

MS Dynamics CRM 365

Dynamics 365 Entity / Field Customization



Lesson Objectives

- Dynamics 365 Entities Overview
- Defining Entity Ownership
- Working with Entity Properties
- System vs Custom Entities
- Dynamics 365 Fields Overview
- Working with Different Types of Fields



Types of Entities

- **System Entities**
 - Built-in entities created when system is deployed
 - Many can be modified, some cannot
 - Cannot be deleted
 - Cannot be 'locked down' by a managed solution

- **Custom Entities**
 - Created by system customizer or through solution import
 - Can be modified or deleted (unless managed properties from a managed solution prevent this)



Activity Entities

- Some of the entity properties are predefined and cannot be changed
- All activities share some common fields with the activity pointer entity
- No separate security role privileges
- Can be hidden from usual activity menus



Entity Ownership

- Ownership: User or Team
 - Owner field added, and extra default views
 - Security role privileges have five access levels
 - Used for accountability, or for security (or both)
- Ownership: Organization
 - No owner field
 - Security role privileges have two access levels
 - Used when people have access to all the records of the entity, or none

Ownership *

☐ Define as an activity entity.

☒ Display in Activity Menus

User or Team

Organization



General Entity Properties

- Display name and plural name can be changed
 - Plural name used in names of default views
 - Plural name used in navigation to related entities
- Name (Schema) cannot be changed
 - Note schema name uses publisher prefix
- Primary Field
 - Must be a text field
 - After entity is saved, can be modified
 - Activity entity properties cannot be changed

General

Primary Field

Controls

Entity Definition

Display Name *

Account

Plural Name *

Accounts

Name *

account

Primary Image

Default Image

▼

Color

#794300

Description

Business that represents a customer or potential

☒ **Enable for interactive experience**

Areas that display this entity

☒ Sales

☒ Service

☐ Help Center



Additional Entity Properties

- Communication and Collaboration
- Data Services
- Outlook and Mobile
- Relationships to frequently-user system

Note: Some properties cannot be disabled after they have been enabled

Options for Entity


Process

- ☒ Business process flows (fields will be created) +

Communication & Collaboration

- ☐ Feedback +
- ☒ Notes (includes attachments) +
- ☒ Activities +
- ☒ Connections +
- ☒ Sending email (If an email field does not exist, one will be created) +
- ☒ Mail merge
- ☒ Document management
- ☐ Access Teams
- ☐ Queues +
 - ☐ Automatically move records to the owner's default queue when a record is created or assigned.
- ☐ Knowledge Management
- ☐ Enable for SLA

Data Services

- ☒ Allow quick create
- ☒ Duplicate detection
- ☐ Auditing
 -  This entity will not be audited until auditing is enabled for the organization.
- ☒ Change Tracking

Outlook & Mobile

- ☒ Enable for phone express
- ☒ Enable for mobile
 - ☐ Read-only in mobile
 - ☒ Enable for Mobile offline
 - [Organization data download filter](#)
- ☒ Reading pane in Dynamics 365 for Outlook
- ☒ Offline capability for Dynamics 365 for Outlook



Managed Properties

- Define if a component can be customized after it is exported and imported as part of a managed solution
 - Most components contain managed properties
 - Ex. Entities, Fields, Forms, etc.
- Managed properties can include
 - Ability to change display name
 - Changing properties
 - Adding forms, charts, or views
- All out of box components Managed Properties are set to be customized
 - This behavior cannot be changed

Set Managed Properties

Set the Managed Properties of this component.

The following properties will take effect only after the component is exported part of a managed solution.

Can be customized	<input checked="" type="radio"/> True	<input type="radio"/> False
Display name can be modified	<input checked="" type="radio"/> True	<input type="radio"/> False
Can Change Additional Properties	<input checked="" type="radio"/> True	<input type="radio"/> False
New forms can be created	<input checked="" type="radio"/> True	<input type="radio"/> False
New charts can be created	<input checked="" type="radio"/> True	<input type="radio"/> False
New views can be created	<input checked="" type="radio"/> True	<input type="radio"/> False



Controls

- Custom Controls are Field and Data Set Visualizations for the Mobile Clients

- Examples:

- Calendar
- Arc and Radial Knobs
- Star Ratings
- Flip Switch
- Number Input
- Option Sets

Add Control

Select a custom control from the field.

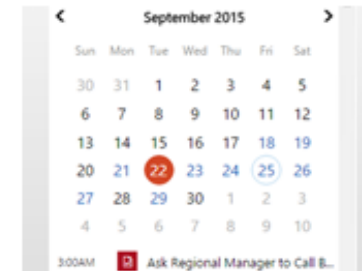
Calendar Control

Calendar Control

Modes: Edit + Read

CRM Types: Grid

Use this control to display items in a calendar view.



