# Architecture

Microsoft Dynamics CRM 2015

# Outlook Synchronization in Microsoft Dynamics CRM

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Microsoft Dynamics CRM

## Acknowledgements

Initiated by the Microsoft Dynamics CRM Core Engineering Team, this document was developed with support from across the organization and in direct collaboration with the following:

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The MS CRM Support Team recognizes their efforts in helping to ensure delivery of an accurate and comprehensive technical resource in support of the broader CRM community.

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## Feedback

Please send comments or suggestions about this document to the MS Product team.

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# Introduction

## Audience

The target audience of this “Dynamics CRM: How it works” paper includes (but isn’t limited to):

- Solution architects
- Application architects
- Infrastructure architects
- Consultants
- Developers

# Overview of CRM for Outlook synchronization

Microsoft Dynamics CRM manages replication of information between the central CRM database and the local data store on a computer running Microsoft Dynamics CRM for Microsoft Outlook by using *Outlook synchronization* and *server-side synchronization*.

### Outlook synchronization

CRM for Outlook (also known as "the Outlook client") supports Outlook synchronization, which is synchronizing CRM contacts and CRM activities to Outlook folders. Outlook synchronization enables Outlook users to view CRM information, including contacts, tasks, phone calls, letters, faxes, appointments, and email, within the Outlook interface.

### Server-side synchronization

Starting with Dynamics CRM 2013, server-side synchronization is available, which is used to integrate CRM with Exchange and POP3 or SMTP-based email servers. This has benefits compared to using the email router because it's built in to CRM and doesn't require a separate component. It also has benefits compared to Outlook synchronization by eliminating the load on clients. For more information, see Set up server-side synchronization of email, appointments, contacts, and tasks.

## Online and offline synchronization

The online and offline synchronization processes manage replication of data back and forth between the CRM database and the local database on a computer that's running CRM for Outlook.

*Offline synchronization* (Go Offline) manages replication of information from CRM to CRM for Outlook. *Online synchronization* (Go Online) manages replication of changes in the local data store from CRM for Outlook to Microsoft Dynamics CRM when CRM for Outlook reconnects to the network. For further details, see Work offline with CRM for Outlook.

## Outlook synchronization

There are several ways that individual items, such as contacts, tasks, appointments, and emails, are marked for synchronization. However, after an item is marked for synchronization, two copies of that item exist; one copy resides in Outlook and the other copy resides in Dynamics CRM. In addition, modifications that are made to either copy of the item are replicated in the other system via the Outlook synchronization process.

In CRM for Outlook, users can control which Outlook items are synchronized to Dynamics CRM by using the *Track in CRM* button. This is called manual tracking. The system and data filters control CRM to Outlook synchronization. To understand how system and data filters are used to control synchronization of data, read the help article Choose the records to synchronize between CRM and Outlook or Exchange. You can also find answers to frequently asked questions by viewing Synchronizing data with Outlook or Exchange FAQ.

## Scenarios and synchronization rules

Synchronization of Outlook with CRM occurs when:

- A user manually runs Outlook synchronization with CRM (using the **Synchronize Now** button in CRM for Outlook).
- A background sync operation kicks in on a periodic basis.

Manual as well as background synchronization results in immediate replication of changes between Outlook and CRM. When a user marks an item for synchronization (via "Track in CRM") or alters an Outlook object, such as a contact, that's currently tracked in CRM, the synchronization process replicates those changes to CRM.

However, replication doesn't always happen immediately. In addition to marking an item for synchronization (via "Track in CRM"), the users can also set the regarding value for the tracked item (via "Set Regarding"). This can be used to link an "activity" created in CRM corresponding to a tracked item with an existing record in CRM such as an opportunity or case. This helps a salesperson working on an opportunity or a customer service representative working on a case to track customer or prospect communication activities against those records. There are several other actions you can do in CRM for Outlook related to tracking, such as converting the record to an opportunity, case, or lead. For further details, see Tracking in CRM for Outlook.

Note that for cases in which the changes aren't immediately processed, the next scheduled or manual synchronization will process and replicate the changes as described previously. For more information, see *Appendix B: Summary of Immediate Synchronization Rules*.

Microsoft Dynamics CRM for Outlook allows only one computer to be set as the *primary*, or *synchronizing*, *client*. Any other clients a user might have are considered secondary. Because the synchronizing client runs automatic synchronization, it's recommended that users designate a computer that is online most often, such as a desktop computer.

The synchronization process for primary clients differs from that for secondary clients: in certain instances, secondary clients rely on the primary client for synchronization of changes to Outlook items that are made on the secondary client. This behavior ensures that even if changes are made to the same object on each of the primary and secondary clients, no duplicate objects will be created on the server. Additional details on the differences between primary and secondary clients are provided in the Primary client and Secondary client sections of this paper.

**Important**: If a user has been enabled with a roaming profile, the distinction of primary versus secondary client across multiple computers doesn't apply. In that case, all computers act as if these were primary clients. For more information, see Install Microsoft Dynamics CRM 2015 for Outlook for desktop virtualization.

CRM for Outlook also provides the "Track in CRM" functionality for mailboxes that are delegated among multiple users. Delegated users can track on behalf of a user but they can't sync on behalf of the user, so the items are synced only when the primary user has Outlook open.

