[MS-OXCROPS]:

Remote Operations (ROP) List and Encoding Protocol

Intellectual Property Rights Notice for Open Specifications Documentation

- **Technical Documentation.** Microsoft publishes Open Specifications documentation ("this documentation") for protocols, file formats, data portability, computer languages, and standards support. Additionally, overview documents cover inter-protocol relationships and interactions.
- **Copyrights**. This documentation is covered by Microsoft copyrights. Regardless of any other terms that are contained in the terms of use for the Microsoft website that hosts this documentation, you can make copies of it in order to develop implementations of the technologies that are described in this documentation and can distribute portions of it in your implementations that use these technologies or in your documentation as necessary to properly document the implementation. You can also distribute in your implementation, with or without modification, any schemas, IDLs, or code samples that are included in the documentation. This permission also applies to any documents that are referenced in the Open Specifications documentation.
- **No Trade Secrets**. Microsoft does not claim any trade secret rights in this documentation.
- **Patents**. Microsoft has patents that might cover your implementations of the technologies described in the Open Specifications documentation. Neither this notice nor Microsoft's delivery of this documentation grants any licenses under those patents or any other Microsoft patents. However, a given Open Specifications document might be covered by the Microsoft Open Specifications Promise or the Microsoft Community Promise. If you would prefer a written license, or if the technologies described in this documentation are not covered by the Open Specifications Promise or Community Promise, as applicable, patent licenses are available by contacting iplg@microsoft.com.
- **License Programs**. To see all of the protocols in scope under a specific license program and the associated patents, visit the Patent Map.
- **Trademarks**. The names of companies and products contained in this documentation might be covered by trademarks or similar intellectual property rights. This notice does not grant any licenses under those rights. For a list of Microsoft trademarks, visit www.microsoft.com/trademarks.
- **Fictitious Names**. The example companies, organizations, products, domain names, email addresses, logos, people, places, and events that are depicted in this documentation are fictitious. No association with any real company, organization, product, domain name, email address, logo, person, place, or event is intended or should be inferred.

Reservation of Rights. All other rights are reserved, and this notice does not grant any rights other than as specifically described above, whether by implication, estoppel, or otherwise.

Tools. The Open Specifications documentation does not require the use of Microsoft programming tools or programming environments in order for you to develop an implementation. If you have access to Microsoft programming tools and environments, you are free to take advantage of them. Certain 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.

Support. For questions and support, please contact dochelp@microsoft.com.

Revision Summary

Date	Revision History	Revision Class	Comments
4/4/2008	0.1	New	Initial Availability.
6/27/2008	1.0	Major	Initial Release.
8/6/2008	1.01	Minor	Revised and edited technical content.
9/3/2008	1.02	Minor	Revised and edited technical content.
12/3/2008	1.03	Minor	Revised and edited technical content.
3/4/2009	1.04	Minor	Revised and edited technical content.
4/10/2009	2.0	Major	Updated technical content and applicable product releases.
7/15/2009	3.0	Major	Revised and edited for technical content.
11/4/2009	4.0.0	Major	Updated and revised the technical content.
2/10/2010	5.0.0	Major	Updated and revised the technical content.
5/5/2010	6.0.0	Major	Updated and revised the technical content.
8/4/2010	7.0	Major	Significantly changed the technical content.
11/3/2010	7.1	Minor	Clarified the meaning of the technical content.
3/18/2011	8.0	Major	Significantly changed the technical content.
8/5/2011	8.1	Minor	Clarified the meaning of the technical content.
10/7/2011	9.0	Major	Significantly changed the technical content.
1/20/2012	10.0	Major	Significantly changed the technical content.
4/27/2012	11.0	Major	Significantly changed the technical content.
7/16/2012	12.0	Major	Significantly changed the technical content.
10/8/2012	12.1	Minor	Clarified the meaning of the technical content.
2/11/2013	13.0	Major	Significantly changed the technical content.
7/26/2013	13.1	Minor	Clarified the meaning of the technical content.
11/18/2013	14.0	Major	Significantly changed the technical content.
2/10/2014	14.0	None	No changes to the meaning, language, or formatting of the technical content.
4/30/2014	14.0	None	No changes to the meaning, language, or formatting of the technical content.
7/31/2014	15.0	Major	Significantly changed the technical content.
10/30/2014	15.1	Minor	Clarified the meaning of the technical content.
3/16/2015	16.0	Major	Significantly changed the technical content.
5/26/2015	16.1	Minor	Clarified the meaning of the technical content.

Copyright © 2025 Microsoft Corporation

Date	Revision History	Revision Class	Comments
9/14/2015	17.0	Major	Significantly changed the technical content.
6/13/2016	18.0	Major	Significantly changed the technical content.
9/14/2016	18.0	None	No changes to the meaning, language, or formatting of the technical content.
3/10/2017	19.0	Major	Significantly changed the technical content.
6/20/2017	19.1	Minor	Clarified the meaning of the technical content.
9/19/2017	20.0	Major	Significantly changed the technical content.
12/12/2017	20.0	None	No changes to the meaning, language, or formatting of the technical content.
7/24/2018	21.0	Major	Significantly changed the technical content.
10/1/2018	22.0	Major	Significantly changed the technical content.
4/22/2021	23.0	Major	Significantly changed the technical content.
8/17/2021	24.0	Major	Significantly changed the technical content.
2/15/2022	24.0	None	No changes to the meaning, language, or formatting of the technical content.
8/20/2024	25.0	Major	Significantly changed the technical content.
5/20/2025	26.0	Major	Significantly changed the technical content.

Copyright © 2025 Microsoft Corporation

Table of Contents

1 Introduction ... 14
1.1 Glossary ... 14
1.2 References ... 17
1.2.1 Normative References ... 17
1.2.2 Informative References ... 18
1.3 Overview ... 18
1.3.1 Server Objects ... 19
1.3.2 Format of ROP Buffers ... 19
1.4 Relationship to Other Protocols ... 19
1.5 Prerequisites/Preconditions ... 20
1.6 Applicability Statement ... 20
1.7 Versioning and Capability Negotiation ... 20
1.8 Vendor-Extensible Fields ... 20
1.9 Standards Assignments ... 20

2 Messages ... 21
2.1 Transport ... 21
2.2 Message Syntax ... 21
2.2.1 ROP Input and Output Buffers ... 21
2.2.2 The Table of RopIds ... 21
2.2.3 Logon ROPs ... 30
2.2.3.1 RopLogon ROP ... 30
2.2.3.1.1 RopLogon ROP Request Buffer ... 30
2.2.3.1.2 RopLogon ROP Success Response Buffer for Private Mailboxes ... 30
2.2.3.1.2.1 LogonTime Structure ... 32
2.2.3.1.3 RopLogon ROP Success Response Buffer for Public Folders ... 33
2.2.3.1.4 RopLogon ROP Redirect Response Buffer ... 34
2.2.3.1.5 RopLogon ROP Failure Response Buffer ... 35
2.2.3.2 RopGetReceiveFolder ROP ... 35
2.2.3.2.1 RopGetReceiveFolder ROP Request Buffer ... 35
2.2.3.2.2 RopGetReceiveFolder ROP Success Response Buffer ... 36
2.2.3.2.3 RopGetReceiveFolder ROP Failure Response Buffer ... 36
2.2.3.3 RopSetReceiveFolder ROP ... 37
2.2.3.3.1 RopSetReceiveFolder ROP Request Buffer ... 37
2.2.3.3.2 RopSetReceiveFolder ROP Response Buffer ... 37
2.2.3.4 RopGetReceiveFolderTable ROP ... 38
2.2.3.4.1 RopGetReceiveFolderTable ROP Request Buffer ... 38
2.2.3.4.2 RopGetReceiveFolderTable ROP Success Response Buffer ... 38
2.2.3.4.3 RopGetReceiveFolderTable ROP Failure Response Buffer ... 39
2.2.3.5 RopGetStoreState ROP ... 39
2.2.3.5.1 RopGetStoreStage ROP Request Buffer ... 39
2.2.3.5.2 RopGetStoreState ROP Success Response Buffer ... 39
2.2.3.5.3 RopGetStoreState ROP Failure Response Buffer ... 40
2.2.3.6 RopGetOwningServers ROP ... 40
2.2.3.6.1 RopGetOwningServers ROP Request Buffer ... 40
2.2.3.6.2 RopGetOwningServers ROP Success Response Buffer ... 41
2.2.3.6.3 RopGetOwningServers ROP Failure Response Buffer ... 42
2.2.3.7 RopPublicFolderIsGhosted ROP ... 42
2.2.3.7.1 RopPublicFolderIsGhosted ROP Request Buffer ... 42
2.2.3.7.2 RopPublicFolderIsGhosted ROP Success Response Buffer ... 42
2.2.3.7.3 RopPublicFolderIsGhosted ROP Failure Response Buffer ... 43
2.2.3.8 RopLongTermIdFromId ROP ... 44
2.2.3.8.1 RopLongTermIdFromId ROP Request Buffer ... 44
2.2.3.8.2 RopLongTermIdFromId ROP Success Response Buffer ... 44
2.2.3.8.3 RopLongTermIdFromId ROP Failure Response Buffer ... 45

Copyright © 2025 Microsoft Corporation

2.2.3.9 RopIdFromLongTermId ROP 45
2.2.3.9.1 RopIdFromLongTermId ROP Request Buffer 45
2.2.3.9.2 RopIdFromLongTermId ROP Success Response Buffer 46
2.2.3.9.3 RopIdFromLongTermId ROP Failure Response Buffer 46
2.2.3.10 RopGetPerUserLongTermIds ROP 47
2.2.3.10.1 RopGetPerUserLongTermIds ROP Request Buffer 47
2.2.3.10.2 RopGetPerUserLongTermIds ROP Success Response Buffer 47
2.2.3.10.3 RopGetPerUserLongTermIds ROP Failure Response Buffer 48
2.2.3.11 RopGetPerUserGuid ROP 48
2.2.3.11.1 RopGetPerUserGuid ROP Request Buffer 49
2.2.3.11.2 RopGetPerUserGuid ROP Success Response Buffer 49
2.2.3.11.3 RopGetPerUserGuid ROP Failure Response Buffer 50
2.2.3.12 RopReadPerUserInformation ROP 50
2.2.3.12.1 RopReadPerUserInformation ROP Request Buffer 50
2.2.3.12.2 RopReadPerUserInformation ROP Success Response Buffer 51
2.2.3.12.3 RopReadPerUserInformation ROP Failure Response Buffer 52
2.2.3.13 RopWritePerUserInformation ROP 52
2.2.3.13.1 RopWritePerUserInformation ROP Request Buffer 52
2.2.3.13.2 RopWritePerUserInformation ROP Response Buffer 53
2.2.4 Folder ROPs 54
2.2.4.1 RopOpenFolder ROP 54
2.2.4.1.1 RopOpenFolder ROP Request Buffer 54
2.2.4.1.2 RopOpenFolder ROP Success Response Buffer 55
2.2.4.1.3 RopOpenFolder ROP Failure Response Buffer 55
2.2.4.2 RopCreateFolder ROP 56
2.2.4.2.1 RopCreateFolder ROP Request Buffer 56
2.2.4.2.2 RopCreateFolder ROP Success Response Buffer 57
2.2.4.2.3 RopCreateFolder ROP Failure Response Buffer 58
2.2.4.3 RopDeleteFolder ROP 58
2.2.4.3.1 RopDeleteFolder ROP Request Buffer 58
2.2.4.3.2 RopDeleteFolder ROP Response Buffer 59
2.2.4.4 RopSetSearchCriteria ROP 59
2.2.4.4.1 RopSetSearchCriteria ROP Request Buffer 59
2.2.4.4.2 RopSetSearchCriteria ROP Response Buffer 60
2.2.4.5 RopGetSearchCriteria ROP 60
2.2.4.5.1 RopGetSearchCriteria ROP Request Buffer 60
2.2.4.5.2 RopGetSearchCriteria ROP Success Response Buffer 61
2.2.4.5.3 RopGetSearchCriteria ROP Failure Response Buffer 62
2.2.4.6 RopMoveCopyMessages ROP 62
2.2.4.6.1 RopMoveCopyMessages ROP Request Buffer 62
2.2.4.6.2 RopMoveCopyMessages ROP Response Buffer 63
2.2.4.6.3 RopMoveCopyMessages ROP Null Destination Failure Response Buffer 63
2.2.4.7 RopMoveFolder ROP 64
2.2.4.7.1 RopMoveFolder ROP Request Buffer 64
2.2.4.7.2 RopMoveFolder ROP Response Buffer 65
2.2.4.7.3 RopMoveFolder ROP Null Destination Failure Response Buffer 65
2.2.4.8 RopCopyFolder ROP 66
2.2.4.8.1 RopCopyFolder ROP Request Buffer 66
2.2.4.8.2 RopCopyFolder ROP Response Buffer 66
2.2.4.8.3 RopCopyFolder ROP Null Destination Failure Response Buffer 67
2.2.4.9 RopEmptyFolder ROP 67
2.2.4.9.1 RopEmptyFolder ROP Request Buffer 67
2.2.4.9.2 RopEmptyFolder ROP Response Buffer 68
2.2.4.10 RopHardDeleteMessagesAndSubfolders ROP 68
2.2.4.10.1 RopHardDeleteMessagesAndSubfolders ROP Request Buffer 68
2.2.4.10.2 RopHardDeleteMessagesAndSubfolders ROP Response Buffer 69
2.2.4.11 RopDeleteMessages ROP 69
2.2.4.11.1 RopDeleteMessages ROP Request Buffer 69

Copyright © 2025 Microsoft Corporation

2.2.4.11.2 RopDeleteMessages ROP Response Buffer 70
2.2.4.12 RopHardDeleteMessages ROP 70
2.2.4.12.1 RopHardDeleteMessages ROP Request Buffer 71
2.2.4.12.2 RopHardDeleteMessages ROP Response Buffer 71
2.2.4.13 RopGetHierarchyTable ROP 72
2.2.4.13.1 RopGetHierarchyTable ROP Request Buffer 72
2.2.4.13.2 RopGetHierarchyTable ROP Success Response Buffer 72
2.2.4.13.3 RopGetHierarchyTable ROP Failure Response Buffer 73
2.2.4.14 RopGetContentsTable ROP 73
2.2.4.14.1 RopGetContentsTable ROP Request Buffer 73
2.2.4.14.2 RopGetContentsTable ROP Success Response Buffer 73
2.2.4.14.3 RopGetContentsTable ROP Failure Response Buffer 74
2.2.5 Table ROPs 74
2.2.5.1 RopSetColumns ROP 74
2.2.5.1.1 RopSetColumns ROP Request Buffer 74
2.2.5.1.2 RopSetColumns ROP Success Response Buffer 75
2.2.5.1.3 RopSetColumns ROP Failure Response Buffer 75
2.2.5.2 RopSortTable ROP 76
2.2.5.2.1 RopSortTable ROP Request Buffer 76
2.2.5.2.2 RopSortTable ROP Success Response Buffer 77
2.2.5.2.3 RopSortTable ROP Failure Response Buffer 77
2.2.5.3 RopRestrict ROP 77
2.2.5.3.1 RopRestrict ROP Request Buffer 77
2.2.5.3.2 RopRestrict ROP Success Response Buffer 78
2.2.5.3.3 RopRestrict ROP Failure Response Buffer 78
2.2.5.4 RopQueryRows ROP 79
2.2.5.4.1 RopQueryRows ROP Request Buffer 79
2.2.5.4.2 RopQueryRows ROP Success Response Buffer 79
2.2.5.4.3 RopQueryRows ROP Failure Response Buffer 80
2.2.5.5 RopAbort ROP 80
2.2.5.5.1 RopAbort ROP Request Buffer 81
2.2.5.5.2 RopAbort ROP Success Response Buffer 81
2.2.5.5.3 RopAbort ROP Failure Response Buffer 81
2.2.5.6 RopGetStatus ROP 82
2.2.5.6.1 RopGetStatus ROP Request Buffer 82
2.2.5.6.2 RopGetStatus ROP Success Response Buffer 82
2.2.5.6.3 RopGetStatus ROP Failure Response Buffer 82
2.2.5.7 RopQueryPosition ROP 83
2.2.5.7.1 RopQueryPosition ROP Request Buffer 83
2.2.5.7.2 RopQueryPosition ROP Success Response Buffer 83
2.2.5.7.3 RopQueryPosition ROP Failure Response Buffer 84
2.2.5.8 RopSeekRow ROP 84
2.2.5.8.1 RopSeekRow ROP Request Buffer 84
2.2.5.8.2 RopSeekRow ROP Success Response Buffer 85
2.2.5.8.3 RopSeekRow ROP Failure Response Buffer 85
2.2.5.9 RopSeekRowBookmark ROP 86
2.2.5.9.1 RopSeekRowBookmark ROP Request Buffer 86
2.2.5.9.2 RopSeekRowBookmark ROP Success Response Buffer 86
2.2.5.9.3 RopSeekRowBookmark ROP Failure Response Buffer 87
2.2.5.10 RopSeekRowFractional ROP 87
2.2.5.10.1 RopSeekRowFractional ROP Request Buffer 87
2.2.5.10.2 RopSeekRowFractional ROP Response Buffer 88
2.2.5.11 RopCreateBookmark ROP 88
2.2.5.11.1 RopCreateBookmark ROP Request Buffer 88
2.2.5.11.2 RopCreateBookmark ROP Success Response Buffer 89
2.2.5.11.3 RopCreateBookmark ROP Failure Response Buffer 89
2.2.5.12 RopQueryColumnsAll ROP 90
2.2.5.12.1 RopQueryColumnsAll ROP Request Buffer 90

