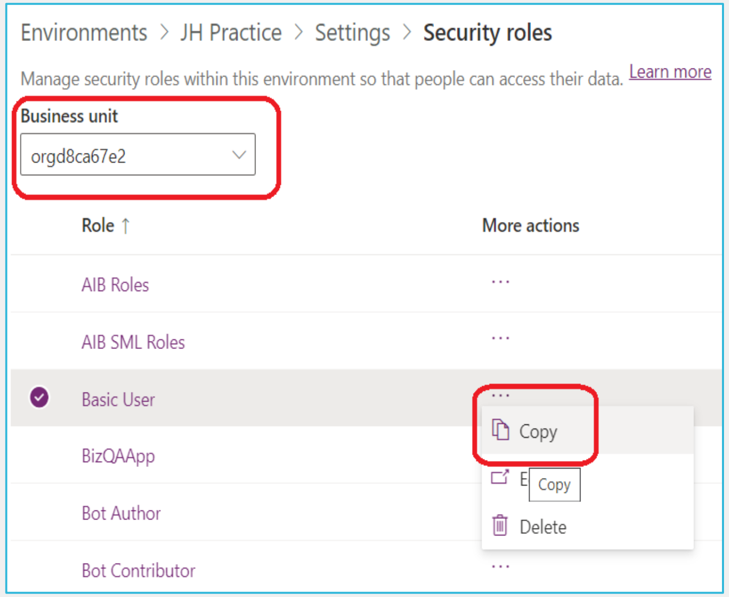
Copy and Modify Security Roles (Legacy)