## Primary, secondary, and delegated clients

### *Primary client*

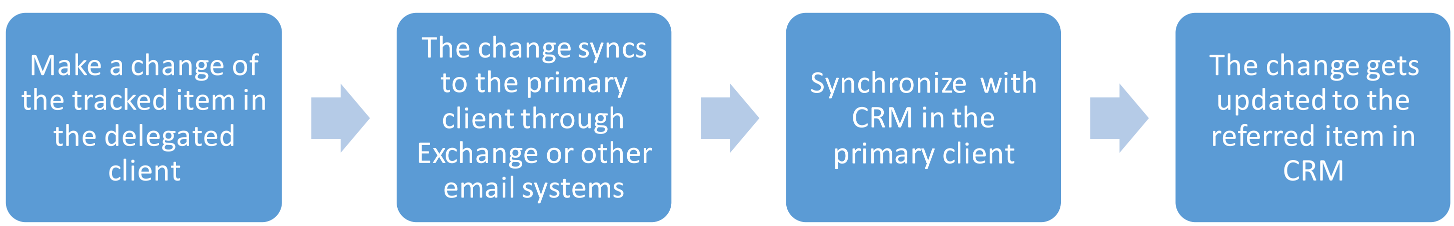
The primary client is your:

1. Computer running CRM for Outlook if you configured just one Outlook client with CRM
2. First computer running CRM for Outlook if you configured more than one Outlook client with CRM for the same mailbox
3. Designated computer running CRM for Outlook that was configured by using the configuration wizard for the CRM for Outlook or through "CRM options"

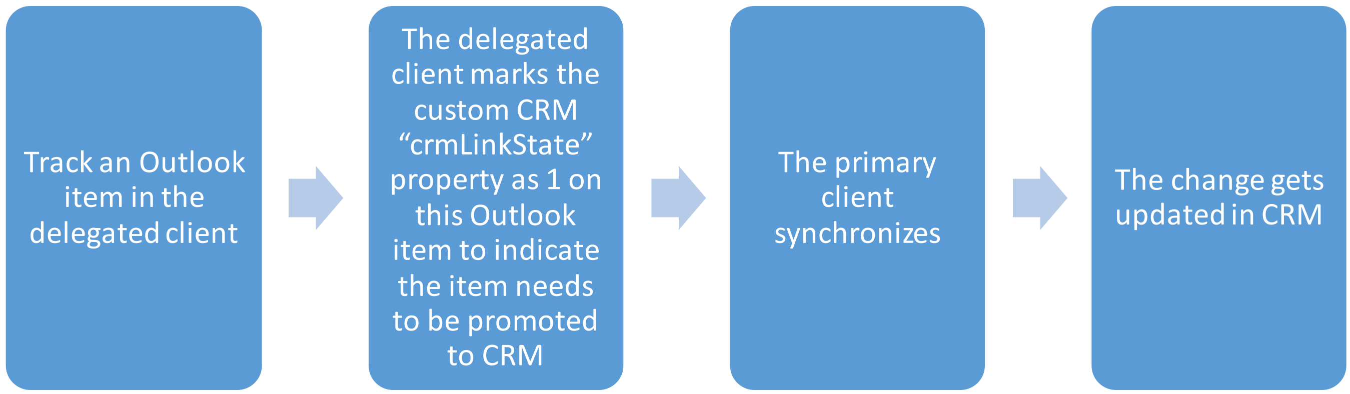
### *Delegated client*

Entities that have been tracked in a delegated client will never be immediately synced with CRM. These changes will be processed by the primary synchronizing client at its next manual or scheduled synchronization operated from the primary client.

The following illustration shows the flow for already tracked items.




The following illustration shows the flow for newly tracked items.

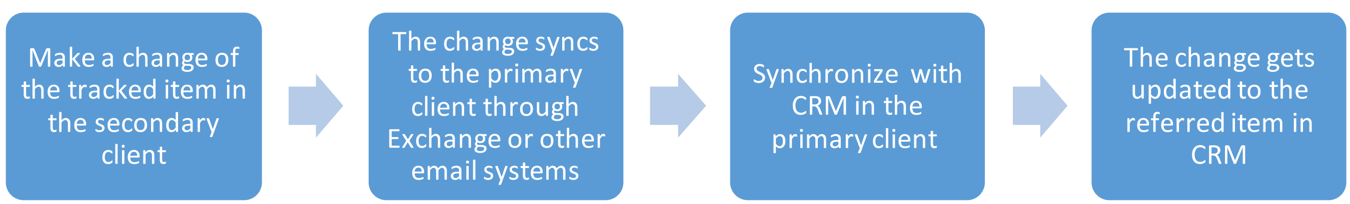



**Notes**

- If the primary client is offline, any changes made to these entities won't be replicated in CRM until that client is online and performs its first synchronization.
- Unsupported scenarios like leads, accounts, and other types of activities or custom entities aren't mapped to Outlook contacts or Outlook tasks.
- When you track an item on behalf of a user, the delegated user must be a CRM user and must be configured for Outlook synchronization.

### *Secondary client*

The following illustration shows the flow for already tracked items.




**Notes**

- You can't track new items in a secondary client.
- If the primary client is offline, any changes made to these entities won't be replicated in CRM until the primary client is online and performs its first synchronization.
- Unsupported scenarios like leads, accounts, and other types of activities or custom entities aren't mapped to Outlook contacts or Outlook tasks.

## Appointments, contacts, and tasks

The following table presents the synchronization behavior for a primary client's appointments, contacts, and tasks. For your reference, an "Inspector" is any form inside of Outlook. Doubleclicking an email will bring up its "Inspector." The "Explorer" is the normal Outlook view of all items of a particular type in a grid layout. When Outlook starts, the first thing that the user will see is the email "Explorer."

The synchronization process differs as to whether the item being tracked or changed is an email or is another Outlook item, such as an appointment, a contact, or a task. The following table describes the sync behavior for items like appointments, contacts, and tasks.

| Item | Description |
|---|---|
| Track in Inspector | Item tracked immediately after user saves the item. |
| Update in Inspector | Item synced immediately after user closes the Inspector. |
| Untrack in Inspector | Item synced immediately after user closes the Inspector. |
| Delete in Inspector | Deletion propagated to CRM during next Outlook synchronization according to the deletion rules. |
| Track in Explorer | Item tracked immediately in CRM. |
| Set Regarding in Explorer | Item synced immediately with CRM. |
| Delete in Explorer | Deletion propagated to CRM according to the Deletion Rules. |

**Note**: More information is provided in the Deletion rules section.

Here are a few more details you need to be aware of.

