

Compatibility

Microsoft Dynamics CRM 2011
Microsoft Dynamics CRM Online

Microsoft Dynamics CRM for Microsoft Office Outlook compatibility with Citrix XenApp 6

White Paper

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Overview

Microsoft Dynamics CRM 2011 and Microsoft Dynamics CRM Online are designed to help enterprise organizations acquire a 360-degree view of customers, achieve reliable user adoption, adapt quickly to business change, and accelerate project delivery and returns – all on a platform that provides enterprise levels of scalability and performance.

Microsoft, working with Citrix® Corporation, completed functional verification of Microsoft Dynamics CRM for Microsoft Office Outlook and Citrix XenApp 6 and its components. This white paper focuses on documenting the compatibility verification of Microsoft Dynamics CRM for Microsoft Office Outlook when deployed with Microsoft Office 2007 or Microsoft Office 2012 on Citrix XenApp 6.

Important – Citrix XenApp 6 does not support client-side or dual-mode virtualization for Microsoft Dynamics CRM for Outlook. In addition, Microsoft Dynamics CRM for Outlook with Offline Access is not supported.

This white paper also details the results of scalability testing of Microsoft Dynamics CRM for Outlook on Citrix XenApp 6 running on an Intel Xeon processor-based server. Included are:

- Instructions for setting up and deploying the test environment.
- A description of the Microsoft Dynamics CRM implementation and the methods used to obtain the results.
- Details of the hardware configuration and software settings.
- A summary of the key test parameters and results.

Results summary

Functional testing of Microsoft Dynamics CRM for Outlook on Citrix XenApp 6 server was performed on server-scale hardware set up following the supported deployment configuration:

- Microsoft Office Outlook configured in Online exchange mode
- Microsoft Dynamics CRM for Outlook installed
- Microsoft Office Outlook published in server-side Citrix app virtualization mode on Citrix XenApp 6

In the test environment, results verified that major features of Microsoft Dynamics CRM and Citrix XenApp 6 function properly together.

Important: Scalability testing results reflect the scalability and performance of a specific Microsoft Dynamics CRM 2011 or Microsoft Dynamics CRM Online implementation running in a particular test environment. Each organization is different; factors ranging from industry vertical to geographic span can affect how an enterprise organization uses its CRM system, so results will vary for each implementation. Customers may be able to achieve higher levels of performance and scalability through customization and a finer level of optimization.

Note: This document is not intended as a deployment guide; it is provided for informational purposes only. For additional information about deploying Microsoft Office on Citrix XenApp, see the Citrix white paper, *Rapidly Deliver Microsoft Office 2007 with Citrix XenApp*, at:

http://www.citrix.com/%2Fsite%2Fresources%2Fdynamic%2Fsalesdocs%2FCitrix_Deliver-Office-2007-With-XenApp.pdf

Methodology

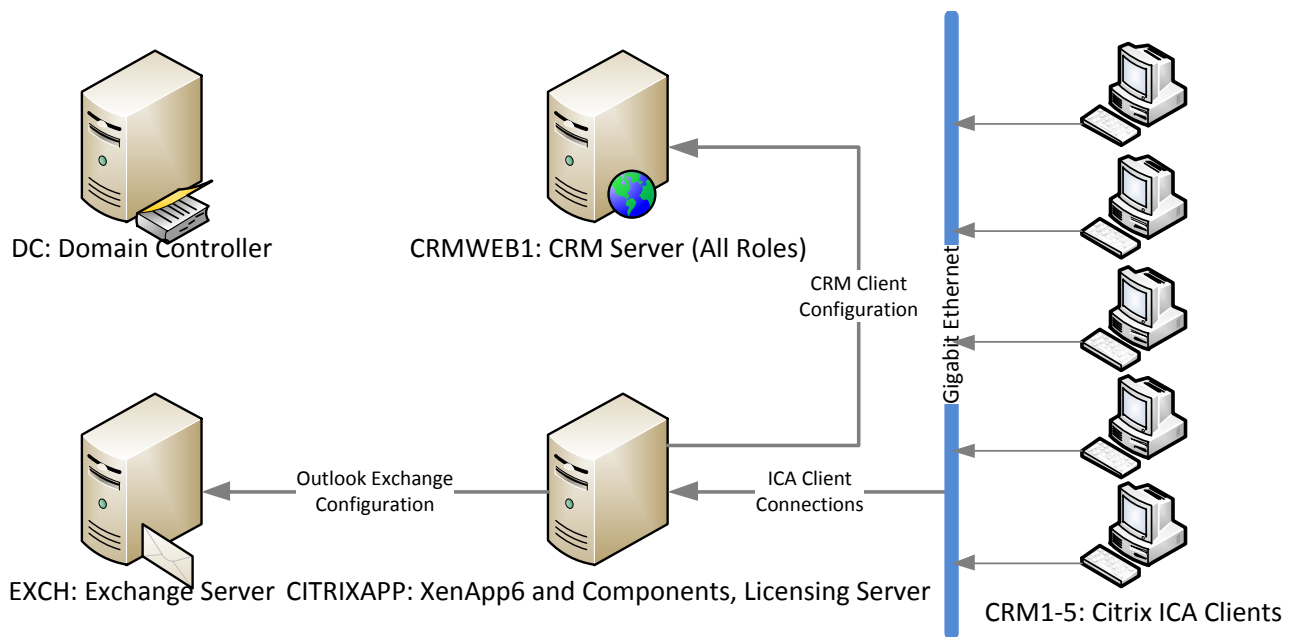
Testing was conducted by Microsoft, working with Citrix Corporation, to verify the functionality of the Microsoft Dynamics CRM for Outlook feature set and the performance and scalability characteristics of a Microsoft Dynamics CRM 2011 implementation that included:

- Microsoft Windows Server 2008 R2
- Microsoft SQL Server 2008 R2
- Intel® Xeon® Processor L5520-based servers

Verification was conducted in a lab environment with Microsoft and Citrix components installed on different servers as specified in the *Environment setup* section that follows. After set up, verification was performed by using a set of Microsoft and Citrix tests, which are described more fully in the *Results* section.

Environment setup

The test environment was a basic, flat Windows Server 2008 R2 Active Directory infrastructure, as shown in the following graphic:



The environment included three groups of systems: the Microsoft infrastructure, the Citrix server/client infrastructure, and the Microsoft Dynamics CRM servers.

Microsoft infrastructure

The Microsoft infrastructure consisted of:

- DC: Active Directory Domain Controller, running DNS, Terminal Server Licensing, and Certificate Authority services. The only domain controller in the environment was running Windows Server 2008 R2 with all current Windows Updates installed.
- EXCH: Exchange 2007 Server provided e-mail services to the client computers running Microsoft Dynamics CRM for Outlook, as required for the Microsoft Dynamics CRM test.

Citrix infrastructure

The Citrix infrastructure consisted of:

- CITRIXAPP:
 - CITRIXAPP running on Windows Server 2008 R2 with XenApp 6 and its components installed:
 - Citrix Licensing Server
 - Citrix Web Interface Server 5.3
 - Microsoft SQL Server 2008 R2 provides database services for the Citrix XenApp farm and IMA Datastore.
 - The XenApp server running Office 2007 Enterprise, with all Windows Updates (including Office 2007 Service Pack 2) installed. For the second round of verification, Office 2010 Enterprise was installed.
- CRM1, CRM2, CRM3, CRM4, CRM5: Client computers running Windows 7 with Citrix ICA clients (full package, containing Program Neighborhood, Program Neighborhood Agent and Web Client) installed and configured.

Microsoft Dynamics CRM infrastructure

The Microsoft Dynamics CRM infrastructure consisted of a single server (CRMWEB1) running Windows Server 2008 R2 with a local installation of SQL Server 2008 R2 with SQL Reporting Services. This server was subsequently used for Microsoft Dynamics CRM Server deployment.

Note: For additional information about setting up the environment, see *Appendix A: Environment Setup* later in this document.

Microsoft Dynamics CRM 2011 deployment

This section covers installation of the Microsoft Dynamics CRM server and deployment of Microsoft Dynamics CRM for Outlook on the XenApp server.

First, deploy the Microsoft Dynamics CRM server, create two organizations, and then assign test user accounts from the Active Directory domain to each organization. Next, perform a basic Internet Explorer validation of Microsoft Dynamics CRM functionality by logging on to the Microsoft Dynamics CRM server URL from client computers using test user accounts.

Deploy Microsoft Dynamics CRM for Outlook on the XenApp 6 server. Because Microsoft Dynamics CRM for Outlook with Offline Access is not supported, invoke the setup with the **/disableofflinecapability** command-line argument. Then run Windows Update to ensure that all components, including Office 2007 (or Office 2010), .NET Framework, and so on, are up-to-date.

CRM infrastructure

- CRMWEB1: Microsoft Dynamics CRM Server is deployed on the CRMWEB1 system. Two organizations are created with test users from the Active Directory domain assigned to both organizations.
- CITRIXAPP: Microsoft Dynamics CRM for Outlook is installed. Remote Desktop, IE8 and Outlook 2007 are provided as published applications for this server.

Note: For more information about the Microsoft Dynamics CRM deployment process, see *Appendix A: Environment Setup* later in this document.

Microsoft Dynamics CRM 2011 functional test

Basic verification tests were performed with Microsoft Dynamics CRM for Outlook inside the ICA session. This included verifying multi-user functionality, Microsoft Dynamics CRM toolbar integration, and Microsoft Dynamics CRM Configuration Wizard functionality. This also included performing validation of Microsoft Dynamics CRM functionality using the published Internet Explorer 8 browser.

