

# Microsoft Dynamics CRM Planning Guide

4.5.0

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## Overview

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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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## Planning Microsoft Dynamics CRM

Planning Microsoft Dynamics CRM, like any enterprise-wide software, is a significant task for an organization. This guide is written for the team of people responsible for planning Microsoft Dynamics CRM, and provides information and tools that are needed to design a successful implementation. In smaller organizations, several roles may be filled by one person. In larger organizations, each role may be divided among several people. These roles include the following:

- **Business managers:** Responsible for determining how your business will use Microsoft Dynamics CRM. This includes mapping your processes to Microsoft Dynamics CRM, deciding on default values, and identifying any required customizations.
- **Customization technical staff:** Responsible for implementing the planned customizations.
- **Network technical staff:** Responsible for determining how Microsoft Dynamics CRM will be installed on the network.
- **Project manager:** Responsible for managing an enterprise-wide implementation project.

Organizations that implement Microsoft Dynamics CRM software may use the services of an independent software vendor (ISV) or value-added reseller, a consultant, or other organization that is partnered with Microsoft and will help you with implementing and maintaining your Microsoft Dynamics CRM installation. Because of this assumption, there may be references in this guide to these "partners" who are expected to provide services to you.

## Microsoft Dynamics CRM editions and licensing

Microsoft Dynamics CRM offers several editions that cover implementations for small, to mid-level, to even very large organizations.

### Editions

- **Microsoft Dynamics CRM 4.0 Workgroup.** This edition is limited to five, or fewer, users. It can be installed on Microsoft Windows Small Business Server 2003 R2 Premium Edition, any of the supported Windows Server 2003 editions, or Windows Server 2008. This version is limited to a single organization and a single computer that is running Microsoft Dynamics CRM Server.
- **Microsoft Dynamics CRM 4.0 Professional.** This edition has no user limit and is limited to a single organization. However, Microsoft Dynamics CRM 4.0 Professional can be installed on more than one computer in the same deployment.
- **Microsoft Dynamics CRM 4.0 Enterprise.** There is no user limit for this edition. Additional features include support for multiple organizations, multiple server instances, and role-based service installation. Role-based services let you increase performance by installing component services on different computers.

### Licensing

A Microsoft Dynamics CRM 4.0 deployment operates by using a single license key. Unlike earlier versions, Microsoft Dynamics CRM 4.0 no longer requires additional license keys to be added when changes are made, such as adding a client access license (CAL). The single license key contains the Microsoft Dynamics CRM version, server license, and the CALs.

You can view and upgrade a license in Deployment Manager.

You can view and modify client access license types for each user in the Users area of the Settings area in the Microsoft Dynamics CRM Web client.

For more information about Microsoft Dynamics licensing, see *How to buy Microsoft Dynamics* (<http://go.microsoft.com/fwlink/?linkid=111388>).

## What's new in Microsoft Dynamics CRM 4.0?

Microsoft Dynamics CRM 4.0 includes several new features that offer flexibility, scalability, and ease of use.

### Multi-tenancy

Earlier versions of Microsoft Dynamics CRM Server were a single-organization solution. Microsoft Dynamics CRM 4.0 lets you host multiple organizations in a single deployment. This feature is a great benefit for hosted solutions or businesses that require a separation of data inside the organization. Microsoft Dynamics CRM 4.0 now implements two kinds of databases:

- A single configuration database that stores metadata and location information for all organizations
- One or more organization databases

### Server role groups

Microsoft Dynamics CRM 4.0 Enterprise introduces two new server role groups. This increases flexibility and scalability. You can opt to have a computer dedicated to one server role group or to both.

The server role groups selected and installed during Setup are as follows:

- **Application Server Role Group.** This group provides the Microsoft Dynamics CRM 4.0 Web user interface and services.
- **Platform Server Role Group.** This group provides the asynchronous services, such as the Workflow and Bulk E-mail services.

## Microsoft Dynamics CRM Connector for SQL Server Reporting Services

The Microsoft Dynamics CRM 4.0 Connector for Microsoft SQL Server Reporting Services is a service that connects the Microsoft Dynamics CRM Server to the Microsoft SQL Report Server. The Microsoft Dynamics CRM 4.0 Connector for SQL Server Reporting Services eliminates the Kerberos double-hop authentication that was required for Microsoft Dynamics CRM 3.0 deployments when Microsoft SQL Server Reporting Services was installed on a separate computer.

The Microsoft Dynamics CRM 4.0 Connector for SQL Server Reporting Services is installed as a separate component.

## Microsoft Dynamics CRM 4.0 Language Pack

A Microsoft Dynamics CRM 4.0 Language Pack lets users display the Microsoft Dynamics CRM 4.0 user interface in a different language than the base language. Also, users can display Help in a language that differs from both the base language and the language displayed in the Microsoft Dynamics CRM 4.0 user interface.

## Multicurrency

Multiple currencies are now supported for transaction-based records.

## Resource Center

The Resource Center is a place in the application where users, administrators, and implementers will find information to help them use and configure Microsoft Dynamics CRM 4.0. The Resource Center presents rich content and links to valuable information. Much of the content in the Resource Center is created by experts in the Microsoft Dynamics CRM community.

## What's new in data management?

New data management features are tools to load data into most entities in Microsoft Dynamics CRM 4.0, and ways to make sure of data quality by detecting and merging duplicate records. These features can help you as follows:

- Comma separated values (CSV) formatted data derived from different sources can be migrated into Microsoft Dynamics CRM 4.0 by using the Data Migration Manager. This wizard is installed on a client computer.
- If the source data requires custom entity, attribute, or list-value creation, the Data Migration Manager can customize Microsoft Dynamics CRM 4.0 as part of the migration process.
- Data Migration Manager lets you reuse data mappings from previous migrations. You can then import similar data without the need to remap the data every time.
- Data Migration Manager preserves the relationship between records when you migrate data.
- A new import auto-mapping feature simplifies mapping source data. If the records use attribute display labels as column headings in a CSV file, the data is automatically mapped to the correct attribute.
- Data can be imported into most entities by using the new Imports area in the application. For each import, the user can view the status of each record in the import.
- Users can receive an e-mail notification when an import is complete.

- Duplicates can be detected automatically in various scenarios. For example:
  - ▶ When you import records.
  - ▶ When you create or update a record.
  - ▶ When Microsoft Dynamics CRM for Microsoft Office Outlook goes from offline to online, or because of a workflow action.
- System administrators can run recurring duplicate detection on selected entities as an asynchronous job.
- Users can run duplicate detection from any view on selected records, or all records, in the entity.
- System administrators can define the rules for duplicate detection for each entity.
- Access control to data management features is based on privileges for the new entities: data imports, import maps, and duplicate-detection rules, and on new global duplicate-detection settings, which control where duplicate detection is enabled.

## What's new in customization?

Several of the new customization features include the following features:

- **Set Form Assistant options in form properties.** You can set options for how the Form Assistant displays for each entity.
- **Enable duplicate detection.** In each entity you can decide whether to enable duplicate detection.
- **Select Input Method Editor (IME) mode for each attribute.** IME mode can be set for attributes that accept text or numbers. IME is used for East Asian languages, such as Chinese, Japanese, and Korean, accommodating the thousands of possible characters in these languages to be entered by using a keyboard.
- **Download Web Services Description Language (WSDL) files.** Use links available in the Customization area to download WSDL files for programming.
- **Set Application Mode.** In System Settings, you can select whether Microsoft Dynamics CRM will run in application mode, which hides the address, tool, and menu bars on the browser.
- **Set ISV integration.** In System Settings, you can select whether custom buttons or menus appear.

## What's new in workflow?

The new workflow features include the following options:

- In earlier versions of Microsoft Dynamics CRM, creating workflows was limited to users who were granted permission to access the server that was running Microsoft Dynamics CRM. Workflow creation is now available to all users of the Microsoft Dynamics CRM Web client. In addition, administrative users can now monitor individual workflow jobs in the new **System Jobs** area of the Web client.
- System jobs are processes that run in the background, such as workflow jobs and bulk import. When a system job is started, the person starting the job can select who should be notified by e-mail when the job is finished.
- The new Web-based workflow system is fully integrated into the Microsoft Dynamics CRM 4.0 Web client and replaces the server-based Workflow Manager tool. Based on Windows Workflow Foundation, the new Microsoft Dynamics CRM 4.0 workflow system also supports a broad range of activities created outside the Web client by using development tools such as Microsoft Visual Studio.

## What's new in Microsoft Dynamics CRM 4.0 E-mail Router?

The Microsoft Dynamics CRM 4.0 E-mail Router includes the following new features:

- Support for multiple Microsoft Dynamics CRM Server computers.
- Separately maintained incoming and outgoing e-mail server configurations.

- Support for POP3 incoming e-mail servers.
- The E-mail Router can now be installed on a Windows Server that is not running Microsoft Exchange.

## What's new in Microsoft Dynamics CRM for Outlook?

Microsoft Dynamics CRM for Microsoft Office Outlook includes the following new features:

- The E-mail Router is no longer required to send and receive Microsoft Dynamics CRM 4.0 e-mail messages.
- Setup and configuration are now separate programs.
- There is an updated look that uses the 2007 Microsoft Office system user interface components, such as the Ribbon, which replaces the traditional menu and toolbar.
- A Diagnostics Wizard can be used to troubleshoot issues with Microsoft Dynamics CRM for Outlook.
- The Mail Merge feature has been added to the Web application. You can now specify the details of the Microsoft Dynamics CRM activity created by Mail Merge.
- There are several technical changes to synchronization to reduce the time that is required to go offline.
- Activity tracking and synchronization improvements are included. Microsoft Office Outlook tasks can now be mapped to Microsoft Dynamics CRM letters, faxes, tasks, and telephone calls.

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## Business Management with Microsoft Dynamics CRM

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This chapter describes the role of the business manager in the implementation process and the planning tools available for that process. Business managers play a key role during all the phases of a successful implementation of Microsoft Dynamics CRM: planning, development, deployment, and post-deployment.

Each organization has a set of business processes unique to that organization. To run smoothly, organizations should standardize processes across the organization, and encourage all users to follow these standards. By mapping your business processes to Microsoft Dynamics CRM, you will determine areas where you either have to modify your processes to match Microsoft Dynamics CRM, or configure and customize Microsoft Dynamics CRM to match your business processes.

Microsoft Dynamics CRM is a solution for automating internal business processes by creating workflow rules that describe routine and repetitive tasks involving daily business operations. These processes can be designed to make sure that appropriate and timely information is sent to the correct people. They also help participants keep track of the steps they have to take to complete their work. You must decide which processes to automate.

When Microsoft Dynamics CRM is deployed in your organization, your role is to make sure employees are trained correctly, and that everyone understands their responsibilities for data management. In addition, because configuration and customization can be done through the user interface in Microsoft Dynamics CRM, business managers in many organizations are responsible for adding and removing users, changing security roles to meet employees' data access needs, changing team and queue memberships, and even customizing the user interface.

After your employees start using Microsoft Dynamics CRM, you must have a process for deciding when changing business needs require changes to Microsoft Dynamics CRM.

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## Tools, training, and documentation to help you plan

This section describes the tools, training, and documentation that are available to help you perform Microsoft Dynamics CRM Business Management.

### Tools for customization planning

The Microsoft Dynamics CRM 4.0 Form Reporter generates a Microsoft Word 2007 document detailing the tabs, sections and fields of all entity forms found in the exported definition of entity customizations. Field descriptions include details about how the field is configured, including all the available values for picklist fields. If you have multiple languages installed, you can select which language labels that you want the document to use. The output of the Form Reporter is typically used to document the state of form customizations at a point in time. This 'snapshot' can be used for training, planning, or project documentation. For example, you might capture the initial state of the forms before any customizations are applied and then compare that with the results after customizations are applied.

For more information, download the **Form Reporter** (<http://go.microsoft.com/fwlink/?LinkID=167172>) tool and documentation.

## Tools for business management

The following table describes tools that you can modify and use for determining how your business processes map to Microsoft Dynamics CRM. These tools are available for download at **Microsoft Dynamics CRM Planning Tools** (<http://go.microsoft.com/fwlink/?LinkID=148432>).

Tool	Description
Business Process Questions (.doc)	A document that contains questions to ask yourself to help think through how your business processes map to Microsoft Dynamics CRM.
Sample Sales Process Flowchart (.vsd)	A sample flowchart of sales processes.
Sample Service Process Flowchart (.vsd)	A sample flowchart of service processes.
Configuration Data Collection (.xls)	A Microsoft Office Excel worksheet to collect all the business data required to configure Microsoft Dynamics CRM.
Customization Requirements Summary (.xls)	An Excel worksheet for tracking customization changes.
Workflow Planning (.xls)	An Excel worksheet for summarizing needed workflow rules.

- At a minimum, use the Configuration Data Collection spreadsheet to collect the data required for configuration of Microsoft Dynamics CRM.
- If you want to customize any fields, forms, views, or reports, use the Customization Requirements Summary.
- If you want to create workflow rules to automate business processes, use the sample process diagrams to create your own process diagram, and then use the Workflow spreadsheet to document the triggers and actions required.

## Microsoft Dynamics Sure Step methodology

Microsoft Dynamics Sure Step provides a complete methodology. This includes project management discipline and field-tested best practices, plus user-friendly tools that can help you deploy, migrate, configure, and upgrade Microsoft Dynamics products.

Microsoft Dynamics Sure Step is available to Microsoft partners to help reduce risk and guide you through the tasks associated with deployment and configuration of Microsoft Dynamics solutions. For more information about Microsoft Dynamics Sure Step, including training, methodology, and tool downloads, visit the **PartnerSource Web site** (<http://go.microsoft.com/fwlink/?linkid=88066>).

## Business management training

Business management training consists of the business needs, process analysis, and the project management skills that are required to perform a successful implementation of a CRM system. For more information, see "Identifying training requirements" in this guide.

## Help

The Microsoft Dynamics CRM Help has conceptual information about how Microsoft Dynamics CRM can support the sales, service, and marketing functions in your organization. The Help also has information about how to configure and customize Microsoft Dynamics CRM.

## Planning a Microsoft Dynamics CRM implementation

This section describes how to plan a Microsoft Dynamics CRM implementation.

### Planning tasks for business managers

During planning, business managers should:

1. Plan how your business structure maps to Microsoft Dynamics CRM. Take an organization chart for your area, and decide which security roles each user needs. Define the teams and queues and who should be on each.
2. Decide whether you want to automate any business processes. Microsoft Dynamics CRM is a solution for automating internal business processes by creating workflow rules that describe routine and repetitive tasks involving daily business operations.

To use the workflow feature, you build rules. For each rule, you define the trigger and the resulting action. Rules can be triggered when a record changes state (open to closed, active to inactive), when a record is created, when a record is assigned, or manually.

The following scenarios are examples of how to automate a business process by using workflow.

- ▶ Assign different kinds of cases to specific service representatives.

A workflow rule could determine the category of the case (shipping problem, product problem, or billing problem), and assign it to the appropriate queue. If a case stays in a queue for two days without a resolution, the rule could automatically assign the case to the manager. If after four days, the case is still not resolved, it might be routed to an escalation queue.

- ▶ Communicate with other databases at your organization.

A workflow rule could notify your billing system whenever an invoice is created in Microsoft Dynamics CRM.

- ▶ Notify customers automatically when an order ships.

When the invoice status changes to Fully Shipped, the customer can be automatically notified of the shipment through e-mail, by using a predefined e-mail template.

- ▶ Automatically e-mail a message to new leads.

After a lead is created, depending on the stage that the lead is identified at, different activities can be scheduled. For a stage 1 lead, an introductory e-mail letter can be automatically sent and an activity scheduled with a due date of one month for follow-up. For a stage 2 lead, an activity can be scheduled for a specific salesperson to call the lead and mail a product catalog. For a stage 3 or 4 lead, an activity is scheduled for a specific salesperson to fax promotions and collateral to the customer, with another task activity to follow up in a week.

- ▶ Coordinate handling of dissatisfied customers between sales and support.

After a case is resolved with customer satisfaction set to "dissatisfied," an activity can be automatically scheduled for a salesperson to call the customer. If the satisfaction is set to "very dissatisfied," an activity can be automatically scheduled for a manager to call the customer.

3. Collect configuration data about your products and competitors.

For more information products and competitor data, see the Microsoft Dynamics CRM Help topics.

4. Decide whether you have to customize Microsoft Dynamics CRM to meet your business needs.

For more information about customization, see the Microsoft Dynamics CRM Help topics.

5. Look at the default reports provided with Microsoft Dynamics CRM and determine whether additional reports are needed.

Microsoft Dynamics CRM includes standard reports that you can use to answer common business questions. You can modify these reports or create your own if you have additional reporting needs.

As you design your Microsoft Dynamics CRM system, the managers should review the reports for their areas to make sure that the reports will meet their needs. The Help includes a topic for the default reports in each area of Microsoft Dynamics CRM, with a link to a detailed topic that describes the business questions the report is designed to answer.

## Development tasks for business managers

During development, business managers should:

1. Closely monitor configuration and customization changes to make sure that they meet business needs.
2. Be available to answer detailed questions as they occur.
3. Get trained on the management tasks that you can do, such as adding and removing users, and entering configuration changes.

## Deployment tasks for business managers

During deployment, business managers should:

1. Make sure training needs of employees are met.
2. Listen to the initial experiences of Microsoft Dynamics CRM users and determine additional configuration and customization requirements.

## Post-deployment tasks for business managers

During post-deployment, also known as the operation phase in Microsoft Dynamics Sure Step, business managers should:

1. Learn about the experiences of Microsoft Dynamics CRM users and determine additional configuration and customization requirements.
2. Use the data in Microsoft Dynamics CRM reports to strengthen your organization's sales, marketing, and service functions.

## Managing a Microsoft Dynamics CRM implementation project

As you plan your implementation, the first step is to determine the project scope. Because the tasks depend on the complexity of your implementation project, this section of the documentation divides implementations into two categories:

- **Rapid implementation.** Expect to spend 30 work days if you are doing a rapid implementation that requires minimal customization, no migration of source data or integration with other applications, and training up to ten users.
- **Measured or Full implementation.** Expect to spend 60 work days for a medium-to-large implementation, with much of the additional time spent in planning. A large business with multiple locations will experience different challenges than a smaller business with one location and only a few users.

Experience has shown that those organizations that use the methods discussed in this section achieve their implementations successfully and in a timely manner. Beyond these two categories, implementations that have extensive data migration and customizations may take more than 60 days.

## Tools for project management

The following tables describe tools that you can modify and use for managing your implementation project. For project plans, two versions are provided: one for rapid implementations, and one for measured or full implementations. These tools are available for download at **Microsoft Dynamics CRM Planning Tools** (<http://go.microsoft.com/fwlink/?LinkId=148432>).

More information about project management can also be found in the Microsoft Dynamics Sure Step Methodology.

### Project planning tools

Tool	Description
Project Plan Rapid (.xls)	An Excel worksheet for creating the implementation schedule for rapid implementations.
Project Plan (.xls)	An Excel worksheet for creating the implementation schedule for measured implementations.
Assessing Implementation Capacity (.doc)	A document that has questions to help you determine whether your organization has sufficient resources for implementing Microsoft Dynamics CRM, or whether a consultant is required.
Estimating Implementation Time (.doc)	A document of guidelines for determining how long an implementation is likely to take.
Project Scope (.doc)	A document that has questions to determine the scope of the project, based on rough estimates of the customization required and the state of your current IT infrastructure.
Rapid Implementation Guidelines (.doc)	A document that contains guidelines for when a rapid implementation is appropriate.
Test Case Template (.doc)	A sample form to use for people testing Microsoft Dynamics CRM before deployment.
Go Live Checklist (.doc)	A checklist for tasks that must be finished before you deploy Microsoft Dynamics CRM.
Server Tracking Form (.doc)	A form for documenting server and network configuration.
Responsibility Checklist (.doc)	A checklist of all areas that need owners, to guarantee that Microsoft Dynamics CRM continues to work well after the implementation.
Project Review Survey (.doc)	An agenda for a project review meeting to be held when Microsoft Dynamics CRM is deployed.

### Project status tools

Tool	Description
Project Status (.doc)	A sample project status form that you can use to report on status.
Weekly Summary (.xls)	A sample weekly log sheet.

## Change management tools

Tool	Description
Scope Change Log (.doc)	A sample scope change form that you can use to track scope changes.
Scope Change Request Form (.doc)	A sample scope change request form that business managers can use to request scope changes.

## Implementation overview

This section expands on the tasks that are required for a successful Microsoft Dynamics CRM implementation.

### Planning

Planning is the critical phase that starts with understanding how your organization plans to use Microsoft Dynamics CRM. This includes the following:

- Developing commitment from key managers.
- Defining the implementation project team.
- Deciding whether to hire consultants or to use your own staff.
- Defining the scope of the project.
- Writing an implementation plan.
- Making sure key managers in your organization understand and support the plan.

For a detailed task list, see *Planning Tasks* in this guide.

### Development

There are three tasks in this group:

1. Installing and configuring the hardware and software
2. Using the data that is collected in planning to configure Microsoft Dynamics CRM
3. Using the data that is collected in planning to customize Microsoft Dynamics CRM, if it is necessary

Depending on the options selected for your organization, this may also include the following:

- Migrating data from source applications
- Setting up a test or pilot environment
- Integrating Microsoft Dynamics CRM with an Enterprise Resource Planning (ERP) system, such as Microsoft Dynamics GP

For a detailed task list, see "Development tasks" in this guide.

### Deployment

This starts with user training, followed by deployment to the production environment. For a detailed task list, see "Deployment tasks" in this guide.

### Post-deployment: operating and maintaining

As your business evolves, post-deployment maintenance makes sure that Microsoft Dynamics CRM continues to support your business practices.

For a detailed task list, see "Post-Deployment Tasks" in this guide.

## Planning tasks

This section describes the planning tasks that are essential to a successful Microsoft Dynamics CRM implementation. A good implementation plan includes definitions of the general goals you want to achieve, the system requirements that you have to meet, and the timeframe to complete the plan. Business requirements and processes are also mapped to the application.

