

## **Entity relationships CRM 2015**

Entity relationships define how records can be related to each other in the database. At the simplest level, adding a lookup field to an entity creates a new 1:N (One-to-Many) relationship between the two entities and allows you to place that lookup field in a form. With the lookup field, users can associate multiple “child” records of that entity to a single “parent” entity record.

Beyond simply defining how records can be related to other records, 1:N entity relationships also provide data to address the following questions:

- When I delete a record should any records related to that record also be deleted?
- When I assign a record, do I also need to assign all records related to that record to the new owner?
- How can I streamline the data entry process when I create a new related record in the context of an existing record?
- How should people viewing a record be able to view the associated records?

Entities can also participate in a N:N (Many-to-Many) relationship where any number of records for two entities can be associated with each other.

- 
1. Evaluate whether to use entity relationships or connections
  2. Types of entity relationships
  3. Creating and editing 1:N relationships
  4. Mapping entity fields
  5. Creating and editing N:N (Many to Many) relationships
  6. Setting Managed Properties for relationships

### **Evaluate whether to use entity relationships or connections**

Entity relationships are metadata that make changes to the database. These relationships allow for queries to retrieve related data very efficiently. Use entity relationships to define formal relationships that define the entity or that most records can use. For example, an opportunity without a potential customer wouldn't be very useful. The Opportunity entity also has a N:N relationship with the Competitor entity. This allows for multiple competitors to be added to the opportunity. You may want to capture this data and create a report that shows the competitors.

There are other less formal kinds of relationships between records that are called connections. For example, it may be useful to know if two contacts are married, or perhaps they are friends outside of work, or perhaps a contact used to work for another account. Most business won't

generate reports using this kind of information or require that it is entered, so it's probably not worthwhile to create entity relationships.

### **Types of entity relationships**

When you look at the solution explorer you might think that there are three types of entity relationships. Actually there are only two as shown in the following table.

Relationship Type	Description
1:N (One-to-Many)	<p>An entity relationship where one entity record for the <b>Primary Entity</b> can be associated to many other <b>Related Entity</b> records because of a lookup field on the related entity.</p> <p>When viewing a primary entity record you can see a list of the related entity records that are associated with it.</p>
N:N (Many-to-Many)	<p>An entity relationship that depends on a special <b>Relationship Entity</b>, sometimes called an intersect entity, so that many records of one entity can be related to many records of another entity.</p> <p>When viewing records of either entity in a N:N relationship you can see a list of any records of the other entity that are related to it.</p>

The **N:1 (Many-to-one)** relationship type exists in the solution explorer user interface because the solution explorer shows you a view grouped by entities. 1:N relationships actually exist between entities and refer to each entity as either a **Primary Entity** or **Related Entity**. The related entity, sometimes called the child entity, has a lookup field that allows storing a reference to a record from the primary entity, sometimes called the parent entity. A N:1 relationship is just a 1:N relationship viewed from the related entity.

### **Creating and editing 1:N relationships**

The easiest way to create a 1:N relationship is to create a new lookup field for an entity. This allows you to simply set the common field values for the lookup field as well as two additional options when you set the **Type** to **Lookup**. Those additional fields are **Target Record Type** and **Relationship Name**.

**Target Record Type** selects the **Primary Entity** in the 1:N relationship. **Relationship Name** is auto-generated for you based on the two entities that participate in the relationship. You typically don't need to even edit this, but you can if you want. The name of the entity relationship contains the customization prefix of the solution publisher for the solution you are currently working in.

## Note

**If you care about the customization prefix, be sure you are working within the context of a solution that is linked to the solution publisher with the prefix you want.**

However, when you create a 1:N relationship by creating a lookup field, certain default values are set for you. If you want to edit some of the options available in the relationship you must locate the relationship and edit it.

Custom 1:N relationships can't be created for all entities. When this is true there will simply be no option to create a new custom entity relationship using the solution explorer. If you use the metadata browser, you can filter the list of entities according to the **CanBePrimaryEntityInRelationship** and **CanBeRelatedEntityInRelationship** properties.