**Appointments in the past**: You can still track a past appointment in CRM, but CRM doesn't synchronize these past appointments.

**Recurring appointments**: In Outlook, a series of appointments can have no end time, but in CRM, instances as part of the recurring appointment will be created if the instance is either within the near future (12 months), or was modified as an exception of the series.

**Service activities and service appointments**: You can push service appointments in CRM to Outlook as a regular appointment, but the appointment in Outlook won't sync back to CRM, and you should always modify the service appointment in CRM to provide consistency. Directly updating the appointment in Outlook is not allowed nor recommended.

**Closed tasks:** Closed tasks can be altered in Outlook but not in CRM, so changes to closed tasks won't be synced back to CRM.

## Email

This section describes when emails will be tracked and synchronized to the CRM system.

### *Received and sent emails*

The synchronization behavior for email differs based on whether the email being tracked or altered is a draft email (emails that have not yet been sent) versus an email that's in the user's inbox or sent folder. The tracking and syncing behavior is uniform and doesn't depend on the client type (primary versus secondary). The synchronization behavior for a primary client's received and sent emails is provided in the following table.

| Item | Description |
|---|---|
| Track in Inspector | Item tracked immediately after user clicks the “Track” button. |
| Update in Inspector | Because the Regarding field is the only property that can be edited for synchronization of received and sent emails, the item is synced immediately upon the Regarding property change. |
| Untrack in Inspector | Item untracked immediately after user clicks the “Untrack” button. |
| Delete in Inspector | Deletion propagated to CRM according to the deletion rules. |
| Track in Explorer | Item tracked immediately after user clicks the “Track” button. |
| Set Regarding in Explorer | Item synced immediately after user clicks the “Set Regarding” button. |
| Delete in Explorer | Deletion propagated to CRM according to the deletion rules. |

### *Draft emails*

Draft emails are never placed in CRM. After the user has sent a draft email, it will be tracked and synced if the user has chosen to do so.

**Bulk email tracking and regarding**

Bulk tracking of emails is supported. The properties of items, such as emails, are immediately updated, and it is reflected in the user interface (UI) that the item is being tracked. The update to a local sync cache (SQL CE database) is done asynchronously to map the changes. Even if it is done asynchronously, users should always use this capability with caution. It may not be performant to do bulk tracking of thousands of emails for initial onboarding scenarios.

**Note:**

- CRM on-premises customers should also evaluate the impact of bulk tracking on CRM server performance, and onboarding of users who require bulk tracking of emails. It should be done in a controlled manner by onboarding a limited number of users.
- You can’t untrack bulk emails.

### *Email auto-tracking and correlation*

In addition to manual tracking in CRM for Outlook, there are options for automatically tracking an email. There are multiple rules that apply to received emails. Of course, the synchronization method picks up these emails that are marked through these rules based on scheduled intervals. There are also two email correlation algorithms (Smart Matching and Tracking Token) that could be used to track and sync “received” emails that are part of an email thread. For more information, see Set an option to automatically track incoming Outlook email in CRM for Outlook.

**Note:** The correlation algorithms only apply to “received” emails in the *Inbox* folder. They don’t apply to *Sent* or other folders.

### *Email tagging*

The email tagging process polls the CRM Server for messages that are currently tracked in Outlook. If there are CRM server-side modifications, for example, updating the regarding information in CRM email activity record, the process retrieves these changes from the **CRM server to Outlook for modified emails only**.

When you turn on automatic email tagging through the CRM Client Diagnostics tool, this updates the **TagDisabled** registry key to a 0 in the following path:
**HKEY_CURRENT_USER\Software\Microsoft\MSCRMClient\{Orgid}**

Starting in CRM 2015, there is an Org DB setting that overrides all the user email tagger settings.

The email tagger is useful in the following scenarios: where the System Settings (Settings > Administration > System Settings) **"Track emails sent between CRM users as two activities"** option is **not** selected. If two CRM users are included on an email, each user has the option to track this into CRM. Now, if **User1** tracks this to a specific record (**Record A**), the set regarding record will then be updated on the CRM server for that email. However, if **User2** tracks this email from CRM for Outlook and sets the regarding to a different record in CRM (**Record B**), this will update the set regarding for the same email record on the CRM server. If tagging is enabled in User1's CRM for Outlook, this set regarding change will roll down to User1's email in CRM for Outlook and they will now see this set regarding to **Record B**.

- **Note**: Emails with thousands of recipients can be tracked in CRM. However, to avoid performance degradation, the recipient resolution against existing contacts or leads in CRM happens only for the first 10 recipients. The tracking pane in CRM for Outlook shows the resolved recipients, and the user can manually continue to resolve recipients.
- The email tagger will only retrieve emails where the user is a party member on the email activity record.
- A distribution list (DL) is treated as any other email address and CRM doesn't expand the DL to the actual email addresses. Hence, sending an email to a DL where all the members are CRM users (say user1 and user2) but the DL address is not in CRM, the email tagger won't auto track or update the email status in user1 and user2's mailbox.

## Deletion rules

This section describes the deletion propagation rules for the Outlook synchronization process.

**Important**: If User A assigns a contact to another user, depending on the sync filters, that contact may no longer be included in User A's filter. This is the expected behavior for the default, out-of-the-box Contacts filter. PrepareSync will treat this as a delete action in Outlook. However, PrepareSync will keep track of the items that User A manually tracked from Outlook and won't remove them even if the contact is re-assigned to another CRM user.

