

## [MS-STANOPOP3]:

# Outlook Post Office Protocol Version 3 (POP3) Standards Support

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Open Specifications documents are intended for use in conjunction with publicly available standards specifications and network programming art and, as such, assume that the reader either is familiar with the aforementioned material or has immediate access to it.

This document describes the choices made when implementing the Post Office Protocol Version 3 (POP3) Standard. It identifies ambiguities and implementer choices and indicates the approach taken in the implementation. The details of the implementation itself are described in the specifications for the relevant protocols or data structures, not in this document.

## Revision Summary

Date	Revision History	Revision Class	Comments
7/15/2009	1.0.0	Major	Initial Availability.
10/1/2008	1.1.0	Minor	Updated IP notice.
4/10/2009	2.0.0	Major	Updated applicable product releases.
7/15/2009	3.0.0	Major	Revised and edited technical content.
11/4/2009	3.0.1	Editorial	Revised and edited the technical content.
2/10/2010	3.0.1	None	Version 3.0.1 release
8/4/2010	3.1	Minor	Clarified the meaning of the technical content.
11/3/2010	3.2	Minor	Clarified the meaning of the technical content.
3/18/2011	3.3	Minor	Clarified the meaning of the technical content.
8/5/2011	3.3	None	No changes to the meaning, language, or formatting of the technical content.
10/7/2011	3.3	None	No changes to the meaning, language, or formatting of the technical content.
1/20/2012	4.0	Major	Significantly changed the technical content.
4/27/2012	4.0	None	No changes to the meaning, language, or formatting of the technical content.
7/16/2012	4.0	None	No changes to the meaning, language, or formatting of the technical content.
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9/14/2016	5.0	None	No changes to the meaning, language, or formatting of the technical content.
2/24/2017	5.0	None	No changes to the meaning, language, or formatting of the technical content.

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# 1 Introduction

This document specifies the level of support provided by Outlook for the **Post Office Protocol - Version 3 (POP3)**, as specified in [\[RFC1939\]](#). Outlook uses the POP3 protocol to retrieve messages from the server.

## 1.1 Glossary

This document uses the following terms:

**Post Office Protocol - Version 3 (POP3):** A protocol that is used for accessing email from mail servers, as described in [\[RFC1939\]](#).

**MAY, SHOULD, MUST, SHOULD NOT, MUST NOT:** These terms (in all caps) are used as defined in [\[RFC2119\]](#). All statements of optional behavior use either MAY, SHOULD, or SHOULD NOT.

## 1.2 References

Links to a document in the Microsoft Open Specifications library point to the correct section in the most recently published version of the referenced document. However, because individual documents in the library are not updated at the same time, the section numbers in the documents may not match. You can confirm the correct section numbering by checking the [Errata](#).

### 1.2.1 Normative References

We conduct frequent surveys of the normative references to assure their continued availability. If you have any issue with finding a normative reference, please contact [dochelp@microsoft.com](mailto:dochelp@microsoft.com). We will assist you in finding the relevant information.

[MS-OXPOP3] Microsoft Corporation, "[Post Office Protocol Version 3 \(POP3\) Extensions](#)".

[RFC1939] Myers, J., and Rose, M., "Post Office Protocol - Version 3", STD 53, RFC 1939, May 1996, <http://www.rfc-editor.org/rfc/rfc1939.txt>

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997, <http://www.rfc-editor.org/rfc/rfc2119.txt>

[RFC2449] Gellens, R., Newman, C., and Lundblade, L., "POP3 Extension Mechanism", RFC 2449, November 1998, <http://www.rfc-editor.org/rfc/rfc2449.txt>

### 1.2.2 Informative References

None.

## 1.3 Microsoft Implementations

Microsoft Office Outlook 2007

Microsoft Outlook 2010

Microsoft Outlook 2013

Microsoft Outlook 2016

## 1.4 Standards Support Requirements

The conformance requirements for [RFC1939](#) are that all required portions of the specifications are implemented according to the specification, and any optional portions that are implemented are implemented according to the specification.