The definition for the 1:N relationship has four parts: **Relationship Definition**, **Lookup Field**, **Navigation Pane Item for Primary Entity**, **Relationship Behavior**.

The screenshot shows a configuration form for a 1:N relationship. It is divided into four main sections: Relationship Definition, Lookup Field, Navigation Pane Item for Primary Entity, and Relationship Behavior. Each section contains various fields and dropdown menus for configuring the relationship.

Relationship Definition	
Primary Entity *	Account
Related Entity *	Activity Party
Name *	account_activity_parties
Searchable	Yes

  

Lookup Field	
Display Name *	Party
Name *	partyid
Field Requirement *	Optional
Description	Unique identifier of the party associated with the activity.

  

Navigation Pane Item for Primary Entity	
Display Option *	Do not Display
Custom Label *	
Display Area *	Details
Display Order *	0

  

Relationship Behavior	
Type of Behavior *	System
Assign *	Cascade None
Reparent *	Cascade None
Share *	Cascade None
Delete *	Cascade None
Unshare *	Cascade None
Merge *	Cascade None

## Create or edit 1:N relationships between entities

---

1. Follow the steps for the app you're using.

### If using the CRM web application

---

1. On the nav bar, click or tap **Microsoft Dynamics CRM > Settings**.

**Settings** appears on the nav bar.

2. Click or tap **Settings > Customizations > Customize the System**.

### If using CRM for Outlook

---

3. In the Navigation Pane, expand your organization if necessary, and then click or tap **Settings > Customization > Customizations > Customize the System**.
2. Under **Components**, expand **Entities**, and then expand the entity you want to work with.
3. Click or tap **1:N Relationships**.
4. To edit a relationship or view the details for a relationship, select the relationship, and on the Actions toolbar, click or tap **More Actions**, and then click or tap **Edit**.

- OR -

To add a new relationship, click or tap **New 1-to-Many Relationship**.

#### Important

**If New 1-to-Many Relationship does not appear on the Actions toolbar, you cannot create a 1:N relationship for that entity.**

5. For a new relationship, in the **Relationship Definition** section, in the **Related Entity** list, select the entity to be related.

#### Note

**Specifying the related entity sets a default value for the Name field. If you change the related entity before you save, the value of the Name changes accordingly.**

6. Select whether this will be searchable to not.
7. In the **Lookup Field** section, specify a value for the **Display Name** field.

#### Important

**Specifying the Display Name sets a default value for the Name field. If you change the Display Name of the lookup field before you save, the value in the Name field will not change. As a result, be sure the Name is meaningful before saving.**

8. In the **Field Requirement** list, choose an option to specify data requirements for the field prior to saving a record.
9. In the **Navigation Pane Item for Primary Entity** section, in the **Display Option** list, choose an option for displaying associated views or a custom label.
10. In the **Relationship Behavior** section, in the **Type of Behavior** list, choose one of the following options:
  - **Parental.** In a parental relationship between two entities, any action taken on a record of the parent entity is also taken on any child entity records that are related to the primary (or parent) entity record.
  - **Referential.** In a referential relationship between two entities, you can navigate to any related records, but actions taken on one will not affect the other.
  - **Referential, Restrict Delete.** In a referential, restrict delete relationship between two entities, you can navigate to any related records. Actions taken on the parent record will not be applied to the child record, but the parent record cannot be deleted while the child record exists. Note that you cannot delete a record when related records exist.
  - **Configurable Cascading.** In a configurable cascading relationship between two entities, you select the behavior associated with each of a set of possible actions.

#### Important

**If you set the behaviors for the actions so that they match the behaviors for the actions associated with another Type of Behavior, when you save the relationship, the Type of Behavior is automatically set to the matching type.**

11. More information: Configuring entity relationship behavior
12. Click or tap **Save and Close** to close the **Relationship** form.
13. When your customizations are complete, publish them:
  - To publish customizations for only the component that you are currently editing, on the Actions toolbar, click or tap **Publish**.

- To publish customizations for all unpublished components at one time, in the nav bar or in the Navigation Pane, click or tap **Entities**, and then on the Actions toolbar, click or tap **Publish All Customizations**.