The Microsoft Dynamics CRM tests contain verification for Microsoft Dynamics CRM with Outlook integration and for Internet Explorer direct access to Microsoft Dynamics CRM server, all performed inside two simultaneously launched ICA sessions using regular domain user accounts from separate client computers (published application and published Remote Desktop approaches were also tested).

Automated test coverage

In addition to manual tests, a suite of automated tests was run in one of the active ICA sessions. The selection of tests covered major features of Microsoft Dynamics CRM for Outlook and was used to establish parity with running automation in a non-Citrix environment. During the test run, another instance of Microsoft Dynamics CRM for Outlook was started to verify that that running two instances of the client side-by-side did not adversely impact functionality.

Exploratory testing

Exploratory testing was conducted to determine if there are any actions of Microsoft Dynamics CRM for Outlook that do not perform correctly or that break Microsoft Dynamics CRM or Citrix functionality in the test environment. This also included running Microsoft Dynamics CRM for Outlook for an extended period of time (12 – 24 hours).

Citrix functional test

This step of the process contained basic tests to ensure Citrix ICA client and XenApp functionality. This ensured the Citrix environment was working as expected when used with Microsoft Dynamics CRM for Outlook. The basic Citrix tests verified that ICA sessions launched correctly and monitored resource usage, session windows, and so on.

Citrix detailed verification test

Citrix detailed tests involved verification of Microsoft Dynamics CRM functionality with a variety of the Citrix policies or settings applied at the Citrix XenApp farm, including server-to-client redirection, printing, client drive mapping (CDMA), and working in SSL secured sessions.

Citrix detailed tests verified more complex, Level 2 Citrix functionality in a XenApp environment with Microsoft Dynamics CRM 2011 deployed. These tests verified both that Microsoft Dynamics CRM software can use Citrix functions and that Citrix functions performed correctly with the Microsoft Dynamics CRM required software installed on the XenApp Server.

Results

The following sections present the results associated with deploying Microsoft Dynamics CRM 2011 and Citrix XenApp 6, as well as those verifying feature functionality.

Test environment deployment results

This setup provides for verification of the environment systems and functions, such as Microsoft Exchange to Outlook communication and Citrix ICA client to Citrix XenApp server communication, which the Microsoft Dynamics CRM test required. No deployment issues were experienced with installing Microsoft Dynamics CRM for Outlook on the same computer with Citrix XenApp 6; the Microsoft Dynamics CRM for Outlook installation process worked as expected on Citrix XenApp 6 with Microsoft Office 2007 and Microsoft Office 2010.

Deployment Action	Result
Install and configure Microsoft Dynamics CRM Server 2011	PASS
Add active directory users to Microsoft Dynamics CRM server	PASS
Install Microsoft Dynamics CRM for Outlook on XenApp environment	PASS
Publish Microsoft Dynamics CRM for Outlook using Citrix Delivery Console in Server-Side virtualization mode	PASS
Verify connection between client machines and XenApp server	PASS
Verify connection between Outlook and Exchange server	PASS

Microsoft Dynamics CRM 2011 functional test results

All functions listed in tests performed as expected when accessed by multiple simultaneous users inside each their own Citrix ICA session.

Microsoft Dynamics CRM Verification	Result
Microsoft Dynamics CRM Configuration button is shown	PASS
Microsoft Dynamics CRM Configuration Wizard works correctly	PASS
Microsoft Dynamics CRM for Outlook Toolbar is present and functions correctly	PASS
Microsoft Dynamics CRM action menu is present and functions correctly	PASS
Microsoft Dynamics CRM actions are shown inside a new message	PASS
Internet Explorer 8 window launches correctly when attempting to view Microsoft Dynamics CRM items	PASS
Navigating to Microsoft Dynamics CRM folders works correctly	PASS
Pinning the views works correctly	PASS
Switching Microsoft Dynamics CRM Organizations functions correctly	PASS
Working in multiple Microsoft Dynamics CRM organizations functions correctly	PASS
Enabling and disabling synchronization in Microsoft Dynamics CRM options functions correctly	PASS
Manually synchronizing Microsoft Dynamics CRM from Outlook works correctly	PASS
Viewing all Microsoft Dynamics CRM folders in Outlook functions properly	PASS

Automated test coverage

Automated tests did not reveal additional issues.

Exploratory testing

Exploratory tests for Microsoft Dynamics CRM for Outlook on Citrix XenApp 6 with Microsoft Office 2007 and Microsoft Office 2010 did not reveal any major issues.

Citrix functional test results

Citrix BVT contains basic level 1 test to ensure Citrix ICA client and XenApp functionality. This can help to ensure that the Citrix environment is working as expected when used with Microsoft Dynamics CRM for Outlook. The basic Citrix tests verify launching of ICA sessions correctly, resource usage, session windows and so on. All functions listed in tests performed correctly when used by multiple simultaneous users inside ICA sessions. Server load per user did not exceed critical levels.