The following table lists the sections of [RFC1939] that are considered normative and the sections that are considered informative.

Section(s)	Normative/Informative
1 - 2	Informative
3 - 7	Normative
8 - 11	Informative
12	Normative
13 - 15	Informative

## 1.5 Notation

The following notations are used in this specification.

Notation	Explanation
C####	This identifies a clarification of ambiguity in the target specification. This includes imprecise statements, omitted information, discrepancies, and errata. This does not include data formatting clarifications.
V####	This identifies an intended point of variability in the target specification such as the use of MAY, SHOULD, or RECOMMENDED. This does not include extensibility points.
E####	Because the use of extensibility points (such as optional implementation-specific data) may impair interoperability, this profile identifies such points in the target specification.

## 2 Standards Support Statements

### 2.1 Normative Variations

There are no normative variations from [\[RFC1939\]](#).

### 2.2 Clarifications

The following sub-sections identify clarifications relative to [\[RFC1939\]](#).

Additional Outlook **POP3** extensions to [\[RFC1939\]](#) are as specified in [\[MS-OXPOP3\]](#).

#### 2.2.1 [\[RFC1939\]](#) Section 3, Basic Operation

C0001:

The specification states: "When a client host wishes to make use of the service, it establishes a TCP connection with the server host."

Microsoft Office Outlook 2007, Microsoft Outlook 2010, Microsoft Outlook 2013, Microsoft Outlook 2016

When a client host wishes to make use of the service, it **MUST** establish a TCP connection with the server host.

C0002:

The specification states: "When the connection is established, the **POP3** server sends a greeting."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

When the connection is established, the POP3 server **MUST** send a greeting. If Outlook does not receive a greeting, then the POP synchronization will stop responding.

C0003:

The specification states: "All commands are terminated by a CRLF pair. Keywords and arguments consist of printable ASCII characters."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

All commands sent by the client to the server **MUST** be terminated by a CRLF pair and **MUST** consist only of printable ASCII characters.

C0004:

The specification states: "Keywords and arguments are each separated by a single SPACE character."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

When the client sends a command, keywords and arguments **MUST** be separated by a single SPACE character. When the client receives a response to a command, the client **MUST** accept multiple SPACE characters and tab characters between keywords and arguments.

C0005:

The specification states: "All responses are terminated by a CRLF pair."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016



The server response MUST be terminated by a CRLF pair. If Outlook does not receive the terminating CRLF pair, then the POP synchronization stops responding.

V0001:

The specification states: "Servers MUST send the '+OK' and '-ERR' in upper case."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

Outlook treats any response that begins with "+" as positive and any other response as negative. The casing of the status indicators has no effect on how Outlook interprets the responses.

C0006:

The specification states: "In these cases, which are clearly indicated below, after sending the first line of the response and a CRLF, any additional lines are sent, each terminated by a CRLF pair. When all lines of the response have been sent, a final line is sent, consisting of a termination octet (decimal code 046, '.') and a CRLF pair."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

Each line MUST be terminated with a CRLF. The final line MUST consist of a termination octet and a CRLF pair. If Outlook does not receive the terminating CRLF, then the POP synchronization stops responding.

V0002:

The specification states: "When examining a multi-line response, the client checks to see if the line begins with the termination octet. If so and if octets other than CRLF follow, the first octet of the line (the termination octet) is stripped away. If so and if CRLF immediately follows the termination character, then the response from the POP server is ended and the line containing '.CRLF' is not considered part of the multi-line response."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

The client MUST examine the octets after the termination octet and, if anything other than the CRLF pair follows the termination octet, then the client MUST remove the termination octet to process the rest of the line normally. Outlook only looks for the termination octet at the beginning of the line and does not check past the termination octet for the LIST, UIDL, and CAPA commands. The CAPA command is specified in [RFC2449](#) section 5.

C0007:

The specification states: "Once the TCP connection has been opened and the POP3 server has sent the greeting, the session enters the AUTHORIZATION state. In this state, the client must identify itself to the POP3 server."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

The client MUST identify itself to the server after it has received the greeting.