### Note

- **A custom entity cannot be the primary entity in a relationship with a related system entity that cascades. This means you cannot have a relationship with any action set to Cascade All, Cascade Active, or Cascade User-Owned between a primary custom entity and a related system entity.**
- **No new relationship can have any action set to Cascade All, Cascade Active, or Cascade User-Owned if the related entity in that relationship already exists as a related entity in another relationship that has any action set to Cascade All, Cascade Active, or Cascade User-Owned. This avoids relationships that create a multi-parent relationship.**
- **Any time you change user interface elements or implement form scripts for an entity, you must publish changes to apply them. Any customizations that change the data schema of Microsoft Dynamics CRM such as custom entities, relationships, or fields are applied immediately.**
- **If a relationship is part of a managed solution, the developer of the managed solution can restrict you from customizing the relationship.**
- **Installing a solution or publishing customizations can interfere with normal system operation. We recommend that you schedule a solution import when it's least disruptive to users.**

### Relationship definition

Depending on whether you chose to create a **New 1-to-Many Relationship** or a **New Many-to-1 Relationship** from the solution explorer, either the **Primary Entity** or **Related Entity** fields will be pre-populated. You only need to choose the other one. A default value for the **Name** field is pre-populated based on the solution publisher's customization prefix and the names of the entities you choose to participate in the relationship. You can edit this if you wish. If you create more than one custom relationship between two entities and use the same customization prefix for both, the auto-generated name value will not be unique and you will not be able to save the new relationship. You must edit the name to differentiate it from any existing name before you can save it. Once saved, you cannot change it.

If you don't want to have this entity relationship visible in **Advanced Find**, set the **Searchable** value to **No**.

### Lookup Field

These fields are the common properties all fields have except **Searchable**, **Field Security**, and **Auditing**. To edit these values for the lookup field that is created with the entity relationship, you must locate and edit the lookup field separately after you create the entity relationship.

As a rule of thumb, the **Display Name** should correspond to the primary entity display name.

### Navigation pane item for primary entity

The primary entity can display lists of related entities by expanding the navigation pane. The options in this group control how or whether to display this list. These navigation items can also be edited using the form editor and, by using JavaScript, a developer can apply changes to these items when the form is displayed.

Field	Description
Display Option	<ul style="list-style-type: none"><li>• <b>Do Not Display:</b> Choose this if you do not want to allow people to be able to navigate to a list of related entity records.</li><li>• <b>Use Custom Label:</b> Choose this if you want to specify a custom label to use.</li><li>• <b>Use Plural Name:</b> Choose this if you want to use the plural name of the related entity as the label.</li></ul>
Custom Label	When you select <b>Use Custom Label</b> as the display option, enter the custom label you want to use instead of the related entity plural name.
Display Area	<ul style="list-style-type: none"><li>• <b>Details:</b> Choose this to include the navigation item in the <b>Common</b> group.</li><li>• <b>Marketing:</b> Choose this to include the navigation item in the <b>Marketing</b> group.</li><li>• <b>Sales:</b> Choose this to include the navigation item in the <b>Sales</b> group.</li><li>• <b>Service:</b> Choose this to include the navigation item in the <b>Service</b> group.</li></ul>
Display Order	This number controls where the navigation item will be included within the selected display area. The range of allowed numbers begins with 10,000. Navigation pane items with a lower value appear above other relationships with a higher value.

### Relationship behavior

In a 1:N relationship, you can control how the relationship behaves to support business rules for your organization. Why would you want to do this? Let's look at an example.

Let's say that you have a new salesperson and you want to assign them a number of existing opportunities currently assigned to another salesperson. Each opportunity record may have a number of task activities associated with it. You can easily locate the active opportunities you want to re-assign and assign them to the new salesperson. But what should happen for any of the task activities that are associated with the opportunities? Do you want to open each task and decide whether they should also be assigned to the new salesperson? Probably not. Instead, you can let the relationship apply some standard rules for you automatically. These rules only apply to task records associated to the opportunities you are re-assigning. The entity relationship is named **Opportunity\_Tasks**. Your options are:

- Re-assign all active tasks.
- Re-assign all tasks. This is the default behavior.
- Re-assign none of the tasks.
- Re-assign all tasks currently assigned to the former owner of the opportunity.