### *Deletions that occur in Outlook*

The following table describes whether a deletion that occurred in Outlook will propagate to CRM during the next Outlook synchronization process.

| Deleted entity | Description |
|---|---|

| | |
|---|---|
| **Emails** | ▪ An **Email** that is **deleted** in Outlook *will not be* deleted in CRM at the next Outlook sync.<br>▪ An **Email** that is **untracked** in Outlook *will be* deleted in CRM at the next Outlook sync if the user designates. |
| **Appointments** | ▪ An **appointment** that is **deleted or untracked** in Outlook *will be* deleted in CRM at the next Outlook sync only if the following are true:<br>o The appointment is open or scheduled in CRM.<br>o The appointment start time is in the future.<br>o The user performing the delete action is the owner or organizer of the appointment. |
| **Contacts** | ▪ A **contact** that is **deleted** in Outlook *will not be* deleted in CRM at the next Outlook sync.<br>▪ A **contact** that is **untracked** in Outlook *will be* deleted in CRM at the next Outlook sync if the user designates for the item to be deleted in CRM. |
| **Tasks** | ▪ A **Task** that is **deleted** in Outlook *will be* deleted in CRM at the next Outlook Sync only *if* following are true:<br>o The task is not completed.<br>o The user performing the delete action is the owner of the task in Outlook. |

**Notes**

- Deleting a tracked contact in Outlook doesn't delete the contact in CRM.
- Deleting a tracked completed task in Outlook doesn't delete the task in CRM.
- Deleting a tracked task that you own and that is not completed will delete the task in CRM.

### *Deletions that occur in CRM*

The following table describes whether a deletion that occurred in CRM will propagate to Outlook during the next Outlook synchronization process.

| Deleted entity | Description |
|---|---|
| **Emails** | ▪ An **email** that's **deleted** in CRM *will not be* deleted in Outlook. |
| **Appointments** | ▪ An **appointment** that is **deleted** in CRM *will be* deleted in Outlook at the next Outlook sync if the appointment start time is in the future. |
| **Contacts** | ▪ A **contact** that is **deleted** in CRM *will be* deleted in Outlook at the next Outlook synchronization if the Outlook user is not the CRM owner of the contact. If the user is the owner in CRM, the Outlook contact will be unlinked after synchronization. |
| **Tasks** | ▪ A **task** that is **deleted** in CRM *will be* deleted in Outlook at the next Outlook sync if the task has not been completed. |

## Migration and upgrade scenario**s**

The following scenarios might cause data duplication:

1. **CRM on-premises to CRM Online migration** – When migrating from an on-premises version of CRM to CRM Online, it's recommended to migrate historical emails, contacts, and CRM activities with the same CRM record ID or unique identifier. If new IDs are used, the client will re-sync this as duplicate records in CRM for Outlook.
2. **Exchange on-premises to Exchange Online** – **Exchange IDs** are used in the **IDMapping** table to map Exchange items to CRM items. Any changes to the mailbox email address can cause changes in Exchange IDs, and can cause duplicates in Exchange or Outlook.
3. **Upgrade from CRM 2011 to CRM 2013 or CRM 2015 or beyond** – The migration using standard export and import capability or double hop upgrade is recommended. Any changes to **CRM IDs** can cause the **IDMapping** table to go out of sync, and can cause duplicates.

## Best practices

### *Cached Exchange mode*

CRM supports only synchronization if your Exchange email account configuration in Outlook is cached (See Troubleshooting). Here's how you turn on Cached Exchange Mode.

### *Field mapping in synchronization and management*

Data mappings between various entities in Outlook and CRM, which are used by the Outlook synchronization process to determine and propagate changes to and from CRM and Outlook, are shown in the following article: What fields can be synchronized between CRM and CRM for Outlook?

**Important**: There are specific behaviors for some fields, an example is the task reminder upon creation and tracking. They are clearly documented in the preceding article and you should review the fields that are important to your business to ensure the number of fields and directions to synchronize is what you need.

**Note**: The data mappings between Outlook entities and CRM entities are customizable if you have versions of CRM 2015 or later on both server and clients. The customization is available on the org level, managed by the CRM admin. For more information, see Control field synchronization between CRM and Outlook or Exchange. The control is at the entity type level, meaning that for each entity, tasks, for example, share the same set of fields that can be synchronized. In other words, you can't set task A to sync 3 fields, while having task B sync 4 other fields.

Also, you can't synchronize custom fields. For custom CRM fields, you can access these through the "CRM Fields" menu button.

# Outlook synchronization in Microsoft Dynamics CRM 2013 for Outlook and CRM 2015 for Outlook

Microsoft Dynamics CRM uses online synchronization filters to determine which appointments, contacts, or activities to copy and synchronize between CRM and Outlook. The filters have to be created first, so the required records will be copied from CRM to Outlook. After copying to Outlook, any change to these records, either in CRM or in Outlook, will be synced to the other system based on the filters. You can modify the existing online synchronization filters or create new filters to synchronize certain types of records. You can also delete, deactivate, or activate filters. Read more about filters. The manually tracked items are part of synchronization even if they are not included in the filters. Hence, the changes to those items on the server are copied over to Outlook.

