

Microsoft Dynamics CRM Operating and Maintaining Guide

4.5.0



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Overview

This guide is part of the Microsoft Dynamics CRM 4.0 Implementation Guide, which consists of the following three documents:

- **Planning Guide:** Use this to determine what you have to plan for Microsoft Dynamics CRM. It includes coverage in the following areas:
 - ▶ **Technical.** These topics focus on supported topologies, system requirements, and technical considerations to address before installation.
 - ▶ **Implementation Methodology.** Learn about the business management, system requirements, and project management aspects that are needed when you deploy a Microsoft Dynamics CRM system. In addition, there are several documents that you can use as tools to plan the implementation of Microsoft Dynamics CRM. These tools are available for download at **Microsoft Dynamics CRM Planning Tools** (<http://go.microsoft.com/fwlink/?LinkId=148432>).
- **Installing Guide:** Use this guide to learn about what you have to install Microsoft Dynamics CRM, such as step-by-step instructions for running Setup, command-line installation instructions, and guidance about how to remove Microsoft Dynamics CRM.
- **Operating and Maintaining Guide:** You can read this guide to learn how to back up, restore, and perform system recovery for Microsoft Dynamics CRM data. Also, this guide has troubleshooting steps for known issues.

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Operating Microsoft Dynamics CRM

Operating Microsoft Dynamics CRM includes guaranteeing availability by monitoring server status and performance, making backups, planning for recovery from disasters, and ongoing troubleshooting.

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Operating Microsoft Dynamics CRM Server

This section describes how to perform operations tasks with Microsoft Dynamics CRM Server.

Determine where each Microsoft Dynamics CRM Server role is installed

Microsoft Dynamics CRM 4.0 Enterprise lets you install server roles to different computers for additional performance and availability. Notice that, during a typical installation by using the Microsoft Dynamics CRM Server Setup Wizard, all roles are installed on the same computer.

➤ **To view server role information, follow these steps:**

1. On the computer where Deployment Manager is installed, click **Start**, point to **All Programs**, point to **Microsoft Dynamics CRM 4.0**, and then click **Deployment Manager**.
2. Expand **Servers**, and then click the server that you want.

The list of server roles is displayed in the **Roles** column. If Microsoft Dynamics CRM Server is installed on a single computer, only one server will appear in the list with the following three server roles: Full Server, SQL Server, and SRS Data Connector.

Depending on how you have deployed server roles, the following server roles may be displayed on different servers in the list: Platform Server, Application Server, SRS Data Connector, Asynchronous Service, Discovery Service, SQL Server, Deployment SDK, Platform SDK, Web application, Help Content Server, and Deployment Service.

Set the Microsoft Dynamics CRM DeletionService frequency

For most entities in Microsoft Dynamics CRM, a delete results in a *soft* delete, whereby the column DeletionStateCode value is set to 2. These rows are filtered out from all views, but are not physically deleted from the table until the next run of the DeletionService.

DeletionService is a type of Asynchronous operation that is based on a table ScaleGroupOrganizationMaintenanceJobs in the MSCRM_Config database. By default, the DeletionService job is set to once a day, which is sufficient for most Microsoft Dynamics CRM deployments. However, if you want to change the frequency, use the **ScaleGroup Job Editor tool** (<http://go.microsoft.com/fwlink/?LinkId=145862>).

For more information, see the Microsoft TechNet article **Asynchronous Processing Service** (<http://go.microsoft.com/fwlink/?LinkId=145864>).

Change the CRMAppPool service account

To change the CRMAppPool service account, the appropriate permissions must be granted or the CRMAppPool application pool will not start. For more information about how to resolve issues that occur when changing the CRMAppPool service account, see the KB article **An "A failure was encountered while launching the process serving application pool 'CRMAppPool'" message is logged in the Application log after you configure CRMAppPool for a domain account user in Microsoft Dynamics CRM** (<http://support.microsoft.com/kb/929388/>).

Configure service principal names (SPNs)

If SPNs are not set correctly, authentication will be dropped at the Microsoft Dynamics CRM Server and the request to Microsoft SQL Server Reporting Services will come from NT Authority\Anonymous Logon. This will result in a 401 authentication error. For more information about how to set SPNs, see **Configuring service principal names (SPNs)** (<http://go.microsoft.com/fwlink/?LinkId=167118>) in the Resource Center.

Move an organization database to a different instance of SQL Server

You can move an organization database to a different computer that is running Microsoft SQL Server in the same Active Directory domain. To do this, right-click the organization that you want to move, in the **Organizations** area, and then click **Disable**. Then, click **Edit Organization** to change the instance of SQL Server.

To move an organization database to a different computer that is running SQL Server in a different domain, you must use the Import Organization Wizard.

➤ **To move the organization to an instance of SQL Server that is located in a different domain, follow these steps:**

1. Move the database to the new SQL Server instance and make sure that it is attached and available. For more information about how to move a database in SQL Server, see SQL Server Books Online.
2. Run the Import Organization Wizard that is in Deployment Manager.

During the import process, the Import Organization Wizard requires the following information:

- The name of the computer that is running SQL Server
- The URL of the SQL Server Reporting Services server
- The organization name
- Select the user mapping option

User mappings

During the import organization process, you must select the method that you want to use to map users. The following options are available:

- **Keep existing user mappings.** Select this option if you want to keep the existing user mappings that are already in the organization database.
- **Manually map users.** Select this option if you want to manually map each user.
- **Generate a new mapping file.** Select this option to create a sample XML mapping file that can be used to modify to how users will be imported.
- **Auto-map users.** Select this option if you want to automatically map users based on the following options:
 - ▶ **Active Directory account name.** Select this option to try to match user names that are in the organization database to user account names (User logon name) that are in Active Directory.
 - ▶ **Microsoft Dynamics CRM full name to Active Directory full name.** Select this option to try to match user names that are in the organization database to user full names (Display Name field) that are in Active Directory.
 - ▶ **Prefix.** Select this option if you want to create a custom prefix with an incrementing numeric value appended to it for each user, such as User01, User02, and so on. Notice that the users must exist in Active Directory. The Import Wizard will not create the user accounts in Active Directory.
 - ▶ **Use existing mapping file.** Select this option if you have created an XML mapping file to import users.

User mapping file

This section discusses the structure and contents of the user mapping file. This information is for when you have many Microsoft Dynamics CRM users who must be mapped from the original Microsoft Dynamics CRM implementation to a new one. In these cases, it may be easier to edit the XML file directly.

The Import Organization Wizard gives you the option of using a mapping file on the **User Mapping** page of the wizard. This page will also give you the option to generate a new mapping file. If you generate a new file, you can edit the file by using a text editor, and then start the wizard again. The user mapping file is created in the *Drive:\Program Files\Microsoft CRM\Tools* folder. You can select a different location by clicking **Browse**.

The following example maps all users found in the domain that is named *origcrmdom*:

```
<MappingConfiguration>
  <DomainMapping old="origcrmdom" new="newcrmdom" />
</MappingConfiguration>
```

The following example user-mapping file contains two users in the domain that is named *origcrmdom*:

```
<MappingConfiguration>
  <UserMapping old="origcrmdom\someone" new="newcrmdom\someone" />
  <UserMapping old="origcrmdom\someone2" new="newcrmdom\someone2" />
</MappingConfiguration>
```

Elements in the user mapping file

The user mapping file is in the root element `<MappingConfiguration>`. There are two types of subelements available: `<DomainMapping>` and `<UserMapping>`. Use one, or the other, but not both. If both are present, the `<UserMapping>` elements take precedence.

The `<DomainMapping old="___" new="___" />` element contains the Active Directory domain for the original and new Microsoft Dynamics CRM implementations. If you use this element, you do not have to use the individual `<UserMapping>` elements. If this is the only element you use, all Microsoft Dynamics CRM users will be transformed automatically from the old domain to the new domain, keeping the same account names.

The `<UserMapping old="origcrmdom\someone" new="newcrmdom\someone" />` element contains the alias name of each Microsoft Dynamics CRM user. For example, if you have ten users in your Microsoft Dynamics CRM implementation, your user mapping file will have ten `<UserMapping>` elements; one for each user.

Start the Import Organization Wizard

➤ **To start the Import Organization Wizard, follow these steps:**

1. On the computer where Microsoft Dynamics CRM Server is installed, click **Start**, point to **All Programs**, point to **Microsoft Dynamics CRM 4.0**, and then click **Deployment Manager**.
2. In Deployment Manager, right-click **Organization**, and then click **Import Organization**.

For more information about Deployment Manager, see the Deployment Manager Help.

Publish reports

During the Import-Organization or Edit-Organization operations, reports are synchronized. However, if reports become unsynchronized, such as if the SQL Server Reporting Services computer is offline for an extended time, you can synchronize the reports that are stored on the Microsoft Dynamics CRM Server with those on the SQL Server Reporting Services server. To do this, run the **publishreports.exe** tool. This command-line tool is located in the `Drive:\Program Files\Microsoft CRM folder\Tools` folder. To run the command, start a command prompt and then run the following command from the folder where the tool is located, where *OrganizationName* is the unique name of the organization:

```
Publishreports OrganizationName
```

Move the Microsoft Dynamics CRM deployment

For the steps that you must follow to move the Microsoft Dynamics CRM 4.0 deployment in the following scenarios, see **KB article 952934: How to move the Microsoft Dynamics CRM 4.0 deployment** (<http://go.microsoft.com/fwlink/?linkid=129208>):

- You want to move the Microsoft Dynamics CRM databases to another Microsoft SQL Server and Microsoft SQL Server Reporting Services server in the same domain. Additionally, you want to leave the Microsoft Dynamics CRM Server on the existing server.
- You want to redeploy the Microsoft Dynamics CRM deployment that includes the Microsoft Dynamics CRM Server within the same domain or to another domain.
- You want to move the Microsoft Dynamics CRM Server or one of the Microsoft Dynamics CRM Server roles. However, you want to leave the SQL Server and SQL Server Reporting Services server intact.

In addition to the steps described in the Microsoft Knowledge Base article, if you have customizations and workflows, you may also need to perform the following task:

- If you have upgraded from Microsoft Dynamics CRM 3.0, copy all upgraded workflow assemblies to the new deployment.

Operating Microsoft Dynamics CRM for Outlook

This section describes how to perform operations tasks with Microsoft Dynamics CRM for Microsoft Office Outlook.

Automatically update Microsoft Dynamics CRM for Outlook

Microsoft Dynamics CRM includes a Microsoft Dynamics CRM Update feature that checks for, and installs, updates for Microsoft Dynamics CRM for Outlook and Microsoft Dynamics CRM Data Migration Manager. This feature can be started manually from the **Start** menu, from the **CRM** menu in Outlook, or run at the command prompt. Check for updates will happen automatically when you sign in to Microsoft Dynamics CRM Data Migration Manager or start Microsoft Dynamics CRM for Outlook. In addition, a check for updates occurs when you click **Go Offline** or click **Go Online**.

The updates can be identified as either mandatory or optional. If the update is configured as mandatory, the Microsoft Dynamics CRM for Outlook functionality will be disabled if the user does not select to install the update when prompted.

Microsoft Dynamics CRM Patch Configuration tool

The Microsoft Dynamics CRM Patch Configuration tool lets the administrator add, update, and remove update information from the system. By default, the tool is located in the *Drive:\Program Files\Microsoft Dynamics CRM\Tools* folder on the server where Microsoft Dynamics CRM Server is installed. The tool is named **Microsoft.Crm.Tools.ClientPatchConfigurator.exe** and is run at the command prompt.

Microsoft Dynamics CRM Patch Configuration tool XML configuration file

The Microsoft Dynamics CRM Patch Configuration tool uses a configuration file that the Microsoft Dynamics CRM administrator can modify to specify how updates are managed. To run the tool, start the command prompt and then type the following command, where **Configuration_File.xml** is the name of the configuration file described later in this section.

```
Microsoft.Crm.Tools.ClientPatchConfigurator.exe Configuration_File.xml
```

Tool configuration file elements and descriptions

In the ClientPatches element, the Patch Configuration tool XML file has two main elements, a Create element that is used to create or modify information about an update in the Microsoft Dynamics CRM system and a Delete element that is used to remove existing information from the Microsoft Dynamics CRM system. Information in the Create elements will be updated if the update already exists in the Microsoft Dynamics CRM system.

```
<ClientPatches></ClientPatches>
```

The configuration file must be a valid XML file that uses `<ClientPatches>` as the root element.

```
<Create></Create>
```

Container element that specifies the information that will be used to create or modify an update instance in the Microsoft Dynamics CRM configuration database.

The `Create` element accepts the following child elements.

```
<ClientPatchInfo></ClientPatchInfo>
```

Container element for the following elements.

```
<PatchId>{UpdateID}</PatchId>
```

Specifies the unique identifier of the update to install. This identifier can be located in the information that is included in the .msp package. The {} brackets are not required.

```
<Title>Update Title </Title>
```

Specifies the title of the update.

```
<Description>Description of the update.</Description>
```

Specifies the description of the update.

```
<IsMandatory>true/false</IsMandatory>
```

If you specify true, the update will be configured as a mandatory update. If you specify false, the update will not be configured as a mandatory update. The default value is false.

```
<IsEnabled>true/false</IsEnabled>
```

Specifies whether the update is enabled. Specify true to install the update. If you specify false, Microsoft Dynamics CRM for Outlook will not install the update.

```
<ClientType>OutlookLaptop/OutlookDesktop/DataMigration</ClientType>
```

Specifies the client that is installed on the computer where the Microsoft Dynamics CRM Update application will run.

```
<LinkId>KBNumber.exe</LinkId>
```

Specifies the name of the executable file, typically the associated Microsoft Knowledge Base article number, that is included in the .msi package that will be used to install the update.

```
<ConditionsXsl></ConditionsXsl>
```

Specifies restrictions for installing an update. For example, you can restrict updates by organization, user, operating system, Microsoft Office version, or language type.