### Defining the scope of the project

The project scope section should include the following:

- **Identifying the business goals.** Determine what the business goals are and calculate the return-on-investment (ROI) and the total cost of ownership (TCO). Define your vision for why you are using Microsoft Dynamics CRM.
- **Identifying the risk factors.** Make contingency plans to reduce risks and dependencies. These plans might include additional training, internal public relations, and support. Risk factors might include delivery of new hardware and software, dependencies on important personnel or outside vendors, deployment timing, and users' resistance to change.
- **Identifying the implementation team.** Designate a person who will be responsible for tracking costs, schedules, performance, and risk factors. Determine executive sponsors, project managers, and project team members. This task includes deciding if an outside consultant is needed. Define an escalation process and determine who is responsible for making final decisions.
- **Planning usage.** Define who will be expected to use Microsoft Dynamics CRM, what tasks will be done by using Microsoft Dynamics CRM, and what old systems will be discontinued (if any).
- **Identifying equipment and software needs.** Document the state of the current technical infrastructure, and the hardware, software, and network changes that are required for Microsoft Dynamics CRM. Include information about technical risks and constraints.
- **Determining the budget and schedule.** Include estimates. If you plan a phased deployment by location, functionality, or both, set target dates and budgets for each part.
- **Planning for change management.** Determine how to request, review, and approve changes during the implementation process.

### Identifying the implementation team

The responsibility for a successful Microsoft Dynamics CRM implementation should be shared by several people and organizations. Some of these include your software vendor, consultant, or other value-added partner, and the people in your own organization who are needed to participate in your implementation team. These people will implement Microsoft Dynamics CRM for your business.

The responsibilities of an implementation team include the following:

- Develop an installation strategy.
- Determine who will perform the various tasks.
- Create an implementation schedule.
- Define a progress-reporting plan.

Members of the implementation team should include people with organizational and planning skills, a comprehensive knowledge of the day-to-day business operations of your organization, and knowledge of Microsoft Dynamics CRM. The team should also include the system administrators whose technical experience should include Microsoft Windows security, client/server networks, database administration, and Web technology.

The number of people involved in implementing Microsoft Dynamics CRM depends on the size of your organization. To avoid task and time-responsibility conflicts, make sure that members of the implementation team are either full-time resources or can schedule implementation-related tasks as a priority, especially if deployment is to a large number of users. Team members and their managers must understand and accept the commitment required.

Each member of the team must have a well-defined role and set of responsibilities. These roles include the following:

- **Business owners and managers**

Business owners and managers provide the leadership necessary for success, and guide decisions about the way Microsoft Dynamics CRM is deployed. Although they do not have to understand the details of installation and configuration, they must be aware of the system configuration and maintenance requirements.

- **Executive sponsor**

In small organizations, this role may be the same as the business owner or managers. In larger organizations, this person provides the link between the project manager and upper management. This person must understand the details of the installation and configuration, understand the schedule, and work with outside vendors.

- **Implementation project manager**

The project manager is the person who directs the work and makes things happen. This person must understand the details of the installation and configuration, understand the schedule, know the other team members and their contributions, and work with outside vendors.

- **System administrator/database administrator**

The system administrator sets up and configures hardware, installs operating systems and supporting software, and installs the Microsoft Dynamics CRM software. In smaller organizations, a Microsoft Partner may handle these tasks.

The database administrator maintains and backs up business data. Depending on the size of your organization, the system administrator or another person (such as someone in operations) might be assigned the database administrator role.

- **Operations personnel**

Your operations personnel are responsible for maintaining the system on a day-to-day basis. This ensures good system health and failure recovery. In smaller organizations, these roles may be shared with the system or database administrator.

## Creating a schedule

Creating a schedule is one of the important jobs of the implementation team. A schedule should list the steps that you must follow to implement and deploy Microsoft Dynamics CRM, the time requirements for each step, and who is responsible to make sure that the tasks are completed. It may also determine any risks and dependencies. For example, the following list identifies the main tasks associated with deploying (deployment tasks) Microsoft Dynamics CRM:

1. Hardware and software
  - a. Determine requirements and specifications
  - b. Obtain, install, and configure
2. Install Microsoft Dynamics CRM
3. Customize the Microsoft Dynamics CRM application
  - a. Analyze the business process
  - b. Determine customization requirements and specifications
  - c. Approve and freeze customization specifications
  - d. Develop customization
  - e. Review customization
  - f. Test the system
  - g. Get pilot group to use product

- h. Finish customization
- i. Process audit
4. Training
  - a. Schedule administrator training
  - b. Schedule user training
5. Deployment
  - a. Deploy Microsoft Dynamics CRM to the organization
  - b. Perform the import of legacy data (if importing)
  - c. Validate legacy data after installation
6. Post-deployment follow-up
  - a. Hold a post-implementation audit or review (after about 3 months)

### **Analyzing your business processes**

You must have a thorough understanding of how your sales, service, service scheduling, marketing processes, and existing data collection systems work. In addition, you have to have a vision of how you want these processes to work. The best way to analyze your business processes is to use members of your organization who know your business processes. Usually, the experts are the department heads or the people they appoint to do the tasks as part of their job. A successful implementation ultimately depends on its usability and the willingness of users to use it. Therefore, it is very important to engage these experts early in the process.

The tasks to analyze your business processes are as follows:

- Learn what processes are in place. For example, how are accounts created and managed, how are orders recorded, how is inventory tracked, and how are customers billed?
- Learn what users think about the current system. For example, is it effective, is it time-consuming, and are there processes that can be streamlined or dropped completely?
- Learn what expectations users have of Microsoft Dynamics CRM. For example, are they excited about how to use an automated CRM system, or do they have reservations and questions?
- Examine the current processes and find out whether they stand up to the scrutiny of smart business practices or whether they continue to exist because no one wants change.
- Learn the features of the Microsoft Dynamics CRM product and how they relate to current organization processes and procedures.
- Determine what reports are necessary and part of your current business process.
- Determine the components and features that will be implemented and deployed first and when additional components and features will be added later.
- Incorporate the processes into Microsoft Dynamics CRM. Determine whether the processes can be re-created as they currently are or whether changes must be made to incorporate the application and use its new functionality.

### **Defining tasks for development, deployment, and post-deployment**

Tasks for development, deployment, and post-deployment include the following:

- Define a testing or pilot plan.
- Define deployment support requirements.
- Deliver an implementation scope document.
- Prepare a gap analysis document.
- Prepare an initial UI design guide.

- Prepare and deliver report design changes.
- If data migration is required, prepare an initial data migration plan.
- If integration is required, prepare an initial integration plan.

## Identifying optional components

Determine which optional components will be included in your Microsoft Dynamics CRM system:

- Microsoft Dynamics CRM for Microsoft Office Outlook
- Microsoft Dynamics CRM E-mail Router
- Microsoft Dynamics CRM Data Migration Manager

## Identifying hardware and software requirements

An inventory of your current hardware and software will help determine what you already have that can be used as part of your Microsoft Dynamics CRM implementation, and what must be purchased before implementation can continue.

If you have to purchase additional hardware or software, verify availability and delivery dates. These dates, and the time that is required for installation, are external dependencies that affect the schedule. For more information about the hardware and software requirements of the Microsoft Dynamics CRM components, see "System Requirements and Required Components" in this document.

## Determining data import requirements

The primary method to put existing data into Microsoft Dynamics CRM is by using the Data Migration Manager. The Data Migration Manager includes tools for importing and migrating data for most entities.

## Determining customization needs

For each record type, you must determine:

- Field-level changes, such as labels to change, fields to add, and drop-down list values to modify.
- Form-level changes, such as incorporating new fields, removing unused fields, and reordering fields to match business processes.
- View-level changes, such as incorporating new fields, removing unused fields, and reordering fields to match business processes.
- Reports that have to change to incorporate field-level changes.
- New reports that are needed.

## Identifying training requirements

One of the keys to a successful implementation is to provide training and support for all users to make sure that everyone can use the system correctly. All users will need training on the general use of Microsoft Dynamics CRM, and on your business processes. An effective method is to schedule hands-on training immediately before organization-wide deployment. In this manner, users will be able to put what they have learned into practice.

The training plan should include training for several groups of people:

- **Business managers**

Training should include how to manage users and their access privileges, make changes to department structure, generate reports, review and analyze data, and use any other system features that are relevant to their job responsibilities.

Sales managers should learn how to track sales quotas.

Service manager should learn how to track resources, manage queues, and manage the service subject list.

Marketing manager training should include how to manage lists and campaigns.

- **Sales representatives**

Training should include how to create and manage accounts and activities by using the Web and Microsoft Dynamics CRM for Outlook, import lists, manage direct e-mail, create e-mail templates, and generate reports.

- **Service representatives**

Training should include how to manage cases and knowledge base articles, and how to use queues.

- **Service schedulers**

Training should include how to define resources.

- **Marketing staff**

Training should include how to define resources.

- **Other users (such as the accounting department staff)**

Training should include how to manage contracts, process commissions, view and access data, and other job responsibilities.

- **Information technology staff**

Training should include how to configure Microsoft Dynamics CRM, perform backups and other data maintenance tasks, make changes to organizational structure and business policies, customize drop-down lists, provide support to users, create templates, and create workflow rules.

In addition to knowing the Microsoft Dynamics CRM product, the technology staff may need experience with the following:

- ▶ The Windows operating system
- ▶ Active Directory
- ▶ Internet Information Services (IIS)
- ▶ Microsoft SQL Server 2005. This includes Reporting Services.
- ▶ Microsoft Exchange Server 2003, Microsoft Exchange Server 2007, or POP3-compliant e-mail server (Required if implementing Microsoft Dynamics CRM E-mail Router)
- ▶ Microsoft Office Outlook (Required if implementing Microsoft Dynamics CRM for Outlook)

## Training resources

Microsoft Dynamics CRM includes several tools to help users train while on the job:

- Help has step-by-step instructions on how to do specific tasks.
- The Microsoft Dynamics CRM Resource Center is an integrated part of the application and provides rich content and links to valuable resources. Much of the content in the Resource Center is created by experts in the Microsoft Dynamics CRM community.
- Tool Tips are embedded in the interface and have brief descriptions of the various components on the screen. These tips help users learn about the product interface.

## Defining ongoing support and maintenance needs

Although users may be given training and job aids to help them become accustomed to a new product, if they do not use the product, the organization will not realize a return on its investment. A successful implementation plan should include change-management efforts and post-deployment follow-up to determine whether your work force is using Microsoft Dynamics CRM.

Development tasks can include any of the following activities, depending on your implementation plan.

- Communicate progress, and coordinate timing of deployment.
- Provide required configuration information, such as your organizational structure, and the security role that you want each employee to have.
- Answer questions from the project manager and the installer. Questions will occur as they start configuring and customizing, regardless of how thorough your planning was.
- Establish a small group of employees to use Microsoft Dynamics CRM first, who can help determine areas that need changes and then help other users. This group should perform the common activities that their jobs require, such as creating accounts, reviewing data, and sending e-mail. Notice their actions to find out what difficulties may exist and address these issues during training.
- Install Microsoft Dynamics CRM. If it makes sense for your organization, implement a pilot or test installation.
- Import or migrate your existing customer data.
- Configure Microsoft Dynamics CRM.
- If it is necessary, integrate Microsoft Dynamics CRM into existing systems, such as Microsoft Dynamics GP or Microsoft Dynamics AX
- Microsoft Dynamics AX.
- Test the installation.
- Customize the application and the reporting features.
- Test the customizations.

## Deployment tasks

To deploy Microsoft Dynamics CRM, the following tasks must be performed.

- Verify that all users are trained, and coordinate the actual date that everyone will start to use Microsoft Dynamics CRM.
- Turn off old systems, and start using Microsoft Dynamics CRM. You may have to make old systems available in a read-only mode.
- Verify that you understand what is expected from you for using and managing Microsoft Dynamics CRM, and that your employees know what is expected of them.
- Train users.
- Watch users as they start to use Microsoft Dynamics CRM so that you can determine and correct process issues.
- Use reports to track adoption and usage so that you can remove obstacles for your employees.
- Verify that all users are set up in Microsoft Dynamics CRM, assigned the needed security roles, and that they have access to Microsoft Dynamics CRM.

Because the Microsoft Dynamics CRM user interface is browser-based, no special software installations are needed on networked desktop computers. However, for client computers that will use Microsoft Dynamics CRM by using Microsoft Office Outlook, installation of Microsoft Dynamics CRM for Outlook is required.

- Watch users as they start to use Microsoft Dynamics CRM to see whether additional customizations are necessary.

## Post-deployment tasks

Deploying a CRM system may involve significant change in process and daily tasks for members of the organization. A successful deployment guarantees that issues and areas of resistance related to this change are identified and addressed through training, coaching, and other change-management practices. As your company uses Microsoft Dynamics CRM, you will likely determine additional areas that need changes in order to match your changing business processes.

Department managers must be available to set an example and support the implementation, both by talking about it and by using it. Executive managers must demonstrate an ongoing commitment to show that using Microsoft Dynamics CRM is a permanent change.

## Tips for a successful implementation

The following list identifies some operational changes associated with transitioning to Microsoft Dynamics CRM:

- **The organization must develop processes and tools that will add long-term customer value.** The organization must be an active participant in marketing activities to generate customers and create brand loyalty.
- **The initial deployment period will affect productivity.** Learning a new way to do daily tasks is time-consuming and might be frustrating. This could result in an initial reduction in productivity.
- **Customer relationships are owned by the organization, not the individual.** Customers become organization assets, not clients of the salespeople they work with. This means that, if a salesperson leaves, his or her customer relationships remain with the organization instead of leaving with the salesperson.
- **Users must see Microsoft Dynamics CRM as a tool to help them.** If users perceive Microsoft Dynamics CRM as a tool for organizational efficiency analysis and resist using it, the data the system generates will be inaccurate.

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## System Requirements and Required Components

Microsoft Dynamics CRM requires several software applications and components that work together to create an effective system. Before you install Microsoft Dynamics CRM, use this chapter for guidance to verify that system requirements are met and the necessary software components are available.

### Important

Unless specified otherwise, Microsoft Dynamics CRM supports the latest version and service pack (SP) for all required components, such as Windows Server, SQL Server, Internet Explorer, and Exchange Server.

For the most up-to-date information about system requirements and required components, see the **Microsoft Dynamics CRM 4.0 Server Readme** (<http://go.microsoft.com/fwlink/?linkid=78157>).

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## Microsoft Dynamics CRM Server hardware requirements

The following table lists the minimum and recommended hardware requirements for Microsoft Dynamics CRM Server.

Component	Minimum	Recommended
Processor	Dual 1.8-GHz processor such as an Intel Xeon P4	Multi-core or multiple 1.8-GHz CPU or higher
Memory	1-GB RAM	2-GB RAM or more
Hard disk	400 MB of available hard disk space	400 MB of available hard disk space

## Microsoft Dynamics CRM Server software requirements

This section lists the software and application requirements for Microsoft Dynamics CRM Server.

### Windows Server operating system

Microsoft Dynamics CRM can be installed only on Windows Server 2003 or Windows Server 2008 computers. The specific versions and editions of Windows Server that are supported for installing and running Microsoft Dynamics CRM Server are listed in the following sections.

#### **Important**

Microsoft Windows 2000 Server editions are not supported for installing and running Microsoft Dynamics CRM.

### Supported Windows Server 2003 editions

The following editions of the Windows Server 2003 operating system are supported for installing and running Microsoft Dynamics CRM Server and components:

- Windows Server 2003, Web Edition SP2
- Windows Server 2003, Standard Edition SP2, or Windows Server 2003 R2, Standard Edition SP2
- Windows Server 2003, Enterprise Edition SP2, or Windows Server 2003 R2, Enterprise Edition SP2
- Windows Server 2003, Datacenter Edition SP2, or Windows Server 2003 R2, Datacenter Edition SP2
- Windows Server 2003, Small Business Edition R2, Standard
- Windows Server 2003, Small Business Edition R2, Premium
- Windows Server 2003 64x Standard Edition SP2, or Windows Server 2003 R2 64x Standard Edition SP2
- Windows Server 2003 64x Enterprise Edition SP2, or Windows Server 2003 R2 64x Enterprise Edition SP2
- Windows Server 2003 64x Datacenter Edition SP2, or Windows Server 2003 R2 64x Datacenter Edition SP2

#### **Important**

Windows Server 2003 for Itanium-Based Systems is not supported for installing and running Microsoft Dynamics CRM 4.0.

### Supported Windows Server 2008 editions

The following editions of the Windows Server 2008 operating system are supported for installing and running Microsoft Dynamics CRM 4.0:

- Windows Server 2008 Standard (32-bit and x64 versions)
- Windows Server 2008 Enterprise (32-bit and x64 versions)
- Windows Server 2008 Datacenter (32-bit and x64 versions)
- Windows Web Server 2008 (32-bit and x64 versions)
- Windows Small Business Server 2008 Standard edition
- Windows Small Business Server 2008 Premium edition (32-bit and x64 versions)
- Windows Essential Business Server 2008 Standard and Premium editions

However, before you install Microsoft Dynamics CRM, we recommend that you read **KB article 950100: Support for Microsoft Dynamics CRM 4.0 on Windows Server 2008-based computers** (<http://go.microsoft.com/fwlink/?linkid=114209>). This article includes a list of issues that may occur when you install or run Microsoft Dynamics CRM on Windows Server 2008.

**Important**

- If you installed Windows Server 2008 by using the Server Core installation option, you cannot install and run Microsoft Dynamics CRM 4.0.
- You cannot install and run Microsoft Dynamics CRM 4.0 on Windows Server 2003 for Itanium-Based Systems.
- The Windows Small Business Server 2008 Standard edition does not include SQL Server. You must have a supported version of SQL Server available to install Microsoft Dynamics CRM 4.0 on Windows Small Business Server 2008 Standard edition.

**Server virtualization**

Microsoft Dynamics CRM servers can be deployed in a virtualized environment by using Microsoft Virtual Server 2005 R2 or Windows Server 2008 with Hyper-V. You must understand the limitations and best practices of server virtualization before you try to virtualize your installation of Microsoft Dynamics CRM.

For information about how to deploy Microsoft Dynamics CRM in an environment that is running Virtual Server 2005, see **KB article 946600: Microsoft Dynamics CRM 4.0 on a computer that is running Microsoft Windows Server 2008** (<http://go.microsoft.com/fwlink/?linkid=132451>).

For information about how to deploy Microsoft Dynamics CRM in an environment that is running Windows Server 2008 with Hyper-V, see **KB article 957054: Support for Microsoft Dynamics CRM 4.0 on a computer that is running Windows Server 2008 Hyper-V** (<http://go.microsoft.com/fwlink/?linkid=127728>).

**Active Directory modes**

The computer on which Microsoft Dynamics CRM 4.0 is running must be a domain member in a domain that is running in one of the following Active Directory modes:

- Windows 2000 Mixed
- Windows 2000 Native
- Windows Server 2003 Native
- Windows Server 2003 Interim
- All Windows Server 2008 Modes

**Important**

- The computer on which Microsoft Dynamics CRM is running cannot function as an Active Directory domain controller, unless it is running Microsoft Windows Small Business Server 2003 Premium Edition R2.
- When you install Microsoft Dynamics CRM in a Windows 2000 Mixed-mode domain, you cannot add users to Microsoft Dynamics CRM that are located in a different domain.
- Installing Microsoft Dynamics CRM Server in a domain that is running in Active Directory Application Mode (ADAM) is not supported.

All Active Directory forest modes are supported. For more about Active Directory domain and forest modes, see **How to raise domain and forest functional levels in Windows Server 2003** (<http://go.microsoft.com/fwlink/?linkid=52205>).

**Internet Information Services (IIS)**

You must install and run either Internet Information Services (IIS) 6.0 or IIS 7.0 in IIS Compatibility Mode before you install Microsoft Dynamics CRM Server.

### Note

When you install the Microsoft Dynamics CRM Server Web application on a computer that is running IIS, Microsoft Dynamics CRM Server Setup will enable HTTP compression by default. If you use a different method to compress HTTP communications, you may want to disable this feature. To do this, start IIS Manager, right-click the **Web Sites** folder, click **Properties**, click the **Service** tab, and then clear the **Compress application files** and **Compress static files** check boxes.

## SQL Server editions

Any one of the following Microsoft SQL Server editions is required and must be installed, running, and available for Microsoft Dynamics CRM:

- Microsoft SQL Server 2005, Standard Edition with SP2 or a later version
- Microsoft SQL Server 2005, Enterprise Edition with SP2 or a later version
- Microsoft SQL Server 2005, Developer Edition with SP2 or a later version
- Microsoft SQL Server 2005, Workgroup Edition with SP2 or a later version
- Microsoft SQL Server 2005, Standard Edition, x64 with SP2 or a later version
- Microsoft SQL Server 2005, Enterprise Edition, x64 with SP2 or a later version
- Microsoft SQL Server 2005, Developer Edition, x64 with SP2 or a later version
- Microsoft SQL Server 2008, Standard Edition
- Microsoft SQL Server 2008, Enterprise Edition
- Microsoft SQL Server 2008, Standard Edition, x64
- Microsoft SQL Server 2008, Enterprise Edition, x64

### Important

- Deployments that use SQL Server 2008 may require one or more updates to be installed on the computer that is running SQL Server 2008 to work with Microsoft Dynamics CRM. If they are needed, these updates will be installed when you click **Update installation files** during Microsoft Dynamics CRM Server Setup and Microsoft Dynamics CRM Connector for SQL Server Reporting Services Setup. For more information about these updates see **KB article 957053: Support for running Microsoft Dynamics CRM 4.0 together with Microsoft SQL Server 2008** (<http://go.microsoft.com/fwlink/?linkid=125888>).
- Microsoft SQL Server 2008, Workgroup Web, Compact, or Express editions are not supported for running Microsoft Dynamics CRM.
- SQL Server 2000 editions are not supported for Microsoft Dynamics CRM.
- SQL Server that is running on Windows 2000 Server is not supported for Microsoft Dynamics CRM.
- Commercially reasonable support will be provided when you run Microsoft Dynamics CRM with 64-bit SQL Server versions for Itanium (IA-64). Commercially reasonable support is defined as all reasonable support efforts by Microsoft Customer Service and Support that do not require Microsoft Dynamics CRM code fixes.
- Microsoft Dynamics CRM Server now supports a named instance of SQL Server when you add or create organization databases.
- You must install the cumulative update package 2 for SQL Server 2005 on the SQL Server when you use SQL Server 2005, Workgroup Edition.
- SQL Server 2005, Workgroup Edition is supported only if Microsoft Dynamics CRM is installed on Small Business Server.
- SQL Server 2005, Workgroup Edition is not supported for running the Microsoft Dynamics CRM Connector for Microsoft SQL Server Reporting Services when Microsoft Dynamics CRM

Server is installed as an Internet-facing deployment. This is because SQL Server 2005 Workgroup Edition does not support custom data extensions. Therefore, some features such as report scheduling will not work.