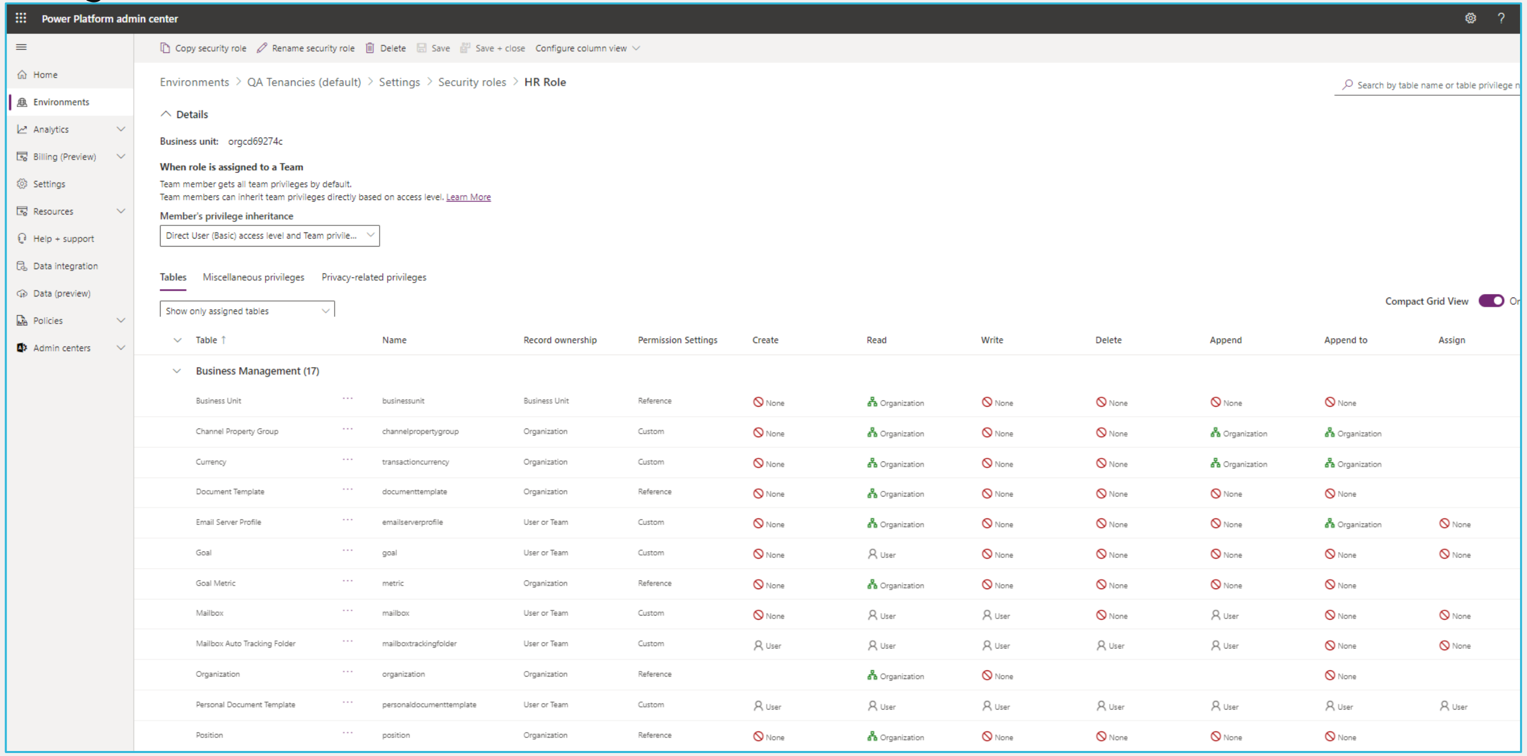


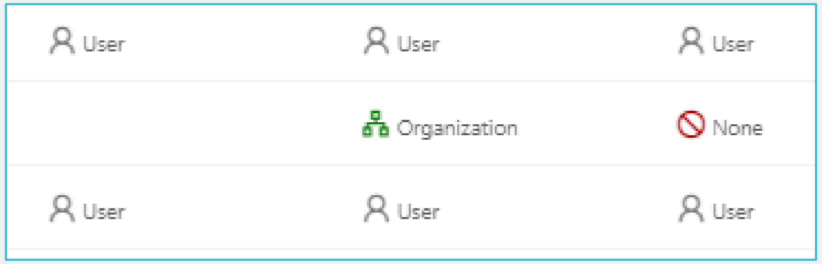




Copy and Modify Security Roles (Modern)







Lab 14 (page 212)

- Configure Security Roles

1. Copy the Basic Users role twice to create two new roles
2. Add the roles to your solution
3. Modify the roles to include privileges listed in the lab
4. Add users (Andrea & Dave) to the Event Management Leaders and Event Management Team roles

Module 15: Security Model: Teams

- The building blocks of Dataverse security
- Teams overview
- Team Types
- Owner Teams
- Microsoft Entra ID Teams
- Access Teams
- Creating and Managing Teams

Teams

The building blocks of Dataverse security

- Business Units
- Security Roles
- Teams

Teams overview

- Teams can assist in assigning permissions

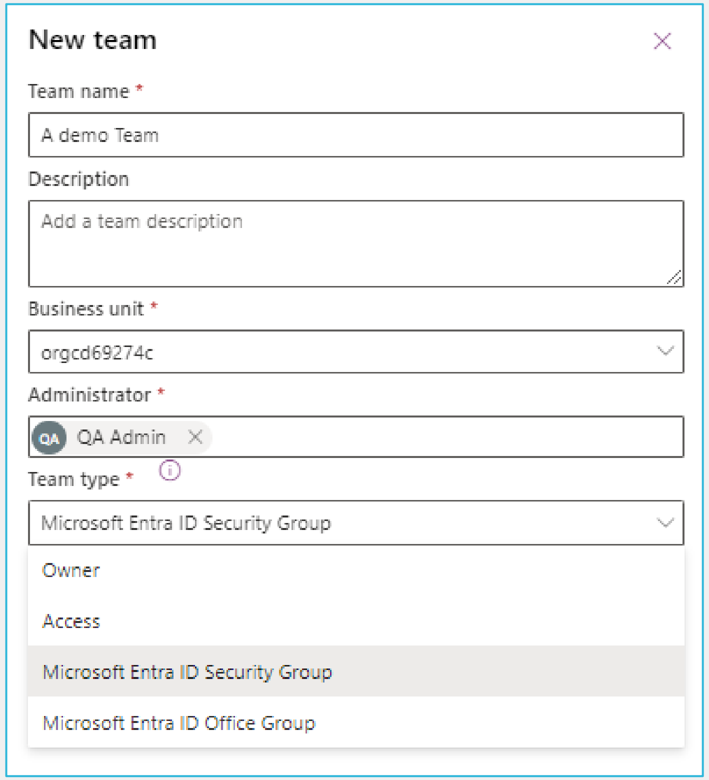
- Users can be added to Teams

- Security roles can be assigned to teams* – the team members will inherit these permissions