Copyright © 2025 Microsoft Corporation

2.2.5.12.2 RopQueryColumnsAll ROP Success Response Buffer 90
2.2.5.12.3 RopQueryColumnsAll ROP Failure Response Buffer 90
2.2.5.13 RopFindRow ROP 91
2.2.5.13.1 RopFindRow ROP Request Buffer 91
2.2.5.13.2 RopFindRow ROP Success Response Buffer 92
2.2.5.13.3 RopFindRow ROP Failure Response Buffer 92
2.2.5.14 RopFreeBookmark ROP 93
2.2.5.14.1 RopFreeBookmark ROP Request Buffer 93
2.2.5.14.2 RopFreeBookmark ROP Response Buffer 93
2.2.5.15 RopResetTable ROP 94
2.2.5.15.1 RopResetTable ROP Request Buffer 94
2.2.5.15.2 RopResetTable ROP Response Buffer 94
2.2.5.16 RopExpandRow ROP 94
2.2.5.16.1 RopExpandRow ROP Request Buffer 94
2.2.5.16.2 RopExpandRow ROP Success Response Buffer 95
2.2.5.16.3 RopExpandRow ROP Failure Response Buffer 96
2.2.5.17 RopCollapseRow ROP 96
2.2.5.17.1 RopCollapseRow ROP Request Buffer 96
2.2.5.17.2 RopCollapseRow ROP Success Response Buffer 97
2.2.5.17.3 RopCollapseRow ROP Failure Response Buffer 97
2.2.5.18 RopGetCollapseState ROP 97
2.2.5.18.1 RopGetCollapseState ROP Request Buffer 97
2.2.5.18.2 RopGetCollapseState ROP Success Response Buffer 98
2.2.5.18.3 RopGetCollapseState ROP Failure Response Buffer 99
2.2.5.19 RopSetCollapseState ROP 99
2.2.5.19.1 RopSetCollapseState ROP Request Buffer 99
2.2.5.19.2 RopSetCollapseState ROP Success Response Buffer 100
2.2.5.19.3 RopSetCollapseState ROP Failure Response Buffer 100
2.2.6 Message ROPs 101
2.2.6.1 RopOpenMessage ROP 101
2.2.6.1.1 RopOpenMessage ROP Request Buffer 101
2.2.6.1.2 RopOpenMessage ROP Success Response Buffer 101
2.2.6.1.2.1 OpenRecipientRow Structure 103
2.2.6.1.3 RopOpenMessage ROP Failure Response Buffer 103
2.2.6.2 RopCreateMessage ROP 103
2.2.6.2.1 RopCreateMessage ROP Request Buffer 104
2.2.6.2.2 RopCreateMessage ROP Success Response Buffer 104
2.2.6.2.3 RopCreateMessage ROP Failure Response Buffer 105
2.2.6.3 RopSaveChangesMessage ROP 105
2.2.6.3.1 RopSaveChangesMessage ROP Request Buffer 105
2.2.6.3.2 RopSaveChangesMessage ROP Success Response Buffer 106
2.2.6.3.3 RopSaveChangesMessage ROP Failure Response Buffer 106
2.2.6.4 RopRemoveAllRecipients ROP 107
2.2.6.4.1 RopRemoveAllRecipients ROP Request Buffer 107
2.2.6.4.2 RopRemoveAllRecipients ROP Response Buffer 107
2.2.6.5 RopModifyRecipients ROP 107
2.2.6.5.1 RopModifyRecipients ROP Request Buffer 107
2.2.6.5.1.1 ModifyRecipientRow Structure 108
2.2.6.5.2 RopModifyRecipients ROP Response Buffer 109
2.2.6.6 RopReadRecipients ROP 109
2.2.6.6.1 RopReadRecipients ROP Request Buffer 109
2.2.6.6.2 RopReadRecipients ROP Success Response Buffer 110
2.2.6.6.2.1 ReadRecipientRow Structure 110
2.2.6.6.3 RopReadRecipients ROP Failure Response Buffer 111
2.2.6.7 RopReloadCachedInformation ROP 111
2.2.6.7.1 RopReloadCachedInformation ROP Request Buffer 111
2.2.6.7.2 RopReloadCachedInformation ROP Success Response Buffer 112
2.2.6.7.3 RopReloadCachedInformation ROP Failure Response Buffer 113

Copyright © 2025 Microsoft Corporation

2.2.6.8 RopSetMessageStatus ROP ... 113
2.2.6.8.1 RopSetMessageStatus ROP Request Buffer ... 113
2.2.6.8.2 RopSetMessageStatus ROP Success Response Buffer ... 114
2.2.6.8.3 RopSetMessageStatus ROP Failure Response Buffer ... 114
2.2.6.9 RopGetMessageStatus ROP ... 115
2.2.6.9.1 RopGetMessageStatus ROP Request Buffer ... 115
2.2.6.9.2 RopGetMessageStatus ROP Response Buffers ... 115
2.2.6.10 RopSetReadFlags ROP ... 115
2.2.6.10.1 RopSetReadFlags ROP Request Buffer ... 115
2.2.6.10.2 RopSetReadFlags ROP Response Buffer ... 116
2.2.6.11 RopSetMessageReadFlag ROP ... 117
2.2.6.11.1 RopSetMessageReadFlag ROP Request Buffer ... 117
2.2.6.11.2 RopSetMessageReadFlag ROP Success Response Buffer ... 117
2.2.6.11.3 RopSetMessageReadFlag ROP Failure Response Buffer ... 118
2.2.6.12 RopOpenAttachment ROP ... 119
2.2.6.12.1 RopOpenAttachment ROP Request Buffer ... 119
2.2.6.12.2 RopOpenAttachment ROP Response Buffer ... 119
2.2.6.13 RopCreateAttachment ROP ... 120
2.2.6.13.1 RopCreateAttachment ROP Request Buffer ... 120
2.2.6.13.2 RopCreateAttachment ROP Success Response Buffer ... 120
2.2.6.13.3 RopCreateAttachment ROP Failure Response Buffer ... 121
2.2.6.14 RopDeleteAttachment ROP ... 121
2.2.6.14.1 RopDeleteAttachment ROP Request Buffer ... 121
2.2.6.14.2 RopDeleteAttachment ROP Response Buffer ... 121
2.2.6.15 RopSaveChangesAttachment ROP ... 122
2.2.6.15.1 RopSaveChangesAttachment ROP Request Buffer ... 122
2.2.6.15.2 RopSaveChangesAttachment ROP Response Buffer ... 122
2.2.6.16 RopOpenEmbeddedMessage ROP ... 123
2.2.6.16.1 RopOpenEmbeddedMessage ROP Request Buffer ... 123
2.2.6.16.2 RopOpenEmbeddedMessage ROP Success Response Buffer ... 123
2.2.6.16.3 RopOpenEmbeddedMessage ROP Failure Response Buffer ... 125
2.2.6.17 RopGetAttachmentTable ROP ... 125
2.2.6.17.1 RopGetAttachmentTable ROP Request Buffer ... 125
2.2.6.17.2 RopGetAttachmentTable ROP Response Buffer ... 126
2.2.6.18 RopGetValidAttachments ROP ... 126
2.2.6.18.1 RopGetValidAttachments ROP Request Buffer ... 126
2.2.6.18.2 RopGetValidAttachments ROP Success Response Buffer ... 126
2.2.6.18.3 RopGetValidAttachments ROP Failure Response Buffer ... 127
2.2.7 Transport ROPs ... 128
2.2.7.1 RopSubmitMessage ROP ... 128
2.2.7.1.1 RopSubmitMessage ROP Request Buffer ... 128
2.2.7.1.2 RopSubmitMessage ROP Response Buffer ... 128
2.2.7.2 RopAbortSubmit ROP ... 128
2.2.7.2.1 RopAbortSubmit ROP Request Buffer ... 128
2.2.7.2.2 RopAbortSubmit ROP Response Buffer ... 129
2.2.7.3 RopGetAddressTypes ROP ... 129
2.2.7.3.1 RopGetAddressTypes ROP Request Buffer ... 129
2.2.7.3.2 RopGetAddressTypes ROP Success Response Buffer ... 130
2.2.7.3.3 RopGetAddressTypes ROP Failure Response Buffer ... 130
2.2.7.4 RopSetSpooler ROP ... 131
2.2.7.4.1 RopSetSpooler ROP Request Buffer ... 131
2.2.7.4.2 RopSetSpooler ROP Response Buffer ... 131
2.2.7.5 RopSpoolerLockMessage ROP ... 132
2.2.7.5.1 RopSpoolerLockMessage ROP Request Buffer ... 132
2.2.7.5.2 RopSpoolerLockMessage ROP Response Buffer ... 132
2.2.7.6 RopTransportSend ROP ... 133
2.2.7.6.1 RopTransportSend ROP Request Buffer ... 133
2.2.7.6.2 RopTransportSend ROP Success Response Buffer ... 133

Copyright © 2025 Microsoft Corporation

2.2.7.6.3 RopTransportSend ROP Failure Response Buffer 134
2.2.7.7 RopTransportNewMail ROP 134
2.2.7.7.1 RopTransportNewMail ROP Request Buffer 134
2.2.7.7.2 RopTransportNewMail ROP Response Buffer 135
2.2.7.8 RopGetTransportFolder ROP 135
2.2.7.8.1 RopGetTransportFolder ROP Request Buffer 135
2.2.7.8.2 RopGetTransportFolder ROP Success Response Buffer 136
2.2.7.8.3 RopGetTransportFolder ROP Failure Response Buffer 136
2.2.7.9 RopOptionsData ROP 136
2.2.7.9.1 RopOptionsData ROP Request Buffer 136
2.2.7.9.2 RopOptionsData ROP Success Response Buffer 137
2.2.7.9.3 RopOptionsData ROP Failure Response Buffer 138
2.2.8 Property ROPs 138
2.2.8.1 RopGetPropertyIdsFromNames ROP 138
2.2.8.1.1 RopGetPropertyIdsFromNames ROP Request Buffer 138
2.2.8.1.2 RopGetPropertyIdsFromNames ROP Success Response Buffer 139
2.2.8.1.3 RopGetPropertyIdsFromNames ROP Failure Response Buffer 140
2.2.8.2 RopGetNamesFromPropertyIds ROP 140
2.2.8.2.1 RopGetNamesFromPropertyIds ROP Request Buffer 140
2.2.8.2.2 RopGetNamesFromPropertyIds ROP Success Response Buffer 141
2.2.8.2.3 RopGetNamesFromPropertyIds ROP Failure Response Buffer 141
2.2.8.3 RopGetPropertiesSpecific ROP 142
2.2.8.3.1 RopGetPropertiesSpecific ROP Request Buffer 142
2.2.8.3.2 RopGetPropertiesSpecific ROP Success Response Buffer 142
2.2.8.3.3 RopGetPropertiesSpecific ROP Failure Response Buffer 143
2.2.8.4 RopGetPropertiesAll ROP 143
2.2.8.4.1 RopGetPropertiesAll ROP Request Buffer 143
2.2.8.4.2 RopGetPropertiesAll ROP Success Response Buffer 144
2.2.8.4.3 RopGetPropertiesAll ROP Failure Response Buffer 144
2.2.8.5 RopGetPropertiesList ROP 145
2.2.8.5.1 RopGetPropertiesList ROP Request Buffer 145
2.2.8.5.2 RopGetPropertiesList ROP Success Response Buffer 145
2.2.8.5.3 RopGetPropertiesList ROP Failure Response Buffer 146
2.2.8.6 RopSetProperties ROP 146
2.2.8.6.1 RopSetProperties ROP Request Buffer 146
2.2.8.6.2 RopSetProperties ROP Success Response Buffer 147
2.2.8.6.3 RopSetProperties ROP Failure Response Buffer 148
2.2.8.7 RopSetPropertiesNoReplicate ROP 148
2.2.8.7.1 RopSetPropertiesNoReplicate ROP Request Buffer 148
2.2.8.7.2 RopSetPropertiesNoReplicate ROP Success Response Buffer 149
2.2.8.7.3 RopSetPropertiesNoReplicate ROP Failure Response Buffer 149
2.2.8.8 RopDeleteProperties ROP 150
2.2.8.8.1 RopDeleteProperties ROP Request Buffer 150
2.2.8.8.2 RopDeleteProperties ROP Success Response Buffer 150
2.2.8.8.3 RopDeleteProperties ROP Failure Response Buffer 151
2.2.8.9 RopDeletePropertiesNoReplicate ROP 151
2.2.8.9.1 RopDeletePropertiesNoReplicate ROP Request Buffer 151
2.2.8.9.2 RopDeletePropertiesNoReplicate ROP Success Response Buffer 152
2.2.8.9.3 RopDeletePropertiesNoReplicate ROP Failure Response Buffer 152
2.2.8.10 RopQueryNamedProperties ROP 153
2.2.8.10.1 RopQueryNamedProperties ROP Request Buffer 153
2.2.8.10.2 RopQueryNamedProperties ROP Success Response Buffer 154
2.2.8.10.3 RopQueryNamedProperties ROP Failure Response Buffer 154
2.2.8.11 RopCopyProperties ROP 155
2.2.8.11.1 RopCopyProperties ROP Request Buffer 155
2.2.8.11.2 RopCopyProperties ROP Success Response Buffer 155
2.2.8.11.3 RopCopyProperties ROP Null Destination Failure Response Buffer 156
2.2.8.11.4 RopCopyProperties ROP Failure Response Buffer 156

Copyright © 2025 Microsoft Corporation

2.2.8.12 RopCopyTo ROP ... 157
2.2.8.12.1 RopCopyTo ROP Request Buffer ... 157
2.2.8.12.2 RopCopyTo ROP Success Response Buffer ... 158
2.2.8.12.3 RopCopyTo ROP Null Destination Failure Response Buffer ... 158
2.2.8.12.4 RopCopyTo ROP Failure Response Buffer ... 159
2.2.8.13 RopProgress ROP ... 159
2.2.8.13.1 RopProgress ROP Request Buffer ... 159
2.2.8.13.2 RopProgress ROP Success Response Buffer ... 160
2.2.8.13.3 RopProgress ROP Failure Response Buffer ... 160
2.2.9 Stream ROPs ... 161
2.2.9.1 RopOpenStream ROP ... 161
2.2.9.1.1 RopOpenStream ROP Request Buffer ... 161
2.2.9.1.2 RopOpenStream ROP Success Response Buffer ... 161
2.2.9.1.3 RopOpenStream ROP Failure Response Buffer ... 162
2.2.9.2 RopReadStream ROP ... 162
2.2.9.2.1 RopReadStream ROP Request Buffer ... 162
2.2.9.2.2 RopReadStream ROP Response Buffer ... 163
2.2.9.3 RopWriteStream ROP ... 163
2.2.9.3.1 RopWriteStream ROP Request Buffer ... 163
2.2.9.3.2 RopWriteStream ROP Response Buffer ... 164
2.2.9.4 RopWriteStreamExtended ROP ... 164
2.2.9.4.1 RopWriteStreamExtended ROP Request Buffer ... 164
2.2.9.4.2 RopWriteStreamExtended ROP Response Buffer ... 165
2.2.9.5 RopCommitStream ROP ... 165
2.2.9.5.1 RopCommitStream ROP Request Buffer ... 165
2.2.9.5.2 RopCommitStream ROP Response Buffer ... 166
2.2.9.6 RopGetStreamSize ROP ... 166
2.2.9.6.1 RopGetStreamSize ROP Request Buffer ... 166
2.2.9.6.2 RopGetStreamSize ROP Success Response Buffer ... 167
2.2.9.6.3 RopGetStreamSize ROP Failure Response Buffer ... 167
2.2.9.7 RopSetStreamSize ROP ... 167
2.2.9.7.1 RopSetStreamSize ROP Request Buffer ... 167
2.2.9.7.2 RopSetStreamSize ROP Response Buffer ... 168
2.2.9.8 RopSeekStream ROP ... 168
2.2.9.8.1 RopSeekStream ROP Request Buffer ... 168
2.2.9.8.2 RopSeekStream ROP Success Response Buffer ... 169
2.2.9.8.3 RopSeekStream ROP Failure Response Buffer ... 169
2.2.9.9 RopCopyToStream ROP ... 170
2.2.9.9.1 RopCopyToStream ROP Request Buffer ... 170
2.2.9.9.2 RopCopyToStream ROP Response Buffer ... 170
2.2.9.9.3 RopCopyToStream ROP Null Destination Failure Response Buffer ... 171
2.2.9.10 RopLockRegionStream ROP ... 172
2.2.9.10.1 RopLockRegionStream ROP Request Buffer ... 172
2.2.9.10.2 RopLockRegionStream ROP Response Buffer ... 172
2.2.9.11 RopUnlockRegionStream ROP ... 173
2.2.9.11.1 RopUnlockRegionStream ROP Request Buffer ... 173
2.2.9.11.2 RopUnlockRegionStream ROP Response Buffer ... 174
2.2.9.12 RopWriteAndCommitStream ROP ... 174
2.2.9.12.1 RopWriteAndCommitStream ROP Request Buffer ... 174
2.2.9.12.2 RopWriteAndCommitStream ROP Response Buffer ... 175
2.2.9.13 RopCloneStream ROP ... 175
2.2.9.13.1 RopCloneStream ROP Request Buffer ... 175
2.2.9.13.2 RopCloneStream ROP Response Buffer ... 175
2.2.10 Permission ROPs ... 176
2.2.10.1 RopModifyPermissions ROP ... 176
2.2.10.1.1 RopModifyPermissions ROP Request Buffer ... 176
2.2.10.1.1.1 PermissionData Structure ... 176
2.2.10.1.2 RopModifyPermissions ROP Response Buffer ... 177