## SQL Server Reporting Services

The following SQL Server Reporting Services editions are required and must be installed, running, and available for Microsoft Dynamics CRM Server:

- Microsoft SQL Server 2005, Standard Edition with SP2 or a later version
- Microsoft SQL Server 2005, Enterprise Edition with SP2 or a later version
- Microsoft SQL Server 2005, Standard Edition, x64 with SP2 or a later version
- Microsoft SQL Server 2005, Enterprise Edition, x64 with SP2 or a later version
- Microsoft SQL Server 2008, Standard Edition
- Microsoft SQL Server 2008, Enterprise Edition
- Microsoft SQL Server 2008, Standard Edition, x64
- Microsoft SQL Server 2008, Enterprise Edition, x64

### Important

- SQL Server 2000 Reporting Services editions are not supported with this version of Microsoft Dynamics CRM Server.
- When a user who belongs to multiple organizations within a Microsoft Dynamics CRM 4.0 deployment executes a report, the report executes correctly *only* if it is executed against that user's default organization. To avoid problems that can arise from this, make sure that you use the same deployment of SQL Server Reporting Services for each organization in your Microsoft Dynamics CRM deployment.
- SQL Server 2005, Workgroup Edition is not supported for running the Microsoft Dynamics CRM Connector for Microsoft SQL Server Reporting Services when Microsoft Dynamics CRM Server is installed as an Internet-facing deployment (IFD). This is because SQL Server 2005 Workgroup Edition does not support custom data extensions. Therefore, some features such as report scheduling will not work.
- Microsoft Dynamics CRM Connector for Microsoft SQL Server Reporting Services cannot be used to view a report that uses a Windows SharePoint Web Part or that is called from a custom .ASPX page. For these implementations, you must publish the report for external use. In addition, you must configure trust for delegation to enable double-hop Kerberos authentication. To publish a report for external use, follow these steps.
  1. In the Navigation Pane, click **Workplace**, and then under **My Work**, click **Reports**.
  2. Select the report, and on the Actions toolbar, click **Edit Report**.
  3. On the Actions menu, click **Publish Report For External Use**.

## Software component prerequisites

The following SQL Server components are not installed during Setup and *must* be installed and running on the computer that is running SQL Server before you install Microsoft Dynamics CRM Server:

- SQL word breakers

This is only required for some Microsoft Dynamics CRM language editions. For more information about word breaker versions for languages supported by SQL Server see **Word Breakers and Stemmers** (<http://go.microsoft.com/fwlink/?linkid=127754>).

- SQL Server Agent service
- SQL Server Full Text Indexing

The following components are *not* installed during Setup. These components must be installed and running on the computer where Microsoft Dynamics CRM Server will be installed:

- Services
  - ▶ Indexing Service

By default, this service is installed during Windows Server 2003 Setup. However, the service is not set to start automatically. To set this service to start automatically, click **Start**, click **Run**, type **services.msc**, and then click **OK**. In the **Services** list, right-click **Indexing Service**, and then click **Properties**. On the **General** tab in the **Startup type** list, select **Automatic**, and then under **Service status** click **Start**, and then click **OK**.
  - ▶ IIS Admin service
  - ▶ World Wide Web Publishing service
- Windows Data Access Components (MDAC) 2.81 (This is the default version of MDAC with Windows Server 2003.)
- Microsoft ASP.NET (Must be registered. Does not have to be running.)

#### **Important**

Before you run Setup, you must remove (uninstall) any prereleased versions of Microsoft .NET Framework 3.0. To do this, open **Add or Remove Programs**, click the prerelease version, click **Change/Remove**, and then follow the instructions that are on the screen.

## **Verify prerequisites**

Before you install Microsoft Dynamics CRM Server, review the server installations and note the following:

- Microsoft SQL Server can be, but is not required to be, installed on the same computer as Microsoft Dynamics CRM Server.
- If Microsoft Dynamics CRM Server and SQL Server are installed on different computers, both computers must be in the same Active Directory domain.
- SQL Server can be installed by using either Windows authentication or mixed-mode authentication. (Windows authentication is recommended for increased security and Microsoft Dynamics CRM will use only Windows authentication).
- The service account that SQL Server uses to log on to the network must be either a domain user account (recommended) or the local system account. Installation of Microsoft Dynamics CRM will fail if the SQL Server service account is the local administrator.
- The SQL Server service must be started and can be configured to automatically start when the computer is started.
- The SQL Server Reporting Services service must be started and configured to automatically start when the computer is started.
- SQL Server Agent must be started. This service can be configured to automatically start when the computer is started.
- The Microsoft Search service (Full-Text Service) must be running. This is required for Full-server role, Application-server role, or Help-server role installations.
- Although it is optional, we recommend that you accept the SQL Server default settings for Collation Designator, Sort Order, and SQL Collation. Microsoft Dynamics CRM supports both case-sensitive and case-insensitive sort orders.
- Microsoft Dynamics CRM Server Setup requires at least the Named Pipes network library to authenticate by using SQL Server. By default, both Named Pipes and TCP/IP network libraries are enabled when you install SQL Server.

## Microsoft Dynamics CRM Connector for SQL Server Reporting Services

The Microsoft Dynamics CRM Connector for SQL Server Reporting Services is a service that connects the Microsoft Dynamics CRM computer to the SQL Server Reporting Services computer. This eliminates the Kerberos double-hop authentication that was required for Microsoft Dynamics CRM 3.0 deployments when SQL Server Reporting Services was installed on a separate computer.

### Important

- Microsoft SQL Server 2005, Workgroup Edition is not supported for running the Microsoft Dynamics CRM Connector for SQL Server Reporting Services when Microsoft Dynamics CRM is used in an Internet-facing deployment. This is because SQL Server 2005 Workgroup Edition does not support custom data extensions. Therefore, some features such as report scheduling will not work.
- Commercially reasonable support will be provided when you run Microsoft Dynamics CRM Connector for SQL Server Reporting Services with 64-bit SQL Server versions for Itanium (IA-64). Commercially reasonable support is defined as all reasonable support efforts by Microsoft Customer Service and Support that do not require Microsoft Dynamics CRM code fixes.

## Microsoft Dynamics CRM Connector for SQL Server Reporting Services requirements

The Microsoft Dynamics CRM Connector for SQL Server Reporting Services has the following general requirements:

- You must complete Microsoft Dynamics CRM Server Setup *before* you run Microsoft Dynamics CRM Connector for SQL Server Reporting Services Setup.
- You can install and run only one instance of Microsoft Dynamics CRM Connector for SQL Server Reporting Services on a computer that has SQL Server 2005 Reporting Services or SQL Server 2008 Reporting Services installed.
- Separate deployments of Microsoft Dynamics CRM cannot share one SQL Server Reporting Services server. However, a single deployment of Microsoft Dynamics CRM that has multiple Organizations can use the same SQL Server Reporting Services server.

## Microsoft Dynamics CRM E-mail Router software requirements

This section lists the software and application software requirements for Microsoft Dynamics CRM E-mail Router.

Microsoft Dynamics CRM E-mail Router Setup consists of two main components: the E-mail Router and the Rule Deployment Manager. The E-mail Router component installs the E-mail Router service and E-mail Router Configuration Manager. The E-mail Router Configuration Manager is used to configure the E-mail Router. The Rule Deployment Manager component deploys the rules that enables received e-mail messages to be tracked.

You can install the E-mail Router and Rule Deployment Manager on any computer that is running one of the following operating systems and has network access to both Microsoft Dynamics CRM and the e-mail server:

- Windows 7
- Windows Server 2008
- Windows Server 2003 (all editions)
- Windows Vista
- Windows XP Professional SP2
- Windows XP Tablet PC Edition SP2

- Windows XP Professional x64 Edition

**Important**

- Windows XP Media Center Edition is not supported for installing and running Microsoft Dynamics CRM E-mail Router or E-mail Router Configuration Manager.
- Running Microsoft Dynamics CRM E-mail Router and E-mail Router Configuration Manager (32-bit) is not supported on a Windows Server 64-bit operating system, in Windows- (32-bit) - On-Windows (64-bit) (WOW) mode.

## Exchange Server

Microsoft Exchange Server is only required if you want to use the E-mail Router to connect to an Exchange Server e-mail messaging system. To do this, the E-mail Router can be installed on any of the previously-mentioned Windows or Windows Server operating systems that have a connection to the Exchange Server. The E-mail Router supports the following versions of Exchange Server:

- Exchange 2003 Standard Edition SP2
- Exchange 2003 Enterprise Edition SP2
- Exchange Server 2007 Standard Edition
- Exchange Server 2007 Enterprise Edition

**Important**

Microsoft Exchange 2000 Server editions are not supported with these versions of Microsoft Dynamics CRM E-mail Router and Rule Deployment Manager.

If missing, E-mail Router Setup installs the .NET Framework 3.0 on the computer where you install the E-mail Router.

The Rule Deployment Wizard component must be installed on a computer that is running any of the previously-mentioned Windows or Windows Server operating systems and has the Microsoft Exchange Server Messaging API (MAPI) client runtime libraries installed.

See **MAPI client runtime libraries** (<http://go.microsoft.com/fwlink/?linkid=78805>) on the Microsoft Download Center.

## POP3/SMTP

In addition to Exchange Server, POP3 e-mail systems are supported for incoming e-mail message routing.

**Important**

- When you use the **Forward Mailbox** option on the **User** form, the POP3 e-mail server must provide support where an e-mail message can be sent as an attachment to another e-mail message.
- SMTP is the only transport protocol that is supported for outgoing e-mail message routing.

If you install the Microsoft Dynamics CRM E-mail Router to connect to a POP3 and SMTP server, the following standards are required:

- POP3: RFC 1939
- SMTP: RFC 2821 and 2822

## Microsoft Dynamics CRM for Outlook hardware requirements

The following table lists the minimum and recommended hardware requirements for Microsoft Dynamics CRM for Microsoft Office Outlook.

Component	Minimum	Recommended
Processor	Intel Pentium III 750-MHz CPU, or comparable	Dual-core 1.8-GHz CPU or higher
Memory	1-GB RAM	2-GB RAM or more
Hard disk	Up to 500 MB of available hard disk space	Up to 500 MB of available hard disk space

## Microsoft Dynamics CRM for Outlook software requirements

Microsoft Dynamics CRM for Outlook works the way that you do by providing a seamless combination of Microsoft Dynamics CRM features in the familiar Outlook environment. This section lists software and software requirements for Microsoft Dynamics CRM for Outlook and Microsoft Dynamics CRM for Outlook with Offline Access.

### Important

Unless specified otherwise, Microsoft Dynamics CRM for Outlook supports the latest version and service pack (SP) for all supported operating systems.

One of the following operating systems is required:

- Windows 7
- Windows Vista
- Windows XP Professional Edition
- Windows XP Tablet PC Edition
- Windows XP Professional x64

### Important

- Windows XP Media Center Edition is not supported for installing and running Microsoft Dynamics CRM for Outlook.
- Because Microsoft Dynamics CRM for Outlook and Microsoft Dynamics CRM for Outlook with Offline Access are 32-bit applications, they must run in the Windows on Windows (WOW) system when installed on a computer that is running a 64-bit version of Windows.

## Microsoft Dynamics CRM for Outlook software component prerequisites

The following components must be installed and running on the computer before you run the Microsoft Dynamics CRM for Outlook Setup program (**SetupClient.exe**):

- Internet Explorer 6 with SP1, Internet Explorer 7, or Internet Explorer 8
- Microsoft Office 2003 SP3 or 2007 Microsoft Office system SP2
- Indexing Service (recommended for Microsoft Dynamics CRM for Outlook with Offline Access)

### Important

Microsoft Office XP and Microsoft Outlook 2000 versions are not supported for installing and running Microsoft Dynamics CRM for Outlook.

Before you run the Configuration Wizard to configure Microsoft Dynamics CRM for Outlook, a Microsoft Office Outlook profile must exist for the user. Therefore, Outlook must be run at least one time to create the user's Outlook profile.

If the following components are missing, they will be installed by Microsoft Dynamics CRM for Outlook Setup:

- .NET Framework 3.0
- Windows Installer (MSI) 4.5

- SQL Server 2005 Express Edition SP3 (Microsoft Dynamics CRM for Outlook with Offline Access only)
- Microsoft Report Viewer Redistributable 2005
- Microsoft Visual C++ Redistributable 8.0

## Earlier versions of Microsoft Dynamics CRM for Outlook and Microsoft Dynamics CRM Server compatibility

Earlier versions of the Microsoft Dynamics CRM client for Microsoft Office Outlook, such as Microsoft Dynamics CRM 3.0 client for Outlook or Microsoft CRM 1.2 client for Outlook, will not work with Microsoft Dynamics CRM 4.0 Server. After you upgrade Microsoft Dynamics CRM Server, you must upgrade all computers that are running an earlier version of the Microsoft Dynamics CRM client for Outlook. After the server is upgraded, users can access the application by using Internet Explorer until the computer is upgraded to Microsoft Dynamics CRM 4.0 for Outlook.

## Microsoft Dynamics CRM for Outlook and Windows Server Terminal Services or Citrix Presentation Server support

This section describes terminal server and roaming user profile support for Microsoft Dynamics CRM for Outlook.

### Important

Microsoft Dynamics CRM for Outlook with Offline Access is not supported for Terminal Services, Citrix Presentation Server.

Microsoft Dynamics CRM for Outlook is supported for running on Windows Server 2003 or later versions of Terminal Services. When users run an application on Terminal Server, the application execution occurs on the server. Only keyboard, mouse, and display information is transmitted over the network. Users see only their own individual sessions, which are managed transparently by the server operating system and remain independent of any other client session.

Microsoft Dynamics CRM for Outlook is certified as Citrix-Ready for use with the Citrix Presentation Server 4.5 (32-bit and 64-bit). For more information, see **Citrix Ready Products** (<http://go.microsoft.com/fwlink/?linkid=114528>).

Additionally, Microsoft Dynamics CRM for Outlook supports roaming user profiles. Roaming user profiles let you store user profiles centrally on a server and load them when a user logs on. Therefore, users experience a consistent environment regardless of which computer they use.

### Note

By default, the Configuration Wizard starts automatically the first time the user runs Outlook after Microsoft Dynamics CRM for Outlook is installed. If you do not want the Configuration Wizard to run automatically for each user, you can set the following registry keys by using a group policy:

HKCU\Software\Microsoft\Office\Outlook\Addins\crmaddin.Addin\LoadBehavior DWORD 2

HKCU\Software\Microsoft\Office\Excel\Addins\crmexceladdin.Addin\LoadBehavior DWORD 2

## Microsoft Dynamics CRM Web client software requirements

This section lists the operating system and software requirements for the Microsoft Dynamics CRM Web client.

The following operating systems are supported for the Microsoft Dynamics CRM Web client:

- Windows 7
- Windows Vista
- Windows XP Professional SP2

- Windows XP Home Edition SP2
- Windows XP Media Center Edition SP2
- Windows XP Tablet PC Edition SP2

In addition, the Microsoft Dynamics CRM Web client requires one of the following Internet Explorer Web browser versions:

- Internet Explorer 6 with SP1
- Internet Explorer 7
- Internet Explorer 8

To use Microsoft Dynamics CRM Office integration features, such as Export to Excel and Mail Merge, you must have one of the following installed on the computer that is running the Microsoft Dynamics CRM Web client:

- Microsoft Office 2003 SP3
- 2007 Microsoft Office system SP2

**Note**

Microsoft Windows 2000 editions are not supported for installing and running the Microsoft Dynamics CRM Web client.

## Microsoft Dynamics CRM Data Migration Manager hardware requirements

The following table lists the minimum and recommended hardware requirements for Microsoft Dynamics CRM Data Migration Manager.

Component	Minimum	Recommended
Processor	Intel Pentium III 750-MHz CPU, or comparable	Dual-core 1.8-GHz CPU or higher
Memory	1-GB RAM	2-GB RAM or more
Hard disk	Up to 500 MB of available hard disk space	Up to 500 MB of available hard disk space

## Data Migration Manager software requirements

There are several new data-management features in Microsoft Dynamics CRM. These include improved data import and data migration functionality, duplicate data detection options, and customization support.

Data Migration Manager can be installed and run on either of the following operating systems:

- Windows 7
- Windows Vista
- Windows XP editions with SP2 or SP3

**Important**

Although Data Migration Manager may install and run successfully on server operating systems, we do not recommend that you install or run Data Migration Manager on operating systems such as Windows Server 2003 or Windows Server 2008.

## Data migration overview

Data-management features provide tools to load data into most entities in Microsoft Dynamics CRM from various sources. For more information about data migration, see the Microsoft Dynamics CRM Data Migration Manager Help.

## Requirements and recommendations

- Although Data Migration Manager and Microsoft Dynamics CRM for Outlook can be installed on the same computer, they cannot run at the same time.
- Data Migration Manager must be installed on a computer that has a connection to the Microsoft Dynamics CRM Server.
- We do not recommend that you install the Data Migration Manager on a computer that is running Microsoft Dynamics CRM Server. Uninstalling the Data Migration Manager from Microsoft Dynamics CRM will cause the Microsoft Dynamics CRM Asynchronous Processing Service to become unregistered.

## 64-bit supported configurations

Installing and running Microsoft Dynamics CRM on 64-bit editions of Windows Server, or 64-bit server applications, such as SQL Server or Exchange Server, has the following limitations:

- You must install the same-bit versions, either Microsoft Dynamics CRM editions (32-bit) or Microsoft Dynamics CRM Server 64-bit editions in a deployment. For example, running a computer that has a 64-bit version of the Microsoft Dynamics CRM Server platform server role group on one computer and running another computer that has a 32-bit version of the Microsoft Dynamics CRM application server role group in the same deployment is not supported.
- Running Microsoft Dynamics CRM Server (32-bit) is not supported on a Windows Server 64-bit operating system. The CRM Server cannot run in Windows- (32-bit) -On-Windows (64-bit) (WOW) mode.
- Microsoft SQL Server x64 editions are supported with either 64-bit or 32-bit editions of Microsoft Dynamics CRM Server. For example, you can use a computer that is running a SQL Server x64 edition as the database server to a 32-bit computer that is running the 32-bit edition of Microsoft Dynamics CRM Server.
- Exchange Server 2007 editions, which are available only for 64-bit systems, are supported and can run 64-bit or 32-bit editions of the Microsoft Dynamics CRM E-mail Router.
- The 64-bit edition of the Microsoft Dynamics CRM E-mail Router can be deployed in an environment that has either the 64-bit or 32-bit editions of Microsoft Dynamics CRM Server.
- Both the SQL Server Reporting Services version and the Microsoft Dynamics CRM Connector for SQL Server Reporting Services version must be of the same processor architecture version as the Windows Server operating system.
- Running Microsoft Dynamics CRM Connector for SQL Server Reporting Services (32-bit) is not supported on a Windows Server 64-bit operating system, running in Windows-32-bit-On-Windows-64-bit (WOW) mode.

## Language support

This section describes the supported configurations for different language versions of a Microsoft Dynamics CRM system. This section does not include information about Microsoft Dynamics CRM Language Pack support, but instead explains the supported configurations for the base-language versions. For more information about Microsoft Dynamics CRM Language Packs, see the *Microsoft Dynamics CRM Help*.

## Requirements

The following requirements must be met when you run Microsoft Dynamics CRM and components such as SQL Server.

Microsoft Dynamics CRM Component	Requirement	Language Supported
Microsoft Dynamics CRM Server	The base language of Windows Server, SQL Server, .NET Framework, MDAC, and MSXML must be either the same language version as Microsoft Dynamics CRM Server or English. If a component is not available in a certain language, the English version of that component can be used.	All available Microsoft Dynamics CRM languages versions
Microsoft Dynamics CRM for Outlook	The base language of Windows Server, SQL Server 2005 Express Edition, Internet Explorer, Office, .NET Framework, MDAC, and MSXML do not have to be the same language versions as Microsoft Dynamics CRM for Outlook.  Each client stack in a single deployment can be in a different language.	All available Microsoft Dynamics CRM languages versions
Microsoft Dynamics CRM Server and Microsoft Dynamics CRM for Outlook	The base language version of Microsoft Dynamics CRM Server must match that used for Microsoft Dynamics CRM for Outlook.  For example, you cannot have some users who run the German version of Microsoft Dynamics CRM for Outlook while other users run the English version. For this scenario, we recommend provisioning the appropriate Microsoft Dynamics CRM Language Pack.	All available Microsoft Dynamics CRM languages versions

## Examples

The following table describes an example of a supported language configuration for Microsoft Dynamics CRM Server where all language editions match.

Server Component	Language
Windows Server 2003	German
SQL Server 2005	German
Exchange Server 2003	German
MSXML	German
.NET Framework	German
Microsoft Dynamics CRM Server	German

The following table describes an example of a supported language configuration for Microsoft Dynamics CRM Server where not all language editions match.

Server Component	Language	Notes
Windows Server 2003	English	
SQL Server 2005	English	Currently not available in Swedish.
Exchange Server 2003	English	Currently not available in Swedish.
MSXML	English	Currently not available in Swedish.
.NET Framework	English	
Microsoft Dynamics CRM Server	Swedish	

## Japanese Kanji font JIS2004 specification issues

Because of the update to the JIS90 kanji font, specification to JISX 0213:2004 (JIS2004), the following display issues may occur in when you run Microsoft Dynamics CRM on the Windows Vista operating systems:

- The fonts appear differently in the Microsoft Dynamics CRM Web application and Microsoft Dynamics CRM for Outlook when you run Windows Vista than with Windows XP or Windows Server 2003.
- Some characters do not display when viewed on earlier versions of Windows such as Windows XP or Windows Server 2003. This can occur when a document is created on Windows Vista, which contains the new font glyph information in the JIS2004 specification
- Search results and sort orders may be different on Windows Vista than on earlier versions of Windows.