* Not Access Teams

Team types

- Owner
- Access
- Microsoft Entra ID Security Group
- Microsoft Entra ID Office Group



Owner Teams

Are assigned Security roles

Can be used for querying and reporting (e.g. view of all records owned by a team)

Default Teams

- One in each Business Unit (with the same name)
- May not be deleted
- May not change membership

Created Owner Teams

- May contain users from anywhere in the organization

Microsoft Entra ID Teams

Membership is controlled by the selected Microsoft Entra ID Security or Microsoft 365 group

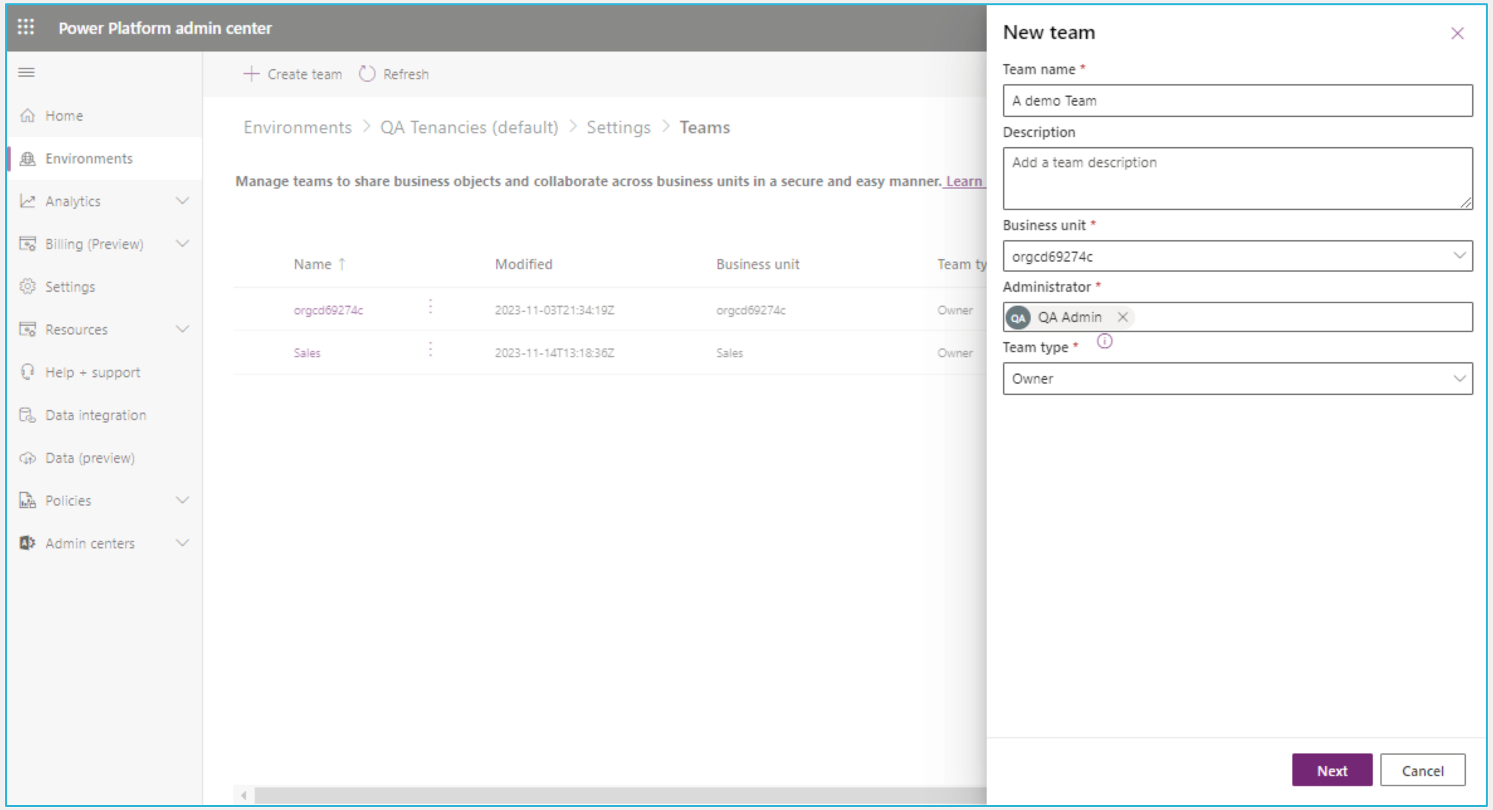
Can restrict membership to

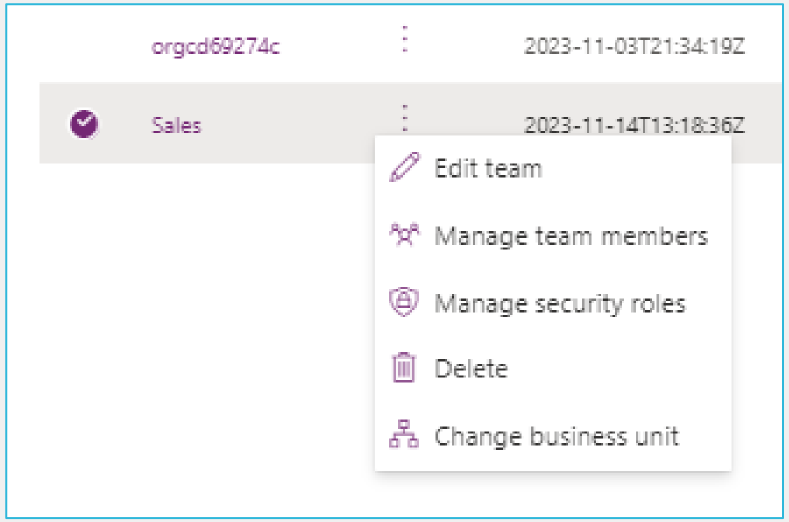
- Members and Guests
- Members
- Owners
- Guests

Access Teams

- Does not own records
- Does not have security roles assigned
- If a record is shared with the team, the team members are granted access rights to the record

Creating and Managing Teams





Lab 15 (page 226)

Managing and Creating Teams

1. Create a new team in the Event Management Leaders Business Unit called Event Collaboration Team
2. Add users to the Team
3. Test the team permissions

Module 16: Putting it all together

Solution Management

Solution Management

- Managed vs Unmanaged Solutions
- Managed Properties
- Moving solutions from Development > Test > Production

Ongoing Solution Maintenance

- Patching
- Cloning Solutions

Putting it all together

Solution version numbers

<major>.<minor>.<build>.<revision>

Exporting a solution increases the <revision> number

History

