Sitecore CMS 7.5

Performance Tuning Guide for ECM 2.2

A developer's guide to optimizing the performance of Sitecore ECM

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Chapter 1

Introduction

This guide is designed to help ensure the high performance of the Sitecore E-mail Campaign Manager (ECM) module. The goal of this document is to help you increase throughput from the Sitecore installation to the Mail Transfer Agent (MTA), not to show you how to increase the performance of the MTA.

This document is a fine tuning guide for the ECM and explains how to realize high-volume peak performance in your environment.

This guide contains the following chapters:

- **Chapter 1 — Introduction**
  Introduction to this guide.
- **Chapter 2 — General Recommendations**

  This chapter describes some general advices that are highly recommended to follow before starting the actual ECM tuning process.
- **Chapter 3 — Tuning Procedures**

  This chapter describes how to tune the ECM to achieve peak performance while sending an email campaign to the MTA.
- **Chapter 4 — ECM Performance Measurement Tool**

  This chapter describes the ECM Performance Measurement Tool.

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Chapter 2

General Recommendations

This chapter describes some general advices that are recommended to follow before starting the actual ECM tuning process.

This chapter contains the following sections:

- ECM Version
- DMS Performance Tuning
- Bandwidth
- Rendering
- Speed-up reporting
- ECM Environment

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2.1 ECM Version

Sitecore recommends that you use the latest version of the E-mail Campaign Manager module. Using the latest version ensures that you have all the newest stability and performance improvements.

To find the latest version, go to http://sdn.sitecore.net/Products/ECM.aspx.

2.1.1 Procedure to Check ECM Version

To see which version of the ECM module you are using:

1. Navigate to the bin directory of the website. This is typically `/Web Root/bin`.
2. Right-click the `Sitecore.EmailCampaign.dll` file and then click **Properties**.
3. In the **Properties** window, click the **Details** tab.

   The version information is listed here.

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2.2 DMS Performance Tuning

ECM works closely with the Experience and Reporting databases. Performance issues related to the DMS can quickly create performance issues for the ECM. It is important that you tune your DMS implementation.

ECM uses its own NoSQL database to read and write information about every recipient. The **QueueMessage** processor in the **DispatchNewsletter** pipeline queues recipients to the **DispatchQueue** collection in ECM. Then, when running the SendMessage processor, the module is reading from ECM database to get recipients.

You must tune your DMS implementation before you tune the ECM module, otherwise the ECM tuning effort may generate false results.

For more information on how to tune your DMS implementation, see the *DMS Performance Tuning Guide*.

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2.3 Bandwidth

Understanding the bandwidth, or bandwidth limitations that exist between the Sitecore implementation and the MTA can be the difference between a successful high output email campaign and an email campaign that crawls along.

Sitecore is capable of generating large quantities of high quality emails with attachments and/or embedded images at a high rate. For example, if the size of a single email is 100 KB and you are trying to achieve a rate of 40 emails per second, the bandwidth between the sending server and the receiving MTA must be able to handle 4 MB per sec. You must ensure that the available bandwidth can handle the load. Alternatively, you can decrease the size of the email or lower your expectations.

You can estimate needed bandwidth using the ECM Performance Measurement Tool.

For more information on the Required Bandwidth and the ECM Performance Measurement Tool, see the section *ECM Performance Measurement Tool*.

2.3.1 Overcoming Bandwidth Limitations

Possible solutions to bandwidth limitations are:

- In low bandwidth situations, create text based emails that contain links to images.

  To create text based emails, navigate to the *Manager Root* item and clear the **Embed images** check box.

- Reduce the number of SMTP connections.

  This reduces the number of emails that are sent per second and means that it will take longer to complete a campaign. However, doing this will reduce the likelihood of sending errors occurring due to lack of bandwidth.

  The number of connections is controlled by the `SMTP.MaxConnections` setting in the `Sitecore.EmailCampaign.config` file. There is a particular dependency between `SMTP.MaxConnections` and other ECM parameters, which is explained in the following chapters. Please make sure to read the *Tuning Procedures* chapter before changing this ECM setting.

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2.4 Rendering

Rendering an email is the same as rendering a web page. Complexity of email rendering can significantly influence CPU performance. Slow rendering times can cause excessive CPU usage.

Email rendering times greater than 100ms are considered to be slow. To check the email rendering times, view the rendering information on the `sitecore/admin/stats.aspx` page, or by using Sitecore Rocks. For more information about Sitecore Rocks and download links, visit the SDN website.