To work around these issues, make sure that all computers in the organization use the same version of the font, either JIS90 or JIS2004.

Also, the following print issue can occur:

- Documents from a computer that is running Windows Vista may appear different than when printed from an earlier version of Windows.

To work around this issue, contact your printer manufacturer for a driver update that includes the JIS2004 font.

## Currency support

During Microsoft Dynamics CRM Server Setup, you must select a base currency, which is used for the basis for calculating additional currencies that can be used for transaction-based records. The base currency is also used in financial reporting.

The following table lists the currencies that are supported.

Country or Region	ISO Three-Letter Currency Code
Albania	ALL
Algeria	DZD
Argentina	ARS
Armenia	AMD
Australia	AUD

Country or Region	ISO Three-Letter Currency Code
Austria	EUR
Azerbaijan	AZM
Bahrain	BHD
Belarus	BYB
Belgium	EUR
Belize	BZD
Bolivia	BOB
Bosnia and Herzegovina	BAM
Brazil	BRL
Brunei Darussalam	BND
Bulgaria	BGL
Canada	CAD
Caribbean	USD
Chile	CLP
Columbia	COP
Costa Rica	CRC
Croatia	HRK
Czech Republic	CZK
Denmark	DKK
Dominican Republic	DOP
Ecuador	USD
Egypt	EGP
El Salvador	USD
Estonia	EEK
Faroe Islands	DKK
Finland	EUR
France	EUR
Georgia	GEL
Germany	EUR
Greece	EUR
Guatemala	GTQ
Honduras	HNL
Hong Kong S.A.R.	HKD
Hungary	HUF
Iceland	ISK

Country or Region	ISO Three-Letter Currency Code
India	INR
Indonesia	IDR
Iran	IRR
Iraq	IQD
Ireland	EUR
Islamic Republic of Pakistan	PKR
Israel	ILS
Italy	EUR
Jamaica	JMD
Japan	JPY
Jordan	JOD
Kazakhstan	KZT
Kenya	KES
Korea	KRW
Kuwait	KWD
Kyrgyzstan	KGS
Latvia	LVL
Lebanon	LBP
Libya	LYD
Liechtenstein	CHF
Lithuania	LTL
Luxembourg	EUR
Macao S.A.R.	MOP
Macedonia (FYROM)	MKD
Malaysia	MYR
Maldives	MVR
Malta	MTL
Mexico	MXN
Mongolia	MNT
Morocco	MAD
Netherlands	EUR
New Zealand	NZD
Nicaragua	NIO
Norway	NOK
Oman	OMR

Country or Region	ISO Three-Letter Currency Code
Panama	PAB
Paraguay	PYG
People's Republic of China	CNY
Peru	PEN
Philippines	PHP
Poland	PLN
Portugal	EUR
Principality of Monaco	EUR
Puerto Rico	USD
Qatar	QAR
Republic of Philippines	PHP
Romania	ROL
Russia	RUR
Saudi Arabia	SAR
Serbia	CSD
Singapore	SGD
Slovakia	SKK
Slovenia	SIT
South Africa	ZAR
Spain	EUR
Sweden	SEK
Switzerland	CHF
Syria	SYP
Taiwan	TWD
Thailand	THB
Trinidad and Tobago	TTD
Tunisia	TND
Turkey	TRY
United Arab Emirates	AED
Ukraine	UAH
United Kingdom	GBP
United States	USD
Uruguay	UYU
Uzbekistan	YZS

Country or Region	ISO Three-Letter Currency Code
Venezuela	VEB
Vietnam	VND

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## Planning Deployment

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The deployment architecture you will use depends on your business needs. This chapter gives guidelines for planning a Microsoft Dynamics CRM deployment on three representative computer system architectures: a single-computer server deployment based on Microsoft Windows Small Business Server 2003 R2, a two-server deployment, and multiple-server deployments involving a minimum of six servers. These deployments are discussed in detail in the "Supported configurations" section of this chapter.

Use this chapter as a reference if you have no existing Windows Server infrastructure, and you are planning a new Microsoft Dynamics CRM deployment.

If most or all the Windows Server infrastructure already exists, we recommend that you read this chapter to make sure that your current infrastructure meets the prerequisites for a successful Microsoft Dynamics CRM deployment.

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### Planning deployment prerequisites

This section has lists of what you must have before you install Microsoft Dynamics CRM, such as needed hardware and software. Use this section for preparing your network and to make sure that all requirements are satisfied before you run Microsoft Dynamics CRM Setup.

In this chapter, the following topics are discussed:

- **Hardware and software requirements.** A brief overview of the computer hardware and software requirements, and where you can find more information about the requirements.
- **Active Directory considerations.** Supported Active Directory forest and domain modes.
- **SQL Server and SQL Server Reporting Services installation and configuration.** A summary of how Microsoft SQL Server and SQL Server Reporting Services must be deployed and configured to install Microsoft Dynamics CRM.
- **Planning Exchange Server or POP3.** A summary of how Microsoft Exchange Server or a POP3-compliant e-mail server must be deployed to install and use the E-mail Router to send and receive Microsoft Dynamics CRM e-mail messages.
- **Security considerations.** Information about how you can make the Microsoft Dynamics CRM system more secure.

- **Supported configurations.** The supported network, domain, and server configurations for Microsoft Dynamics CRM.
- **Upgrading from Microsoft Dynamics CRM 3.0.** How Microsoft Dynamics CRM 4.0 upgrades your current system and what happens to items such as existing reports and customizations.

## Hardware requirements

Depending on how you plan to deploy the system, as a single-server solution, a multiple-server solution, or a clustered solution, the computer hardware that Microsoft Dynamics CRM 4.0 and components will run on is important for acceptable application performance.

There are many factors that you must consider that can affect the hardware requirements. They include the following:

- Number of users the Microsoft Dynamics CRM implementation will support and the way the application will be used, such as for intensive reporting.
- Number of servers and how they are configured.
- Microsoft SQL Server performance and availability.
- Integration of Microsoft Dynamics CRM with the Exchange or POP3 e-mail servers.
- Performance of your servers and the local area network (LAN).

For a list of the suggested hardware requirements, see "*System Requirements and Required Components*" in this guide.

## Software requirements

Before you install Microsoft Dynamics CRM, there are several operating system, application, and software components that must be installed, configured, and running. Some of these operating system and software components include Windows Server, SQL Server, SQL Server Reporting Services, and Microsoft .NET Framework 3.0.

For a complete list of the software requirements, see "*System Requirements and Required Components*" in this guide.

## Active Directory considerations

Active Directory is a component of the Windows Server 2003 and Windows Server 2008 operating systems. Active Directory provides a directory and security structure for network applications such as Microsoft Dynamics CRM.

As with most applications that rely on a directory service, Microsoft Dynamics CRM has dependencies that are important for operation, such as use of Active Directory to store user and group information and to create application security.

Microsoft Dynamics CRM 4.0 can only be installed on a Windows Server that is a domain member or, if you are installing on Microsoft Small Business Server, a domain controller. The domain where the server is located must be running in one of the following Active Directory modes:

- Windows 2000 Mixed Mode
- Windows 2000 Native
- Windows Server 2003 Native
- Windows Server 2003 Interim
- All Windows Server 2008 Modes

All Active Directory forest modes are supported. For more information about Active Directory domain and forest modes, see ***How to raise domain and forest functional levels in Windows Server 2003*** (<http://go.microsoft.com/fwlink/?linkid=52205>).

For more information about Active Directory, see the following resources:

Topic	Link
Architecture	<b>Active Directory Architecture</b> ( <a href="http://go.microsoft.com/fwlink/?linkid=51956">http://go.microsoft.com/fwlink/?linkid=51956</a> )
Planning an Active Directory Deployment Project	<b>Overview of Planning an Active Directory Deployment Project</b> ( <a href="http://go.microsoft.com/fwlink/?linkid=88219">http://go.microsoft.com/fwlink/?linkid=88219</a> )
Active Directory Site Design	<b>Designing the Site Topology</b> ( <a href="http://go.microsoft.com/fwlink/?linkid=88203">http://go.microsoft.com/fwlink/?linkid=88203</a> )
Domain Controller Roles	<b>FSMO placement and optimization on Active Directory domain controllers</b> ( <a href="http://go.microsoft.com/fwlink/?linkid=88220">http://go.microsoft.com/fwlink/?linkid=88220</a> )
Windows 2000 Upgrade	<b>Upgrading from Windows 2000 Domains to Windows Server 2003 Domains</b> ( <a href="http://go.microsoft.com/fwlink/?linkid=92513">http://go.microsoft.com/fwlink/?linkid=92513</a> )

## SQL Server installation and configuration

To plan your use of SQL Server with Microsoft Dynamics CRM, you must understand how Microsoft Dynamics CRM uses SQL Server, and what Microsoft Dynamics CRM Server Setup does and does not do:

- Microsoft Dynamics CRM requires SQL Server 2005 for storing the databases that contain Microsoft Dynamics CRM data and metadata.
- Reports in Microsoft Dynamics CRM depend on SQL Server Reporting Services, an add-in for SQL Server. Reporting Services includes two server components that are used to store, display, and manage reports: Report Server and Report Manager. A third component, Report Designer, is used to customize reports and write new reports. The Report Designer component is typically installed on a workstation, instead of on the computer that is running SQL Server.
- Microsoft Dynamics CRM Server Setup does not install SQL Server 2005 or SQL Server Reporting Services.

There are many configurations possible based on your expected usage of Microsoft Dynamics CRM. For information about the licensing implications when you install SQL Server Reporting Services on a separate computer, see **How to License Reporting Services** (<http://go.microsoft.com/fwlink/?linkid=92675>).

- You can install SQL Server on the same computer as Microsoft Dynamics CRM, on a separate computer, or you can use multiple computers that are running SQL Server.
- You can install SQL Server Reporting Services on the computer that stores the Microsoft Dynamics CRM databases, or on a separate report server that is running SQL Server.
- Multiple Microsoft Dynamics CRM front-end servers that run in a network load balancing cluster can use the same computer that is running SQL Server.

The following information describes:

- SQL Server requirements common to most scenarios.
- Considerations about how to use one computer that is running SQL Server with multiple computers that are running Microsoft Dynamics CRM Server.

For more information about SQL Server, see "Additional resources for SQL Server" in this guide.

## SQL Server requirements and recommendations for Microsoft Dynamics CRM

These requirements apply to new and existing installations of SQL Server:

- Microsoft Dynamics CRM requires an installation of Microsoft SQL Server Reporting Services. All installations of the supported SQL Server editions can be used as the reporting server. However, the Reporting Services edition must match the SQL Server edition.
- Microsoft Dynamics CRM 4.0 is not supported on Microsoft SQL Server 2000.
- Microsoft Dynamics CRM 4.0 is not supported on SQL Server that is running on Windows 2000 Server.
- If Microsoft Dynamics CRM Server and SQL Server are installed on different computers, they must be in the same Active Directory domain.
- Microsoft Dynamics CRM Server Setup supports the default instance or a named instance of SQL Server.
- Although you can install SQL Server by using either Windows authentication or mixed-mode authentication, Windows authentication is a prerequisite for Microsoft Dynamics CRM.
- The service account that SQL Server uses to log on to the network must be a domain user account (recommended), the Network Service account, or the Local System account (you cannot use a local user account on the server). Using a low-privilege account strategy is recommended to help avoid compromising the security of the server.
- The SQL Server service must be started. This service can be configured to automatically start when the computer is started.
- SQL Server Agent must be started. This service can be configured to automatically start when the computer is started.
- SQL Server Full-Text Search must be installed and started.
- Microsoft Dynamics CRM Server Setup requires a network library to authenticate SQL Server. By default, both Named Pipes and TCP/IP network libraries are enabled when you install SQL Server 2005. SQL Server can use both TCP/IP and Named Pipes for authentication. However, it must be configured for at least one of the two network libraries.
- We recommend that the computer that is running SQL Server be located on the same local area network (LAN) as the computer that is running Microsoft Dynamics CRM Server.
- The computer that is running SQL Server must be configured to have sufficient disk space, memory, and processing power to support the Microsoft Dynamics CRM environment.
- Although it is optional, consider accepting the SQL Server default settings for **Collation Designator**, **Sort Order**, and **SQL Collation**. Microsoft Dynamics CRM supports the following collation orders:
  - ▶ Case-sensitive
  - ▶ Case-insensitive
  - ▶ Accent-sensitive
  - ▶ Accent-insensitive
  - ▶ Binary sort order (such as Latin1\_General\_BIN for SQL Server 2005 or Latin1\_General\_100\_BIN for SQL Server 2008)

### Note

Microsoft Dynamics CRM sets the collation order at the database level. This setting might differ from that set at the SQL Server level.

- Make sure that the computer meets the system requirements for SQL Server. For more information, see one of the following:
  - ▶ **SQL Server 2005 System Requirements** (<http://go.microsoft.com/fwlink/?linkid=53211>)
  - ▶ **SQL Server 2008 System Requirements** (<http://go.microsoft.com/fwlink/?LinkId=149063>)

- Review all SQL Server installation options and be prepared to make the needed selections when you run Setup. For more information, see one of the following:
  - ▶ **Installing SQL Server 2005** (<http://go.microsoft.com/fwlink/?LinkId=149069>)
  - ▶ **Installing SQL Server 2008** (<http://go.microsoft.com/fwlink/?LinkId=149070>)
- If you plan to install SQL Server in a location other than the default file location, see one of the following:
  - ▶ **File Locations for Default and Named Instances of SQL Server 2005** (<http://go.microsoft.com/fwlink/?LinkID=149066>)
  - ▶ **File Locations for Default and Named Instances of SQL Server 2008** (<http://go.microsoft.com/fwlink/?linkid=102987>)

You should also consider where the Microsoft Dynamics CRM databases are located on the server and the hard-disk configuration that will support them.

#### Note

To achieve the best combination of disk fault tolerance and performance, consider the many specifications for redundant array of independent disks (RAID) available from hardware vendors. Format the disks where the SQL Server database files reside for the fault-tolerance requirements of the application and performance parameters for the I/O activity occurring on that partition.

- If you are using an operating system with regional settings other than English (United States), or if you are customizing character-set or sort-order settings, review topics on collation settings. For more information, see **International Considerations for SQL Server 2005** (<http://go.microsoft.com/fwlink/?LinkId=149067>) or **International Considerations for SQL Server 2008** (<http://go.microsoft.com/fwlink/?linkid=92514>).

## Running SQL Server 2008 with Microsoft Dynamics CRM

Microsoft Dynamics CRM 4.0 is compatible with SQL Server 2008. However, to run this configuration, you must install updates. For information about these updates, see **KB article 957053: Support for running Microsoft Dynamics CRM 4.0 together with Microsoft SQL Server 2008** (<http://go.microsoft.com/fwlink/?linkid=125888>).

## SQL Server deployment

If your organization uses SQL Server for applications other than Microsoft Dynamics CRM, you may be able to support Microsoft Dynamics CRM in the same instance of SQL Server. If you install on a computer that is running SQL Server that is used for other applications, you must carefully analyze the effect that Microsoft Dynamics CRM will have on the existing installation of SQL Server.

For best results, we recommend that you install the Microsoft Dynamics CRM databases on a computer that is running SQL Server and that will support *only* Microsoft Dynamics CRM and no other databases or database applications.

## Considerations

Microsoft Dynamics CRM is a database-intensive application. We do not recommend that you install the Microsoft Dynamics CRM databases on a SQL Server installation that supports other application databases. However, this deployment is supported. If you plan to install the Microsoft Dynamics CRM database on an existing SQL Server installation, you should understand the other database applications supported on the server, and also the load that Microsoft Dynamics CRM will put on SQL Server. Therefore, make sure that you test your implementation of Microsoft Dynamics CRM on a SQL Server installation that hosts other applications in production. You should consider the following issues:

- **Modification of system tables.** The SQL Server system tables should not be modified before you install Microsoft Dynamics CRM Server. Some database applications may modify the SQL Server system tables. If this occurs, problems with Microsoft Dynamics CRM and data may result.

- **Indexing.** Full-text indexing must be installed. This is required for the Microsoft Dynamics CRM knowledge-base functionality.

## Language locale collation and sort order

Installing SQL Server in a language other than English (US) may require changing the Collation designator. The following table indicates the Collation designator to use for each language.

Windows Locale	Locale Identifier (LCID)	Collation Designator	Code Page
Danish	0X406	Danish_Norwegian	1252
Dutch (Standard)	0X413	Latin1_General	1252
English (United States)	0X409	Latin1_General	1252
French (Standard)	0X40C	French	1252
German (Standard)	0X407	Latin1_General	1252
Italian	0X410	Latin1_General	1252
Portuguese (Brazil)	0X416	Latin1_General	1252
Spanish (Modern Sort)	0XC0A	Modern_Spanish	1252

## Disk configurations and file locations

For the default instance of SQL Server, the default directory for both program and data files is **\Program Files\Microsoft SQL Server\Mssql.1**. You can specify a file path other than the default for both program and data files.

### Note

The default locations for program and data files are not necessarily the best locations. As noted earlier, for the best combination of disk fault tolerance and performance, consider the RAID specifications available from hardware vendors. You can create the Microsoft Dynamics CRM databases on your partitions, especially for these files, and specify the existing databases when you run Microsoft Dynamics CRM Server Setup. The databases created by Microsoft Dynamics CRM are noted in the specified data file location. For more information, see "SQL Server data file location" later in this chapter.

By default, Shared Tools are installed in **\Program Files\Microsoft SQL Server\90\Tools** on the system drive. This folder contains the default and named files shared by all instances of SQL Server. Tools include SQL Server Books Online and Dev Tools.

SQL Server Setup also installs files in the Windows system directory. The system file location cannot be changed.

## SQL Server program file location

The SQL Server program files are located in **\Program Files\Microsoft SQL Server\Mssql.1\Mssql\Binn**.

The binary file location is in the root directory where Setup creates the folders that contain program files and other files that typically do not change as you use SQL Server. Although these files are not read-only, the folders do not contain data, logs, back-up files, or replication data. Therefore, the space requirements for these files should not increase as SQL Server is used.

### Important

Program files cannot be installed on a removable disk drive.

## SQL Server data file location

Each SQL Server database consists of one or more database files and one or more transaction log files. Microsoft Dynamics CRM creates two databases:

- **OrganizationName\_MSCRM**. This is the organization database where Microsoft Dynamics CRM data is stored, such as all records and activities. Microsoft Dynamics CRM 4.0 Enterprise supports multiple organizations so that you can have multiple-organization databases.
- **MSCRM\_CONFIG**. This database contains Microsoft Dynamics CRM metadata such as configuration and location information that is specific to each organization database.

Microsoft Dynamics CRM also relies on the SQL Server system databases to store Microsoft Dynamics CRM configuration information. These databases include the **master** and **msdb** databases. The database files that accompany a database contain all its data and properties. Transaction log files contain a record of the write activity in the database, such as when a row is added, changed, or removed. Transaction log files are binary and cannot be used for auditing database activity.

The transaction log is used for recovery, if a failure occurs, and to roll back (undo) transactions (writes) that cannot be finished. You may also periodically back up the transaction log as a way to perform an incremental backup while users are working in the application, with very low effect on available server resources.

To have the best chance of recovery, if there is a disk failure, and the best performance for the application, put the database files and transaction log files on separate sets of physical disks. The location that you specify for a file does not have to be the original location for data files specified during SQL Server Setup. You can select an alternative location for the database and transaction log files any time that you create or change the database. For more information, see the prior note about disk fault tolerance and performance.

If the partition that contains a database file has failed and the database has become unusable, but the partition that contains the transaction log is still available, you can back up the transaction log for that database. This can be the last backup in your back-up set. When you restore, this transaction log backup, made after the failure, will be the last restored backup. If all transaction log backups in the back-up set are restored successfully, you will have restored all the committed (100 percent successful) transactions up to the moment of the failure. This, of course, limits the data loss.

When the database files and transaction log files are on separate sets of disks, performance is optimized. Transaction log files can be write-intensive during periods when lots of data is being added, changed, or removed from the application.

For example, if you have a server wherein the drive C is the system partition (the drive where the Windows and program file folders are located). The Windows pagefile is also located on drive C. Drives D and E are RAID-5 partitions on separate sets of physical disks. Select the partitioning scheme for the database files that will give you the combination of performance and disk fault tolerance that you want. Drive D contains only data files for one or more databases, and drive E contains only log files for one or more databases. If you verify that performance will decrease because one database will have much more hard disk activity than other databases, you should put them all on separate sets of disks. If you estimate that data will significantly grow over time, make sure drive D has 100 gigabytes (GB) available for the database files. Because the log files will be truncated every time that a transaction-log backup is performed, make sure drive E has 10 GB available. Specify the location of the database file to be on drive D and the transaction log file to be on drive E when you create the database.

### Note

It is best to dedicate a partition to SQL Server data files. We recommend that you do not put a data file on the same partition as a Windows pagefile because of the degree of fragmentation that will occur.

By default, the directory where all database files and transaction log files are located is \Program Files\Microsoft SQL Server\Mssql.1\Mssql\Data. When you run SQL Server Setup, you can specify a different location as the default location for data files. The data file location is the root directory where Setup creates the folders that contain database and log files, in addition to directories for the System log, back-up, and replication data. Setup creates database and log files for the **master**, **model**, **tempdb**, and **msdb** databases. If you are selecting different locations for each file in the application, you do not have to change the default setting.

**Note**

Data files cannot be installed on a file system that uses compression.

**Specifying file paths**

Because you can install multiple instances of SQL Server on one computer, an instance name is used in addition to the user-specified location for program and data files. For tools and other shared files, instance names are not required.

**Default-instance file path for program and data files**

For the default instance of SQL Server, the default SQL Server directory name (Mssql.1) is used as the default instance name, with the directory that you specify.

For example, if you specify the SQL Server default instance to be installed on D:\MySqlDir, the file paths are as follows:

D:\MySqlDir\Mssql.1\Mssql\Binn (for program files)

D:\MySqlDir\Mssql.1\Mssql\Data (for data files)

**Note**

The program and data file locations can be changed, depending on the drive configuration of the computer that is running SQL Server.