Note

Do not use the **<** logic operator (XSL less-than operator) in update configuration files. For example, if you include the following conditions to restrict an update advertisement to clients with a version number below 2064, as in the following example, the **<** operator will not be honored and clients with version 2064 and higher get the advertised update.

```
<ConditionsXsl>
```

```
<![CDATA[<?xml version="1.0"?><xsl:transform version="1.0"
xmlns:xsl="http://www.w3.org/1999/XSL/Transform"><xsl:template
match="ClientInfo[CRMVersion&lt;'4.0.7333.2064']">IsAvailable</xsl:template><xsl:template
match="text()|@*" /></xsl:transform>]]>
```

```
</ConditionsXsl>
```

To enforce version checks, use the XSL **!=** operator. In the following example, **!=** means that any version that is not 2135 will get the advertisement, whether it's a lower version or a higher version.

```
<ConditionsXsl>
```

```
<![CDATA[<?xml version="1.0"?><xsl:transform version="1.0"
xmlns:xsl="http://www.w3.org/1999/XSL/Transform"><xsl:template
match="ClientInfo[CRMVersion!='4.0.7333.2135']">IsAvailable</xsl:template><xsl:template
match="text()|@*" /></xsl:transform>]]>
```

```
</ConditionsXsl>
```

```
<ConditionsXsl>
```

```
<![CDATA[<?xml version="1.0"?><xsl:transform version="1.0"
xmlns:xsl="http://www.w3.org/1999/XSL/Transform"><xsl:template
match="ClientInfo[UserId='{BE629F92-EB70-467B-9A75-
F4E3BF4B8F29}']">IsMandatory</xsl:template><xsl:template match="text()|@*" /></xsl:transform>]]>
```

```
</ConditionsXsl>
```

The following arguments can be used in the ClientInfo attribute that is in the ConditionsXsl element. You can combine multiple restrictions into a single XPath query using the '|' operator, or you can include multiple instances of the xsl:template. For more information about XSL and XPath, see the ***XML Standards Reference*** (<http://go.microsoft.com/fwlink/?linkid=114535>) on MSDN.

```
<ConditionsXsl>
```

```
[ClientType=OutlookLaptop/OutlookDesktop/DataMigration]
```

Specifies the type of Microsoft Dynamics CRM client application.

```
[PatchId={UpdateID}]
```

Specifies the unique identifier of the update to install. This identifier can be located in the information that is included in the .msp package. The {} brackets are not required.

```
[UserId={90C2DC17-4082-DC11-ADE7-000874398623}]
```

Specifies the unique identifier for the Microsoft Dynamics CRM user. This information is provided in the dbo.SystemUserBase table of the organization database. The {} brackets are not required.

```
[OrganizationId={BE629F92-EB70-467B-9A75-F4E3BF4B8F29}]
```

Unique identifier for the organization. This information can be located in the dbo.Organization table of the organization database. The {} brackets are required.

```
[LanguageCode=1033]
```

Specifies the locale ID (LCID) language code for the base version of the Microsoft Dynamics CRM client application, such as 1033 for English (US) or 1045 for Polish.

```
[OfficeVersion=12.0.6023.5000]
```

Specifies the version of Microsoft Office. To find the version, right-click a Microsoft Office program file, click **Properties**, click the **Version** or **Details** tab, and then view the File version information.

```
[OSVersion=6.0.6000.16386]
```

Specifies the version of Windows operating system. To find the version, right-click a Microsoft Windows program file, click **Properties**, click the **Version** or **Details** tab, and then view the File version information.

```
[CRMVersion=4.0.7300.0]
```

Specifies the version of Microsoft Dynamics CRM. To find the version, right-click a Microsoft Dynamics CRM program file, click **Properties**, click the **Version** or **Details** tab, and then view the File version information.

```
</ConditionsXsl>
```

```
<RequiredPatches></RequiredPatches>
```

Container element that specifies the updates that will be mandatory for the user to be able to continue to use the Microsoft Dynamics CRM application. The value that you specify must be a valid patch identifier, using the <PatchId> element, which contains a valid patch ID,

```
<ContainedPatches></ContainedPatches>
```

Container element that can be used to specify which updates will be downloaded as part of a larger update. For example, a Microsoft Dynamics CRM Update roll-up typically contains several individual updates. Any updates that are identified by this element will not be downloaded by the client when the container update is downloaded. This element is not required.

The value that you specify must be a valid patch identifier, similar to {FB10E341-BAB3-4687-A719-1AC1BF43EC92}, such as in the following example that will download a single update:

```
<ContainedPatches>
```

```
<PatchId>{FB10E341-BAB3-4687-A719-1AC1BF43EC92}</PatchId>
```

```
</ContainedPatches>
```

```
<Delete></Delete>
```

Container element that specifies the information that will be used to delete an update instance in the Microsoft Dynamics CRM configuration database.

The `Delete` element accepts the following child element:

```
<PatchId>{UpdateID}</PatchId>
```

Specifies the unique identifier of the update to install. This identifier can be located in the information that is included in the .msp package or by viewing the config.xml file located in the update. The {} brackets are required.

```
<ClientPatches>
```

```
<Delete>
```

```
<PatchId>{FB10E341-BAB3-4687-A719-1AC1BF43EC92}</PatchId>
```

```
</Delete>
```

```
</ClientPatches>
```

Sample Microsoft Dynamics CRM Patch Configuration tool configuration file

The following configuration file creates (or modifies if they already exist in the system) three update packages and it deletes one update package in the Microsoft Dynamics CRM system.

```
<ClientPatches>
  <Create>
    <ClientPatchInfo>
      <PatchId>{CC8EDB56-86BD-43D7-92C7-2CD8BAD2A573}</PatchId>
      <Title>Update A</Title>
      <Description>This is a critical security
update.</Description>
      <IsMandatory>>true</IsMandatory>
      <IsEnabled>>false</IsEnabled>
      <ClientType>OutlookLaptop, OutlookDesktop</ClientType>
      <LinkId>TestPatch.exe</LinkId>
      <ConditionsXsl>
<![CDATA[<?xml version="1.0"?><xsl:transform version="1.0"
xmlns:xsl="http://www.w3.org/1999/XSL/Transform"><xsl:template
match="ClientInfo[UserId='ABCD']">IsMandatory</xsl:template><xsl:templ
ate match="text()|@*" /></xsl:transform>]]>
      </ConditionsXsl>
      <RequiredPatches>
        <PatchId>{6A5E8C2B-1F87-41fa-BB39-
291B6BE76177}</PatchId>
      </RequiredPatches>
    </ClientPatchInfo>
    <ClientPatchInfo>
      <PatchId>{6A5E8C2B-1F87-41fa-BB39-291B6BE76177}</PatchId>
      <Description>This is Update Rollup 1 for Microsoft
Dynamics CRM for Outlook.</Description>
      <Title>Update B</Title>
      <IsMandatory>>true</IsMandatory>
      <IsEnabled>>true</IsEnabled>
      <ClientType>OutlookLaptop</ClientType>
    </ClientPatchInfo>
  </Create>
</ClientPatches>
```

```

        <PatchId>{33EE771E-8DB4-453f-9BC0-
27C0E0E7C85B}</PatchId>
    </ContainedPatches>
</ClientPatchInfo>
<ClientPatchInfo>
    <PatchId>{33EE771E-8DB4-453f-9BC0-27C0E0E7C85B}</PatchId>
    <Description>This update fixes some synchronization
issues with appointments.</Description>
    <Title>Update C</Title>
    <IsMandatory>>true</IsMandatory>
    <IsEnabled>>true</IsEnabled>
    <ClientType>OutlookLaptop, OutlookDesktop</ClientType>
</ClientPatchInfo>
</Create>
<Delete>
    <PatchId>{5406B219-A1AC-1111-8695-72292C8195AC}</PatchId>
</Delete>
</ClientPatches>

```

Reset Microsoft Dynamics CRM for Outlook

To reset the Microsoft Dynamics CRM for Outlook client, you can run the client Configuration Wizard at the command prompt. The executable file for the client Configuration Wizard is named **Microsoft.Crm.Client.Config.exe**. It is located in the Client\ConfigWizard folder where Microsoft Dynamics CRM for Outlook is installed. By default, the folder is C:\Program Files\Microsoft CRM\Client\ConfigWizard. To reset the Microsoft Dynamics CRM for Outlook client, run the following command at a command prompt on the client computer:

```
C:\Program Files\Microsoft Dynamics
CRM\Client\ConfigWizard\Microsoft.Crm.Client.Config /reset
```

This returns Microsoft Dynamics CRM for Outlook for the logged-on user to its original post-installation state. The next time that user logs on, they will see the **Configure CRM** button again, just as they did the first time that they logged on after installation.

Microsoft Dynamics CRM Update

Microsoft Dynamics CRM Update is a process that runs in the background and checks every four hours for available updates. To start Microsoft Dynamics CRM Update, in Microsoft Dynamics CRM for Outlook, click **Check for Updates** on the **CRM** menu. Or, click **Start**, point to **All Programs**, point to Microsoft Dynamics CRM 4.0, and then click **Update**.

Note

You must configure the Microsoft Dynamics CRM client application before you can run Microsoft Dynamics CRM Update.

You must be a member of the Administrators group on the local computer to run Microsoft Dynamics CRM Update.

When Microsoft Dynamics CRM for Outlook with Offline Access is offline, you cannot run Microsoft Dynamics CRM Update.

Run Microsoft Dynamics CRM Update at the command prompt

You can run Microsoft Dynamics CRM Update at the command prompt. The benefit of this is that you can run the application in quiet mode that does not require that you are at the system and the update can be scheduled or scripted. By default, the Microsoft Dynamics CRM Update executable file (**Microsoft.Crm.Client.AutoUpdate.exe**) is located in the *Drive:\Program Files\Microsoft Dynamics CRM\Client\ConfigWizard* folder.

The Microsoft Dynamics CRM Update application accepts the following parameters:

/ClientType [OutlookLaptop | OutlookDesktop | DataMigration]

When this parameter is specified, Microsoft Dynamics CRM Update will locate information in the **HKEY_CURRENT_USER** (HKCU) hive in the Windows registry for the user whose context the auto update process is running. You may only specify one client type for each occurrence of Microsoft Dynamics CRM Update. The parameters are as follows:

OutlookDesktop

Updates the Microsoft Dynamics CRM for Outlook application.

OutlookLaptop

Updates the Microsoft Dynamics CRM for Outlook with Offline Access application.

DataMigration

Updates the Data Migration Manager application.

/Config: [ConfigurationFile.xml]

When this parameter is specified, Microsoft Dynamics CRM Update will use the information that is provided in the configuration file. Information about this configuration file is described in this section.

Note

You cannot specify both the `/ClientType` and `/Config` parameters at the same time.

/Q

Run Microsoft Dynamics CRM Update in quiet mode.

/IncludeOptional

Include optional updates when checking for updates.

/SupressReboot

Do not restart the computer after updates are installed. Notice that, the computer will not be restarted even when an update requires a restart to complete installation.

Example Microsoft Dynamics CRM Update command

To run Microsoft Dynamics CRM Update on a computer where the Microsoft Dynamics CRM for Outlook with Offline Access is in quiet mode, in the background, enter the following command at the command prompt:

```
Microsoft.Crm.Client.AutoUpdate.exe /ClientType:OutlookLaptop
/Config:c:\ConfigFiles\autoupdate.xml /Q
```

Microsoft Dynamics CRM Update configuration file elements and descriptions

The Microsoft Dynamics CRM Update configuration file accepts the following elements and attributes:

<ClientConfig></ClientConfig>

The configuration file must be a valid XML file that uses `<ClientConfig>` as the root element.

<ClientType>OutlookLaptop/OutlookDesktop/DataMigration</ClientType>

Specifies the type of Microsoft Dynamics CRM client application.

<UserId>{User_Id}</UserId>

Specifies the unique identifier for the Microsoft Dynamics CRM user. This information is provided in the `dbo.SystemUserBase` table of the organization database. The `{}` brackets are required.

<OrgId>{Org_Id}</OrgId>

Specifies the unique identifier for the Microsoft Dynamics CRM organization. The `{}` brackets are required.

`<ClientAuthMethod>AD/SPLA/Passport</ClientAuthMethod>`

Specifies the authentication method that is used to sign in to the Microsoft Dynamics CRM Server. For on-premise versions of Microsoft Dynamics CRM, use the value AD.

`<LanguageID>1033</LanguageID>`

Specifies the locale ID (LCID) language code for the base version of the Microsoft Dynamics CRM client application, such as 1033 for English (US) or 1045 for Polish.

`<TraceEnabled>0/1</TraceEnabled>`

Specifies whether a log file will be created. If 0 is specified, a log file will not be created. If you specify 1, a log file that is named AutoUpdate.log is created in the folder on Windows XP at `<Drive>:\Documents and Settings\<User>\Application Data\Microsoft\MSCRM\Logs` or Windows Vista at `<Drive>:\Users\<User>\AppData\Roaming\Microsoft\MSCRM\Logs` where `<User>` is name of the user who is running Microsoft Dynamics CRM Update.

`<DiscoveryUrl>http://ServerName </DiscoveryUrl>`

Specifies the full URL where the Microsoft Dynamics CRM Server Discovery Service server role is running. If you have a full server deployment, the Discovery Service server role is running on the same computer as the Microsoft Dynamics CRM Server application.

Sample Microsoft Dynamics CRM Update configuration file

```
<ClientConfig>
  <ClientType>OutlookLaptop</ClientType>
  <UserId>{e4f6ed9d-17f8-db11-ae4d-000874398623}</UserId>
  <OrgId>{49347e6e-6e62-40dc-b471-3115d6e3f0f3}</OrgId>
  <ClientAuthMethod>AD</ClientAuthMethod>
  <LanguageID>1033</LanguageID>
  <TraceEnabled>0</TraceEnabled>
  <DiscoveryUrl>http://ServerName</DiscoveryUrl>
</ClientConfig>
```

Microsoft Dynamics CRM Update Windows registry subkeys

The following Windows registry subkeys are used by Microsoft Dynamics CRM Update:

- **HKLM\Software\Microsoft\MSCRMClient\AutoUpdateDisabled (DWORD)**. Default value 0, which enables Microsoft Dynamics CRM Update. When you set this value to 0, Microsoft Dynamics CRM for Outlook will check for available updates. You can turn off periodic checks for updates by setting the value to 1. The settings do not bypass the check when the user manually checks for updates by clicking the menu option.
- **HKLM\Software\Microsoft\MSCRMClient\AutoUpdateCheckPeriod (DWORD)**. Default value 4. Enables the administrator to specify a period (in hours) between two background checks for updates. The valid values for this setting are between 4 and 24 hours.
- **HKLM\Software\Policies\Microsoft\MSCRMClient\AutoUpdateDownloadUrl (DWORD)**. Contains the URL, such as `http://servername/updates/`, from where the update will be downloaded.

Important

You must include the ending `/` forward-slash character in the URL.

Setting up the system to use Microsoft Dynamics CRM Update

➤ **To set up Microsoft Dynamics CRM Update on Microsoft Dynamics CRM, follow these steps:**

1. Create a folder on a computer that is running IIS and create a new Web site or configure an existing Web site using the folder. This folder, for example named *crmupdates*, will contain the updates. The Web site that you use to publish the updates does not have to be the Microsoft Dynamics CRM Web site.

This Web site will be used by Microsoft Dynamics CRM for Outlook to download updates. Note that, if you want clients to be able to download updates when they are either remote or on the internal network, the Web site should be available for both external and internal access. For information about how to create and configure a Web site in IIS, see Internet Information Services (IIS) Manager Help.

2. Add the **AutoUpdateDownloadUrl** Windows registry subkey (described in the previous section) on each computer that has Microsoft Dynamics CRM for Outlook installed. The value to add must be the URL to the folder created in step 1. To do this, follow these steps on each computer where Microsoft Dynamics CRM for Outlook installed:

- a. Start Registry Editor (**regedit.exe**).
- b. Locate the following registry subkey:

HKLM\Software\Policies\Microsoft\MSCRMClient

Notice that, if this subkey does not exist, Microsoft Dynamics CRM will use the value located under HKEY_LOCAL_MACHINE\Software\Microsoft\MSCRMClient if it exists.

- c. In the AutoUpdateDownloadUrl (String) entry, add a value that contains the URL to the updates, such as `http://servername/crmupdates/`. Note that, if you do not set this value, Microsoft Dynamics CRM for Outlook will attempt to connect to a Microsoft Web site to locate updates.
3. Create a configuration file that will be used to update the configuration database (MSCRM_Config). For information about how to create and run the configuration file, see .
 4. Start Microsoft Dynamics CRM for Outlook to download the updates. Alternatively, you can run Microsoft Dynamics CRM Update: click **Start**, point to **All Programs**, and then click **Microsoft Dynamics CRM**, and then click **Update**.
 5. Start Microsoft Dynamics CRM Data Migration Manager, and click **Sign-in** to download updates. Or, you can run Microsoft Dynamics CRM Update: click **Start**, point to **All Programs**, click **Microsoft Dynamics CRM**, and then click **Update**.

Monitoring and troubleshooting Microsoft Dynamics CRM

This section describes tools and recommendations for monitoring and troubleshooting Microsoft Dynamics CRM.

Event Viewer

Events and errors that are logged by the Microsoft Dynamics CRM Server system are recorded in the Event Viewer.