Citrix Verification	Result
ICA Session Launch	PASS
ICA Session Exit/Logoff (note)	PASS
ICA Session Window position on the client computer	PASS
Session Sharing (Outlook and IE8)	PASS
Resource (CPU and Memory) usage by CRM components on XenApp	PASS

Note: For additional information on memory verification, see *Appendix D: Scalability Verification* later in this document.

Citrix architect note: It is very important to note memory usage by the Microsoft Dynamics CRM 2011 applications for deployment planning in the XenApp 6 environment. In Microsoft Dynamics CRM 2011, there is only one application running for Microsoft Dynamics CRM for Outlook - Microsoft Outlook itself. Average server memory usage per user is 300MB, and this should be taken into consideration when planning the hardware resources of the XenApp farm.

Detailed verification results

All functions listed in tests perform as expected when used by multiple simultaneous users inside ICA sessions.

Citrix Verification	Result
Server-to-Client Content Redirection (note)	PASS
Printing to Client printer	PASS
Client Drive Mapping	PASS
VIP Testing (Virtual IP) (note)	PASS
SSL Encrypted ICA connections (SSL Relay)	PASS
RSA Encrypted ICA connections	PASS
Access Management Console functionality verification	PASS
Presentation Server Console functionality verification	PASS

Administrator note: There is a server-to-client content redirection effect on the Microsoft Dynamics CRM 2011 deployment. If server-to-client content redirection is enabled on the XenApp server that hosts Microsoft Dynamics CRM 2011 for Outlook, all the Microsoft Dynamics CRM viewing actions sent to Internet Explorer will attempt to open on the client computers instead of inside the ICA session. One way to address this issue is to configure content redirection to apply to only specific URLs, excluding the Microsoft Dynamics CRM server from that list.

For more information, see the article *Server-To-Client Content Redirection Explained* at: <http://support.citrix.com/article/CTX113457>.

Administrator note: For, Virtual IP and Microsoft Dynamics CRM for Outlook, if you need to assign each of the Microsoft Dynamics CRM user sessions a unique IP address. For information on how to configure the Virtual IP, look in the Citrix Product Documentation Library at <http://support.citrix.com/proddocs/index.jsp?lang=en>

Conclusion

Multiple phases of functionality verification were performed, including basic verification for both Microsoft Dynamics CRM for Outlook and Citrix, detailed verification, exploratory testing and scalability verification. During testing, no major issues surfaced, confirming expectations that Microsoft Dynamics CRM for Outlook, when deployed with Microsoft Office Outlook 2007 or Microsoft Office Outlook 2010, is compatible with Citrix XenApp 6.

Appendix A: Environment setup

The testing environment use commercially released versions of all products, including Microsoft Dynamics CRM Server 2011 and Microsoft Dynamics CRM for Office Outlook.

- The build number for Microsoft Dynamics CRM Server 2011 release is 5.0.9688.583
- The build number for Microsoft Dynamics CRM for Outlook release is 5.0.9688.583

Set up of the major components of the environment are detailed in the following sections.

DC: Windows Server 2008 R2 Root Domain Controller

1. Install operating system: Windows Server 2008 R2
2. Assign static IP address
3. Install server: Active Directory Domain Service, Application Server (IIS)
4. Register and join all computers and servers to the domain
5. Create policy to disable pop-up blocker for the XenApp Server for CRM users by adding the Microsoft Dynamics CRM server to a Trusted Zone and disabling Pop-Up Blocker for the Trusted Zone

EXCH: Exchange 2007 Server

1. Install operating system: Windows Server 2008 R2
2. Assign static IP address
3. Install Exchange Server 2007 SP3 with all roles enabled
4. Create user accounts, configure mailboxes and policies

CITRIXAPP: XenApp 6 Server

1. Install operating system: Windows Server 2008 R2
2. Install server roles: Terminal Server, Application Server (IIS)
3. Configure Terminal Service w/licenses
4. Install SQL Server 2008 R2 and create a database for XenApp datastore if necessary
5. Install XenApp 6
6. Configure Citrix License Server w/licenses
7. Configure the farm for your Citrix deployment
8. Install Microsoft Office 2007
9. Publish Outlook application, Remote Desktop and Internet Explorer
10. Install Microsoft Dynamics CRM for Outlook, providing /disableofflinecapability parameter to setup

CRMWEB1: Microsoft Dynamics CRM 2011 Server

1. Install operating system: Windows Server 2008 R2
2. Install SQL Server 2008 R2
3. Install Microsoft Dynamics CRM Server 2011 with all roles selected
4. Install Microsoft Dynamics CRM 2011 SSRS Connector
5. In Microsoft Dynamics CRM Deployment Manager create two organizations
6. Using the web interface, add test users to the Microsoft Dynamics CRM organizations

Test Clients

1. Install operating system: Windows 7
2. Install Citrix ICA client (Online client web plugin)

Appendix B: Troubleshooting Microsoft Dynamics CRM for Office Outlook on Citrix XenApp 6

Configuring Microsoft Dynamics CRM Tracing by Using the Registry

To enable Microsoft Dynamics CRM client tracing on the XenApp Server, it is necessary to merge a set of registry keys for the user experiencing the issue as that user. To perform this operation, it is recommended to launch a Remote Desktop ICA session with the specified user account and in that session merge the registry keys into the XenApp Server registry.