**SQL Server 2008 transparent data encryption**

The Microsoft SQL Server 2008 Transparent Data Encryption feature is supported for use with Microsoft Dynamics CRM. However, based on test results conducted internally, using this feature can cause a decrease in overall performance of approximately 10% when run against a compressed database with the same workload.

**Additional resources for SQL Server**

For more information about how to plan for and install SQL Server, see the following resources:

- **Microsoft SQL Server Web site** (<http://go.microsoft.com/fwlink/?linkid=53219>)
- **SQL Server Books 2005 Online** (<http://go.microsoft.com/fwlink/?linkid=99647>)
- **Microsoft SQL Server Support Center** (<http://go.microsoft.com/fwlink/?linkid=92519>)

**Planning requirements for Microsoft SQL Server Reporting Services**

The Microsoft Dynamics CRM Connector for SQL Server Reporting Services connects the Microsoft Dynamics CRM Server to the Reporting Services computer, and eliminates the Kerberos double-hop authentication that was required for Microsoft Dynamics CRM 3.0 deployments where Reporting Services was installed on a separate computer.

The Microsoft Dynamics CRM Connector for SQL Server Reporting Services is required if the following two conditions are true:

- You do not want to manually configure Trust for Delegation.  
This configuration is necessary to allow the double-hop Kerberos authentication requirement when you install the Microsoft Dynamics CRM Connector for SQL Server Reporting Services on a computer that is not the Microsoft Dynamics CRM Server or SQL Server.
- You deploy Microsoft Dynamics CRM for Internet-facing deployment (IFD).  
To enable reporting through an Internet connection, you must install the Microsoft Dynamics CRM Connector for SQL Server Reporting Services.

**Important**

- The Microsoft Dynamics CRM Connector for SQL Server Reporting Services should not be installed on an instance of Microsoft SQL Server Reporting Services that is running under the same account as a Microsoft Dynamics CRM Server component. This configuration can make the system vulnerable to certain attacks. During installation, Setup detects this scenario, and you can click Help for information about how to work around the issue,
- The Microsoft Dynamics CRM Connector for SQL Server Reporting Services does not work correctly if it is installed on an instance of SQL Server Workgroup Edition. Some features, such as report scheduling do not work.

If you do not install the Microsoft Dynamics CRM Connector for SQL Server Reporting Services, Microsoft Dynamics CRM reports will function with behavior and functionality seen in Microsoft Dynamics CRM 3.0. However, the following limitations exist:

- The ability to schedule reports by using the Report Scheduling Wizard is not available.
- Note that when you install the Microsoft Dynamics CRM Connector for SQL Server Reporting Services, you have the option of installing the component on a different server that is running Reporting Services. Therefore, by isolating the Microsoft Dynamics CRM Connector for SQL Server Reporting Services on a separate instance of SQL Server, which does not store the Microsoft Dynamics CRM databases, report performance may be improved.

**Microsoft Dynamics CRM Connector for SQL Server Reporting Services requirements**

The Microsoft Dynamics CRM Connector for SQL Server Reporting Services has the following requirements:

- You must complete Microsoft Dynamics CRM 4.0 Setup before you run the Microsoft Dynamics CRM Connector for SQL Server Reporting Services Setup.
- You must run the Microsoft Dynamics CRM Connector for SQL Server Reporting Services Setup on a computer that has SQL Server 2005 Reporting Services installed. For smaller data sets and fewer users, you can use either a single-server deployment, or a multiple-server deployment with one computer that is running SQL Server for Microsoft Dynamics CRM, and another server for Microsoft SQL Server Reporting Services. With larger datasets or more users, performance will decrease quickly when complex reports are run.

**Microsoft Dynamics CRM Connector for SQL Server Reporting Services location**

There are two approaches when you install the Microsoft Dynamics CRM Connector for SQL Server Reporting Services:

- You can move complex reports from running on-demand by any Microsoft Dynamics CRM user, and schedule them to run at non-busy times. The result can be posted, and users can share the snapshot. The limitation of this method is that data is retrieved based on the user credentials that were supplied when the report was scheduled. This means that the snapshot could contain data that some users are cannot see. Therefore, the report administrator must carefully consider the user credentials that are used to run scheduled reports, and who has access to the snapshots.

You can combine these approaches by scheduling reports in this environment, although you have to consider the user credentials and access for the reasons listed previously.

## Planning e-mail integration

To use the Microsoft Dynamics CRM e-mail routing and tracking features, you must use one or both of the following software components to integrate your e-mail system with your Microsoft Dynamics CRM deployment:

- The E-mail Router provides centrally managed e-mail routing for users, queues, and forward mailboxes. This is frequently the better option for On-Premise and Partner-Hosted Microsoft Dynamics CRM deployments. With this method, e-mail is routed to Microsoft Dynamics CRM regardless of whether the recipient is logged on.

- Microsoft Dynamics CRM for Microsoft Office Outlook provides e-mail routing capabilities on a single user basis. This does not require the E-mail Router, and is frequently the better option for smaller organizations that do not have full-time IT staff, or for organizations that use Microsoft Dynamics CRM Online. With this method, the actual e-mail routing for each user occurs only while the user is logged on. If Outlook is not running, e-mail messages remain in the queue and will not be processed until Outlook is started again.

### **Important**

If your organization uses e-mail queues, you must use the E-mail Router. Queues are not supported by using Microsoft Dynamics CRM for Outlook.

Microsoft Dynamics CRM Server can operate without Exchange Server or a POP3 server. However, you will not have Microsoft Dynamics CRM incoming e-mail capabilities. Also, Microsoft Dynamics CRM Server can operate without an SMTP server. However, you will not have Microsoft Dynamics CRM outgoing e-mail capabilities.

Depending on your requirements, you may want to implement a solution that uses both the E-mail Router and Microsoft Dynamics CRM for Outlook. For example, if your Microsoft Dynamics CRM deployment hosts multiple organizations, or a single organization that has users who have varying needs, you might want to configure some users for the Microsoft Dynamics CRM for Outlook e-mail routing method, and configure other users and queues for the E-mail Router. For more information, see ***What's New in Microsoft Dynamics CRM 4.0 E-mail Integration*** (<http://go.microsoft.com/fwlink/?LinkId=140358>) and ***Microsoft Dynamics CRM 4.0 E-mail Integration Overview*** (<http://go.microsoft.com/fwlink/?LinkId=140359>).

## **Microsoft Dynamics CRM E-mail Router**

The E-mail Router is an optional interface component that integrates your e-mail system with Microsoft Dynamics CRM, and routes qualified e-mail messages to and from your Microsoft Dynamics CRM organization. This section gives guidelines for analyzing your organization's requirements for integrating e-mail with Microsoft Dynamics CRM, and outlines the things to consider when you plan, install, and configure an E-mail Router deployment.

The E-mail Router enables you to configure an interface between your Microsoft Dynamics CRM deployment and one or more Exchange Servers or POP3 servers, for incoming e-mail, and one or more SMTP servers for outgoing e-mail. E-mail messages come into the Microsoft Dynamics CRM system through the E-mail Router. If you use Exchange Server or a POP3 server, you can install the E-mail Router on a computer that is running Windows Server 2003, Windows XP, Windows Vista, or Windows Server 2008. Or, you can install the E-mail Router on a computer that is running Exchange Server. However, this is not a requirement.

### **Note**

You can deploy and run the E-mail Router on multiple computers in a Microsoft cluster to provide high availability and failover functionality. In Windows Server 2003 this kind of server cluster is known as server clustering and in Windows Server 2008 it is known as failover clustering. Both of these server clustering technologies are supported with the E-mail Router. For more information, see "Install E-mail Router on multiple computers" in the Microsoft Dynamics CRM Installing Guide

After you install the E-mail Router, you must run the E-mail Router Configuration Manager, an application that is installed during E-mail Router Setup. You can use E-mail Router Configuration Manager to configure the following:

- One or more incoming profiles. An incoming profile contains the information that is required by the E-mail Router to process incoming e-mail messages.
- One or more outgoing profiles. An outgoing profile contains the information that is required by the E-mail Router to process outgoing e-mail messages.

For more information about the E-mail Router Configuration Manager, see the following resources:

- "Microsoft Dynamics CRM E-mail Router Installation Instructions" in the Microsoft Dynamics CRM Installing Guide
- E-mail Router Configuration Manager Help.

- **Deploying E-mail Router Sample Scenarios document**  
(<http://go.microsoft.com/fwlink/?linkid=102768>)

## E-mail systems

The E-mail Router can connect to one or more e-mail servers that run Microsoft Exchange Server 2003 or Microsoft Exchange Server 2007. The E-mail Router can also connect to POP3-compliant servers to provide incoming e-mail routing, and SMTP servers to provide outgoing e-mail routing. For more information about the e-mail server versions and protocols that Microsoft Dynamics CRM supports, see "E-mail Router software requirements" in this document.

### Note

If your organization uses an e-mail system that Microsoft Dynamics CRM does not support out-of-the-box, you may want to consider writing your own e-mail plug-in. For detailed information, see **E-mail Providers** (<http://go.microsoft.com/fwlink/?LinkID=140360>) and **Extending E-mail Integration** (<http://go.microsoft.com/fwlink/?LinkId=140361>). When you install the E-mail Router, the assemblies that your plug-in must link to are also installed.

Exchange Server is an enterprise messaging system with the versatility to support various organizations. As with Active Directory and Microsoft Dynamics CRM, Exchange Server requires planning before it is deployed. Many documents are available from Microsoft that explain how to plan, deploy, and operate Exchange Server. For more information, see Additional resources for Exchange Server in this document.

## Network topology and e-mail traffic

The overall requirements to deploy and configure an effective Microsoft Dynamics CRM e-mail solution for a small business are similar to those of a large enterprise. However, a small business might not have an IT department. As you plan your e-mail solution, consider the details of your particular IT environment, such as who is responsible for network administration, what is allowed for E-mail Router placement, use of forward mailboxes, and forwarding rules.

To optimize performance, carefully consider the size, complexity, and geographical distribution of your network. The location of your e-mail servers, the number of users who will route e-mail to and from Microsoft Dynamics CRM, expected traffic levels, and the frequency and size of attachments should help guide your decisions.

For example, an international enterprise-level Microsoft Dynamics CRM deployment might have user and queue mailboxes in multiple sites, regions, or countries. Such a deployment may accommodate multiple Microsoft Dynamics CRM organizations and multiple e-mail server configurations. The e-mail servers might be located inside or outside the corporate domain, separated by firewalls. For an example of the architectural design process for implementing an enterprise-level E-mail Router deployment, see **Microsoft Dynamics CRM E-mail Router: Configuring for the Enterprise** (<http://go.microsoft.com/fwlink/?LinkId=140364>).

A small business deployment, on the other hand, will typically have a relatively small number of users and significantly less e-mail traffic. Frequently there will be no full-time IT department to configure and maintain an E-mail Router deployment. For an example of a small business E-mail Router deployment, see **Microsoft Dynamics CRM E-mail Router: Configuring for a Small Business** (<http://go.microsoft.com/fwlink/?LinkId=140365>).

## Avoid mailbox storage problems

Every organization has its own unique requirements for e-mail message routing and storage. To avoid problems that can result from overtaxing your system's storage capacity, consider the following when you plan an E-mail Router deployment:

- **How much e-mail should be routed?** You can configure your system for the following levels of e-mail message tracking:
  - ▶ All e-mail messages
  - ▶ E-mail messages in response to Microsoft Dynamics CRM e-mail
  - ▶ E-mail messages from Microsoft Dynamics CRM Leads, Contacts, and Accounts

For more information, see "E-mail message filtering and correlation" in this document.

- **What storage quotas should be applied to each mailbox?** For information about how to apply mailbox storage quotas and managing the automated messages that are sent to mailbox owners when their size limit is exceeded, see the documentation for your e-mail system.
- **How long should e-mail messages be stored?** For information about automatically archiving or deleting e-mail messages, see the documentation for your e-mail system.

## E-mail message filtering and correlation

The E-mail Router can automatically create e-mail activities in Microsoft Dynamics CRM, which are based on received e-mail messages. This kind of automation is known as e-mail message tracking. Users can select a filtering option that determines what e-mail messages will be tracked in Microsoft Dynamics CRM. Filtering is set on the **E-mail** tab of the **Set Personal Options** dialog box. The user filtering options are as follows:

- **All e-mail messages.** All e-mail messages that are received by the user will have activities created.
- **E-mail messages in response to CRM e-mail.** Only the replies to an e-mail message that is already tracked will be saved as e-mail activities. This option uses smart matching to relate e-mail messages to activities.
- **E-mail messages from CRM Leads, Contacts, and Accounts.** Only e-mail messages sent from leads, contacts, and accounts that exist in the Microsoft Dynamics CRM database are saved as activities.

By default, the **E-mail messages in response to CRM e-mail** option is enabled. Correlation occurs after an e-mail message is filtered. When an incoming e-mail message is processed by the E-mail Router, the system extracts information that is associated with the e-mail message subject, sender address, and recipient's addresses that link the e-mail activity to other Microsoft Dynamics CRM records. This correlation process, also known as smart matching, uses the following criteria to match received e-mail message information to e-mail activities.

- **Subject matching.** Prefixes, such as RE: or Re:, and letter case are ignored. For example, e-mail message subjects with *Re: hello* and *Hello* would be considered a match.
- **Sender and recipient matching.** The system calculates the number of exact sender and recipient e-mail addresses in common.

When the matching process is complete, the system selects the owner and the object of the incoming e-mail message.

System administrators can turn off all message tracking for a particular user by setting the **E-mail access type – Incoming** value to **None** on the **General** tab on the **User** form.

### Tracking tokens

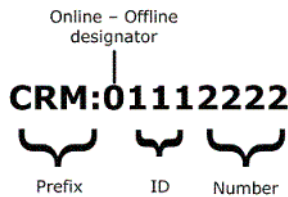
If you need increased probability for e-mail identification and matching, the tracking token feature can be used to improve e-mail message tracking. A tracking token is an alphanumeric string generated by Microsoft Dynamics CRM and appended to the end of an e-mail subject line. It matches e-mail activities with e-mail messages.

Tracking tokens can be turned on or off, and configured to be unique for a specific Microsoft Dynamics CRM deployment. This means that an organization with multiple Microsoft Dynamics CRM deployments (such as for departmental use), can configure tracking tokens that are unique to each deployment. To configure tracking tokens, do the following:

1. At the Microsoft Dynamics CRM main page, click **Settings**, under **Settings** click **Administration**, and then click **System Settings**.
2. Click the **E-mail** tab.

Tracking tokens add an additional correlation component to smart matching. When Microsoft Dynamics CRM generates an outgoing e-mail activity, a resulting e-mail response arriving in the Microsoft Dynamics CRM system is then correlated to the originating activity.

By default, for new installations of Microsoft Dynamics CRM 4.0, the tracking token feature is turned on. The following figure and table show a tracking token and the parts.



### Tracking token structure

The following table lists tracking-token parts and descriptions.

Part	Description
Prefix	Configurable. Default value = CRM. This can be unique for an organization or for a particular Microsoft Dynamics CRM deployment in an organization with multiple Microsoft Dynamics CRM deployments. We recommend that different Microsoft Dynamics CRM deployments use unique prefixes.
Online-offline designator	Not configurable. One digit. 0 for Online. 1 for Offline. This part indicates if the user was online or offline when the e-mail activity was created.
ID	Configurable. Default range is 3 digits. This is a numeric identifier for the Microsoft Dynamics CRM user who generated the e-mail activity.
Number	Configurable. Default range is 4 digits. This is a numeric identifier for the e-mail activity (not the individual messages that the activity contains.) If you configure Microsoft Dynamics CRM to generate a token with a four-digit number, it will increment the number through 9999, and then restart the number at 0000. You can use a larger order of digits to reduce the possibility of assigning duplicate tokens to active e-mail threads.

For more information about how to configure the tracking token, see the *Microsoft Dynamics CRM Help*.

### Forward mailbox vs. individual mailboxes

For incoming e-mail messages, you can configure the E-mail Router to monitor either of the following:

- A forward mailbox, also known as a *sink* mailbox
- Each user's or queue's mailbox

#### Important

If your e-mail system does not allow rules where an e-mail message can be forwarded as an attachment, you must select **Individual Mailbox Monitoring** during E-mail Router Setup. If you are using Exchange Server, we recommend that you select **Forward Mailbox Monitoring**.

Configuring the E-mail Router to use a forward mailbox gives Microsoft Dynamics CRM one central mailbox to monitor, instead of monitoring the mailbox of each user who needs Microsoft Dynamics CRM e-mail capabilities.

Organizations that have to monitor a large number of mailboxes should consider using a forward mailbox to reduce the administrative effort. Monitoring many mailboxes can sometimes require maintaining access credentials in many incoming configuration profiles. For more information, see "Access credentials" in the *Microsoft Dynamics CRM Installing Guide*.

By using a forward mailbox, you shift the administrative effort to the task of deploying a server-side forwarding rule to each user mailbox. The forwarding rule forwards all incoming e-mail messages as attachments to the centralized forward mailbox. For Exchange Server only, you can use the Rule Deployment Wizard (installed with the E-mail Router) to deploy the forwarding rules. This can significantly reduce administration and maintenance requirements because the Rule Deployment Wizard can deploy the forwarding rule to multiple Microsoft Dynamics CRM users at the same time.

### **Important**

To use a forward mailbox with a Microsoft Dynamics CRM deployment that interfaces with a POP3-compliant e-mail system, the e-mail system must be able to forward e-mail messages as attachments. Also, for POP3 e-mail servers, you cannot use the Rule Deployment Wizard. Instead, you must create the rules manually. For instructions, see "Create the rule manually" in the *Microsoft Dynamics CRM Installing Guide*.

You can configure users and queues in different ways within the same Microsoft Dynamics CRM deployment. For example, you may want to configure some user or queue mailboxes to be monitored directly on one e-mail server, and configure others to use a forward mailbox on a different e-mail server.

### **Forward mailbox monitoring**

When you use forward mailbox monitoring, incoming messages are processed by Exchange or the POP3 server and the E-mail Router in the following sequence:

1. A message is received by a Microsoft Dynamics CRM user or queue mailbox, on either the Exchange Server or the POP3 server.
2. A rule in the user's mailbox sends a copy of the message to the Microsoft Dynamics CRM forward mailbox.
3. The E-mail Router retrieves the message from the Microsoft Dynamics CRM forward mailbox and sends it to the computer that is running Microsoft Dynamics CRM Server.

## **Microsoft Dynamics CRM user options**

This section describes the options available in Microsoft Dynamics CRM user records for sending and receiving e-mail messages.

### **Incoming e-mail messaging options**

The available incoming e-mail configurations that can be used when a user or a queue receives Microsoft Dynamics CRM e-mail messages are as follows:

- **None:** Use this option for users or queues that do not use Microsoft Dynamics CRM to track received e-mail messages.
- **Microsoft Dynamics CRM for Outlook:** This option is available for users and requires that Microsoft Office Outlook be installed on the user's computer. This option does not require the E-mail Router component and is not available for queues.
- **Forward Mailbox:** To use this option, you must install the E-mail Router. This option requires a "sink" mailbox, which is a dedicated mailbox that collects e-mail messages transferred from each Microsoft Dynamics CRM user's mailbox by a server-side rule. Although this option does not require users to run Outlook, it does require that the rule be deployed for each user. You use the Rule Deployment Wizard to deploy rules to each Microsoft Dynamics CRM user mailbox.
- **E-mail Router:** When you select this option, the E-mail Router will process Microsoft Dynamics CRM e-mail messages directly from the user's or queue's inbox, without using a forward or a sink mailbox. Although this option does not require a sink mailbox, it does make troubleshooting E-mail Router issues more complex for larger user bases (10 or more users) because each incoming e-mail message is processed by the E-mail Router in every user's mailbox instead of in a single dedicated mailbox.

## Outgoing e-mail messaging options

The available outgoing e-mail configurations that can be used when users or queues send Microsoft Dynamics CRM e-mail messages are as follows:

- **None:** Use this option for users or queues that do not use Microsoft Dynamics CRM to send e-mail messages.
- **Microsoft Dynamics CRM for Outlook:** This option is available for users and requires that Office Outlook be installed on the user's computer. This option does not require the E-mail Router component and is not available for queues.
- **E-mail Router:** This option delivers Microsoft Dynamics CRM e-mail messages by using the E-mail Router component. The e-mail system must be SMTP-compliant. The E-mail Router can be installed on the SMTP server or on a different computer that has a connection to the SMTP server.

## Additional resources for E-mail Router

For more information about the software requirements for the E-mail Router, see "System Requirements and Required Components" in this guide.

For more information about how to install and configure the E-mail Router, see "Install Microsoft Dynamics CRM E-mail Router" in the Microsoft Dynamics CRM Installing Guide.

### Instructional videos

- ***The Microsoft Dynamics CRM 4.0 E-mail Router with POP3***  
(<http://go.microsoft.com/fwlink/?LinkId=140367>)
- ***The Microsoft Dynamics CRM 4.0 E-mail Router with Microsoft Exchange Server***  
(<http://go.microsoft.com/fwlink/?LinkId=140368>)
- ***Using a Forward Mailbox with Microsoft Dynamics CRM 4.0***  
(<http://go.microsoft.com/fwlink/?LinkId=140369>)

### Troubleshooting

- ***Troubleshooting the Microsoft Dynamics CRM E-mail Router***  
(<http://go.microsoft.com/fwlink/?LinkId=140414>)
- ***Troubleshooting E-Mail issues in Microsoft Dynamics CRM 4.0***  
(<http://go.microsoft.com/fwlink/?LinkId=140431>)
- ***Microsoft Dynamics CRM 4.0 E-Mail Connector Logger tool***  
(<http://go.microsoft.com/fwlink/?LinkId=151312>)

## Additional resources for Exchange Server

For more information about how to plan to install Exchange Server 2003, see the following resources:

- ***Microsoft Exchange Server 2003 Deployment Guide*** (<http://go.microsoft.com/fwlink/?linkid=92524>)
- ***Planning a Microsoft Exchange Server 2003 Messaging System***  
(<http://go.microsoft.com/fwlink/?linkid=92526>)

For more information about how to plan to install Exchange Server 2007, see the following resource:

- ***Exchange Server 2007 Planning*** (<http://go.microsoft.com/fwlink/?linkid=102916>)

## Operating system and software component security considerations

In the broadest sense, security involves planning and considering tradeoffs. For example, a computer can be locked in a vault and available only to one system administrator. This computer may be secure, but it is not very usable because it is not connected to any other computer. If your business users need access to the Internet and your corporate intranet, you must consider how to make the network both secure and usable.