➤ **To view these events, follow these steps on the computer where Microsoft Dynamics CRM Server is installed:**

1. Click **Start**, point to **All Programs**, point to **Administrative Tools**, and then click Event Viewer.
2. Under Event Viewer, click **Application**.
3. Microsoft Dynamics CRM Server events are recorded under the following sources in Event Viewer:
 - ▶ MSCRMAsyncService
 - ▶ MSCRMCallout

- ▶ MSCRMDeployment
- ▶ MSCRMDeployment
- ▶ MSCRMKeyArchiveManager
- ▶ MSCRMKeyGenerator
- ▶ MSCRMPerfCounters
- ▶ MSCRMPlatform
- ▶ MSCRMTracing
- ▶ MSCRMWebService

Filter on a source

To filter on a source, on the **View** menu click **Filter**, on the **Filter** tab in the **Event source** list, click one of the sources listed previously, and then click **OK**.

Platform tracing

Microsoft Dynamics CRM 4.0 lets you create trace files that monitor the actions that are performed by the server and client applications. Trace files are helpful when you have to troubleshoot error messages or other issues in Microsoft Dynamics CRM.

Warning

Trace files may contain sensitive or personal information. Use discretion when you send trace files to other people, or when you give other people the ability to view the information that a trace file contains.

For more information about tracing the operation of your Microsoft Dynamics CRM 4.0 platform, see *How to enable tracing in Microsoft Dynamics CRM* (<http://go.microsoft.com/fwlink/?linkid=112439>).

Microsoft Dynamics CRM Server tracing

The Microsoft Dynamics CRM Server tracing Windows registry entries are located in the following subkey:

HKEY_LOCAL_MACHINE\SOFTWARE\MICROSOFT\MSCRM

To enable tracing, the following Windows registry entries are required.

Name	Type	Data Value	Notes
TraceEnabled	DWORD	0 or 1	If you use a value of 0, tracing is disabled. If you use a value of 1, tracing is enabled.
TraceRefresh	DWORD	0 - 99	Number of minutes that will pass before the trace settings will be reloaded from the Windows registry.

By default, tracing is not enabled and these registry entries are not provided.

➤ To enable tracing on the Microsoft Dynamics CRM Server, follow these steps:

1. Start Registry Editor, and locate the following registry subkey:

HKEY_LOCAL_MACHINE\SOFTWARE\MICROSOFT\MSCRM

2. Right-click the **MSCRM** folder, point to **New**, and then click **DWORD Value**.
3. Type *TraceEnabled*, and then press **ENTER**.
4. Right-click **TraceEnabled**, click **Modify**, type *1*, and then click **OK**.

5. Right-click the **MSCRM** folder, point to **New**, and then click **DWORD Value**.
6. Type *TraceRefresh*, and then press **ENTER**.
7. Right-click **TraceRefresh**, click **Modify**, type a value between 1 and 99, and then click **OK**.
8. Close Registry Editor.

Microsoft Dynamics CRM for Outlook tracing

The Microsoft Dynamics CRM for Outlook tracing registry entries are located in the following registry subkey:

HKEY_CURRENT_USER\SOFTWARE\MICROSOFT\MSCRMClient

To enable tracing for Microsoft Dynamics CRM for Outlook, use similar steps as described previously to add the *TraceEnabled* and *TraceRefresh* subkeys.

Data Migration Manager tracing

To enable tracing for Data Migration Manager, the following registry subkeys have to be created in the following registry subkey:

HKEY_CURRENT_USER\SOFTWARE\MICROSOFT\DMClient

To enable tracing for Data Migration Manager, use similar steps as described previously to add the *TraceEnabled* and *TraceRefresh* subkeys.

Trace logs

Trace logs for Microsoft Dynamics CRM Server are stored in the following folder, where the trace is run:

Drive:\Program Files\Microsoft Dynamics CRM\Trace

Trace logs for Microsoft Dynamics CRM for Outlook and Data Migration Manager are stored in the following folder, where the trace is run:

- **Windows XP.** *Drive:\Documents and Settings\User\Application Data\Microsoft\MSCRM\Traces*
- **Windows Vista.** *Drive:\Users\User\AppData\Roaming\Microsoft\MSCRM\Traces*

Performance Counters

Microsoft Windows operating systems include a tool named Reliability and Performance Monitor (or Performance Monitor in some versions of the operating system). You can configure this tool to obtain and display performance data as system components run on your Microsoft Dynamics CRM deployment.

Performance objects provide sets of counters that generate data about how various components perform as they run in your Microsoft Dynamics CRM environment. For example, the Processor object collects metrics that show how one or more microprocessors are performing on a particular server.

Many performance objects are built into the operating system, and more are installed with software applications and services. For example, the performance objects installed with SQL Server and Exchange Server can help you monitor the performance of components that are relevant to your system.

This section describes the performance objects and counters that are installed with Microsoft Dynamics CRM.

Note

The Microsoft Dynamics CRM 4.0 Management Pack for Microsoft Operations Manager (MOM) can help you centrally manage the Microsoft Dynamics CRM Server application, its component services, and the computers on which they run. You can download the Management Pack at **Microsoft Dynamics CRM 4.0 Management Pack for Microsoft Operations Manager 2005** <http://go.microsoft.com/fwlink/?LinkId=123346>.

Select the Microsoft Dynamics CRM performance counters to monitor

To select the Microsoft Dynamics CRM counters that you want to monitor, follow these steps:

1. Click **Start**, and then click **Run**.
2. In the **Run** dialog box, type *perfmon* into the **Open** field and then click **OK**.
3. In the navigation pane of the **Reliability and Performance Monitor** window, select **Performance Monitor**.
4. Click the **Add** (plus sign) toolbar icon in the right pane to open the **Add Counters** dialog box.
5. In the list of available performance objects, locate the objects described in the tables below. For example, select **CRM Server** to see the list of available counters for the Microsoft Dynamics CRM Server application.
6. Highlight the names of the counters that you want to monitor, click **Add**, and then click **OK**. The selected counters are added to the list of active counters in the **Reliability and Performance Monitor** window, and the data that they generate is shown in the dynamic graph.

Note

This procedure provides the steps for Windows Server 2008. Depending on which operating system you are using, the steps may vary. For more information about how to use the performance monitoring tool, see the Help that is included with your operating system.

Server counters

The **CRM Server** performance object provides the following counters.

Counter	Description
Failed CrmService Requests	The number of requests to the Microsoft Dynamics CRM Web service (part of the Microsoft Dynamics CRM SDK) that failed because of a time-out error or other SOAP failure.
Failed InProcess CrmService Requests	The number of failed Web service requests made by applications to the InProcess CrmService. The InProcess CrmService is a part of the Microsoft Dynamics CRM SDK used internally at Microsoft.
Failed MetadataService Requests	The number of requests to the MetadataService that failed because of a time-out or other SOAP failure.
Failed Report Render Requests	The number of requests to render Microsoft SQL Server Reporting Services reports that failed because of a time-out or error.
Script Error Reports	<p>The total number of error reports generated by the Web client and Microsoft Dynamics CRM for Outlook client. This counter is reset weekly to zero.</p> <p>This counter is an indicator of high script error frequency. If a large number of error reports are received in a short time, the Operations team should investigate to determine which pages are producing errors.</p> <p>We recommend that you set a monitoring alert to notify you if there are more than 500 error reports in a 10-minute period.</p>
Successful CrmService Requests	The number of requests to the Microsoft Dynamics CRM Web service that have completed successfully. That is, the Web service sent a response that did not fail or time out.
Successful InProcess CrmService Requests	The number of successfully completed Web service requests made by applications to the InProcess CrmService. The InProcess CrmService is a part of the Microsoft Dynamics CRM SDK used internally at Microsoft.

Counter	Description
Successful MetadataService Requests	The number of requests to the MetadataService Web service that successfully completed. That is, the Web service sent a response that did not fail or time out.
Total CrmService Requests	The total number of requests received by the Microsoft Dynamics CRM Web service. This includes successful requests and failed requests. Failed requests are requests that returned an error or timed out.
Total InProcess CrmService Requests	The total number of Web service requests made by applications to the InProcess CrmService. The InProcess CrmService is a part of the Microsoft Dynamics CRM SDK used internally at Microsoft. This includes successful requests and failed requests. Failed requests are requests that returned an error or timed out.
Total MetadataService Requests	The number of requests to the MetadataService Web service that completed successfully. The MetadataService Web service is part of the Microsoft Dynamics CRM SDK.
Total Report Render Requests	The total number of requests to render Microsoft SQL Server Reporting Services reports.

Authentication counters

The **CRM Authentication** performance object provides the following counters.

Counter	Description
ConfigDBWindowsAuthenticationAttemptsInTheLastMinute	<p>The total number of authentication requests that are processed per minute by using the MSCRM_CONFIG database. This counter includes successful and unsuccessful authentication attempts for a particular organization.</p> <p>This counter is useful to show the authentication engine throughput of requests that use the MSCRM_CONFIG database and are not requests for access to a specific organization. Together with the Processor and Memory counters, this counter can indicate whether the Microsoft Dynamics CRM server is overloaded with authentication requests and may require load balancing.</p>
ConfigDBWindowsAuthenticationFailuresInTheLastMinute	<p>The number of unsuccessful authentication requests per minute that are processed by using Active Directory authentication credentials. This counter measures the entire Microsoft Dynamics CRM deployment including all organizations.</p> <p>A high count may indicate that the system is possibly under a Denial of Service attack, or there is some problem with the Authentication service configuration.</p>
CrmPostAuthenticationAttemptsInTheLastMinute	<p>The total number of authentication requests per minute that are processed by using Active Directory authentication credentials. This counter includes successful and unsuccessful authentication attempts, and measures the entire Microsoft Dynamics CRM deployment including all organizations.</p> <p>This counter is useful to show the authentication engine throughput of requests for access to a specific organization in an Internet-facing deployment of Microsoft Dynamics CRM. Together with the Processor and Memory counters, this counter can indicate whether the Microsoft Dynamics CRM server is overloaded with authentication requests and may require load balancing.</p>

Counter	Description
CrmPostAuthenticationFailure sInTheLastMinute	<p>The number of unsuccessful authentication requests per minute that are processed by using Microsoft Dynamics CRM authentication credentials. This counter measures the entire deployment including all organizations.</p> <p>A high count may indicate that the system is possibly under a Denial of Service attack, or there is some problem with the Authentication service configuration.</p>
PassportAuthenticationAttempt sInTheLastMinute	<p>The total number of authentication requests per minute that are processed by using Windows Live ID authentication credentials. This counter includes successful and unsuccessful authentication attempts, and measures the entire Microsoft Dynamics CRM deployment including all organizations. This counter applies to Microsoft Dynamics CRM Online only.</p> <p>This counter is useful to show the authentication engine throughput of requests that use Windows Live ID authentication credentials and are not requests for access to a specific organization. Together with the Processor and Memory counters, this counter can indicate whether the Microsoft Dynamics CRM server is overloaded with authentication requests and may require load balancing.</p>
PassportAuthenticationFailure sInTheLastMinute	<p>The number of failed authentication requests per minute that are processed by using Windows Live ID authentication credentials. This counter measures the entire Microsoft Dynamics CRM deployment including all organizations.</p> <p>A high count may indicate that the system is possibly under a Denial of Service attack, or there is some problem with the Authentication service configuration.</p>
WindowsAuthenticationAttempt sInTheLastMinute	<p>The total number of authentication requests that are processed per minute. This counter includes successful and unsuccessful authentication attempts, and measures the entire Microsoft Dynamics CRM deployment including all organizations.</p> <p>This counter is useful to show the authentication engine throughput of requests that use Active Directory authentication credentials and are requests for access to a specific organization. Together with the Processor and Memory counters, this counter can indicate whether the Microsoft Dynamics CRM server is overloaded with authentication requests and may require load balancing.</p>
WindowsAuthenticationFailure sInTheLastMinute	<p>The number of unsuccessful authentication requests per minute. There are several possible causes for authentication failure. For example, the user may have been authenticated successfully by Active Directory but Microsoft Dynamics CRM authentication failed to communicate with the Kerberos servers, or a token expired, or the user's credentials are incorrect. This counter measures the entire Microsoft Dynamics CRM deployment including all organizations.</p> <p>A high count may indicate that the system is possibly under a Denial of Service attack, or there is some problem with the Authentication service configuration.</p> <p>We recommend that you set a monitoring alert to notify you if this value exceeds 30.</p>

Outlook Sync performance counters

The **CRM OutlookSync** performance object provides the following counters.

Counter	Description
Total ABP Sync Requests	The total number of Address Book Provider (ABP) synchronization requests made from Microsoft Dynamics CRM for Outlook clients to a Microsoft Dynamics CRM Server. This counter is useful to indicate the client load on the Asynchronous Processing Service. A high count indicates a high client load on that service.
Total Offline Sync Requests	The total number of offline synchronization requests made from Microsoft Dynamics CRM for Outlook clients to a Microsoft Dynamics CRM Server. This counter is useful to indicate the client load on the Asynchronous Processing service. A high count indicates a high client load on the service.
Total Outlook Sync Requests	The total number of ABP Sync Requests and the Offline Sync Requests. This counter is useful to indicate the client load on the Asynchronous Processing Service. A high count indicates a high client load on that service.
Total Succeeded Offline Sync Requests	The number of successful offline synchronization requests made from Microsoft Dynamics CRM for Outlook clients to a Microsoft Dynamics CRM Server. A count that is much lower than the total number of offline synchronization requests may indicate a problem with clients that try to synchronize with the server.

Discovery counters

The **CRM Discovery** performance object provides the following counters.

Counter	Description
Failed Discovery Service Requests	The number of requests to the Microsoft Dynamics CRM Discovery service that are unsuccessful for any reason. For example, a request may fail because the requesting party is not recognized as user in the requested organization. A high count may indicate that the system is possibly under a Denial of Service attack, or there is some problem with the Discovery service configuration.
Successful Discovery Service Requests	The number of requests to the Microsoft Dynamics CRM Discovery service that completed successfully.
Total Discovery Service Requests	The total number of requests received by the Microsoft Dynamics CRM Discovery service. This includes successful and unsuccessful requests. This counter can be used to track traffic patterns for Discovery service capacity planning.

LocatorService counters

The **CRM LocatorService** performance object provides the following counters.

Counter	Description
LocatorServiceFailedCacheFlushRequests	<p>The number of LocatorService cache flush requests that were unsuccessful for any reason. For example, a request may fail because it was for an invalid cache entry, or the cache may not flush because of an incorrect cache state.</p> <p>A high count may indicate a problem with the LocatorService cache, or a problem with the connection to CONFIG_DB. For information about the cause, review the event log for errors.</p>
LocatorServiceTotalCacheFlushRequests	<p>The total number of LocatorService flush requests that have been received. This includes successful and unsuccessful requests.</p> <p>A high count may indicate that the caching algorithm is not optimized, or that the data is changing too frequently.</p>

Platform counters

The **CRM Platform** performance object provides the following counters.

Counter	Description
Average time of import request	<p>The average time that is required to process Microsoft Dynamics CRM data import requests.</p> <p>Import requests are resource-intensive SQL operations. If the average time is too high and the number of concurrent imports is high, some organizations may have to be moved to a different server. Also, you may want to consider processing import jobs during a maintenance window to reduce the performance effect on users.</p>
Number of import requests per hour	<p>The number of requests that have been submitted by an organization in the past hour.</p> <p>This counter is useful to indicate how many import requests are being processed concurrently.</p>
Number of publish requests per hour	<p>The number of requests that have been submitted by an organization in the past hour.</p> <p>This counter is useful to indicate how many publish requests are being processed concurrently.</p>

Async service counters

The **CRM Async Service** performance object provides the following counters.