► **To configure CRM Tracing by using the Registry**

1. Log on as the test or regular user account.
2. Launch ICA connection to Remote Server Desktop published application to the server that has Microsoft Dynamics CRM for Outlook installed.
3. Merge the registry entries listed here into the server registry:
Windows Registry Editor Version 5.00
[HKEY_CURRENT_USER\Software\Microsoft\MSCRMClient]
"TraceEnabled"=dword:00000001
"TraceDirectory"=\\DebugTrace\Client
"TraceCategories"="*:Verbose"
"TraceCallStack"=dword:00000001
"TraceRefresh"=dword:00000000
"TraceSchedule"="Hourly"
4. Log off from the Remote Server Desktop ICA session.
5. Launch the published Outlook 2007 application from an ICA session.
6. Monitor the %appdata%\microsoft\mscrm\traces folder of the account used for the log files being created by the trace process.

Microsoft Windows debugging tools log

1. Download and install the Windows debugger.
2. Extract and copy the symbols you downloaded previously to a directory on the local computer (that is, c:\symbols\dll and c:\symbols\exe).
3. While the issue is occurring, in Microsoft Windows Debugging Tools, on the **File** menu, point to **Attach to process**, and then click **Outlook.exe**.
4. At the prompt, type **.logopen c:\temp\debugsession.txt**, and then press Enter. This will begin a log of the session.
5. Type **enable_unicode 1**, and then press Enter.
6. Type **sympath**
C:\symbols\dll;C:\symbols\exe;SRV*c:\websymbols*http://msdl.microsoft.com/download/symbols, and then press Enter.
Note that c:\symbols\dll and \exe should be the directories you created in step #2 above. \websymbols should exist and will be used to locally cache symbols on the box.
7. Type **!reload**, and then press Enter.
8. Press Ctrl+Break, and then press Enter.
9. Type **~*kpn** and then press Enter.

10. Type **!locks**, and then press Enter.
11. Type **.logclose**, and then press Enter.
12. Type **!runaway**, and then press Enter.
13. Use the debugsession.txt in the debugging process.

CRM Performance Trace Configuration

► **To configure CRM Performance Tracing**

1. Open regedit.
2. Navigate to HKEY_CURRENT_USER\Software\Microsoft\MSCRMClient.
3. Create the following values:

String	LogPerfData	perf.txt
DWORD	LogPerfDataDetails	1
DWORD	LogPerfDataLevel	4
4. Restart Outlook.
5. Repro the scenario.
6. At the conclusion of data gathering, clear the keys above from the registry because they will generate a substantial amount of data.
7. Collect and send in the trace from C:\Documents and Settings\\Application Data\Microsoft\MSCRM\Traces\Perf.txt.

Performance Monitor Capture Settings

► **To configure Performance Monitor capture settings**

1. Start a capture with the following counters:
 - a. CRM Client -> Synching to Outlook cost
 - b. CRM Client -> Items Synched to Outlook
2. When done gathering, the perfmon capture can be used.
3. Configure Microsoft Dynamics CRM Trace for XenApp Users using the Microsoft Dynamics CRM Diagnostics application.
4. Publish the remote server desktop in AMC.
5. Launch the published remote desktop for the user.
6. Launch Microsoft Dynamics CRM Diagnostics.
7. Click **Support Mode**.
8. On the **Advanced Troubleshooting** tab, click to select **Tracing**.
9. Launch the Microsoft Dynamics CRM application.
10. On the XenApp server, the traces are in the user's profile directory, under Application Data\Microsoft\MSCRM\Traces.

Running Windows Debugger in published application for the Microsoft Dynamics CRM published application

This process allows the Microsoft Dynamics CRM process to be attached before it is configured to attach to Outlook. Be sure to consider the following points:

- Ensure that regular users have access to a storage location into which they can save dumps if needed.
- Make your symbols and websymbols folders on the XenApp Server accessible to the test user accounts. Note that it might be necessary to make the websymbols folder write accessible to your test users if it will need to be updated by symbol load.

To complete this process, use the following process:

1. Publish windbg.exe as a published ICA application.
2. Launch the Windows Debugger published application.
3. Attach to the outlook.exe process.
4. Proceed with the debugging process as the Windows Debugger.