Add

Editable Grids

- Editable Grids are defined at an entity level
 - Available for Display:
 - Web
 - Tablet
 - Phone
- 
- Control

General	Primary Field	Controls	Events
Control			
	Web	Phone	Tablet
Microsoft Dynamics 365 Read-only Grid (default)	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>
Editable Grid	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
			X

Add Control...

Editable Grid	
Property	Value
Grid view	
Lookup: Primary Contact (My Active Accounts)	
Add Lookup	
Nested grid view	
Nested grid parent ID	



System vs. Custom Entities

- The display name and plural name of out of the box entities can be changed as needed
 - OOB entity messages should also be customized to reflect name change
- Before creating custom entities, first determine if existing entities can be used
- Some entities are tied to system behavior
 - Ex. Marketing list can only contain Accounts, Contacts, or Leads



Custom Entities and Security Roles

- Each security role has a tab called Custom Entities
 - Privileges and access levels must be defined for each custom entity
 - By default, only the System Administrator role will have access to custom entities
 - All other roles will need to be provided appropriate access

File

Save and Close

Actions ▾

Help ▾

Security Role: Salesperson

Working on solution: Default Solution

Details	Core Records	Marketing	Sales	Service	Business Management	Service Management	Customization	Missing Entities	Custom Entities
Entity	Create	Read	Write	Delete	Append	Append To	Assign	Share	
Bank Account									
Filter									
Post Configuration									
Post Rule Configuration									
Profile Album									
Wall View									

Key
 None Selected User Business Unit Parent: Child Business Units Organization



Deleting Entities

- System entities cannot be deleted
- Entities in Managed Solutions cannot be deleted directly
 - The Solution containing the entity must be deleted
 - Entity will be removed if no other items are using it
- Custom Entities can be deleted
 - Must not have any dependencies with other items
 - *Example a lookup field to entity on another published entity form*



Lab / Demo



Fields

- Store a single value of defined data type
 - Fields of the same data type can be formatted to display in different ways
- Appears as a control on form
- Used as a display column on a form
- Can be used as part of a query
- Data is stored in a column in the entity table in SQL database
- Also known as an attribute by developers



Microsoft Dynamics 365 Field Types

Field Types	Description	Available field types
Simple Field	Contains data that is not based on a formula	Single Line of Text, Option Set, Two Options image, Whole Number, Floating Point Number, Decimal Number, Currency, Multiple Lines of Text, Date and Time, Lookup
Calculated Field	Contains calculations that use fields from the current entity or related parent entities	Single Line of Text, Option Set, Two Options, Whole Number, Decimal Number, Currency, Date and Time
Rollup Field	Contains an aggregate value computed from the records related to a record or a value computed over a hierarchy	Whole Number, Decimal Number, Currency, Date and Time



Microsoft Dynamics 365 Field Data Types

Field Data Types	Description
Single line of Text	Short text no longer than 4000 characters
Option set	A pick-list of options, stored as an integer with associated labels. (Local or Global list available to all fields)
Two Options	0 or 1; Displays Yes or NO; True or False or any other two values
Image	A foreign key value (GUID) that will link to an image record
Whole number	Integer from -2,147,483,648 to +2,147,483,647
Floating Point Number	Number with up to 5 decimal places. Range 100,000,000,000
Decimal Number	Number with up to 10 decimal places. Range 100,000,000,000
Currency	A number representing a currency value with up to 4 decimal places and in the range 922,337,203,685,477
Multiple Lines of Text	Text that will extend over more than one line. Can hold up to 100,000 characters
Date and Time	Stored internally as UTC date and time displayed in local format
Lookup	A value (GUID) that will link to a record of a particular entity
Customer	A value (GUID) that allows linking to either a specific Account or Contact Entity



Field Naming

- Display Name used in several places:
 - As the column heading in view
 - Used by default when field is added to a form. This label can be modified in the form editor
 - Any list of fields, such as: Form editor Field Explorer, Advanced Find, Field mappings, Workflow steps
 - Can be changed
- Name is used for the column in the database
 - Also used in JavaScript and other code
 - Cannot be changed
- Field Requirement
 - Optional, Business Recommended, Business Required
 - Only enforced on forms, can be modified by Business Rules or JavaScript
- Searchable (available in Advanced Find queries)



Field Properties

- Interactive Service Hub
 - Appears in global filter
 - Sortable in dashboard
- Field Security
 - Available for system and custom fields
- Auditing
- Description
 - Used as an info tip on forms to help users

General

Schema

Display Name *

Field Requirement *


Name *

Searchable


Appears in global filter in interactive experience☐

Sortable in interactive experience dashboard☐

Field Security☐ Enable ☒ Disable

 Enabling field security? [What you need to know](#)

Auditing *☒ Enable ☐ Disable

 This field will not be audited until you enable auditing on th

Description



Field Display Formats – Single Line of Text

Format	Description
Email	Validated for email address format a@b.c . Can be double-clicked in the user interface to start a new email in the User's email client
Text	Single line of plain text
Text Area	Displayed as multiple lines of text. The number of lines to use is configured on each form
URL	Validated for URL format and characters . Must begin with http, https, ftp, ftps, onenote or tel. Prefixed with http:// if none of those found
Ticker Symbol	Display symbol (such as MSFT) and formats as a clickable link to money.MSN.com showing performance of the stock with that symbol
Phone	Formatted as a link to support "click to dial" applications. Note: not validated, formatted or grouped to any particular numbering format