The relationship can control how actions performed on a record for the primary entity record cascade down to any related entity records. The actions and possible behaviors are shown in the following table.

Action	Description	Possible behaviors
Assign	What should happen when the primary entity record changes ownership?	<ul style="list-style-type: none"> <li>• Cascade Active</li> <li>• Cascade All</li> <li>• Cascade None</li> <li>• Cascade User Owned</li> </ul>
Share	What should happen when the primary entity record is shared?	<ul style="list-style-type: none"> <li>• Cascade Active</li> <li>• Cascade All</li> <li>• Cascade None</li> <li>• Cascade User Owned</li> </ul>



Unshare	What should happen when sharing of the primary entity record stops?	<ul style="list-style-type: none"> <li>• Cascade Active</li> <li>• Cascade All</li> <li>• Cascade None</li> <li>• Cascade User Owned</li> </ul>
Reparent	<p>What should happen when a lookup field value for a parental type relationship in the primary entity record is changed?</p> <p>A parental type relationship is one that uses <b>Cascade All</b> for all actions lists the customizable parental system relationships.</p>	<ul style="list-style-type: none"> <li>• Cascade Active</li> <li>• Cascade All</li> <li>• Cascade None</li> <li>• Cascade User Owned</li> </ul>
Delete	What should happen when the primary entity record is deleted?	<ul style="list-style-type: none"> <li>• Cascade All</li> <li>• Remove Link</li> <li>• Restrict Delete</li> </ul>
Merge	What should happen when the primary entity record is merged with another record?	<ul style="list-style-type: none"> <li>• Cascade All</li> <li>• Cascade None</li> </ul>

Each of these actions can be configured to control how actions cascade down to records related to the primary entity record through the 1:N entity relationship. The behavior options are in the following table.

Behavior	Description
Cascade Active	Perform the action on all active related entity records.
Cascade All	Perform the action on all related entity records.
Cascade None	Do nothing.
Remove Link	Remove the value of the lookup field for all related entity records.

Restrict Delete	Prevent the primary entity record from being deleted when related records exist.
Cascade User Owned	Perform the action on all related entity records owned by the same user as the primary entity record.

How these actions are applied within a relationship can be categorized or applied using the **Type of Behavior** field values described in the following table.

Field value	Description
Parental	All actions use the <b>Cascade All</b> behavior.  Customizable parental entity relationships lists all of the customizable system entity relationships that use the parental behavior.
Referential	<b>Assign, Share, Unshare, and Reparent</b> use the <b>Cascade None</b> behavior.  <b>Delete</b> uses the <b>Remove Link</b> behavior.  <b>Merge</b> uses the <b>Cascade All</b> behavior.
Referential, Restrict Delete	The same as <b>Referential</b> , except that <b>Delete</b> uses the <b>Restrict Delete</b> behavior.
Configurable Cascading	Individual behaviors can be assigned for each action. If the choices match any of the other <b>Type of Behavior</b> categories, the value will change to that <b>Type of Behavior</b> value.

### Limitations on behaviors you can set

There are some limitations that you should keep in mind when you define entity relationships.

- A custom entity can't be the primary entity in a relationship with a related system entity that cascades. This means you can't have a relationship with any action set to **Cascade All**, **Cascade Active**, or **Cascade User-Owned** between a primary custom entity and a related system entity.
- No new relationship can have any action set to **Cascade All**, **Cascade Active**, or **Cascade User-Owned** if the related entity in that relationship already exists as a related entity in another relationship that has any action set to **Cascade All**, **Cascade Active**, or **Cascade User-Owned**. This avoids relationships that create a multi-parent relationship.

### Mapping entity fields

Let's say that you want to add a new contact record for a person who is an employee for a specific account. You can do this in two different ways.