Some of the commands include:

- kp n
- !analyze -v
- !locks

Appendix C: Disabling Microsoft Dynamics CRM for individual users

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

For Office 2010: In the HKEY_CURRENT_USER\Software\Microsoft\Office\Outlook\Addins\crmaddin.Addinregkey hive add the following DWORD registry key, **LoadBehavior**, and set the Decimal value to 8.

For Office 2007: The registry key is a binary key, the binary value is built from the path of the crmaddin. This means that the binary value will be different for different install paths. The value below is for default path "C:\Program Files\Microsoft Dynamics CRM\Client\bin\crmaddin.dll". The name of the binary key doesn't matter, the below example uses CRMAddin.

```
[HKEY_CURRENT_USER\Software\Microsoft\Office\12.0\Outlook\Resiliency\DisabledItems]
```

```
"CRMAddin"=hex:01,00,00,00,80,00,00,00,2e,00,00,00,63,00,3a,00,5c,00,70,00,72,\  
00,6f,00,67,00,72,00,61,00,6d,00,20,00,66,00,69,00,6c,00,65,00,73,00,5c,00,\  
6d,00,69,00,63,00,72,00,6f,00,73,00,6f,00,66,00,74,00,20,00,64,00,79,00,6e,\  
00,61,00,6d,00,69,00,63,00,73,00,20,00,63,00,72,00,6d,00,5c,00,63,00,6c,00,\  
69,00,65,00,6e,00,74,00,5c,00,62,00,69,00,6e,00,5c,00,63,00,72,00,6d,00,61,\  
00,64,00,64,00,69,00,6e,00,2e,00,64,00,6c,00,6c,00,00,00,6d,00,69,00,63,00,\  
72,00,6f,00,73,00,6f,00,66,00,74,00,20,00,64,00,79,00,6e,00,61,00,6d,00,69,\  
00,63,00,73,00,20,00,63,00,72,00,6d,00,00,00
```

Right-click the **DisabledItems** key, choose **New**, and select **Binary Value**. Type the above hex value.

For Office 2003: Same steps as 2007, substitute Office\12.0 for Office\11.0

```
[HKEY_CURRENT_USER\Software\Microsoft\Office\11.0\Outlook\Resiliency\DisabledItems]
```

```
"CRMAddin"=hex:01,00,00,00,80,00,00,00,2e,00,00,00,63,00,3a,00,5c,00,70,00,72,\  
00,6f,00,67,00,72,00,61,00,6d,00,20,00,66,00,69,00,6c,00,65,00,73,00,5c,00,\  
6d,00,69,00,63,00,72,00,6f,00,73,00,6f,00,66,00,74,00,20,00,64,00,79,00,6e,\  
00,61,00,6d,00,69,00,63,00,73,00,20,00,63,00,72,00,6d,00,5c,00,63,00,6c,00,\  
69,00,65,00,6e,00,74,00,5c,00,62,00,69,00,6e,00,5c,00,63,00,72,00,6d,00,61,\  
00,64,00,64,00,69,00,6e,00,2e,00,64,00,6c,00,6c,00,00,00,6d,00,69,00,63,00,\  
72,00,6f,00,73,00,6f,00,66,00,74,00,20,00,64,00,79,00,6e,00,61,00,6d,00,69,\  
00,63,00,73,00,20,00,63,00,72,00,6d,00,00,00
```

Appendix D: Scalability verification

Scalability verification was performed to ensure that multiple instances of Outlook can coexist and provide a good level of performance on a Citrix deployment. Verification included:

- Microsoft Dynamics CRM 4.0 comparison verification
- Median Microsoft Dynamics CRM database verification
- Median Microsoft Dynamics CRM database verification with specific MAPI operations

Important: The findings in this section are specific to the hardware and data used. The number of concurrent instances of Microsoft Dynamics CRM for Outlook that a deployment can support will vary by deployment.

Hardware configuration

The same CRMAPP server was used for scalability verification as for functional verification. The hardware specifications of the machine were:

- Intel Xeon L5520 Quad Core CPU
- 16GB RAM
- 126GB RAID5 drive

Minimal database verification

For minimal database verification, there was no Microsoft Dynamics CRM data pre-created before the test. All Microsoft Dynamics CRM data was created during the test itself. The Exchange store in Outlook contained pre-populated data, including emails, appointments, tasks and contacts.