Start time ↓	End time	Version	Publisher	Operation	Suboperati...	Result	Error code
10/11/2023, 08:15	10/11/2023, 08:15	1.0.0.19	SEEvents	Export	None	Success	-
09/11/2023, 14:42	09/11/2023, 14:42	1.0.0.18	SEEvents	Export	None	Success	-
09/11/2023, 14:37	09/11/2023, 14:37	1.0.0.17	SEEvents	Export	None	Failure	80060376
09/11/2023, 14:01	09/11/2023, 14:01	1.0.0.16	SEEvents	Export	None	Success	-
09/11/2023, 13:47	09/11/2023, 13:48	1.0.0.15	SEEvents	Export	None	Success	-
09/11/2023, 13:36	09/11/2023, 13:36	1.0.0.13	SEEvents	Export	None	Success	-
09/11/2023, 12:13	09/11/2023, 12:13	1.0.0.13	SEEvents	Export	None	Success	-
09/11/2023, 12:03	09/11/2023, 12:04	1.0.0.12	SEEvents	Export	None	Success	-
09/11/2023, 11:40	09/11/2023, 11:40	1.0.0.11	SEEvents	Export	None	Success	-
09/11/2023, 11:12	09/11/2023, 11:12	1.0.0.10	SEEvents	Export	None	Success	-
09/11/2023, 11:03	09/11/2023, 11:04	1.0.0.9	SEEvents	Export	None	Success	-
09/11/2023, 10:21	09/11/2023, 10:21	1.0.0.8	SEEvents	Export	None	Success	-
09/11/2023, 10:14	09/11/2023, 10:14	1.0.0.6	SEEvents	Export	None	Success	-
09/11/2023, 09:58	09/11/2023, 09:58	1.0.0.6	SEEvents	Export	None	Success	-
09/11/2023, 09:46	09/11/2023, 09:46	1.0.0.5	SEEvents	Export	None	Success	-
09/11/2023, 09:42	09/11/2023, 09:42	1.0.0.4	SEEvents	Export	None	Success	-
09/11/2023, 09:30	09/11/2023, 09:31	1.0.0.3	SEEvents	Export	None	Success	-
09/11/2023, 09:12	09/11/2023, 09:13	1.0.0.2	SEEvents	Export	None	Success	-
09/11/2023, 08:30	09/11/2023, 08:30	1.0.0.1	SEEvents	Export	None	Success	-

