

Microsoft Dynamics CRM 2011 Planning Guide

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Overview

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

- **Planning Guide:** Use this guide 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 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 *Planning Tools* (<http://go.microsoft.com/fwlink/?LinkID=189326>).
- **Installing Guide:** Use this guide to learn about how you install Microsoft Dynamics CRM applications. This guide includes 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 editions that cover implementations for small, to mid-level, to even very large organizations.

Editions

- Microsoft Dynamics CRM 2011 Server. There is no user limit for this edition. Additional features include support for multiple organizations, multiple server instances, and separate role-based service installation. Role-based services let you increase performance by installing component services on different computers.
- Microsoft Dynamics CRM Workgroup Server 2011. This edition is limited to five, or fewer, users. This version is limited to a single organization and a single computer that is running Microsoft Dynamics CRM Server 2011.

Licensing

A Microsoft Dynamics CRM deployment operates by using a single product key. Microsoft Dynamics CRM 2011 does not require additional product keys to be added when changes are made, such as adding a client access license (CAL). The single product key contains the Microsoft Dynamics CRM version, server license, and the CALs.

You can view and upgrade a license in Deployment Manager. Deployment Manager is a Microsoft Management Console (MMC) snap-in that system administrators can use to manage organizations, servers, and licenses for deployments of Microsoft Dynamics CRM.

Client Access License Types

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 2011?

Microsoft Dynamics CRM 2011 includes several new features that offer flexibility, scalability, and ease of use.

New application features

Microsoft Dynamics CRM 2011 includes several new application features:

Advanced user personalization. Microsoft Dynamics CRM 2011 lets you configure a workspace that is personalized to meet your unique role and information needs. Personalizing a workspace means that you can set the default pane and tab that display when you open Microsoft Dynamics CRM. You also have control over what links appear in the workplace view, how many records appear in lists, how numbers and dates display, and the language for your user interface. Combine this personalization with the new dashboard feature to create a personalized dashboard for your default view.

Improved Microsoft Office interface. Microsoft Dynamics CRM 2011 introduces a new Office 2010 contextual ribbon for the Microsoft Dynamics CRM Online and Microsoft Dynamics CRM browser clients and for Microsoft Dynamics CRM for Microsoft Office Outlook. The new ribbon delivers a consistent, familiar navigation and user experience that helps you better integrate Microsoft Dynamics CRM with your Office 2010 environment.

Better Office Outlook experience. Microsoft Dynamics CRM 2011 improves the integration of Microsoft Dynamics CRM into Microsoft Office Outlook with the Microsoft Dynamics CRM for Microsoft Office Outlook. It takes full advantage of native Outlook functionality, such as previews and conditional formatting, and presents Microsoft Dynamics CRM areas as sub-folders in Outlook mail folders. With a few exceptions, these Microsoft Dynamics CRM areas in Outlook include all of the same functionality as the browser clients.

Dashboards. Dashboards are a powerful feature in Microsoft Dynamics CRM 2011. Use a dashboard to see at a glance all the important information you need to make key business decisions every day. Assemble and present information from several places in Microsoft Dynamics CRM in a quickly-read format. This means that you do not have to search multiple areas for the information you want. Dashboards are easy to create, and are easy to revise as your changing business needs require.

Goal management. Microsoft Dynamics CRM 2011 gives you the ability to define key performance and business health indicators. This way you can track and measure results against your organization's goals or metrics. Easily and quickly define goals for a campaign or fiscal period. Combine smaller goals, such as for specific teams or territories, into the overall goals for your organization. Create a rollup of all the goals into the actuals that show how you are tracking.

Interactive process dialogs. Microsoft Dynamics CRM 2011 expands its workflow capability by adding interactive dialogs. Dialogs present a consistent message to your customers. Also, dialogs collect and process information by using step-by-step scripts to direct users through every process. At one level, you can use dialogs to guide customer interactions and internal processes. At another level, you can increase dialog performance and versatility by incorporating workflow logic. This logic invokes automated tasks by using the responses a customer or user makes during the dialog script.

Role-based forms and views. Microsoft Dynamics CRM 2011 displays forms and views based on user roles. This role-tailored design ensures that the business professionals in your organization have fast access to the relevant information they need. Role-based forms and views also prevent users from viewing data that they are not authorized to view.

Solution management. Solutions in Microsoft Dynamics CRM 2011 are a new way to save customizations and share them with other users. You can create a solution or import a solution created by a developer outside your organization. It is easy to share a solution with other users. A managed solution can be edited only by specific users. An unmanaged solution can be edited by any user with an appropriate user role. A solution can have version numbering, relationships with entities and other components, and security features based on user roles.

Cloud development. Microsoft Dynamics CRM 2011 is at the leading edge of cloud computing. Developers can take advantage of the Windows Azure platform to develop and deploy custom code for Microsoft Dynamics CRM Online by using powerful tools, such as Microsoft Visual Studio. Using the Microsoft .NET Framework 4.0, developers can also incorporate Microsoft Silverlight, Windows Communication Foundation, and .NET Language Integrated Query (LINQ) into their cloud solutions. Cloud development for Microsoft Dynamics CRM 2011 is a powerful tool for customizing your Microsoft Dynamics CRM solution for optimal performance and business results.

Microsoft Dynamics CRM Marketplace. Microsoft Dynamics Marketplace is your online solutions catalog. These solutions help you accelerate and extend your Microsoft Dynamics CRM implementation.

Quickly discover and apply industry-specific applications and extensions from Microsoft and its partners. Then, Marketplace distributes your solution directly to you.

Microsoft Dynamics Marketplace is fully integrated with Microsoft Dynamics CRM 2011. Find your solution directly from Microsoft Dynamics CRM.

Claims-based authentication support

Using federation identity technology such as Active Directory Federation Services (AD FS) 2.0, Microsoft Dynamics CRM supports claims-based authentication. This technology helps simplify access to applications and other systems by using an open and interoperable claims-based model that provides simplified user access and single sign-on to applications on-premises, cloud-based, and even across organizations. For more information about AD FS 2.0, see *Active Directory Federation Services 2.0* (<http://go.microsoft.com/fwlink/?LinkId=200771>).

Add or remove a server role

You can now install individual server roles by using the Microsoft Dynamics CRM Server Setup Wizard. Similarly, you can add a server role, or change or remove installed server roles from **Programs and Features** in **Control Panel**.

Sandbox Processing Service

The Sandbox Processing Service server role enables an isolated environment to allow for the execution of custom code, such as plug-ins.

What's new in Microsoft Dynamics CRM 2011 E-mail Router?

The Microsoft Dynamics CRM 2011 E-mail Router includes the following new features:

- You can upgrade from the Microsoft Dynamics CRM 4.0 E-mail Router to the Microsoft Dynamics CRM 2011 E-mail Router without uninstalling and losing your configuration data.
- The E-mail Router and the Rule Deployment Wizard support Microsoft Exchange Server 2010. The E-mail Router also supports Exchange Online.
- You can use Autodiscover to obtain the Exchange Web Services (EWS) URL. This capability is supported for Exchange Server 2007 SP1 and later versions.
- You can use the E-mail Router with either Microsoft Dynamics CRM Online or Microsoft Dynamics CRM (On-Premises Edition). You can switch between these two options after installing the E-mail Router. For more information, see "Set e-mail access type" in the Installing Guide.
- On supported operating systems, the E-mail Router can now use claims-based authentication when connecting to Microsoft Dynamics CRM. For more information about supported operating systems, see "*Microsoft Dynamics CRM E-mail Router software requirements* (on page 28)" in the Planning Guide.

What's new in Microsoft Dynamics CRM for Outlook?

Microsoft Dynamics CRM 2011 for Outlook includes the following new features:

- The setup of Microsoft Dynamics CRM for Outlook has been simplified. It now uses a single installer mechanism for both Online and On-Premises clients. Update support is now available through Microsoft Update.
- Both 32-bit and 64-bit versions of Microsoft Office are now supported.
- Microsoft Dynamics CRM for Outlook can now connect to multiple organizations.
- Microsoft Dynamics CRM for Outlook is simpler to use, requiring fewer clicks to perform tasks, for example when you track or reply to e-mail messages.
- The Microsoft Dynamics CRM views create an experience that is more like working in Microsoft Office Outlook.
- You can now import contacts more quickly from Microsoft Dynamics CRM, keep those contacts synchronized automatically, and administer synchronization filters centrally.
- The new Microsoft Dynamics CRM tracking pane shows Microsoft Dynamics CRM associations and user options in-line. Additionally, users can now track and synchronize recurring appointments.
- Microsoft Dynamics CRM for Outlook now offers Microsoft Dynamics CRM e-mail templates and a rich Outlook e-mail editing surface.
- Microsoft Dynamics CRM for Outlook now offers the ability to control the scope of Microsoft Dynamics CRM e-mail messages, appointments, and tasks that are pushed to Outlook by using synchronization through personalized filters.

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Business Manager's Role in a Microsoft Dynamics CRM Implementation

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

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 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 enables you to automate internal business processes by creating work flow 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, one of your roles is to make sure that 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 the Business Manager's role in planning a Microsoft Dynamics CRM implementation.

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=189326>).

Tool	Description
Business Process Questions (.doc)	A document that contains questions to answer to help decide how your business processes map to Microsoft Dynamics CRM.

Tool	Description
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 Planning spreadsheet to document the triggers and actions required.

Microsoft Dynamics Sure Step methodology

Microsoft Dynamics Sure Step provides a complete Microsoft Dynamics CRM implementation 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

Microsoft Dynamics CRM Help has conceptual information about how Microsoft Dynamics CRM can support the sales, service, and marketing functions in your organization. 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:

- Closely monitor configuration and customization changes to make sure that they meet business needs.
- Be available to answer detailed questions as they occur.
- 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. Ensure that the training needs of all employees are met.
2. Document and analyze the initial experiences of Microsoft Dynamics CRM users and determine if additional configuration and customization of the Microsoft Dynamics CRM implementation must be done.

Post-deployment tasks for business managers

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

1. Continue to document and analyze the initial experiences of Microsoft Dynamics CRM users and determine if additional configuration and customization of the Microsoft Dynamics CRM implementation must be done.
2. Use the data in Microsoft Dynamics CRM reports to strengthen the 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 scope of the project. 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=189326>).

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

Project planning tools

Tool	Description
Project Plan Rapid (Office Excel document)	An Excel worksheet for creating the implementation schedule for rapid implementations.
Project Plan (Office Excel document)	An Excel worksheet for creating the implementation schedule for measured implementations.
Assessing Implementation Capacity (Office Word document)	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 (Office Word document)	A document of guidelines for determining how long an implementation is likely to take.

Tool	Description
Project Scope (Office Word document)	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 (Office Word document)	A document that contains guidelines for when a rapid implementation is appropriate.
Test Case Template (Office Word document)	A sample form to use for people testing Microsoft Dynamics CRM before deployment.
Go Live Checklist (Office Word document)	A checklist for tasks that must be finished before you deploy Microsoft Dynamics CRM.
Server Tracking Form (Office Word document)	A form for documenting server and network configuration.
Responsibility Checklist (Office Word document)	A checklist of all areas that need owners, to guarantee that Microsoft Dynamics CRM continues to work well after the implementation.
Project Review Survey (Office Word document)	An agenda for a project review meeting to be held when Microsoft Dynamics CRM is deployed.
Project Plan (Microsoft Project document)	A sample project plan containing the tasks needed for a full deployment of Microsoft Dynamics CRM.
Project Plan Rapid (Microsoft Project document)	A sample project plan containing the tasks needed for a rapid deployment of Microsoft Dynamics CRM.

Project status tools

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

Change management tools

Tool	Description
Scope Change Log (Office Word document)	A sample scope change form that you can use to track scope changes.
Scope Change Request Form (Office Word document)	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 the development phase:

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 necessary.

Depending on the options selected for your organization, performing those tasks 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

The deployment phase 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 for 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 time frame 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.

Responsibilities of 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 main deployment tasks associated with 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 the customization
 - e. Review the customization
 - f. Test the system
 - g. Get a pilot group to use the product
 - h. Finish the 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)

Among the Planning Tools are more detailed sample project plans: *Project_Plan.mpp*, *Project_Plan.xlsx*, *Project_Plan_Rapid.mpp*, and *Project_Plan_Rapid.xlsx*. These tools are available for download at *Planning Tools* (<http://go.microsoft.com/fwlink/?LinkID=189326>).

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.

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?
- 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 are 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.
- 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?

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 user interface (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 of the following optional components will be included in your Microsoft Dynamics CRM system:

- Microsoft Dynamics CRM for Microsoft Office Outlook
- Microsoft Dynamics CRM E-mail Router

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 for loading existing data into Microsoft Dynamics CRM is by using the **Import Data Wizard**. The **Import Data Wizard** 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 quickly 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 Microsoft Dynamics CRM Web client 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 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)
- ▶ SQL Server, including Reporting Services
- ▶ Exchange Server 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 in Microsoft Dynamics CRM

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 and the Getting Started pane are embedded in the interface and have brief descriptions of the various components on the screen. These tools 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 workforce is using Microsoft Dynamics CRM.

Development tasks

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

Project-manager tasks

- Communicate progress.
- Coordinate timing of deployment.

Business manager tasks

- 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.

Installer tasks

- 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.