Option Set and Two Options Fields

- Store a numeric value but display a related label
 - Option Sets store integers
 - Two Options (also known as bit fields) store 0 or 1
- Configured for a default value
 - Option Set can have default value of unassigned (null)
 - Two Options cannot store null, must be 0 or 1
-
- Option sets always appears as a picklist
- Two Options display format is set on a form

Type

Data Type*

Field Type*

Use Existing Option Set ☐ Yes ☒ No

Default Value

Options


Preferred Customer

Standard

Label*

Value*

Description

Color 



Numeric Fields – Common Properties

- Minimum and Maximum Values
 - Invalid values cause an appropriate error to be displayed to remind user of the limits in place
- Precision Property
 - Whole Number – not applicable
 - Floating Point – 0 to 5 decimal places
 - Decimal – 0 to 10 decimal places
 - Currency – 0 to 4 decimal places, Pricing Decimal Precision, or Currency Precision

Type	
Data Type *	Currency
Field Type *	Simple
Precision *	Currency Precision
Minimum Value *	0.0000
Maximum Value *	100,000,000,000,000.0000
IME Mode *	disabled



Compare Floating Point and Decimal

- Floating Point can give faster performance for calculations, at the expense of tiny inaccuracies in the least significant decimal place
- Floating Point is suitable for most purposes
- Use Decimal if you need the best precision
- Use Decimal if you must use queries with “equals” instead of “greater than” or “less than”
- When transferring data between systems, avoid converting a value from one type to another



Field Display Formats – Whole Number

Format	Description
None	Field is displayed and stored as the same integer number
Duration	A number of minutes. The user can select from a picklist of options in minutes, hours or days, or they can type any value which is a number of whole minutes, such as 2.5 hours or 1.25 days. Note: 1 day = 24 hours, not a “working day”
Time Zone	User chooses a time zone from a standard picklist, which is stored as an integer value
Language	User can choose from a picklist of languages which are installed on the CRM server. This is stored as a language country ID (LCID) which is an integer value. For example 1033 is English,1036 is French



Currency

Extra fields added for a currency field named “price”

Field	Purpose
<prefix>_price	Custom field added
<prefix>_price _base	Value of the currency field converted into the base currency for the organization
Currency	Lookup field to choose an installed currency. This is automatically added for the first currency field
exchangerate	Exchange rate between the chosen currency and the base currency when any currency field on the record was last updated. This is automatically added for the first currency field



Currency Field Precision

Precision setting	Effect
Currency Precision	Uses the precision normally associated with the currency selected for the record in question
Pricing Decimal Precision	Uses the number of decimal places defined for the Organization in System settings from 0 to 4
Fixed Value 0 through 4	The field will use a fixed number of decimal places regardless of decimal places regardless of currency chosen Note that zero can be good choice for fields containing estimated values if higher display precision would imply greater accuracy in the estimate than is actually the case



Date and Time

- Always stored as Date and Time
 - Display as Date and Time, or Date only
- Stored in Coordinated Universal Time (UTC)
- Date and Time Behavior
 - User Local: Displays in the user's local time
 - Date Only: No time zone conversion
 - Time is stores in DB as 12:00 AM
 - Date is stored and retrieved as specified (Birthdate)
 - Time-Zone Independent: No time zone conversion
 - Date and Time stored and retrieved as specified

Type

Data Type *

Field Type *

Behavior *

Format *

IME Mode *

Date and Time	▼
Simple	▼
User Local	
Date Only	
Time-Zone Independent	
auto	▼



Lookup Fields

- A lookup holds a link to another record
- Stores the globally unique identifier (GUID)
- Displays the primary field of the linked record
 - For example, Account Name or Contact Full Name
- Lookups are associated with 1:N relationships
- On a form a lookup can be filtered based on another relationship
 - For example, on Account, Primary contact is filtered to only show Contacts who work for the Account

Type

Data Type *

Lookup

Target Record Type *

Contact

Relationship Name *

new_contact_account_PrimaryContact



Customer Field

- Holds a link to either an Account or Contact record
- Stores the globally unique identifier (GUID)
- Displays the primary field of the linked record
 - For example, Account Name or Contact Full Name
- The Account and Contact relationship needs to be defined

Type

Data Type *

Customer

Relationship Names

To Account *

new_account_customer

To Contact *

new_contact_customer



Module Review

- By creating Custom Entities, you can begin to tailor Dynamics 365 to achieve requirements not met by out of the box functionality
- Each Entity has properties that can be configured to provide additional functionality such as queue support
- Adding custom fields to an entity allows you to capture data that is unique to your specific business needs



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