Copyright © 2025 Microsoft Corporation

2.2.10.2 RopGetPermissionsTable ROP 177
2.2.10.2.1 RopGetPermissionsTable ROP Request Buffer 177
2.2.10.2.2 RopGetPermissionsTable ROP Response Buffer 177
2.2.11 Rule ROPs 178
2.2.11.1 RopModifyRules ROP 178
2.2.11.1.1 RopModifyRules ROP Request Buffer 178
2.2.11.1.1.1 RuleData Structure 179
2.2.11.1.2 RopModifyRules ROP Response Buffer 179
2.2.11.2 RopGetRulesTable ROP 179
2.2.11.2.1 RopGetRulesTable ROP Request Buffer 179
2.2.11.2.2 RopGetRulesTable ROP Response Buffer 180
2.2.11.3 RopUpdateDeferredActionMessages ROP 180
2.2.11.3.1 RopUpdateDeferredActionMessages ROP Request Buffer 180
2.2.11.3.2 RopUpdateDeferredActionMessages ROP Response Buffer 181
2.2.12 Fast Transfer ROPs 182
2.2.12.1 RopFastTransferDestinationConfigure ROP 182
2.2.12.1.1 RopFastTransferDestinationConfigure ROP Request Buffer 182
2.2.12.1.2 RopFastTransferDestinationConfigure ROP Response Buffer 182
2.2.12.2 RopFastTransferDestinationPutBuffer ROP 183
2.2.12.2.1 RopFastTransferDestinationPutBuffer ROP Request Buffer 183
2.2.12.2.2 RopFastTransferDestinationPutBuffer ROP Response Buffer 183
2.2.12.3 RopFastTransferDestinationPutBufferExtended ROP 184
2.2.12.3.1 RopFastTransferDestinationPutBufferExtended ROP Request Buffer 184
2.2.12.3.2 RopFastTransferDestinationPutBufferExtended ROP Response Buffer 184
2.2.12.4 RopFastTransferSourceGetBuffer ROP 185
2.2.12.4.1 RopFastTransferSourceGetBuffer ROP Request Buffer 185
2.2.12.4.2 RopFastTransferSourceGetBuffer ROP Response Buffer 186
2.2.12.5 RopFastTransferSourceCopyFolder ROP 187
2.2.12.5.1 RopFastTransferSourceCopyFolder ROP Request Buffer 187
2.2.12.5.2 RopFastTransferSourceCopyFolder ROP Response Buffer 187
2.2.12.6 RopFastTransferSourceCopyMessages ROP 188
2.2.12.6.1 RopFastTransferSourceCopyMessages ROP Request Buffer 188
2.2.12.6.2 RopFastTransferSourceCopyMessages ROP Response Buffer 188
2.2.12.7 RopFastTransferSourceCopyTo ROP 189
2.2.12.7.1 RopFastTransferSourceCopyTo ROP Request Buffer 189
2.2.12.7.2 RopFastTransferSourceCopyTo ROP Response Buffer 190
2.2.12.8 RopFastTransferSourceCopyProperties ROP 190
2.2.12.8.1 RopFastTransferSourceCopyProperties ROP Request Buffer 190
2.2.12.8.2 RopFastTransferSourceCopyProperties ROP Response Buffer 191
2.2.12.9 RopTellVersion ROP 191
2.2.12.9.1 RopTellVersion ROP Request Buffer 191
2.2.12.9.2 RopTellVersion ROP Response Buffer 192
2.2.13 Incremental Change Synchronization ROPs 192
2.2.13.1 RopSynchronizationConfigure ROP 192
2.2.13.1.1 RopSynchronizationConfigure ROP Request Buffer 192
2.2.13.1.2 RopSynchronizationConfigure ROP Response Buffer 193
2.2.13.2 RopSynchronizationImportMessageChange ROP 194
2.2.13.2.1 RopSynchronizationImportMessageChange ROP Request Buffer 194
2.2.13.2.2 RopSynchronizationImportMessageChange ROP Success Response Buffer 195
2.2.13.2.3 RopSynchronizationImportMessageChange ROP Failure Response Buffer 195
2.2.13.3 RopSynchronizationImportReadStateChanges ROP 196
2.2.13.3.1 RopSynchronizationImportReadStateChanges ROP Request Buffer 196
2.2.13.3.1.1 MessageReadState Structure 196
2.2.13.3.2 RopSynchronizationImportReadStateChanges ROP Response Buffer 197
2.2.13.4 RopSynchronizationImportHierarchyChange ROP 197
2.2.13.4.1 RopSynchronizationImportHierarchyChange ROP Request Buffer 197

Copyright © 2025 Microsoft Corporation

2.2.13.4.2 RopSynchronizationImportHierarchyChange ROP Success Response Buffer ... 198
2.2.13.4.3 RopSynchronizationImportHierarchyChange ROP Failure Response Buffer ... 198
2.2.13.5 RopSynchronizationImportDeletes ROP ... 199
2.2.13.5.1 RopSynchronizationImportDeletes ROP Request Buffer ... 199
2.2.13.5.2 RopSynchronizationImportDeletes ROP Response Buffer ... 199
2.2.13.6 RopSynchronizationImportMessageMove ROP ... 200
2.2.13.6.1 RopSynchronizationImportMessageMove ROP Request Buffer ... 200
2.2.13.6.2 RopSynchronizationImportMessageMove ROP Success Response Buffer 201
2.2.13.6.3 RopSynchronizationImportMessageMove ROP Failure Response Buffer .. 202
2.2.13.7 RopSynchronizationOpenCollector ROP ... 202
2.2.13.7.1 RopSynchronizationOpenCollector ROP Request Buffer ... 202
2.2.13.7.2 RopSynchronizationOpenCollector ROP Response Buffer ... 203
2.2.13.8 RopSynchronizationGetTransferState ROP ... 203
2.2.13.8.1 RopSynchronizationGetTransferState ROP Request Buffer ... 203
2.2.13.8.2 RopSynchronizationGetTransferState ROP Response Buffer ... 204
2.2.13.9 RopSynchronizationUploadStateStreamBegin ROP ... 204
2.2.13.9.1 RopSynchronizationUploadStateStreamBegin ROP Request Buffer ... 204
2.2.13.9.2 RopSynchronizationUploadStateStreamBegin ROP Response Buffer ... 205
2.2.13.10 RopSynchronizationUploadStateStreamContinue ROP ... 205
2.2.13.10.1 RopSynchronizationUploadStateStreamContinue ROP Request Buffer ... 205
2.2.13.10.2 RopSynchronizationUploadStateStreamContinue ROP Response Buffer . 206
2.2.13.11 RopSynchronizationUploadStateStreamEnd ROP ... 206
2.2.13.11.1 RopSynchronizationUploadStateStreamEnd ROP Request Buffer ... 206
2.2.13.11.2 RopSynchronizationUploadStateStreamEnd ROP Response Buffer ... 206
2.2.13.12 RopSetLocalReplicaMidsetDeleted ROP ... 207
2.2.13.12.1 RopSetLocalReplicaMidsetDeleted ROP Request Buffer ... 207
2.2.13.12.1.1 LongTermIdRange Structure ... 208
2.2.13.12.2 RopSetLocalReplicaMidsetDeleted ROP Response Buffer ... 208
2.2.13.13 RopGetLocalReplicaIds ROP ... 209
2.2.13.13.1 RopGetLocalReplicaIds ROP Request Buffer ... 209
2.2.13.13.2 RopGetLocalReplicaIds ROP Success Response Buffer ... 209
2.2.13.13.3 RopGetLocalReplicaIds ROP Failure Response Buffer ... 210
2.2.14 Notification ROPs ... 210
2.2.14.1 RopRegisterNotification ROP ... 210
2.2.14.1.1 RopRegisterNotification ROP Request Buffer ... 210
2.2.14.1.2 RopRegisterNotification ROP Response Buffer ... 211
2.2.14.2 RopNotify ROP ... 212
2.2.14.2.1 RopNotify ROP Response Buffer ... 212
2.2.14.3 RopPending ROP ... 212
2.2.14.3.1 RopPending ROP Response Buffer ... 212
2.2.15 Other ROPs ... 213
2.2.15.1 RopBufferTooSmall ROP ... 213
2.2.15.1.1 RopBufferTooSmall ROP Response Buffer ... 213
2.2.15.2 RopBackoff ROP ... 213
2.2.15.2.1 RopBackoff ROP Response Buffer ... 213
2.2.15.2.1.1 BackoffRop Structure ... 214
2.2.15.3 RopRelease ROP ... 214
2.2.15.3.1 RopRelease ROP Request Buffer ... 214

3 Protocol Details ... 216
3.1 Client Details ... 216
3.1.1 Abstract Data Model ... 216
3.1.2 Timers ... 216
3.1.3 Initialization ... 216
3.1.4 Higher-Layer Triggered Events ... 216
3.1.4.1 Creating a ROP Input Buffer ... 216

Copyright © 2025 Microsoft Corporation

3.1.4.2 Logging On ... 217
3.1.5 Message Processing Events and Sequencing Rules ... 217
3.1.5.1 Extra ROP Responses ... 217
3.1.5.1.1 Processing the RopBackoff ROP Response ... 217
3.1.5.1.2 Processing the RopBufferTooSmall Response Buffer ... 217
3.1.5.1.3 Processing the RopNotify and RopPending Responses ... 218
3.1.5.2 Subsequent RopProgress ROP Requests ... 218
3.1.5.3 Server Object Dependencies ... 218
3.1.5.4 Code Page for Strings ... 219
3.1.6 Timer Events ... 219
3.1.7 Other Local Events ... 219
3.1.7.1 Shutting Down ... 219
3.2 Server Details ... 219
3.2.1 Abstract Data Model ... 219
3.2.2 Timers ... 220
3.2.3 Initialization ... 220
3.2.4 Higher-Layer Triggered Events ... 220
3.2.4.1 Sending Notifications to the Client ... 220
3.2.4.2 Sending the RopBackoff ROP Response ... 220
3.2.4.3 Responding to Insufficient Output Buffer Space ... 220
3.2.5 Message Processing Events and Sequencing Rules ... 221
3.2.5.1 Processing a ROP Input Buffer ... 221
3.2.5.2 Creating a ROP Output Buffer ... 221
3.2.5.3 Processing the RopRelease ROP Request ... 221
3.2.5.4 Error Codes Returned When an Object Is Invalid ... 222
3.2.6 Timer Events ... 222
3.2.7 Other Local Events ... 222
3.2.7.1 Disconnecting ... 222

4 Protocol Examples ... 223
4.1 Empty ROP Buffer ... 223
4.2 Single ROP Request ... 223
4.3 Multiple ROP Request ... 223
4.4 RopRelease ROP Request ... 224
4.5 RopBufferTooSmall ROP Response ... 225
4.6 Logon RopBackoff ROP Response ... 225
4.7 RopBackoff ROP Response ... 226

5 Security ... 228
5.1 Security Considerations for Implementers ... 228
5.2 Index of Security Parameters ... 228

6 Appendix A: Product Behavior ... 229

7 Change Tracking ... 232

8 Index ... 233

Copyright © 2025 Microsoft Corporation

1 Introduction

The Remote Operations (ROP) List and Encoding Protocol provides the **remote operations (ROPs)** used to access and modify **mailbox** information on the server.

Sections 1.5, 1.8, 1.9, 2, and 3 of this specification are normative. All other sections and examples in this specification are informative.

1.1 Glossary

This document uses the following terms:

active replica: A name given to a server that hosts content and is expected to serve that content to clients.

address type: An identifier for the type of email address, such as SMTP and EX.

ASCII: The American Standard Code for Information Interchange (ASCII) is an 8-bit character-encoding scheme based on the English alphabet. ASCII codes represent text in computers, communications equipment, and other devices that work with text. ASCII refers to a single 8-bit ASCII character or an array of 8-bit ASCII characters with the high bit of each character set to zero.

attachments table: A Table object whose rows represent the Attachment objects that are attached to a **Message object**.

bookmark: A data structure that the server uses to point to a position in the Table object. There are three pre-defined bookmarks (beginning, end, and current). A custom bookmark is a server-specific data structure that can be stored by the client for easily navigating a Table object.

code page: An ordered set of characters of a specific script in which a numerical index (code-point value) is associated with each character. Code pages are a means of providing support for character sets and keyboard layouts used in different countries. Devices such as the display and keyboard can be configured to use a specific code page and to switch from one code page (such as the United States) to another (such as Portugal) at the user's request.

contents table: A Table object whose rows represent the **Message objects** that are contained in a **Folder object**.

Deferred Action Message (DAM): A hidden message indicating to a client that it needs to execute one or more **rules** on another user-visible message in the store.

distinguished name (DN): A name that uniquely identifies an object by using the relative distinguished name (RDN) for the object, and the names of container objects and domains that contain the object. The distinguished name (DN) identifies the object and its location in a tree.

Embedded Message object: A **Message object** that is stored as an Attachment object within another Message object.

entry ID: See EntryID.

FastTransfer download context: A **Server object** that represents a context for a FastTransfer download.

FastTransfer upload context: A **Server object** that represents a context for a FastTransfer upload.

flags: A set of values used to configure or report options or settings.

Copyright © 2025 Microsoft Corporation

folder associated information (FAI): A collection of **Message objects** that are stored in a Folder object and are typically hidden from view by email applications. An FAI Message object is used to store a variety of settings and auxiliary data, including forms, views, calendar options, favorites, and category lists.

Folder object: A messaging construct that is typically used to organize data into a hierarchy of objects containing Message objects and **folder associated information (FAI)** Message objects.

Gateway Address Routing Table (GWART): A list of values that specifies the **address types** that are supported by transport gateways.

ghosted folder: A folder whose contents are located on another server.

globally unique identifier (GUID): A term used interchangeably with universally unique identifier (UUID) in Microsoft protocol technical documents (TDs). Interchanging the usage of these terms does not imply or require a specific algorithm or mechanism to generate the value. Specifically, the use of this term does not imply or require that the algorithms described in [RFC4122] or [C706] have to be used for generating the GUID. See also universally unique identifier (UUID).

handle: Any token that can be used to identify and access an object such as a device, file, or a window.

hard delete: A process that removes an item permanently from the system. If an item is hard deleted, a server does not retain a back-up copy of the item and a client cannot access or restore the item. See also soft delete.

hierarchy table: A Table object whose rows represent the **Folder objects** that are contained in another Folder object.

Hypertext Transfer Protocol (HTTP): An application-level protocol for distributed, collaborative, hypermedia information systems (text, graphic images, sound, video, and other multimedia files) on the World Wide Web.

little-endian: Multiple-byte values that are byte-ordered with the least significant byte stored in the memory location with the lowest address.

local replica: A copy of the data in a **mailbox** that exists on the client.

Logon object: A **Server object** that provides access to a private **mailbox** or a **public folder**. A client obtains a Logon object by issuing a RopLogon **remote operation (ROP)** to a server.

lowest-cost server: A server whose communication cost to access is the lowest in a list of servers.

mailbox: A **message store** that contains email, calendar items, and other **Message objects** for a single recipient.

message class: A property that loosely defines the type of a message, contact, or other Personal Information Manager (PIM) object in a mailbox.

Message object: A set of properties that represents an email message, appointment, contact, or other type of personal-information-management object. In addition to its own properties, a Message object contains recipient properties that represent the addressees to which it is addressed, and an **attachments table** that represents any files and other Message objects that are attached to it.

message store: A unit of containment for a single hierarchy of Folder objects, such as a mailbox or public folders.

Copyright © 2025 Microsoft Corporation

messaging object: An object that exists in a **mailbox**. It can be only a **Folder object** or a **Message object**.

named property: A property that is identified by both a GUID and either a string name or a 32-bit identifier.

non-read receipt: A message that is generated when an email message is deleted at the expiration of a time limit or due to other client-specific criteria.

permissions table: A Table object whose rows represent entries in a permissions list for a **Folder object**.

property ID: A 16-bit numeric identifier of a specific attribute. A property ID does not include any property type information.

property name: A string that, in combination with a property set, identifies a **named property**.

property tag: A 32-bit value that contains a property type and a property ID. The low-order 16 bits represent the property type. The high-order 16 bits represent the property ID.

public folder: A **Folder object** that is stored in a location that is publicly available.

Receive folder: A **Folder object** that is configured to be the destination for email messages that are delivered.

recipient: (1) An entity that can receive email messages.

(2) An entity that is in an address list, can receive email messages, and contains a set of attributes. Each attribute has a set of associated values.

remote operation (ROP): An operation that is invoked against a server. Each ROP represents an action, such as delete, send, or query. A ROP is contained in a **ROP buffer** for transmission over the wire.

remote procedure call (RPC): A communication protocol used primarily between client and server. The term has three definitions that are often used interchangeably: a runtime environment providing for communication facilities between computers (the RPC runtime); a set of request-and-response message exchanges between computers (the RPC exchange); and the single message from an RPC exchange (the RPC message). For more information, see [C706].

replica: (1) A server that hosts an instance of a message item in a folder.

(2) A copy of the data that is in a user's **mailbox** at a specific point in time.

replica GUID (REPLGUID): A value that represents a namespace for identifiers. If a REPLGUID is combined with a GLOBSET, the result is a set of global identifiers. A REPLGUID value has an associated **replica ID (REPLID)** that is used in its place on disk and on the wire.

replica ID (REPLID): A value that is mapped to a **replica GUID (REPLGUID)** that identifies a namespace for IDs within a given logon. REPLIDs are used on disk and on the wire for compactness, and are replaced with the corresponding REPLGUID for external consumption.

restriction: A filter used to map some domain into a subset of itself, by passing only those items from the domain that match the filter. Restrictions can be used to filter existing Table objects or to define new ones, such as **search folder** or rule criteria.

ROP buffer: A structure containing an array of bytes that encode a **remote operation (ROP)**. The first byte in the buffer identifies the ROP. This byte is followed by ROP-specific fields. Multiple ROP buffers can be packed into a single **remote procedure call (RPC)** request or response.

Copyright © 2025 Microsoft Corporation

ROP request: See **ROP request buffer**.

ROP request buffer: A **ROP buffer** that a client sends to a server to be processed.

ROP response: See **ROP response buffer**.

ROP response buffer: A **ROP buffer** that a server sends to a client to be processed.

rule: A condition or action, or a set of conditions or actions, that performs tasks automatically based on events and values.

rules table: A Table object whose rows represent the rules that are contained in a **Folder object**.

search criteria: A criteria used to determine which messages are included in a folder with specific characteristics. It is composed of a restriction, which is the filter to be applied, and a search scope, which are the folders that contain the content to search.

search folder: A **Folder object** that provides a means of querying for items that match certain criteria. The search folder includes the search folder definition message and the search folder container.

server object: A class of object in the configuration naming context (config NC). A **server object** can have an nTDSDSA object as a child.

Server object handle: A 32-bit value that identifies a **Server object**.

Server object handle table: An array of 32-bit handles that are used to identify input and output **Server objects** for **ROP requests** and **ROP responses**.

server replica: A copy of a user's **mailbox** that exists on a server.

special folder: One of a default set of **Folder objects** that can be used by an implementation to store and retrieve user data objects.

Stream object: A **Server object** that is used to read and write large string and binary properties.

Unicode: A character encoding standard developed by the Unicode Consortium that represents almost all of the written languages of the world. The **Unicode** standard [UNICODE5.0.0/2007] provides three forms (UTF-8, UTF-16, and UTF-32) and seven schemes (UTF-8, UTF-16, UTF-16 BE, UTF-16 LE, UTF-32, UTF-32 LE, and UTF-32 BE).

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. We will assist you in finding the relevant information.

[MS-OXCDATA] Microsoft Corporation, "Data Structures".

[MS-OXCFOLD] Microsoft Corporation, "Folder Object Protocol".

Copyright © 2025 Microsoft Corporation

[MS-OXCFXICS] Microsoft Corporation, "Bulk Data Transfer Protocol".

[MS-OXCMAPIHTTP] Microsoft Corporation, "Messaging Application Programming Interface (MAPI) Extensions for HTTP".

[MS-OXCMSG] Microsoft Corporation, "Message and Attachment Object Protocol".

[MS-OXCNOTIF] Microsoft Corporation, "Core Notifications Protocol".

[MS-OXCPERM] Microsoft Corporation, "Exchange Access and Operation Permissions Protocol".

[MS-OXCPRPT] Microsoft Corporation, "Property and Stream Object Protocol".

[MS-OXCRPC] Microsoft Corporation, "Wire Format Protocol".

[MS-OXCSTOR] Microsoft Corporation, "Store Object Protocol".

[MS-OXCTABL] Microsoft Corporation, "Table Object Protocol".

[MS-OXOMSG] Microsoft Corporation, "Email Object Protocol".

[MS-OXORULE] Microsoft Corporation, "Email Rules Protocol".

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

1.2.2 Informative References

[MS-OXIMAP4] Microsoft Corporation, "Internet Message Access Protocol Version 4 (IMAP4) Extensions".