The following sections contain links to information about how you can make your computing environment more secure. Ultimately, Microsoft Dynamics CRM data security largely depends on the security of the operating system and software components that it uses.

## Securing Windows Server

Windows Server, the foundation of Microsoft Dynamics CRM, provides sophisticated network security. The Kerberos version-5 authentication protocol is integrated into Active Directory, which gives you powerful standards-based authentication. In addition, users can use a single user name and password logon combination for the network. Windows Server also includes several features that help make the network more secure.

The following links take you to information about these features. You can learn how to help make your deployment of Windows Server more secure.

- **Windows Server 2003 Security Guide** (<http://go.microsoft.com/fwlink/?linkid=92529>). This comprehensive guide has specific recommendations about how to harden computers that run Windows Server 2003.
- **Security and Protection** (<http://go.microsoft.com/fwlink/?linkid=92534>). This Microsoft TechNet page is a list of links to information about features in Windows Server 2003 that help make your deployment more secure.
- **Windows Security Collection** (<http://go.microsoft.com/fwlink/?linkid=92537>). This Microsoft TechNet article contains a comprehensive overview of the security features that are available in Windows Server 2003.
- **Windows Server 2003 Windows Firewall (WF)** (<http://go.microsoft.com/fwlink/?linkid=92539>). This Microsoft TechNet article contains several topics about how to implement and configure Windows Firewall.

## Windows error reporting

Microsoft Dynamics CRM requires the Windows Error Reporting service and Setup will install it if it is missing. The Error Reporting service collects information, such as IP addresses. These are not used to identify users. The Error Reporting service does not intentionally collect anyone's name, address, e-mail address, computer name, or any other form of personally identifying information. It is possible that such information may be captured in memory or in the data collected from open files, but Microsoft does not use it to identify users. In addition, some information that is transmitted between the Microsoft Dynamics CRM application and Microsoft may not be secure. For more information about the kind of information that is transmitted and how it is transmitted, see **Using Windows Server 2003 in a Managed Environment: Error Reporting** (<http://go.microsoft.com/fwlink/?linkid=102981>).

## Virus protection

To help protect your system against viruses, see the following information sources:

- **Microsoft Security Central** (<http://go.microsoft.com/fwlink/?linkid=92540>). This page is an entry point for tips, training, and guidance about how to keep your computer up to date and prevent your computer from being susceptible to exploitation, spyware, and viruses.
- **TechNet Security Center** (<http://go.microsoft.com/fwlink/?linkid=92541>). This page has links to technical bulletins, advisories, updates, tools, and guidance designed to make computers and applications up to date and secure.

## Managing security operations

- **Security Guidance for Patch Management** (<http://go.microsoft.com/fwlink/?linkid=92542>). Manage software updates and help make sure that your systems stay up to date

## Securing SQL Server

Because Microsoft Dynamics CRM relies on SQL Server, make sure that you take the following measures to improve the security of your SQL Server database:

- Make sure that the latest operating-system and SQL Server service packs (SP) and updates are applied. Check the **Microsoft Security Central** (<http://go.microsoft.com/fwlink/?linkid=92540>) Web site for the latest details.
- Make sure that all SQL Server data and system files are installed on NTFS partitions for file system-level security. You should make the files available only to administrative or system-level users through NTFS permissions. This helps to safeguard against users who access those files when the MSSQLSERVER service is not running.
- Use a low-privilege domain account. Or, you can specify the Network Service or the Local System account for SQL Server services. However, we do not recommend that you use these accounts because Domain User accounts are more appropriate for the SQL Server services. This account should have minimal rights in the domain and should help contain (but will not stop) an attack on the server if there is a compromise. In other words, this account should have only local user-level permissions in the domain. If SQL Server is installed by using a Domain Administrator account to run the services, a compromise of SQL Server will lead to a compromise of the whole domain. If you have to change this setting, use SQL Server Enterprise Manager to make the change, because the access control lists (ACLs) on files, the registry, and user rights will be changed automatically.
- SQL Server authenticates users who have either Windows NT or SQL Server credentials. This is known as mixed-mode security. You should use integrated security (Windows NT authentication only) for the highest security. This allows the use of Windows NT credentials only, not SQL Server credentials.
- By default, the auditing of the SQL Server system is disabled so that no conditions are audited. This makes intrusion detection difficult and aids the attacker with covering their tracks. At a minimum, you should enable auditing of failed logins.
- Each SQL login is configured to use the master database as the default database. Although users should not have rights to the master database, as a best practice, you should change the default for every SQL login (except those with the SYSADMIN role) to use *OrganizationName\_MSCRM* as the default database.

For more information, see **Improving Microsoft Dynamics CRM Performance and Securing Data with Microsoft SQL Server 2008** (<http://go.microsoft.com/fwlink/?linkid=143092>).

## Securing Exchange Server and Outlook

The following considerations are for Exchange Server, and some are specific to Exchange Server in a Microsoft Dynamics CRM environment:

- Exchange Server contains a rich series of mechanisms for precise administrative control of its infrastructure. In particular, you can use administrative groups to collect Exchange Server objects, such as servers, connectors, or policies, and then modify the ACLs on those administrative groups to make sure that only certain people can access them. You may, for example, want to give Microsoft Dynamics CRM administrators some control over servers that directly affect their applications. When you implement efficient use of administrative groups, you can make sure that you give Microsoft Dynamics CRM administrators only the rights that they require to perform their job.
- Frequently, you may find it convenient to create a separate organizational unit (OU) for Microsoft Dynamics CRM users, and give Microsoft Dynamics CRM administrators limited administrative rights over that OU. They can therefore make the change for any user in that OU, but not to any user outside it.

- You should make sure that you adequately protect against unauthorized e-mail relay. E-mail relay is a feature that lets an SMTP client use an SMTP server to forward e-mail messages to a remote domain. By default, Exchange Server 2003 and Exchange Server 2007 are configured to prevent e-mail relay. The exact settings that you configure will depend on your message flow and configuration of your Internet service provider's (ISP) e-mail server. However, the best way to approach this problem is to lock down your e-mail relay settings and then gradually open them to allow e-mail to flow successfully. For more information, view the Exchange Server Help.
- If you use forward mailbox monitoring, the E-mail Router requires an Exchange Server or POP3-compliant mailbox. We recommend that the ACLs on this mailbox be set to prevent other users from adding server-side rules.
- The Microsoft Dynamics CRM E-mail Router service operates under the Local System account. This enables the E-mail Router to access a specified user's mailbox and process e-mail in that mailbox.

For more information about how to make Exchange Server 2003 more secure, view the **Microsoft Exchange Server 2003 Security Hardening Guide** (<http://go.microsoft.com/fwlink/?linkid=92543>).

For more information about how to make Exchange Server 2007 more secure, view **Security and Protection** (<http://go.microsoft.com/fwlink/?linkid=92544>) information in the Microsoft TechNet Library.

## Security considerations for Microsoft Dynamics CRM

This section provides information and best practices for the Microsoft Dynamics CRM application.

### Isolate the HelpServer role for Internet-facing deployments

Microsoft Dynamics CRM Internet-facing deployments (IFDs) require anonymous authentication. Because anonymous Web site authentication is used, the virtual directory used by the Microsoft Dynamics CRM Help site can be targeted for denial of service (DoS) attacks.

To isolate the Microsoft Dynamics CRM Help pages, and help protect the other Microsoft Dynamics CRM Server roles from potential DoS attacks, consider installing the HelpServer role on a separate computer if you implement an IFD.

For information about the options for installing Microsoft Dynamics CRM roles on separate computers, see the Microsoft Dynamics CRM Installing Guide.

For more information about reducing the risk of DoS attacks, see **Improving Web Application Security: Threats and Counter-measures** (<http://go.microsoft.com/fwlink/?linkid=128944>).

### Microsoft Dynamics CRM installation files

If you plan to install Microsoft Dynamics CRM from a location on the network, such as a network share, you must make sure that the correct permissions are applied to the folder, preferably on an NTFS volume, where the installation files are located. For example, it may be needed to allow only members of the Domain Admins group to have permission for the folder. This practice can reduce the risk of attacks on the installation files that may be compromised or altered, which can cause unexpected behavior. For more information about how to set permissions on files and folders on Windows operating systems, see the Windows Help.

### Minimum permissions that are required to install Microsoft Dynamics CRM Server

For information about the minimum security permissions required to install Microsoft Dynamics CRM Server, see **KB article 946677: How to install Microsoft Dynamics CRM 4.0 with the minimum required permissions** (<http://go.microsoft.com/fwlink/?linkid=129357>).

### Network ports for Microsoft Dynamics CRM

This section describes the ports that are used for Microsoft Dynamics CRM. This information is useful and helpful as you configure the network when users connect through a firewall.

### Network ports for the Microsoft Dynamics CRM Web application

The following table lists the ports used for a server that is running a full-server installation of Microsoft Dynamics CRM. Moreover, except for the Microsoft SQL Server role, and the Microsoft Dynamics CRM Connector for SQL Server Reporting Services server role, all server roles are installed on the same computer.

Protocol	Port	Description	Explanation
TCP	80	HTTP	Default Web application port. This port may be different as it can be changed during Microsoft Dynamics CRM Setup. For new Web sites, the default port number is 5555.
TCP	135	MSRPC	RPC endpoint resolution.
TCP	139	NETBIOS-SSN	NETBIOS session service.
TCP	443	HTTPS	Default secure HTTP port. The port number may differ from the default port. This secure network transport must be manually configured. Although this port is not required to run Microsoft Dynamics CRM, we strongly recommend it. For information about how to configure HTTPS for Microsoft Dynamics CRM, see "Make Microsoft Dynamics CRM 4.0 client-to-server network communications more secure" in the Microsoft Dynamics CRM Installing Guide.
TCP	445	Microsoft-DS	Active Directory service required for Active Directory access and authentication.
UDP	123	NTP	Network Time Protocol.
UDP	137	NETBIOS-NS	NETBIOS name service.
UDP	138	NETBIOS-dgm	NETBIOS datagram service.
UDP	445	Microsoft-DS	Active Directory service required for Active Directory access and authentication.
UDP	1025	Blackjack	DCOM, used as an RPC listener

### Network ports that are used by the SQL Server that runs the Microsoft Dynamics CRM Connector for SQL Server Reporting Services server roles

The following table lists the ports that are used for a computer that is running SQL Server and has only SQL Server and the Microsoft Dynamics CRM Connector for SQL Server Reporting Services server roles installed.

Protocol	Port	Description	Explanation
TCP	135	MSRPC	RPC endpoint resolution.
TCP	139	NETBIOS-SSN	NETBIOS session service.
TCP	445	Microsoft-DS	Active Directory required for Active Directory access and authentication.

Protocol	Port	Description	Explanation
TCP	1433	ms-sql-s	SQL Server sockets service. This port is required for access to SQL Server. Note that, this number may be different if you have configured your SQL Server to use a different port number.
UDP	123	NTP	Network Time Protocol.
UDP	137	NETBIOS-NS	NETBIOS name service.
UDP	138	NETBIOS-dgm	NETBIOS datagram service.
UDP	445	Microsoft-DS	Active Directory service required for Active Directory access and authentication.
UDP	1025	Blackjack	DCOM, used as an RPC listener

## Microsoft Dynamics CRM security model

Microsoft Dynamics CRM gives you a security model that protects data integrity and privacy and also supports efficient data access and collaboration. The Microsoft Dynamics CRM security model supports recommended security best practices. The goals of the model are as follows:

- Support a licensing model for users.
- Give users access only to the needed levels of information that are required to do their jobs.
- Categorize users by role and restrict access based on those roles.
- Support data sharing so that users can be granted access to objects they do not own for a one-time collaborative effort.
- Prevent access to objects the user does not own or share.

### Role-based security

Role-based security in Microsoft Dynamics CRM is a grouping of a set of privileges that consists of the responsibilities (or tasks that can be performed) of a user. Microsoft Dynamics CRM includes a set of predefined security roles, each of which is a set of user rights aggregated to make user security management easier. Each application deployment can also have its own roles to meet the needs of different users.

### Object-based security

Object-based security in Microsoft Dynamics CRM is about user rights to entities. This applies to individual instances of entities and is provided by user rights. The relationship between a user right and a privilege is that user rights apply only after privileges have taken effect. For example, if users do not have the privilege to read accounts, they will be unable to read any account, regardless of the user rights another user might grant them to a specific account through sharing.

You combine role-based security and object security to define the overall security rights that users have in your custom Microsoft Dynamics CRM application.

### Deployment-wide administrative-level security

During installation, Microsoft Dynamics CRM Server Setup creates a special deployment-wide administrator role and attaches it to the user account that is used to run Setup. The Deployment Administrator role is not a security role and does not appear in the Microsoft Dynamics CRM Web application as such.

Deployment administrators have complete and unrestricted access to all organizations in a Microsoft Dynamics CRM deployment. For example, Deployment Administrators can create new organizations or disable any existing organization in the deployment. On the other hand, members of the System Administrators security role only have permissions where the user and security role are located.

For more information about security roles and privileges, see the Microsoft Dynamics CRM Help. For more information about the Deployment Administrator role, see the Deployment Manager Help.

## Microsoft Dynamics CRM Server security best practices

- In the **machine.config** and **web.config** configuration files you can determine whether debugging is enabled, and also if detailed error messages are sent to the client. You should make sure that debugging is disabled on all production servers, and that a generic error message is sent to the client if a problem occurs. This avoids unnecessary information about the Web Server configuration being sent to the client.
- Make sure that the Internet Information Services (IIS) Web root is installed on a non-system NTFS partition for file system-level security. A non-system partition is other than the partition that contains the operating system files. (For example, C:\inetpub is on a typical system partition, whereas D:\inetpub is not.)
- Make sure that the latest operating system and IIS service packs and updates are applied. For the latest details see the **Microsoft Security Central** (<http://go.microsoft.com/fwlink/?linkid=92540>) Web site.
- Microsoft Dynamics CRM Server Setup creates an application pool called **CRMAppPool** that operates under user credentials that you specify during Setup. To facilitate a least privilege model, we recommend that you specify a domain user account instead of using the Network Service account. Additionally, we recommend that no other ASP.NET-connected application be installed under this same application pool.

### Important

- All Web sites that are running on the same computer as the Microsoft Dynamics CRM Web site can also have access to the Microsoft Dynamics CRM database.
- If you use a domain user account, before you run Microsoft Dynamics CRM Server Setup you must verify that the SPN is set correctly for that account, and if necessary, set the correct SPN. For more information about SPNs and how to set them, see **KB article 929650: How to use SPNs when you configure Web applications that are hosted on IIS 6.0** (<http://go.microsoft.com/fwlink/?linkid=99582>).

## Microsoft Dynamics CRM administration best practices

By following some simple rules of administration, you can significantly improve the security of the Microsoft Dynamics CRM environment:

- Typically, there is no need for Microsoft Dynamics CRM users to have administrative privileges over the domain. Therefore, all Microsoft Dynamics CRM user accounts should be restricted to Domain Users membership. Also, following the principle of least-privilege, anyone who uses the Microsoft Dynamics CRM system should have minimal rights. This starts at the domain level. A domain user account should be created and used to run Microsoft Dynamics CRM. Domain Administrator accounts should never be used to run Microsoft Dynamics CRM.
- Limit the number of Microsoft Dynamics CRM Administrator and Operator roles to a few people who are responsible for rule changes. Other Microsoft Dynamics CRM users who are Exchange Server or Active Directory administrators do not have to be members of the Microsoft Dynamics CRM users group.
- It is a common practice to reuse passwords across systems and domains. For example, an administrator responsible for two domains may create Domain Administrator accounts in each domain that use the same password, and even set local administrator passwords on domain computers that are the same across the domain. In such a case, a compromise of a single account or computer could lead to a compromise of the whole domain. Passwords should never be reused in this manner.

- It is also common practice to use Domain Administrator accounts as service accounts for common services such as back-up systems. However, it is a security risk to use Domain Administrator accounts as service accounts. The password can easily be retrieved by anybody with administrative rights over the computer. In such a case, the compromise could affect the whole domain. Service accounts should never be domain administrator accounts, and they should be limited in privilege as much as possible.

## Supported configurations

This section describes the supported network, domain, and server configurations for Microsoft Dynamics CRM, which supports multiple domains in either a native- or interim-mode environment.

### Active Directory requirements

The Active Directory requirements are as follows:

- The computer that runs Microsoft Dynamics CRM Server and the computer that runs SQL Server, where the Microsoft Dynamics CRM databases are located, must be in the same Active Directory domain.
- The Active Directory domain where the Microsoft Dynamics CRM Server is located must run in Windows 2000 native, Windows Server 2003 interim, Windows Server 2003 native, or any Windows Server 2008 domain modes.
- The Active Directory forest where the Microsoft Dynamics CRM Server is located can run in Windows 2000, Windows Server 2003 interim, or Windows Server 2003 forest modes.
- The accounts that are used to run the Microsoft Dynamics CRM services must be in the same domain as the computer that is running Microsoft Dynamics CRM Server.
- The Microsoft Dynamics CRM security groups (UserGroup, PrivUserGroup, SQLAccessGroup, ReportingGroup, PrivReportingGroup) must be in a single OU. However, the OU does not have to be in the same domain as the computer that is running Microsoft Dynamics CRM.
- For users who access Microsoft Dynamics CRM from another domain, a one-way trust must exist in which the domain where the Microsoft Dynamics CRM Server is located trusts the domain where the users are located.

#### Note

If you are not using the Microsoft Dynamics CRM Connector for SQL Server Reporting Services, a two-way trust is required for users in other domains to run reports successfully.

### Single-server deployment

A Microsoft Dynamics CRM server (any edition) can be deployed in a single-server configuration, with Microsoft Dynamics CRM Server, SQL Server, SQL Server Reporting Services, and optionally Exchange Server installed and running on the same computer.

There is one limitation to single-server deployments: the server cannot also function as a domain controller, unless it is running Microsoft Windows Small Business Server 2003 Premium Edition R2. If the computer is a member server (not functioning as a domain controller), a single-server configuration is also supported on Windows Server 2003 and Windows Server 2008 editions.

#### Important

Except for Microsoft Windows Small Business Server, Microsoft Dynamics CRM is not supported when you install it on an Active Directory domain controller.

## Multiple-server deployment

Microsoft Dynamics CRM 4.0 Professional and Microsoft Dynamics CRM 4.0 Enterprise deployments can include multiple servers, which provide additional performance and scaling benefits. However, with Microsoft Dynamics CRM 4.0 Professional, server roles cannot be installed on separate computers. Therefore, all server roles are installed on every computer where you install Microsoft Dynamics CRM Server.

### Server roles

With Microsoft Dynamics CRM 4.0 Enterprise you can install certain Microsoft Dynamics CRM Server components and services on different computers. These components and services represent specific server roles. For example, customers who have larger user bases can install the Application Server role on two or more servers that run the IIS service to increase throughput performance for users.

#### Important

You cannot install a new server role on a computer that already has a server role installed. To add a role to a server, you must first uninstall the Microsoft Dynamics CRM Server, and then install all the roles that you want on that server. Because the Microsoft Dynamics CRM Connector for SQL Server Reporting Services is not installed by Microsoft Dynamics CRM Server Setup, it does not have to be uninstalled before you install new server roles.

Except for the SQL Server and SRS Data Connector server roles, installing server roles on separate computers is available only with Microsoft Dynamics CRM 4.0 Enterprise.

#### Note

You cannot explicitly select the SQL Server "role" for installation during server Setup. This is a logical role that SQL Server sets when you specify a particular instance of SQL Server for use in the Microsoft Dynamics CRM deployment.

The following table describes the available server roles.

Server Role	Description	Server Group	Scope	Installation Method
SRS Data Connector	Provides reporting functionality by interfacing with the Microsoft Dynamics CRM system and SQL Reporting Services.	N/A	Organization	Individual by using <b>srsDataConnectorSetup.exe</b>
SQL Server	Installs the MSCRM_CONFIG database on the SQL Server.	Platform Group	Organization	Individual, Group, or Full
Microsoft Dynamics CRM Asynchronous Processing Service	Processes queued asynchronous events, such as bulk e-mail or data import.	Platform Group	Deployment	Individual, Group, or Full
Deployment Service	Manages the deployment by using the methods described in the Microsoft Dynamics CRM SDK, such as create an organization or remove a Deployment Administrator role from a user.	Platform Group	Deployment	Individual, Group, or Full
Discovery Service	Finds the organization that a user belongs to in a multi-tenant deployment.	Platform Group	Deployment	Individual, Group, or Full

Server Role	Description	Server Group	Scope	Installation Method
Microsoft Dynamics CRM SDK Server	Supports running applications that use the methods described in the Microsoft Dynamics CRM SDK. Some other server roles require the Microsoft Dynamics CRM SDK Server role.	Platform Group and Application Group	Deployment	Individual, Group, or Full
Application Server	Runs the Web application server that is used to connect users to Microsoft Dynamics CRM data.	Application Group	Deployment	Individual, Group, or Full
Help Server	Makes Microsoft Dynamics CRM Help available to users.	Application Group	Deployment	Individual, Group, or Full

### Scope definition

- **Deployment:** Each instance of the server role services the entire deployment.
- **Organization:** Each instance of the server role services an organization. Therefore, you can use deploy a different server role instance for a given organization.

### Installation method definition

- **Individual, Group, or Full:** You can install the role individually (by using the command prompt), or as a part of a server role group or a full server installation (all roles) during Microsoft Dynamics CRM Server Setup. The **Application Server Role Group** and **Platform Server Role Group** options are available when you do a custom installation during Microsoft Dynamics CRM Server Setup.
- **srsDataConnectorSetup.exe:** You can install the role by using Microsoft Dynamics CRM Connector for SQL Server Reporting Services Setup.