Exporting Solutions

Exported Solution are a compressed file in .zip Format.

- Filename by default is: Solution Name + Version.
- Contains XML, XAML, .DLL, images and other files.

Warns if dependent components are missing.

Managed Solutions are for distributing customisations, such as ISV add-ons.

Internal developments usually use Unmanaged.

Default Solution may be exported but is always Unmanaged and not recommended.

Importing Solutions

Updates components already in the system

Adds new components

Dependent components must already be in the target system or be included in the Solution

Managed Solution keeps components

- Solution may be removed to delete all components.

Unmanaged Solution deletion will not uninstall components

- Writes changes into the Default Solution
- Can be removed but changes remain in the system

Managed vs Unmanaged Solutions

- Managed Solution – A completed solution intended to be distributed and installed
- Unmanaged – Allows modifications

Managed Solution	Unmanaged Solution
Most elements may not be customised. It is possible to set granular levels (Managed Properties) of rights to alter elements of the Solution such as create views, create forms etc.	All the elements or components in the Solution may be customised without any restriction.
Solution may not be exported	Solution may be exported
By deleting the Managed Solution, all the components in the solution will also be uninstalled.	If a user deletes the solution, the components still exist in the Default Solution. Tables, Columns and Web Resources may be removed manually.
A Managed Solution may be overridden by another new version of a Managed Solution.	