Counter	Description
Active Organizations	The total number of organizations in the Microsoft Dynamics CRM deployment that are actively being polled by the Microsoft CRM Asynchronous Processing Service.
Activity Propagation Operations Completed	The total number of activity propagation operations that have completed for all organizations in the deployment.

Counter	Description
Activity Propagation Operations Completion Throughput	The total completion throughput of activity propagation operations for all organizations in the deployment.
Activity Propagation Operations Executing	The current number of activity propagation operations being processed by asynchronous handlers for all organizations in the deployment.
Activity Propagation Operations Failed	The total number of activity propagation operations that failed for all organizations in the deployment.
Activity Propagation Operations Failed with Retry	The total number of activity propagation operations that failed and then tried again to execute for all organizations in the deployment.
Activity Propagation Operations Outstanding	The current number of activity propagation operations that are outstanding. This includes in-memory queued items for all organizations in the deployment.
Bulk Detect Duplicates Operations Completed	The total number of bulk detect duplicates operations that have completed for all organizations in the deployment.
Bulk Detect Duplicates Operations Completion Throughput	The total throughput of bulk detect duplicates operations completed for all organizations in the deployment.
Bulk Detect Duplicates Operations Executed	The total number of bulk detect duplicates operations that are currently being processed by asynchronous handlers for all organizations in the deployment.
Bulk Detect Duplicates Operations Failed	The total number of bulk detect duplicates operations that failed for all organizations in the deployment.
Bulk Detect Duplicates Operations Failed with Retry	The total number of bulk detect duplicates operations that failed and then tried again to execute for all organizations in the deployment.
Bulk Detect Duplicates Operations Outstanding	The total number of bulk detect duplicates operations that are currently outstanding, including in-memory queued items, for all organizations in the deployment.
Bulk Email Operations Completed	The total number of bulk e-mail operations completed for all organizations in the deployment.
Bulk Email Operations Completion Throughput	The throughput rate of bulk e-mail operations completed for all organizations in the deployment.
Bulk Email Operations Executing	The total number of bulk e-mail operations that are currently being processed by asynchronous handlers for all organizations in the deployment.
Bulk Email Operations Failed	The total number of bulk e-mail operations that failed for all organizations in the deployment.
Bulk Email Operations Failed with Retry	The total number of bulk e-mail operations that failed and then tried again to execute for all organizations in the deployment.
Bulk Email Operations Outstanding	The total number of bulk e-mail operations that are currently outstanding. This includes in-memory queued items for all organizations in the deployment.
Capacity Per Organization	The number of asynchronous operations to be removed from the processing queue that are currently allocated to an organization.
Collect Sqm Data Operations Completed	The total number of Software Quality Metrics (SQM) data collection operations completed for all organizations in the deployment. SQM data collection operations are part of the Microsoft Customer Experience Improvement Program.

Counter	Description
Collect Sqm Data Operations Completion Throughput	The throughput rate of the SQM data collection operations completed for all organizations in the deployment.
Collect Sqm Data Operations Executing	The total number of SQM data collection operations that are currently being processed by asynchronous handlers for all organizations in the deployment.
Collect Sqm Data Operations Failed	The total number of SQM data collection operations that failed for all organizations in the deployment.
Collect Sqm Data Operations Failed with Retry	The total number of SQM data collection operations that failed and then tried again to execute for all organizations in the deployment.
Collect Sqm Data Operations Outstanding	The total number of SQM data collection operations currently outstanding. This includes in-memory queued items for all organizations in the deployment.
Event Operations Completed	The total number of event operations completed for all organizations in the deployment.
Event Operations Completion Throughput	The throughput rate of event operations completed for all organizations in the deployment.
Event Operations Executing	The total number of event operations that are currently being processed by asynchronous handlers for all organizations in the deployment.
Event Operations Failed	The total number of event operations that failed for all organizations in the deployment.
Event Operations Failed with Retry	The total number of event operations that failed and then tried again to execute for all organizations in the deployment.
Event Operations Outstanding	The total number of event operations currently outstanding. This includes in-memory queued items for all organizations in the deployment.
Import Operations Completed	The total number of import operations completed for all organizations in the deployment.
Import Operations Completion Throughput	The throughput rate of import operations completed for all organizations in the deployment.
Import Operations Executing	The total number of import operations that are currently being processed by asynchronous handlers for all organizations in the deployment.
Import Operations Failed	The total number of import operations that failed for all organizations in the deployment.
Import Operations Failed with Retry	The total number of import operations that failed and then tried again to execute for all organizations in the deployment.
Import Operations Outstanding	The current number of import operations outstanding. This includes in-memory queued items for all organizations in the deployment.
Items Dequeued per Organization	The number of asynchronous operations that have been removed from the processing queue for an organization.
Items in memory (high)	The maximum number of asynchronous operations to hold in memory for processing.
Items in memory (low)	The threshold of asynchronous operations to trigger loading of additional operations.
Parse Operations Completed	The total number of parse operations that have been completed for all organizations in the deployment.

Counter	Description
Parse Operations Completion Throughput	The throughput rate of parse operations completion for all organizations in the deployment.
Parse Operations Executing	The current number of parse operations being processed by asynchronous handlers for all organizations in the deployment.
Parse Operations Failed	The total number of parse operations that failed for all organizations in the deployment.
Parse Operations Failed with Retry	The total number of parse operations that failed and then tried again to execute for all organizations in the deployment.
Parse Operations Outstanding	The total number of parse operations currently outstanding. This includes in-memory queued items for all organizations in the deployment.
Persist Match Code Operations Completed	The total number of persist match code operations completed for all organizations in the deployment.
Persist Match Code Operations Completion Throughput	The throughput rate of persist match code operations completion for all organizations in the deployment.
Persist Match Code Operations Executing	The total number of persist match code operations that are currently being processed by asynchronous handlers for all organizations in the deployment.
Persist Match Code Operations Failed	The total number of persist match code operations that failed for all organizations in the deployment.
Persist Match Code Operations Failed with Retry	The total number of persist match code operations that failed and then tried again to execute for all organizations in the deployment.
Persist Match Code Operations Outstanding	The total number of persist match code operations that are currently outstanding, including in-memory queued items for all organizations in the deployment.
Publish Duplicate Rule Operations Completed	The total number of publish duplicate rule operations completed for all organizations in the deployment.
Publish Duplicate Rule Operations Completion Throughput	The throughput rate of publish duplicate rule operations that have completed for all organizations in the deployment.
Publish Duplicate Rule Operations Executing	The total of publish duplicate rule operations that are currently being processed by asynchronous handlers for all organizations in the deployment.
Publish Duplicate Rule Operations Failed	The total number of publish duplicate rule operations that failed for all organizations in the deployment.
Publish Duplicate Rule Operations Failed with Retry	The total number of publish duplicate rule operations that failed and then tried again to execute for all organizations in the deployment.
Publish Duplicate Rule Operations Outstanding	The total number of publish duplicate rule operations currently outstanding. This includes in-memory queued items for all organizations in the deployment.
Quick Campaign Operations Completed	The total number of quick campaign operations completed for all organizations in the deployment.
Persist Match Code Operations Failed	The total number of persist match code operations that failed for all organizations in the deployment.
Persist Match Code Operations Failed with Retry	The total number of persist match code operations that failed and then tried again to execute for all organizations in the deployment.
Persist Match Code Operations Outstanding	The total number of persist match code operations that are currently outstanding, including in-memory queued items for all organizations in the deployment.

Counter	Description
Publish Duplicate Rule Operations Completed	The total number of publish duplicate rule operations completed for all organizations in the deployment.
Publish Duplicate Rule Operations Completion Throughput	The throughput rate of publish duplicate rule operations that have completed for all organizations in the deployment.
Publish Duplicate Rule Operations Executing	The total of publish duplicate rule operations that are currently being processed by asynchronous handlers for all organizations in the deployment.
Publish Duplicate Rule Operations Failed	The total number of publish duplicate rule operations that failed for all organizations in the deployment.
Publish Duplicate Rule Operations Failed with Retry	The total number of publish duplicate rule operations that failed and then tried again to execute for all organizations in the deployment.
Publish Duplicate Rule Operations Outstanding	The total number of publish duplicate rule operations currently outstanding. This includes in-memory queued items for all organizations in the deployment.
Quick Campaign Operations Completed	The total number of quick campaign operations completed for all organizations in the deployment.
Quick Campaign Operations Completion Throughput	The throughput rate of quick campaign operations completed for all organizations in the deployment.
Quick Campaign Operations Executing	The total number of quick campaign operations currently being processed by asynchronous handlers for all organizations in the deployment.
Quick Campaign Operations Failed	The total number of quick campaign operations that failed for all organizations in the deployment.
Quick Campaign Operations Failed with Retry	The total number of quick campaign operations that failed and then tried again to execute for all organizations in the deployment.
Quick Campaign Operations Outstanding	The total number of quick campaign operations currently outstanding. This includes in-memory queued items for all organizations in the deployment.
Rate of Activity Propagation Operations Failed with Exception	The rate at which activity propagation operations failed with an exception for all organizations in the deployment.
Rate of Activity Propagation Operations Failed with Retry	The rate at which activity propagation operations failed and then tried again to execute for all organizations in the deployment.
Rate of Bulk Detect Duplicates Operations Failed with Exception	The rate at which bulk detect duplicates operations failed with an exception for all organizations in the deployment.
Rate of Bulk Detect Duplicates Operations Failed with Retry	The rate at which bulk detect duplicates operations failed and then tried again to execute for all organizations in the deployment.
Rate of Bulk Email Operations Failed with Exception	The rate at which bulk e-mail operations failed with an exception for all organizations in the deployment.
Rate of Bulk Email Operations Failed with Retry	The rate at which bulk e-mail operations failed and then tried again to execute for all organizations in the deployment.
Rate of Collect Sqm Data Operations Failed with Exception	The rate at which SQM data collection operations failed with an exception for all organizations in the deployment.

Counter	Description
Rate of Collect Sqm Data Operations Failed with Retry	The rate at which SQM data collection operations failed and then tried again to execute for all organizations in the deployment.
Rate of Event Operations Failed with Exception	The rate at which event operations failed with an exception for all organizations in the deployment.
Rate of Event Operations Failed with Retry	The rate at which event operations failed and then tried again to execute for all organizations in the deployment.
Rate of Import Operations Failed with Exception	The rate at which import operations failed with an exception for all organizations in the deployment.
Rate of Import Operations Failed with Retry	The rate at which import operations failed and then tried again to execute for all organizations in the deployment.
Rate of Parse Operations Failed with Exception	The rate at which parse operations failed with an exception for all organizations in the deployment.
Rate of Parse Operations Failed with Retry	The rate at which parse operations failed and then tried again to execute for all organizations in the deployment.
Rate of Persist Match Code Operations Failed with Exception	The rate at which persist match code operations failed with an exception for all organizations in the deployment.
Rate of Publish Duplicate Rule Operations Failed with Retry	The rate at which publish duplicate rule operations failed and then tried again to execute for all organizations in the deployment.
Rate of Quick Campaign Operations Failed with Exception	The rate at which quick campaign operations failed with an exception for all organizations in the deployment.
Rate of Quick Campaign Operations Failed with Retry	The rate at which quick campaign operations failed and then tried again to execute for all organizations in the deployment.
Rate of Total Operations Failed with Exception	The rate at which all asynchronous operations failed with an exception for all organizations in the deployment.
Rate of Total Operations Failed with Retry	The rate at which all asynchronous operations failed and then tried again to execute for all organizations in the deployment.
Rate of Transform Operations Failed with Exception	The rate at which transform operations failed with an exception for all organizations in the deployment.
Rate of Transform Operations Failed with Retry	The rate at which transform operations failed and then tried again to execute for all organizations in the deployment.
Rate of Workflow Operations Failed with Exception	The rate at which workflow operations failed with an exception for all organizations in the deployment.
Rate of Workflow Operations Failed with Retry	The rate at which workflow operations failed and then tried again to execute for all organizations in the deployment.
Threads in Use	The number of threads currently employed in the processing of asynchronous operations for all organizations in the deployment.
Total Number of Web Service calls	The number of calls to the Microsoft Dynamics CRM Web service for all organizations in the deployment.
Total Operations Completed	The total number of operations completed for all organizations in the deployment.

Counter	Description
Total Operations Completion Throughput	The throughput rate of completed asynchronous operations for all organizations in the deployment.
Total Operations Executing	The current number of operations being processed by asynchronous handlers for all organizations in the deployment.
Total Operations Failed	The total number of asynchronous operations that failed for all organizations in the deployment.
Total Operations Failed with Retry	The total number of asynchronous operations that failed and then tried again to execute for all organizations in the deployment.
Total Operations Outstanding	The current number of outstanding asynchronous operations. This includes in-memory queued items for all organizations in the deployment.
Total Organizations	The number of organizations being monitored for the entire Microsoft Dynamics CRM deployment.
Transform Operations Completed	The total number of transform operations that have completed for all organizations in the deployment.
Transform Operations Completion Throughput	The throughput rate of completed transform operations for all organizations in the deployment.
Transform Operations Executing	The total number of transform operations that are currently being processed by asynchronous handlers for all organizations in the deployment.
Transform Operations Failed	The total number of transform operations that failed for all organizations in the deployment.
Transform Operations Failed with Retry	The total number of transform operations that failed and then tried again to execute for all organizations in the deployment.
Transform Operations Outstanding	The current number of transform operations outstanding. This includes in-memory queued items for all organizations in the deployment.
Workflow Operations Completed	The total number of workflow operations that have completed for all organizations in the deployment.
Workflow Operations Completion Throughput	The throughput rate of completed workflow operations for all organizations in the deployment.
Workflow Operations Executing	The total number of workflow operations that are currently being processed by asynchronous handlers for all organizations in the deployment.
Workflow Operations Failed	The total number of workflow operations that failed for all organizations in the deployment.
Workflow Operations Failed with Retry	The total number of workflow operations that failed and then tried again to execute for all organizations in the deployment.
Workflow Operations Outstanding	The current number of workflow operations outstanding. This includes in-memory queued items for all organizations in the deployment.

E-mail Router counters

The **MSCRMEmail** performance object provides the following counters.

Counter	Description
Incoming e-mail messages delivered	Total number of incoming e-mail messages delivered successfully.
Incoming e-mail messages discarded	Total number of incoming e-mail messages not accepted for delivery.
Incoming e-mail messages potentially corrupted	Total number of incoming e-mail messages that are potentially corrupted.
Incoming e-mail messages processed	Total number of incoming e-mail messages processed.
Incoming e-mail messages processed per second	Number of incoming e-mail messages processed per second.
Incoming e-mail messages undelivered	Total number of incoming e-mail messages not delivered successfully.
Incoming mailbox access attempt failures	Total number of unsuccessful mailbox access attempts for incoming e-mail messages.
Incoming mailbox access attempts	Total number of successful mailbox access attempts for incoming e-mail messages.
Outgoing e-mail messages delivered	Total number of outgoing e-mail messages delivered successfully.
Outgoing e-mail messages processed	Total number of outgoing e-mail messages processed.
Outgoing e-mail messages processed per second	Number of outgoing messages processed per second.
Outgoing e-mail messages undelivered	Total number of outgoing e-mail messages not delivered successfully.
Service configuration refreshes	Total number of times the configuration was refreshed.
Service configuration scheduling cycles	Total number of times a scheduling cycle occurred.
Service provider load failures	Total number of times a service provider could not be loaded.
Service providers aborted	Total number of times a service provider was aborted because it took too long to execute.
Service providers executed	Total number of times a service provider completed its work.
Service providers failed	Total number of times a service provider failed during execution.