[MS-OXPROTO] Microsoft Corporation, "Exchange Server Protocols System Overview".

[MS-XWDVSEC] Microsoft Corporation, "Web Distributed Authoring and Versioning (WebDAV) Protocol Security Descriptor Extensions".

1.3 Overview

A ROP input buffer is used by the client to send requests to the server. A ROP output buffer is used by the server to send responses back to the client. These requests specify operations, such as the following, that access and modify **mailbox** data on a server:

- Log on to mailboxes or **public folders** on a server
- Retrieve the list of folders and messages on a mailbox
- Move and copy messages or folders from one location to another
- Sort and filter views of messages or folders
- Submit new messages for delivery to other mailboxes or servers
- Retrieve a list of changes made to messages and folders
- Register for notifications when contents of a mailbox have changed

A client packages one or more **ROP requests** into a ROP input buffer and either makes a method call on the **EMSMDB** interface, as described in [MS-OXCRPC] section 3.2, or uses a request type, as described in [MS-OXCMAPIHTTP] section 3.1, passing the ROP input buffer as part of the payload. The

Copyright © 2025 Microsoft Corporation

server then parses the ROP requests from the ROP input buffer. Each request is processed and a **ROP response** is added to the ROP output buffer. Once the server has finished processing the ROP input buffer, the method call returns the responses to the client, as described in [MS-OXCRPC] section 3.1 or as described in [MS-OXCMAPIHTTP] section 3.2.

1.3.1 Server Objects

A **Server object** refers to an object created during the processing of specific **ROPs**. Once created, a Server object can then be used as a parameter for other ROPs until it is released. A Server object is typically a view of data on the server, such as a **Folder object** or a **Message object**, but it could also be an object used to control synchronization or change notifications.

A Server object is identified by a **Server object handle**, a 32-bit **handle** value. This handle is assigned by the server when the Server object is created. A client uses a Server object handle to specify a Server object to be used as input for a **ROP request**.

1.3.2 Format of ROP Buffers

A ROP input buffer contains a list of **ROP requests** and a **Server object handle table**. A ROP output buffer contains a list of **ROP responses** and a Server object handle table. Each ROP request contains input values to use for an operation. Each ROP response contains output produced during the processing of previous requests. The Server object handle table contains **Server object handles** that are used as input or output for **ROPs**.

With few exceptions, a ROP request or ROP response does not directly specify a Server object handle but instead contains an index into the Server object handle table. When the index is used for an input parameter, it specifies the location of the Server object handle identifying the input Server object. When the index is used for an output parameter, it specifies the entry in the Server object handle table where the handle for the created Server object will be stored if the operation is successful. If the operation is unsuccessful, the content of the entry in the Server object handle table is undefined.

The usage of an index allows a client to create a ROP input buffer consisting of ROP requests that reference as an input parameter a Server object created earlier during the server's processing of a previous ROP input buffer. In this way, fewer round-trip calls between the client and server are necessary.

1.4 Relationship to Other Protocols

This protocol depends on the Wire Format Protocol, as described in [MS-OXCRPC], or on the MAPI extensions to HTTP, as described in [MS-OXCMAPIHTTP].

This protocol provides details for implementing a **ROP** parsing layer. It is expected that this protocol is to be implemented in its entirety in order to facilitate working with any of the other protocols built on top of this protocol. Complete implementation is necessary to be able to parse ROPs in the ROP input/output buffer, because there are no markers between **ROP buffers** in the **remote procedure call (RPC)** buffer.

Several protocols can be considered alternatives to the ROP List and Encoding Protocol. These alternatives include the Internet Message Access Protocol Version 4 (IMAP4), as described in [MS-OXIMAP4], and Web Distributed Authoring and Versioning (WebDAV), as described in [MS-XWDVSEC].

For conceptual background information and overviews of the relationships and interactions between this and other protocols, see [MS-OXPROTO].

Copyright © 2025 Microsoft Corporation

1.5 Prerequisites/Preconditions

This protocol assumes that a connection was already made using the **EMSMDB RPC** interface, as specified in [MS-OXCRPC], or the **EMSMDB HTTP** interface, as specified in [MS-OXCMAPIHTTP]. The connection process authenticates and exchanges version information between the server and client.

Successful communication between the client and server requires that the client is already configured with information about the **mailbox** and server. Several **ROPs** make use of a **distinguished name (DN)** as an input field to specify a mailbox or a server.

1.6 Applicability Statement

This protocol is used to view and modify **mailbox** and **public folder** data. It provides broad low-level access to content on the server.

1.7 Versioning and Capability Negotiation

None.

1.8 Vendor-Extensible Fields

None.

1.9 Standards Assignments

None.

Copyright © 2025 Microsoft Corporation

2 Messages

Unless otherwise specified, buffers and fields in this section are depicted in **little-endian** byte order.

2.1 Transport

The **ROP** input/output buffer, as specified in section 2.2.1, is sent as part of the payload of either the **EcDoRpcExt2** **RPC** method, as specified in [MS-OXCRPC] section 3.1.4.2, or the **Execute** request type,<1> as specified in [MS-OXCMAPIHTTP] section 2.2.4.2.

2.2 Message Syntax

2.2.1 ROP Input and Output Buffers

The ROP input buffer, which is sent by the client, includes an array of **ROP request buffers** to be processed by the server. The ROP output buffer, which is sent by the server, includes an array of **ROP response buffers**. The ROP input and output buffers are transmitted between the client and the server as part of the payload of either the **EcDoRpcExt2** method, as specified in [MS-OXCRPC] section 3.1.4.2, or the **Execute** request type,<2> as specified in [MS-OXCMAPIHTTP] section 2.2.4.2.

The ROP input buffer and ROP output buffer have the following structure.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopSize																RopsList (variable)															
...																															
ServerObjectHandleTable (variable)																															
...																															

RopSize (2 bytes): An unsigned integer that specifies the size of both this field and the **RopsList** field.

RopsList (variable): An array of **ROP buffers**. For a ROP input buffer, this field contains an array of ROP request buffers. For a ROP output buffer, this field contains an array of ROP response buffers. The format of each ROP buffer is specified in subsequent sections. The size of this field is 2 bytes less than the value specified in the **RopSize** field.

ServerObjectHandleTable (variable): An array of 32-bit values. Each 32-bit value specifies a **Server object handle** that is referenced by a ROP buffer. The size of this field is equal to the number of bytes of data remaining in the ROP input/output buffer after the **RopsList** field.

2.2.2 The Table of RopIds

Each **ROP** is identified by a one-byte value, which is contained in the **RopId** field of **ROP request buffers** and **ROP response buffers**. The ROPs that a client is allowed to use are listed in the following table. A **RopId** value that is specified as "Reserved" is not used in the communication between the client and server. Therefore, the client MUST NOT use the reserved **RopId** values.

Copyright © 2025 Microsoft Corporation

When the server encounters a **RopId** value that is associated with a reserved ROP, it SHOULD<3> return an error for the **RPC**, as specified in [MS-OXCRPC] section 3.1.4.2, or for the **Execute** request type<4> response, as specified in [MS-OXCMAPIHTTP] section 2.2.4.2.2.

RopId value	ROP name	Section
0x00	Reserved	
0x01	**RopRelease**	2.2.15.3
0x02	**RopOpenFolder**	2.2.4.1
0x03	**RopOpenMessage**	2.2.6.1
0x04	**RopGetHierarchyTable**	2.2.4.13
0x05	**RopGetContentsTable**	2.2.4.14
0x06	**RopCreateMessage**	2.2.6.2
0x07	**RopGetPropertiesSpecific**	2.2.8.3
0x08	**RopGetPropertiesAll**	2.2.8.4
0x09	**RopGetPropertiesList**	2.2.8.5
0x0A	**RopSetProperties**	2.2.8.6
0x0B	**RopDeleteProperties**	2.2.8.8
0x0C	**RopSaveChangesMessage**	2.2.6.3
0x0D	**RopRemoveAllRecipients**	2.2.6.4
0x0E	**RopModifyRecipients**	2.2.6.5
0x0F	**RopReadRecipients**	2.2.6.6
0x10	**RopReloadCachedInformation**	2.2.6.7
0x11	**RopSetMessageReadFlag**	2.2.6.11
0x12	**RopSetColumns**	2.2.5.1
0x13	**RopSortTable**	2.2.5.2
0x14	**RopRestrict**	2.2.5.3
0x15	**RopQueryRows**	2.2.5.4
0x16	**RopGetStatus**	2.2.5.6
0x17	**RopQueryPosition**	2.2.5.7
0x18	**RopSeekRow**	2.2.5.8
0x19	**RopSeekRowBookmark**	2.2.5.9
0x1A	**RopSeekRowFractional**	2.2.5.10
0x1B	**RopCreateBookmark**	2.2.5.11
0x1C	**RopCreateFolder**	2.2.4.2
0x1D	**RopDeleteFolder**	2.2.4.3

Copyright © 2025 Microsoft Corporation

RopId value	ROP name	Section
0x1E	**RopDeleteMessages**	2.2.4.11
0x1F	**RopGetMessageStatus**	2.2.6.9
0x20	**RopSetMessageStatus**	2.2.6.8
0x21	**RopGetAttachmentTable**	2.2.6.17
0x22	**RopOpenAttachment**	2.2.6.12
0x23	**RopCreateAttachment**	2.2.6.13
0x24	**RopDeleteAttachment**	2.2.6.14
0x25	**RopSaveChangesAttachment**	2.2.6.15
0x26	**RopSetReceiveFolder**	2.2.3.3
0x27	**RopGetReceiveFolder**	2.2.3.2
0x28	Reserved	
0x29	**RopRegisterNotification**	2.2.14.1
0x2A	**RopNotify**	2.2.14.2
0x2B	**RopOpenStream**	2.2.9.1
0x2C	**RopReadStream**	2.2.9.2
0x2D	**RopWriteStream**	2.2.9.3
0x2E	**RopSeekStream**	2.2.9.8
0x2F	**RopSetStreamSize**	2.2.9.7
0x30	**RopSetSearchCriteria**	2.2.4.4
0x31	**RopGetSearchCriteria**	2.2.4.5
0x32	**RopSubmitMessage**	2.2.7.1
0x33	**RopMoveCopyMessages**	2.2.4.6
0x34	**RopAbortSubmit**	2.2.7.2
0x35	**RopMoveFolder**	2.2.4.7
0x36	**RopCopyFolder**	2.2.4.8
0x37	**RopQueryColumnsAll**	2.2.5.12
0x38	**RopAbort**	2.2.5.5
0x39	**RopCopyTo**	2.2.8.12
0x3A	**RopCopyToStream**	2.2.9.9
0x3B	**RopCloneStream**	2.2.9.13
0x3C	Reserved	
0x3D	Reserved	

Copyright © 2025 Microsoft Corporation

RopId value	ROP name	Section
0x3E	**RopGetPermissionsTable**	2.2.10.2
0x3F	**RopGetRulesTable**	2.2.11.2
0x40	**RopModifyPermissions**	2.2.10.1
0x41	**RopModifyRules**	2.2.11.1
0x42	**RopGetOwningServers**	2.2.3.6
0x43	**RopLongTermIdFromId**	2.2.3.8
0x44	**RopIdFromLongTermId**	2.2.3.9
0x45	**RopPublicFolderIsGhosted**	2.2.3.7
0x46	**RopOpenEmbeddedMessage**	2.2.6.16
0x47	**RopSetSpooler**	2.2.7.4
0x48	**RopSpoolerLockMessage**	2.2.7.5
0x49	**RopGetAddressTypes**	2.2.7.3
0x4A	**RopTransportSend**	2.2.7.6
0x4B	**RopFastTransferSourceCopyMessages**	2.2.12.6
0x4C	**RopFastTransferSourceCopyFolder**	2.2.12.5
0x4D	**RopFastTransferSourceCopyTo**	2.2.12.7
0x4E	**RopFastTransferSourceGetBuffer**	2.2.12.4
0x4F	**RopFindRow**	2.2.5.13
0x50	**RopProgress**	2.2.8.13
0x51	**RopTransportNewMail**	2.2.7.7
0x52	**RopGetValidAttachments**	2.2.6.18
0x53	**RopFastTransferDestinationConfigure**	2.2.12.1
0x54	**RopFastTransferDestinationPutBuffer**	2.2.12.2
0x55	**RopGetNamesFromPropertyIds**	2.2.8.2
0x56	**RopGetPropertyIdsFromNames**	2.2.8.1
0x57	**RopUpdateDeferredActionMessages**	2.2.11.3
0x58	**RopEmptyFolder**	2.2.4.9
0x59	**RopExpandRow**	2.2.5.16
0x5A	**RopCollapseRow**	2.2.5.17
0x5B	**RopLockRegionStream**	2.2.9.10
0x5C	**RopUnlockRegionStream**	2.2.9.11
0x5D	**RopCommitStream**	2.2.9.5

Copyright © 2025 Microsoft Corporation

RopId value	ROP name	Section
0x5E	**RopGetStreamSize**	2.2.9.6
0x5F	**RopQueryNamedProperties**	2.2.8.10
0x60	**RopGetPerUserLongTermIds**	2.2.3.10
0x61	**RopGetPerUserGuid**	2.2.3.11
0x62	Reserved	
0x63	**RopReadPerUserInformation**	2.2.3.12
0x64	**RopWritePerUserInformation**	2.2.3.13
0x65	Reserved	
0x66	**RopSetReadFlags**	2.2.6.10
0x67	**RopCopyProperties**	2.2.8.11
0x68	**RopGetReceiveFolderTable**	2.2.3.4
0x69	**RopFastTransferSourceCopyProperties**	2.2.12.8
0x6A	Reserved	
0x6B	**RopGetCollapseState**	2.2.5.18
0x6C	**RopSetCollapseState**	2.2.5.19
0x6D	**RopGetTransportFolder**	2.2.7.8
0x6E	**RopPending**	2.2.14.3
0x6F	**RopOptionsData**	2.2.7.9
0x70	**RopSynchronizationConfigure**	2.2.13.1
0x71	Reserved	
0x72	**RopSynchronizationImportMessageChange**	2.2.13.2
0x73	**RopSynchronizationImportHierarchyChange**	2.2.13.4
0x74	**RopSynchronizationImportDeletes**	2.2.13.5
0x75	**RopSynchronizationUploadStateStreamBegin**	2.2.13.9
0x76	**RopSynchronizationUploadStateStreamContinue**	2.2.13.10
0x77	**RopSynchronizationUploadStateStreamEnd**	2.2.13.11
0x78	**RopSynchronizationImportMessageMove**	2.2.13.6
0x79	**RopSetPropertiesNoReplicate**	2.2.8.7
0x7A	**RopDeletePropertiesNoReplicate**	2.2.8.9
0x7B	**RopGetStoreState**	2.2.3.5
0x7C	Reserved	
0x7D	Reserved	

Copyright © 2025 Microsoft Corporation

RopId value	ROP name	Section
0x7E	**RopSynchronizationOpenCollector**	2.2.13.7
0x7F	**RopGetLocalReplicaIds**	2.2.13.13
0x80	**RopSynchronizationImportReadStateChanges**	2.2.13.3
0x81	**RopResetTable**	2.2.5.15
0x82	**RopSynchronizationGetTransferState**	2.2.13.8
0x83	**Reserved**	
0x84	**Reserved**	
0x85	Reserved	
0x86	**RopTellVersion**	2.2.12.9
0x87	Reserved	
0x88	**Reserved**	
0x89	**RopFreeBookmark**	2.2.5.14
0x8A	Reserved	
0x8B	Reserved	
0x8C	Reserved	
0x8D	Reserved	
0x8E	Reserved	
0x8F	Reserved	
0x90	**RopWriteAndCommitStream**	2.2.9.12
0x91	**RopHardDeleteMessages**	2.2.4.12
0x92	**RopHardDeleteMessagesAndSubfolders**	2.2.4.10
0x93	**RopSetLocalReplicaMidsetDeleted**	2.2.13.12
0x94	Reserved	
0x95	Reserved	
0x96	Reserved	
0x97	Reserved	
0x98	Reserved	
0x99	Reserved	
0x9A	Reserved	
0x9B	Reserved	
0x9C	Reserved	
0x9D	Reserved	

Copyright © 2025 Microsoft Corporation

RopId value	ROP name	Section
0x9E	Reserved	
0x9F	Reserved	
0xA0	Reserved	
0xA1	Reserved	
0xA2	Reserved	
0xA3	Reserved	
0xA4	Reserved	
0xA5	Reserved	
0xA6	Reserved	
0xA7	Reserved	
0xA8	Reserved	
0xA9	Reserved	
0xAA	Reserved	
0xAB	Reserved	
0xAC	Reserved	
0xAD	Reserved	
0xAE	Reserved	
0xAF	Reserved	
0xB0	Reserved	
0xB1	Reserved	
0xB2	Reserved	
0xB3	Reserved	
0xB4	Reserved	
0xB5	Reserved	
0xB6	Reserved	
0xB7	Reserved	
0xB8	Reserved	
0xB9	Reserved	
0xBA	Reserved	
0xBB	Reserved	
0xBC	Reserved	
0xBD	Reserved	

Copyright © 2025 Microsoft Corporation

RopId value	ROP name	Section
0xBE	Reserved	
0xBF	Reserved	
0xC0	Reserved	
0xC1	Reserved	
0xC2	Reserved	
0xC3	Reserved	
0xC4	Reserved	
0xC5	Reserved	
0xC6	Reserved	
0xC7	Reserved	
0xC8	Reserved	
0xC9	Reserved	
0xCA	Reserved	
0xCB	Reserved	
0xCC	Reserved	
0xCD	Reserved	
0xCE	Reserved	
0xCF	Reserved	
0xD0	Reserved	
0xD1	Reserved	
0xD2	Reserved	
0xD3	Reserved	
0xD4	Reserved	
0xD5	Reserved	
0xD6	Reserved	
0xD7	Reserved	
0xD8	Reserved	
0xD9	Reserved	
0xDA	Reserved	
0xDB	Reserved	
0xDC	Reserved	
0xDD	Reserved	

Copyright © 2025 Microsoft Corporation

RopId value	ROP name	Section
0xDE	Reserved	
0xDF	Reserved	
0xE0	Reserved	
0xE1	Reserved	
0xE2	Reserved	
0xE3	Reserved	
0xE4	Reserved	
0xE5	Reserved	
0xE6	Reserved	
0xE7	Reserved	
0xE8	Reserved	
0xE9	Reserved	
0xEA	Reserved	
0xEB	Reserved	
0xEC	Reserved	
0xED	Reserved	
0xEE	Reserved	
0xEF	Reserved	
0xF0	Reserved	
0xF1	Reserved	
0xF2	Reserved	
0xF3	Reserved	
0xF4	Reserved	
0xF5	Reserved	
0xF6	Reserved	
0xF7	Reserved	
0xF8	Reserved	
0xF9	**RopBackoff**	2.2.15.2
0xFA	Reserved	
0xFB	Reserved	
0xFC	Reserved	
0xFD	Reserved	

Copyright © 2025 Microsoft Corporation

RopId value	ROP name	Section
0xFE	**RopLogon**	2.2.3.1
0xFF	**RopBufferTooSmall**	2.2.15.1

2.2.3 Logon ROPs

2.2.3.1 RopLogon ROP

The **RopLogon** ROP logs on to a **mailbox** or a **public folder**. For more details about this operation, see [MS-OXCSTOR] section 2.2.1.1.