### Install server role groupings by running Microsoft Dynamics CRM Server Setup

During Microsoft Dynamics CRM 4.0 Enterprise Setup, if you select Custom, you can select from two server role groupings that let you deploy a collection of Microsoft Dynamics CRM services. Server roles that let you increase flexibility and scalability of the Microsoft Dynamics CRM system and the groupings are as follows:

- **Application Server Role Group.** Microsoft Dynamics CRM Web user interface and services.
- **Platform Server Role Group.** Asynchronous services, such as the Workflow and Bulk E-mail services.

You can install both the Application Server Role Group and Platform Server Role Group on the same server, or you can deploy each role group on separate servers. In addition, you can install Application Server Role Groups or Platform Server Role Groups on multiple servers. For example, to increase Web application throughput, you can install the Application Server Role Group on multiple servers in the deployment. The server role groups are selected and installed during Microsoft Dynamics CRM 4.0 Setup.

### Install server roles by running Microsoft Dynamics CRM Server at the command prompt

For information about how to install Microsoft Dynamics CRM at the command prompt, including server role installation, see "Use the Command Prompt to install Microsoft Dynamics CRM" in the Installing Guide.

### Microsoft Dynamics CRM Server placement

The computer or computers that run the Microsoft Dynamics CRM Server roles and the computer that is running SQL Server should be on the same LAN. This is because of the large amount of network traffic passing between the computers. The same is true with Active Directory. The computer or computers on which Microsoft Dynamics CRM Server and the Active Directory domain controller are running should be on the same LAN to guarantee efficient Active Directory access to Microsoft Dynamics CRM.

## SQL Server and Active Directory domain controller placement

For each organization, Microsoft Dynamics CRM stores all customer relationship management (CRM) data in a SQL Server database. Make sure that the computer on which SQL Server is running is located near the Microsoft Dynamics CRM Server. This means there should be a high-speed, permanent network connection between the Microsoft Dynamics CRM Server and the computer that is running SQL Server. A network communications failure between these computers can result in data loss and service becoming unavailable.

The same is true for Active Directory because Microsoft Dynamics CRM depends on it for security information. If communication with Active Directory is lost, Microsoft Dynamics CRM will not function correctly. If communication with Active Directory is inefficient, Microsoft Dynamics CRM performance will be affected. Therefore, it is important to put an Active Directory domain controller on the same high-speed, permanent network connection as the Microsoft Dynamics CRM and SQL Server computers.

## Support for multiple-server topologies

This section provides examples of various multiple-server topologies.

### Two-server (team) topology

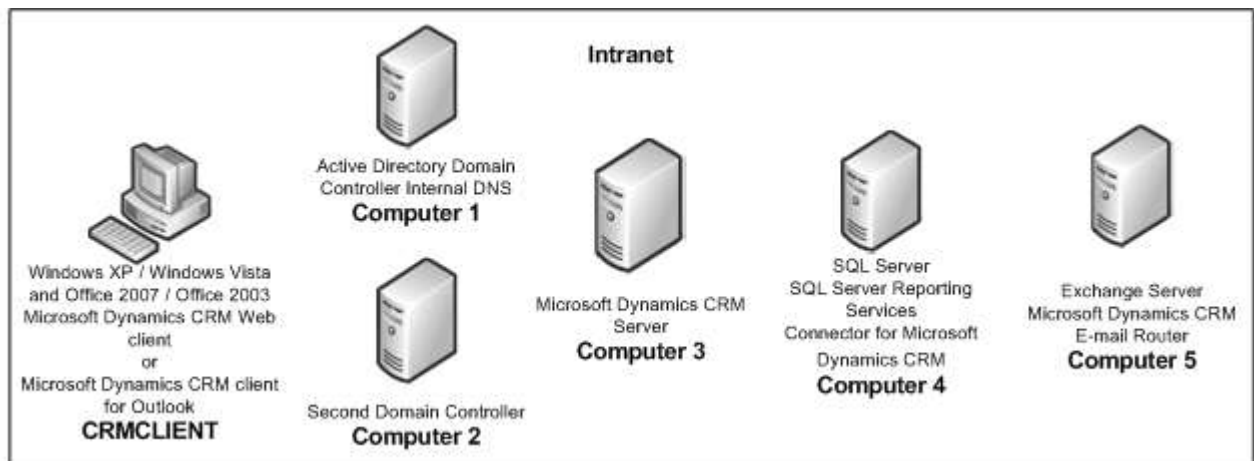
The two-server deployment topology consists of the following configuration:

- Computer 1: Running on Windows Server 2008, Windows Server 2003, or Windows 2000 Server as a functioning domain controller. If the computer is running on Windows Server 2003, it may also have Exchange Server 2003 installed.
- Computer 2: Running on Windows Server 2008 or Windows Server 2003, with instances of SQL Server 2005, SQL Server 2005 Reporting Services, and Microsoft Dynamics CRM 4.0.

### Five-server (division) topology

For larger user bases, the five-server topology can deliver increased performance.

- Computer 1: Running on Windows Server 2008, Windows Server 2003 or Windows 2000 Server as a functioning domain controller.
- Computer 2: Running on Windows Server 2008, Windows Server 2003 or Windows 2000 Server as a secondary domain controller.
- Computer 3: Running on Windows Server 2008 or Windows Server 2003 with an instance of Microsoft Dynamics CRM 4.0.
- Computer 4: Running on Windows Server 2008 or Windows Server 2003, with instances of Microsoft SQL Server 2005, and SQL Server 2005 Reporting Services.
- Computer 5: Running on Windows Server 2008 or Windows Server 2003, with Exchange Server, and the E-mail Router installed.



Basic Microsoft Dynamics CRM 4.0 five-server topology

## **Multi-forest and multi-domain Active Directory topology**

For very large user bases that span multiple domains and, in some cases, forests, the following configuration is supported.

### Forest A: Parent Domain

- Computer 1: Running on Windows Server 2008, Windows Server 2003, or Windows 2000 Server as a functioning domain controller.
- Computer 2: Running on Windows Server 2008, Windows Server 2003, or Windows 2000 Server as a secondary domain controller.
- Computer 3: Running on Windows Server 2008 or Windows Server 2003 with an instance of Microsoft Dynamics CRM 4.0.
- Computer 4: Running on Windows Server 2008 or Windows Server 2003 with an instance of SQL Server 2005.
- Computer 5: Running on Windows Server 2008 or Windows Server 2003 with an instance of SQL Server 2005 Reporting Services
- Computer 6: Running on Windows Server 2008 or Windows Server 2003, with Exchange Server, and the Microsoft Dynamics CRM 4.0 E-mail Router installed.

### Forest A: Child Domain

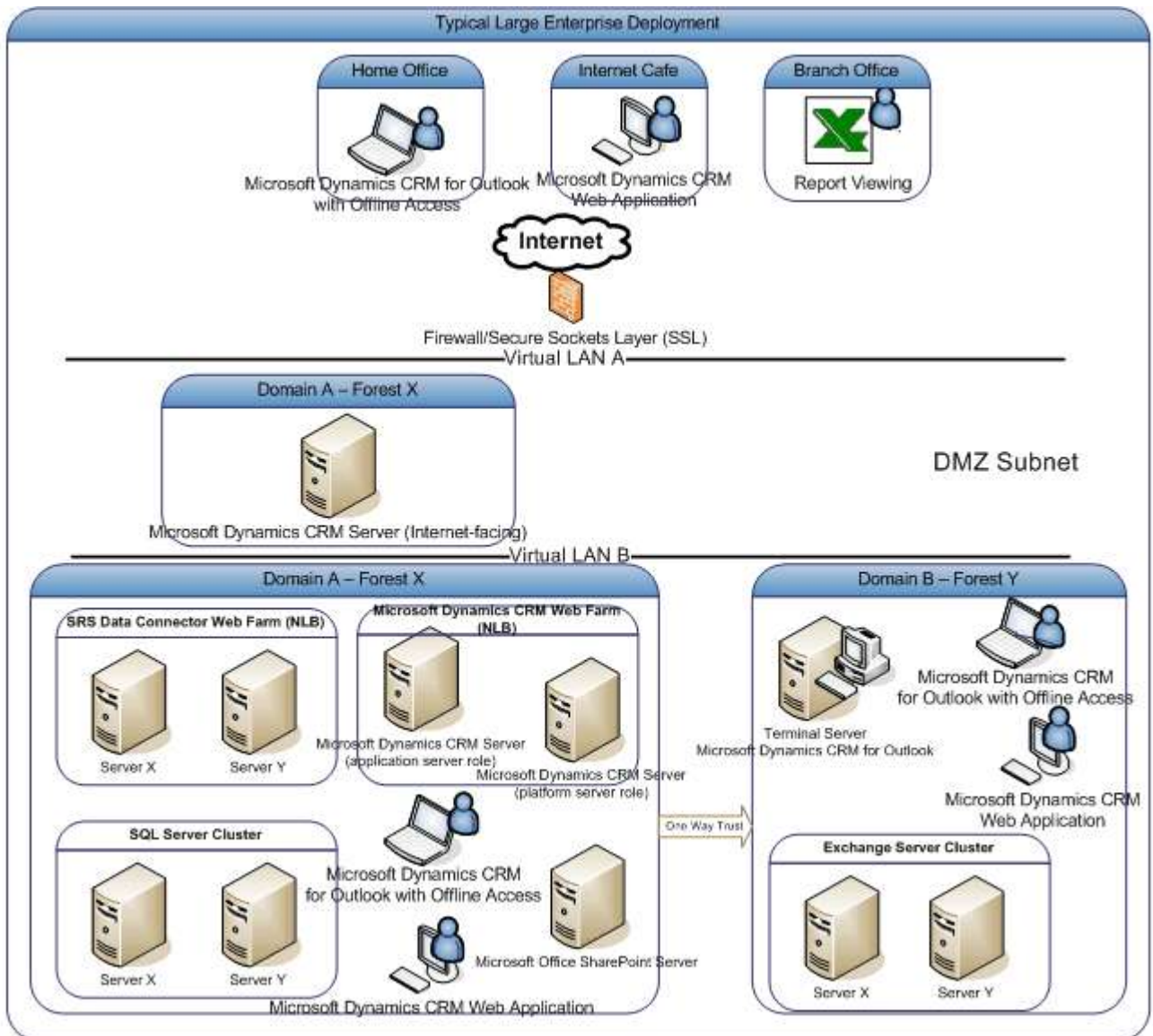
- Computer 7: Running on Windows Server 2008, Windows Server 2003, or Windows 2000 Server as a functioning domain controller.
- Computer 8: Running on Windows Server 2008, Windows Server 2003, or Windows 2000 Server as a secondary domain controller.
- Computer 9: Running on Windows Server 2008 or Windows Server 2003 with an instance of Exchange Server.

### Forest B: Parent Domain

- Computer 10: Running on Windows Server 2008, Windows Server 2003, or Windows 2000 Server as a functioning domain controller.
- Computer 11: Running on Windows Server 2008, Windows Server 2003, or Windows 2000 Server as a secondary domain controller.
- Computer 12: Running on Windows Server 2008 or Windows Server 2003 with an installation of Exchange Server.

## Multi-forest with client Internet access

The following diagram shows a possible deployment that lets users access Microsoft Dynamics CRM 4.0 through the Internet by implementing front-facing application servers that are isolated from user and resource domains by using a perimeter network (also known as DMZ, demilitarized zone, and screened subnet) model.



Internet access to Microsoft Dynamics CRM 4.0 topology example

## Multiple-domain and cross-forest implications

When Microsoft Dynamics CRM is installed in a native mode domain, users located in a mixed-mode domain can access Microsoft Dynamics CRM.

### Important

When you install Microsoft Dynamics CRM Server in a mixed-mode domain, the Microsoft Dynamics CRM groups are created by using global scope. Therefore, resources that must be added to the Microsoft Dynamics CRM groups, such as users or a computer that is running Exchange Server, must be located in the same domain. Active Directory global groups do not support adding resources from another domain.

## Tasks for a native-mode domain with users in a mixed-mode domain

You should perform the following tasks only if:

- Microsoft Dynamics CRM and Reporting Services are deployed in a domain that is a Windows 2000 or Windows Server 2003 native-mode domain.
- Microsoft Dynamics CRM is set up to use pre-created existing system groups that have the Active Directory group type Universal Security.
- Some Microsoft Dynamics CRM users are in a mixed-mode trusted domain.

➤ **To create the domain local security group with users from the mixed-mode trusted domain, follow these steps:**

### Important

For users from mixed-mode domains to access Microsoft Dynamics CRM, the Microsoft Dynamics CRM security groups must be created as Domain Local.

The Microsoft Dynamics CRM security groups cannot be Global Security groups.

Users in a Windows NT mixed-mode domain cannot be added as Microsoft Dynamics CRM users because Windows NT mixed-mode domains are not supported. To resolve this issue, you must upgrade the Windows NT mixed-mode domain level to at least a Windows 2000 mixed mode. If you are upgrading a Microsoft Dynamics CRM 3.0 deployment with users in a Windows NT mixed-mode domain, you must update the domain level before you run Setup.

1. On the computer where Microsoft Dynamics CRM Server is installed, open Active Directory Users and Computers.
2. Create a Domain Local Security Group named **MixedModeCRMUsers** in the domain where Microsoft Dynamics CRM Server is installed.
3. Add all Microsoft Dynamics CRM users located in a trusted mixed-mode domain to this group.
4. Assign the browser for Microsoft Dynamics CRM role to the **MixedModeCRMUsers** group in SQL Server Reporting Services. To do this, follow these steps:
  - a. On the default Web site where Reporting Services is installed, start a Web browser and open the Reports folder by using the following path:

`http://YourSRServer/reports`

- b. Click the **Properties** tab, and then click the *Your\_Org\_Name\_mscrm* folder.

### Note

In this step, *Your\_Org\_Name* represents the company name that you entered during Microsoft Dynamics CRM Setup.

- c. In the left column, click **Security**.
  - d. Click **New Role Assignment**, and then type the **MixedModeCRMUsers** group name in the **Group or user name** box, and then click **Browser for Microsoft Dynamics CRM** in the **Role** column.
  - e. Click **OK**, and close the Web page.
5. Add the **MixedModeCRMUsers** group to the **Logins** on the SQL Server installation where the Microsoft Dynamics CRM databases are located. The **MixedModeCRMUsers** group must have the same permissions for the Microsoft Dynamics CRM databases as the **ReportingGroup** group.

## Upgrading from Microsoft Dynamics CRM 3.0

The only supported upgrade path to Microsoft Dynamics CRM 4.0 is from Microsoft Dynamics CRM 3.0. This section provides guidelines for preparing for an upgrade to Microsoft Dynamics CRM 4.0. Performing these tasks in advance can help minimize system downtime and ensure a successful upgrade. Also, this section describes how Microsoft Dynamics CRM 4.0 upgrades your current system and what happens to items such as existing reports, customizations, and workflows.

For the latest product information, see the **Microsoft Dynamics CRM 4.0 Server Readme** (<http://go.microsoft.com/fwlink/?LinkID=78157>).

### Important

Always run a full backup of the Microsoft Dynamics CRM databases before you upgrade to a new version of the product. For information about database backups, see "Backing up the Microsoft Dynamics CRM System" in the Microsoft Dynamics CRM 4.0 Operating and Maintaining Guide.

## Microsoft Dynamics CRM software and components not supported for upgrade

The following products and solutions are not supported by Microsoft Dynamics CRM 4.0 and will not be upgraded during Microsoft Dynamics CRM Setup. If you upgrade a Microsoft Dynamics CRM 3.0 system that includes these products or solutions, or you install these components after installing Microsoft Dynamics CRM 4.0, these products or solutions may not function correctly.

- Microsoft Dynamics CRM 3.0 Mobile
- Microsoft Dynamics CRM Connector for Microsoft Dynamics GP
- Microsoft Dynamics CRM Accelerator for Siebel
- Microsoft Dynamics BizTalk Adapter
- Microsoft Dynamics CRM 3.0 Data Migration Pack and Microsoft Dynamics CRM 3.0 Data Migration Framework
- Microsoft Dynamics CRM 3.0 List Web Part
- Microsoft Dynamics CRM 3.0 Exchange E-mail Router

## Upgrade license key

Before the upgrade, obtain the license key that you will enter during the upgrade. In Microsoft Dynamics CRM 4.0, the server and client keys are combined so that you enter only one key.

For more information, see "Microsoft Dynamics CRM editions and licensing" in this document.

Also, verify that the license key that you will enter is valid for use during an upgrade. For detailed information, see **KB Article 947272: Microsoft Dynamics CRM 4.0 Deployment Manager Error: "The license code entered is not valid for upgrade"** (<http://go.microsoft.com/fwlink/?LinkId=141545>).

If you will be making any system changes that require changes to your existing Microsoft Dynamics CRM 3.0 licensing agreement, see **How to buy Microsoft Dynamics** (<http://go.microsoft.com/fwlink/?LinkId=111388>).

## User permissions and privileges

To perform a successful upgrade, the user who runs Setup must:

- Have an account in the same Active Directory domain as the server or servers that are being upgraded.
- Be a member of the Microsoft Dynamics CRM System Administrator security role.
- Have administrator rights on the SQL Server and Reporting Services associated with the deployment that is being upgraded.
- Have sufficient permissions to create new security groups in the Active Directory organizational unit that contains the Microsoft Dynamics CRM 3.0 groups.

For more information about the permission requirements for performing an installation or upgrade, see **KB Article 946677: How to install Microsoft Dynamics CRM 4.0 with the minimum required permissions** (<http://go.microsoft.com/fwlink/?LinkId=141525>).

#### Note

If you use pre-created groups together with a configuration file, the user who runs the upgrade does not have to have permission to create security groups. For more information, see "Server XML Configuration File" in the Microsoft Dynamics CRM Installing Guide.

## Multiple Microsoft Dynamics CRM Server versions in the same domain

Microsoft CRM 1.2, Microsoft Dynamics CRM 3.0, and Microsoft Dynamics CRM 4.0 can coexist in the same Active Directory domain. However, each version must be installed on a separate server. We recommend that you associate each version of Microsoft Dynamics CRM with a separate Active Directory organizational unit. This can prevent confusion if you have to add users or troubleshoot Active Directory issues.

#### Note

After you upgrade your Microsoft Dynamics CRM deployment, the earlier version is no longer available.

## Sharing a SQL Server

Only one Microsoft Dynamics CRM 4.0 deployment per instance of SQL Server is supported. This is because each Microsoft Dynamics CRM 4.0 deployment requires its own **MSCRM\_Config** database, and multiple instances of **MSCRM\_Config** cannot coexist on the same SQL Server. If you have multiple SQL Server instances running on the same computer, you can host the databases for multiple Microsoft Dynamics CRM 4.0 deployments on the same computer. However, this might decrease system performance.

#### Note

If you want to host multiple organizations in a single Microsoft Dynamics CRM 4.0 deployment, see **Multi-Tenancy: Use a single hardware group for separate data and processes** (<http://go.microsoft.com/fwlink/?LinkId=146765>).

Because Microsoft CRM 1.2 and Microsoft Dynamics CRM 3.0 do not have a database named **MSCRM\_Config**, you can configure the databases for these versions of the product to coexist on the same SQL Server as Microsoft Dynamics CRM 4.0 databases. However, to optimize performance we recommend that each version have its own SQL Server.

For detailed information about the options available for upgrading multiple Microsoft Dynamics CRM Server deployments that share a SQL Server, see "Upgrade Multiple Deployments of Microsoft Dynamics CRM 3.0 That Share an Instance of SQL Server" in the Microsoft Dynamics CRM Installing Guide.

## Additional downloads and information resources

Gather the following tools and review the following documentation before you run the upgrade:

- **Update Rollup**. Download the latest **Update Rollup** (<http://go.microsoft.com/fwlink/?LinkId=146266>) package for Microsoft Dynamics CRM 4.0.
- **Diagnostics Tool**. Download the CrmDiagTool4 from **Microsoft Dynamics CRM Support Tools Information** (<http://go.microsoft.com/fwlink/?LinkId=140354>) so that it is available if you encounter problems during the upgrade.
- **Internet Facing Deployment Configuration Tool**. If you plan to configure an Internet-facing deployment (IFD) of Microsoft Dynamics CRM, you can download the Internet Facing Deployment Configuration Tool to use during the upgrade. For more information, see **KB article 948779: How to use the Internet Facing Deployment Configuration Tool** (<http://support.microsoft.com/kb/948779>).
- **KB Articles**. Before you start the upgrade, review the following articles:
  - ▶ **947061: How to resolve common problems that may occur when you upgrade from Microsoft Dynamics CRM 3.0 to Microsoft Dynamics CRM 4.0** (<http://go.microsoft.com/fwlink/?LinkId=122246>)

- ▶ **946590: Error message when you try to upgrade Microsoft Dynamics CRM 3.0 to Microsoft Dynamics CRM 4.0: "Action Microsoft.Crm.Setup.Server.InstallDatabaseAction failed"** (<http://go.microsoft.com/fwlink/?LinkId=146662>)
- ▶ **947997: Error message when you try to reinstall Microsoft Dynamics CRM 3.0 after you uninstall Microsoft Dynamics CRM 4.0: "Microsoft.Crm.Setup.Server.ConfigureServiceVirtualDirAction failed"** (<http://go.microsoft.com/fwlink/?LinkId=146663>)
- ▶ **952105: How to revert to Microsoft Dynamics CRM 3.0 if you cannot upgrade to Microsoft Dynamics CRM 4.0** (<http://go.microsoft.com/fwlink/?LinkId=146664>)

## Test upgrade

We recommend that you plan to run at least one test upgrade before you upgrade your production environment. After you run a test upgrade, verify the product configuration by performing operations that you would typically use in your production environment. For example, for a service organization, you may want to create an e-mail activity related to a case, and then verify the functionality by sending a test e-mail that contains text from an existing case. If you receive any errors while you are using the product in a test environment, make sure that you resolve them before you upgrade your production environment.

## What happens to reports?

When you run Setup to upgrade an existing Microsoft Dynamics CRM 3.0 system, the Microsoft Dynamics CRM 4.0 reports will be installed. However, these reports will only be available in the Microsoft Dynamics CRM 4.0 Reports view in the Reports area. Also, Microsoft Dynamics CRM 3.0 reports will be upgraded so that they can use the new data connector. After the Setup is complete, the upgraded Microsoft Dynamics CRM 3.0 reports will be available in the same forms and lists as with the Microsoft Dynamics CRM 3.0 system.