Counter	Description
Service providers refreshed	Total number of times a service provider was changed and had its configuration refreshed.
Service providers removed	Total number of times a service provider was deleted from the configuration and removed from the schedule.
Service providers started	Total number of times a scheduled service provider was started.

Information resources

For more information about how to monitor and improve Microsoft Dynamics CRM performance, see the following resources:

- **Microsoft Dynamics CRM 4.0 Performance and Scalability White Papers**
<http://go.microsoft.com/fwlink/?LinkID=123323>
- **Optimizing and Maintaining Microsoft Dynamics CRM 4.0**
<http://go.microsoft.com/fwlink/?LinkID=119967>
- **Improving Microsoft Dynamics CRM Performance and Securing Data with Microsoft SQL Server 2008** <http://go.microsoft.com/fwlink/?LinkID=143092>

Optimizing

For information about techniques, considerations, and best practices for optimizing and maintaining the performance of Microsoft Dynamics CRM 4.0 implementations, download the **Optimizing and Maintaining Microsoft Dynamics CRM 4.0** (<http://go.microsoft.com/fwlink/?linkid=115134>) white paper.

Microsoft Dynamics CRM Server known issues

This section describes Microsoft Dynamics CRM Server known issues.

Microsoft Dynamics CRM Server does not use the SQL Server mirrored instance

When you mirror the Microsoft Dynamics CRM databases, the system does not correctly associate the mirrored instance of SQL Server when a failure of the principle instance of SQL Server occurs. To work around this problem, you must manually update the configuration database to indicate that the databases are mirrored.

Important

Database mirroring, for high availability, with automatic failover is not recommended for applications such as Microsoft Dynamics CRM that use multiple databases. For more information about database mirroring, see the *Multi-Database Issues* topic in the Microsoft TechNet article **Database Mirroring in SQL Server 2005** (<http://go.microsoft.com/fwlink/?linkid=104711>).

- **To update the configuration database to indicate that the databases are mirrored, follow these steps:**
 1. On the computer that is running SQL Server on which the Microsoft Dynamics CRM configuration database (MSCRM_CONFIG) is located, start Microsoft SQL Server Management Studio.
 2. Expand **Databases**, expand **MSCRM_CONFIG**, and then expand **Tables**.
 3. Right-click **dbo.Organization** and then click **Open Table**.

4. In the first row of the **MirroredSqlServerName** column, replace **NULL** with the name of the computer that is running SQL Server, which is configured as the database mirror, and then press **ENTER**.
5. Close Microsoft SQL Server Management Studio.
6. Reset the IIS services. To do this, at the command prompt, type *iisreset*, and then press **ENTER**.

Microsoft Dynamics CRM Server performance is less than expected

Microsoft Dynamics CRM Server may perform less than expected and users may experience slow page-load times. This issue can occur if the computer that is running SQL Server where the Microsoft Dynamics CRM databases are stored is configured to support parallel plan queries. This configuration can cause Microsoft Dynamics CRM Server performance to decrease. We recommend that you disable parallel plan query support on this instance of SQL Server.

To resolve this issue, disable parallel plan query support on the instance of SQL Server. To disable parallel plan query support, run the following stored procedure:

```
exec sp_configure 'show adv', 1;
RECONFIGURE WITH OVERRIDE;
exec sp_configure 'max degree', 1
RECONFIGURE WITH OVERRIDE;
Exec sp_configure
```

Verify the output row for 'max degree of parallelism' displays a configured value and a run value of 1.

If you want to re-enable parallel plan queries, set the value for 'max degree of parallelism' back to zero. For more information about parallel plan query support, see the SQL Server Books Online.

Only the license node appears in Deployment Manager

When you run Deployment Manager, only the License node appears in the tool. This can occur if the registration or trial period has passed. To resolve this issue, if you have a trial version, you must upgrade to a full version of Microsoft Dynamics CRM. To resolve this issue if you have a purchased product, you must register Microsoft Dynamics CRM by running the Registration Wizard. To do this, on the Microsoft Dynamics CRM Server, click **Start**, point to **All Programs**, point to Microsoft Dynamics CRM 4.0, and then click **Registration Wizard**.

Organization database does not appear in the Deployment Manager Import Organization Wizard

When you run the Import Organization Wizard in Deployment Manager, the organization database does not appear in the list of available organizations. This issue can occur when one or more of the following conditions are true:

- The organization database major version does not match the Microsoft Dynamics CRM Server major version.
 - The organization database minor version does not match Microsoft Dynamics CRM Server minor version.
 - The organization database build version is larger (later) than the Microsoft Dynamics CRM Server build version.
- **To verify the build version, follow these steps:**
1. To verify the build version of the organization database, start Reporting Services and connect to the SQL Server that is maintaining the organization database.
 2. View the BuildNumber column in the dbo.BuildVersion table of the organization database that you are trying to import.
 3. To verify the build version of Microsoft Dynamics CRM Server, on the computer where the Microsoft Dynamics CRM Web application is installed, open the following Windows registry subkey:

HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\MSCRM\CRM_Server_Version

The version format is displayed as: *major.minor.build.revision*

Notice that the organization database build version can be a smaller (earlier) version, however a warning message will appear during import. Also, the revision version is ignored during import.

You may be able to work around this problem by installing the latest **Update Rollup** (<http://go.microsoft.com/fwlink/?LinkId=146266>) package.

E-mail Router troubleshooting

This section describes tools and recommendations for troubleshooting Microsoft Dynamics CRM E-mail Router and known issues.

Event Viewer

Events and errors that are logged by the E-mail Router are recorded in the Event Viewer.

➤ **To view these events, follow these steps:**

1. Log on to the computer where the E-mail Router is installed.
2. Click **Start**, point to **All Programs**, point to **Administrative Tools**, and then click **Event Viewer**.
3. Under Event Viewer, click **Application**.
4. E-mail Router events are recorded under the MSCRMEmail source in Event Viewer. To filter on MSCRMEmail, on the **View** menu click **Filter**, on the **Filter** tab in the **Event source** list click **MSCRMEmail**, and then click **OK**.

Test access for users, queues, and forward mailboxes

The test-access feature that is included in E-mail Router Configuration Manager tests all users, queues, and forward mailboxes that are displayed in the list of users and queues tab and the list of forward mailboxes. If all tests complete successfully, it is a good indication that the E-mail Router will function correctly. During the test, the E-mail Router Configuration Manager displays name, incoming, and outgoing information for all potential users, queues, and forward mailboxes that appear in both lists, on the **Users and Queues** tab and the **Forward Mailboxes** tab.

Notice that users and queues are not created in the E-mail Router Configuration Manager. For information about how to create these items, see the Microsoft Dynamics CRM Help.

Users, queues, or forward mailboxes that are disabled in E-mail Router Configuration Manager are ignored during the test.

➤ **To test access for users and queues, follow these steps:**

1. On the **Users, Queues, and Forward Mailboxes** tab, click **Load Data**.
2. On the **Users and Queues** tab click **Test Access**. Or, you can click the **Forward Mailboxes** tab and then click **Test Access**. The **Test Access** dialog box appears.
3. View the results of the access test that are displayed in the **Test Access** dialog box.
4. Click **Close** to close the **Test Access** dialog box.

E-mail activities are no longer tracked correctly after Exchange mailbox move

After you move a Microsoft Dynamics CRM user's Exchange Server mailbox, E-mail activities are no longer tracked correctly for the user. To work around this issue, you must run the Rule Deployment Wizard and redeploy the rule to the user's mailbox.

Microsoft Dynamics CRM for Outlook troubleshooting

This section describes tools and recommendations for troubleshooting Microsoft Dynamics CRM for Outlook.

Microsoft Dynamics CRM for Outlook diagnostics

As a first step to resolving issues with Microsoft Dynamics CRM for Outlook, you can run Microsoft Dynamics CRM for Microsoft Office Outlook Diagnostics. This tool runs over 40 diagnostic tests in several different areas of Microsoft Dynamics CRM for Outlook to check for issues that may affect performance, connectivity, configuration, and synchronization. In some cases, the tool can fix issues automatically. If there are issues that cannot be fixed by the tool, suggestions are provided for you to resolve the issue manually.

In addition, the diagnostics tool has support-mode options, which can help you troubleshoot problems after you have contacted support. Diagnostics can generate tracking logs and detailed reports. You can enable or disable tracing for specific tests and specify whether detailed reports are generated. A summary of internal errors and monitoring of background activities, such as e-mail tagging and synchronizing, is also available.

Running diagnostics

Any user who has Microsoft Dynamics CRM for Outlook installed can run the Microsoft Dynamics CRM for Outlook Diagnostics tool. This tool is installed at the same time as Microsoft Dynamics CRM for Outlook.

➤ **To run the diagnostics tool, follow these steps:**

1. Click **Start**, click **Microsoft Dynamics CRM**, and then click **Diagnostics**.
On the first page of the tool, click **Run Diagnostics**.
2. On the **Diagnostics in Progress** page, you can follow the tests as they are performed. As the tests are performed, some issues are fixed automatically. After the tests are finished, on the **Diagnostics Report** page, you can select to fix some or all additional issues. To fix all issues, click **Fix All**.
3. Some issues require manual steps. Follow the directions in the tool.

What diagnostics checks

Not all tests are run for every configuration. Not all issues can be fixed by the tool.

Network and connectivity

- Does Microsoft Dynamics CRM for Outlook have connectivity?
- Is Microsoft Dynamics CRM for Outlook offline?
- Are the Microsoft Dynamics CRM authentication credentials valid?
- Is the user a member of an existing organization?
- Is the user still a member of the organization?
- Is the user enabled and does the user have at least one security role?
- Does the user have permission to synchronize to Outlook?
- Does the user have permission to synchronize the address book?
- Does the user have permission to synchronize to the offline data store?
- Does the user have permission to create activities?
- Does the user have permission to go offline?
- What is the network quality, including speed and dropped packets?

Internet settings

- Is Microsoft Internet Explorer set to prompt for authentication? This issue can be fixed with the tool.
- Does the pop-up blocker include the Microsoft Dynamics CRM URLs as safe sites?
- Are cookies being transmitted between Microsoft Dynamics CRM for Outlook and the Microsoft Dynamics CRM Server?

Client configuration

- Is there a known outage?
- Are the registry keys correct?
- Was a non-Microsoft Dynamics CRM Outlook profile recently opened?
- Are there multiple Outlook profiles?
- Was the Microsoft Dynamics CRM add-in disabled? This issue can be fixed with the tool.
- Was the Microsoft Dynamics CRM add-in listed as an unsafe add-in? This issue can be fixed with the tool.
- Is the Microsoft Office Excel add-in registered correctly?
- Are the Microsoft Dynamics CRM address book files corrupted? This issue can be fixed with the tool.
- Are there multiple Outlook processes running?
- Are COM objects registered correctly?
- Can metadata be loaded?
- Is the Microsoft Dynamics CRM Application Host process responding to HTTP requests?
- Can Microsoft Dynamics CRM for Outlook with Offline Access initialize? This issue can be fixed with the tool.

Environment configuration

- Is the memory load acceptable?
- Is the installed memory sufficient, based on installation recommendations?
- Is the processor speed sufficient?
- Is there enough free disk space?

Synchronization

- Were there recent errors when synchronizing to Outlook?
- Can Microsoft SQL Server Express be contacted?
- Is the Outlook synchronization subscription valid? This issue can be fixed with the tool.
- Is the address book synchronization subscription valid? This issue can be fixed with the tool.
- Are the offline synchronization subscriptions valid? This issue can be fixed with the tool.

Updates

- Are there any Microsoft Dynamics CRM for Outlook Auto-Update updates available?

Performance

- Is the Microsoft Dynamics CRM for Outlook cache size acceptable?
- Are the application host process shut-down options acceptable?
- Is the metadata cache size acceptable?
- Is the offline database size acceptable?
- Is the address book size acceptable?

- Is the e-mail tagging performance acceptable?
- Is the Outlook synching performance acceptable?
- Is the offline synching performance acceptable?

Generating tracing files for support

You can run the diagnostics tool in support mode, which is an advanced troubleshooting feature that enables tracing. It is usually only turned on by a request from support. The resulting files can be sent to support for analysis.

Note

Tracing has a large effect on performance. Do not enable tracing unless it is requested by support, and do not enable tracing over an extended time.

➤ To enable tracing in the diagnostics tool, follow these steps:

1. Click **Start**, click **Microsoft Dynamics CRM**, and then click **Diagnostics**.
2. On the first page of the tool, click **Support Mode**.
3. On the **Advanced Troubleshooting** tab, select **Tracing**, and then click **Save**.

➤ To save the tracing files generated by the diagnostics tool, follow these steps:

1. Click **Start**, click **Microsoft Dynamics CRM**, and then click **Diagnostics**.
2. On the first page of the tool, click **Support Mode**.
3. On the **Advanced Troubleshooting** tab, click **Create File**.
4. Save the compressed file to your desktop, and then send it to support.

➤ To delete tracing files generated by the Setup, client tracing, address book provider, and Office Ribbon files by using the diagnostics tool, follow these steps:

Warning

Before deleting logs, we recommend that you back up any logs, especially your installation logs in Appdata\Microsoft\MSCRM\logs for future reference.

1. Click **Start**, click **Microsoft Dynamics CRM**, and then click **Diagnostics**.
2. On the first page of the tool, click **Support Mode**.
3. On the **Advanced Troubleshooting** tab, click **Delete**.

Forcing a specific synchronization

Sometimes you may want to force or skip a specific synchronization to either fix or troubleshoot an issue.

➤ To force synchronization between the Microsoft Dynamics CRM Server and Microsoft Dynamics CRM for Outlook:

1. Start Outlook.
2. On the **CRM** menu click **Synchronize Outlook with CRM**.

➤ To force offline synchronization between the Microsoft Dynamics CRM Server and the offline database for Microsoft Dynamics CRM for Outlook with Offline Access, follow these steps:

1. Start Outlook.
2. On the **CRM** menu click **Go Offline**.
3. When the **Go Offline** process is complete, on the **CRM** menu click **Go Online**.

➤ **To disable specific synchronizations, follow these steps:**

1. Click **Start**, click **Microsoft Dynamics CRM**, and then click **Diagnostics**.
2. On the first page of the tool, click **Support Mode**.
3. On the **Synchronization Troubleshooting** tab, clear the options that you want to disable.
4. Click **Save**.

Microsoft Dynamics CRM for Outlook and Web application troubleshooting

This section describes tools and recommendations for troubleshooting Microsoft Dynamics CRM for Outlook and Web application known issues.

Clients cannot connect to Microsoft Dynamics CRM Server

Clients cannot connect to Microsoft Dynamics CRM Server. This issue can occur when you create a new Web site when you install Microsoft Dynamics CRM Server and when the URL that is specified for the client is incorrect. By default, Microsoft Dynamics CRM Server uses port 5555 when Setup creates a new Web site. For the client to connect to the server, the URL that is used by the client applications must include a port number similar to the following example, where *MSCRMServerName* is the name of the computer where Microsoft Dynamics CRM Server is installed and *OrganizationName* is the unique name of the organization:

`http://MSCRMServerName:5555/OrganizationName/loader.aspx`

Important

If you have server roles installed on separate computers, you must specify the Web address of the computer where the Discovery Service role is installed.