For more information about rendering times, see the *CMS Performance Tuning Guide*.

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2.5 Speed-up reporting

Besides sending, ECM performance tuning also includes reporting tuning. To allow ECM reports run faster, you need to speed-up reading from the SQL Reporting database. Pay special attention to SQL indexes maintaining and ensure a stable connection between the server where you are running the reports and the SQL server.

For more information about procedures of performance tuning of the Reporting database, see the *DMS Performance Tuning Guide*.

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2.6 ECM Environment

To achieve peak performance of your ECM implementation, you need to choose the right type of environment. ECM environments are either shared or dedicated.

2.6.1 Shared Environment

Shared environment can also be named a “single-server” environment or a “simple” environment. In this environment, you use the same server to create and send email campaigns and perform other CMS activities — creating and editing content, workflow, publishing, delivery, and so on. For example, if you have one CM (Content Management) server and one CD (Content Delivery) server, you most likely create and send emails on the CM server, where a lot of other Sitecore tasks are also performed.

Remember that in a shared environment CPU utilization must remain at a percentage that is low enough to allow all different CMS activities to take place. If your server becomes too loaded with many other tasks besides sending emails, you should consider adding one or more dedicated servers to share the load of creating and sending campaigns, as described in the following section.

ECM in a shared environment — Targeted CPU Utilization: ~30-40% while dispatching emails.

2.6.2 Dedicated Environment

In a dedicated environment, one or more additional servers are only used to create and send email campaigns.

For more information about configuring dedicated servers, see the section *Configuring Dedicated Servers* in the *ECM Administrator’s and Developer’s Guide* for the version of the ECM that you are running.

For dedicated servers, CPU utilization must be maximized — but not over utilized — to ensure the highest possible output.

ECM in a dedicated environment — Targeted CPU Utilization: ~80% while dispatching emails.

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Chapter 3

Tuning Procedures

This chapter describes tuning procedures that allow to achieve the maximum performance of the ECM module and to run an email campaign in the most efficient way.

This chapter contains the following sections:

- Tuning Procedures Overview
- MTA Emulation
- Configuration Settings
- Testing Process
- Understanding the Results
- Adding Dedicated Servers

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3.1 Tuning Procedures Overview

This chapter lists the steps to speed up the sending process of the ECM module. You can use this overview as a checklist for tuning your ECM implementation.

1. Double-check that you followed all general recommendations related to sending.

   For more information, see the chapter *General Recommendations*.

2. Set up MTA Emulation that will allow you to test campaigns with a huge number of emails without actually sending them.

   For more information, see the section *MTA Emulation*.

3. Learn configuration settings that will help you to influence the sending process.

   For more information, see the section *Configuration Settings*.

4. Follow the testing process with a deep understanding of the testing results to achieve the highest sending rate with the appropriate CPU utilization.

   For more information, see the sections *Testing Process* and *Understanding the Results*.

5. If you're still not able to achieve desired results, add a dedicated server and perform the steps in this list again.

   For more information, see the section *Adding Dedicated Servers*Adding Dedicated Servers.

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3.2 MTA Emulation

The ECM module lets you test campaign throughput by emulating an MTA. MTA emulation allows you to mimic the round-trip time required to send an email from Sitecore CMS to an MTA and get a response back.

There are two ways to configure emulation:

- Single dispatch.
- Server level dispatch.

This section describes how to configure the ECM module to run in MTA emulation mode.

Note
Remember that if you enable MTA Emulation mode, actual emails won't be sent. This mode is used only to estimate the sending speed.

3.2.1 Prerequisite

To run in MTA emulation mode, the ECM module must be able to connect to an MTA. This can be a local MTA, a remote MTA, or a Sitecore Application Center (SAC) account.

If a connection is not available, a *Failed to connect to SMTP Server* error will occur.