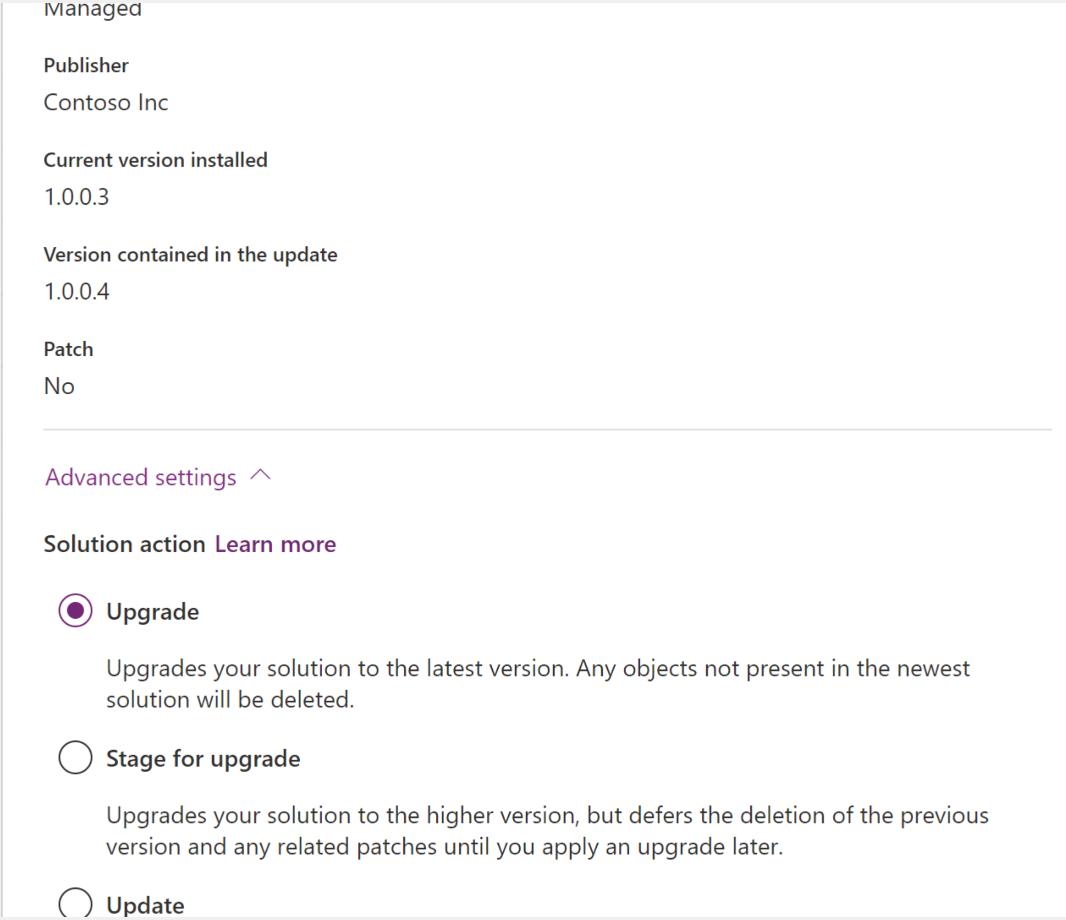
Updating Managed Solutions

Upgrade – Default option, upgrades your Solution to the latest version and rolls up all previous patches in one step.

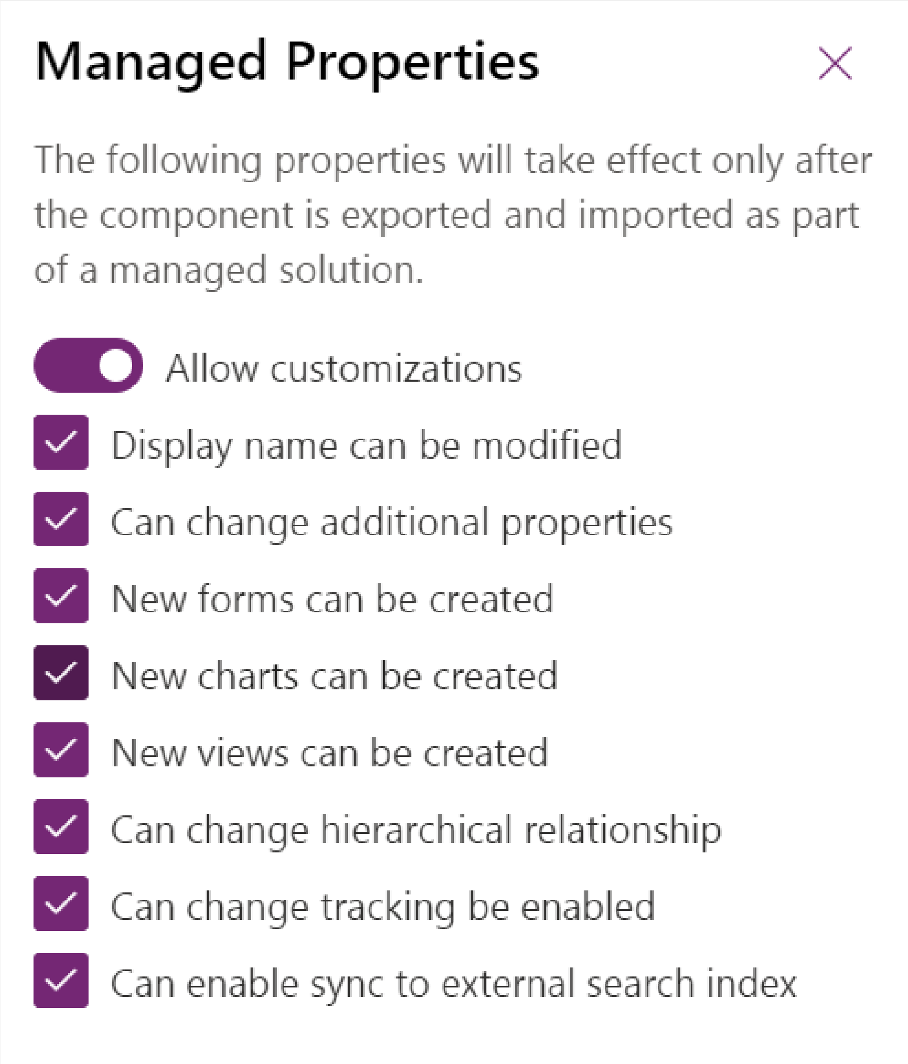
Stage for Upgrade – upgrades your Solution but defers the deletion of the previous version and any related patches until you apply the Solution upgrade later.