Customizer tasks

- Customize the application and the reporting features.
- Test the customizations.

Deployment tasks

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

Project manager tasks

- 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.

Business manager tasks

- 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.

Installer tasks

- 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.

Customizer tasks

- Watch users as they start to use Microsoft Dynamics CRM and determine whether additional customizations are necessary to optimize your organization's workflow.

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.

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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. However, to fully support the latest version of a required component you should apply the latest update for Microsoft Dynamics CRM.

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Microsoft Dynamics CRM Server 2011 hardware requirements

The following table lists the minimum and recommended hardware requirements for Microsoft Dynamics CRM Server 2011 running in a Full Server configuration. These requirements assume that additional components such as Microsoft SQL Server, Microsoft SQL Server Reporting Services, Microsoft SharePoint, or Microsoft Exchange Server are not installed or running on the system.

Component	*Minimum	*Recommended
Processor	x64 architecture or compatible dual-core 1.5 GHz processor	Quad-core x64 architecture 2 GHz CPU or higher such as AMD Opteron or Intel Xeon systems
Memory	2-GB RAM	8-GB RAM or more

Component	*Minimum	*Recommended
Hard disk	10 GB of available hard disk space Note Computers with more than 16GB of RAM will require more disk space for paging, hibernation, and dump files.	40 GB or more of available hard disk space Note Computers with more than 16GB of RAM will require more disk space for paging, hibernation, and dump files.

* Actual requirements and product functionality may vary based on your system configuration and operating system.

The minimum and recommended requirements are based on 320-user load simulation tests.

Microsoft SQL Server hardware requirements

The following table lists the minimum and recommended hardware requirements for Microsoft SQL Server. These requirements assume that additional components such as Microsoft Dynamics CRM Server 2011, Microsoft SQL Server Reporting Services, Microsoft SharePoint, or Microsoft Exchange Server are not installed or running on the system.

Component	*Minimum	*Recommended
Processor	x64 architecture or compatible dual-core 1.5 GHz processor	Quad-core x64 architecture 2 GHz CPU or higher such as AMD Opteron or Intel Xeon systems
Memory	4-GB RAM	16-GB RAM or more
Hard disk	SAS RAID 5 or RAID 10 hard disk array	SAS RAID 5 or RAID 10 hard disk array

* Actual requirements and product functionality may vary based on your system configuration and operating system.

The minimum and recommended requirements are based on 320-user load simulation tests.

Microsoft Dynamics CRM Server 2011 software requirements

This section lists the software and application requirements for Microsoft Dynamics CRM Server 2011.

Windows Server operating system

Microsoft Dynamics CRM 2011 Server can be installed only on Windows Server 2008 x64-based computers. The specific versions and editions of Windows Server that are supported for installing and running Microsoft Dynamics CRM Server 2011 are listed in the following section.

Important

The Windows Server 2003 family of operating systems are not supported for installing and running Microsoft Dynamics CRM 2011 Server.

Supported Windows Server 2008 editions

The following editions of the Microsoft Windows Server 2008 operating system are supported for installing and running Microsoft Dynamics CRM 2011 Server:

- Windows Server 2008 Standard (x64 versions) SP2 or later version
- Windows Server 2008 Enterprise (x64 versions) SP2 or later version
- Windows Server 2008 Datacenter (x64 versions) SP2 or later version
- Windows Web Server 2008 (x64 versions) SP2 or later version
- Windows Small Business Server 2008 Premium x64 or later version

- Windows Small Business Server 2008 Standard x64 or later version

Important

- Windows Server 2008 installed by using the Server Core installation option is not supported for installing and running Microsoft Dynamics CRM 2011 Server.
- Virtualization technology such as Hyper-V is only required if you want to install and run Microsoft Dynamics CRM in a virtual environment.
- Windows Server 2008 for Itanium-based systems is not supported for installing and running Microsoft Dynamics CRM 2011.
- 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 on Windows Small Business Server 2008 Standard edition.

Server virtualization

Microsoft Dynamics CRM servers can be deployed in a virtualized environment by using Windows Server 2008 with Hyper-V or virtualization solutions from vendors who participate in the Microsoft Windows Server Virtualization Validation Program (SVVP). 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 Hyper-V, see the *Microsoft Virtualization* (<http://go.microsoft.com/fwlink/?linkid=145119>) Web site.

Active Directory modes

The computer on which Microsoft Dynamics CRM 2011 is running must be a domain member in a domain that is running in one of the following Active Directory directory service domain modes:

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

Important

- The computer on which Microsoft Dynamics CRM is running cannot function as an Active Directory domain controller, unless it is running Windows Small Business Server 2008.
- 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 2011 in a domain that is running in Active Directory Application Mode (ADAM) is not supported.

All Active Directory forest modes are supported. For more information about Active Directory domain and forest modes, see the Active Directory Domains and Trusts MMC snap-in Help.

Internet Information Services (IIS)

We recommend that you install and run IIS 7.0 or a later version in Native Mode before you install Microsoft Dynamics CRM Server 2011. However, if IIS is not installed and it is required for a Microsoft Dynamics CRM server role, Microsoft Dynamics CRM Server Setup will install it.

SQL Server editions

Any one of the following Microsoft SQL Server editions is required and must be installed on a Windows Server 2008 64-bit or later version, running, and available for Microsoft Dynamics CRM:

- Microsoft SQL Server 2008, Standard Edition, x64 SP1 or later version
- Microsoft SQL Server 2008, Enterprise Edition, x64 SP1 or later version
- Microsoft SQL Server 2008 Datacenter x64 SP1 or later version

- Microsoft SQL Server 2008 Developer x64 SP1 or later version (for non-production environments only)

Important

- 32-bit versions of SQL Server 2008 database engine or Reporting Services are not supported for this version of Microsoft Dynamics CRM.
- Microsoft SQL Server 2008 Workgroup, Web, Compact, or Microsoft SQL Server 2008 Express Edition editions are not supported for running Microsoft Dynamics CRM Server 2011.
- Microsoft SQL Server 2000 and Microsoft SQL Server 2005 editions are not supported for this version of Microsoft Dynamics CRM.
- Running 64-bit SQL Server 2008 versions for Itanium (IA-64) systems in conjunction with Microsoft Dynamics CRM will receive commercially reasonable support. 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 2011 supports a named instance of SQL Server for configuration and organization databases.

Claims-based authentication and IFD requirements

The following items are required or recommended for Internet-facing deployments (IFD). This topic assumes you will be using Active Directory Federation Services (AD FS) 2.0 as the security token service (STS). For more information about configuring Microsoft Dynamics CRM for claims-based authentication, download the *Claims-based Authentication White Paper* (<http://go.microsoft.com/fwlink/?linkid=202394>) from the Microsoft Download Center.

- The computer where Microsoft Dynamics CRM Server Setup is installed must have access to a STS service, such as AD FS 2.0 federation server.
- Note the following conditions for the Web components before you configure IFD:
 - ▶ If you are installing Microsoft Dynamics CRM in a single server configuration, be aware that AD FS 2.0 installs on the Default Web Site. Therefore, you must create a new Web site for Microsoft Dynamics CRM.
 - ▶ When you run the Internet-Facing Deployment Configuration Wizard, Microsoft Dynamics CRM Server 2011 must be running on a Web site that is configured to use Secure Sockets Layer (SSL). Microsoft Dynamics CRM Server Setup will not configure the Web site for SSL.
 - ▶ We recommend that the Web site where the Microsoft Dynamics CRM Server 2011 Web application will be installed has the “Require SSL” setting enabled in IIS.
 - ▶ The Web site should have a single binding. Multiple IIS bindings, such as a Web site with an HTTPS and an HTTP binding or two HTTPS or two HTTP bindings, are not supported for running Microsoft Dynamics CRM.
 - ▶ Access to the AD FS 2.0 federation metadata file from the computer where the Configure Claims-Based Authentication Wizard is run. Note the following:
 - The federation metadata endpoint must use the Web services trust model (WS-Trust) 1.3 standard. Endpoints that use a previous standard, such as the WS-Trust 2005 standard, are not supported. In AD FS 2.0, all WS-Trust 1.3 endpoints contain */trust/13/* in the URL path.
 - ▶ Encryption certificates. The following encryption certificates are required. You can use the same encryption certificate for both purposes, such as when you use a wildcard certificate:
 - Claims encryption. Claims-based authentication requires identities to provide an encryption certificate for authentication. This certificate should be trusted by the computer where you are installing Microsoft Dynamics CRM Server 2011 so it must be located in the local Personal store where the Configure Claims-Based Authentication Wizard is running.

- SSL (HTTPS) encryption. The certificates for SSL encryption should be valid for host names similar to org.contoso.com, auth.contoso.com, and dev.contoso.com. To satisfy this requirement you can use a single wildcard certificate (*.contoso.com), a certificate that supports Subject Alternative Names, or individual certificates for each name. Individual certificates for each host name are only valid if you use different servers for each Web server role. Multiple IIS bindings, such as a Web site with two HTTPS or two HTTP bindings, is not supported for running Microsoft Dynamics CRM. For more information about the options that are available to you, contact your certificate authority service company or your certificate authority administrator.
- ▶ The **CRMAppPool** account of each Microsoft Dynamics CRM Web application must have read permission to the private key of the encryption certificate specified when configuring claims-based authentication. You can use the Certificates snap-in to edit permissions for the encryption certificate found in the Personal store of the local computer account.

SQL Server Reporting Services

Specific SQL Server Reporting Services editions are used for reporting functionality.

Any one of the following Microsoft SQL Server editions is required and must be installed on a Windows Server 2008 64-bit or later version, running, and available for Microsoft Dynamics CRM:

- Microsoft SQL Server 2008, Standard Edition, x64 SP1 or later version
- Microsoft SQL Server 2008, Enterprise Edition, x64 SP1 or later version
- Microsoft SQL Server 2008 Datacenter x64 SP1 or later version
- Microsoft SQL Server 2008 Developer x64 SP1 or later version (for non-production environments only)

Important

- Microsoft SQL Server 2008 Workgroup, Web, Compact, or Microsoft SQL Server 2008 Express Edition editions are not supported for running Microsoft Dynamics CRM Server 2011.
- Running 64-bit SQL Server 2008 versions for Itanium (IA-64) systems in conjunction with Microsoft Dynamics CRM will receive commercially reasonable support. 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 SQL Server 2008 Workgroup is not supported for running the Microsoft Dynamics CRM Reporting Extensions. This is because SQL Server 2008 Workgroup does not support custom data extensions. Therefore, features such as creating, running, or scheduling Fetch-based or SQL-based reports will not work.

Software component prerequisites

The following SQL Server components *must* be installed and running on the computer that is running SQL Server before you install Microsoft Dynamics CRM Server 2011:

- 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 must be installed and running on the computer where Microsoft Dynamics CRM Server 2011 will be installed:

- Services
 - ▶ Indexing Service
 - To install this service, see the Windows Server documentation.
 - ▶ IIS Admin
 - ▶ World Wide Web Publishing

- Windows Data Access Components (MDAC) 6.0 (This is the default version of MDAC with Windows Server 2008.)
- Microsoft ASP .NET (Must be registered, but does not have to be running.)

Verify prerequisites

Before you install Microsoft Dynamics CRM Server 2011, you should understand the following:

- Microsoft SQL Server can be, but is not required to be, installed on the same computer as Microsoft Dynamics CRM Server 2011.
- If Microsoft Dynamics CRM Server 2011 and SQL Server are installed on different computers, both computers must be in the same Active Directory directory service 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.
- The SQL Server Agent service must be started. This service can be configured to automatically start when the computer is started.
- 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 one network protocol to be enabled to authenticate by using SQL Server. By default, TCP/IP protocol is enabled when you install SQL Server. You can view network protocols in SQL Server Configuration Manager.

Microsoft Dynamics CRM Reporting Extensions

Microsoft Dynamics CRM Reporting Extensions is not required to run Microsoft Dynamics CRM 2011; however, to create, use, and schedule reports in Microsoft Dynamics CRM, you must install Microsoft Dynamics CRM Reporting Extensions. Additionally, Microsoft Dynamics CRM Reporting Extensions is required to create or import an organization in a Microsoft Dynamics CRM deployment.

Microsoft Dynamics CRM Reporting Extensions are data processing extensions that are installed on the SQL Server Reporting Services server. The Microsoft Dynamics CRM Reporting Extensions accept the authentication information from the Microsoft Dynamics CRM Server 2011 and passes it to the SQL Server Reporting Services server.

Microsoft Dynamics CRM Reporting Extensions Setup includes two data processing extensions: Fetch data processing extension and SQL data processing extension. These extensions are installed by default during Microsoft Dynamics CRM Reporting Extensions Setup.

The Fetch data processing extension is required to create, run, and schedule Fetch-based reports.

The SQL data processing extension is required to run and schedule the default (out-of-box) or SQL-based custom reports in Microsoft Dynamics CRM 2011.

For SQL-based reports, the SQL data processing extension eliminates the need to enable delegation for the Kerberos double-hop authentication that is required when SQL Server Reporting Services are installed on a separate computer. For more information about reporting scenarios, see "Planning requirements for Microsoft SQL Server Reporting Services" in the Microsoft Dynamics CRM 2011 Planning Guide.