The following operations were performed simultaneously on the clients:

1. Create and send an email and then track it in Microsoft Dynamics CRM
2. Open and save a Microsoft Dynamics CRM entity
3. Navigate to a Dashboard folder
4. Navigate to a Microsoft Dynamics CRM folder
5. Select a view with Microsoft Dynamics CRM items, such as 'All Contacts' and pin it
6. Turn on a chart display for a selected view
7. Perform an Outlook sync operation

Median database verification

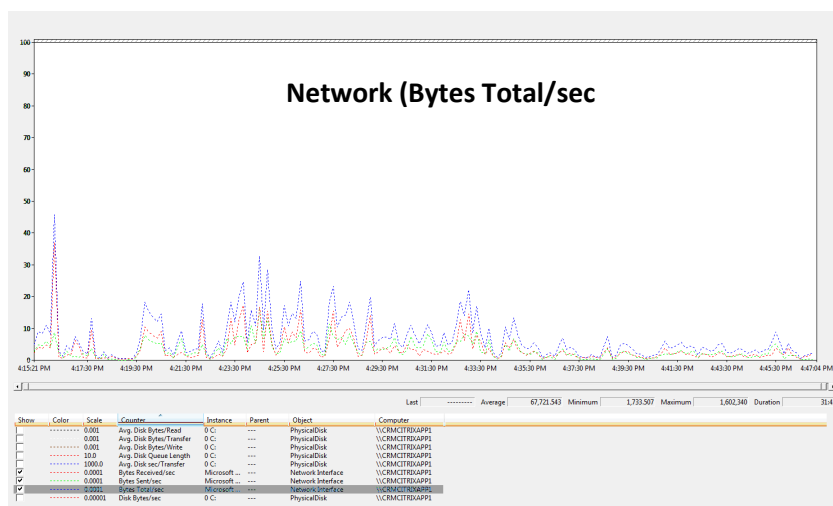
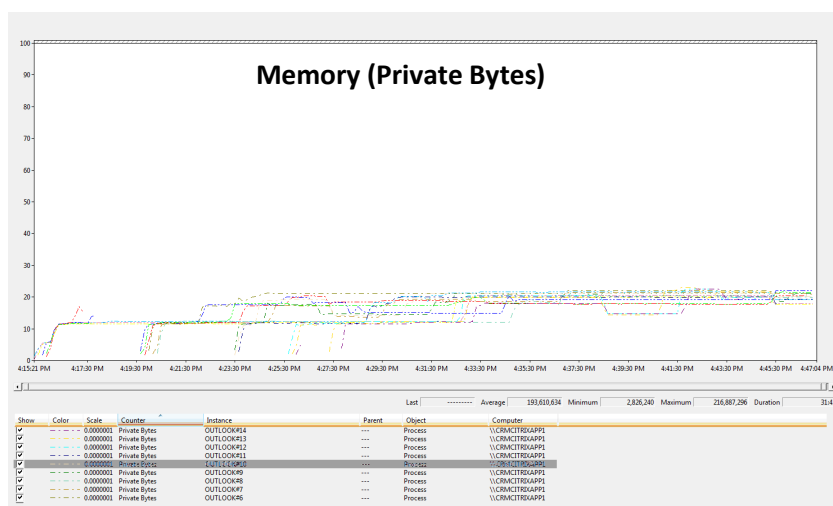
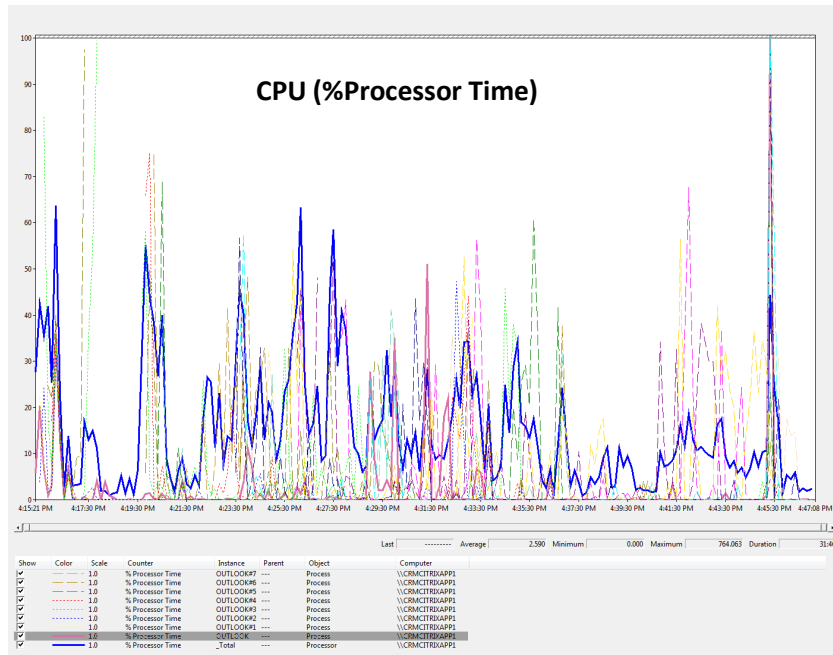
For median database verification there was a significant amount of data pre-populated. All operations were conducted. The Exchange store in Outlook contained pre-populated data as well. The same operations were performed as in Minimal Database Verification.