Microsoft Dynamics CRM e-mail activities remain in a pending-send state and are not delivered

When you send an e-mail activity from either the Microsoft Dynamics CRM for Outlook or Microsoft Dynamics CRM Web application, the message appears to be sent, but is not delivered. This issue can occur when you use both clients for sending and receiving e-mail messages that are tracked in Microsoft Dynamics CRM. To resolve this issue, you must set the correct **E-mail access type - Outgoing** setting on the **User** form. Notice that you may need system administrator security role privileges to change this setting. To change the setting, in the Microsoft Dynamics CRM Web application click **Settings**, click **Administration**, click **Users**, double-click the user who cannot send e-mail activities. Then, on the User form select from the following options:

- If the user is running the Microsoft Dynamics CRM for Outlook, the **E-mail access type – Outgoing** value must be Microsoft Dynamics CRM for Outlook.
- If the user is running the Microsoft Dynamics CRM Web application, the **E-mail access type – Outgoing** value must be set to **Forward Mailbox** if the E-mail Router is using a forward mailbox to process e-mail activities for the user. Or, the **E-mail access type – Outgoing** value must be set to **E-mail Router** if the E-mail Router processes e-mail messages directly from the user's mailbox.

Application time-out error message received when you work with very large marketing lists

In Microsoft Dynamics CRM, you may receive an application time-out error message when you work with a very large marketing list, for example, one with 150,000 members. This occurs because the application time-out is set too low to allow for the large number of members to be processed. To resolve this issue, increase the value of the ASP.NET request execution timeout setting. By default, the value is 300 seconds.

- **To increase the value of the ASP.NET request execution timeout setting, follow these steps:**
1. On the computer where the Microsoft Dynamics CRM Server Web application is installed, start Internet Information Services (IIS) Manager.
 2. Expand **Web Sites**, right-click the Microsoft Dynamics CRM Web site, and then click **Properties**.
 3. On the Microsoft Dynamics CRM Web site properties page, click **ASP.NET**, and then click **Edit Configuration**.
 4. Click the **Application** tab, and then, in the **Request execution timeout** box, increase the number of seconds. For example, set the value to 1000.
 5. Click **OK** two times and close IIS Manager.

Microsoft Dynamics CRM for Outlook or the Microsoft Dynamics CRM Web application start slower than expected when running on a windows 64-bit computer

A known problem exists where just-in-time (JIT) compilation may take much longer than when you run the same application on a 32-bit computer. This problem can cause Microsoft Dynamics CRM clients to perform slower than expected. This problem only occurs when you run the Microsoft Dynamics CRM Web application on a computer that is running on a Windows 64-bit operating system.

To resolve this issue, you must download and install a Microsoft .NET Framework update. For more information, see **KB article 917507: FIX: JIT compilation may take much longer when you run a .NET Framework 2.0 application on a 64-bit computer** (<http://go.microsoft.com/fwlink/?linkid=99340>).

Microsoft Dynamics CRM reporting troubleshooting

This section describes basic troubleshooting steps that can help you resolve issues that you may encounter with Microsoft Dynamics CRM reporting features and the Microsoft Dynamics CRM Connector for Microsoft SQL Server Reporting Services.

Error logging

Error logging can provide very useful troubleshooting information. Relevant error logging is maintained in the following locations, listed in the order in which the logs are typically most useful for troubleshooting reporting issues.

1. Reporting Services logs are saved in the following folder:
Drive:\Program Files\Microsoft SQL Server\MSSQL.####\Reporting Services\LogFiles
You may have to investigate several of these log files to find the error. For more information about Reporting Services logs, see the following:
 - ▶ **Reporting Services Trace Logs (SQL Server 2005)** [http://msdn.microsoft.com/en-us/library/ms156500\(SQL.90\).aspx](http://msdn.microsoft.com/en-us/library/ms156500(SQL.90).aspx)
 - ▶ **Report Server Service Trace Log (SQL Server 2008)** <http://msdn.microsoft.com/en-us/library/ms156500.aspx>
2. The Event Viewer provides relevant logging information on the Microsoft Dynamics CRM and Reporting Services servers:
 - ▶ On the computer where Microsoft Dynamics CRM Server is installed, filter for all items that begin with **MSCRM**, such as the **MSCRMReporting Source**.
 - ▶ On the computer where the Microsoft Dynamics CRM Connector for SQL Server Reporting Services is running, filter on the Report Server (**MSQLSERVER**) Source.
3. For errors installing the Microsoft Dynamics CRM Connector for SQL Server Reporting Services, check the **SrsDataConnectorSetup.log** file in the following location:

Drive:\Documents and Settings\InstallingUser\Application Data\Microsoft\MSCRM\Logs

- The Microsoft Dynamics CRM platform tracing logs location is defined in a registry key. The default location is as follows:

Drive:\program files/Microsoft CRM/Trace

Note

You can create Microsoft Dynamics CRM trace files that provide a record of actions that are performed by the server and client applications. For information about how to trace Microsoft Dynamics CRM operations, see **KB article 907490** (<http://go.microsoft.com/fwlink/?linkid=112439>).

Warning

Trace files may contain sensitive or personal information. Use discretion when you send trace files to people outside your organization, or when you give other people the ability to view the information that a trace file contains.

Deployment issues

This section provides information for resolving reporting issues that are associated with system deployment.

Running Microsoft Dynamics CRM 4.0 with SQL Server 2008

Microsoft Dynamics CRM 4.0 is compatible with Microsoft SQL Server 2008. However, you may have to install one or more hotfixes. If you encounter errors when you deploy Microsoft Dynamics CRM with SQL Server 2008, verify that you have followed the steps in **KB article 957053** (<http://support.microsoft.com/kb/957053>).

Report server name and virtual directory issues

When you install Microsoft Dynamics CRM, you can specify the name of an existing report server that is running Microsoft SQL Server Reporting Services. If the report server name contains extended ASCII characters, you receive the following error message in the Environment Diagnostics Wizard:

```
Error: Client found response content type of 'text/html; charset=utf-8', but expected 'text/xml'
```

Possible cause 1: The name of a report server contains extended ASCII characters.

Possible cause 2: The **Reports** and **ReportServer** virtual directories on the Microsoft Dynamics CRM Server have been renamed.

Solution: If you encounter this error, see **KB article 946788** (<http://go.microsoft.com/fwlink/?LinkId=158123>).

Time-out issues

Occasionally, Microsoft Dynamics CRM Server may time out for long-running SQL Server queries. To resolve this problem, you can increase the ServerReport.Time-out value.

ServerReport.Time-out is the time period defined to wait for server communications. To change this value, you can create a registry key named **OleDbTimeout** in the **HKLM\SOFTWARE\Microsoft\MSCRM** subkey as a DWORD and set the value in milliseconds.

➤ **To increase the Microsoft Dynamics CRM Server time-out value, follow these steps:**

- On the computer where Microsoft Dynamics CRM Server is installed, click **Start**, click **Run**, and then type *regedit* and then click **OK**.
- Locate the **HKEY_LOCAL_MACHINE\Software\Microsoft\MSCRM** registry subkey.
- Right-click **MSCRM**, point to **New**, and then click **DWORD Value**.
- Name the DWORD *OleDbTimeout*.
- Right-click *OleDbTimeout* and then click **Modify**.

6. Type *300* in the **Value** field and then click **OK**.

Note

To prevent excessive SQL blocking, we do not recommend that you set *OLEDBTimeout* to a value greater than 300.

Troubleshooting configuration issues

This section provides general guidelines for troubleshooting reporting problems that are caused by system configuration issues. For example, the Microsoft Dynamics CRM server may not be configured to locate the correct Microsoft SQL Server Reporting Services server, or the Report Manager data source may not be configured correctly.

Important

Although in most situations you can run reports by using Microsoft Dynamics CRM without Microsoft Dynamics CRM Connector for Microsoft SQL Server Reporting Services, we recommend that you install and run this component. Microsoft Dynamics CRM Connector for SQL Server Reporting Services Setup (**SetupSrsDataConnector.exe**) is located in the *Server\platform\SrsDataConnector* folder of the Microsoft Dynamics CRM installation media.

➤ To troubleshoot reporting configuration problems, follow these steps:

1. Verify that Microsoft SQL Server Reporting Services is running correctly. To do this, on the computer where Reporting Services is installed, open a Web browser and connect to the report server. For example, connect to `http://ServerName/ReportServer`. If you cannot connect to the ReportServer Web page, use Microsoft SQL Server Reporting Services troubleshooting practices to resolve the problem. For more information, see the Microsoft SQL Server Reporting Services documentation available in Related Links.
2. Verify that the report files are present in Reporting Services. If the report files are not present, follow these steps to run the PublishReports tool to publish the reports from the *OrganizationName_MSCRM* database into Reporting Services:
 - a. On the computer where Microsoft Dynamics CRM Server is running, open a command prompt and go to the following folder:
`Drive:\Program Files\Microsoft Dynamics CRM\Tools`
 - b. Enter `PublishReports OrganizationName`, where *OrganizationName* is the unique name of the Microsoft Dynamics CRM organization with the reports that you want to publish. For example, enter the following command:
`PublishReports Adventure_Works_Cycle`
For more information about how to run the PublishReports tool, see the Microsoft Dynamics CRM 4.0 Implementation Guide.
3. If you are *not* using the Microsoft Dynamics CRM Connector for SQL Server Reporting Services, follow these steps to verify the data source. If you are using Microsoft Dynamics CRM Connector for SQL Server Reporting Services, skip this step.
 - a. Run Reports Manager (`http://SSRS_Server/Reports/`).
 - b. Click the *OrganizationName_MSCRM* folder.
 - c. Click **Show Details**.
 - d. Click the **4.0** folder.
 - e. Click the **MSCRM_Datasource** in the list. You can make changes as necessary and then click **Apply**. The data source should be configured similar to the following:
 - **Name:** MSCRM_DataSource
 - **Hide in list view:** Checked

- **Enable this data source:** Checked
 - **Data Source Type:** Microsoft SQL Server
 - **Connection string:** Data Source=ServerName;Initial Catalog=OrganizationName_MSCRM;Integrated Security=SSPI
 - **Connect using:** Windows integrated security
4. If you *are* using the Microsoft Dynamics CRM Connector for SQL Server Reporting Services, follow these steps to verify the data source:
- a. Open Report Manager.
 - b. Select the *OrganizationName_MSCRM* folder.
 - c. Click **Show Details**.
 - d. Click the **4.0** folder.
 - e. Click the **Microsoft Dynamics CRM Data Source** and verify that it is configured as follows:
 - **Connection Type:** Microsoft CRM Data Extension
 - **Connection String:** MSCRM Data Connector Connection String
 - **Connect Using:** Credentials Supplied by user running the report

Note

If the Microsoft Dynamics CRM Connector for SQL Server Reporting Services is installed and is displayed in **Add or Remove Programs** but is not an option in Reporting Services, verify that this is a named instance of SQL Reporting Services. By default the Microsoft Dynamics CRM Connector for SQL Server Reporting Services is installed to the default instance. If you are using a named instance, see **KB article 947060** (<http://go.microsoft.com/fwlink/?LinkId=160473>).

5. Verify that the Microsoft Dynamics CRM server is configured to locate the correct Microsoft SQL Server Reporting Services server. To do this, follow these steps:
- a. On the computer where Microsoft Dynamics CRM Server is running, click **Start -> All Programs -> Microsoft Dynamics CRM -> Deployment Manager** to start the Deployment Manager.
 - b. Click **Organizations**.
 - c. Right-click the organization that you are troubleshooting, and then click **Properties**.
The Microsoft SQL Server Reporting Services server URL is displayed in the Microsoft SQL Server Reporting Services **URL** box.

For more information about how to use the Deployment Manager, see the Microsoft Dynamics CRM Deployment Manager Help.

6. Verify that individual users have permissions to run reports. By default, most Microsoft Dynamics CRM security roles are granted reporting permissions. You can view a user's security role in Microsoft Dynamics CRM. Or, you can verify Active Directory ReportingGroup security group membership. Every Microsoft Dynamics CRM user who will run reports in Microsoft Dynamics CRM must have this membership. To verify ReportingGroup group membership, follow these steps:
- a. On a domain controller, start the Active Directory Users and Computers snap-in.
 - b. Locate the organizational unit where the Active Directory security groups for Microsoft Dynamics CRM are located.
 - c. Right-click **ReportingGroup**, and then click **Properties**.
 - d. Click the **Members** tab to verify that each Microsoft Dynamics CRM user is in the list of members.
 - e. You can manually add users by clicking **Add**.

7. View the Reporting Services logs and the relevant Event Viewer logging information. For more information, see Error Logging.

If you still cannot resolve the issue contact **Microsoft Customer Support** (<http://go.microsoft.com/fwlink/?LinkID=99244>).

Troubleshooting reporting issues

This section provides guidelines for troubleshooting problems that you might encounter when you try to run, add, publish, or upload a report to Microsoft Dynamics CRM.

➤ **To troubleshoot problems with reporting functionality, follow these steps:**

1. Try running a default report and a custom report to determine whether the problem occurs for all reports.
 - ▶ If the problem occurs for default reports, see Default report issues.
 - ▶ If the problem occurs only for custom reports, see Custom report issues.

2. Follow these steps to try running a report without using Microsoft Dynamics CRM:

On the computer where Microsoft Dynamics CRM Connector for SQL Server Reporting Services is installed, open a Web browser and connect to the report server. For example, connect to <http://ServerName/ReportServer>

- a. Click the *OrganizationName_MSCRM* folder.
- b. Click the **4.0** folder.
- c. In the list of reports, click a report to run it.

Note

Because the Microsoft Dynamics CRM Connector for SQL Server Reporting Services is installed, you are prompted for a login name and password. Enter your SystemUserId as the login name and your OrganizationID as the password. You can find this information in the **SystemUserBase** table of the *OrganizationName_MSCRM* database.

Although many of the reports in the list can be run this way, not all reports can be run outside Microsoft Dynamics CRM. Alternatively, you can run Report Manager (http://SSRS_Server/Reports/) and use similar steps to verify that Microsoft SQL Server Reporting Services is running correctly.

3. To rule out the Microsoft Dynamics CRM Connector for SQL Server Reporting Services as the cause of the problem, follow these steps to test the report *without* using the Microsoft Dynamics CRM Connector for SQL Server Reporting Services:
 - a. In Microsoft Dynamics CRM, highlight the report and then click **Edit Report**.
 - b. Click **Actions** and then select **Publish Report for External Use**.
 - c. In Reporting Services, open the *OrganizationName_MSCRM* folder. The report is now available from this folder instead of just inside the **4.0** folder.
 - d. Try running the report from the *OrganizationName_MSCRM* folder. This does not use the Microsoft Dynamics CRM Connector for SQL Server Reporting Services. If the error does not occur in Microsoft Dynamics CRM Connector for SQL Server Reporting Services directly, it is probably specific to Microsoft Dynamics CRM.
4. View the Reporting Services logs and the relevant Event Viewer logging information. For more information, see Error Logging.

If you still cannot resolve the issue contact **Microsoft Customer Support** (<http://go.microsoft.com/fwlink/?LinkID=99244>).

Default report issues

This section provides information about how to resolve issues in which default reports reports are not working correctly.

Reports do not display data

Symptom: Reports do not display any data, or you receive one of the following errors:

```
The 'CRM_CalendarType' parameter is missing a value.
The 'CRM_Fullname' parameter is missing a value.
```

Potential Cause 1: The **DomainName** value in the **SystemUserBase** table of the *OrganizationName_MSCRM* database does not exactly match the user's actual domain user name.

A common cause of this issue is if a user is assigned new Active Directory domain logon credentials after their user record was created in Microsoft Dynamics CRM. Another potential cause is if there is more than one row in the **SystemUserBase** table with the same **DomainName** value. Some sites have encountered this problem after they have made unsupported changes directly to the **SystemUserBase** table.

Resolution: Update the **DomainName** value by changing it in the user's profile in Microsoft Dynamics CRM.