The following items should be considered before you run Setup to upgrade your existing Microsoft Dynamics CRM 3.0 system.

- During the upgrade, all report definition files (.RDL) will be modified to work with the new Microsoft Dynamics CRM Connector for SQL Server Reporting Services.
- Some Microsoft Dynamics CRM 3.0 reports will not work correctly after the upgrade. This includes reports that have the following conditions:
  - ▶ Modification to use expressions for linking.
  - ▶ Modification to use stored procedures.
- The report entity now supports views. During Setup, the following two new views seem to differentiate the reports:
  - ▶ Microsoft Dynamics CRM 3.0 Reports: Existing Microsoft Dynamics CRM 3.0 reports.
  - ▶ Microsoft Dynamics CRM 4.0 Reports: New Microsoft Dynamics CRM 4.0 reports.
- During Setup, all reports, in both view categories, are created that have organization ownership and then are available to every Microsoft Dynamics CRM user.
- Administrators who want to make the Microsoft Dynamics CRM reports available in views and forms must modify the properties for each report. For more information about how to modify report properties, see the Microsoft Dynamics CRM Help.
- Any snapshot reports that are created by using the Report Scheduling Wizard (available from the Microsoft Download Center) will have the following ownership after the upgrade:
  - ▶ Snapshot reports that were available to the whole organization will have organization ownership.
  - ▶ Snapshot reports that were owned by individual users will have user ownership.

## What happens to customizations?

During the upgrade process, Setup will try to upgrade all published customizations.

### Important

During the upgrade process, Setup deletes all customizations that are not published. Therefore, we recommend that you review each unpublished customization and publish the customizations that you want before you run Microsoft Dynamics CRM 4.0 Setup.

In rare cases, an existing custom view may be renamed during the customization upgrade if it conflicts with a new system defined view.

## What happens to workflows?

Setup will try to upgrade all existing Microsoft Dynamics CRM 3.0 workflows. Because of design improvements, note the following details:

- Microsoft Dynamics CRM 4.0 workflows do not support a post-URL action. As described in the Microsoft Dynamics CRM 3.0 SDK, the post-URL action was deprecated with that release. Because post-URL actions are deprecated, any workflows or workflow instances in the Microsoft Dynamics CRM 3.0 system will not be upgraded during Microsoft Dynamics CRM 4.0 Setup. During Server Setup, workflows that cannot be upgraded are recorded in the Setup log.
- In Microsoft Dynamics CRM 3.0, workflows were executed in a predetermined order based on entity and event type. In Microsoft Dynamics CRM 4.0, a single workflow job now supports multiple events (create, update, and delete), the following behavior that occurs after upgrade should be considered:

### Note

The sequential order when a workflow runs cannot be configured. Therefore, Microsoft Dynamics CRM 3.0 workflows that are upgraded will do so without following a predetermined order of execution. If the workflow requires a strict order, we recommend that you redefine the workflow after the upgrade is completed.

- Sales process workflows are upgraded as follows:
  - ▶ Sales processes that are inactive are upgraded without change to the original behavior of the workflow.
  - ▶ Sales processes that are active and that subscribe to a manual event are upgraded without change to the original behavior of the workflow.
  - ▶ If multiple sales processes exist on an opportunity create event and the sales processes belong to a single owner, particular transformation logic will be used to upgrade the sales processes. Although the logic of the upgraded sales process is similar, the definition structure of the sales processes will seem to differ from the original. For example, consider a Microsoft Dynamics CRM 3.0 sales process definition that has the following order of execution.
    1. Sales process 1 (gating condition --> C1)
    2. Sales process 2 (gating condition --> C2)
    3. Sales process 3 (gating condition --> None)

After the upgrade, the definition appears as follows:

1. Sales process 0 (This is a new workflow definition automatically created as part of the upgrade process) with the following logic:
2. If C1 is not true then call sub-process P1'
3. Elself C2 then call sub-process P2'
4. Elself Null then call sub-process P3'
5. P1' --> Sales process 1 without C1

6. P2' --> Sales process 2 without C2
7. P3' --> Sales process 3

**Note**

Sales processes that contain multiple active processes on an opportunity create event, and are owned by multiple users, will be deactivated during upgrade. Therefore, to run these sales processes after the upgrade is complete you must manually publish them. However, after the upgrade, these sales processes may not function as expected and may require redefinition.

**Workflow rules and workflow instances on additional servers are not upgraded to Microsoft Dynamics CRM 4.0 when upgrading the second node in an NLB cluster**

In a multi-server configuration of Microsoft Dynamics CRM 3.0, it is possible to have unique workflow rules and workflow assemblies on each server. Similarly, each server may have active workflow instances. However, the upgrade process for Microsoft Dynamics CRM 4.0 only upgrades workflow rules, workflow assemblies, and workflow instances for one server.

To make sure that there are no active workflow instances on these additional servers during the upgrade process, shut down the additional servers before you start the upgrade to Microsoft Dynamics CRM 4.0. To make sure that any unique workflow rules or workflow assemblies are also upgraded, copy them from the additional servers to the primary server that will be upgraded.

**What happens to Microsoft Dynamics CRM 3.0 Mobile?**

Microsoft Dynamics CRM 3.0 Mobile is not supported with Microsoft Dynamics CRM 4.0. We recommend that you uninstall Microsoft Dynamics CRM 3.0 Mobile before you run Microsoft Dynamics CRM 4.0 Setup.

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## Planning Deployment Advanced Topics

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This chapter describes some of the common topics about how to plan the deployment of Microsoft Dynamics CRM for the enterprise.

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## Advanced deployment options for Microsoft Dynamics CRM Server

This section describes advanced deployment options for Microsoft Dynamics CRM Server.

### Update Setup files by using a local package

The update Setup feature can indicate if you have the latest updates to Microsoft Dynamics CRM before you run Setup. With this feature, you can specify where Setup locates the **.MSP** package applied to the Setup files. This gives you additional control over the update, and also lets you apply the update package locally without the need of an Internet connection.

To specify the location, you must edit the XML Setup configuration file `<Patch>` element and then run Setup from the command prompt. For information about how to specify the package to apply, see "Use the Command Prompt to install Microsoft Dynamics CRM" in the Installing Guide.

For information about MSP packages for Microsoft Dynamics CRM Setup, see Microsoft Knowledge Base article 948917: ***How to obtain the Setup updates for Microsoft Dynamics CRM 4.0*** (<http://go.microsoft.com/fwlink/?linkid=102967>).

### Install server roles

To install server roles, you can select one of the following options:

- Run the Microsoft Dynamics CRM Server Setup Wizard Custom option to select from two server role groups.
- Configure an XML Setup configuration file and then run Setup at the command prompt to specify a server role group or one or more individual server roles.

For information about planning server roles, see "Server roles" in this document. For information about installing server roles, see "Use the Command Prompt to install Microsoft Dynamics CRM" in the Installing Guide.

### Configure a Microsoft Dynamics CRM Internet-facing deployment

You can deploy Microsoft Dynamics CRM so that remote users can connect to the application through the Internet. The following Internet-facing deployment (IFD) configurations are supported:

- Microsoft Dynamics CRM for internal users only
- Microsoft Dynamics CRM for internal users and IFD access

- Microsoft Dynamics CRM for IFD-only access

Microsoft Dynamics CRM uses integrated Windows authentication to authenticate internal users. Integrated Windows authentication implements pass-through authentication functionality so that Microsoft Dynamics CRM users are not prompted to log on to Microsoft Dynamics CRM after their initial sign on to the Active Directory network.

Configuring an IFD enables access to Microsoft Dynamics CRM from the Internet, outside the company firewall, without using a virtual private network (VPN) solution. Microsoft Dynamics CRM configured for Internet access uses forms authentication to verify credentials of external users. When you configure Microsoft Dynamics CRM for Internet access, integrated Windows authentication must remain in place for internal users.

To let users access the application over the Internet, the server that is running Internet Information Services (IIS) where the Microsoft Dynamics CRM application is installed must be available over the Internet.

Configuring an IFD sets the Microsoft Dynamics CRM Web site to use anonymous authentication for external users, and provides a sign on page to capture users' credentials and obtain an authentication ticket cookie. Microsoft Dynamics CRM IFD checks for a valid ticket cookie before processing the page request. When a page request does not contain a valid ticket, the page request is redirected to the sign-on page. A page request with an expired ticket is also redirected to the sign-on page. Users access the Microsoft Dynamics CRM Web site by typing the IFD URL in Internet Explorer. Because this kind of authentication sends user credentials and passwords by using clear text, you should always configure Microsoft Dynamics CRM to use Secure Sockets Layer (SSL), also known as secure HTTP.

For information about SSL, see "Make Microsoft Dynamics CRM 4.0 client-to-server network communications more secure" in the Microsoft Dynamics CRM Installing Guide. Also see the Internet Information Services (IIS) Manager Help.

For information about forms authentication, see **Web Form (IFD) Authentication** (<http://go.microsoft.com/fwlink/?LinkId=149497>).

For information about forms authentication with Active Directory, see **Forms Authentication in ASP.NET** (<http://go.microsoft.com/fwlink/?LinkId=149498>).

## Methods to configure an IFD

You can configure a Microsoft Dynamics CRM Internet-facing deployment (IFD) by using one of the following methods:

- Deploy an IFD during a Microsoft Dynamics CRM Server installation or upgrade:
  - ▶ Upgrade from Microsoft Dynamics CRM 3.0 to Microsoft Dynamics CRM 4.0 by using command-line options and an XML configuration file that contains IFD configuration information.
  - ▶ Install a new deployment of Microsoft Dynamics CRM by using command-line options and an XML configuration file that contains IFD configuration information.
- Reconfigure an existing non-IFD deployment by running the Microsoft Dynamics CRM Internet Facing Deployment Configuration Tool. For more information, see **KB article 948779: How to use the Internet Facing Deployment Configuration Tool** (<http://support.microsoft.com/kb/948779>).

## Implement a strong password policy

To reduce the risk of "brute-force attacks" we strongly recommend that you implement a strong password policy for remote users who are accessing the domain where Microsoft Dynamics CRM is installed. For more information about how to implement a strong password policy in Microsoft Windows Server, see the *Best Practices* topic in the Active Directory Users and Computers Help.

## Internet connection firewall

The Windows Server 2003 family provides firewall software to prevent unauthorized connections to the server from remote computers. For more information about how to configure Internet Connection Firewall for Internet Information Services (IIS), see the "*Before Configuring IIS*" topic in Internet Information Services (IIS) Manager Help.

For information about how to make a Web site available on the Internet, see the *Domain Name Resolution* topic in the Internet Information Services (IIS) Manager Help.

## Proxy/firewall server

If you do not have a secure proxy and firewall solution on the network, we recommend that you use a dedicated proxy and firewall server, such as Microsoft Internet Security and Acceleration Server (ISA). ISA Server can act as a gateway between the Internet and the Microsoft Dynamics CRM application. ISA Server protects your IT infrastructure while providing users with fast and secure remote access to applications and data. For more information, see **Internet Security and Acceleration Server** (<http://go.microsoft.com/fwlink/?linkid=102704>).

Follow these steps as configuration guidelines:

### Step 1: Install Microsoft Dynamics CRM Server for Internet access

- You can deploy Microsoft Dynamics CRM Server for Internet access by preparing an XML Setup configuration file, and then running Setup at the command prompt. For more information, see "Use the Command Prompt to Install Microsoft Dynamics CRM" in the Microsoft Dynamics CRM Installing Guide.

When you deploy Microsoft Dynamics CRM for Internet access, the following settings are configured:

- The Microsoft Dynamics CRM Web site is configured to accept a nonsecure connection. We strongly recommend that you modify the Microsoft Dynamics CRM Web site so that SSL is required. For more information about how to configure a Web site to use SSL, see the Help in the Internet Information Services (IIS) Manager MMC snap-in. The Web site allows anonymous access.
- Internal network address information is added to the Windows registry on the computer where Microsoft Dynamics CRM Server, or the Application Server role group, is installed. CRM ticket encryption is enabled. For information about Microsoft Dynamics CRM key management, see "Key management in Microsoft Dynamics CRM" in this guide.

### Step 2: Configure Microsoft Dynamics CRM for Outlook to connect to the Microsoft Dynamics CRM Server by using the Internet

For Microsoft Dynamics CRM for Microsoft Office Outlook to be able to access the Microsoft Dynamics CRM Server over the Internet, you must specify the external Web address that will be used to access the Internet-facing Microsoft Dynamics CRM Server. To do this, you must install Microsoft Dynamics CRM for Outlook and then run the Configuration Wizard. Then, during configuration, enter the external Web address in the **External Web** address box. If you install server roles, this Web address must specify where the Discovery Server role is installed. For more information about how to configure Microsoft Dynamics CRM for Outlook, see "Microsoft Dynamics CRM Server Installation Instructions" in the Microsoft Dynamics CRM Installing Guide.

When accessing the Microsoft Dynamics CRM Server over the Internet, the Microsoft Dynamics CRM client applications use ASP.NET forms authentication. For more information about forms authentication, see the MSDN article **Explained: Forms Authentication in ASP.NET 2.0** (<http://go.microsoft.com/fwlink/?linkid=102281>).

For more information about Microsoft Dynamics CRM Internet-facing deployments, download the **Microsoft Dynamics CRM 4.0 Internet Facing Deployment Scenarios** (<http://go.microsoft.com/fwlink/?linkid=108142>) white paper.

## Key management in Microsoft Dynamics CRM

To verify the identity of people and organizations, and to guarantee content integrity, Microsoft Dynamics CRM generates digital certificates. These electronic credentials bind the identity of the certificate owner to a pair of electronic keys (public and private) that can be used to digitally encrypt and sign information. The credentials ensure that the keys actually belong to the person or organization specified. To learn more about increasing security with keys, read the following article about key-management features in Microsoft Dynamics CRM.

### Key types

Microsoft Dynamics CRM uses three kinds of private encryption keys for deployments accessed over the Internet.

- **CRM ticket key.** This key creates CRM tickets, which are generated when a Microsoft Dynamics CRM user logs on to the system. In addition, every time that a request is made to the Microsoft Dynamics CRM Server, the CRM ticket key decrypts the CRM ticket to validate users without forcing the user to re-enter credentials.
- **Web remote procedure call (WRPC) token key.** This is used to generate a security token, which helps make sure that the request originated from the user who made the request. This security token decreases the likelihood of certain attacks, such as a cross-site request forgery (one-click) attack.
- **CRM e-mail credentials key.** This key encrypts the credentials for the E-mail Router, an optional component of Microsoft Dynamics CRM.

### Key regeneration and renewal

CRM ticket keys are automatically generated and renewed and then distributed, or deployed, to all computers running Microsoft Dynamics CRM or running a specific Microsoft Dynamics CRM Server role. These keys are regenerated periodically and, in turn, replace the previous keys. By default, key regeneration occurs every 24 hours.

### Key-management logging

Microsoft Dynamics CRM records encryption-key events in the Application log. By Using the Event Viewer, you can filter on the Source column and look for **MSCRMKeyServiceName** entries, where *ServiceName* is the key management service such as **MSCRMKeyArchiveManager** or **MSCRMKeyGenerator**.

### Key storage

Cryptographic keys are stored in the Microsoft Dynamics CRM configuration database (**MSCRM\_CONFIG**).

#### Warning

By default, encryption keys are not stored in the configuration database in an encrypted format. We strongly recommend that you specify encryption when you run Setup.

### How to encrypt Microsoft Dynamics CRM keys

Before you run Microsoft Dynamics CRM Setup, you can add the `<encryptionkeys>` entry in the XML configuration file, and then run Microsoft Dynamics CRM Server Setup at the command prompt. During the installation, Setup creates a server master key and database master key, which are used to encrypt Microsoft Dynamics CRM certificates.

For detailed instructions about how to install Microsoft Dynamics CRM at the command prompt and how to encrypt the Microsoft Dynamics CRM keys, see "Use the Command Prompt to install Microsoft Dynamics CRM" in the Installing Guide.

## Multi-organization deployment

In the **Organizations** area of Deployment Manager, you create, add, enable, disable, or remove organizations.

**Important**

There are several names that cannot be used to name an organization. To view a list of reserved names, open the dbo.ReservedNames table in the **MSCRM\_CONFIG** database, and notice the names in the ReservedName column.

For more information about organization management in Microsoft Dynamics CRM, see the Deployment Manager Help.

## Advanced deployment options for Microsoft Dynamics CRM for Outlook

This section describes advanced deployment options that can be used to deploy Microsoft Dynamics CRM for Outlook.

The Microsoft Dynamics CRM for Outlook installation is completed by performing two steps. First, run Setup, which installs the files that are required on the computer. Then, run the Client Configuration Wizard.

There are two versions of Microsoft Dynamics CRM for Outlook:

- **Microsoft Dynamics CRM for Outlook.** Install this on workstations (including computers that are shared by several users) that do not go offline and have a connection to the local area network (LAN) or to the Internet. If a computer is being shared by several users (that is, each user has a logon and is a valid Microsoft Dynamics CRM user), you install Microsoft Dynamics CRM for Outlook one time, and then run the Client Configuration Wizard to configure each user.

**Note**

If a user does not require offline capabilities, for improved performance we recommend that you install Microsoft Dynamics CRM for Outlook instead of Microsoft Dynamics CRM for Outlook with Offline Access.

- **Microsoft Dynamics CRM for Outlook with Offline Access.** Install this on computers that go offline. Salespeople who require offline support for sales force automation data while they work in the field have access to their customer data by using laptops.

At the beginning of the Microsoft Dynamics CRM for Outlook installation, you will have the choice to install either Microsoft Dynamics CRM for Outlook or Microsoft Dynamics CRM for Outlook with Offline Access. Microsoft Dynamics CRM for Outlook is available from the shortcut bars and folder navigation in the main window of Outlook.

## Deploy Microsoft Dynamics CRM for Outlook by using deployment management software

You can deploy Microsoft Dynamics CRM for Outlook by using Systems Management Server 2003, or its successor, System Center Configuration Manager 2007. For instructions, see "Microsoft Dynamics CRM for Outlook Installation Instructions" in the *Microsoft Dynamics CRM Installing Guide*.

## Deploy Microsoft Dynamics CRM for Outlook by using Group Policy

You can deploy Microsoft Dynamics CRM for Outlook by using Microsoft Group Policy. If you perform a Group Policy-based software deployment, you can publish the software and make it available to users from a list of applications in **Add or Remove Programs** in **Control Panel**. When you publish software for users, you give them the opportunity to decide if and when they want to install it.

**Important**

You must run the Microsoft Dynamics CRM for Outlook Setup program (**SetupClient.exe**) by using the administrative installation option to create an MSI package (**CRMClient.msi**) for Group Policy deployment. You cannot use the MSI package (**Client.msi**) that is included with the Microsoft Dynamics CRM for Outlook installation files to deploy by using Group Policy. For information about how to perform an administrative installation, see "Install Microsoft Dynamics CRM for Outlook" in the *Microsoft Dynamics CRM Installing Guide*.

## Preparing Microsoft Dynamics CRM for Outlook for a Group Policy deployment

Follow this procedure to create the **CRMClient.msi** file that is required for a Microsoft Dynamics CRM for Outlook Group Policy deployment.

➤ **To create the CRMClient.msi file, follow these steps:**

1. Determine the distribution point and copy the MSI package in that location.
  - ▶ Run **SetupClient.exe** at the command prompt by using the **/A** and **/targetdir** parameters. The **/A** parameter specifies an administrative installation, and **/targetdir** specifies the target directory. After Setup is complete, you can share the location. For more information, see "Use the Command Prompt to install Microsoft Dynamics CRM" in the Microsoft Dynamics CRM Installing Guide.
  - ▶ Consider using Microsoft Distributed File System (DFS) and File Replication Service (FRS) to help improve the security and availability of your distribution points. For more information about DFS, FRS, and how to deploy Microsoft file server technologies, refer to your operating system documentation. We recommend that you understand those features before you configure your distribution point servers.
2. Create the Group Policy object (GPO) and target the application to Microsoft Dynamics CRM Users. To do this, follow these steps:
  - a. On a domain controller in the domain where Microsoft Dynamics CRM is installed, click **Start**, point to **Programs**, point to **Administrative Tools**, and then click **Active Directory Users and Computers**.

### Note

You may have to download and install the Group Policy Management Console (GPMC) with SP1 snap-in. For more information, see *Internet Security and Acceleration Server* (<http://go.microsoft.com/fwlink/?linkid=102704>).

- b. In Active Directory Users and Computers, right-click the domain, and then click **Properties**.
- c. In the **Properties** box, click the **Group Policy** tab, and then click **Open**.
- d. In **Group Policy Management**, right-click the domain, click **Create and Link a GPO Here**, type a name for the Group Policy object, such as *Microsoft Dynamics CRM Users*, and then click **OK**.
- e. Creating a GPO at the domain level configures the GPO with domain-wide scope.
- f. Right-click the GPO that you created in the previous step, and then click **Edit**.
- g. In **Group Policy Object Editor**, expand **User Configuration**, and then expand **Software Settings**.
- h. Right-click **Software Installation**, point to **New**, and then click **Package**.
- i. Type the full path or locate the Microsoft Dynamics CRM for Outlook MSI package (**CRMClient.msi**) that was created by the administrative installation, and then click **Open**.

### Important

Users must have Read access to this path.

- j. Click **Publish** to publish the Microsoft Dynamics CRM for Outlook application, and then click **OK**.
- k. By default, Microsoft Dynamics CRM for Outlook is available in **Add or Remove Programs** for *all* authenticated users the next time that they log on to the domain. To limit the scope to a specific OU, Group, or individual User, in **Group Policy Management**, click the GPO named *Microsoft Dynamics CRM Users*, and then add or remove the security objects that you want, such as a group, in the **Security Filtering** area of the publication on the **Scope** tab.

## Publish versus assign

When you publish an application by using GPO deployment, it is made for users to install by using **Add or Remove Programs** in Windows **Control Panel**. *Assigned* applications are installed when a user logs on to the domain.

**Note**

Microsoft Dynamics CRM for Outlook does not support application assignment through GPO installation. For more information about publishing versus assigning software, see the Group Policy deployment documentation for your operating system.

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