Microsoft Dynamics CRM Reporting Extensions general requirements

The Microsoft Dynamics CRM Reporting Extensions component has the following general requirements:

- You must complete Microsoft Dynamics CRM Server Setup *before* you run Microsoft Dynamics CRM Reporting Extensions Setup.
- You can install and run Microsoft Dynamics CRM Reporting Extensions on only one instance of SQL Server Reporting Services on a computer.
- 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.
- You must run the Microsoft Dynamics CRM Reporting Extensions Setup on a computer that has Microsoft SQL Server 2008 Reporting Services installed. For smaller data sets and fewer users, you can use a single-server deployment or a multiple-server deployment. With larger datasets or more users, performance will decrease quickly when complex reports are run. Use a multi-server deployment with one computer that is running SQL Server for Microsoft Dynamics CRM, and another server for Microsoft SQL Server Reporting Services.

SharePoint Document Management software requirements

Microsoft SharePoint is not required to install Microsoft Dynamics CRM 2011. However, to use document management functionality with SharePoint one of the following Microsoft SharePoint editions is required and must be installed, running, and at least one Microsoft SharePoint site collection configured and available for Microsoft Dynamics CRM Server 2011:

- Microsoft SharePoint 2010 (all editions)
- Microsoft Office SharePoint Server (MOSS) 2007

You enable document management functionality with SharePoint in the **Settings** area of the Microsoft Dynamics CRM Web application.

Important

For documents to appear in Microsoft SharePoint 2010 by using the grid view, the grid component must be installed. If the component is not installed the data will appear in a windowless inline floating frame (IFrame).

Although, you can use document management functionality with Microsoft Office SharePoint Server (MOSS) 2007, the data will always appear in an IFrame.

Office Communications Server Integration

If your organization has Microsoft Office Communications Server 2007 or later version enabled and users are running Microsoft Dynamics CRM for Outlook or the Microsoft Dynamics CRM Web application together with Microsoft Office Communicator 2007 or later version, you can use Microsoft Office Communicator 2007 features such as send an instant message or check user availability from within Microsoft Dynamics CRM.

Microsoft Dynamics CRM E-mail Router hardware requirements

The following table lists the minimum and recommended hardware requirements for Microsoft Dynamics CRM E-mail Router.

Component	*Minimum	*Recommended
Processor (32-bit)	750-MHz CPU or comparable	Multi-core 1.8-GHz CPU or higher
Processor (64-bit)	x64 architecture or compatible 1.5 GHz processor	Multi-core x64 architecture 2GHz CPU or higher such as AMD Opteron or Intel Xeon systems
Memory	1-GB RAM	2-GB RAM or more
Hard disk	100 MB of available hard disk space	100 MB of available hard disk space

*Actual requirements and product functionality may vary based on your system configuration and operating system.

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 Wizard. The E-mail Router component installs the E-mail Router service and E-mail Router Configuration Manager. You use the E-mail Router Configuration Manager to configure the E-mail Router. The Rule Deployment Wizard component deploys the rules that enables received e-mail messages to be tracked.

Important

Unless specified otherwise, E-mail Router supports the latest service pack (SP) for all required software components.

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

- Microsoft Windows 7 32-bit and 64-bit editions
- Microsoft Windows Server 2008 or later version x64-bit editions only

Important

- Windows Server 2008 32-bit editions, Windows Server 2003, Windows Vista, and Microsoft Windows XP editions are 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-On-Windows (WOW) mode. Install and run the 64-bit version of the Microsoft Dynamics CRM E-mail Router.

Rule Deployment Wizard Requires MAPI

The Rule Deployment Wizard requires the Microsoft Exchange Server Messaging API (MAPI) client runtime libraries. To install the MAPI client runtime libraries, see *Microsoft Exchange Server MAPI Client and Collaboration Data Objects 1.2.1* (<http://go.microsoft.com/fwlink/?LinkId=198514>).

Notes

MAPI versions 6.5.8147 (or later) are supported by Microsoft Exchange Server 2010.

If you already have a version of the MAPI download installed, you must uninstall it before installing the new version.

If you are installing the Rule Deployment Wizard on a system that uses Microsoft Exchange Server 2010 as its e-mail server, you must also have installed Update Rollup 2 (or later) of Microsoft Exchange Server 2010. For more information, see *Update Rollup 2 for Exchange Server 2010 (KB979611)* (<http://go.microsoft.com/fwlink/?LinkId=195275>).

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, you can install the E-mail Router on any of the supported 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 or later edition
- Exchange 2003 Enterprise Edition SP2 or later edition
- Exchange Server 2007 Standard Edition
- Exchange Server 2007 Enterprise Edition
- Microsoft Exchange Server 2010 Standard Edition

- Microsoft Exchange Server 2010 Enterprise Edition
- Microsoft Exchange Online

Important

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

If missing, E-mail Router Setup installs the Microsoft .NET Framework 4.0 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 supported Windows or Windows Server operating systems and that has the Microsoft Exchange Server Messaging API (MAPI) client runtime libraries installed.

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

Messaging and transport protocols

Microsoft Dynamics CRM E-mail Router supports a variety of e-mail messaging and transport options.

POP3

POP3-compliant 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.

If you configure the Microsoft Dynamics CRM E-mail Router to connect to a POP3-compliant e-mail server, the server must support RFC 1939.

Transport protocols

Both SMTP and Exchange Online with Exchange Web Services (EWS) are messaging transport protocols that are supported for outgoing e-mail message routing.

If you configure the Microsoft Dynamics CRM E-mail Router to use an SMTP-compliant transport service, the server must support RFC 2821 and RFC 2822.

Exchange Online

Microsoft Exchange Online is a hosted enterprise messaging service from Microsoft. It provides the robust capabilities of Microsoft Exchange Server as a cloud-based service. To learn more, see *Exchange Online* (<http://go.microsoft.com/fwlink/?LinkID=197112>).

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 (32-bit)	750-MHz CPU, or comparable	Multi-core 1.8-GHz CPU or higher
Processor (64-bit)	x64 architecture or compatible 1.5 GHz processor	Multi-core x64 architecture 2GHz CPU or higher such as AMD Opteron or Intel Xeon systems
Memory	2-GB RAM	4-GB RAM or more
Hard disk	1.5 GB of available hard disk space	2 GB of available hard disk space

Component	*Minimum	*Recommended
Display	Super VGA with a resolution of 1024 x 768	Super VGA with a resolution higher than 1024 x 768

* Actual requirements and product functionality may vary based on your system configuration and operating system.

Note

Successful network installation of Microsoft Dynamics CRM for Outlook requires a reliable and high-throughput network. Otherwise, installation might fail. The recommended minimum available bandwidth of the network connection is 300 Kbps.

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.

Any one of the following operating systems is required:

- Windows 7 (both 64-bit and 32-bit versions)
- Windows Vista (both 64-bit and 32-bit versions)
- Microsoft Windows XP Professional SP3
- Microsoft Windows XP Tablet SP3
- Windows XP Professional x64 Edition

Important

- Windows XP Media Center Edition is not supported for installing and running Microsoft Dynamics CRM for Outlook.

Microsoft Dynamics CRM for Outlook software component prerequisites

The following components *must* be installed and running on the computer before you run Microsoft Dynamics CRM for Outlook Setup:

- Microsoft Internet Explorer
 - Internet Explorer 7 or a later version
 - Internet Explorer 8 or a later version
- Microsoft Office
 - Microsoft Office 2003 with SP3 or later version
 - 2007 Microsoft Office system
 - Office 2010
 - Indexing Service (must be installed and running)

Important

Microsoft Internet Explorer 6 or earlier versions are not supported.

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

To install and run the 64-bit version of Microsoft Dynamics CRM for Outlook, a 64-bit version of Office 2010 is required.

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 once to create the user's Outlook profile.

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

- Microsoft SQL Server 2008 Express Edition (Microsoft Dynamics CRM for Outlook with Offline Access only)
- Microsoft .NET Framework 4.0
- Microsoft Windows Installer (MSI) 4.5.
- MSXML 4.0
- Microsoft Visual C++ Redistributable
- Microsoft Report Viewer 2010
- Microsoft Application Error Reporting
- Windows Identity Framework (WIF)

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 (all versions)
- Windows Vista (all versions)
- Microsoft Windows XP Professional SP3
- Microsoft Windows XP Home SP3
- Windows XP Media Center Edition SP3
- Microsoft Windows XP Tablet SP3

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

- Internet Explorer 8 or a later version
- Internet Explorer 7 or a later version

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

- Microsoft Office 2003 SP3 or later version
- 2007 Microsoft Office system SP2 or later version
- Office 2010

Note

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

64-bit supported configurations

Installing and running Microsoft Dynamics CRM and connecting to database, reporting services, and e-mail components running on other 32-bit computers is generally supported. For example:

- Exchange Server 2007 and Microsoft Exchange Server 2010 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.
- Microsoft Dynamics CRM for Outlook includes a 64-bit version that can be installed on any of the supported 64-bit Windows operating systems.
- The 32-bit version of Microsoft Dynamics CRM for Outlook can be installed and run on a Windows 64-bit operating system but the version of Outlook must be 32-bit.

Important

32-bit versions of SQL Server 2008 database engine are not supported with Microsoft Dynamics CRM 2011 Server. You cannot use a computer that is running a SQL Server 2008 32-bit edition as the database server for Microsoft Dynamics CRM 2011 Server.

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 2011	The base language of Windows Server, SQL Server, Microsoft .NET Framework, MDAC, and MSXML must be either the same language version as Microsoft Dynamics CRM Server 2011 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, Microsoft SQL Server Express Edition, Internet Explorer, Office, Microsoft .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 2011 and Microsoft Dynamics CRM for Outlook	The base language version of Microsoft Dynamics CRM Server 2011 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 2011 where all language editions match.

Server Component	Language
Windows Server 2008	German
SQL Server 2008	German

Server Component	Language
Microsoft Exchange Server 2010	German
MSXML	German
.NET Framework	German
Microsoft Dynamics CRM Server 2011	German

The following table describes an example of a supported language configuration for Microsoft Dynamics CRM Server 2011 where not all language editions match.

Server Component	Language
Windows Server 2008	English
SQL Server 2008	English
Microsoft Exchange Server 2010	English
MSXML	English
.NET Framework	English
Microsoft Dynamics CRM Server 2011	Swedish

Currency support

During Microsoft Dynamics CRM Server 2011 Setup, you must select a base currency, which is used as the basis to calculate 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\Region	ISO Three-Letter Currency Code
Afghanistan	AFN
Albania	ALL
Algeria	DZD
Argentina	ARS
Armenia	AMD
Australia	AUD
Austria	EUR
Azerbaijan	AZM
Bahrain	BHD
Bangladesh	BDT
Belarus	BYR
Belgium	EUR
Belize	BZD
Bolivarian Republic of Venezuela	VEF

Country\Region	ISO Three-Letter Currency Code
Bolivia	BOB
Bosnia and Herzegovina	BAM
Brazil	BRL
Brunei Darussalam	BND
Bulgaria	BGL
Cambodia	KHR
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
Ethiopia	ETB
Faroe Islands	DKK
Finland	EUR
France	EUR
Georgia	GEL
Germany	EUR
Greece	EUR
Greenland	DKK
Guatemala	GTQ
Honduras	HNL
Hong Kong S.A.R.	HKD
Hungary	HUF
Iceland	ISK
India	INR
Indonesia	IDR
Iran	IRR

Country\Region	ISO Three-Letter Currency Code
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
Lao P.D.R.	LAK
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
Montenegro	EUR
Nepal	NPR
Netherlands	EUR
New Zealand	NZD
Nicaragua	NIO
Norway	NOK
Oman	OMR

Country\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
Romania	RON
Russia	RUB
Rwanda	RWF
Saudi Arabia	SAR
Senegal	XOF
Serbia	RSD
Serbia and Montenegro	CSD
Singapore	SGD
Slovakia	EUR
Slovenia	EUR
South Africa	ZAR
Spain	EUR
Sweden	SEK
Switzerland	CHF
Syria	SYP
Taiwan	TWD
Tajikistan	TJS
Thailand	THB
Trinidad and Tobago	TTD
Tunisia	TND
Turkey	TRY
Turkmenistan	TMT
U.A.E.	AED
Ukraine	UAH
United Kingdom	GBP

Country\Region	ISO Three-Letter Currency Code
United States	USD
Uruguay	UYU
Uzbekistan	YZS
Vietnam	VND
Yemen	YER
Zimbabwe	ZWL

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Planning Deployment

The deployment architecture you will use depends on your business needs. This chapter provides 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, 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 Microsoft 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 and considerations

This section contains 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 Server 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 directory service 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 Microsoft Exchange or POP3.** A summary of how 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.** Information about the supported network, domain, and server configurations for Microsoft Dynamics CRM.
- **Upgrading from a previous version of Microsoft Dynamics CRM.** How Microsoft Dynamics CRM 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 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 Microsoft Exchange Server or POP3 e-mail servers.
- Integration with Microsoft SharePoint.
- Performance of your servers and the local area network (LAN).
- Whether users will be connecting from untrusted domains and forests or from the Internet.

For a list of the suggested hardware requirements, see *System Requirements and Required Components* (on page 21) 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 Microsoft Windows Server, Microsoft SQL Server, SQL Server Reporting Services, and Microsoft .NET Framework.