2.2.3.1.1 RopLogon ROP Request Buffer

The following descriptions define valid fields for the **RopLogon** **ROP request buffer**.

<table>
<tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>20</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>30</td><td>1</td></tr>
<tr><td colspan="8">RopId</td><td colspan="8">LogonId</td><td colspan="8">OutputHandleIndex</td><td colspan="8">LogonFlags</td></tr>
<tr><td colspan="32">OpenFlags</td></tr>
<tr><td colspan="32">StoreState</td></tr>
<tr><td colspan="16">EssdnSize</td><td colspan="16">Essdn (variable)</td></tr>
<tr><td colspan="32">...</td></tr>
</table>

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0xFE.

LogonId (1 byte): An unsigned integer that specifies the ID that the client requests to have associated with the created logon. Any value is allowed, and the client does not have to use values in a certain numeric order. If the client specifies an active LogonID, the current logon is released and replaced with the new one.

OutputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the output **Server object** will be stored. For more information about Server objects, see section 1.3.1.

LogonFlags (1 byte): A **flags** structure that contains flags that control the behavior of the logon. The possible values are specified in [MS-OXCSTOR] section 2.2.1.1.1.

OpenFlags (4 bytes): A flags structure that contains more flags that control the behavior of the logon. The possible values are specified in [MS-OXCSTOR] section 2.2.1.1.1.

StoreState (4 bytes): A flags structure. This field is not used and is ignored by the server. This field MUST be set to 0x00000000.

EssdnSize (2 bytes): An unsigned integer that specifies the size of the **Essdn** field.

Copyright © 2025 Microsoft Corporation

Essdn (variable): A null-terminated **ASCII** string that specifies which **mailbox** to log on to. The number of characters (including the terminating null character) contained in this field is specified by the **EssdnSize** field.

2.2.3.1.2 RopLogon ROP Success Response Buffer for Private Mailboxes

The following descriptions define valid fields for the **RopLogon ROP** success response buffer for private **mailboxes**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								OutputHandleIndex								ReturnValue															
...																LogonFlags								FolderIds							
...																															
...																															
...																															
...																															
...																															
...																															
...																															
(FolderIds cont'd for 18 rows)																															
...																								ResponseFlags							
MailboxGuid																															
...																															
...																															
...																															
ReplId																ReplGuid															
...																															
...																															
...																															

Copyright © 2025 Microsoft Corporation

...	LogonTime
...	
...	GwartTime
...	
...	StoreState
...	

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0xFE.

OutputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the output **Server object** will be stored. For more information about Server objects, see section 1.3.1.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

LogonFlags (1 byte): A **flags** structure that contains flags that specify the type of logon. The possible values are specified in [MS-OXCSTOR] section 2.2.1.1.3.

FolderIds (104 bytes): 13 64-bit identifiers that specify a set of **special folders** for a mailbox.

ResponseFlags (1 byte): A flags structure that contains flags that provide details about the state of the mailbox. The possible values are specified in [MS-OXCSTOR] section 2.2.1.1.3.

MailboxGuid (16 bytes): A **GUID** that identifies the mailbox on which the logon was performed.

ReplId (2 bytes): An identifier that specifies a **replica ID** for the logon.

ReplGuid (16 bytes): A GUID that specifies the **replica GUID** that is associated with the replica ID, which is specified in the **ReplId** field.

LogonTime (8 bytes): A **LogonTime** structure that specifies the time at which the logon occurred. The format of this structure is specified in section 2.2.3.1.2.1.

GwartTime (8 bytes): An unsigned integer that contains a numeric value that tracks the currency of the **Gateway Address Routing Table (GWART)**. The server generates a new numeric value with each change of the GWART. The client can use the value of this field in a comparison to detect a change but does not interpret the value of this field.

StoreState (4 bytes): A flags structure. This field MUST be set to 0x00000000 by the server and MUST be ignored by the client.

2.2.3.1.2.1 LogonTime Structure

The following descriptions define valid fields for the **LogonTime** structure.

Copyright © 2025 Microsoft Corporation

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
Seconds								Minutes								Hour								DayOfWeek							
Day								Month								Year															

Seconds (1 byte): An unsigned integer that specifies the current second.

Minutes (1 byte): An unsigned integer that specifies the current minute.

Hour (1 byte): An unsigned integer that specifies the current hour.

DayOfWeek (1 byte): An enumeration that specifies the current day of the week (Sunday = 0, Monday = 1, and so on).

Day (1 byte): An unsigned integer that specifies the current day of the month.

Month (1 byte): An unsigned integer that specifies the current month (January = 1, February = 2, and so on).

Year (2 bytes): An unsigned integer that specifies the current year.

2.2.3.1.3 RopLogon ROP Success Response Buffer for Public Folders

The following descriptions define valid fields for the **RopLogon ROP** success response buffer for **public folders**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								OutputHandleIndex								ReturnValue															
...																LogonFlags								FolderIds							
...																															
...																															
...																															
...																															
...																															
...																															
...																															
(FolderIds cont'd for 18 rows)																															
...																								ReplId							

Copyright © 2025 Microsoft Corporation

...	ReplGuid
...	
...	
...	
...	PerUserGuid
...	
...	
...	
...	

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0xFE.

OutputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the output **Server object** will be stored. For more information about Server objects, see section 1.3.1.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

LogonFlags (1 byte): A **flags** structure that contains flags that specify the type of logon. The possible values are specified in [MS-OXCSTOR] section 2.2.1.1.4.

FolderIds (104 bytes): 13 64-bit identifiers that specify a set of **special folders** for a **mailbox**.

ReplId (2 bytes): An identifier that specifies a **replica ID** for the logon.

ReplGuid (16 bytes): A **GUID** that specifies the **replica GUID** associated with the replica ID that is specified in the **ReplId** field.

PerUserGuid (16 bytes): This field is not used and is ignored by the client. The server SHOULD<5> set this field to all zeroes.

2.2.3.1.4 RopLogon ROP Redirect Response Buffer

The following descriptions define valid fields for the **RopLogon ROP** redirect response buffer.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
RopId								OutputHandleIndex								ReturnValue															
...																LogonFlags								ServerNameSize							

Copyright © 2025 Microsoft Corporation

ServerName (variable)
...

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0xFE.

OutputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the output **Server object** will be stored. For more information about Server objects, see section 1.3.1.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000478.

LogonFlags (1 byte): A **flags** structure that contains flags that specify the type of logon. The possible values are specified in [MS-OXCSTOR] section 2.2.1.1.2.

ServerNameSize (1 byte): An unsigned integer that specifies the length of the **ServerName** field.

ServerName (variable): A null-terminated **ASCII** string that specifies a different server for the client to connect to. The number of characters (including the terminating null character) contained in this field is specified by the **ServerNameSize** field.

2.2.3.1.5 RopLogon ROP Failure Response Buffer

The following descriptions define valid fields for the **RopLogon ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								OutputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0xFE.

OutputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the output **Server object** will be stored. For more information about Server objects, see section 1.3.1.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000 or 0x00000478.

2.2.3.2 RopGetReceiveFolder ROP

The **RopGetReceiveFolder ROP** gets the **Receive folder** for incoming messages of a particular **message class**. For more details about this operation, see [MS-OXCSTOR] section 2.2.1.2.

2.2.3.2.1 RopGetReceiveFolder ROP Request Buffer

The following descriptions define valid fields for the **RopGetReceiveFolder ROP request buffer**.

Copyright © 2025 Microsoft Corporation

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								MessageClass (variable)							
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x27.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

MessageClass (variable): A null-terminated **ASCII** string that specifies the **message class** to find the **Receive folder** for.

2.2.3.2.2 RopGetReceiveFolder ROP Success Response Buffer

The following descriptions define valid fields for the **RopGetReceiveFolder ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																FolderId															
...																															
...																ExplicitMessageClass (variable)															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x27.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

FolderId (8 bytes): An identifier that specifies the **Receive folder**.

ExplicitMessageClass (variable): A null-terminated **ASCII** string that specifies the **message class** that is actually configured for delivery to the folder.

2.2.3.2.3 RopGetReceiveFolder ROP Failure Response Buffer

The following descriptions define valid fields for the **RopGetReceiveFolder ROP** failure response buffer.

Copyright © 2025 Microsoft Corporation

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x27.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.3.3 RopSetReceiveFolder ROP

The **RopSetReceiveFolder** **ROP** sets the **Receive folder** for incoming messages of a particular **message class**. For more details about this operation, see [MS-OXCSTOR] section 2.2.1.3.

2.2.3.3.1 RopSetReceiveFolder ROP Request Buffer

The following descriptions define valid fields for the **RopSetReceiveFolder** **ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								FolderId							
...																															
...																								MessageClass (variable)							
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x26.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

FolderId (8 bytes): An identifier that specifies the **Receive folder**.

MessageClass (variable): A null-terminated **ASCII** string that specifies which **message class** to set the Receive folder for.

2.2.3.3.2 RopSetReceiveFolder ROP Response Buffer

The following descriptions define valid fields for the **RopSetReceiveFolder** **ROP response buffer**.

Copyright © 2025 Microsoft Corporation

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x26.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

2.2.3.4 RopGetReceiveFolderTable ROP

The **RopGetReceiveFolderTable ROP** gets the table of all folders that were established as **Receive folders**. For more details about this operation, see [MS-OXCSTOR] section 2.2.1.4.

2.2.3.4.1 RopGetReceiveFolderTable ROP Request Buffer

The following descriptions define valid fields for the **RopGetReceiveFolderTable ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
RopId								LogonId								InputHandleIndex															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x68.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

2.2.3.4.2 RopGetReceiveFolderTable ROP Success Response Buffer

The following descriptions define valid fields for the **RopGetReceiveFolderTable ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
RopId								InputHandleIndex								ReturnValue															
...																RowCount															
...																Rows (variable)															
...																															

Copyright © 2025 Microsoft Corporation

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x68.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

RowCount (4 bytes): An unsigned integer that specifies the number of row structures contained in the **Rows** field.

Rows (variable): An array of row structures. This field contains the rows of the **Receive folder** table. Each row is returned in either a **StandardPropertyRow** structure, as specified in[MS-OXCDATA] section 2.8.1.1, or a **FlaggedPropertyRow** structure, as specified in [MS-OXCDATA] section 2.8.1.2. The number of row structures contained in this field is specified by the **RowCount** field. The **ValueArray** field of either the **StandardPropertyRow** structure or the **FlaggedPropertyRow** structure MUST include only the **PidTagFolderId** ([MS-OXCFOLD] section 2.2.2.2.1.6), **PidTagMessageClass** ([MS-OXCMSG] section 2.2.1.3), and **PidTagLastModificationTime** ([MS-OXCMSG] section 2.2.2.2) properties, in that order, and no other properties.

2.2.3.4.3 RopGetReceiveFolderTable ROP Failure Response Buffer

The following descriptions define valid fields for the **RopGetReceiveFolderTable ROP** failure response buffer.

<table>
<tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>20</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>30</td><td>1</td></tr>
<tr><td colspan="8">RopId</td><td colspan="8">InputHandleIndex</td><td colspan="16">ReturnValue</td></tr>
<tr><td colspan="16">...</td><td colspan="16"></td></tr>
</table>

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x68.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.3.5 RopGetStoreState ROP

The **RopGetStoreState ROP** gets the current state of the **mailbox** for the logged on user. For more details about this operation, see [MS-OXCSTOR] section 2.2.1.5.

2.2.3.5.1 RopGetStoreStage ROP Request Buffer

The following descriptions define valid fields for the **RopGetStoreStage ROP request buffer**.

<table>
<tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>20</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>30</td><td>1</td></tr>
<tr><td colspan="8">RopId</td><td colspan="8">LogonId</td><td colspan="8">InputHandleIndex</td><td colspan="8"></td></tr>
</table>

Copyright © 2025 Microsoft Corporation

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x7B.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the handle for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

2.2.3.5.2 RopGetStoreState ROP Success Response Buffer

The following descriptions define valid fields for the **RopGetStoreState ROP** success response buffer.

<table>
<tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>20</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>30</td><td>1</td></tr>
<tr><td colspan="8">RopId</td><td colspan="8">InputHandleIndex</td><td colspan="16">ReturnValue</td></tr>
<tr><td colspan="16">...</td><td colspan="16">StoreState</td></tr>
<tr><td colspan="16">...</td><td colspan="16"></td></tr>
</table>

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x7B.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

StoreState (4 bytes): A **flags** structure that contains flags that indicate the state of the **mailbox** for the logged on user. The possible values are specified in [MS-OXCSTOR] section 2.2.1.5.2.

2.2.3.5.3 RopGetStoreState ROP Failure Response Buffer

The following descriptions define valid fields for the **RopGetStoreState ROP** failure response buffer.

<table>
<tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>20</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>30</td><td>1</td></tr>
<tr><td colspan="8">RopId</td><td colspan="8">InputHandleIndex</td><td colspan="16">ReturnValue</td></tr>
<tr><td colspan="16">...</td><td colspan="16"></td></tr>
</table>

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x7B.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

Copyright © 2025 Microsoft Corporation

2.2.3.6 RopGetOwningServers ROP

The **RopGetOwningServers ROP** gets the list of servers that host **replicas (1)** of a given **public folder**. For more details about this operation, see [MS-OXCSTOR] section 2.2.1.6.

2.2.3.6.1 RopGetOwningServers ROP Request Buffer

The following descriptions define valid fields for the **RopGetOwningServers ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								FolderId							
...																															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x42.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

FolderId (8 bytes): An identifier that specifies the folder for which to get owning servers.

2.2.3.6.2 RopGetOwningServers ROP Success Response Buffer

The following descriptions define valid fields for the **RopGetOwningServers ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																OwningServersCount															
CheapServersCount																OwningServers (variable)															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x42.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

Copyright © 2025 Microsoft Corporation

OwningServersCount (2 bytes): An unsigned integer that specifies the number of strings in the **OwningServers** field.

CheapServersCount (2 bytes): An unsigned integer that specifies the number of strings in the **OwningServers** field that refer to **lowest-cost servers**.

OwningServers (variable): A list of null-terminated **ASCII** strings that specify which servers have **replicas (1)** of this folder. The number of strings contained in this field is specified by the **OwningServersCount** field.

2.2.3.6.3 RopGetOwningServers ROP Failure Response Buffer

The following descriptions define valid fields for the **RopGetOwningServers ROP** failure response buffer.

<table>
<tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>20</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>30</td><td>1</td></tr>
<tr><td colspan="8">RopId</td><td colspan="8">InputHandleIndex</td><td colspan="16">ReturnValue</td></tr>
<tr><td colspan="16">...</td></tr>
</table>

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x42.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.3.7 RopPublicFolderIsGhosted ROP

The **RopPublicFolderIsGhosted ROP** determines whether a **public folder** is ghosted. For more details about this operation, see [MS-OXCSTOR] section 2.2.1.7.

2.2.3.7.1 RopPublicFolderIsGhosted ROP Request Buffer

The following descriptions define valid fields for the **RopPublicFolderIsGhosted ROP request buffer**.

<table>
<tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>20</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>30</td><td>1</td></tr>
<tr><td colspan="8">RopId</td><td colspan="8">LogonId</td><td colspan="8">InputHandleIndex</td><td colspan="8">FolderId</td></tr>
<tr><td colspan="32">...</td></tr>
<tr><td colspan="24">...</td></tr>
</table>

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x45.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

Copyright © 2025 Microsoft Corporation

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

FolderId (8 bytes): An identifier that specifies the folder to check.

2.2.3.7.2 RopPublicFolderIsGhosted ROP Success Response Buffer

The following descriptions define valid fields for the **RopPublicFolderIsGhosted ROP** success response buffer.

<table>
<tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>20</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>30</td><td>1</td></tr>
<tr><td colspan="8">RopId</td><td colspan="8">InputHandleIndex</td><td colspan="16">ReturnValue</td></tr>
<tr><td colspan="16">...</td><td colspan="8">IsGhosted</td><td colspan="8">ServersCount (optional)</td></tr>
<tr><td colspan="8">...</td><td colspan="16">CheapServersCount (optional)</td><td colspan="8">Servers (optional) (variable)</td></tr>
<tr><td colspan="32">...</td></tr>
</table>

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x45.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

IsGhosted (1 byte): A Boolean that specifies whether the folder is a **ghosted folder**.

ServersCount (2 bytes): An unsigned integer that is present if **IsGhosted** is nonzero and is not present if **IsGhosted** is zero. This value specifies the number of strings in the **Servers** field.

CheapServersCount (2 bytes): An unsigned integer that is present if the value of the **IsGhosted** field is nonzero and is not present if the value of the **IsGhosted** field is zero. This value specifies the number of strings in the **Servers** field that refer to a **lowest-cost server**.

Servers (optional) (variable): A list of null-terminated **ASCII** strings that specify which servers have **replicas (1)** of this folder. This field is present if **IsGhosted** is nonzero and is not present if **IsGhosted** is zero.

2.2.3.7.3 RopPublicFolderIsGhosted ROP Failure Response Buffer

The following descriptions define valid fields for the **RopPublicFolderIsGhosted ROP** failure response buffer.

<table>
<tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>20</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>30</td><td>1</td></tr>
<tr><td colspan="8">RopId</td><td colspan="8">InputHandleIndex</td><td colspan="16">ReturnValue</td></tr>
<tr><td colspan="16">...</td><td colspan="16"></td></tr>
</table>

Copyright © 2025 Microsoft Corporation

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x45.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value of the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.3.8 RopLongTermIdFromId ROP

The **RopLongTermIdFromId ROP** converts a short-term ID (Folder ID structure or Message ID structure) into a long-term ID (LongTermID structure). For more details about this operation, see [MS-OXCSTOR] section 2.2.1.8. For more details about short-term IDs, see [MS-OXCDATA] section 2.2.1.1 and [MS-OXCDATA] section 2.2.1.2. For more details about long-term IDs, see [MS-OXCDATA] section 2.2.1.3.1.

2.2.3.8.1 RopLongTermIdFromId ROP Request Buffer

The following descriptions define valid fields for the **RopLongTermIdFromId ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								ObjectId							
...																															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x43.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the handle for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

ObjectId (8 bytes): An identifier that specifies the short-term ID to be converted to a long-term ID.