Potential Cause 2: The membership of the **PrivReportingGoup** in the **CRMReaderRole** of the *OrganizationName_MSCRM* database does not immediately taking effect in SQL Server. The Microsoft Dynamics CRM IS_MEMBER check does not identify that the Reporting Services Application Pool identity has the CRMReaderRole, even though it does have that membership.

Resolution: There is a known issue in which the IS_MEMBER Function returns incorrect results until you log off or create a new SQL Server connection. For more information, see **KB article 812774** (<http://go.microsoft.com/fwlink/?LinkId=160221>).

Potential Cause 3: Authentication is configured incorrectly. This issue may occur if Kerberos protocol or Trust for Delegation is not set up correctly.

Resolution: For information about how to configure authentication, see the Microsoft Dynamics CRM 4.0 Implementation Guide.

Potential Cause 4: The Microsoft Dynamics CRM Connector for SQL Server Reporting Services was uninstalled, but Microsoft Dynamics CRM is still trying to authenticate as the **CRMAppPool** identity instead of the user requesting the report.

Resolution: Restart IIS on the Microsoft Dynamics CRM server so that it will recognize that the Microsoft Dynamics CRM Connector for SQL Server Reporting Services is no longer installed.

Custom report issues

This section provides information about how to resolve issues when default reports work correctly but custom reports do not.

Some users encounter problems

Symptom: Some users receive an error or do not get any data in their custom reports.

Potential Cause: Microsoft Dynamics CRM users are only granted SQL SELECT permissions to each of the filtered views. If you create a report that tries to retrieve data from other tables or views, users may encounter errors running the report because they do not have access to select data from those objects.

Resolution: Make sure that the report is only retrieving data from the filtered views.

All users encounter problems

Symptom: All users receive an error such as the following when they run a custom report:

```
The report parameter 'CRM_URL' is read-only and cannot be modified
```

Potential Cause: The CRM_URL parameter settings were changed. You can view the parameter settings by opening the report in Visual Studio and clicking **Report Parameters** from the **Reports** menu.

Resolution: Make sure that the **Internal** and **Hidden** check boxes are not selected for any of the parameters that have the **CRM_** prefix.

Custom reports display less data than expected

Symptom: When you generate a custom report, it includes less than the expected amount of data.

Potential Cause 1: A default filter is enabled (for example, **Modified in the Last 30 Days**).

Resolution: To view the default filter, select a report in the **Reports** area and then click **Edit Default Filter** on the **More Actions** menu. When an entity is enabled for prefiltering, a default filter is enabled to display only records for that entity that have a modified date within the last 30 days. Clear the default filter and then check whether the problem still occurs.

Potential Cause 2: A default filter is enabled on an entity that is not available for Advanced Find.

Resolution: Do not enable prefiltering on an entity that is not available for Advanced Find because a default filter will be enabled (**Modified in the Last 30 Days**) but it will not appear in the user interface. For example: If you are creating a report that queries Opportunities and Opportunity Products, do not enable prefiltering on the Opportunity Products entity because it is not available for Advanced Find.

Custom reports display more data than expected

Symptom: When you generate a custom report, it includes more than the expected amount of data.

Potential Cause: You are using the **CRMAF_** prefiltering method, but the Explicit Filtering option is necessary to correctly enable prefiltering.

Resolution: Use the Explicit Filtering option. For information about how to use this option, see *Microsoft Dynamics CRM Pre-Filtering Tips* (<http://go.microsoft.com/fwlink/?LinkId=159756>).

Stored procedure issues

Symptom: You receive the following error message when you run a custom report that uses the **StoredProcedure** command type in the Microsoft Dynamics CRM Connector for SQL Server Reporting Services:

```
An error has occurred during report processing. Query execution failed for data set 'Test_MSCRM'. Could not find stored procedure''.
```

Potential Cause: This problem may occur because of a known issue that can occur when Microsoft Dynamics CRM tries to retrieve the data from stored procedures.

Resolution: For information about how to resolve this problem, see *KB article 956852* (<http://go.microsoft.com/fwlink/?LinkId=158864>).

Hebrew- and Arabic-language support for the report viewer

If you use Arabic- or Hebrew-language versions of Microsoft Dynamics CRM 4.0, you may experience Report Viewer problems when you use Internet Explorer 7.

For information and instructions about how to submit a request for an update that resolves language-interpretation problems, see *KB article 941450: Cumulative update package 4 for SQL Server 2005 Service Pack 2* (<http://go.microsoft.com/fwlink/?linkid=103657>).

You receive error message when you try to print a report

You may receive "An error occurred during printing" message when you try to print a report. This error can occur when the SQL Server Report Server virtual directory name has been changed from the default name of **ReportServer** or the Microsoft SQL Server Reporting Services Report Manager virtual directory name has been changed from the default name of **Reports**. To resolve this issue, use Reporting Services Configuration Manager to rename the virtual directory back the default name.

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Backing Up the Microsoft Dynamics CRM System

If you will recover from any scenario, you must back up all needed information and store a copy offsite. A backup plan should be created and rehearsed for all Microsoft Dynamics CRM components and services to make sure that, if a disk or other failure occurs, the maximum amount of data is recoverable.

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Backup requirements summary

Backup requirements vary according to the servers involved. The following table is a summary of what to back up for Microsoft Dynamics CRM.

Server	What to back up for Microsoft Dynamics CRM	Comments
Domain controller	Full System State	None.
Exchange Server	Backup not required by Microsoft Dynamics CRM.	Backup may be required for Exchange.
SQL Server	MSCRM_CONFIG <i>OrganizationName_MSCRM</i> master msdb <i>ReportServer</i> <i>ReportServertempdb</i>	Backup should be done by using Reporting Services. The <i>OrganizationName_MSCRM</i> and <i>ReportServer</i> databases should have full database backups and transaction log backups. For databases that are rarely updated, such as msdb and MSCRM_CONFIG , you may select only full database backup. Backup of the master and msdb databases are not required by Microsoft Dynamics CRM but should be part of an overall backup strategy.

Server	What to back up for Microsoft Dynamics CRM	Comments
Microsoft Dynamics CRM Server	web.config (Default location: c:\inetpub\wwwroot) Windows registry: HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\MSCRM	The web.config file is required only if the file has been changed from the default settings. The file location assumes the installation occurred at the Default Web site. Windows registry subkey.

Selecting a backup model

When you back up to tape, we recommend that you select a tape backup rotation model that guarantees data protection in case a tape malfunctions or loss. When backing up to disk, you can implement similar logic for rotating disk files. A popular tape rotation scheme is grandparent-parent-child:

- The tape used for backup on the last Friday of each month is called the *grandparent* tape. This tape is stored off-site.
- The tape used for backup every Friday (except the last Friday of the month) is called the *parent* tape. This tape is also stored off-site.
- The tapes used for backup on Monday, Tuesday, Wednesday, and Thursday are called *child* tapes. Frequently all child tapes are stored on-site except for the tape from the previous day.

The following backup options are available when you use the Microsoft Backup and Restore Wizard:

- **Normal.** Backs up all selected files and marks the files as backed up.
- **Copy.** Backs up all selected files, but does not mark the files as backed up.
- **Differential.** Backs up selected files, only if they have not been previously backed up, or changed since the last backup, but does not mark the files as backed up.
- **Incremental.** Backs up selected files, only if they have not been previously backed up, or changed, since the last backup, and marks the files as backed up.
- **Daily.** Backs up only files that have been changed, on that particular day, and marks them as backed up.

Because many small businesses typically do not have system administrators on staff, a regular backup, which is performed daily and according to the suggested grandparent-parent-child backup model, is recommended for small organizations. Larger organizations likely have an existing backup methodology that Microsoft Dynamics CRM will fit into.

Backing up Windows Server 2003

Windows Server 2003 has a comprehensive backup utility that lets you back up important company data to disk or tape media. The scheduling capability found in the Backup and Restore Wizard provides data backup for the server itself and workstations in the small business network. The data backed up includes security information, file and share permissions, and registry data. For data security, only a member of the Administrators or Backup Operators group can perform a backup. Individual files and directories on the server can be restored by using the Backup and Restore Wizard.

When you back up to tape, the Backup and Restore Wizard requires that the tape backup device be connected to a compatible SCSI or non-SCSI controller card. The controller card must be installed correctly and functional. Windows Server 2003 automates the installation of a controller card because the new hardware is detected at system startup and the correct drivers are automatically installed.

Backing up Active Directory

The Backup and Restore Wizard can back up System State data, which includes Active Directory, system startup files, the Component Services Class Registration database, the registry, and SysVol. Possible backup locations for System State data include floppy disks, hard disks, removable media, recordable compact discs, and tapes.

Although we recommend that you back up Active Directory, the only way to avoid data loss is to have multiple Active Directory domain controllers. Then, if a domain controller fails, the other domain controllers will have a complete copy of the directory. With a tape backup, you have data only as recent as your last backup.

Active Directory is a transacted database system that uses log files that support roll-back semantics to make sure that transactions are committed to the database. The files associated with Active Directory are as follows:

- **Ntds.dit.** The database.
- **Edbxxxxx.log.** Transaction logs.
- **Edb.chk.** Checkpoint file.
- **Res1.log** and **Res2.log.** Reserved log files.

Ntds.dit grows as the database fills up. However, the logs are of fixed size (10 MB). Any change made to the database is also appended to the current log file, and its disk image is always kept up to date.

Edb.log is the current log file. When a change is made to the database, it is written to the **Edb.log** file. When the **Edb.log** file is full of transactions, it is renamed to **Edbxxxxx.log**. (It starts at 00001 and continues to increment by using hexadecimal notation.) Because Active Directory uses circular logging, old log files are constantly deleted as soon as they have been written to the database. At any point in time, you will have the **Edb.log** file and maybe one or more **Edbxxxxx.log** files.

The **Edb.chk** file stores the database checkpoint, which identifies the point where the database engine has to replay the logs, generally at the time of recovery or initialization.

Res1.log and **Res2.log** are "placeholders," designed to reserve (in this case) the last 20 MB of disk space. This gives the log files sufficient room for a graceful shutdown if all other disk space is consumed.

For more information, see:

- ***Backing Up and Restoring Data for Windows Server 2003***
(<http://go.microsoft.com/fwlink/?linkid=91943>)
- ***Server Clusters: Storage Best Practices for Windows 2000 and Windows Server 2003***
(<http://go.microsoft.com/fwlink/?linkid=91944>)
- ***How to use the backup feature to back up and restore data in Windows Server 2003***
(<http://go.microsoft.com/fwlink/?linkid=91945>)

Backing up SQL Server, including Reporting Services

The Backup and Restore Wizard in Windows Server 2003 cannot back up SQL Server databases that are online, instead you must first stop the MSSQLSERVER service. A better solution that can be used while SQL Server runs is the built-in backup. Use SQL Server 2005 Management Studio to create a backup of the SQL Server databases. Then, you can run a backup job from the Backup and Restore Wizard to include database backups that Reporting Services created. You would schedule the backup routing in Reporting Services to run first, followed by a backup job run in the Backup and Restore Wizard. For more information about SQL Server backups, see *Backing up and Restoring Databases* in SQL Server Books Online.

Microsoft Dynamics CRM creates at least two Microsoft Dynamics CRM-specific databases on SQL Server. In addition, Microsoft Dynamics CRM requires the default master and msdb SQL Server databases for database services and the default report server SQL Server databases for Reporting Services. The databases that make up a Microsoft Dynamics CRM system on SQL Server are as follows:

- *OrganizationName_MSCRM*
- **MSCRM_CONFIG**

- *ReportServer*
- *ReportServertempdb*
- **master**
- **msdb**

Note

Your Microsoft Dynamics CRM deployment may include more than one *OrganizationName_MSCRM* database.

The SQL Server backup plan should address each of these databases to make sure that Microsoft Dynamics CRM could recover if one, or all, databases fail. If your organization already has SQL Server or another database application, your database administrator may have a database backup strategy. However, if this is the first database application in your organization, you can create and maintain scheduled backup jobs to perform the necessary backups by using the Maintenance Plan Wizard in SQL Server 2005 Management Studio. To start the Maintenance Plan Wizard, in Reporting Services, expand the server, expand the **Management** folder, right-click the **Maintenance Plans** folder, and then click **Maintenance Plan Wizard**.

Your backup plan for the Microsoft Dynamics CRM databases provides you a backup set that includes a full database backup and some number of transaction log backups, depending on the Microsoft Dynamics CRM installation and the frequency with which you determine whether you must have backups. For more information about backup and restore strategies, see SQL Server Books Online.

For databases that are updated infrequently, such as **msdb** and **MSCRM_CONFIG**, you might perform only full database backups. The *OrganizationName_MSCRM* and *ReportServer* databases should have both full database and transaction-log backups

Databases on which transaction log backups will be performed must have the **Full** recovery model database property set. You can set this property through SQL Server 2005 Management Studio. For more information about how to set database properties, see "How to Change the Configuration Settings for a Database" in SQL Server Books Online.

Schedule full database backups frequently enough to reduce the number of restores after a failure. For example, if one day's data loss is acceptable, you can back up the transaction log one time per day, and back up the database one time per week. If only one hour's maximum data loss is acceptable, you can back up the transaction log one time per hour. To reduce the number of restores, back up the database one time per day.

To create a database maintenance plan for scheduled backups, run the Maintenance Plan Wizard from SQL Server 2005 Management Studio. Select the option to back up the database as part of the maintenance plan for a full database backup. Select the option to back up the transaction log as part of the maintenance plan for a transaction log backup.

Your computer that is running SQL Server should also be designed with a level of fault-tolerance that is correct for a database server. This includes a RAID-5 disk array for your databases and a RAID-1 (mirror) for your transaction logs. With the correct level of hardware fault-tolerance, restoring from backup should be a very uncommon occurrence.

For information about the other options available in these maintenance plans, such as where to store the backups, see the Maintenance Plan Wizard topics in SQL Server Books Online.

For more information about how to back up and restore SQL Server databases, see:

- ***Backing Up and Restoring Databases in the SQL Server***
(<http://go.microsoft.com/fwlink/?linkid=91946>)
- ***Optimizing Backup and Restore Performance in SQL Server***
(<http://go.microsoft.com/fwlink/?linkid=91947>)

Backing up Exchange Server 2003 and Exchange Server 2007

The Backup and Restore Wizard in Windows Server 2003 can back up the Exchange Server 2003 or Exchange Server 2007 Information Store and directory services databases. Backing up the Exchange Information Store is an important part of creating a fault-tolerant messaging system. The backup and restore features in Exchange Server help you recover from various types of data loss with minimal downtime for your e-mail system.

Exchange Server uses the Backup and Restore Wizard to back up and restore the Exchange Information Store. The wizard helps you protect data from accidental loss or hardware and media failure by using a storage device to back up and restore data on any server in your organization locally, or over the network.

Improvements in Exchange Server make sure that backing up and restoring data is efficient and reliable. For example, you can restore one or more mailbox stores, or public folder stores, without shutting down the Information Store.

You can make sure that your organization is prepared to recover from data loss by performing the necessary planning and implementation. Developing a backup and restoration strategy consists of the following steps:

1. Understand Exchange Server database and storage group technology.
2. Design a backup plan.
3. Develop failure-recovery strategies.
4. Restore data.

The Microsoft Dynamics CRM E-mail Router can be installed to receive incoming e-mail messages from Exchange Servers. If the E-mail Router fails and is recovered, the E-mail Router component must be reinstalled so that it will continue to identify Microsoft Dynamics CRM e-mail messages as they enter the organization.

For more information about Exchange Server 2007 failure recovery, see *Disaster Recovery* (<http://go.microsoft.com/fwlink/?linkid=91948>).