For a complete list of the software requirements, see *System Requirements and required components* (on page 21) in this guide.

Active Directory considerations

Active Directory directory service is a component of the Microsoft Windows Server 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 should 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 Active Directory domain and forest functional levels* (<http://go.microsoft.com/fwlink/?linkid=52205>)
 - *Active Directory (Windows Server 2008 R2)* (<http://go.microsoft.com/fwlink/?LinkID=200995>)

Federation and claims-based authentication support

When you configure Microsoft Dynamics CRM for Internet-facing access, Microsoft Dynamics CRM 2011 requires federated services that support claims-based authentication. We recommend Active Directory Federation Services 2.0 (AD FS 2.0).

Active Directory Federation Services 2.0

Active Directory Federation Services is a highly secure, highly extensible, and Internet-scalable identity access solution that allows organizations to authenticate users from partner organizations. Using Active Directory Federation Services 2.0 in Windows Server 2008, you can simply and very securely grant external users access to your organization's domain resources. AD FS can also simplify integration between untrusted resources and domain resources within your own organization.

AD FS 2.0 is a feature in Windows Server 2008 R2 and earlier versions that can be downloaded and installed (see the AD FS 2.0 RTW download link in table below).

Digital Certificates

AD FS 2.0 requires two types of digital certificates:

- Claims encryption. Claims-based authentication requires identities to provide an encryption certificate for authentication. This certificate should be trusted by the computer where you are installing Microsoft Dynamics CRM Server 2011 so it must be located in the local Personal store where the Configure Claims-Based Authentication Wizard is running.
- SSL (HTTPS) encryption. The certificates for SSL encryption should be valid for host names similar to org.contoso.com, auth.contoso.com, and dev.contoso.com. To satisfy this requirement you can use a single wildcard certificate (*.contoso.com), a certificate that supports Subject Alternative Names, or individual certificates for each name. Individual certificates for each host name are only valid if you use different servers for each Web server role. Multiple IIS bindings, such as a Web site with two HTTPS or two HTTP bindings, is not supported for running Microsoft Dynamics CRM. For more information about the options that are available to you, contact your certificate authority service company or your certificate authority administrator.

To meet these requirements, your organization should have a public key infrastructure or a contract with a digital certificate provider such as VeriSign, GoDaddy, or Comodo.

For more information about Active Directory, see the resources in the following table.

Topic	Link
Active Directory Domain Services	<i>Active Directory Domain Services for Windows Server 2008 R2</i> (http://go.microsoft.com/fwlink/?LinkId=200770)
Planning an Active Directory Deployment Project (Windows Server 2003)	<i>Overview of Planning an Active Directory Deployment Project</i> (http://go.microsoft.com/fwlink/?linkid=88219)
Active Directory Site Design (Windows Server 2003)	<i>Designing the Site Topology</i> (http://go.microsoft.com/fwlink/?linkid=88203)
Domain Controller Roles (Windows Server 2003)	<i>FSMO placement and optimization on Active Directory domain controllers</i> (http://go.microsoft.com/fwlink/?linkid=88220)
Active Directory Federation Services	<i>Active Directory Federation Services 2.0</i> (http://go.microsoft.com/fwlink/?LinkId=200771)
AD FS 2.0 RTW Download	<i>Active Directory Federation Services 2.0 RTW</i> (http://go.microsoft.com/fwlink/?LinkId=200773)
Digital certificates overview	<i>Certificates</i> (http://go.microsoft.com/fwlink/?LinkId=200774)

SQL Server installation and configuration

To plan your use of Microsoft 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 64-bit versions for storing the databases that contain Microsoft Dynamics CRM data and metadata. For specific details, see the *SQL Server editions* section in this guide.

- Reports in Microsoft Dynamics CRM depend on SQL Server Reporting Services, a feature in 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 available with Microsoft Visual Studio and 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 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 *SQL Server 2008 R2 Licensing* (<http://go.microsoft.com/fwlink/?linkid=92675>).

- Although we do not recommend it, you can install SQL Server on the same computer as Microsoft Dynamics CRM Server 2011. For better performance, install and run SQL Server on a separate dedicated computer. For better performance and improved availability, install and run SQL Server on separate multiple dedicated computers in a clustered configuration.
- 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 2011.

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 instance of Microsoft SQL Server Reporting Services be installed, running, and available. 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 2011 is not supported on Microsoft SQL Server 2000, Microsoft SQL Server 2005, or 32-bit versions of Microsoft SQL Server 2008.
- Microsoft Dynamics CRM 2011 is not supported on SQL Server that is running on Windows Server 2003 or Windows 2000 Server.
- When Microsoft Dynamics CRM Server 2011 and SQL Server are installed on different computers, they must be in the same Active Directory directory service domain.
- Microsoft Dynamics CRM Server Setup and Microsoft Dynamics CRM 2011 Deployment Manager support 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 either a domain user account (recommended) or the Network Service 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. This service can be configured to automatically start when the computer is started.
- Microsoft Dynamics CRM Server Setup requires a network library to authenticate SQL Server. By default, TCP/IP network libraries are enabled when you install SQL Server 2008. SQL Server can use both TCP/IP or Named Pipes for authentication. However, the computer that is running SQL Server 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 2011.
- 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. For more information see the Microsoft SQL Server hardware requirements topic.
- 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_100_BIN)

Note

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

- Review all SQL Server installation options and be prepared to make the needed selections when you run Setup. For more information, see *SQL Server Installation (SQL Server 2008 R2)* (<http://go.microsoft.com/fwlink/?LinkId=149070>).
- If you plan to install SQL Server in a location other than the default file location, see *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 2008* (<http://go.microsoft.com/fwlink/?linkid=92514>).

SQL Server deployment

If your organization uses SQL Server for applications other than Microsoft Dynamics CRM, performance may degrade as resources are consumed by other applications. If you use 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 information about monitoring SQL Server, see *Performance Monitoring and Tuning How-To Topics* (<http://go.microsoft.com/fwlink/?LinkID=200083>).

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.

SQL Server deployment considerations

Microsoft Dynamics CRM is a database-intensive application. Before you deploy Microsoft Dynamics CRM to an instance of SQL Server, you should consider the following requirements and database configurations.

- **Modification of system tables.** The SQL Server system tables should not be modified before you install Microsoft Dynamics CRM Server 2011. 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 Microsoft Dynamics CRM knowledge-base functionality.

- **Compatibility level.** During an upgrade or a new installation, Microsoft Dynamics CRM Server Setup sets the database compatibility level to 100, which is the compatibility level of SQL Server 2008.
- **Autogrowth.** By default, Microsoft Dynamics CRM organization database files are created to have an autogrowth setting of 256 megabytes. Earlier versions of Microsoft Dynamics CRM used the default setting of 1 megabyte autogrowth. If you perform intensive database transactions, such as large data imports, consider increasing the autogrowth value to improve performance. For information about how to change the autogrowth setting for a database, see the SQL Server Management Studio Help.
- **Max server memory.** We recommend that, if you run SQL Server on a computer that is also running other applications, that the SQL Server max server memory be set to no more than one half of the installed RAM. By default, max server memory is set to 2147483647 bytes in SQL Server 2008, which has demonstrated resource issues with SQL Server during intensive use of Microsoft Dynamics CRM. For more information about the memory options in SQL Server see *Server Memory Options* (<http://go.microsoft.com/fwlink/?LinkID=204645>).
- **Max degree of parallelism.** We recommend that, if you are run SQL Server on a computer that is also running other applications, that the SQL Server max degree of parallelism be set to 1 to help improve performance. For more information about the max degree of parallelism see *max degree of parallelism Option* (<http://go.microsoft.com/fwlink/?LinkID=204646>).

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 some of the available languages.

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 (France)	0X40C	French	1252
German (Germany)	0X407	Latin1_General	1252
Italian	0X410	Latin1_General	1252
Portuguese (Brazil)	0X416	Latin1_General	1252
Spanish (Traditional 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\MSSQL10.MSSQLSERVER\MSSQL**. 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. 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\100\Tools** on the system drive. This folder contains the default and named files shared by all instances of SQL Server. Tools include the T-SQL command line utility and the OSQL SQL query tool.

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\MSSQL10.MSSQLSERVER\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 this path 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 increase only marginally as SQL Server is used, and over time as updates are applied.

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 at least two databases:

- **MSCRM_CONFIG**. This database contains Microsoft Dynamics CRM metadata, such as configuration and location information that is specific to each organization database.
- **OrganizationName_MSCRM**. This is the organization database where Microsoft Dynamics CRM data is stored, such as all records and activities. Microsoft Dynamics CRM Server 2011 supports multiple organizations so that you can have multiple-organization databases.

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 note about disk fault tolerance and performance in the *Disk configurations and file locations* (on page 44) topic.

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 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 a lot of data is being added, changed, or removed from the application.

For example, you have a server wherein 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 at least 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 at least 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\SQL Server\MSSQL10.MSSQLSERVER\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 SQL Server Setup creates the folders that contain database and log files, in addition to directories for the System log, back-up, and replication data. SQL Server 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.10) 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\MSSQL10.MSSQLSERVER\MSSQL\Binn (for program files)

D:\MySqlDir\MSSQL10.MSSQLSERVER\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 Online* (<http://go.microsoft.com/fwlink/?linkid=99647>)
- *Microsoft SQL Server Solution Center* (<http://go.microsoft.com/fwlink/?linkid=92519>)

Planning requirements for Microsoft SQL Server Reporting Services

The Microsoft Dynamics CRM Reporting Extensions are data processing extensions that are installed on the Microsoft SQL Server Reporting Services server. Microsoft Dynamics CRM Reporting Extensions accept the authentication information from the Microsoft Dynamics CRM Server 2011 and passes it to the Microsoft SQL Server Reporting Services server. Microsoft Dynamics CRM Reporting Extensions Setup includes Fetch and SQL data processing extensions.

The Microsoft Dynamics CRM Reporting Extensions are required for all major reporting tasks in Microsoft Dynamics CRM such as, working with default (out-of-box) Microsoft Dynamics CRM reports, uploading custom reports, creating Report Wizard reports, or scheduling reports. Microsoft Dynamics CRM Reporting Extensions must also be installed before you import or provision new organizations.

The Microsoft Dynamics CRM Reporting Extensions Setup does the following:

1. Installs Fetch and SQL data processing extensions on the Microsoft SQL Server Reporting Services server.
2. Installs custom assemblies used by default reports and wizard reports on Microsoft SQL Server Reporting Services server.
3. Creates default reports (SQL-based) for the default organization both on Microsoft Dynamics CRM Server 2011 and Microsoft SQL Server Reporting Services server.

The following table explains what reporting options will be available to you if you install Microsoft Dynamics CRM Reporting Extensions.

Installed?	What reports will work?			
	Default reports	Custom SQL-based reports	Fetch-based Wizard reports	Custom Fetch-based reports
No	Clean installation: Will not be available.	<ul style="list-style-type: none"> ▪ Cannot be scheduled. ▪ Can be uploaded and run if Microsoft Dynamics CRM Server 2011 and SQL Server are installed on one computer or Trust for Delegation is configured. 	Will not be available.	Cannot be uploaded and run.
Yes	Will be published for the default organization.	Can be uploaded and run.	Can be created, run, and scheduled.	Can be uploaded, run, and scheduled.

Important

Microsoft Dynamics CRM Reporting Extensions should not be installed on an instance of Microsoft SQL Server Reporting Services that is running under an account that is a member of the SQL Access Group. This can occur when Microsoft SQL Server Reporting Services is running under the same account as a Microsoft Dynamics CRM Server 2011 component. This configuration can make the system vulnerable to certain attacks. During installation, Setup detects this scenario. You can click Help for information about how to work around the issue.

Note that when you install Microsoft Dynamics CRM Reporting Extensions, you have the option of installing the component on a different server that is running Reporting Services. Therefore, by isolating Microsoft Dynamics CRM Reporting Extensions on a separate instance of SQL Server, which does not store the Microsoft Dynamics CRM databases, report performance may be improved.

Microsoft Dynamics CRM Reporting Extensions requirements

Microsoft Dynamics CRM Reporting Extensions has the following requirements:

- You must complete Microsoft Dynamics CRM Server Setup before you run the Microsoft Dynamics CRM Reporting Extensions Setup.
- You must run the Microsoft Dynamics CRM Reporting Extensions Setup on a computer that has SQL Server 2008 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.

Planning e-mail integration

You can control the tracking and routing of incoming and outgoing e-mail by using the following Microsoft Dynamics CRM components:

- The E-mail Router, which provides e-mail routing for users and queues. If your organization uses the E-mail Router, you can establish a dedicated forward mailbox to which all incoming e-mail messages are forwarded from the e-mail server. You can also enable smart-matching, which automatically associates incoming e-mail messages with their cases..
- Microsoft Dynamics CRM for Microsoft Office Outlook, which gives users access to the same data as the Web application, and provides e-mail routing capabilities. Note that Microsoft Dynamics CRM for Outlook does not require the E-mail Router.

For more information about how to use and configure these components, see *Planning e-mail integration* (<http://go.microsoft.com/fwlink/?LinkId=207847>).