## **2.2.2 [RFC1939] Section 4, The AUTHORIZATION State**

C0008:

The specification states: "The client must now identify and authenticate itself to the **POP3** server."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

The client MUST now identify and authenticate itself to the POP3 server.

C0009:

The specification states: "While there is no single authentication mechanism that is required of all POP3 servers, a POP3 server must of course support at least one authentication mechanism."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

While there is no single authentication mechanism that is required of all POP3 servers, a POP3 server MUST support at least one authentication mechanism.

Without an authentication method that Outlook supports, Outlook is not able to authenticate to the server.

C0010:

The specification states: "If the server does not close the connection, the client may either issue a new authentication command and start again, or the client may issue the QUIT command."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

If the server does not close the connection, the client can either issue a new authentication command and start again, or the client can issue the QUIT command.

"May" is not interpreted as "MAY" by Outlook. The server has the option to perform either action, and Outlook does not suggest or require either.

C0011:

The specification states: "The first message in the maildrop is assigned a message-number of '1', the second is assigned '2', and so on, so that the nth message in a maildrop is assigned a message-number of 'n'."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

The server MUST assign the first message in the maildrop a message-number of "1", and so on, so that the nth message in a maildrop is assigned a message-number of "n".

### **2.2.3 [RFC1939] Section 4, QUIT Command**

C0012:

The specification states that the QUIT command has no arguments.

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

The client MUST NOT send arguments with the QUIT command.

### **2.2.4 [RFC1939] Section 5, The TRANSACTION State**

C0013:

The specification states: "The client may now issue any of the following **POP3** commands repeatedly."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

"May" is not interpreted as "MAY" by Outlook.

The client can now issue any of the following POP3 commands repeatedly.

C0014:

The specification states: "After each command, the POP3 server issues a response."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

The server MUST issue a response for each command. If Outlook does not receive a response, then the POP synchronization stops responding.

### **2.2.5 [RFC1939] Section 5, STAT Command**

C0015:

The specification states that the STAT command has no arguments.

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

The client MUST NOT send arguments with the STAT command.

C0016:

The specification states: "Restrictions: may only be given in the TRANSACTION state."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

The client SHOULD only send the STAT command when in the TRANSACTION state.

C0017:

The specification states: "In order to simplify parsing, all **POP3** servers are required to use a certain format for drop listings. The positive response consists of '+OK' followed by a single space, the number of messages in the maildrop, a single space, and the size of the maildrop in octets. This memo makes no requirement on what follows the maildrop size."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

The positive response from the server MUST consist of "+OK" followed by one or more space or tab characters, the number of messages in the maildrop followed by one or more space or tab characters, and the size of the maildrop in octets. The server MAY follow this with additional information.

### **2.2.6 [RFC1939] Section 5, LIST Command**

V0003:

The specification states: "Arguments: a message-number (optional), which, if present, may NOT refer to a message marked as deleted."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

The client MAY send the message-number argument with the LIST command.

Outlook never sends an argument to the LIST command.

C0018:

The specification states: "Restrictions: may only be given in the TRANSACTION state."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

The client SHOULD only send the LIST command when in the TRANSACTION state.

C0019:

The specification states: "Discussion: If an argument was given and the **POP3** server issues a positive response with a line containing information for that message. This line is called a "scan listing" for that message."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

If the LIST command includes an argument and the server returns success, then the server MUST issue a positive response line (a "scan listing"). Outlook does not send an argument with the LIST command, so no server response is issued.

C0020:

The specification states: "If no argument was given and the POP3 server issues a positive response, then the response given is multi-line. After the initial '+OK' for each message in the maildrop, the POP3 server responds with a line containing information for that message."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

If the LIST command does not include an argument and the server issues a positive response, then the response given MUST be multi-line. The initial line MUST be the positive response "+OK". Then the server MUST send a "scan list" for each message in the maildrop on its own line.

C0021:

The specification states: "All POP3 servers are required to use a certain format for scan listings. A scan listing consists of the message-number of the message, followed by a single space and the exact size of the message in octets."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

The "scan listing" MUST consist of the number of the message followed by one or more space or tab characters and then the exact size of the message in octets. The server MAY follow this with additional information.