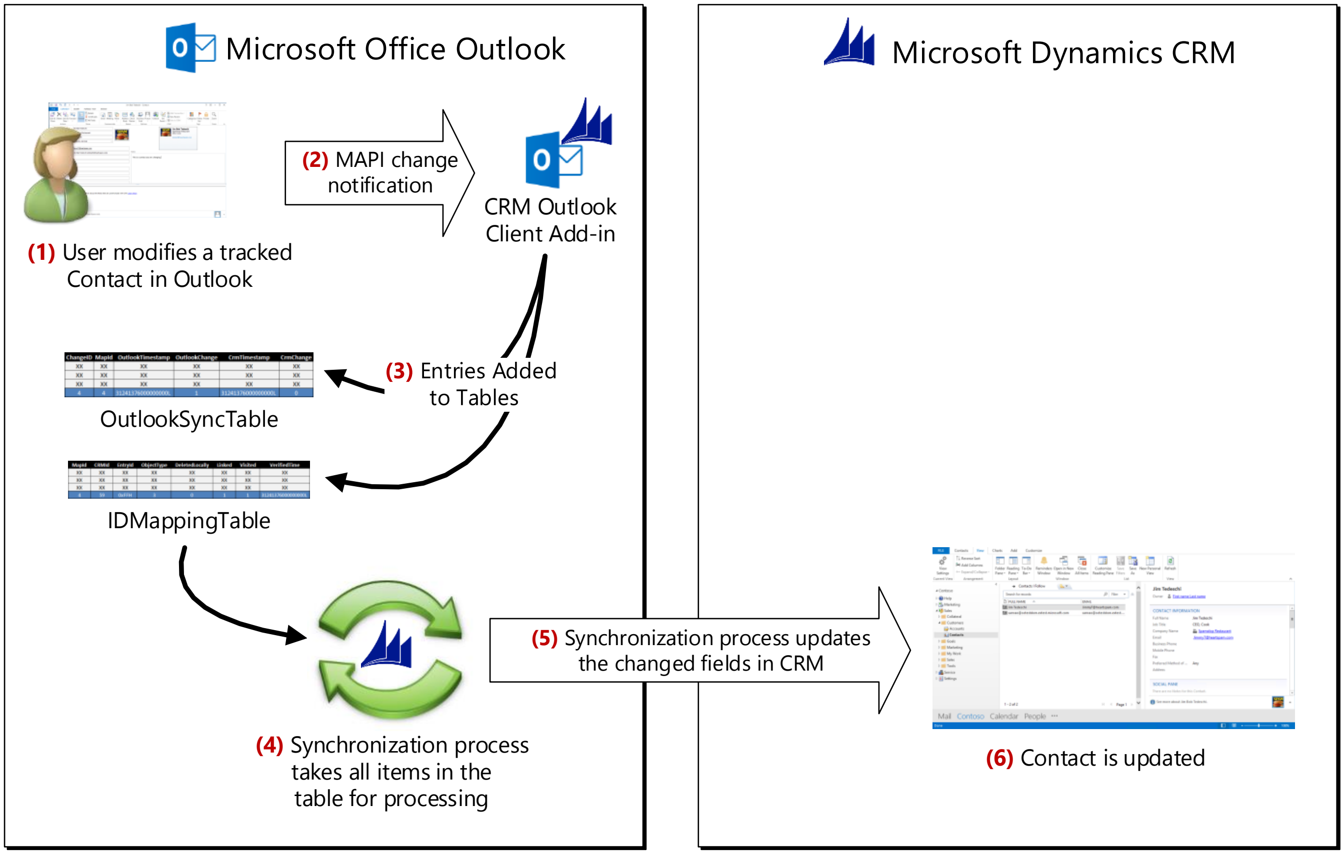
The system administrator in CRM can create system filters that will apply to the entire organization. These filters can be created by using the Microsoft Dynamics CRM SDK and the end user can't control them.

To be able to manually track appointments, contacts, or tasks from Outlook, the user has to have at least one system filter or user filter on each activity type. This means that if all the filters are disabled during on boarding, appointments, contacts, and tasks won't be copied and synced from CRM to Exchange.

**Note:** Microsoft Dynamics CRM Online 2015 Update 1 will support a new capability to track items dropped into folders in Outlook or Exchange by users defining rules in Outlook or Exchange for moving items into those folders or manually moving those items from any devices. This folder-level tracking will be available in a future release to on-premises customers. For further details, please read the article on folder-level tracking (supported with server-side sync only).

### Changes to items in Outlook

For items that are modified in Outlook, the process for synchronizing those changes with items in Microsoft Dynamics CRM is shown in the following illustration.




The Outlook synchronization process detects changes by monitoring MAPI change notifications, which Outlook generates whenever an item is altered. When a MAPI notification is detected for an item that is marked for synchronization, an entry recording this is added to the *OutlookSyncTable* in the Outlook Sync Client Cache. This ensures that changes to CRM tracked items inside Outlook are picked up by CRM even when these changes occurred in the absence of the CRM add-in (for example, the add-in was disabled during the change or changes were made via Outlook on the web or through native applications on mobile devices).

**Note**: MAPI is a Messaging API that was developed for building solutions on Microsoft Outlook. For more information, see the MAPI reference. CRM for Outlook uses MAPI for displaying CRM data in the Outlook add-in using navigation folders, and items in the grid, for example, accounts, contacts, leads, opportunities, campaigns, cases and so on. CRM for Outlook also uses MAPI notifications for synchronization.

Created by the CRM add-in, the *Outlook Sync Client Cache* is a SQL Compact (SQL CE) database that's located on the client and is used to store information about synchronized items for use by the Outlook Synchronization Process. This cache file is located in the user's profile in the Windows directory *%AppData%\Microsoft\MSCRM\Client*. The cache contains the information that's necessary to identify and locate items in Outlook and CRM, as well as changes to those items that are made by either system, to re-attempt synchronization for changes that fail to synchronize. This ensures that the CRM add-in has a ready reference to establish whether a change indicates that a new record needs to be added or that it requires an existing record to be modified without doing costly scans on Outlook. The net result is faster synchronization without any impact on Outlook performance.