3.2.2 Enabling MTA Emulation for a Single Dispatch

To enable MTA Emulation Mode for a single dispatch:

1. In ECM UI, open the email that you want to dispatch.
2. Navigate to the **Dispatch** tab.

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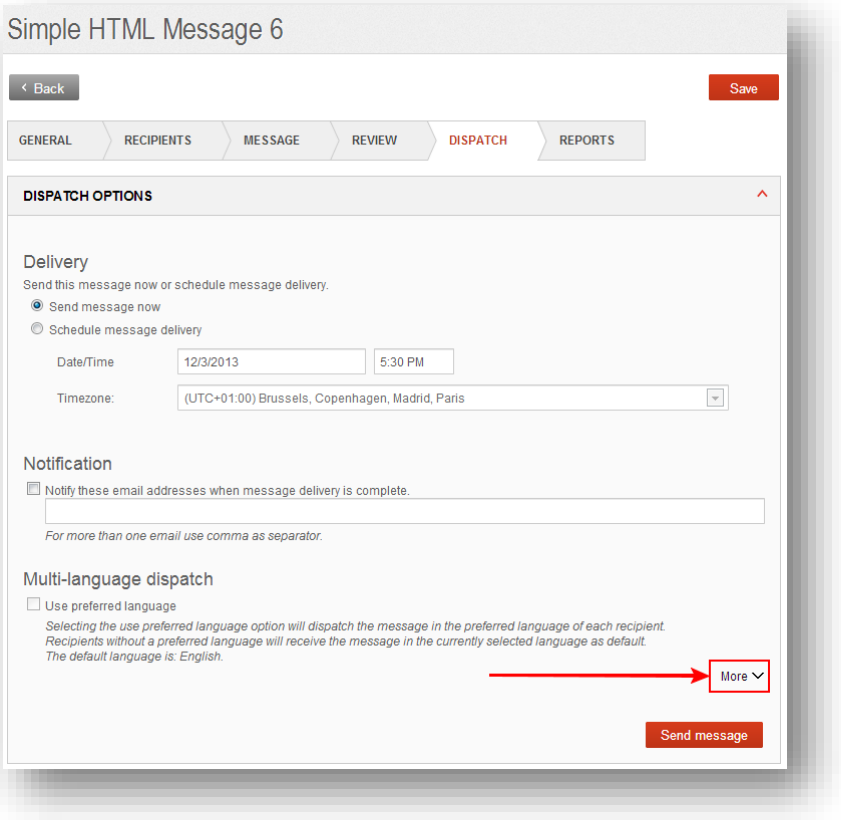
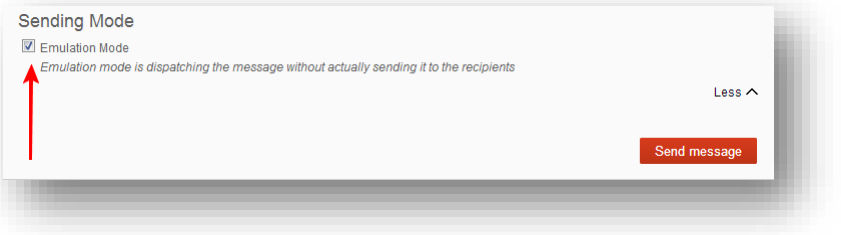
3. In the **Dispatch** tab, click the **More** button:



4. Select the **Emulation Mode** check box:



3.2.3 Enabling MTA Emulation on Server Level

To enable MTA Emulation Mode for all dispatches, in the `<web root>/App_Config/Includes/Sitecore.EmailCampaign.config` file, change the `MtaEmulation.Active` setting to `true`. Save your changes.

3.2.4 MTA Emulation Mode Configuration

The MTA configuration settings are in the `Sitecore.EmailCampaign.config` file:

```
<!--The minimum amount of time to emulate a single sending (milliseconds).-->
<setting name="MtaEmulation.MinSendTime" value="200" />

<!--The maximum amount of time to emulate a single sending (milliseconds).-->
<setting name="MtaEmulation.MaxSendTime" value="400" />

<!--The probability of a connection fail (%).-->
<setting name="MtaEmulation.FailProbability" value="0.01" />
```

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Setting	Value
`MtaEmulation.MinSendTime`	The minimum amount of time, in milliseconds, it takes to emulate sending a single email. Use this in conjunction with the `MtaEmulation.MaxSendTime` setting to mimic the Sitecore CMS to MTA round-trip time.
`MtaEmulation.MaxSendTime`	The maximum amount of time, in milliseconds, it takes to emulate sending a single email.
`MtaEmulation.FailProbability`	Allows you to introduce the probability of connection failure into your emulation.

Determining MinSendTime and MaxSendTime values

This section describes how to find round-trip time when using Sitecore Application Center (SAC) server. The round-trip time contains the time to transmit a packet, process it on the server running ECM, and receive the answer from the Sitecore Application Center (SAC) server. However, you may use the same measuring approach if you use a custom MTA (sending provider). In this case, you will need to replace `smtp.dynect.com` in further formulas with the name or IP of your custom MTA.