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

Microsoft Windows Server, the foundation of Microsoft Dynamics CRM, provides sophisticated network security. The Kerberos version-5 authentication protocol that is integrated into Active Directory directory service and Active Directory Federation Services 2.0 allows you to federate Active Directory domains by using claims-based authentication. Both give you powerful standards-based authentication. These authentication standards let users input a single user name and password logon combination for resource access across 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:

- *Secure Windows Server* (<http://go.microsoft.com/fwlink/?LinkID=200362>)
- *Windows Server 2008 Security Guide* (<http://go.microsoft.com/fwlink/?LinkID=200364>)
- *Download the Security Compliance Manager* (<http://go.microsoft.com/fwlink/?LinkID=200365>)

Windows error reporting

Microsoft Dynamics CRM requires the Windows Error Reporting (WER) service, which Setup will install it if it is missing. The WER service collects information, such as IP addresses. These are not used to identify users. The WER service does not intentionally collect names, addresses, e-mail addresses, computer names, 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 type of information that is transmitted, see *Privacy statement for the Microsoft Error Reporting Service* (<http://go.microsoft.com/fwlink/?LinkID=200371>).

Important

By default, automatic error reporting is not enabled in Microsoft Dynamics CRM. For information about how to enable automatic error reporting for Microsoft Dynamics CRM see "Enable Windows Error Reporting" in the *Microsoft Dynamics CRM Operating and Maintaining Guide*.

Virus protection

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

- *Microsoft Security* (<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.
- *Security TechCenter* (<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 more secure.

Update management

Microsoft Dynamics CRM updates include security, performance, and functional improvements. Making sure that your Microsoft Dynamics CRM applications have the latest updates helps make sure that your system is running as efficiently and reliably as it can.

For information about how to manage updates, see the following:

- *Windows Server Update Services* (<http://go.microsoft.com/fwlink/?LinkID=200474>)
- *Update Management in System Center Essentials* (<http://go.microsoft.com/fwlink/?LinkID=200475>)
- *Managing Software Updates in Windows Small Business Server 2008* (<http://go.microsoft.com/fwlink/?LinkID=200476>)

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* (<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 entire 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 authentication or SQL Server credentials. We recommend that you use Windows authentication for single sign-on ease of use and to provide the most secure authentication method.
- By default, the auditing of the SQL Server system is disabled so that no conditions are audited. This makes intrusion detection difficult and aids attackers 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 *Securing SQL Server* (<http://go.microsoft.com/fwlink/?LinkID=200479>).

Securing Exchange Server and Outlook

The following considerations are for Microsoft 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 access control lists (ACL) on those administrative groups to make sure that only certain users 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 jobs.
- 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 make the change for any user in that OU, but not for 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, Exchange Server 2007, and Microsoft Exchange Server 2010 are configured to prevent e-mail relay. The 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, see 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 more secure, see the following:

- *Microsoft Exchange Server 2003 Security Hardening Guide* (<http://go.microsoft.com/fwlink/?linkid=92543>).
- Microsoft Exchange Server 2007, see *Security and Protection* (<http://go.microsoft.com/fwlink/?linkid=92544>) information in the Microsoft TechNet Library.
- Microsoft Exchange Server 2010, see the *Deployment Security Checklist* (<http://go.microsoft.com/fwlink/?LinkID=200484>) on Microsoft TechNet.

Security considerations for Microsoft Dynamics CRM

Microsoft Dynamics CRM 2011 introduces several improvements that help make your deployment more secure. This section provides information and best practices for the Microsoft Dynamics CRM application.

Minimum permissions required for Microsoft Dynamics CRM Setup, services, and components

Microsoft Dynamics CRM is designed so that its components can run under separate identities. By specifying a domain user account that is granted only the permissions necessary to enable a particular component to function, you help secure the system and reduce the likelihood of exploitation.

This topic describes the minimum permissions that are required by the user account for Microsoft Dynamics CRM services and components.

Microsoft Dynamics CRM Server Setup

The user account used to run Microsoft Dynamics CRM Server Setup that includes the creation of databases requires the following minimum permissions:

- Be a member of the Active Directory Domain Users group. By default, Active Directory Users and Computers adds new users to the Domain Users group.
- Be a member of the Administrators group on the local computer where Setup is running.
- Have Local Program Files folder read and write permission.
- Be a member of the Administrators group on the local computer where the instance of SQL Server is located that will be used to store the Microsoft Dynamics CRM databases.

- Have sysadmin membership on the instance of SQL Server that will be used to store the Microsoft Dynamics CRM databases.
- Have organization and security group creation permission in Active Directory directory service. Alternatively, you can use a Setup XML configuration file to install Microsoft Dynamics CRM Server 2011 when security groups have already been created. For more information see *Use the Command Prompt to Install Microsoft Dynamics CRM* (<http://go.microsoft.com/fwlink/?LinkID=207601>).
- If Microsoft SQL Server Reporting Services is installed on a different server, you must add the Content Manager role at the root level for the installing user account. You must also add the System Administrator role at the site-wide level for the installing user account.

Services and CRMAppPool IIS application pool identity permissions

The user account that is used for the Microsoft Dynamics CRM services and IIS application pools require the following permissions:

Important

Microsoft Dynamics CRM services and application pool identity accounts must not be configured as a Microsoft Dynamics CRM user. Doing so can cause authentication issues and unexpected behavior in the application for all Microsoft Dynamics CRM users.

Managed service accounts, introduced in Windows Server 2008 R2, are not supported for running Microsoft Dynamics CRM services.

Microsoft Dynamics CRM Sandbox Processing Service

- Domain User membership.
- That account must be granted the **Logon as service** permission in the Local Security Policy.
- Folder read and write permission on the \Trace, by default located under \Program Files\Microsoft Dynamics CRM\Trace, and user account %AppData% folders on the local computer.
- Read permission to the **HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\MSCRM** subkey in the Windows Registry.
- The service account may need an SPN for the URL used to access the Web site that is associated with it. To set the SPN for the Sandbox Processing Service account, run the following command at a command prompt on the computer where the service is running.
`SETSPN -a MSCRMSandboxService/<ComputerName> <service account>`

Microsoft Dynamics CRM Asynchronous Processing Service and Microsoft Dynamics CRM Asynchronous Processing Service (maintenance) services

- Domain User membership.
- Performance Log Users membership.
- That account must be granted the **Logon as service** permission in the Local Security Policy.
- Folder read and write permission on the Trace folder, by default located under \Program Files\Microsoft Dynamics CRM\, and user account %AppData% folder on the local computer.
- Read and write permission to the **HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\MSCRM** and **HKEY_LOCAL_MACHINE\SYSTEM\ControlSet001\services\MSCRMSandboxService** subkeys in the Windows Registry.
- The service account may need an SPN for the URL used to access the Web site that is associated with it.

Deployment Web Service (CRMDeploymentServiceAppPool Application Pool identity)

- Domain User membership
- That account must be granted the **Logon as service** permission in the Local Security Policy.
- Local administrator group membership on the computer where the Deployment Web Service is running.
- Local administrator group membership on the computer where SQL Server is running.
- Sysadmin permission on the instance of SQL Server to be used for the configuration and organization databases.

- Folder read and write permission on the Trace and CRMWeb folders, by default located under \Program Files\Microsoft Dynamics CRM\, and user account %AppData% folder on the local computer.
- Read and write permission to the **HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\MSCRM** and **HKEY_LOCAL_MACHINE\SYSTEM\ControlSet001\services\MSCRMSandboxService** subkeys in the Windows Registry.
- CRM_WPG group membership. This group is used for IIS worker processes. The group is created and the membership is added during Microsoft Dynamics CRM Server Setup.
- The service account may need an SPN for the URL used to access the Web site that is associated with it.

Application Service (CRMAppPool IIS Application Pool identity)

- Member of the Active Directory Domain Users group.
- Member of the Active Directory Performance Log Users group.
- Administrators local group membership on the computer where SQL Server is running.
- Administrators local group membership on the computer where the Microsoft Dynamics CRM Web site is installed.
- Folder read and write permission on the Trace and CRMWeb folders, by default located under \Program Files\Microsoft Dynamics CRM\, and user account %AppData% folder on the local computer.
- Read and write permission to the **HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\MSCRM** and **HKEY_LOCAL_MACHINE\SYSTEM\ControlSet001\services\MSCRMSandboxService** subkeys in the Windows Registry.
- CRM_WPG group membership. This group is used for IIS worker processes. The group is created and the membership is added during Microsoft Dynamics CRM Server Setup.
- The service account may need an SPN for the URL used to access the Web site that is associated with it.

IIS Application Pool identities running under Kernel-Mode authentication and SPNs

By default, Internet Information Services (IIS) 7.0 and later versions Web sites are configured to use Kernel-Mode authentication. When you run the Microsoft Dynamics CRM Web site by using Kernel-Mode authentication, you may not need configure additional Service Principal Names (SPNs) for the Microsoft Dynamics CRM Application Pool identities.

To determine whether your IIS deployment requires SPNs, see *Service Principal Name (SPN) checklist for Kerberos authentication with IIS 7.0/7.5* (<http://go.microsoft.com/fwlink/?LinkID=201806>).

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, you may want to allow only members of the Domain Admins group permissions for the folder. This practice can help to reduce the risk of attacks on the installation files that may compromise or alter them. For more information about how to set permissions on files and folders on Microsoft Windows operating systems, see Windows Help.

Microsoft Dynamics CRM security best practices

Internet Information Services (IIS) is a mature Web service that is included with Microsoft Windows Server. Microsoft Dynamics CRM depends on an efficient and secure IIS Web service. Consider the following:

- 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.
- We recommend 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 information, see the *Microsoft Security* (<http://go.microsoft.com/fwlink/?linkid=92540>) Web site.
- Microsoft Dynamics CRM Server Setup creates application pools called **CRMAppPool** and **CRMDeploymentServiceAppPool** that operate under user credentials that you specify during Setup. To facilitate a least-privileged model, we recommend that you specify separate domain user accounts for these application pools instead of using the Network Service account. Additionally, we recommend that no other ASP.NET-connected application be installed under these application pools. For information about the minimum permissions required for these components, see "*Minimum permissions required for Microsoft Dynamics CRM Setup, service and components*" (see "*Minimum permissions required for Microsoft Dynamics CRM Setup, services, and components*" on page 50)," in this guide.

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 may need to verify that the Service Principal Name (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 *How to use SPNs when you configure Web applications that are hosted on IIS* (<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 Deployment Administrator and System Administrator roles to a few people who are responsible for rule changes. Others who are SQL Server, Microsoft Exchange Server, or Active Directory directory service administrators do not have to be members of the Microsoft Dynamics CRM users group.
- Make sure that at least two or three trusted people have the Deployment Administrator role. This avoids system lockout if the primary deployment administrator is unavailable.
- In some organizations 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 entire 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 anyone who has administrative rights over the computer. In such a case, the compromise could affect the entire domain. Service accounts should never be domain administrator accounts, and they should be limited in privilege as much as possible.
- A domain user account that is specified to run a Microsoft Dynamics CRM service must not also be configured as a Microsoft Dynamics CRM user. This can cause unexpected behavior in the application.

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 and teams 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 a 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 or team. Microsoft Dynamics CRM includes a set of predefined security roles, each of which is a set of rights aggregated to make user security management easier. Each application deployment can also have its own roles to meet the needs of different users.

Entity-based security

Entity-based security in Microsoft Dynamics CRM is about user and team 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.

Object field-based security

You can restrict access to or set field-level security for custom fields in the client application.

You combine role-based security, object security, and field-based security for custom fields 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 Administrators 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 Deployment Manager in the 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.

Important

When organizations are created by different Deployment Administrators, the associated user accounts of other Deployment Administrators must be granted db_owner privileges to the databases that they did not create in order to have full access to those organizations.

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

Network ports for Microsoft Dynamics CRM

This section describes the ports that are used for Microsoft Dynamics CRM. This information is 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 Server 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 GuideMake Microsoft Dynamics CRM client-to-server network communications more secure .
TCP	445	Microsoft-DS	Active Directory 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.
TCP	1433	ms-sql-s	SQL Server sockets service. This port is required for access to SQL Server. This number may be different if you have configured your default instance of SQL Server to use a different port number or you are using a named instance.
UDP	123	NTP	Network Time Protocol.

Protocol	Port	Description	Explanation
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.

Known risks and vulnerabilities

This topic describes the risks and vulnerabilities that may exist when you use Microsoft Dynamics CRM. Mitigations and workarounds are also described when applicable.

Risks when users connect to Microsoft Dynamics CRM over an unsecured network

Issues that can occur when you run Microsoft Dynamics CRM without using Secure Sockets Layer (SSL) (HTTPS) are as follows:

- Visual chart definitions can be altered over an unsecured HTTP connection by using "man in the middle" type attacks. To mitigate this vulnerability, configure Microsoft Dynamics CRM to only use SSL. For information about how to configure Microsoft Dynamics CRM Server 2011 to use SSL, see "Make Microsoft Dynamics CRM client-to-server network communications more secure" in the *Microsoft Dynamics CRM Installing Guide*.

Security recommendations on server role deployments

The following recommendations can help make your Microsoft Dynamics CRM deployment more reliable and secure.