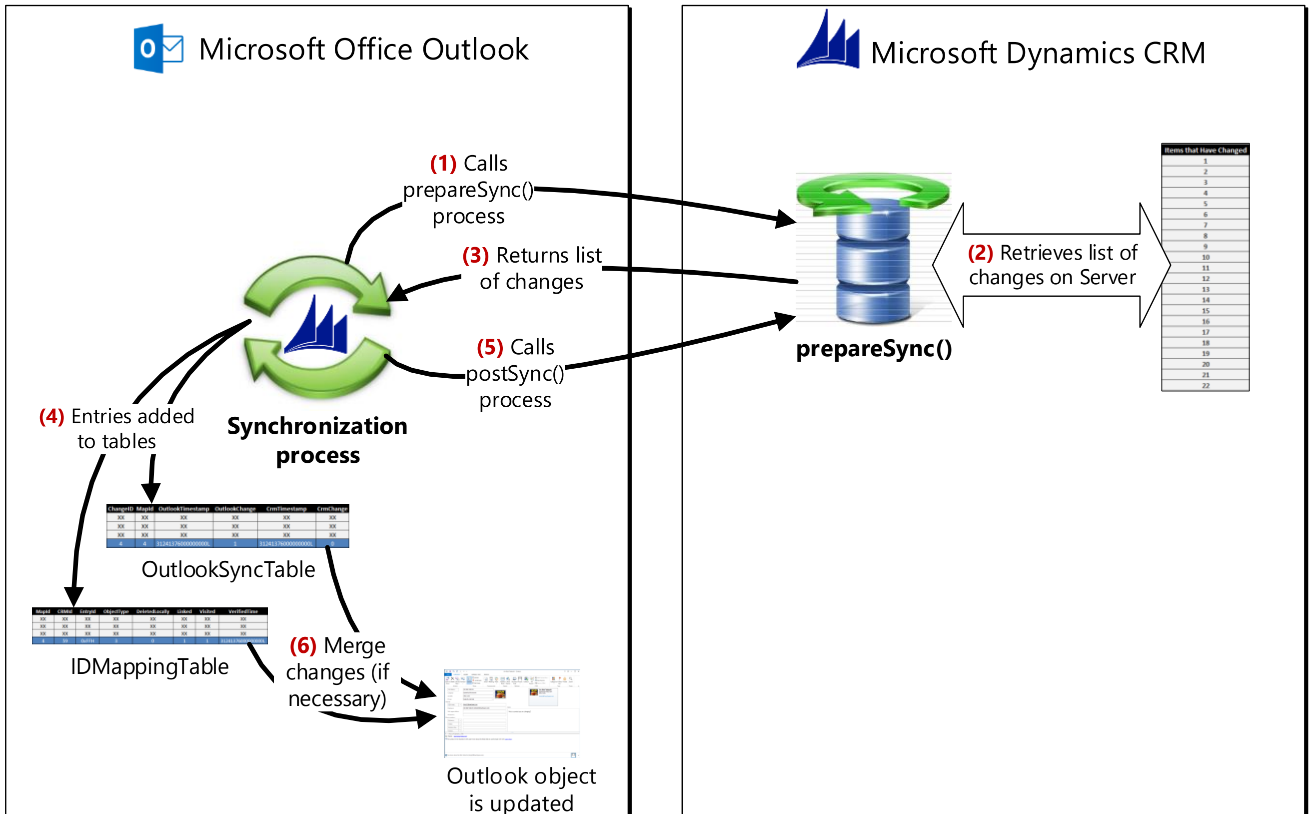
CRM also stores some other data in the local machine cache including metadata.

**Important**: Certain circumstances, for example if a change were to occur before the Outlook add-in had been fully loaded, can cause CRM for Outlook to miss MAPI notifications. To account for this issue, installation of the CRM Outlook add-in creates the MAPI Contents Table (in Outlook's native cache or store), which stores all items that are marked for synchronization, sorted in reverse order based on modification date. As a result, any missed change notifications (except for deletes) are picked up the next time the system scans the MAPI Contents Table for the synchronized folders for all items that have been changed since the last synchronization occurred. Items in MAPI Contents Tables are processed one by one until the last synchronization time is reached.

## Changes to items in Dynamics CRM

CRM changes are fetched by calling the PrepareSync API on the server, which identifies the number of items on the server that have changed for a particular client and returns that summary information since the last time a successful synchronization of such changes was performed. With this information, a GetSyncData call will be made against the server with a columnset that only contains the CRMID and the timestamp of the changed items. For the items retrieved in this way, the PostSync API will be called to identify to the server that the change on the item has been processed. The items are then added to the OutlookSyncTable in the CRM for Outlook Sync Cache for later processing.

For items that are modified in Microsoft Dynamics CRM, the process for synchronizing those changes with items in Outlook is shown in the following illustration.