## **2.2.7 [RFC1939] Section 5, RETR Command**

V0004:

The specification states: "Arguments: a message-number (required) which may NOT refer to a message marked as deleted."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

The client MUST send the message-number argument with the RETR command.

V0005:

The specification states: "Restrictions: may only be given in the TRANSACTION state."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

The client SHOULD only send the RETR command when in the TRANSACTION state.

C0022:

The specification states: "If the **POP3** server issues a positive response, then the response given is multi-line."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

If the server is returning success, then it MUST issue a multi-line response.

C0023:

The specification states: "After the initial +OK, the POP3 server sends the message corresponding to the given message-number."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

If the server is issuing a positive response, then it MUST return the message corresponding to the given message-number in the multi-line response.

### **2.2.8 [RFC1939] Section 5, DELE Command**

C0024:

The specification states: "Arguments: a message-number (required) which may NOT refer to a message marked as deleted."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

The client MUST send the message-number argument with the DELE command.

C0025:

The specification states: "Restrictions: may only be given in the TRANSACTION state."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

The client SHOULD only send the DELE command when in the TRANSACTION state.

C0026:

The specification states: "Any future reference to the message-number associated with the message in a **POP3** command generates an error."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

Any future reference to this message-number in a POP3 command MUST generate an error.

### **2.2.9 [RFC1939] Section 5, NOOP Command**

C0027:

The specification states that the NOOP command has no arguments.

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

The client MUST NOT send arguments with the NOOP command.

C0028:

The specification states: "Restrictions: may only be given in the TRANSACTION state."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

The client SHOULD only send the NOOP command when in the TRANSACTION state.

C0029:

The specification states: "Discussion: The **POP3** server does nothing, it merely replies with a positive response."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

The server MUST return a positive response.

### **2.2.10 [RFC1939] Section 5, RSET Command**

V0006:

The specification states that the RSET command is a required command.

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

Outlook never sends the RSET command.

### **2.2.11 [RFC1939] Section 6, QUIT Command**

C0030:

The specification states that the QUIT command has no arguments.

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

The client MUST NOT send arguments with the QUIT command.

### **2.2.12 [RFC1939] Section 7, Optional POP3 Commands**

C0031:

The specification states: "The **POP3** commands discussed above must be supported by all minimal implementations of POP3 servers."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

The server MUST support all the commands discussed above.

### **2.2.13 [RFC1939] Section 7, TOP Command**

C0032:

The specification states: "Arguments: a message-number (required) which may NOT refer to a message marked as deleted, and a non-negative number of lines (required)."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

The client MUST send two arguments. The first argument is the message-number and the second is a non-negative number of lines.

C0033:

The specification states: "Restrictions: may only be given in the TRANSACTION state."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

The client SHOULD only send the TOP command when in the TRANSACTION state.

C0034:

The specification states: "If the **POP3** server issues a positive response, then the response given is multi-line. After the initial +OK, the POP3 server sends the headers of the message, the blank line separating the headers from the body, and then the number of lines of the indicated message's body."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

If the POP3 server issues a positive response, then the response given MUST be multi-line. The first line MUST be the positive response "+OK". The following line MUST be the headers of the message, the blank line separating headers from body, and then the number of lines on the body indicated in the arguments.

## 2.2.14 [RFC1939] Section 7, UIDL Command

V0007:

The specification states: "Arguments: a message-number (optional), which, if present, may NOT refer to a message marked as deleted."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

The client MAY send an argument.

Outlook never sends the UIDL command with an argument.

C0035:

The specification states: "Restrictions: may only be given in the TRANSACTION state."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

The client SHOULD only send the UIDL command when in the TRANSACTION state.

C0036:

The specification states: "Discussion: If an argument was given and the **POP3** server issues a positive response with a line containing information for that message."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

If the UIDL command includes an argument and the server is returning success, then it MUST issue a positive response line (a "unique-id listing").

This statement has no impact as Outlook never sends the UIDL command with an argument.

