

# Understanding Deleted Item Retention and Message Deletion Process

(Microsoft Corporation)

## Summary

This article explains the message deletion process and the method that Exchange Server uses to handle delete requests when the Deleted Item Retention option is selected, to help Exchange Server administrators understand this process and plan for this process accordingly.

## Client Perspective

When a client profile is configured to store messages on the server, a message exists in a folder, and a delete operation is requested, under normal circumstances, the message is moved to the Deleted Items folder. When you empty the Deleted Items folder, a request to delete the message is sent to the Exchange Server information store. You can also force the deletion of messages from any folder by pressing SHIFT+DELETE while the messages are selected.

If a client profile is configured to deliver to a personal folder file (.pst) instead of to an Exchange Server mailbox, the message is actually deleted from the Inbox folder after the message is copied to the local .pst file, instead of being moved to the Deleted Items folder. For additional information about how to view the contents of the dumpster that contains items that have been deleted from folders other than the Deleted Items folder, click the following article number to view the article in the Microsoft Knowledge Base:

## Information Store Perspective

When the information store receives a request to delete a message in a particular folder referenced by the Message ID, the information store determines if the message should be soft deleted (also referred to as logical deletion) or hard deleted (also referred to as physical deletion). A hard deletion of a message is performed when any of the following criteria are met:

- The client specifically requests a hard deletion.
- The effective item retention time is zero.
- The registry key that indicates "Force Hard Deletes" is enabled for the private or public information store.
- The account requesting the deletion is a gateway.
- The account requesting the deletion is a system.

## Soft Deletion

A soft deletion is performed if none of the criteria for a hard deletion are met. A flag is set on the entry in the MsgFolder table that indicates that the message has been soft deleted from the folder. Message counts for the mailbox and folder are also updated. At this point, the message is available to deleted item recovery.

During the next scheduled information store maintenance process, each folder is examined to determine if any of the soft-deleted messages that the folder contains have passed the deleted item retention time. The deleted item retention time for the private and public information store is configured in the Exchange Server Administrator program. If such a message is found, the message is hard deleted. For more information about hard deletion, see the "Hard Deletion"

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section of this article. You can also control information store maintenance scheduling by using the Exchange Server Administrator program.

For additional information about how to configure deleted item retention, click the article number below to view the article in the Microsoft Knowledge Base:

246283 (<http://support.microsoft.com/kb/246283/EN-US/>) XADM: Set Deleted Mail Message Retention Time in Exchange Server 5.5

For additional information about information store maintenance and scheduling, click the article number below to view the article in the Microsoft Knowledge Base:

159196 (<http://support.microsoft.com/kb/159196/EN-US/>) XADM: Tasks Controlled by the IS Maintenance Schedule

## Hard Deletion

When a message is hard deleted, the message reference is immediately removed from the MsgFolder table, which is a mapping between entries in the folder table and the messages table. At this point, the message is no longer available to the mailbox that contains the folder, even if you use deleted item recovery. The reference count of the message is checked. When the message reference count drops to zero, which means that no other mailbox has a copy of the message, an entry is made in the DeletedMessages Table that indicates that the message is ready to be removed from the messages table.

During the next background cleanup process, the entries in the DeletedMessages table are examined and the corresponding entries in the messages table are deleted. This process occurs every hour by default, but you can control this schedule by editing the following registry entries:

- HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\Services\MSExchangeIS\ParametersPublic\Background Cleanup (value in milliseconds)
- HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\Services\MSExchangeIS\ParametersPrivate\Background Cleanup (value in milliseconds)

For additional information about the background cleanup process, click the article number below to view the article in the Microsoft Knowledge Base:

159306 (<http://support.microsoft.com/kb/159306/EN-US/>) XADM: IS Maintenance Tasks Not on IS Schedule

## Conclusion

If you enable and increase the deleted item retention time, you may need to perform additional capacity planning. The following example demonstrates that messages can be present for an extended duration even after the messages have been deleted by the user:

- Deleted item retention is set for 48 hours.

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- Information store maintenance is set to run between 3:00 A.M. and 7:00 A.M.
- Background cleanup is configured to run every hour.

In this example, if you delete a message at 8:00 A.M., the message does not become a candidate for hard deletion for 48 hours. The next information store maintenance procedure is scheduled to finish at 6 A.M., so the message is not hard deleted (the record is not removed) for 71 hours.