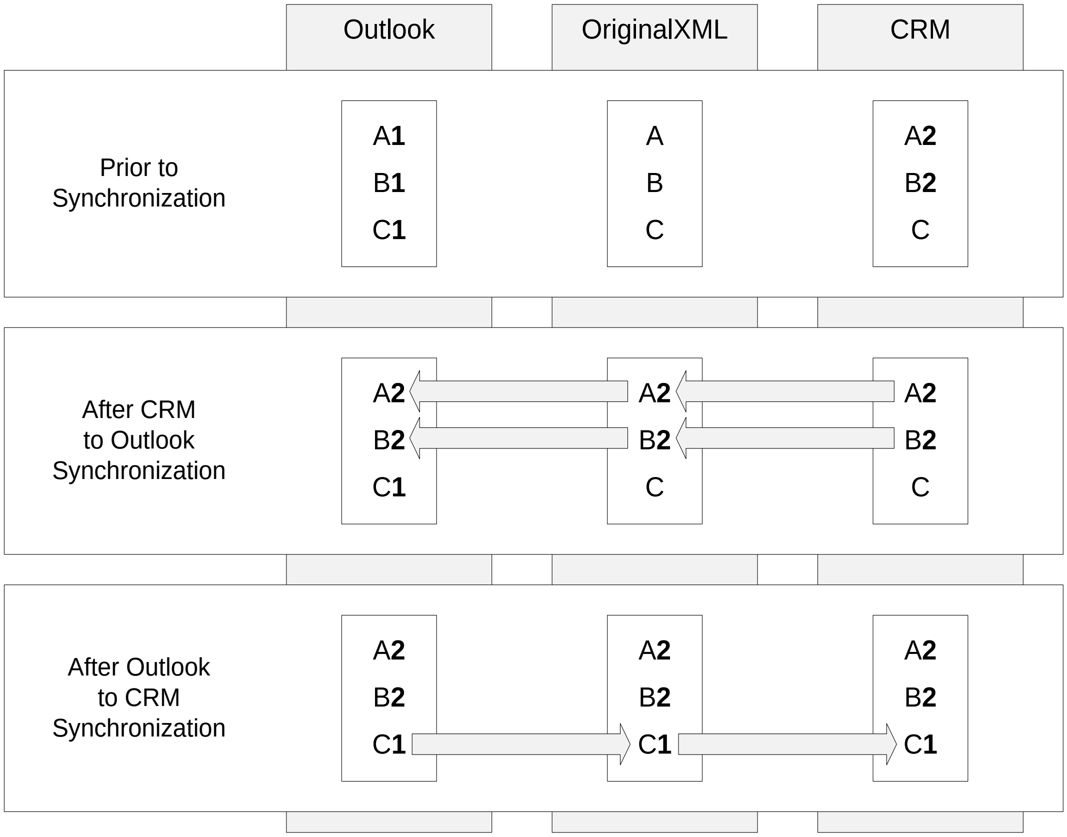

## Merging overlapping changes

Outlook synchronization is bi-directional; Outlook synchronizes with CRM and vice versa. After the synchronization process runs, the most recent synchronized version of an item is saved as XML (OriginalXML) and stored in a user-defined property of the item.

When an item is changed in either Outlook or CRM, the item is synchronized so that the change appears in both systems by comparing column differences using the OriginalXML on the item from Outlook and time stamps of the changes. When an item is changed in both Outlook and CRM, bi-directional synchronization occurs according to the time stamps of the changes, so that the most recent change takes precedence and overrides any earlier changes.

For example, when a synchronized item is altered in CRM after a change on the corresponding item in Outlook, CRM to Outlook synchronization will be performed to synchronize all the latest changes that have been made to the item in CRM over to the corresponding item in Outlook, and the OriginalXML associated with the Outlook item is updated. Then, the system will run Outlook to CRM synchronization to ensure that all the latest changes to the Outlook item are synchronized with the corresponding item in CRM.

An example of the process associated with merging overlapping changes between CRM and Outlook is shown in the following illustration.




In this scenario, prior to synchronization, an Outlook user makes changes to three fields (A1, B1, and C1) in an item. At a later time, a user makes changes to the corresponding item in CRM, modifying two of the same fields (A2 and B2) modified earlier by the Outlook user. As a result, the CRM time stamp is more recent than the corresponding Outlook time stamp.

During synchronization, the more current field values in the CRM system (A2 and B2) are copied to the OriginalXML property and then to the item in Outlook, overwriting the earlier changes (A1 and B1) made to the item in Outlook. When CRM to Outlook synchronization is complete, Outlook to CRM synchronization occurs, and the more current field value in Outlook (C1) is copied to the OriginalXML property and then to the item in CRM, overwriting the original value (C).

**Note**: The process for merging overlapping changes between Outlook and CRM is different from that for playing back changes from the offline database to the CRM database. For additional information about the offline synchronization process, see the white paper [Offline and Online Synchronization in Microsoft Dynamics CRM.]()

## Address book synchronization

With Microsoft Dynamics CRM for Outlook, when you compose an email message or set up a meeting, you can search for a CRM contact directly from the **To** field of the email message or appointment. By default, only the contacts that are synchronized with CRM for Outlook and other record types that you own (such as accounts and leads) appear in the address book. For more information, see the article [Set address book options in CRM for Outlook]().

The data synchronized with the Outlook address book should be controlled since it can affect CRM for Outlook performance.

# Appendix A: Term list

Descriptions of key terms associated with Outlook synchronization in Microsoft Dynamics CRM are listed in the following table.

| Term | Description |
|---|---|
| *GetSyncData* | An API call to the server that returns the data for the items to be synced by the client. |
| *IdMappingTable* | A SQL CE table that keeps track of the IDs for synced items in both Outlook and CRM. The table also keeps track of unlinked items and deletions. |
| *Offline synchronization* | Also known as the GoOffline process; manages replication of information from the Microsoft Dynamics CRM database to the offline CRM for Outlook. |
| *Online mode* | State in which the offline CRM for Outlook is connected to the CRM server. |
| *Online synchronization* | Also known as the GoOnline process; manages replication of changes in the local data store from the offline CRM for Outlook to the Microsoft Dynamics CRM database when the CRM for Outlook reconnects to the network. |
| *OriginalXML* | The XML that records the last synced state of the item in Outlook. |
| *Outlook synchronization* | Synchronization process responsible for synchronizing Outlook entities such as contacts, emails, and so on. |
| *OutlookSyncTable* | A table in the SQL CE database that keeps track of all changes that occurred in Outlook. |
| *PostSync* | An API call to the server that indicates that the item has been successfully synchronized to the client. |
| *PrepareSync API* | During the PrepareSync process, this API populates the SyncEntry table and returns information about the number of records to be synchronized, on a per entity basis, in XML format. |
| *Primary client* | The computer specified as the "synchronizing client;" CRM for Outlook allows for only one primary client. Because the synchronizing client runs automatic synchronization, it is recommended that users designate a computer that is online most often (such as a desktop computer) or their primary computers. |
| *Secondary client* | A computer in addition to a user's primary, or synchronizing, client on which that user receives email. |
| *SyncEntry Table* | During the PrepareSync process, a table that maintains all the information about replication data for a subscription. A SyncEntry table is created in the server database for each type of client subscription. |

## Appendix B: Summary of immediate synchronization rules

A summary of the immediate synchronization rules provided with the Microsoft Dynamics CRM for Outlook is provided in the following table.

| | ***Received\Sent Email*** | | ***Draft Email*** | ***Non-Email*** | |
|---|---|---|---|---|---|
| **Action** | **Primary** | **Secondary** | **Primary & Secondary** | **Primary** | **Secondary/ Delegate** |
| Track in Inspector | Yes | Yes | On item send | On item close | No |
| Update in Inspector | Yes | Yes | On item send | On item close | No |
| Untrack in Inspector | Yes | Yes | N/A | On item close | No |
| Delete in Inspector | No* | No* | N/A | No* | No* |
| Track in Explorer | Yes | Yes | N/A | Yes | No |
| Set Regarding in Explorer | Yes | Yes | N/A | Yes | No |
| Delete in Explorer | No* | No* | N/A | No* | No* |