For more information about Exchange Server 2003 failure recovery, see *Exchange 2003 Disaster Recovery Operations Guide* (<http://go.microsoft.com/fwlink/?linkid=91949>).

Backing up Microsoft Dynamics CRM Server

Backing up and restoring the Microsoft Dynamics CRM Server basically involves the following data:

- Microsoft Dynamics CRM Server database files (explained previously)
- Microsoft Dynamics CRM Server program files
- Microsoft Dynamics CRM Web site files

Customizations made to Microsoft Dynamics CRM By default, all Microsoft Dynamics CRM program files are located in the following folder:

C:\Program Files\Microsoft CRM\

By default, the Microsoft Dynamics CRM Web site files are located in the following folder:

C:\inetpub\wwwroot

The Export Customizations tool can be used to back up Microsoft Dynamics CRM customizations such as modified forms, views, and mappings. The Export Customizations tool is located in the Customizations area of the Settings area in the Microsoft Dynamics CRM application. It is a good practice to make a backup of your customizations before you try to make changes. For more information about how to export customizations, see the Microsoft Dynamics CRM Help.

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Failure Recovery

To understand the failure-recovery procedures, you must examine several different scenarios to learn how restoration occurs in each case. For each scenario in this guide, total server failure is assumed. The following four scenarios contain information that shows the steps to ensure successful recovery.

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Scenario A: SQL Server failure

If the computer that is running Microsoft SQL Server fails, you must restore the databases from backup, and then reassociate them with the Microsoft Dynamics CRM deployment.

Scenario-A recovery

➤ **To recover from this failure, follow these steps:**

1. Install Windows Server 2003 or Windows Server 2008, and make sure that the computer is in the same domain as the Microsoft Dynamics CRM Server. In addition, you should use the same database name and disk structure. If you change either of these, you must take additional steps to correctly restore the SQL Server databases.
2. Install SQL Server.
3. If you have a valid backup of the **master** database, restore that backup. For more information, see **Restoring the master Database** (<http://go.microsoft.com/fwlink/?linkid=100240>) in SQL Server Books Online.
4. Restore the **msdb** database. For more information, see **Restoring the model and msdb Databases** (<http://go.microsoft.com/fwlink/?linkid=100244>) in SQL Server Books Online.
5. Restore the **MSCRM_CONFIG** and *OrganizationName_MSCRM* databases. For more information about how to restore databases, see **Backing Up and Restoring Databases** (<http://go.microsoft.com/fwlink/?linkid=100249>).
6. If Microsoft SQL Server Reporting Services and the Microsoft Dynamics CRM 4.0 Connector for Microsoft SQL Server Reporting Services are also installed on the instance of SQL Server, restore the **ReportServer** and **ReportServertempDB** databases. For more information about how to restore databases, see **Backing Up and Restoring Databases** (<http://go.microsoft.com/fwlink/?linkid=100249>).
7. If you restored the **MSCRM_CONFIG** database, you must run Microsoft Dynamics CRM Server Setup and use the **Connect to existing databases** option on the Specify Deployment Options page. If you did not restore the **MSCRM_CONFIG** database and the database is functioning correctly, you use the **Import Organization** feature in Microsoft Dynamics CRM Deployment Manager to reassociate the organization database with the Microsoft Dynamics CRM system. For more information about how to import an organization, see the Deployment Manager Help.

This scenario is a worst-case situation, that is, total failure of the computer that is running SQL Server. In other circumstances, such as the failure of a disk, you may only have to restore a single database to recover the environment.

For more information about failure recovery for SQL Server, see *Disaster Recovery Planning (Database Engine)* (<http://go.microsoft.com/fwlink/?linkid=100252>).

Scenario B: Microsoft Dynamics CRM Server failure

Most of the Microsoft Dynamics CRM configuration information is stored on the computer that is running SQL Server. Therefore, the information can be recovered if all, or part, of Microsoft Dynamics CRM Server fails. Registry entries on the Microsoft Dynamics CRM Server are recovered when you run repair or reinstall processes for the Microsoft Dynamics CRM Server and Microsoft Dynamics CRM 4.0 Connector for Microsoft SQL Server Reporting Services.

Scenario-B recovery

- **If the computer that is running Microsoft Dynamics CRM Server fails, follow these steps:**
- 1. Install the operating system on another server and join the same domain as the computer that is running SQL Server.
- 2. Install Microsoft Dynamics CRM Server. During Setup, you must select **Connect to existing databases** when you are prompted. If Microsoft Dynamics CRM 4.0 Connector for Microsoft SQL Server Reporting Services was also installed on the computer that failed, install the Microsoft Dynamics CRM 4.0 Connector for Microsoft SQL Server Reporting Services after Microsoft Dynamics CRM Server is completed.
- 3. If ISV.config and web.config have been changed from their default settings, restore these files from backup.
- 4. Publish all customizations. To do this, in the Web application, click **Settings**, click **Customization**, click **Customize Entities**, on the Actions toolbar select **More Actions**, and then click **Publish all Customizations**.

Scenario C: Exchange Server failure

The process to restore a Microsoft Exchange Server computer that is used by Microsoft Dynamics CRM depends on the other uses of that instance of Exchange Server. Except for the forward mailbox, Microsoft Dynamics CRM does not directly use Exchange Server mailboxes.

Note

Installing the E-mail Router on a computer that is running Exchange Server is not required.

Scenario-C recovery

- **To restore Exchange Server in a Microsoft Dynamics CRM environment, follow these steps:**
- 1. Restore Exchange Server.
- 2. If the E-mail Router was installed on the computer that is running Exchange Server, reinstall the E-mail Router.
- 3. Restore the Microsoft.Crm.Tools.EmailAgent.xml file. By default, this file is located in the Drive:\Program Files\Microsoft CRM Email\Service folder. If this file is not available, you must reconfigure the profiles, settings, users, queue, and forward-mailbox information by running the E-mail Router Configuration Manager.

For more information about how to restore Exchange Server 2003, see:

- ***How to Back Up and Restore an Exchange Computer by Using the Windows Backup Program*** (<http://go.microsoft.com/fwlink/?linkid=100257>)

- **Disaster Recovery Includes Metabase Backup and Restore** (<http://go.microsoft.com/fwlink/?linkid=100259>)
- **How to Recover or to Restore a Single Mailbox in Exchange Server 2003** (<http://go.microsoft.com/fwlink/?linkid=100261>)
- **Microsoft Exchange Server 2003 technical library** (<http://go.microsoft.com/fwlink/?linkid=100262>)

For more information about how to restore Exchange Server 2007, see:

- **Single Mailbox Recovery** (<http://go.microsoft.com/fwlink/?linkid=100271>)
- **Microsoft Exchange Server 2007 technical library** (<http://go.microsoft.com/fwlink/?linkid=100266>)

Scenario D: Active Directory failure

In most environments, it is highly unlikely that Active Directory will fail on its own, because more than one Active Directory domain controller should be installed.

Scenario-D recovery

➤ **To recover from a failed domain controller, follow these steps:**

1. Reinstall the Windows Server 2003 or Windows Server 2008 operating system.
2. Perform a system state restore.

Make sure that you have a method for recovering from an Active Directory failure. Regardless of the size of your environment, you should consider having multiple domain controllers with regular backups of the system state. If your backups are not current, any data that belong to Microsoft Dynamics CRM objects in Active Directory will be orphaned in SQL Server and therefore will be unrecoverable. Any changes that are made in Microsoft Dynamics CRM, such as adding new Microsoft Dynamics CRM users or queues, requires that Active Directory is backed up immediately after the change.

One major problem can occur with Active Directory that stops Microsoft Dynamics CRM from functioning. If an administrator unintentionally deletes the organizational unit (OU) that corresponds to a Microsoft Dynamics CRM deployment, it becomes inoperable. Similarly, if any of the OU security groups that are created by Microsoft Dynamics CRM are deleted (such as PrivUserGroup, ReportingGroup, PrivReportingGroup, SQLAccessGroup, or UserGroup), Microsoft Dynamics CRM will no longer function correctly. In either of these events, an authoritative restore of Active Directory restores the deleted OU, and security groups, to their original state.

For more information about Active Directory failure recovery, see **Backing Up and Restoring an Active Directory server** (<http://go.microsoft.com/fwlink/?linkid=100256>).

Microsoft Dynamics CRM for Outlook failure recovery

Microsoft Dynamics CRM for Microsoft Office Outlook with Offline Access includes functionality that uses Microsoft SQL Server 2005 Express Edition. This enables Microsoft Dynamics CRM users to work offline with data synchronized to SQL Server when Microsoft Dynamics CRM for Outlook with Offline Access is brought online again.

In some cases, Microsoft Dynamics CRM users may want to back up the local SQL Server 2005 Express Edition database. This is especially useful when Microsoft Dynamics CRM users are offline for prolonged periods. The following table indicates different methods that can be used for backing up Microsoft Dynamics CRM for Outlook with Offline Access.

Backup Method	What to Back Up for Microsoft Dynamics CRM	Comments
Offline backup	<p>Contents of Microsoft Dynamics CRM data directory. Default location is:</p> <p><i>SystemDrive:\Documents and Settings\UserName\Application Data\Microsoft\MSCRM\Data</i></p> <p>On Windows Vista, the default location is:</p> <p><i>SystemDrive:\Users\UserName\AppData\Roaming\Microsoft\MSCRM\Data</i></p>	Before you start the backup, make sure that the SQL Server (CRM) service is stopped. Restart the service after the backup is complete.
Online backup using Microsoft tools	<p>MSCRM_MSDE.mdf</p> <p>MSCRM_MSDE_log.LDF</p>	Use the Osql.exe tool that is provided with Microsoft Office Server Extensions.
Online backup using non-Microsoft tools	<p>MSCRM_MSDE.mdf</p> <p>MSCRM_MSDE_log.LDF</p>	Look for tools that are compatible with SQL Server 2005 Express Edition.

For more information about the Osql.exe tool, see *How to manage the SQL Server Desktop Engine (MSDE 2000) or SQL Server 2005 Express Edition by using the osql utility* (<http://go.microsoft.com/fwlink/?linkid=100703>).

If there is a problem with Microsoft Dynamics CRM for Outlook with Offline Access before the user can reconnect to the server, the backup can be used to restore Microsoft Dynamics CRM functionality to the client. Outlook should be in offline mode before you restore the backup. When restored, you can then connect to the Microsoft Dynamics CRM Server (online mode). The data not already on the server will be transferred to the server from the client. Be careful when reconnecting to the server. If you restore from an outdated backup, the existing data on the server may have subsequently changed. However, neither SQL Server 2005 Express Edition nor SQL Server recognizes this fact. Therefore you run the risk of overwriting current data on the server by using older data from the offline client backup.

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Send Feedback (<http://go.microsoft.com/fwlink/?LinkId=167997>)

Resources, Downloads, and Information

This chapter contains a list of Microsoft Dynamics CRM documentation and other resources, such as team blogs and articles, that you can access to find information to help you manage, extend, and configure your environment.

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Support and training

- Download a printable version of **Microsoft Dynamics CRM Help from the Microsoft Dynamics CRM User's Guide** (<http://go.microsoft.com/fwlink/?linkid=123355>).
- Search for Help and Support specifically related to **Microsoft Dynamics CRM in the Dynamics CRM 4.0 Solution Center** (<http://go.microsoft.com/fwlink/?linkid=123094>).
- Search for news group discussions that may contain answers to your questions by typing **CRM** in the **Search For** box, and selecting your preferred language. To search news group discussions, see **Microsoft Discussion Groups** (<http://go.microsoft.com/fwlink/?linkid=123089>).
- Take free online courses or register for subscription courses at **Microsoft Dynamics CRM Training** (<http://go.microsoft.com/fwlink/?linkid=123148>).
- Learn how you can become certified as a Microsoft Business Management Solutions Specialist for Microsoft Dynamics CRM at **Microsoft Certified Business Management Solutions Specialist for Microsoft Dynamics** (<http://go.microsoft.com/fwlink/?linkid=124837>).

Deploying, configuring, and operating

- Download the latest **Update Rollup** (<http://go.microsoft.com/fwlink/?LinkId=146266>) package.
- Download the **Microsoft Dynamics CRM 4.0 Management Pack for Microsoft Operations Manager 2005** (<http://go.microsoft.com/fwlink/?LinkId=123346>).
- Download a white paper with benchmark results and recommendations for improving performance at **Improving Microsoft Dynamics CRM Performance and Securing Data with Microsoft SQL Server 2008** (<http://go.microsoft.com/fwlink/?linkid=143092>).
- Read performance and scalability white papers for Microsoft Dynamics CRM at **Performance and Scalability: User Scalability for the Enterprise** (<http://go.microsoft.com/fwlink/?linkid=123323>).
- Read a Dynamics CRM Blog post that describes how to **Use Workflow to Configure Business Data Auditing in Microsoft Dynamics CRM 4.0** (<http://go.microsoft.com/fwlink/?LinkId=151514>).
- Download the **Microsoft Dynamics CRM 4.0 Language Pack** (<http://go.microsoft.com/fwlink/?LinkId=123344>).

- Read a white paper that recommends hardware for large enterprise deployments at **Microsoft Dynamics CRM 4.0 Suggested Hardware for Deployments of up to 500 Concurrent Users** (<http://go.microsoft.com/fwlink/?linkid=124352>).

Extending

- Learn how to create plug-ins, custom entities, and import data by using the Microsoft Dynamics CRM SDK. For more information about extending Microsoft Dynamics CRM, see the **Microsoft Dynamics CRM Developer Center** (<http://go.microsoft.com/fwlink/?linkid=122783>).
- Download the **Microsoft Dynamics CRM 4.0 Deployment Software Development Kit** (<http://go.microsoft.com/fwlink/?linkid=123311>).
- Download foundation building information to help you build your custom Microsoft Dynamics CRM solution from the **Developer Ramp up Kit for Microsoft Dynamics CRM 4** (<http://go.microsoft.com/fwlink/?linkid=122782>) article.
- Get code samples created by Microsoft developers and support engineers to help with your customization in the **MSDN Code Gallery** (<http://go.microsoft.com/fwlink/?linkid=123110>) and type CRM in the Search box to get code that you can use.
- Get code samples created by customers and others from the **Codeplex Open Source Community** (<http://go.microsoft.com/fwlink/?linkid=123122>) and type *Dynamics CRM* in the **Search Projects** box to get list of available code.
- Download a white paper about developing applications with Microsoft Dynamics CRM from **Developing ISV Applications using Microsoft Dynamics CRM 4.0** (<http://go.microsoft.com/fwlink/?linkid=124358>).

Community, blogs, and other resources

- Visit the **Microsoft Dynamics CRM Resource Center** (<http://go.microsoft.com/fwlink/?LinkId=123345>) for articles and links to other resources.
- Visit the **Microsoft Dynamics CRM Team Blog** (<http://go.microsoft.com/fwlink/?linkid=123338>) often for articles relevant to managing your implementation.
- Read a different kind of CRM blog at **A CRM Riff** (<http://go.microsoft.com/fwlink/?linkid=123349>) for updates on what is going on with the MVP and CRM world.
- Consult with members of the CRM community at **Microsoft Dynamics CRM Community** (<http://go.microsoft.com/fwlink/?linkid=123356>).
- See how you can contact an expert for advice, information, and tips by visiting the **Microsoft MVP directory** (<http://go.microsoft.com/fwlink/?linkid=123342>).
- Review the Microsoft Dynamics CRM 4.0 application optimizer benefits of the **Intelligent Application Gateway SP2** (<http://go.microsoft.com/fwlink/?LinkId=147161>).

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