PERFORMANCE OVERHEADS OF DEPLOYING EXCLAIMER MAIL DISCLAIMERS

Introduction

This document is intended as a guide for customers and prospective customers seeking information on the likely performance overhead of deploying Exclaimer Mail Disclaimers in their production Exchange 2010 environments. The approach taken to establish this overhead has been as follows:

1. A physical infrastructure on which to run the tests has been defined and deployed. The infrastructure has been designed to be typical of customer environments rather than 'leading edge'. Details of this infrastructure are found below.
2. A large set of outgoing emails conforming to a typical customer profile has been prepared. Details of this email set are found below.
3. The set of outgoing emails has been sent through the test infrastructure without further processing to establish an issue-free send rate for the environment.
4. The set of outgoing emails has been sent through the test infrastructure, each having had a set of Mail Disclaimers policies applied, to establish an issue-free send rate for the environment where email signatures/disclaimers have been created and added to each email.
5. Operation 4 has been repeated using Exchange Transport Rules to apply broadly similar email signatures/disclaimers to each email.
6. Operation 4 has been repeated using a number of competitive products to apply broadly similar email signatures/disclaimers to each email.
7. The values from 4, 5 and 6 have been used to provide advice on the likely performance overheads associated with Mail Disclaimers deployment.

Infrastructure

DC with Exchange 2010 Mailbox role.

Computer: HP Proliant DL360 G6.
Processor: 1x Intel Xeon E5520 (4 physical cores / 8 threads running at 2.27GHz).
4GB of PC3-10700 DDR3 memory.

Exchange Hub Transport and Client Access roles.

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Email Set

Emails were generated by a proprietary email generator. This generator constructs HTML format emails with bodies built using a random sentence generation algorithm. This algorithm constructs variable length sentences using English words in a frequency appropriate to that with which they are found in typical written English. Sentence lengths are evenly distributed around the mean for the English language. Total body sizes for the mail set were evenly distributed around the average found in business emails.

The email generator also randomly attaches a set of different formats of attachments to mails in proportion to how often they are attached to business emails and the size of those attachments is varied, once again, to be evenly distributed around the mean for business email.

Size and composition data relating to emails was provided by the Radicati Group.

Overall, mail size varied between 4KB and 13MB.

Senders and Recipients

The active directory contained a total of 70 users. 24 of these users were randomly selected as sender accounts, and an automated process sent 250 emails from each sender account to a random internal recipient and a further 250 were sent to an external address randomly picked from a list. These emails were sent over a period of 20 minutes.

Email Signatures/Disclaimers

Policies/Transport Rules were created so as to apply three policies to each email. The function of each policy was as follows:

1. Insert the current time at the top of all email.
2. Insert one of the Exclaimer standard templates selected according to the value of a specific attribute on the sender's Active Directory Entry. The templates used contained sender fields typically used by customers such as name, job title, phone number etc.
3. Insert a randomly selected 468x60 banner image on all internal emails
4. Insert a textual disclaimer on all outgoing emails.

Results

The test environment was capable of processing **16.8** mails per second. Using Exchange 2010 Transport rules to apply the disclaimers/signatures as described, system throughout was reduced to **9.8** messages per second. Using Mail Disclaimers, throughput was further reduced to **9.2** messages per second. Competitive products under test all performed worse than Mail Disclaimers and were on average capable of processing **8.7** messages per second.

It is worth noting that throughput parity with Exchange 2010 Transport Rules for an equivalent operation was an original design goal for Mail Disclaimers. Whilst the figure achieved by Mail Disclaimers is slightly less than that for Exchange 2010 Transport Rules, it should be noted that Mail Disclaimers has a number of capabilities that Exchange 2010 does not. In this case, the product's ability to insert signatures and disclaimers underneath the latest reply is important. Whilst this capability has not been exercised in this test, a design decision was taken to optimise this feature in a way that would add a slight performance overhead when it was not triggered. Customer feedback has shown this feature to be highly desirable and thus we still believe this decision to be an expedient one.

Discussion

Broadly speaking, Mail Disclaimers has added a 45% throughput overhead in this test. It should be understood that dynamically constructing new fragments of HTML, filling out fields based upon Active Directory queries plus parsing and rebuilding the mail's original email body are relatively complex tasks compared to the normal per email operation of a hub transport server. This observation is backed up by the fact that Exchange's own transport rules added a 42% throughput overhead to achieve similar results. Please note that these measurements and observations relate only to outgoing and internal emails. Incoming emails need not be considered unless you have a specific requirement to process them.

Recommendation

Anyone planning a deployment of Exclaimer Mail Disclaimers should understand the current maximum throughput of their installation and the throughput required to support their business need. Our general recommendation is that anyone whose business need regularly exceeds 55-60% of their maximum current throughput should consider the deployment of extra hub transport servers to achieve the required headroom to support Mail Disclaimers.

For example, if you have two hub transport servers capable of processing 40 emails per second and your business need is to send 30 emails per second then you will need to consider introducing a third hub transport server since the business need of 30 emails per second is greater than 60% of 40 (24 emails per second). By adding a third server, your new throughput is assumed to be 60 emails per second which will allow plenty headroom to introduce Mail Disclaimers and service the business need of 30 emails per second.