You can measure round-trip time by starting a timer when you transmit a packet to the server and stopping the timer when you receive the answer. To perform this, you can use a ping command to measure this locally on the server running ECM.

Note
If you are using a different MTA than SAC, you must change the ping address.

You can set the `MinSendTime` and `MaxSendTime` values for MTA emulation by pinging the SAC server:

1. Open the **Command** window.
2. Use a smaller package size to send a small package to the SAC.

   At the prompt enter: `ping smtp.dynect.net -l 100 -n 50`

   Write down your min. time: min1 = _____

   Write down your max time: max1 = _____

   Write down package size: psize1 = _____ bytes
3. Use a larger package size to send a larger package to the SAC.

   At the prompt enter: `ping smtp.dynect.net -l 1400 -n 50`

   Write down your min. time: min2 = _____

   Write down your max time: max2 = _____

   Write down package size: psize2 = _____ bytes

Note
To verify your results, make a sanity check against your upload connection speed (the bandwidth is likely to be much higher than observed) and run an online speed test on the Internet. You can use testing services provided by your ISP, or by independent third parties, for example, speedtest.net. The bandwidth is likely to be slightly higher than observed.

4. Use the following formula to calculate the bandwidth for min. and max.:

```
bandwidth min = 2 * (psize1 - psize2) / (min1 - min2) Bytes/sec
bandwidth max = 2 * (psize1 - psize2) / (max1 - max2) Bytes/sec
```

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5. Estimate the size of the messages you are sending. To do that, you can send a test email, save it and measure its size.

   For example, ECM message size = 12,800 bytes.

   ECM message size = _____ bytes

6. Estimate the `MinSendTime` and `MaxSendTime` values.

   The minimum amount of time it takes to emulate sending a single message (in milliseconds):

   ```
   MtaEmulation.MinSendTime = ECM message size [bytes] / bandwidth min
   [bytes/sec] / 1000 [sec/ms]
   ```

   The maximum amount of time it takes to emulate sending a single message (in milliseconds):

   ```
   MtaEmulation.MaxSendTime = ECM message size [bytes] / bandwidth max
   [bytes/sec] / 1000 [sec/ms]
   ```

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3.3 Configuration Settings

This chapter describes how to tune the configuration settings in a specific way to achieve peak performance of the ECM sending process.

The configuration settings that you can use for tuning the ECM sending process are in the `Sitecore.EmailCampaign.config` file.

The settings that focus on tuning are:

```
<!--The maximum number of concurrent SMTP connections allowed to open-->
<setting name="SMTP.MaxConnections" value="100" />

<!--The number of threads that you can use for sending messages-->
<setting name="NumberThreads" value="100" />

<!--Specifies how many sending threads can generate messages at the same time.
          Default value: Environment.ProcessorCount * 2-->
<setting name="MaxGenerationThreads" value="" />

<!--The number of recipients in each batch enqueued in the dispatch queue.-->
<setting name="DispatchEnqueueBatchSize" value="300" />

<!--The number of threads that adds recipient batches to dispatch queue.-->
<setting name="DispatchEnqueueThreadsNumber" value="2" />

<!--The amount of time to wait between sending messages (ms)-->
<setting name="Sleep" value="0" />
```

Setting	Description
`SMTP.MaxConnections`	The maximum number of concurrent SMTP connections allowed.
`NumberThreads`	The total number of sending threads used for sending messages.
`MaxGenerationThreads`	The CPU throttle — specifies how many sending threads can generate messages at the same time.
`Sleep`	The amount of time, in milliseconds, to wait between sending messages.

3.3.1 Initial Configuration Values for Tuning

Tuning is an iterative process that starts with you setting the initial configuration values, depending on whether you are running in a shared or dedicated environment.

The initial settings in the ECM configuration file are based on the default settings shipped with ECM. These settings are based on Sitecore internal test and case studies for enterprise customers, and have been optimized for a dedicated environment.

Setting	Initial Value
`SMTP.MaxConnections`	Same as `NumberThreads`
`NumberThreads`	100

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Setting	Initial Value

`MaxGenerationThreads`	Equal to the number of available CPU cores.
	
	Note
	By default, the `MaxGenerationThreads` setting has a value of `Environment.ProcessorCount * 2`.
	