Good if you want both old and new Solutions in the system to do some data migration before you complete the Solution upgrade.

- Update – This option replaces your Solution with this version. Components that are not in the newer Solution won't be deleted and remain in the system. This option typically finishes in less time than the upgrade method.

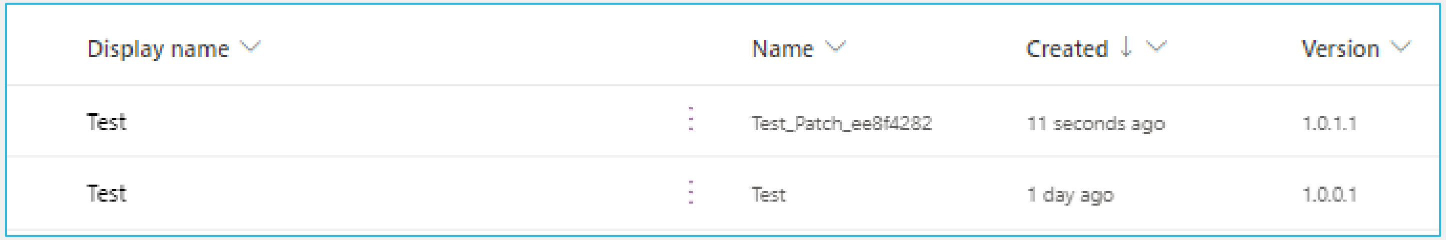


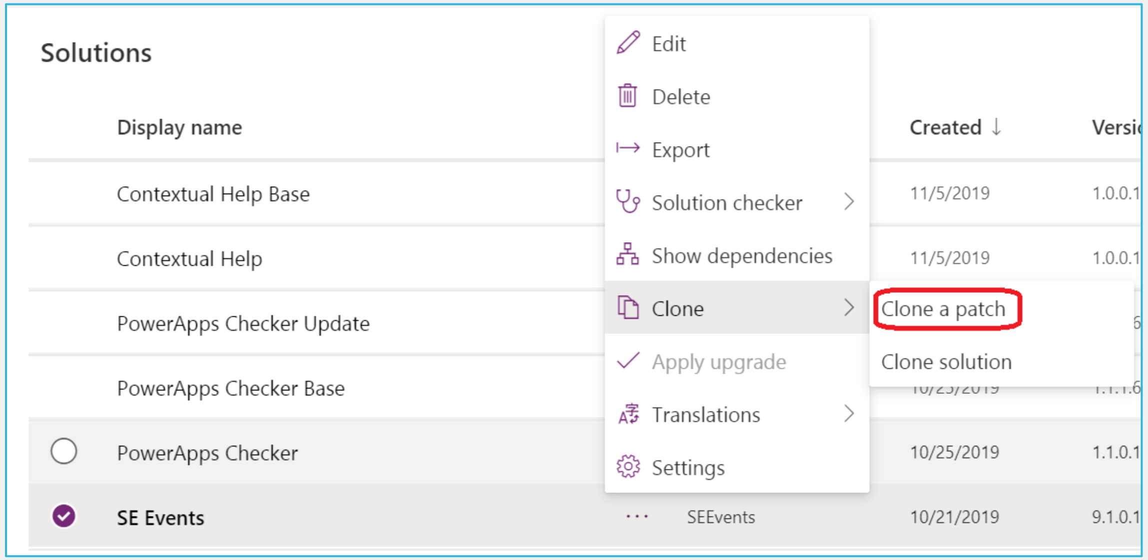
Managed Properties



Patching a solution

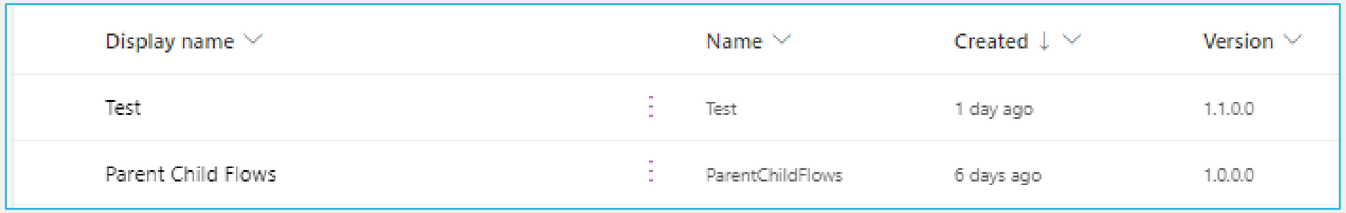
- If you make a small change (e.g. add a column) and export, all assets in the solution will be exported
- A patch allows changes to be isolated from the rest of the solution (allowing it to contain only the changes)
- Patches are applied to existing solutions
- Parent solution becomes read-only
- Creating a patch increases the <build> number in the solution version.

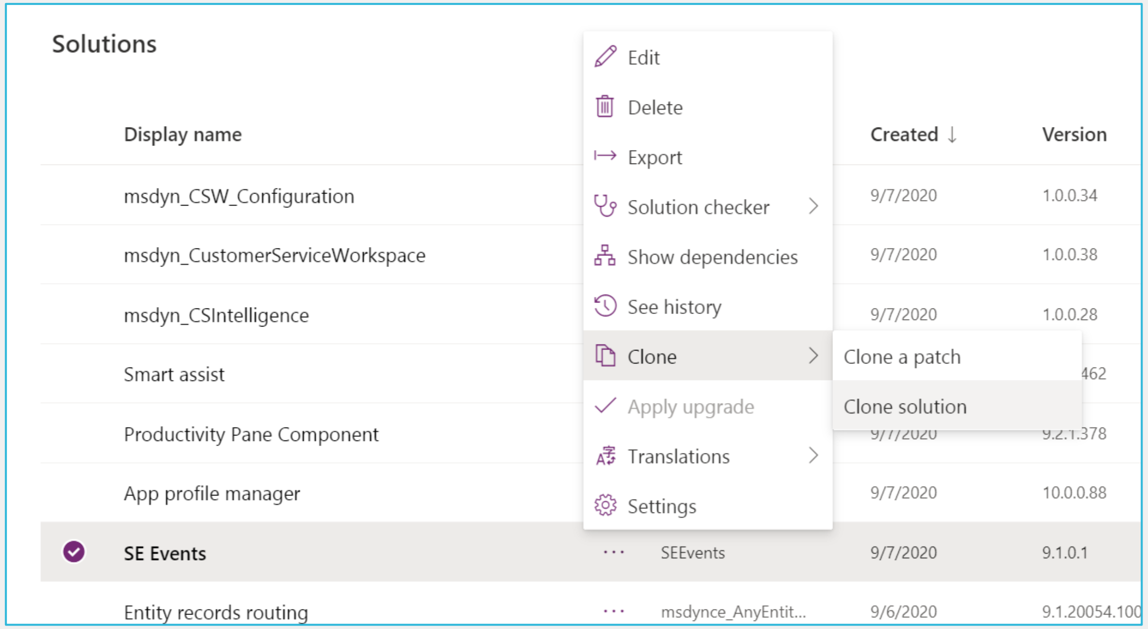




Clone a solution

- Merges original solution and patched into one entity
- Increases <minor> number in the solution version





Lab 16a (page 235)

- Solution Patching

1. Clone a patch on the SE Events Solution
2. Add a new Activity Table called Event Task to the Patch
3. Save and Publish the Patch
4. Test that the new Event Task is visible within the Model-Driven App

Lab 16b (page 238)

- Import a Managed Solution (do in your own time)

1. Clone the SE Events Solution
2. Check the Managed Properties of the Public Event, Event Bookings and Event Manager tables
3. Publish all Customisations
4. Export the Solution twice; once as Unmanaged and once as Managed
5. Create a new Test Environment
6. Import the Managed Solution into the new Test Environment
7. Try to modify the imported solution

Thank you!

End of Training Session

Please fill out Evaluation form

Any final questions?