Server role	Recommendation
Sandbox Processing Service	Install this role to a dedicated server on a separate virtual LAN (VLAN) from other computers that are running Microsoft Dynamics CRM roles. Then, if there is a malicious plug-in running in the sandbox that exploits the computer, the network isolation from a separate VLAN can help protect other Microsoft Dynamics CRM resources from being compromised.
Help Server	Install this role on a separate computer if you implement an Internet-facing deployment (IFD). For more information, see " <i>Isolate the Help Server role for Internet-facing deployments (see "Isolate the HelpServer role for Internet-facing deployments" on page 56)</i> " in this guide.

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 2011 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>).

Claims-based authentication issues and limitations

This topic describes issues and limitations when you use claims-based authentication with Microsoft Dynamics CRM.

Verify that the identity provider uses a strong password policy

When you use claims-based authentication, we recommend that you verify that the identity provider that is trusted by the security token service (STS) and, in turn, Microsoft Dynamics CRM, enforces strong password policies. Microsoft Dynamics CRM itself does not enforce strong passwords. By default, when it is used as an identity provider, Active Directory directory service enforces a strong password policy.

AD FS 2.0 federation server sessions are valid up to 8 hours even for invalid users

By default, Active Directory Federation Services (AD FS) 2.0 server tokens allocate a Web single sign-on (SSO) cookie expiration of eight (8) hours. Therefore, even when a user is deactivated or deleted from an authentication provider, such as AD FS 2.0, as long as the user session is still active the user can continue to be authenticated to secure resources.

To work around this issue, you can reduce the Web SSO lifetime. To do this, see the AD FS 2.0 Management Help.

Secure the web.config file

The web.config file that is created by Microsoft Dynamics CRM does not contain connection strings or encryption keys. However, the web.config file does contain configuration information about the authentication mode and strategy, ASP.NET view state information, and debug error message display. If this file is modified with malicious intent it can threaten the server where Microsoft Dynamics CRM is running. To help secure the web.config file, we recommend the following:

- Grant permissions to the folder where the web.config file is located to include only those user accounts that require it, such as administrators. By default, the web.config file is located in the <drive:>Program Files\Microsoft Dynamics CRM\CRMWeb folder.
- Limit the number of users who have interactive access to Microsoft Dynamics CRM servers, such as console logon permission.
- Disable directory browsing on the Microsoft Dynamics CRM Web site. By default, this is disabled. For information about how to disable directory browsing, see Internet Information Services (IIS) Manager Help.

Secure server-to-server communication

By default, Microsoft Dynamics CRM server-to-server communication, such as communication between the Web application server role and the server that is running Microsoft SQL Server, is not executed over a security channel. Therefore, information that is transmitted between servers may be susceptible to certain attacks, such as man-in-the-middle attacks.

We recommend that you implement Internet Protocol security (IPsec) to help protect information that is transmitted between servers in your organization. IPsec is a framework of open standards for protecting communications over Internet Protocol (IP) networks through the use of cryptographic security services. For more information, see *IPsec* (<http://go.microsoft.com/fwlink/?LinkID=204951>).

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 directory service requirements are as follows:

- The computer that runs Microsoft Dynamics CRM Server 2011 and the computer that runs SQL Server, where the Microsoft Dynamics CRM databases are located, must be in the same Active Directory directory service domain.
- The Active Directory domain where the Microsoft Dynamics CRM Server 2011 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 2011 is located can run in Windows 2000, Windows Server 2003 interim, Windows Server 2003, or Windows Server 2008 forest functional levels.
- 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 2011.
- The Microsoft Dynamics CRM security groups (**PrivUserGroup**, **SQLAccessGroup**, **ReportingGroup**, and **PrivReportingGroup**) must be in the same domain as the computer that is running Microsoft Dynamics CRM. These security groups can be located in the same organizational unit (OU) or in different OUs. To use security groups that are located in different OUs, you must install Microsoft Dynamics CRM Server 2011 by using an XML configuration file and specify the correct distinguished name for each pre-existing security group within the <Groups> element. For more information see the Sample server XML configuration file for installing with pre-created groups topic in the *Installing Guide*.
- For users who access Microsoft Dynamics CRM from another domain and are not using claims-based authentication, a one-way trust must exist in which the domain where the Microsoft Dynamics CRM Server 2011 is located trusts the domain where the users are located.
- For users who access Microsoft Dynamics CRM from another forest and are not using claims-based authentication, a two-way trust must exist between the forests.

Single-server deployment

For small user bases, a Microsoft Dynamics CRM server (any edition) can be deployed in a single-server configuration, with Microsoft Dynamics CRM Server 2011, SQL Server, SQL Server Reporting Services, and optionally Microsoft Exchange Server installed and running on the same computer.

Single-server deployments are not recommended for best experience in application performance and disaster recovery.

There is one limitation to single-server deployments: the server where Microsoft Dynamics CRM Server 2011 is installed cannot also function as a domain controller, unless it is running Microsoft Windows Small Business Server. If the computer is a member server (not functioning as a domain controller), you can deploy a single-server Microsoft Dynamics CRM solution on any other supported version of Windows Server.

Important

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

Multiple-server deployment

Microsoft Dynamics CRM Server 2011 deployments can include multiple servers, which provide additional performance and scaling benefits. However, with Microsoft Dynamics CRM Workgroup Server 2011, server roles cannot be installed on separate computers. Therefore, all server roles are installed on every computer where you install Microsoft Dynamics CRM Server 2011.

Server Roles (Deployment Manager)

In Microsoft Dynamics CRM 2011 Server, you can install specific server functionality, components, and services on different computers. These components and services correspond to specific server roles. For example, customers who have larger user bases can install the Front End Server role on two or more servers that run Internet Information Services (IIS) to increase throughput performance for users. Or, a Full Server role can be installed on one computer and Microsoft Dynamics CRM Reporting Extensions on another. If a server role is missing, Deployment Manager displays a message in the **Messages** area.

Use one of the following options to install server roles:

- Run the Microsoft Dynamics CRM Server Setup Wizard to select one or more server role groups or one or more individual server roles. If Microsoft Dynamics CRM Server 2011 is already installed, you can use Programs and Features in Control Panel to add or remove server roles.
- 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. You cannot explicitly select the SQL Server "role" for installation during Microsoft Dynamics CRM Server Setup. This is a logical role that SQL Server sets when you specify a particular instance of SQL Server, either local or on another computer (recommended) for use in the Microsoft Dynamics CRM deployment.

Note

At any time after the initial installation of server roles, you can add or remove server roles in Control Panel. For more information, see the Uninstall, change, or repair, Microsoft Dynamics CRM Server 2011 topic in the *Installing Guide*.

Available group server roles

Although these server role groups are recommended for most deployments, any individual server role may be installed during Setup.

All server roles must be running in your organization's network to provide a fully functioning system.

Server Role Group	Description	Scope	Installation Method
Full Server	Contains all roles from Front End Server, Back End Server, and Deployment Administration Server. By default, Microsoft Dynamics CRM Server Setup deploys the system as Full Server. In a Full Server deployment, server roles are not listed separately in Control Panel. To view the installed roles or make changes, right-click Microsoft Dynamics CRM 2011 Server, click Uninstall/Change , and then click Configure .	Deployment	Full
Front End Server	Enables the server roles for running client applications and applications developed with the Microsoft Dynamics CRM Software Development Kit.	Deployment	Group or Full
Back End Server	Includes the server roles that handle processing asynchronous events, such as workflows and custom plug-ins. These roles are usually not exposed to the Internet. For a list of server roles that are included in this group, see the following table.	Deployment	Group or Full
Deployment Administration Server	Enables the server roles for components that are used to manage the Microsoft Dynamics CRM deployment either by using the methods described in the Microsoft Dynamics CRM 2011 Deployment Software Development Kit or	Deployment	Group or Full

Server Role Group	Description	Scope	Installation Method
	<p>the deployment tools.</p> <p>For a list of server roles that are included in this group, see the following table.</p>		

Available individual server roles

Server Role	Description	Server Group	Scope	Installation Method
Discovery Web Service	Finds the organization that a user belongs to in a multi-tenant deployment.	Front End Server	Deployment	Individual, Group, or Full
Organization Web Service	Supports running applications that use the methods described in the Microsoft Dynamics CRM Software Development Kit.	Front End Server	Deployment	Individual, Group, or Full
Web Application Server	Runs the Web Application Server that is used to connect users to Microsoft Dynamics CRM data. The Web Application Server role requires the Organization Web Service role.	Front End Server	Deployment	Individual, Group, or Full
Help Server	Makes Microsoft Dynamics CRM Help available to users.	Front End Server	Deployment	Individual, Group, or Full
Asynchronous Service	Processes queued asynchronous events, such as workflows, bulk e-mail, or data import.	Back End Server	Deployment	Individual, Group, or Full
Sandbox Processing Service	Enables an isolated environment to allow for the execution of custom code, such as plug-ins. This isolated environment reduces the possibility of custom code affecting the operation of the organizations.	Back End Server	Deployment	Individual, Group, or Full
Deployment Web Service	Manages the deployment by using the methods described in the Microsoft Dynamics CRM 2011 Deployment Software Development Kit.	Deployment Administration Server	Deployment	Individual, Group, or Full
Deployment Tools	<p>Consists of the Deployment Manager and Windows PowerShell cmdlets. Microsoft Dynamics CRM administrators can use the Windows PowerShell cmdlets to automate Deployment Manager tasks.</p> <p>Deployment Manager is a Microsoft Management Console (MMC) snap-in that system</p>	Deployment Administration Server	Deployment	Individual, Group, or Full

Server Role	Description	Server Group	Scope	Installation Method
	administrators can use to manage organizations, servers, and licenses for deployments of Microsoft Dynamics CRM.			
Microsoft Dynamics CRM Reporting Extensions	Provides reporting functionality by interfacing with the Microsoft Dynamics CRM system and Microsoft SQL Server Reporting Services.	N/A	Organization	Individual by using srsDataConnectorSetup.exe.
SQL Server	Installs the MSCRM_CONFIG database on the SQL Server.	N/A	Deployment	Individual during Microsoft Dynamics CRM Server Setup or from Deployment Manager Edit Organization Wizard .

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 a different server role instance for a given organization.

Installation method definition

- **Individual, Group, or Full.** During Microsoft Dynamics CRM Server Setup, you can install a server role individually, install one of the three predefined groups of server roles, or perform a Full Server installation that includes all roles. Or, you can select multiple individual server roles.
- **srsDataConnectorSetup.exe.** Install this role on the computer where Microsoft SQL Server Reporting Services is running by using Microsoft SQL Server Reporting Services Setup.

For more information about Microsoft Dynamics CRM server roles and multiple server deployment, see the multiple-server deployment topics in the *Microsoft Dynamics CRM Planning Guide* that is in the Microsoft Dynamics CRM 2011 Implementation Guide.

Install server roles by running Microsoft Dynamics CRM Server Setup

During Microsoft Dynamics CRM Server 2011 Setup, you can select to install a server role individually, one of the three predefined group of server roles, or a full server installation that includes all roles. Server roles let you increase flexibility and scalability of the Microsoft Dynamics CRM deployment. Note that all server roles must be running and available on the network to provide a fully functioning Microsoft Dynamics CRM system.

Install server roles by running Microsoft Dynamics CRM Server 2011 at the command prompt

For more information see *Use the Command Prompt to Install Microsoft Dynamics CRM* (<http://go.microsoft.com/fwlink/?LinkID=207601>).

Microsoft Dynamics CRM Server 2011 placement

For improved application performance, the computer or computers that run the Microsoft Dynamics CRM Server 2011 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. This is also recommended with Active Directory where the computer or computers on which Microsoft Dynamics CRM Server 2011 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 data in a SQL Server database. Make sure that the computer on which SQL Server is running that maintains the Microsoft Dynamics CRM databases is located near the Microsoft Dynamics CRM Server 2011. This means there should be a high-speed, permanent network connection between the Microsoft Dynamics CRM Server 2011 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 directory service 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 topology is intended for organizations that have a small number of users. This example does not include the required Active Directory directory service domain controllers that must be available on the network. The following example depicts a possible configuration running a particular version of Windows Server and component software such as Microsoft Office. For a complete list of the supported versions of these components, see the topics under *System Requirements and Required Components*, in this guide.

A two-server deployment topology can consist of the following configuration:

- Computer 1: Running Windows Server 2008 R2, that has Internet Information Services (IIS) (but not a version that is older than IIS 7.0). Microsoft Dynamics CRM Server 2011 is installed as a Full Server.
- Computer 2: Running Windows Server 2008 R2 running an instance of Microsoft SQL Server 2008, Standard Edition.