	The number of available CPU cores will approximate to 50% CPU utilization, thereby allowing you to run other CMS in the same environment.
	Depending on the CPU architecture, you might need 2*CPU cores to reach 50% CPU utilization.
	If you are in doubt about your server processor capacity, refer to the vendor's web-page or use the following code to create a console application and evaluate the capacity.
	
	`using System;`
	
	`namespace Sitecore.Environment.ProcessorCount`
	`{`
	`class Program`
	`{`
	`static void Main(string[] args)`
	`{`
	`Console.WriteLine("The number of processors on the current machine is: ");`
	
	`Console.WriteLine(System.Environment.ProcessorCount);`
	`Console.ReadKey();`
	`}`
	`}`
	`}`

`DispatchEnqueueBatchSize`	300
`DispatchEnqueueThreadsNumber`	2
`Sleep`	0

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3.4 Testing Process

- Enable and configure MTA emulation mode to mimic the round-trip characteristics of your Sitecore CMS to MTA connection.

  For information on how to enable and configure MTA emulation mode, see the section *MTA Emulation*.

- Create an email that is the same size and uses the same rendering complexity as the email messages that you typically send. You can also use an existing email message.

  You should also create a group of recipients to dispatch the messages to. The group of recipients should be large enough to allow for 2 or 3 minutes of run time. No email messages are sent in emulation mode.

- Before you dispatch the messages:

  - On the computer that is creating and sending the emails, open the **Windows Task Manager** by pressing Ctrl+Shift+Esc and go to the **Performance** tab to monitor CPU utilization.
  - Open the ECM Performance Measurement tool at http://hostname/sitecore/admin/dispatchsummary.aspx. Remember that the tool page doesn't refresh automatically, so you need to refresh the page manually a couple of times during the dispatch and capture screen shots of the results.

    For more information, see the section *Launching the ECM Performance Measurement Tool*.

- Dispatch the messages, monitor the CPU utilization and results in ECM Performance Measurement tool.
- Review the next section *Understanding the Results* to find out where modifications need to be made, and then run the test again.

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3.5 Understanding the Results

To understand the results of the test, you must study two pieces of information:

- The sending rate.
- CPU utilization during the email campaign.

These pieces of information are connected. In most cases, increasing the sending rate means increasing CPU utilization, and vice versa, trying to decrease CPU usage you will decrease the sending rate.

3.5.1 Settings Dependency

Tuning ECM performance primarily means changing the following three settings:

- `MaxGenerationThreads`
- `NumberThreads`
- `SMTP.MaxConnections`

When changing these settings, it's important to observe the following rules:

- `MaxGenerationThreads` should be equal to the number of CPU cores, half of CPU cores or twice the number CPU cores.
- `NumberThreads` should be greater or equal to `MaxGenerationThreads`
- `SMTP.MaxConnections` should be greater or equal to `NumberThreads`

In short:

```
½ CPU cores <= MaxGenerationThreads <= NumberThreads <= SMTP.MaxConnections
```

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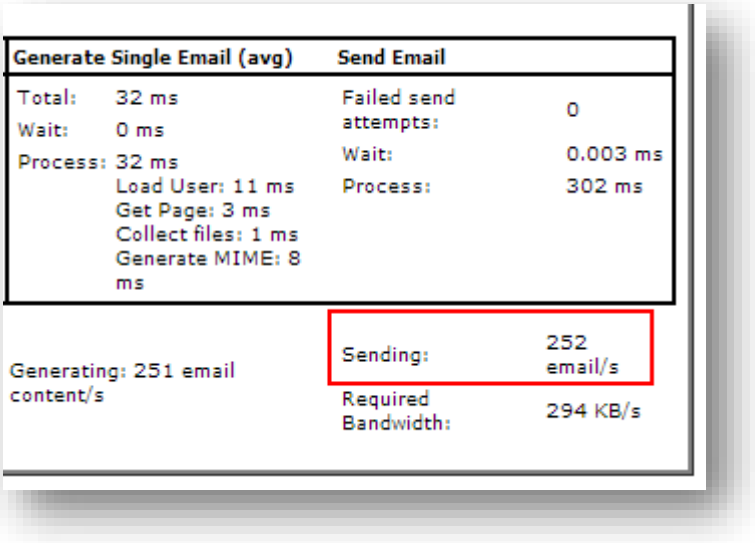
3.5.2 Send Rate

This section describes how to calculate and, if necessary, to increase the ECM sending rate.