C0037:

The specification states: "If no argument was given and the POP3 server issues a positive response, then the response given is multi-line. After the initial +OK, for each message in the maildrop, the POP3 server responds with a line containing information for that message."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

If the UIDL command does not include an argument and the server is returning a positive response, then the server MUST issue a multi-line response. The initial line MUST be the positive response "+OK". Then the server MUST send a "unique-id list" for each message in the maildrop on its own line.

C0038:

The specification states: "In order to simplify parsing, all POP3 servers are required to use a certain format for unique-id listings. A unique-id listing consists of the message-number of the message, followed by a single space and the unique-id of the message in octets."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

The unique-id listing MUST consist of the number of the message followed by one or more space or tab characters, and then the unique-id of the message in octets. The server MAY follow this with additional information.

C0039:

The specification states: "The unique-id of a message is an arbitrary server-determined string, consisting of one to 70 characters in the range 0x21 to 0x7E, which uniquely identifies a message within a maildrop and which persists across sessions."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

The unique-id MUST consist of one to 70 characters in the range 0x2e to 0x7E. The server MUST persist the unique-id that identifies the message across sessions.

C0040:

The specification states: "The server should never reuse a unique-id in a given maildrop, for as long as the entity using the unique-id exists."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

The server SHOULD NOT reuse a unique-id for as long as the entity using the unique-id exists. If the server violates this statement, then the action expected on one message could be performed unexpectedly on another message with the same unique-id.

C0041:

The specification states: "Clients should be able to handle a situation where two identical copies of a message in a maildrop have the same unique-id."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

The client SHOULD be able to handle two identical copies of a message having the same unique-id.

Outlook does not fully comply with the use of SHOULD in the statement. Using Outlook, an action specified by the user on one message can happen on either message with the identical unique-id during synchronization. But, since the messages are identical, this has little impact. For example, if a user marks one message header for download, then Outlook can download the other message header instead.

## **2.2.15 [RFC1939] Section 7, USER Command**

C0042:

The specification states: "Arguments: a string identifying a mailbox (required), which is of significance ONLY to the server."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

The client MUST send one argument.

C0043:

The specification states: "Restrictions: may only be given in the AUTHORIZATION state after the POP3 greeting or after an unsuccessful USER or PASS command."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

The client SHOULD only send the USER command when in the AUTHORIZATION state or when a greeting has not been received.



C0044:

The specification states: "To authenticate using the USER and PASS command combination, the client must first issue the USER command."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

To authenticate using the USER and PASS command combination, the client MUST issue the USER command first.

C0045:

The specification states: "If the **POP3** server responds with a positive status indicator ("+OK"), then the client may issue either the PASS command to complete the authentication, or the QUIT command to terminate the POP3 session. If the POP3 server responds with a negative status indicator ("-ERR") to the USER command, then the client may either issue a new authentication command or may issue the QUIT command."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

If the POP3 server responds with a positive status indicator ("+OK"), then the client SHOULD issue either the PASS command to complete the authentication or the QUIT command to terminate the POP3 session. If the POP3 server responds with a negative status indicator ("-ERR") to the USER command, then the client SHOULD either issue a new authentication command or the QUIT command.

### **2.2.16 [RFC1939] Section 7, PASS Command**

C0046:

The specification states: "Arguments: a server/mailbox-specific password (required)."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

The client MUST send one argument.

C0047:

The specification states: "Restrictions: may only be given in the AUTHORIZATION state immediately after a successful USER command."

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

The client SHOULD only send the PASS command in the AUTHORIZATION state and immediately following a successful USER command.

### **2.2.17 [RFC1939] Section 7, APOP Command**

V0008:

The specification states that the APOP command is an optional **POP3** command.

Office Outlook 2007, Outlook 2010, Outlook 2013, Outlook 2016

Outlook does not support the APOP command.

## **2.3 Error Handling**

There are no additional error handling considerations beyond what are discussed in section [2.2.8](#).

## 2.4 Security

None.

### **3 Change Tracking**

No table of changes is available. The document is either new or has had no changes since its last release.

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