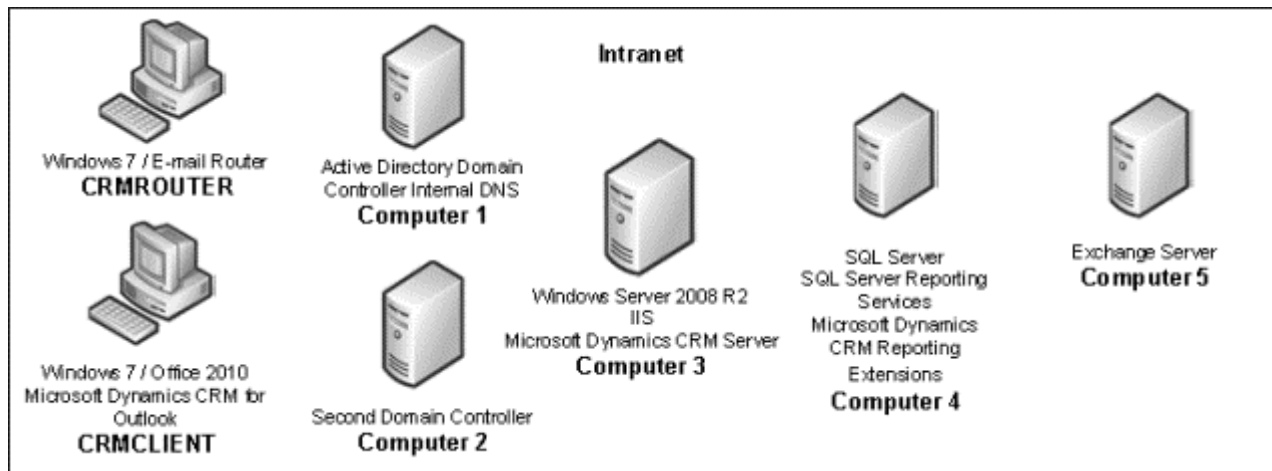
Five-server (division) topology

For small to midsize user bases, the five-server topology can deliver increased performance. The following example depicts a possible configuration running a particular version of Windows Server and component software such as Microsoft Office. For a complete list of the supported versions of these components, see the topics under *System Requirements and Required Components*, in this guide.

A five server topology can consist of the following configuration:

- 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 Standard R2, running IIS 7.0 with a Full Server installation of Microsoft Dynamics CRM.
- Computer 4: Running on Windows Server 2008 with an instance of Microsoft SQL Server 2008, and running Microsoft Dynamics CRM Reporting Extensions.
- Computer 5: Running on Windows Server 2008 or Windows Server 2003 with Microsoft Exchange Server.

- CRMROUTER and CRMCLIENT. These desktop computers are running the E-mail Router and Microsoft Dynamics CRM for Outlook.



Basic Microsoft Dynamics CRM 2011 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. The following example depicts a possible configuration running a particular version of Windows Server and component software such as Microsoft Office. For a complete list of the supported versions of these components, see the topics under *System Requirements and Required Components*, in this guide.

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 Windows Server 2008 R2 with a Full Server installation of Microsoft Dynamics CRM.
- Computer 4: Running Windows Server 2008 R2 with an instance of SQL Server 2008.
- Computer 5: Running Windows Server 2008 R2 with an instance of Microsoft SQL Server 2008 Reporting Services.
- Computer 6: Running on Windows Server 2008 or Windows Server 2003, with Exchange Server.

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.
- Computer 10: Running Windows Server 2008 or Windows 7 with the E-mail Router.

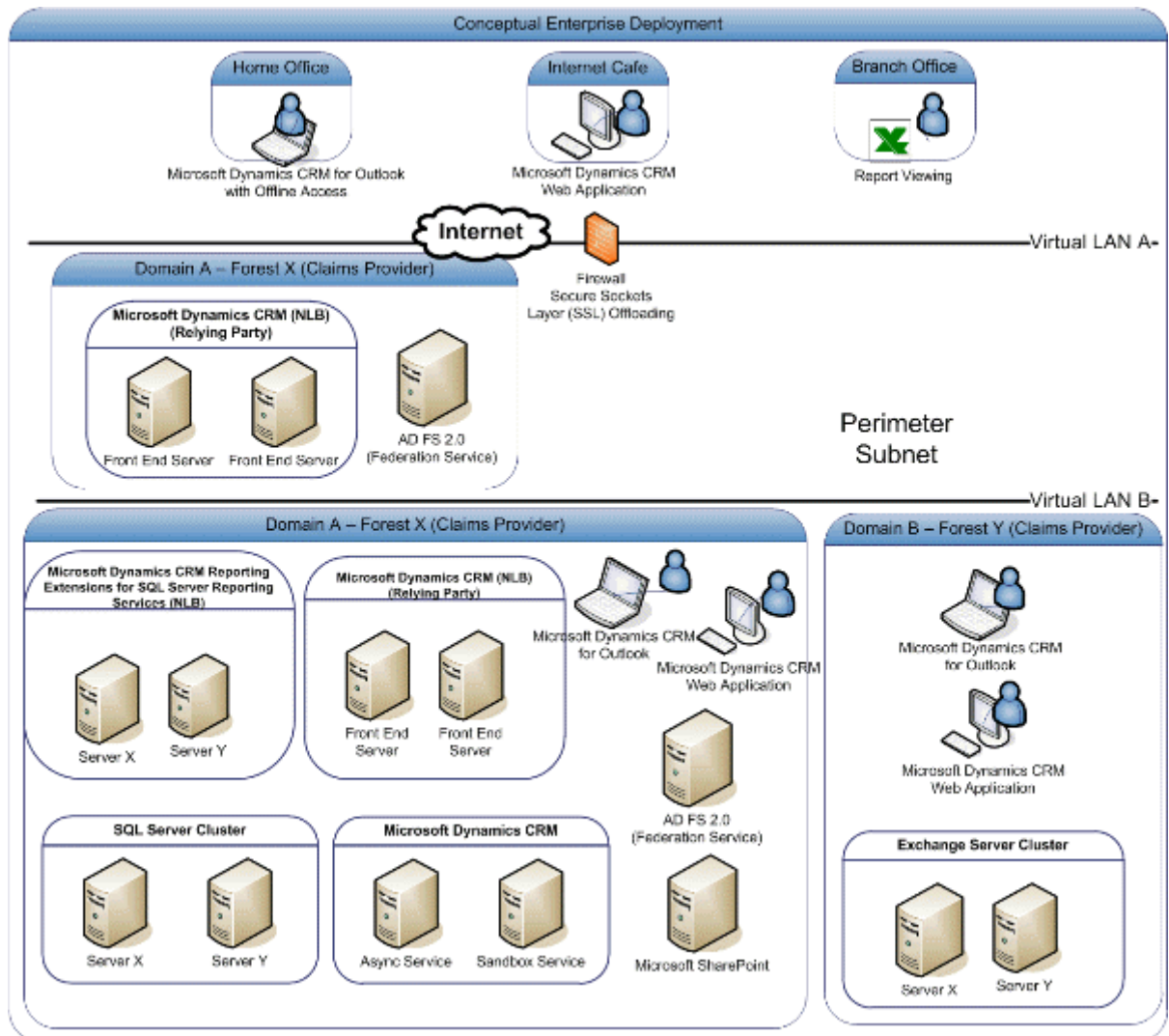
Forest B: Parent Domain

- Computer 11: Running on Windows Server 2008, Windows Server 2003, or Windows 2000 Server as a functioning domain controller.
- Computer 12: Running on Windows Server 2008, Windows Server 2003, or Windows 2000 Server as a secondary domain controller.
- Computer 13: 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 2011 through the Internet by implementing AD FS 2.0 federation supported by front-end server roles that are isolated from user and resource domains on a perimeter network (also known as DMZ, demilitarized zone, and screened subnet) model.

The following example depicts a possible configuration running a particular version of Windows Server and component software such as Microsoft Office. For a complete list of the supported versions of these components, see the topics under *System Requirements and Required Components*, in this guide.



Internet access to Microsoft Dynamics CRM 2011 topology example

Upgrading from Microsoft Dynamics CRM 4.0

The only supported upgrade path to Microsoft Dynamics CRM 2011 is from Microsoft Dynamics CRM 4.0. This section provides guidelines for preparing for an upgrade to Microsoft Dynamics CRM 2011. Performing these tasks in advance can help minimize system downtime and ensure a successful upgrade. Also, this section describes how Microsoft Dynamics CRM 2011 upgrades your current system and what happens to items such as existing reports, customizations, and solutions.

Microsoft Dynamics CRM 4.0 server roles are not compatible with a Microsoft Dynamics CRM 2011 deployment. Therefore, after you upgrade the first Microsoft Dynamics CRM 4.0 server, other Microsoft Dynamics CRM 4.0 servers that are running in the deployment will become disabled. As each server is upgraded, the corresponding server will be enabled.

You can upgrade Microsoft Dynamics CRM 4.0 server roles in any order. However, to have a fully functioning Microsoft Dynamics CRM deployment, all servers and server roles must be upgraded.

Upgrade options

There are three different upgrade options:

- **Migrate by using a new instance of SQL Server.** We recommend this option for upgrading from Microsoft Dynamics CRM 4.0 to Microsoft Dynamics CRM 2011. Although this option requires a different computer for Microsoft Dynamics CRM 2011 Server and a different instance of SQL Server, it provides the least amount of potential downtime for Microsoft Dynamics CRM users since the Microsoft Dynamics CRM 4.0 deployment can remain functioning until the upgrade is completed and verified.
- **Migrate by using the same instance of SQL Server.** This option requires a different computer for Microsoft Dynamics CRM 2011 Server, but will upgrade in-place the configuration and default organization databases using the same instance of SQL Server. If issues occur during the upgrade, you must roll back to Microsoft Dynamics CRM 4.0 to avoid significant downtime.
- **In-place upgrade.** Although this option does not require a different computer for Microsoft Dynamics CRM 2011 Server or a different instance of SQL Server, it poses the greatest risk if upgrade issues occur because a roll back and reinstall of Microsoft Dynamics CRM 4.0 Server will be required to avoid potential downtime.

For detailed procedures for each of these options, see the Upgrade from Microsoft Dynamics CRM 4.0 topics in the Installing Guide.

For the latest product information, see the *Microsoft Dynamics CRM 2011 Server Readme* (<http://go.microsoft.com/fwlink/?LinkID=144915>).

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 2011 Operating and Maintaining Guide*.

We recommend that for each organization that you upgrade, the volume have free space that is at least three times the size of the organization database file and four times the size of the log file. Therefore, if a single organization database and log file are located on the same volume and are one gigabyte in total, you should have at least seven gigabytes of available disk space before you perform the upgrade.

Microsoft Dynamics CRM software and components not supported for in-place upgrade

The following products and solutions are not supported by Microsoft Dynamics CRM 2011 and will not be upgraded during Microsoft Dynamics CRM Setup. If you upgrade a Microsoft Dynamics CRM 4.0 system that includes the product or solution listed below, or you install these components after you install Microsoft Dynamics CRM, these products or solutions may not function correctly. We recommend that you uninstall or manually remove the component before you upgrade.

- Microsoft Dynamics CRM Connector for Microsoft SQL Server Reporting Services
- Microsoft Dynamics CRM Connector for Microsoft Dynamics GP
- Microsoft Dynamics BizTalk Adapter
- Microsoft Dynamics CRM 4.0 List Web Part

Important

Microsoft Dynamics CRM 4.0 32-bit versions are not supported for in-place upgrade. Because Microsoft Dynamics CRM 2011 is available only in 64-bit versions, 32-bit versions must be migrated. For more information, see "Upgrade Microsoft Dynamics CRM 4.0 for Outlook to Microsoft Dynamics CRM 2011 for Outlook." For instructions, see "Migrate from 32-bit versions of Microsoft Dynamics CRM 4.0 Server to Microsoft Dynamics CRM 2011 Server" in the *Installing Guide*.

Microsoft Dynamics CRM 3.0 is not supported for upgrade. However, you can upgrade Microsoft Dynamics CRM 3.0 to Microsoft Dynamics CRM 4.0 by using a trial product key, and then upgrade to Microsoft Dynamics CRM 2011. For instructions about how to migrate from Microsoft Dynamics CRM 3.0 to Microsoft Dynamics CRM 2011, see "Migrate from Microsoft Dynamics CRM 3.0 Server to Microsoft Dynamics CRM 2011 Server," in the *Installing Guide*.

Upgrade product key

Before the upgrade, obtain the product key that you will enter during the upgrade. In Microsoft Dynamics CRM 2011, 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.

If you want to make system changes that require changes to your existing Microsoft Dynamics CRM 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 Microsoft Dynamics CRM Setup must:

- Have an account in the same Active Directory directory service domain as the server or servers that are being upgraded.
- Be a member of both the Deployment Administrators role and 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 existing Microsoft Dynamics CRM groups.

Multiple Microsoft Dynamics CRM Server 2011 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 directory service 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.

Sharing a SQL Server

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

Because Microsoft Dynamics CRM 3.0 does not have a database named MSCRM_Config, you can configure the databases for this version of the product to coexist on the same SQL Server as Microsoft Dynamics CRM 2011 databases. However, to optimize performance we recommend that each version have its own computer that is running SQL Server.

Tips for a successful upgrade

The following issues, if applicable to your current Microsoft Dynamics CRM 4.0 deployment, should be resolved before you start the upgrade.

Maximum number of attributes exceeded

If you have more than 1023 attributes defined for an entity, you must delete the additional attributes before you run the upgrade. The upgrade will fail with the following message if you have more than 1023 attributes. CREATE VIEW failed because column '*column_name*' in view '*view_name*' exceeds the maximum of 1024 columns.

Remove custom database objects

We suggest that, if you have added custom database objects such as triggers, statistics, stored procedures, and certain indexes, that you remove from the configuration and organization databases. In many cases, Microsoft Dynamics CRM Server Setup displays a warning when these objects are detected.