Calculating the Send Rate

There are two ways to find your ECM sending rate:

1. Keep an eye on Sending field, running ECM Performance Measurement tool during sending process:



   For more information about the ECM Performance Measurement tool, also known as the Dispatch Summary, see *Chapter 4*, *ECM Performance Measurement Tool*.

2. Calculate sending rate from log files.

   To do that, you should find the start and finish times of the email campaign in the Sitecore log file:

   - Open the Sitecore log file that is relevant for the test that you just performed.
   - Search the log file for the term *EmailCampaign: Dispatch Message*.
     There should be two entries that relate to the test. Make sure that the time stamp correlates to when the test was run.
   - The first entry will show when the email campaign started.

     For example:

```
ManagedPoolThread #1 10:26:22 INFO  EmailCampaign: Dispatch Message
(NewsHotfix_semch3): Started
```

   - The second entry will show when the email campaign finished.

     For example:

```
ManagedPoolThread #1 10:29:08 INFO  EmailCampaign: Dispatch Message
(NewsHotfix_semch3): Finished
```

   To calculate the send rate:

```
number of recipients / (finish time in seconds – start time in seconds)
```

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10:29:08 – 10:26:22 = 166 seconds

Let's assume that email was sent to 1000 recipients. In this example:

```
Send rate = 1000 recipients / 166 seconds ~ 6 emails/sec,
```

which is a low number, so in this case ECM needs some performance tuning.

Increasing the Send Rate

To increase the sending rate:

- Make sure that the MTA emulation mode is set up correctly to emulate the minimum and maximum send times.

  For information on how to enable and configure MTA emulation mode, see the section *3.2MTA Emulation*.

- Increase the `MaxGenerationThreads`, `SMTP.MaxConnections` and `NumberThreads` settings in accordance with the rules described in the *Settings Dependency* section.
- Rerun the test.

In this example, we use the following initial tuning defaults:

- MaxGenerationThreads = 8
- NumberThreads = 100
- SMTP.MaxConnections = 100

For more information on the initial values, see the section *Initial Configuration Values for Tuning*.

To increase the sending rate, change the setting as follows:

- MaxGenerationThreads = 16
- NumberThreads = 120
- SMTP.MaxConnections = 120

Rerun the test calculating the Send Rate. If the needed Send Rate is not achieved, and CPU utilization still allows to increase the parameters, set larger numbers again. Repeat until you get desired numbers or until CPU load becomes too high to continue.

3.5.3 CPU Utilization

CPU utilization is a key performance metric that you can use to track CPU performance regressions or improvements, and is a useful benchmark for performance investigations and potential improvements when running the ECM code.

During adjusting the Send Rate, you will notice that the CPU usage is also changing. In a shared ECM environment, the target CPU load is around 30-40%, in a dedicated one – around 80%.

For more information on ECM environments, see the section *ECM Environment*.

CPU Utilization is High

On a shared environment, high CPU utilization may mean that the amount of CPU resources used to send an email campaign can limit your ability to perform other CMS activities. A targeted goal of 30-40% CPU utilization will allow the server to handle spikes in the load.

On a dedicated environment, over utilized CPU is just unhealthy.

For a shared environment, CPU usage above 50% during sending emails means overutilization.

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For a dedicated environment, CPU usage above 90% means overutilization.

Possible solutions to decrease the CPU utilization include:

- Decrease the `MaxGenerationThreads` value. This reduces the number of concurrent threads that are processed.

  In a shared environment, reduce the `MaxGenerationThreads` to the number of available CPU cores or by half.

- Decrease the `NumberThreads` value. This decreases the number of available sending threads.
- Rerun the test after making the configuration changes.

The settings should be changed in accordance with the rules described in the *Settings Dependency* section.

Note
Decreasing the settings usually results in decreasing the Send Rate.

If the desired Send Rate forces you to utilize up to 100% of CPU, then you should consider using a dedicated server for generating and sending emails.

For more information on setting up dedicated servers, see the section *Configuring Dedicated Servers* in the *ECM Administrator's and Developer's Guide* for the version of the ECM that you are running.

CPU Utilization is Low

Underutilization of the CPU typically occurs when you are not taking advantage of the available CPU resources when you create and send email campaigns.

For a shared environment, CPU usage below 30% during sending emails means underutilization.

For a dedicated environment, CPU usage below 80% means underutilization.

Possible solutions to increase the CPU utilization include:

- Increase the `MaxGenerationThreads` value. This increases the number of concurrent threads that are processed.