You could just navigate to **Sales > Contacts** and create a new contact record from scratch. But then you need to set the parent account and enter several items of information (such as address and phone information) which is probably the same as the parent account. This can be time consuming and introduces opportunities for errors.

The easier way is to start with the account entity and, using the **Contacts** subgrid on the form, simply click the (+) to add a contact. It will first guide you to look up any existing related contacts so you don't accidentally create a duplicate record. If you don't find an existing record, you can just click **New** and create a new contact record. The difference is that certain items of data from the account record will be copied into the new contact form to set certain default values which you can edit before saving. This can save a lot of time when you are entering data and help reduce errors.

#### Note

**These mappings aren't applied to related records created using a workflow or dialog process. They aren't automatically applied to new records created using code, although developers can use a special message called `InitializeFromRequest` to create a new record using available mappings.**

**These mappings only set default values to a record before it is saved. People can edit the values before saving. The data that is transferred is the data at that point in time. It isn't synchronized. If the information in the primary entity record changes, the related entity record data that was transferred when it was created won't change.**

The default values set when you create a new record from a list aren't actually defined within the entity relationships, but they are exposed in the relationship user interface. Not every 1:N entity relationship has them. When you view a list of 1:N (or N:1) entity relationships for an entity, you can filter the relationships shown by type. You can select either **All**, **Custom**, **Customizable**, or **Mappable**. Mappable entity relationships provides access to allow mapping entity fields.

The following rules show what kinds of data can be mapped.

- Both fields must be of the same type and the same format.
- The length of the target field must be equal to or greater than the length of the source field.
- The target field can't be mapped to another field already.
- The source field must be visible on the form.
- The target field must be a field that a user can enter data into.
- If the fields are option sets, the integer values for each option should be identical.

- Address ID values can't be mapped.

#### Note

**If you need to map option set fields, we recommend you configure both fields to use the same global option set. Otherwise, it can be difficult to keep two separate sets of options synchronized manually. If the integer values for each option aren't mapped correctly you can introduce problems in your data. More information: Create and edit global option sets**

### Create or edit mapping between fields

---

1. Choose **Settings > Customizations**.
2. In the **Customization** area, click **Customize the System**.
3. Under **Components**, expand **Entities**, and then expand the entity you want.
4. Click either **1:N Relationships** or **N:1 Relationships**.
5. In the main pane, in the **Type** list, select **Mappable**.
6. Select a mappable relationship. Then, on the Actions toolbar, click **Actions**, and then click **Edit**.
7. Under **Related**, click **Mappings**.
8. For each new mapping, on the **Actions** toolbar, click **New**.
9. In the **Create Field Mapping** dialog box, select the source field from **Source Entity Fields**. Select the target field from **Target Entity Fields**.
10. Click **OK**.
11. Click **Save and Close** to close the **Relationship** form.
12. When your customizations are complete, publish them

#### Note

- **After publishing customizations, these mappings are available for all users. If you reset Internet Information Services (IIS) before you publish customizations, these mappings are available for all users, even though other customizations won't be available.**
- **If you map to or from a field that isn't displayed on a form, the mapping won't be done until the field is added to a form.**

### Automatically generate field mappings

---

You can also generate mappings automatically but you should apply some care when doing this with system entities. Use this when you create custom entities and want to leverage mapping. When viewing the list of mappings, in the **More Actions** menu select **Generate Mappings**. This removes any existing mappings and replaces them with suggested mappings that are based only on the fields that have similar names and data types. If you use this on a system entity, you could lose some expected mappings. For custom entities, it helps save time because you can more easily delete any mappings you don't want and add any others that the generate mappings action didn't create.

### **Creating and editing N:N (Many-to-Many) relationships**

1:N entity relationships establish a hierarchy between records. With N:N (Many-to-Many) relationships there is no explicit hierarchy. There are no lookup fields or behaviors to configure. Records created using a N:N relationships can be considered peers and the relationship is reciprocal.

With N:N relationships a special entity is created called a Relationship (or Intersect) entity. This entity has a relationship with each of the related entities and only stores the necessary id values necessary to define the relationship. You can't add custom fields to a relationship entity.