2.2.3.8.2 RopLongTermIdFromId ROP Success Response Buffer

The following descriptions define valid fields for the **RopLongTermIdFromId ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																LongTermId															
...																															

Copyright © 2025 Microsoft Corporation

...
...
...
...
...

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x43.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value of the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

LongTermId (24 bytes): A **LongTermID** structure that specifies the long-term ID that was converted from the short-term ID, which is specified in the **ObjectId** field of the request. The format of the **LongTermID** structure is specified in [MS-OXCDATA] section 2.2.1.3.1.

2.2.3.8.3 RopLongTermIdFromId ROP Failure Response Buffer

The following descriptions define valid fields for the **RopLongTermIdFromId ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x43.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.3.9 RopIdFromLongTermId ROP

The **RopIDFromLongTermId ROP** converts a long-term ID into a short-term ID. For more details about this operation, see [MS-OXCSTOR] section 2.2.1.9.

2.2.3.9.1 RopIdFromLongTermId ROP Request Buffer

The following descriptions define valid fields for the **RopIdFromLongTermId ROP request buffer**.

Copyright © 2025 Microsoft Corporation

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								LongTermId							
...																															
...																															
...																															
...																															
...																															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x44.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

LongTermId (24 bytes): A **LongTermID** structure that specifies the long-term ID to be converted to a short-term ID. The format of the **LongTermID** structure is specified in [MS-OXCDATA] section 2.2.1.3.1.

2.2.3.9.2 RopIdFromLongTermId ROP Success Response Buffer

The following descriptions define valid fields for the **RopIdFromLongTermId ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																ObjectId															
...																															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x44.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

Copyright © 2025 Microsoft Corporation

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

ObjectId (8 bytes): An identifier that specifies the short-term ID that was converted from the long-term ID, which is specified in the **LongTermId** field of the request.

2.2.3.9.3 RopIdFromLongTermId ROP Failure Response Buffer

The following descriptions define valid fields for the **RopIdFromLongTermId** **ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x44.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.3.10 RopGetPerUserLongTermIds ROP

The **RopGetPerUserLongTermIds** **ROP** gets the long-term ID of a **public folder** that is identified by the per-user **GUID** of the logged on user. For more details about this operation, see [MS-OXCSTOR] section 2.2.1.10.

2.2.3.10.1 RopGetPerUserLongTermIds ROP Request Buffer

The following descriptions define valid fields for the **RopGetPerUserLongTermIds** **ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								DatabaseGuid							
...																															
...																															
...																															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x60.

Copyright © 2025 Microsoft Corporation

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

DatabaseGuid (16 bytes): A **GUID** that specifies which database the client is querying data for.

2.2.3.10.2 RopGetPerUserLongTermIds ROP Success Response Buffer

The following descriptions define valid fields for the **RopGetPerUserLongTermIds ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																LongTermIdCount															
LongTermIds (variable)																															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x60.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

LongTermIdCount (2 bytes): An unsigned integer that specifies the number of structures in the **LongTermIds** field.

LongTermIds (variable): An array of **LongTermID** structures that specifies which folders the user has per-user information about. The format of these structures is specified in [MS-OXCDATA] section 2.2.1.3.1.

2.2.3.10.3 RopGetPerUserLongTermIds ROP Failure Response Buffer

The following descriptions define valid fields for the **RopGetPerUserLongTermIds ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x60.

Copyright © 2025 Microsoft Corporation

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.3.11 RopGetPerUserGuid ROP

The **RopGetPerUserGuid** **ROP** gets the **GUID** of a **public folder's** per-user information. For more details about this operation, see [MS-OXCSTOR] section 2.2.1.11.

2.2.3.11.1 RopGetPerUserGuid ROP Request Buffer

The following descriptions define valid fields for the **RopGetPerUserGuid** **ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								LongTermId							
...																															
...																															
...																															
...																															
...																															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x61.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

LongTermId (24 bytes): A **LongTermID** structure that specifies the **public folder**. The format of the **LongTermID** structure is specified in [MS-OXCDATA] section 2.2.1.3.1.

2.2.3.11.2 RopGetPerUserGuid ROP Success Response Buffer

The following descriptions define valid fields for the **RopGetPerUserGuid** **ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															

Copyright © 2025 Microsoft Corporation

...	DatabaseGuid
...	
...	
...	
...	

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x61.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

DatabaseGuid (16 bytes): A **GUID** that specifies the database for which per-user information was obtained.

2.2.3.11.3 RopGetPerUserGuid ROP Failure Response Buffer

The following descriptions define valid fields for the **RopGetPerUserGuid ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x61.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.3.12 RopReadPerUserInformation ROP

The **RopReadPerUserInformation ROP** gets per-user information for a **public folder**. For more details about this operation, see [MS-OXCSTOR] section 2.2.1.12.

2.2.3.12.1 RopReadPerUserInformation ROP Request Buffer

The following descriptions define valid fields for the **RopReadPerUserInformation ROP request buffer**.

Copyright © 2025 Microsoft Corporation

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								FolderId							
...																															
...																															
...																															
...																															
...																															
...																								Reserved							
DataOffset																															
MaxDataSize																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x63.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

FolderId (24 bytes): A **LongTermID** structure that specifies the folder for which to get per-user information. The format of the **LongTermID** structure is specified in [MS-OXCDATA] section 2.2.1.3.1.

Reserved (1 byte): Reserved. This field is not used and is ignored by the server. This field MUST be set to 0x00.

DataOffset (4 bytes): An unsigned integer that specifies the location at which to start reading within the per-user information stream.

MaxDataSize (2 bytes): An unsigned integer that specifies the maximum number of bytes of per-user information to be retrieved.

2.2.3.12.2 RopReadPerUserInformation ROP Success Response Buffer

The following descriptions define valid fields for the **RopReadPerUserInformation ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															

Copyright © 2025 Microsoft Corporation

...	HasFinished	DataSize
...	Data (variable)	
...		

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x63.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

HasFinished (1 byte): A Boolean that specifies whether this operation reached the end of the per-user information stream.

DataSize (2 bytes): An unsigned integer that specifies the size of the **Data** field.

Data (variable): An array of bytes. This field contains the per-user data that is returned.

2.2.3.12.3 RopReadPerUserInformation ROP Failure Response Buffer

The following descriptions define valid fields for the **RopReadPerUserInformation ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x63.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.3.13 RopWritePerUserInformation ROP

The **RopWritePerUserInformation ROP** sets per-user information for a **public folder**. For details about this operation, see [MS-OXCSTOR] section 2.2.1.13.

2.2.3.13.1 RopWritePerUserInformation ROP Request Buffer

The following descriptions define valid fields for the **RopWritePerUserInformation ROP request buffer**.

Copyright © 2025 Microsoft Corporation

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								FolderId							
...																															
...																															
...																															
...																															
...																															
...																								HasFinished							
DataOffset																															
DataSize																Data (variable)															
...																															
ReplGuid (optional)																															
...																															
...																															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x64.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

FolderId (24 bytes): A **LongTermID** structure that specifies the folder to set per-user information for. The format of the **LongTermID** structure is specified in [MS-OXCDATA] section 2.2.1.3.1.

HasFinished (1 byte): A Boolean that specifies whether this operation specifies the end of the per-user information stream.

DataOffset (4 bytes): An unsigned integer that specifies the location in the per-user information stream to start writing.

DataSize (2 bytes): An unsigned integer that specifies the size of the **Data** field in bytes.

Copyright © 2025 Microsoft Corporation

Data (variable): An array of bytes that is the per-user data to write. The size of this field, in bytes, is specified by the **DataSize** field.

ReplGuid (16 bytes): A **GUID** that is present when the **DataOffset** field is 0x00000000 and the logon associated with the **LogonId** field was created with the **Private** flag set in the **RopLogon** ROP request buffer, as specified in [MS-OXCSTOR] section 2.2.1.1.1, and is not present otherwise.

2.2.3.13.2 RopWritePerUserInformation ROP Response Buffer

The following descriptions define valid fields for the **RopWritePerUserInformation** **ROP response buffer**.

<table>
<tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>20</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>30</td><td>1</td></tr>
<tr><td colspan="8">RopId</td><td colspan="8">InputHandleIndex</td><td colspan="16">ReturnValue</td></tr>
<tr><td colspan="16">...</td><td colspan="16"></td></tr>
</table>

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x64.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

2.2.4 Folder ROPs

2.2.4.1 RopOpenFolder ROP

The **RopOpenFolder** **ROP** opens an existing folder in a **mailbox**. For more details about this operation, see [MS-OXCFOLD] section 2.2.1.1.

2.2.4.1.1 RopOpenFolder ROP Request Buffer

The following descriptions define valid fields for the **RopOpenFolder** **ROP request buffer**.

<table>
<tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>20</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>30</td><td>1</td></tr>
<tr><td colspan="8">RopId</td><td colspan="8">LogonId</td><td colspan="8">InputHandleIndex</td><td colspan="8">OutputHandleIndex</td></tr>
<tr><td colspan="32">FolderId</td></tr>
<tr><td colspan="32">...</td></tr>
<tr><td colspan="8">OpenModeFlags</td><td colspan="24"></td></tr>
</table>

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x02.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

Copyright © 2025 Microsoft Corporation

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

OutputHandleIndex (1 byte): An unsigned integer index that specifies the location in the Server object handle table where the handle for the output Server object will be stored.

FolderId (8 bytes): A 64-bit identifier that specifies the folder to be opened.

OpenModeFlags (1 byte): An 8-bit **flags** structure that contains flags that are used to control how the folder is opened. The possible flags values are specified in [MS-OXCFOLD] section 2.2.1.1.1.

2.2.4.1.2 RopOpenFolder ROP Success Response Buffer

The following descriptions define valid fields for the **RopOpenFolder ROP** success response buffer.

<table>
<tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>20</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>30</td><td>1</td></tr>
<tr><td colspan="8">RopId</td><td colspan="8">OutputHandleIndex</td><td colspan="16">ReturnValue</td></tr>
<tr><td colspan="16">...</td><td colspan="8">HasRules</td><td colspan="8">IsGhosted</td></tr>
<tr><td colspan="16">ServerCount (optional)</td><td colspan="16">CheapServerCount (optional)</td></tr>
<tr><td colspan="32">Servers (variable)</td></tr>
<tr><td colspan="32">...</td></tr>
</table>

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x02.

OutputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **OutputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

HasRules (1 byte): A Boolean that indicates whether the folder has **rules** associated with it.

IsGhosted (1 byte): A Boolean that specifies whether the folder is a **ghosted folder**.

ServerCount (2 bytes): An unsigned integer that is present if **IsGhosted** is nonzero and is not present if **IsGhosted** is zero. This value specifies the number of strings in the **Servers** field.

CheapServerCount (2 bytes): An unsigned integer that is present if **IsGhosted** is nonzero and is not present if **IsGhosted** is zero. This value specifies the number of values in the **Servers** field that refer to **lowest-cost servers**.

Servers (variable): A list of null-terminated **ASCII** strings that specify which servers have **replicas (2)** of this folder. This field is present if **IsGhosted** is nonzero and is not present if **IsGhosted** is zero. The number of strings contained in this field is specified by the **ServerCount** field.

2.2.4.1.3 RopOpenFolder ROP Failure Response Buffer

The following descriptions define valid fields for the **RopOpenFolder ROP** failure response buffer.

Copyright © 2025 Microsoft Corporation

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								OutputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x02.

OutputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **OutputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.4.2 RopCreateFolder ROP

The **RopCreateFolder ROP** creates a new subfolder. For more details about this operation, see [MS-OXCFOLD] section 2.2.1.2.

2.2.4.2.1 RopCreateFolder ROP Request Buffer

The following descriptions define valid fields for the **RopCreateFolder ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								OutputHandleIndex							
FolderType								UseUnicodeStrings								OpenExisting								Reserved							
DisplayName (variable)																															
...																															
Comment (variable)																															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x1C.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

OutputHandleIndex (1 byte): An unsigned integer index that specifies the location in the Server object handle table where the handle for the output Server object will be stored.

FolderType (1 byte): An enumeration that specifies what type of folder to create. The possible values for this enumeration are specified in [MS-OXCFOLD] section 2.2.1.2.1.

Copyright © 2025 Microsoft Corporation

UseUnicodeStrings (1 byte): A Boolean that specifies whether the **DisplayName** field and the **Comment** field contain **Unicode** characters or multibyte characters.

OpenExisting (1 byte): A Boolean that specifies whether this operation opens a **Folder object** or fails when the Folder object already exists.

Reserved (1 byte): Reserved. This field MUST be set to 0x00.

DisplayName (variable): A null-terminated multibyte string that specifies the name of the created folder. If the value of the **UseUnicodeStrings** field is nonzero, the string is composed of Unicode characters. If the value of the **UseUnicodeStrings** field is zero, the string is composed of multibyte characters.

Comment (variable): A null-terminated multibyte string that specifies the folder comment that is associated with the created folder. If the value of the **UseUnicodeStrings** field is nonzero, the string is composed of Unicode characters. If the value of the **UseUnicodeStrings** field is zero, the string is composed of multibyte characters.

2.2.4.2.2 RopCreateFolder ROP Success Response Buffer

The following descriptions define valid fields for the **RopCreateFolder ROP** success response buffer.

<table>
<tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>20</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>30</td><td>1</td></tr>
<tr><td colspan="8">RopId</td><td colspan="8">OutputHandleIndex</td><td colspan="16">ReturnValue</td></tr>
<tr><td colspan="16">...</td><td colspan="16">FolderId</td></tr>
<tr><td colspan="32">...</td></tr>
<tr><td colspan="16">...</td><td colspan="8">IsExistingFolder</td><td colspan="8">HasRules (optional)</td></tr>
<tr><td colspan="8">IsGhosted (optional)</td><td colspan="16">ServerCount (optional)</td><td colspan="8">CheapServerCount (optional)</td></tr>
<tr><td colspan="8">...</td><td colspan="24">Servers (variable)</td></tr>
<tr><td colspan="32">...</td></tr>
</table>

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x1C.

OutputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **OutputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

FolderId (8 bytes): An identifier that specifies the folder created or opened.

IsExistingFolder (1 byte): A Boolean that indicates whether an existing folder was opened or a new folder was created.

HasRules (1 byte): A Boolean that indicates whether the folder has **rules** associated with it. This field is present if the **IsExistingFolder** field is nonzero and is not present otherwise.

Copyright © 2025 Microsoft Corporation

IsGhosted (1 byte): A Boolean that indicates whether the server is an **active replica** of this folder. This field is present if the value of the **IsExistingFolder** field is nonzero and is not present otherwise.

ServerCount (2 bytes): An unsigned integer that is present if the values of both the **IsExistingFolder** and the **IsGhosted** fields are nonzero and is not present otherwise. This value specifies the number of strings in the **Servers** field.

CheapServerCount (2 bytes): An unsigned integer that is present if the values of both the **IsExistingFolder** and the **IsGhosted** fields are nonzero and is not present otherwise. This value specifies the number of values in the **Servers** field that refer to **lowest-cost servers**.

Servers (variable): A list of null-terminated **ASCII** strings that is present if the values of both the **IsExistingFolder** and the **IsGhosted** fields are nonzero and is not present otherwise. The number of strings contained in this field is specified by the **ServersCount** field. These strings specify which servers have **replicas (2)** of this folder.

2.2.4.2.3 RopCreateFolder ROP Failure Response Buffer

The following descriptions define valid fields for the **RopCreateFolder ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								OutputHandleIndex								ReturnValue															
…																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x1C.

OutputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **OutputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.4.3 RopDeleteFolder ROP

The **RopDeleteFolder ROP** deletes a subfolder. For more details about this operation, see [MS-OXCFOLD] section 2.2.1.3.

2.2.4.3.1 RopDeleteFolder ROP Request Buffer

The following descriptions define valid fields for the **RopDeleteFolder ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								DeleteFolderFlags							
FolderId																															
…																															

Copyright © 2025 Microsoft Corporation

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x1D.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

DeleteFolderFlags (1 byte): A **flags** structure that contains flags that control how to delete the folder. The possible flags values are specified in [MS-OXCFOLD] section 2.2.1.3.1.

FolderId (8 bytes): An identifier that specifies the folder to be deleted.

2.2.4.3.2 RopDeleteFolder ROP Response Buffer

The following descriptions define valid fields for the **RopDeleteFolder ROP response buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																PartialCompletion															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x1D.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

PartialCompletion (1 byte): A Boolean that specifies whether the operation was partially completed.

2.2.4.4 RopSetSearchCriteria ROP

The **RopSetSearchCriteria ROP** sets the **search criteria** for a **search folder**. For more details about this operation, see [MS-OXCFOLD] section 2.2.1.4.

2.2.4.4.1 RopSetSearchCriteria ROP Request Buffer

The following descriptions define valid fields for the **RopSetSearchCriteria ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								RestrictionDataSize							
...								RestrictionData (variable)																							
...																															
FolderIdCount																FolderIds (variable)															

Copyright © 2025 Microsoft Corporation

...
SearchFlags

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x30.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

RestrictionDataSize (2 bytes): An unsigned integer that specifies the length of the **RestrictionData** field.

RestrictionData (variable): A **restriction** packet, as specified in [MS-OXCDATA] section 2.12, that specifies the filter for this **search folder**. The size of this field is specified by the **RestrictionDataSize** field.

FolderIdCount (2 bytes): An unsigned integer that specifies the number of identifiers in the **FolderIds** field.

FolderIds (variable): An array of 64-bit identifiers that specifies which folders are searched. The number of identifiers contained in this field is specified by the **FolderIdCount** field.

SearchFlags (4 bytes): A **flags** structure that contains flags that control the search for a search folder.

2.2.4.4.2 RopSetSearchCriteria ROP Response Buffer

The following descriptions define valid fields for the **RopSetSearchCriteria ROP response buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x30.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

2.2.4.5 RopGetSearchCriteria ROP

The **RopGetSearchCriteria ROP** gets the **search criteria** for a search folder. For more details about this operation, see [MS-OXCFOLD] section 2.2.1.5.

2.2.4.5.1 RopGetSearchCriteria ROP Request Buffer

The following descriptions define valid fields for the **RopGetSearchCriteria ROP request buffer**.

Copyright © 2025 Microsoft Corporation

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								UseUnicode							
IncludeRestriction								IncludeFolders																							

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x31.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

UseUnicode (1 byte): A Boolean that specifies whether the client requests the **restriction** data (returned in the **RestrictionData** field of the response) to be specified with **Unicode** strings or with **ASCII** strings.

IncludeRestriction (1 byte): A Boolean that specifies whether the server includes the restriction information in the response.

IncludeFolders (1 byte): A Boolean that specifies whether the server includes the folders list in the response.