  For optimal performance, the maximum value of `MaxGenerationThreads` should be increased to is: *2 * number of available CPU cores*.

- Increase the `NumberThreads` value.

  This increases the number of available sending threads and raises your sending rate to a higher level.

  You must also take bandwidth considerations into account so that you do not flood the available bandwidth between the ECM implementation and the MTA.

- Increase the number of SMTP connections using the `SMTP.MaxConnections` setting.
- Rerun the test after making the configuration changes.

The settings should be changed in accordance with the rules described in the *Settings Dependency* section.

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3.6 Adding Dedicated Servers

If you have followed all the recommendations described in this manual and adjusted your CPU utilization, but still have not achieved the send rate you want, you should consider moving from a shared environment to a dedicated environment, or add more dedicated servers if you already run ECM in a dedicated environment.

For information on how to setup and configure a dedicated server, see the section *Configuring Dedicated Servers* in the *ECM Administrator's and Developer's Guide* for the version of the ECM that you are running.

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Chapter 4

ECM Performance Measurement Tool

The ECM Performance Measurement Tool gives customers and consultants insight into the performance of their current email campaign and helps them evaluate their current configuration settings.

This chapter describes how to launch the tool, the information it contains, and how this information relates to performance.

The information provided by the ECM Performance Measurement Tool should be used in conjunction with this tuning guide to insure that the ECM implementation is tuned for optimal performance.

This chapter contains the following sections:

- Launching the ECM Performance Measurement Tool
- Understanding the Results

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4.1 Launching the ECM Performance Measurement Tool

To launch the ECM Performance Measurement Tool:

1. Open a web browser and navigate to http://host_name/sitecore/admin/dispatchsummary.aspx.

   Replace `host_name` with the name of the server that you use to dispatch email campaigns.

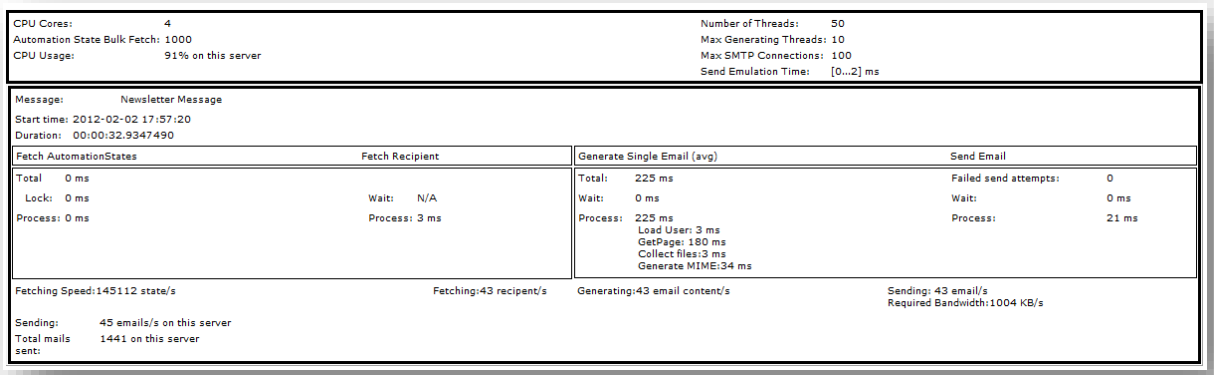
   Note
   To open the tool in the German language, you must add the `?sc_lang=de-de` parameter to the end of this URL. For Japanese language, add the `?sc_lang=ja-jp` parameter.

2. In a separate browser window, dispatch the email campaign that you wish to monitor.

   This can either be to an MTA, or through the MTA emulator.

   For more information about dispatching an email campaign, see *Chapter 3*, *Tuning Procedures*.

3. To see the current performance statistics in the ECM Performance Measurement Tool, refresh the page while the email campaign is being dispatched.



   Note that the tool shows ECM performance at the specific moment of time, so numbers will change with every page reload.

   Remember to capture screen shots with the results, because the Measurement Tool will show no results after all email campaigns are sent.