The procedure to create a N:N relationship is essentially choosing the two entities that you want to participate in the relationship and then for each entity define how you want the respective lists to be available within the navigation pane of the form for each entity. These are the same options used for the primary entity in 1:N entity relationships. More information: **Navigation Pane Item for Primary Entity**

Not all entities can be used with N:N relationships. If the **New Many-to-Many Relationship** button isn't present, you can't create a new N:N relationship with this entity. If you use the metadata browser, you can filter on entities that have the **CanBeInManyToMany** value set to **true**. More information: **Use the metadata browser**

### **Create or edit N-N relationships between entities**

- 
1. Make sure that you have the System Administrator or System Customizer security role or equivalent permissions.

### **Check your security role**

- 
- Follow the steps in **View your user profile.**
    - Don't have the correct permissions? Contact your system administrator.
  2. Follow the steps for the app you're using.

### If using the CRM web application

---

1. On the nav bar, click or tap **Microsoft Dynamics CRM > Settings**.

**Settings** appears in the nav bar.

2. Click or tap **Settings > Customizations > Customize the System**.

### If using CRM for Outlook

---

3. In the Navigation Pane, expand your organization if necessary, and then click or tap **Settings > Customization > Customizations > Customize the System**.
  3. Under **Components**, expand **Entities**, and then expand the entity you want to work with.
  4. Click or tap **N:N Relationships**.
  5. To edit or view the details for an existing relationship, select the relationship, on the Actions toolbar, click or tap **Actions**, and then click or tap **Edit**.

- OR -

To add a new relationship, click or tap **New Many-to-Many Relationship**.

#### Important

**If New Many-to-Many Relationship does not appear on the Actions toolbar, you cannot create a N:N relationship for that entity.**

6. For a new relationship, in the **Current Entity** section, in the **Display Option** list, choose one of the following options:
  - **Do Not Display**. The other entity will not display an associated view for the current entity.
  - **Use Custom Label**. This label will be used for the associated view created for the other entity. Be sure to enter a corresponding value in the **Custom Label** field.
  - **Use Plural Name**. This will use the plural name of the current entity for the associated view.

#### Note

**When the Use Plural Name or Use Custom Label options are selected, you can choose from the Display Area option list to specify the display area (for example Marketing or Sales) on the form where the relationship label will be displayed. You can also specify the Display Order to control where the label will be included within the selected display area.**

Important

**The navigation paradigm for the forms associated with updated entities is significantly different than that for entities that have not been updated. While the mechanics for defining the Display Area and Display Order are common, be sure that you understand the various navigation paradigms as you establish entity relationships.**

7. In the **Other Entity** section, select the other entity from the **Entity Name** list.

Note

**When you specify the entity name, default values are set for the Name and Relationship Entity Name fields in the Relationship Definition section. If you change the Entity Name value before you save, these names will not change, so be sure these names are meaningful before saving.**

8. In the **Relationship Definition** section, confirm the **Name** and the **Relationship Entity Name**.

These values must be unique among N:N relationships.

9. Click or tap **Save and Close** to close the N:N Relationship form.
10. When your customizations are complete, publish them:
  - To publish customizations for only the component that you are currently editing, on the **Home** tab, in the **Save** group, click or tap **Publish**.
  - To publish customizations for all unpublished components at one time, click or tap **Publish All Customizations**.

Note

**Any time you change user interface elements or implement form scripts for an entity, you must publish changes to apply them. Any customizations that change the data schema of Microsoft Dynamics CRM such as custom entities, relationships, or fields, are applied immediately.**

**Installing a solution or publishing customizations can interfere with normal system operation. We recommend that you schedule a solution import when it's least disruptive to users.**

### **Setting managed properties for relationships**

**Managed properties** only apply when you include a field with a managed solution and import it into another organization. These settings allow a solution developer to have some control over the level of customization that they want to allow people who install their managed solution to have when they customize an entity relationship. To set managed properties for a relationship, click the **Managed Properties** button on the menu bar.

With relationships the only managed property is **Can Be Customized**. This single setting controls all changes that can be made to the entity relationship.