2.2.4.5.2 RopGetSearchCriteria ROP Success Response Buffer

The following descriptions define valid fields for the **RopGetSearchCriteria ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																RestrictionDataSize															
RestrictionData (variable)																															
...																															
LogonId								FolderIdCount																FolderIds (variable)							
...																															
SearchFlags																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x31.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

Copyright © 2025 Microsoft Corporation

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

RestrictionDataSize (2 bytes): An unsigned integer that specifies the length of the **RestrictionData** field.

RestrictionData (variable): A **restriction** packet, as specified in [MS-OXCDATA] section 2.12, that specifies the filter for this search folder. The size of this field is specified by the **RestrictionDataSize** field.

LogonId (1 byte): An unsigned integer that MUST be set to the value of the **LogonId** field in the request.

FolderIdCount (2 bytes): An unsigned integer that specifies the number of identifiers in the **FolderIds** field.

FolderIds (variable): An array of 64-bit identifiers that specifies which folders are searched. The number of identifiers contained in this field is specified by the **FolderIdCount** field.

SearchFlags (4 bytes): A **flags** structure that contains flags that control the search for a **search folder**. The possible values for this field are specified in [MS-OXCFOLD] section 2.2.1.5.2.

2.2.4.5.3 RopGetSearchCriteria ROP Failure Response Buffer

The following descriptions define valid fields for the **RopGetSearchCriteria ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x31.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.4.6 RopMoveCopyMessages ROP

The **RopMoveCopyMessages ROP** either moves or copies messages from a source folder to a destination folder. For more details about this operation, see [MS-OXCFOLD] section 2.2.1.6.

2.2.4.6.1 RopMoveCopyMessages ROP Request Buffer

The following descriptions define valid fields for the **RopMoveCopyMessages ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								SourceHandleIndex								DestHandleIndex							

Copyright © 2025 Microsoft Corporation

MessageIdCount		MessageIds (variable)
...		
WantAsynchronous	WantCopy	

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x33.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

SourceHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the source **Server object** is stored. For more information about Server objects, see section 1.3.1.

DestHandleIndex (1 byte): An unsigned integer index that specifies the location in the Server object handle table where the handle for the destination Server object is stored.

MessageIdCount (2 bytes): An unsigned integer that specifies the size of the **MessageIds** field.

MessageIds (variable): An array of 64-bit identifiers that specifies which messages to move or copy. The number of identifiers contained in this field is specified by the **MessageIdCount** field.

WantAsynchronous (1 byte): A Boolean that specifies whether the operation is to be processed asynchronously with status reported via the **RopProgress** ROP (section 2.2.8.13).

WantCopy (1 byte): A Boolean that specifies whether the operation is a copy or a move.

2.2.4.6.2 RopMoveCopyMessages ROP Response Buffer

The following descriptions define valid fields for the **RopMoveCopyMessages** **ROP response buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								SourceHandleIndex								ReturnValue															
...																PartialCompletion															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x33.

SourceHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **SourceHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000503.

PartialCompletion (1 byte): A Boolean that indicates whether the operation was only partially completed.

2.2.4.6.3 RopMoveCopyMessages ROP Null Destination Failure Response Buffer

The following descriptions define valid fields for the **RopMoveCopyMessages** **ROP** null destination failure response buffer.

Copyright © 2025 Microsoft Corporation

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								SourceHandleIndex								ReturnValue															
...																DestHandleIndex															
...																PartialCompletion															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x33.

SourceHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **SourceHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000503.

DestHandleIndex (4 bytes): An unsigned integer index that MUST be set to the value specified in the **DestHandleIndex** field in the request.

PartialCompletion (1 byte): A Boolean that indicates whether the operation was only partially completed.

2.2.4.7 RopMoveFolder ROP

The **RopMoveFolder ROP** moves a folder. For more details about this operation, see [MS-OXCFOLD] section 2.2.1.7.

2.2.4.7.1 RopMoveFolder ROP Request Buffer

The following descriptions define valid fields for the **RopMoveFolder ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								SourceHandleIndex								DestHandleIndex							
WantAsynchronous								UseUnicode								FolderId															
...																															
...																NewFolderName (variable)															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x35.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

SourceHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the source **Server object** is stored. For more information about Server objects, see section 1.3.1.

Copyright © 2025 Microsoft Corporation

DestHandleIndex (1 byte): An unsigned integer index that specifies the location in the Server object handle table where the handle for the destination Server object is stored.

WantAsynchronous (1 byte): A Boolean that specifies whether the operation is to be processed asynchronously with status reported via the **RopProgress** ROP (section 2.2.8.13).

UseUnicode (1 byte): A Boolean that specifies whether the **NewFolderName** field contains **Unicode** characters or multibyte characters.

FolderId (8 bytes): An identifier that specifies the folder to be moved.

NewFolderName (variable): A null-terminated multibyte string that specifies the name for the new moved folder. If the value of the **UseUnicode** field is nonzero, the string is composed of Unicode characters. Otherwise, the string is composed of multibyte characters.

2.2.4.7.2 RopMoveFolder ROP Response Buffer

The following descriptions define valid fields for the **RopMoveFolder** **ROP response buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								SourceHandleIndex								ReturnValue															
...																PartialCompletion															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x35.

SourceHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **SourceHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000503.

PartialCompletion (1 byte): A Boolean that indicates whether the operation was only partially completed.

2.2.4.7.3 RopMoveFolder ROP Null Destination Failure Response Buffer

The following descriptions define valid fields for the **RopMoveFolder** **ROP** null destination failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								SourceHandleIndex								ReturnValue															
...																DestHandleIndex															
...																PartialCompletion															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x35.

Copyright © 2025 Microsoft Corporation

SourceHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **SourceHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000503.

DestHandleIndex (4 bytes): An unsigned integer index that MUST be set to the value specified in the **DestHandleIndex** field in the request.

PartialCompletion (1 byte): A Boolean that indicates whether the operation was only partially completed.

2.2.4.8 RopCopyFolder ROP

The **RopCopyFolder ROP** copies a folder. For more details about this operation, see [MS-OXCFOLD] section 2.2.1.8.

2.2.4.8.1 RopCopyFolder ROP Request Buffer

The following descriptions define valid fields for the **RopCopyFolder ROP request buffer**.

0 1 2 3 4 5 6 7	8 9 10 11 12 13 14 15	16 17 18 19 20 21 22 23	24 25 26 27 28 29 30 31
RopId	LogonId	SourceHandleIndex	DestHandleIndex
WantAsynchronous	WantRecursive	UseUnicode	FolderId
...			
...			NewFolderName (variable)
...			

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x36.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

SourceHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the source **Server object** is stored. For more information about Server objects, see section 1.3.1.

DestHandleIndex (1 byte): An unsigned integer index that specifies the location in the Server object handle table where the handle for the destination Server object is stored.

WantAsynchronous (1 byte): A Boolean that specifies whether the operation is to be processed asynchronously with status reported via the **RopProgress** ROP (section 2.2.8.13).

WantRecursive (1 byte): A Boolean that specifies that the copy is recursive.

UseUnicode (1 byte): A Boolean that specifies whether the **NewFolderName** field contains **Unicode** characters or multibyte characters.

FolderId (8 bytes): An identifier that specifies the folder to be copied.

Copyright © 2025 Microsoft Corporation

NewFolderName (variable): A null-terminated multibyte string that specifies the name for the new copied folder. If the value of the **UseUnicode** field is nonzero, the string is composed of Unicode characters. Otherwise, the string is composed of multibyte characters.

2.2.4.8.2 RopCopyFolder ROP Response Buffer

The following descriptions define valid fields for the **RopCopyFolder** **ROP response buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								SourceHandleIndex								ReturnValue															
...																PartialCompletion															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x36.

SourceHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **SourceHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000503.

PartialCompletion (1 byte): A Boolean that indicates whether the operation was only partially completed.

2.2.4.8.3 RopCopyFolder ROP Null Destination Failure Response Buffer

The following descriptions define valid fields for the **RopCopyFolder** **ROP** null destination failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								SourceHandleIndex								ReturnValue															
...																DestHandleIndex															
...																PartialCompletion															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x36.

SourceHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **SourceHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000503.

DestHandleIndex (4 bytes): An unsigned integer index that MUST be set to the value specified in the **DestHandleIndex** field in the request.

PartialCompletion (1 byte): A Boolean that indicates whether the operation was only partially completed.

Copyright © 2025 Microsoft Corporation

2.2.4.9 RopEmptyFolder ROP

The **RopEmptyFolder ROP** deletes all messages and subfolders from a folder. For more details about this operation, see [MS-OXCFOLD] section 2.2.1.9.

2.2.4.9.1 RopEmptyFolder ROP Request Buffer

The following descriptions define valid fields for the **RopEmptyFolder ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								WantAsynchronous							
WantDeleteAssociated																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x58.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

WantAsynchronous (1 byte): A Boolean that specifies whether the operation is to be processed asynchronously with status reported via the **RopProgress** ROP (section 2.2.8.13).

WantDeleteAssociated (1 byte): A Boolean that specifies whether the operation also deletes **folder associated information (FAI)** messages.

2.2.4.9.2 RopEmptyFolder ROP Response Buffer

The following descriptions define valid fields for the **RopEmptyFolder ROP response buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																PartialCompletion															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x58.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

PartialCompletion (1 byte): A Boolean that indicates whether the operation was only partially completed.

Copyright © 2025 Microsoft Corporation

2.2.4.10 RopHardDeleteMessagesAndSubfolders ROP

The **RopHardDeleteMessagesAndSubfolders** **ROP hard deletes** messages and subfolders from a folder. For more details about this operation, see [MS-OXCFOLD] section 2.2.1.10.

2.2.4.10.1 RopHardDeleteMessagesAndSubfolders ROP Request Buffer

The following descriptions define valid fields for the **RopHardDeleteMessagesAndSubfolders** **ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								WantAsynchronous							
WantDeleteAssociated																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x92.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

WantAsynchronous (1 byte): A Boolean that specifies whether the operation is to be processed asynchronously with status reported via the **RopProgress** ROP (section 2.2.8.13).

WantDeleteAssociated (1 byte): A Boolean that specifies whether to also delete **FAI** messages.

2.2.4.10.2 RopHardDeleteMessagesAndSubfolders ROP Response Buffer

The following descriptions define valid fields for the **RopHardDeleteMessagesAndSubfolders** **ROP response buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																PartialCompletion															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x92.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

PartialCompletion (1 byte): A Boolean that indicates whether the operation was only partially completed.

Copyright © 2025 Microsoft Corporation

2.2.4.11 RopDeleteMessages ROP

The **RopDeleteMessages ROP** deletes one or more messages in a folder. For more details about this operation, see [MS-OXCFOLD] section 2.2.1.11.

2.2.4.11.1 RopDeleteMessages ROP Request Buffer

The following descriptions define valid fields for the **RopDeleteMessages ROP request buffer**.

<table>
<tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>20</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>30</td><td>1</td></tr>
<tr><td colspan="8">RopId</td><td colspan="8">LogonId</td><td colspan="8">InputHandleIndex</td><td colspan="8">WantAsynchronous</td></tr>
<tr><td colspan="8">NotifyNonRead</td><td colspan="16">MessageIdCount</td><td colspan="8">MessageIds (variable)</td></tr>
<tr><td colspan="32">...</td></tr>
</table>

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x1E.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

WantAsynchronous (1 byte): A Boolean that specifies whether the operation is to be processed asynchronously with status reported via the **RopProgress** ROP (section 2.2.8.13).

NotifyNonRead (1 byte): A Boolean that specifies whether the server sends a **non-read receipt** to the message sender when a message is deleted.

MessageIdCount (2 bytes): An unsigned integer that specifies the number of identifiers in the **MessageIds** field.

MessageIds (variable): An array of 64-bit identifiers that specifies the messages to be deleted. The number of identifiers contained in this field is specified by the **MessageIdCount** field.

2.2.4.11.2 RopDeleteMessages ROP Response Buffer

The following descriptions define valid fields for the **RopDeleteMessages ROP response buffer**.

<table>
<tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>20</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>30</td><td>1</td></tr>
<tr><td colspan="8">RopId</td><td colspan="8">InputHandleIndex</td><td colspan="16">ReturnValue</td></tr>
<tr><td colspan="16">...</td><td colspan="8">PartialCompletion</td><td colspan="8"></td></tr>
</table>

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x1E.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

Copyright © 2025 Microsoft Corporation

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

PartialCompletion (1 byte): A Boolean that specifies whether this operation partially completed.

2.2.4.12 RopHardDeleteMessages ROP

The **RopHardDeleteMessages** **ROP hard deletes** messages in a folder. For more details about this operation, see [MS-OXCFOLD] section 2.2.1.12.

2.2.4.12.1 RopHardDeleteMessages ROP Request Buffer

The following descriptions define valid fields for the **RopHardDeleteMessages** **ROP request buffer**.

<table>
<tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>20</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>30</td><td>1</td></tr>
<tr><td colspan="8">RopId</td><td colspan="8">LogonId</td><td colspan="8">InputHandleIndex</td><td colspan="8">WantAsynchronous</td></tr>
<tr><td colspan="8">NotifyNonRead</td><td colspan="16">MessageIdCount</td><td colspan="8">MessageIds (variable)</td></tr>
<tr><td colspan="32">...</td></tr>
</table>

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x91.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

WantAsynchronous (1 byte): A Boolean that specifies whether the operation is to be processed asynchronously with status reported via the **RopProgress** ROP (section 2.2.8.13).

NotifyNonRead (1 byte): A Boolean that specifies whether the server sends a **non-read receipt** to the message-sender when a message is deleted.

MessageIdCount (2 bytes): An unsigned integer that specifies the number of identifiers in the **MessageIds** field.

MessageIds (variable): An array of 64-bit identifiers that specifies the messages to be **hard deleted**. The number of identifiers contained in this field is specified by the **MessageIdCount** field.

2.2.4.12.2 RopHardDeleteMessages ROP Response Buffer

The following descriptions define valid fields for the **RopHardDeleteMessages** **ROP response buffer**.

<table>
<tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>20</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>30</td><td>1</td></tr>
<tr><td colspan="8">RopId</td><td colspan="8">InputHandleIndex</td><td colspan="16">ReturnValue</td></tr>
<tr><td colspan="16">...</td><td colspan="8">PartialCompletion</td><td colspan="8"></td></tr>
</table>

Copyright © 2025 Microsoft Corporation

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x91.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

PartialCompletion (1 byte): A Boolean that indicates whether the operation was only partially completed.

2.2.4.13 RopGetHierarchyTable ROP

The **RopGetHierarchyTable ROP** gets the subfolder **hierarchy table** for a folder. For more details about this operation, see [MS-OXCFOLD] section 2.2.1.13.

2.2.4.13.1 RopGetHierarchyTable ROP Request Buffer

The following descriptions define valid fields for the **RopGetHierarchyTable ROP request buffer**.

0 1 2 3 4 5 6 7	8 9 10 11 12 13 14 15	16 17 18 19 20 21 22 23	24 25 26 27 28 29 30 31
RopId	LogonId	InputHandleIndex	OutputHandleIndex
TableFlags			

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x04.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

OutputHandleIndex (1 byte): An unsigned integer index that specifies the location in the Server object handle table where the handle for the output Server object will be stored.

TableFlags (1 byte): A **flags** structure. The possible values are specified in [MS-OXCFOLD] section 2.2.1.13.1. These flags control the type of table.

2.2.4.13.2 RopGetHierarchyTable ROP Success Response Buffer

The following descriptions define valid fields for the **RopGetHierarchyTable ROP** success response buffer.

0 1 2 3 4 5 6 7	8 9 10 11 12 13 14 15	16 17 18 19 20 21 22 23	24 25 26 27 28 29 30 31
RopId	OutputHandleIndex	ReturnValue	
...		RowCount	
...			

Copyright © 2025 Microsoft Corporation

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x04.

OutputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **OutputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

RowCount (4 bytes): An unsigned integer that represents the number of rows in the **hierarchy table**.

2.2.4.13.3 RopGetHierarchyTable ROP Failure Response Buffer

The following descriptions define valid fields for the **RopGetHierarchyTable ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								OutputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x04.

OutputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **OutputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.4.14 RopGetContentsTable ROP

The **RopGetContentsTable ROP** gets the **contents table** of a container. For more details about this operation, see [MS-OXCFOLD] section 2.2.1.14.

2.2.4.14.1 RopGetContentsTable ROP Request Buffer

The following descriptions define valid fields for the **RopGetContentsTable ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								OutputHandleIndex							
TableFlags																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x05.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

Copyright © 2025 Microsoft Corporation

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

OutputHandleIndex (1 byte): An unsigned integer index that specifies the location in the Server object handle table where the handle for the output Server object will be stored.

TableFlags (1 byte): A **flags** structure that contains flags control the type of table. The possible values are specified in [MS-OXCFOLD] section 2.2.1.14.1.

2.2.4.14.2 RopGetContentsTable ROP Success Response Buffer

The following descriptions define valid fields for the **RopGetContentsTable ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
RopId								OutputHandleIndex								ReturnValue															
...																RowCount															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x05.

OutputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **OutputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

RowCount (4 bytes): An unsigned integer that represents the number of rows in the **contents table**.

2.2.4.14.3 RopGetContentsTable ROP Failure Response Buffer

The following descriptions define valid fields for the **RopGetContentsTable ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
RopId								OutputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x05.

OutputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **OutputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

Copyright © 2025 Microsoft Corporation

2.2.5 Table ROPs

2.2.5.1 RopSetColumns ROP

The **RopSetColumns ROP** sets the properties visible on a table. For more details about this operation, see [MS-OXCTABL] section 2.2.2.2.

2.2.5.1.1 RopSetColumns ROP Request Buffer

The following descriptions define valid fields for the **RopSetColumns ROP request buffer**.

0 1 2 3 4 5 6 7	8 9 10 11 12 13 14 15	16 17 18 19 20 21 22 23	24 25 26 27 28 29 30 31
RopId	LogonId	InputHandleIndex	SetColumnsFlags
PropertyTagCount		PropertyTags (variable)	
...			

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x12.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

SetColumnsFlags (1 byte): A **flags** structure that contains flags that control this operation. The possible values are specified in [MS-OXCTABL] section 2.2.2.2.1.

PropertyTagCount (2 bytes): An unsigned integer that specifies the number of tags present in the **PropertyTags** field.

PropertyTags (variable): An array of **PropertyTag** structures that specifies the property values that are visible in table rows. The number of structures contained in this field is specified by the **PropertyTagCount** field. The format of the **PropertyTag** structure is specified in [MS-OXCDATA] section 2.9.

2.2.5.1.2 RopSetColumns ROP Success Response Buffer

The following descriptions define valid fields for the **RopSetColumns ROP** success response buffer.