***Note**: By default, most of these operations happen in the background so the users aren't blocked, and they can continue to interact with the UI.*

** To delete the email in CRM, it must be untracked and then "Yes" must be selected in the subsequent dialog box asking if the email should also be deleted in CRM.*

*If you want to change the settings, use this org tool* http://support.microsoft.com/kb/2691237

# Appendix C: Summary of settings that affect synchronization

A summary of the synchronization settings applicable specifically to Microsoft Dynamics CRM for Outlook is provided in the following table.

| Setting | Description |
|---|---|
| "Synchronize Microsoft Dynamics CRM items with my default Outlook Folder" | This determines the kinds of items that the PrepareSync process will attempt to synchronize from CRM. PrepareSync will ignore any unchecked items as they are created or updated on the CRM server. This setting has no effect on Outlook to CRM synchronization – if the item is unchecked here, it will be ignored for CRM to Outlook updates. However, the user can still promote the item from Outlook to CRM. |
| "Update the Company Field for Outlook Contacts" | During synchronization, the parent account of Microsoft Dynamics CRM contacts can be inserted or used to overwrite the names in the Company Name field for Outlook contacts. Changes aren't synchronized in CRM. |
| Set Synchronizing Client | One client computer per user can run automatic synchronization. This setting designates if the current client will be the primary, or synchronizing, client. |
| Schedule automatic Synchronization with Outlook | This determines if automatic synchronization occurs, and the interval at which it occurs. |

**Note**: These settings are specified on the **Synchronization** tab of the **Options** dialog box in Microsoft Dynamics CRM for Outlook.

To control synchronization (including sync filters), see Personal options.

### System settings to control emails

| Setting | Description |
|---|---|
| "Email processing for unapproved users and queues" | Select these check boxes if you want to allow email processing only for users and queues whose email addresses have been approved by the system administrator.<br>• Process email only for approved users<br>• Process email only for approved queues |
| Configure folder-level tracking and email correlation | This determines criteria of emails to be auto tracked, including folder-level tracking, correlation, tracking tokens, and smart matching. See help article for more info. |
| "Track email sent between two CRM users as two activities" | Select this option to create two email activities between CRM users, one for the sender and one for the recipient. |

To control synchronization (including control direction of synchronization for attributes of all four entities), see System Settings.

To control emails and Outlook Synchronization (shows up when you access system setting from CRM for Outlook only), see System Settings.

**Diagnostics (CRM for Outlook only)**

You can use the following links for diagnostics:

Microsoft Dynamics CRM for Outlook diagnostics

Understanding the different options for tracking Emails in Microsoft Dynamics CRM

**Other settings**

Field level security – in customization, if you change the permission of a user of an entity type or particular set of fields. If those fields are synchronization fields, we honor the permissions in both ways. For more information on how field level security works and how to manage them, see Control field synchronization between CRM and Outlook or Exchange.

## Appendix D: Tracking in multiple profiles, pst, or ost files

In most cases, you will only have one Outlook profile, one configured mailbox, the email address of that mailbox matches the user's email address of the CRM org you configured to, and no .pst files for archiving Outlook items. If your business is purely this case, you can skip this section.

In newer versions of CRM, here's the expected behavior:

- Tracking Outlook items in the default .ost file (that is, the one and only primary email account you set up in Outlook) and syncing the changes between Outlook and CRM are supported.
- Tracking Outlook items that are in a .pst file *is not* supported.
- Tracking Outlook items that are in a secondary .ost file (aka, a non-primary email account you set up in Outlook), *is not* supported
- Moving Outlook items that are already tracked (linkstate == 2) to a .pst. file has no effect, the email remains to be tracked and you can view it in CRM. *
- We do not support nor block if you create multiple Outlook profiles and switch between them.

* **Note**: Moving a to-be-tracked item (for example, linkstate == 1, the item is marked to be tracked but not yet promoted to CRM through Outlook synchronization) from a default folder to a non-default .pst folder doesn't cause that item to sync to CRM after restarting Outlook. The best practice, if you are manually tracking and moving the items between .ost and .pst files, is to ensure the background sync is properly completed before restarting Outlook. Otherwise, the item may turn into an orphan state.

This is because when Outlook is restarted, we do a background sync to see what changes, at that time we only look at items that have changed recently, and scanned through only in the primary .ost or .pst file.

## Frequently asked questions

**How often does the synchronization to Outlook process occur?**

By default, the synchronization to Outlook process is configured to occur at 15-minute intervals in **Outlook** tab of **System Settings**.

**Why is an object not synchronizing?**

The object must be returned in the synchronization filter defined for the object type. An easy way to determine if you should be synchronizing an item would be to construct a query in Advanced Find that matches the synchronization filter settings. However, another reason why an object might not synchronize may be due to the tracked object being previously deleted in Outlook. In which case, CRM keeps track of these items and will only synchronize them to the client after the client has been reconfigured.

**Is the process for synchronizing Outlook data the same for both the online and offline versions of CRM for Outlook?**

Yes. The process for syncing Outlook data stores with CRM (and the data that will be synchronized) is the same regardless of whether one is using the online or offline version of CRM for Outlook.

**Can we synchronize user-defined fields between CRM and Outlook?**

We can’t add user-defined fields to the synchronization schema. You can view and update user-defined CRM fields by going to the "CRM fields" tab in the Outlook inspector.

**What are the effects of the “Sync to Outlook” and the “Go Offline” privileges?**

The privileges aren’t complex and have few repercussions. Removing the Sync to Outlook privilege prevents synchronization of tasks, appointments, and contacts to Outlook, however, there is no effect on the CRM address book provider, email tagging, and so on. Removing the Go Offline privilege prevents users from going offline or synchronizing their offline store.