Remove the ignorechecks registry subkey

If you have manually added the ignorechecks registry subkey on the Microsoft Dynamics CRM Server 2011 remove it before you start the upgrade. For more information, see *You cannot deploy Microsoft Dynamics CRM 4.0 by using an account that does not have local administrator permissions on Microsoft SQL Server* (<http://go.microsoft.com/fwlink/?LinkID=204888>).

Upgrading Microsoft Dynamics CRM for Outlook

Microsoft Dynamics CRM for Microsoft Office Outlook is a Microsoft Office Outlook add-in that lets Microsoft Dynamics CRM users complete Microsoft Dynamics CRM tasks in the familiar Outlook environment. For information about the hardware and software requirements for Microsoft Dynamics CRM for Outlook, see the *System Requirements and Required Components* section that is part of this guide.

Microsoft Dynamics CRM 4.0 for Outlook compatibility with Microsoft Dynamics CRM 2011 Server

Microsoft Dynamics CRM 4.0 for Outlook with Update Rollup 7 or later is compatible with Microsoft Dynamics CRM 2011 Server. This compatibility eases the upgrade timeline to allow administrators to do a phased rollout without work stoppages for Microsoft Dynamics CRM 4.0 for Outlook users who have not been upgraded to Microsoft Dynamics CRM 2011.

Important

Only Microsoft Dynamics CRM 4.0 for Outlook with Update Rollup 7 or a later Update Rollup is compatible with Microsoft Dynamics CRM 2011 Server.

When you perform a new installation or migration of Microsoft Dynamics CRM 2011 Server to a server that has a different computer name, all Microsoft Dynamics CRM 4.0 for Outlook users must run the Configuration Wizard to point to the new URL. For more information, see "Upgrade Microsoft Dynamics CRM 4.0 for Outlook to Microsoft Dynamics CRM 2011 for Outlook" in the *Microsoft Dynamics CRM Installing Guide*.

In an Internet-facing deployment (IFD), the URL of the Microsoft Dynamics CRM 4.0 Server will probably change when you upgrade it to Microsoft Dynamics CRM 2011 Server. This URL change is likely because of the requirements for Secure Sockets Layer (SSL) and the Internet Information Services (IIS) binding limitations (see "*Claims-based authentication and IFD requirements*" in this guide). If there is a URL change, either upgrade to Microsoft Dynamics CRM 2011 for Outlook or use the Configuration Wizard to point Microsoft Dynamics CRM 4.0 to the new URL. For more information about how to configure Microsoft Dynamics CRM for Outlook, see "Task 2: Configure Microsoft Dynamics CRM for Outlook" in the *Microsoft Dynamics CRM Installing Guide*.

Suggestions for how to avoid client reconfiguration due to a change in the URL

To avoid Microsoft Dynamics CRM for Outlook reconfiguration and the potential down time or data loss that may occur during the period of application inaccessibility, we recommend that you consider one of the possible solutions to avoid a change in the Microsoft Dynamics CRM URL:

- Add the appropriate DNS resource record. Then, users will automatically be redirected to the new Microsoft Dynamics CRM 2011 Server after database import and upgrade. For information about how to add resource records, see your DNS documentation, such as DNS Manager Help.
- For migration scenarios, one possible strategy is to use the same computer name of the existing Microsoft Dynamics CRM 4.0 Server computer. This strategy requires removing the Microsoft Dynamics CRM 4.0 server before joining the Microsoft Dynamics CRM 2011 server to the domain, configuring the IIS bindings to use the same bindings as the Microsoft Dynamics CRM 4.0 Web site, and updating DNS records as necessary to correctly resolve to the new Microsoft Dynamics CRM 2011 Web site.

For information about how to migrate Microsoft Dynamics CRM 2011 Server, see "Upgrade from Microsoft Dynamics CRM 4.0 Server 32-bit editions" in the *Microsoft Dynamics CRM Installing Guide*.

Notes about upgrading Microsoft Dynamics CRM for Outlook

- **Base languages must match.** To upgrade Microsoft Dynamics CRM for Outlook, the base language of Microsoft Dynamics CRM 2011 for Outlook must match the base language of Microsoft Dynamics CRM 4.0 for Outlook.
- **Upgrade is required to continue offline access after server upgrade.** After the Microsoft Dynamics CRM Server 2011 in an organization has been upgraded to Microsoft Dynamics CRM 2011 Server, users must upgrade to Microsoft Dynamics CRM 2011 for Outlook to continue accessing data offline. For example, a particular user runs Microsoft Dynamics CRM 4.0 for Outlook and accesses data offline. This user's organization is upgraded from Microsoft Dynamics CRM 4.0 to Microsoft Dynamics CRM 2011. Although there now exists a client-server mismatch, the user can still connect to the server and can still access data online. However, to go offline again, the user must upgrade to Microsoft Dynamics CRM 2011 for Outlook.

Cross-architecture upgrade of Microsoft Dynamics CRM for Outlook

If you intend to change to a different architecture (move from 32-bit to 64-bit or vice versa) while upgrading, note the following:

- **In-place cross-architecture upgrade is not supported.** Microsoft Dynamics CRM 4.0 for Outlook was available only in a 32-bit architecture. If you are running Microsoft Dynamics CRM 4.0 for Outlook, you can perform an in-place upgrade only to 32-bit Microsoft Dynamics CRM 2011 for Outlook. This also applies to Office 2010: If you are running and intend to retain 32-bit Office 2010, you can upgrade only to 32-bit Microsoft Dynamics CRM 2011 for Outlook.
- **Cross-architecture upgrade requires uninstalling and reinstalling.** To change to a different architecture, perform the following steps in the order listed:
 1. Uninstall Microsoft Dynamics CRM 4.0 for Outlook.
 2. Uninstall Microsoft Office.
 3. Install Microsoft Office in the new architecture.
 4. Install Microsoft Dynamics CRM 2011 for Outlook in the new architecture.

For more information about installing Microsoft Dynamics CRM 2011 for Outlook, see "Task 1: Install Microsoft Dynamics CRM for Outlook", in the *Microsoft Dynamics CRM Installing Guide*.

Upgrade issues and considerations

This section describes the known issues that may occur as a result of upgrading from Microsoft Dynamics CRM 4.0 to Microsoft Dynamics CRM 2011. This section also describes the things that may impact your deployment after the upgrade is complete.

What happens to Microsoft Dynamics CRM 4.0 queues?

In Microsoft Dynamics CRM 2011, managing and using queues is significantly simplified. There are three types of queues in Microsoft Dynamics CRM 4.0:

- Public queues created by the business unit.
- Private queues that contain items assigned to users that they have not started working on.
- Work in progress (WIP) queues that contain items assigned to users that they are currently working on.

In Microsoft Dynamics CRM 2011, public, private, and WIP queues are replaced with a general purpose queue that can be owned by a user or team. Access to a queue is determined by the ownership type, security roles, and entity privileges granted to users or teams.

When you upgrade Microsoft Dynamics CRM 4.0 Server to Microsoft Dynamics CRM 2011, the following behavior occurs:

- Each user's private queue is converted to the user's default queue and renamed using the user's full name.
- All WIP queues remain unchanged.
- All public queues remain unchanged.
- The Route Message (CrmService) message and the Handle Message (CrmService) message will continue to work as they did in Microsoft Dynamics CRM 4.0.

If you want upgraded queues to function in a manner that is similar to a new installation of Microsoft Dynamics CRM 2011, you can implement the following steps after the upgrade to Microsoft Dynamics CRM 2011 is complete:

1. Route all the items contained in the WIP queue to the user's default queue from the Queue Item grid.
2. Delete or deactivate the WIP queue from the **Queues** grid.

In addition, you can revise and change the security roles and privileges of the users in your organization to give them the appropriate level of access to queues.

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

For more information about how the new queue behavior impacts solutions that use the methods that are described in the Microsoft Dynamics CRM 4.0 Software Development Kit (SDK), see the Microsoft Dynamics CRM Software Development Kit.

What happens to ISV solutions?

During upgrade, independent software vendor (ISV) solutions will be moved from <drive>:\inetpub\wwwroot\ISV to the Microsoft Dynamics CRM Server 2011 installation folder. By default, the installation folder is located at <drive>:\Program Files\Microsoft Dynamics CRM\CRMWeb\ISV.

Warning

These solutions may not work correctly after you upgrade. Contact the ISV for the solution to determine if it is compatible with Microsoft Dynamics CRM 2011.

What happens to Microsoft Dynamics CRM 4.0 Mobile Express?

Microsoft Dynamics CRM 4.0 Mobile Express is now integrated into Microsoft Dynamics CRM. During upgrade, Microsoft Dynamics CRM 4.0 Mobile Express will also be upgraded.

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Planning Deployment Advanced Topics

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

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Advanced deployment options for Microsoft Dynamics CRM Server 2011

This section describes advanced deployment options for Microsoft Dynamics CRM Server 2011.

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 that is 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 more information see *Use the Command Prompt to Install Microsoft Dynamics CRM* (<http://go.microsoft.com/fwlink/?LinkID=207601>).

Add or remove server roles

Use one of the following options to install server roles:

- Run the Microsoft Dynamics CRM Server Setup Wizard to select one or more server role groups or one or more individual server roles. If Microsoft Dynamics CRM Server 2011 is already installed, you can use Programs and Features in Control Panel to add or remove server roles.

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.

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

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 claims-based 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.

For more information, see *Claims-based authentication and IFD requirements* in the "System Requirements and Required Components" section of this guide.

Claims-based authentication

The claims-based security model extends traditional authentication models to include other directory sources that contain information about users. This identity federation lets users from various sources, such as Active Directory Domain Services (AD DS), customers via the Internet, or business partners, authenticate with native single sign-on.

The claims-based model has three components: the relying party, which needs the claim to decide what it is going to do; the identity provider, which provides the claim; and the user, who decides what if any information they want to provide. Microsoft provides a claims-based access solution called Active Directory Federation Services (AD FS) 2.0. AD FS 2.0 enables Active Directory Domain Services (AD DS) to be an identity provider in the claims-based access platform.

AD FS 2.0 consists of the following components:

- AD FS 2.0 Framework provides developers pre-built .NET security logic for building claims-aware applications, enhancing either ASP.NET or WCF applications.
- Active Directory Federation Services (AD FS) 2.0 is a security token service (STS) for issuing and transforming claims, enabling federations, and managing user access. Active Directory Federation Services (AD FS) 2.0 supports the WS-Trust, WS-Federation, and Security Assertion Markup Language (SAML) protocols. Active Directory Federation Services (AD FS) 2.0 can also issue manage information cards for AD DS users.
- Windows CardSpace helps users navigate access decisions and is designed for developers to build customer authentication experiences for users.

For more information about AD FS 2.0, see:

- AD FS 2.0 home page: *Active Directory Federation Services 2.0* (<http://go.microsoft.com/fwlink/?LinkID=204234>)
- AD FS 2.0: *AD FS 2.0 RTW* (<http://go.microsoft.com/fwlink/?LinkID=204237>)

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 *Creating a Strong Password Policy* (<http://go.microsoft.com/fwlink/?LinkID=203901>) on Microsoft TechNet and the "Understanding User Accounts" topic in Active Directory Users and Computers Help.

Internet connection firewall

The Windows Server 2008 family provides firewall software to prevent unauthorized connections to the server from remote computers. For more information about how to configure the Internet connection firewall for Internet Information Services (IIS) Manager, see the "Before Configuring IIS" topic in IIS Help.

For information about how to make a Web site available on the Internet, see the "Domain Name Resolution" topic in the IIS Help.

Proxy/firewall server

If you do not have a secure proxy and firewall solution on your 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>).

Use the following steps as configuration guidelines.

Step 1: Configure Microsoft Dynamics CRM Server 2011 for Internet access

You can configure Microsoft Dynamics CRM Server 2011 for Internet access. To do this, run the Configure Claims-Based Authentication Wizard, and then when you run the Internet-Facing Deployment Configuration Wizard Microsoft Dynamics CRM Server 2011 is installed. For more information, see the Deployment Manager Help.

Step 2: Configure Microsoft Dynamics CRM for Outlook to connect to the Microsoft Dynamics CRM Server 2011 by using the Internet

For Microsoft Dynamics CRM for Microsoft Office Outlook to be able to access the Microsoft Dynamics CRM Server 2011 over the Internet, you must specify the external Web address that will be used to access the Internet-facing Microsoft Dynamics CRM Server 2011. To do this, you must install Microsoft Dynamics CRM for Outlook, and then run the Configuration Wizard. Then, during configuration, type the external Web address in the **External Web** address box. If you install server roles, this Web address must specify where the Discovery Web Service role is installed. For more information about how to configure Microsoft Dynamics CRM for Outlook, see "Task 2: Configure Microsoft Dynamics CRM for Outlook" in the *Microsoft Dynamics CRM Installing Guide*.

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.

Key types

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

- **CRM ticket key (Microsoft Dynamics CRM 4.0 clients only).** 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 2011, 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 key 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 2011 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 more information see *Use the Command Prompt to Install Microsoft Dynamics CRM* (<http://go.microsoft.com/fwlink/?LinkID=207601>).

Multi-organization deployment

In the **Organizations** area of the 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 review 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, such as by using deployment management software or by using Group Policy.

For more information see *Advanced deployment options for Microsoft Dynamics CRM for Outlook* (<http://go.microsoft.com/fwlink/?LinkID=207603>).

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