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4.2 Understanding the Results

The ECM Performance Measurement Tool contains the following fields:

Field	Description	Sample Value
CPU Cores	The number of CPU cores that are available on the server that is dispatching the email campaign.	4
Automation State Bulk Fetch	The number of queued recipients to fetch from the *Analytics* database in a single request. This value corresponds to the `RecipentRequestSize` setting in the `Sitecore.EmailCampaign.config` file.	1000
CPU Usage	The CPU usage — in %. This value is the average for the past 5 seconds.	91% on this server
Number of Threads	The maximum number of threads that you can use for sending messages. This value corresponds to the `NumberThreads` setting in the `Sitecore.EmailCampaign.config` file.	50
Max Generating Threads	The number of threads that can generate messages at the same time. This value corresponds to the `MaxGenerationThreads` setting in the `Sitecore.EmailCampaign.config` file.	10
Max SMTP Connections	The maximum number of concurrent SMTP connections that can be opened. This value corresponds to the `SMTP.MaxConnections` setting in the `Sitecore.EmailCampaign.config` file.	100
Send Emulation Time	The min and max send times. This information is taken from the `MtaEmulation.MinSendTime` and `MtaEmulation.MaxSendTime` settings in the `Sitecore.EmailCampaign.config` file. The first value, [0...2] represents the minimum amount of time, in ms, that is takes to emulate sending a single message. The second value [0…2] represents the maximum amount of time, in ms, that it takes to emulate sending a single message.	[0…2] ms
Message	The name of the dispatch that is currently running.	Newsletter Message
Start Time	The start date and time of the dispatch that is currently running.	2012-02-02 17:57:20
Duration	The length of time that the current dispatch has been running for.	00:00:32.9347490

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Field	Description	Sample Value
Fetch Automation States - Total	The total time (Lock, Process) it takes to retrieve the ID of an automation state.	0 ms
Fetch Automation States - Lock	The time it takes to acquire the lock that you need to retrieve the ID of an automation state.	0 ms
Fetch Automation States - Process	The time it takes to process the retrieval of an automation state ID.	0 ms
Fetching Speed	The number of automation state IDs retrieved per second.	145112 state/s
Sending	The number of emails sent per second by this server. This value is the overall performance indicator for the current settings.	45 emails/s on this server
Total mails sent	The total number of emails sent in the current dispatch.	1441 emails on this server
Fetch Recipient - Wait	The amount of time spent in a wait state while retrieving a single recipient.	N/A
Fetch Recipient - Process	The time used to retrieve a single recipient.	3 ms
Fetching	The rate at which recipients are fetched per second. This value helps you see if there is enough throughput to the other parts of the application. If the value is low, it means there could be a database performance issue.	43 recipient/s
Generate Single Email (avg) - Total	The average total time it takes to generate a single email message. This is the sum of the time that you must wait for the thread plus the time to generate the email.	225 ms
Generate Single Email (avg) - Wait	The average time you must wait to launch the thread that generates a single email message.	0 ms

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Field	Description	Sample Value
Generate Single Email (avg) - Process	The average time it takes to generate an email message. This time is the sum of time it takes to load the recipient, get the page, render the page, collect the attached files (if any), generate the MIME section plus some other operations. In the current example, Load User = 3 ms Get Page= 180 ms Collect files = 3 ms Generate MIME = 34 ms Total = 220 See explanation on each part below in the table. The remaining 5 ms are the other operations involved in the generating an email.	225 ms
Generate Single Email (avg) – Process – Load User	The average time required to load the recipient information while generating a single email message.	3 ms
Generate Single Email (avg) – Process – GetPage	The average time required to render the page, based on recipient data, while generating a single email message.	180 ms
Generate Single Email (avg) – Process – Collect files	The average time required to collect the files while generating a single email message.	3 ms
Generate Single Email (avg) – Process – Generate MIME	The average time required to create the MIME section while generating a single email message.	34 ms
Generating	The number of emails generated per second. This value helps you see if there is enough throughput in the sending part of ECM. If the speed is lower than expected, it could mean that the sending speed is affected.	43 email content/s
Send Email – Failed send attempts	The total number of send attempts that failed. This value helps you to identify any network or SMTP server problems.	0
Send Email – Wait	The time you must wait to acquire access to the connection pool. This is the time spent waiting before any send steps are performed.	0 ms
Send Email – Process	The time spent sending the email.	21 ms

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Field	Description	Sample Value
Sending	The number of emails generated per second. The difference between this value and the overall send rate for the server is that this value does not take into account the time required to reset the threads and perform any other operations before a new thread is ready to start a new email.	43 email/s
Required Bandwidth	The bandwidth required to send emails at the indicated send speed. If the value is equal to or higher than the available network bandwidth and you want to increase the send speed, you must increase the network bandwidth.	1004 KB/s

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