Microsoft Dynamics CRM 4.0 comparison

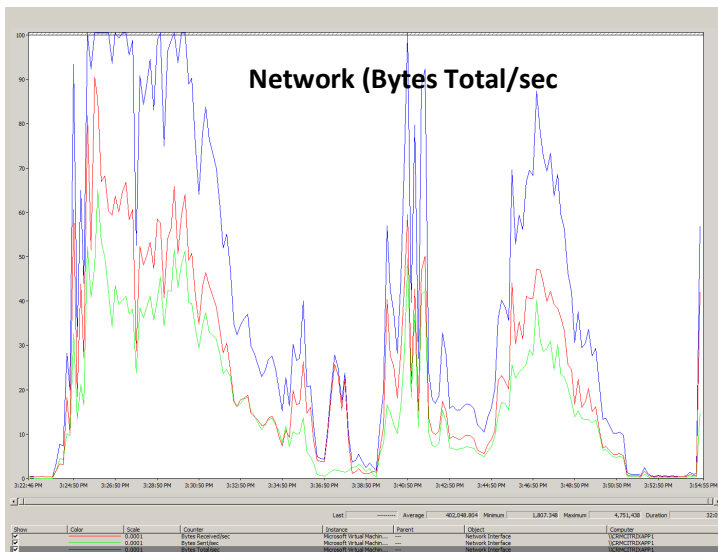
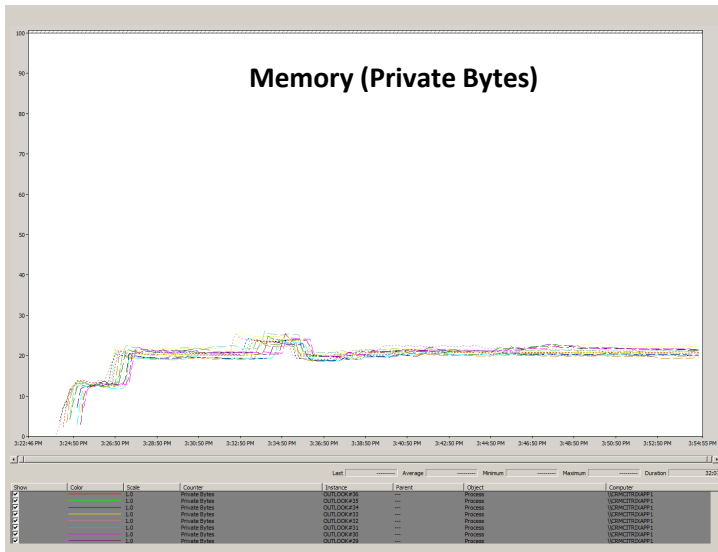
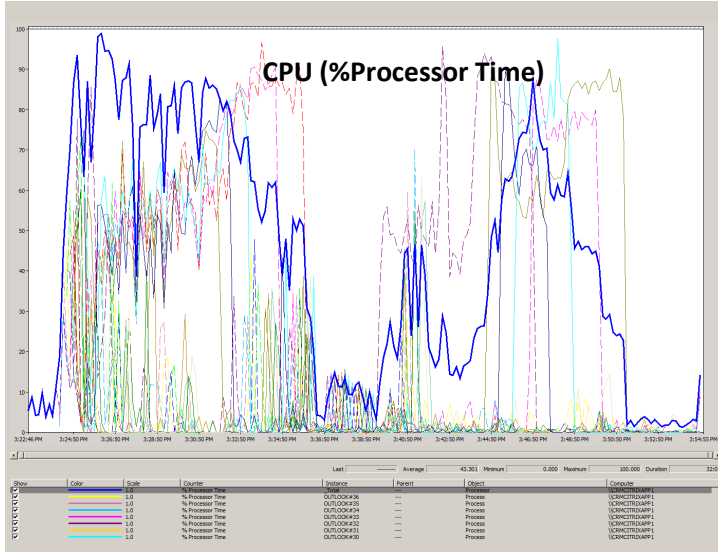
Microsoft Dynamics CRM 4.0 (UR15) was used as a comparison in scalability verification. Due to significant changes in Microsoft Dynamics CRM 2011, direct comparison is not possible. The same or similar operations were performed on Microsoft Dynamics CRM 4.0 for Outlook:

1. Create and send an email and then track it in Microsoft Dynamics CRM.
2. Open and save a Microsoft Dynamics CRM entity.
3. Navigate to a Dashboard folder.
4. Navigate to a Microsoft Dynamics CRM folder.
5. Select a view with multiple thousands of items.
6. Turn on a chart display for selected view (using ribbon).
7. Perform an Outlook sync operation.

Microsoft Dynamics CRM 4.0 UR15 Median DB



Microsoft Dynamics CRM 2011 (RTM) Median DB (300 MAPI Items)



Microsoft Dynamics CRM 2011 (RTM) Median DB (30000 MAPI Items)