0 1 2 3 4 5 6 7	8 9 10 11 12 13 14 15	16 17 18 19 20 21 22 23	24 25 26 27 28 29 30 31
RopId	InputHandleIndex	ReturnValue	
...		TableStatus	

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x12.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

Copyright © 2025 Microsoft Corporation

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

TableStatus (1 byte): An enumeration that specifies the status of the table. The possible values for this enumeration are specified in [MS-OXCTABL] section 2.2.2.1.3.

2.2.5.1.3 RopSetColumns ROP Failure Response Buffer

The following descriptions define valid fields for the **RopSetColumns ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x12.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.5.2 RopSortTable ROP

The **RopSortTable ROP** defines the order of rows of a table based on sort criteria. For more details about this operation, see [MS-OXCTABL] section 2.2.2.3.

2.2.5.2.1 RopSortTable ROP Request Buffer

The following descriptions define valid fields for the **RopSortTable ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								SortTableFlags							
SortOrderCount																CategoryCount															
ExpandedCount																SortOrders (variable)															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x13.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

Copyright © 2025 Microsoft Corporation

SortTableFlags (1 byte): A **flags** structure that contains flags that control this operation. The possible values are specified in [MS-OXCTABL] section 2.2.2.3.1.

SortOrderCount (2 bytes): An unsigned integer that specifies how many **SortOrder** structures are present in the **SortOrders** field. The format of the **SortOrder** structure is specified in [MS-OXCDATA] section 2.13.1.

CategoryCount (2 bytes): An unsigned integer that specifies the number of category **SortOrder** structures in the **SortOrders** field.

ExpandedCount (2 bytes): An unsigned integer that specifies the number of expanded categories in the **SortOrders** field.

SortOrders (variable): An array of **SortOrder** structures that specifies the sort order for the rows in the table. The number of structures contained in this field is specified by the **SortOrderCount** field.

2.2.5.2.2 RopSortTable ROP Success Response Buffer

The following descriptions define valid fields for the **RopSortTable ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																TableStatus															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x13.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

TableStatus (1 byte): An enumeration that specifies the status of the table. The possible values for this enumeration are specified in [MS-OXCTABL] section 2.2.2.1.3.

2.2.5.2.3 RopSortTable ROP Failure Response Buffer

The following descriptions define valid fields for the **RopSortTable ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x13.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

Copyright © 2025 Microsoft Corporation

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.5.3 RopRestrict ROP

The **RopRestrict ROP** establishes a filter for a table. For more details about this operation, see [MS-OXCTABL] section 2.2.2.4.

2.2.5.3.1 RopRestrict ROP Request Buffer

The following descriptions define valid fields for the **RopRestrict ROP request buffer**.

0 1 2 3 4 5 6 7	8 9 10 11 12 13 14 15	16 17 18 19 20 21 22 23	24 25 26 27 28 29 30 31
RopId	LogonId	InputHandleIndex	RestrictFlags
RestrictionDataSize		RestrictionData (variable)	
...			

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x14.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

RestrictFlags (1 byte): A **flags** structure that contains flags that control this operation. The possible values are specified in [MS-OXCTABL] section 2.2.2.4.1.

RestrictionDataSize (2 bytes): An unsigned integer that specifies the length of the **RestrictionData** field.

RestrictionData (variable): A **restriction** packet, as specified in [MS-OXCDATA] section 2.12, that specifies the filter for this table The size of this field is specified by the **RestrictionDataSize** field.

2.2.5.3.2 RopRestrict ROP Success Response Buffer

The following descriptions define valid fields for the **RopRestrict ROP** success response buffer.

0 1 2 3 4 5 6 7	8 9 10 11 12 13 14 15	16 17 18 19 20 21 22 23	24 25 26 27 28 29 30 31
RopId	InputHandleIndex	ReturnValue	
...		TableStatus	

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x14.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

Copyright © 2025 Microsoft Corporation

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

TableStatus (1 byte): An enumeration that specifies the status of the table. The possible values for this enumeration are specified in [MS-OXCTABL] section 2.2.2.1.3.

2.2.5.3.3 RopRestrict ROP Failure Response Buffer

The following descriptions define valid fields for the **RopRestrict ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x14.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.5.4 RopQueryRows ROP

The **RopQueryRows ROP** retrieves rows from a table. For more details about this operation, see [MS-OXCTABL] section 2.2.2.5.

2.2.5.4.1 RopQueryRows ROP Request Buffer

The following descriptions define valid fields for the **RopQueryRows ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
RopId								LogonId								InputHandleIndex								QueryRowsFlags							
ForwardRead								RowCount																							

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x15.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

QueryRowsFlags (1 byte): A **flags** structure that contains flags that control this operation. The possible values are specified in [MS-OXCTABL] section 2.2.2.5.1.

ForwardRead (1 byte): A Boolean that specifies the direction to read rows.

Copyright © 2025 Microsoft Corporation

RowCount (2 bytes): An unsigned integer that specifies the number of requested rows.

2.2.5.4.2 RopQueryRows ROP Success Response Buffer

The following descriptions define valid fields for the **RopQueryRows ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																Origin								RowCount							
...								RowData (variable)																							
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x15.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

Origin (1 byte): An enumeration that specifies current location of the cursor. The possible values for this enumeration are specified in [MS-OXCTABL] section 2.2.2.5.2.

RowCount (2 bytes): An unsigned integer that specifies the number of structures in the **RowData** field.

RowData (variable): A list of **PropertyRow** structures. The number of structures contained in this field is specified by the **RowCount** field. The format of the **PropertyRow** structure is specified in [MS-OXCDATA] section 2.8. The columns used for these rows were those previously set on this table by a **RopSetColumns ROP request** (section 2.2.5.1).

2.2.5.4.3 RopQueryRows ROP Failure Response Buffer

The following descriptions define valid fields for the **RopQueryRows ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x15.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

Copyright © 2025 Microsoft Corporation

2.2.5.5 RopAbort ROP

The **RopAbort ROP** aborts an asynchronous table operation in progress. For more details about this operation, see [MS-OXCTABL] section 2.2.2.6.

2.2.5.5.1 RopAbort ROP Request Buffer

The following descriptions define valid fields for the **RopAbort ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x38.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

2.2.5.5.2 RopAbort ROP Success Response Buffer

The following descriptions define valid fields for the **RopAbort ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																TableStatus															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x38.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

TableStatus (1 byte): An enumeration that specifies the status of the table. The possible values for this enumeration are specified in [MS-OXCTABL] section 2.2.2.1.3.

2.2.5.5.3 RopAbort ROP Failure Response Buffer

The following descriptions define valid fields for the **RopAbort ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															

Copyright © 2025 Microsoft Corporation

...

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x38.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.5.6 RopGetStatus ROP

The **RopGetStatus ROP** gets the status of a table. For more details about this operation, see [MS-OXCTABL] section 2.2.2.7.

2.2.5.6.1 RopGetStatus ROP Request Buffer

The following descriptions define valid fields for the **RopGetStatus ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x16.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

2.2.5.6.2 RopGetStatus ROP Success Response Buffer

The following descriptions define valid fields for the **RopGetStatus ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																TableStatus															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x16.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

Copyright © 2025 Microsoft Corporation

TableStatus (1 byte): An enumeration that specifies the status of the table. The possible values for this enumeration are specified in [MS-OXCTABL] section 2.2.2.1.3.

2.2.5.6.3 RopGetStatus ROP Failure Response Buffer

The following descriptions define valid fields for the **RopGetStatus ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x16.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.5.7 RopQueryPosition ROP

The **RopQueryPosition ROP** gets the cursor position. For more details about this operation, see [MS-OXCTABL] section 2.2.2.8.

2.2.5.7.1 RopQueryPosition ROP Request Buffer

The following descriptions define valid fields for the **RopQueryPosition ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x17.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

2.2.5.7.2 RopQueryPosition ROP Success Response Buffer

The following descriptions define valid fields for the **RopQueryPosition ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															

Copyright © 2025 Microsoft Corporation

...	Numerator
...	Denominator
...	

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x17.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

Numerator (4 bytes): An unsigned integer that represents the numerator of the fraction identifying the table position.

Denominator (4 bytes): An unsigned integer that represents the denominator of the fraction identifying the table position.

2.2.5.7.3 RopQueryPosition ROP Failure Response Buffer

The following descriptions define valid fields for the **RopQueryPosition ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x17.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.5.8 RopSeekRow ROP

The **RopSeekRow ROP** moves the cursor to a specific position in a table. For more details about this operation, see [MS-OXCTABL] section 2.2.2.9.

2.2.5.8.1 RopSeekRow ROP Request Buffer

The following descriptions define valid fields for the **RopSeekRow ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								Origin							

Copyright © 2025 Microsoft Corporation

RowCount	
WantRowMovedCount	

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x18.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

Origin (1 byte): An enumeration that specifies the origin of this seek operation. The possible values for this enumeration are specified in [MS-OXCTABL] section 2.2.2.5.2.

RowCount (4 bytes): A signed integer that specifies the direction and the number of rows to seek.

WantRowMovedCount (1 byte): A Boolean that specifies whether the server returns the actual number of rows moved in the response.

2.2.5.8.2 RopSeekRow ROP Success Response Buffer

The following descriptions define valid fields for the **RopSeekRow** **ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																HasSoughtLess								RowsSought							
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x18.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

HasSoughtLess (1 byte): A Boolean that specifies whether the full number of rows sought past was less than the number that was requested.

RowsSought (4 bytes): A signed integer that specifies the direction and number of rows sought.

2.2.5.8.3 RopSeekRow ROP Failure Response Buffer

The following descriptions define valid fields for the **RopSeekRow** **ROP** failure response buffer.

Copyright © 2025 Microsoft Corporation

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x18.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.5.9 RopSeekRowBookmark ROP

The **RopSeekRowBookmark** **ROP** moves the cursor to a location specified relative to a user-defined **bookmark**. For more details about this operation, see [MS-OXCTABL] section 2.2.2.10.

2.2.5.9.1 RopSeekRowBookmark ROP Request Buffer

The following descriptions define valid fields for the **RopSeekRowBookmark** **ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								BookmarkSize							
...								Bookmark (variable)																							
...																															
RowCount																															
WantRowMovedCount																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x19.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

BookmarkSize (2 bytes): An unsigned integer that specifies the size of the **Bookmark** field.

Bookmark (variable): An array of bytes that specifies the origin for the seek operation. The size of this field, in bytes, is specified by the **BookmarkSize** field.

RowCount (4 bytes): A signed integer that specifies the direction and the number of rows to seek.

Copyright © 2025 Microsoft Corporation

WantRowMovedCount (1 byte): A Boolean that specifies whether the server returns the actual number of rows sought in the response.

2.2.5.9.2 RopSeekRowBookmark ROP Success Response Buffer

The following descriptions define valid fields for the **RopSeekRowBookmark** **ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																RowNoLongerVisible								HasSoughtLess							
RowsSought																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x19.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

RowNoLongerVisible (1 byte): A Boolean that specifies whether the **bookmark** target is no longer visible.

HasSoughtLess (1 byte): A Boolean that specifies whether the full number of rows sought past was less than the number that was requested.

RowsSought (4 bytes): An unsigned integer that specifies the direction and number of rows sought.

2.2.5.9.3 RopSeekRowBookmark ROP Failure Response Buffer

The following descriptions define valid fields for the **RopSeekRowBookmark** **ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x19.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

Copyright © 2025 Microsoft Corporation

2.2.5.10 RopSeekRowFractional ROP

The **RopSeekRowFractional ROP** moves the cursor to an approximate position in a table. For more details about this operation, see [MS-OXCTABL] section 2.2.2.11.

2.2.5.10.1 RopSeekRowFractional ROP Request Buffer

The following descriptions define valid fields for the **RopSeekRowFractional ROP request buffer**.

<table>
<tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>20</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>30</td><td>1</td></tr>
<tr><td colspan="8">RopId</td><td colspan="8">LogonId</td><td colspan="8">InputHandleIndex</td><td colspan="8">Numerator</td></tr>
<tr><td colspan="24">...</td><td colspan="8">Denominator</td></tr>
<tr><td colspan="24">...</td></tr>
</table>

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x1A.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

Numerator (4 bytes): An unsigned integer that represents the numerator of the fraction identifying the table position to seek to.

Denominator (4 bytes): An unsigned integer that represents the denominator of the fraction identifying the table position to seek to.

2.2.5.10.2 RopSeekRowFractional ROP Response Buffer

The following descriptions define valid fields for the **RopSeekRowFractional ROP response buffer**.

<table>
<tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>20</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>30</td><td>1</td></tr>
<tr><td colspan="8">RopId</td><td colspan="8">InputHandleIndex</td><td colspan="16">ReturnValue</td></tr>
<tr><td colspan="16">...</td></tr>
</table>

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x1A.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

2.2.5.11 RopCreateBookmark ROP

The **RopCreateBookmark ROP** marks the current cursor position in a table. For more details about this operation, see [MS-OXCTABL] section 2.2.2.12.

Copyright © 2025 Microsoft Corporation

2.2.5.11.1 RopCreateBookmark ROP Request Buffer

The following descriptions define valid fields for the **RopCreateBookmark** **ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x1B.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

2.2.5.11.2 RopCreateBookmark ROP Success Response Buffer

The following descriptions define valid fields for the **RopCreateBookmark** **ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																BookmarkSize															
Bookmark (variable)																															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x1B.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

BookmarkSize (2 bytes): An unsigned integer that specifies the size of the **Bookmark** field.

Bookmark (variable): An array of bytes that specifies the **bookmark** created. The size of this field, in bytes, is specified by the **BookmarkSize** field.

2.2.5.11.3 RopCreateBookmark ROP Failure Response Buffer

The following descriptions define valid fields for the **RopCreateBookmark** **ROP** failure response buffer.

Copyright © 2025 Microsoft Corporation

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x1B.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.5.12 RopQueryColumnsAll ROP

The **RopQueryColumnsAll ROP** gets a list of columns in a table. For more details about this operation, see [MS-OXCTABL] section 2.2.2.13.

2.2.5.12.1 RopQueryColumnsAll ROP Request Buffer

The following descriptions define valid fields for the **RopQueryColumnsAll ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x37.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

2.2.5.12.2 RopQueryColumnsAll ROP Success Response Buffer

The following descriptions define valid fields for the **RopQueryColumnsAll ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																PropertyTagCount															
PropertyTags (variable)																															
...																															

Copyright © 2025 Microsoft Corporation

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x37.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

PropertyTagCount (2 bytes): An unsigned integer that specifies how many tags are present in the **PropertyTags** field.

PropertyTags (variable): An array of **PropertyTag** structures that specifies the columns of the table. The number of structures contained in this field is specified by the **PropertyTagCount** field. The format of the **PropertyTag** structure is specified in [MS-OXCDATA] section 2.9.

2.2.5.12.3 RopQueryColumnsAll ROP Failure Response Buffer

The following descriptions define valid fields for the **RopQueryColumnsAll** **ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x37.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.5.13 RopFindRow ROP

The **RopFindRow** **ROP** moves the cursor to a row in a table that matches specific **search criteria**. For more details about this operation, see [MS-OXCTABL] section 2.2.2.14.

2.2.5.13.1 RopFindRow ROP Request Buffer

The following descriptions define valid fields for the **RopFindRow** **ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								FindRowFlags							
RestrictionDataSize																RestrictionData (variable)															
...																															

Copyright © 2025 Microsoft Corporation

Origin	BookmarkSize	Bookmark (variable)
...		

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x4F.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

FindRowFlags (1 byte): A **flags** structure that contains flags that control this operation. The possible values are specified in [MS-OXCTABL] section 2.2.2.14.1.

RestrictionDataSize (2 bytes): An unsigned integer that specifies the length of the **RestrictionData** field.

RestrictionData (variable): A **restriction** packet, as specified in [MS-OXCDATA] section 2.12, that specifies the filter for this operation. The size of this field, in bytes, is specified by the **RestrictionDataSize** field.

Origin (1 byte): An enumeration that specifies where this operation begins its search. The possible values for this enumeration are specified in [MS-OXCTABL] section 2.2.2.5.2.

BookmarkSize (2 bytes): An unsigned integer that specifies the size of the **Bookmark** field.

Bookmark (variable): An array of bytes that specifies the **bookmark** to use as the origin. The size of this field, in bytes, is specified by the **BookmarkSize** field.

2.2.5.13.2 RopFindRow ROP Success Response Buffer

The following descriptions define valid fields for the **RopFindRow ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																RowNoLongerVisible								HasRowData							
RowData (variable)																															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x4F.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

Copyright © 2025 Microsoft Corporation

RowNoLongerVisible (1 byte): A Boolean that specifies whether the **bookmark** target is no longer visible.

HasRowData (1 byte): A Boolean that indicates whether the **RowData** field is present.

RowData (variable): A **PropertyRow** structure that is present only when the **HasRowData** field is set to a nonzero value. The format of the **PropertyRow** structure is specified in [MS-OXCDATA] section 2.8. The columns used for these rows were those previously set on this table by a **RopSetColumns ROP request** (section 2.2.5.1).

2.2.5.13.3 RopFindRow ROP Failure Response Buffer

The following descriptions define valid fields for the **RopFindRow ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x4F.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.5.14 RopFreeBookmark ROP

The **RopFreeBookmark ROP** releases a **bookmark**. For more details about this operation, see [MS-OXCTABL] section 2.2.2.15.

2.2.5.14.1 RopFreeBookmark ROP Request Buffer

The following descriptions define valid fields for the **RopFreeBookmark ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
RopId								LogonId								InputHandleIndex								BookmarkSize							
...								Bookmark (variable)																							
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x89.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

Copyright © 2025 Microsoft Corporation

BookmarkSize (2 bytes): An unsigned integer that specifies the size of the **Bookmark** field.

Bookmark (variable): An array of bytes that specifies the **bookmark** to be freed. The size of this field, in bytes, is specified by the **BookmarkSize** field.

2.2.5.14.2 RopFreeBookmark ROP Response Buffer

The following descriptions define valid fields for the **RopFreeBookmark** **ROP response buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x89.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

2.2.5.15 RopResetTable ROP

The **RopResetTable** **ROP** resets a table to its original state. For more details about this operation, see [MS-OXCTABL] section 2.2.2.16.

2.2.5.15.1 RopResetTable ROP Request Buffer

The following descriptions define valid fields for the **RopResetTable** **ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x81.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

2.2.5.15.2 RopResetTable ROP Response Buffer

The following descriptions define valid fields for the **RopResetTable** **ROP response buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															

Copyright © 2025 Microsoft Corporation

...

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x81.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

2.2.5.16 RopExpandRow ROP

The **RopExpandRow ROP** expands a categorized row. For more details about this operation, see [MS-OXCTABL] section 2.2.2.17.

2.2.5.16.1 RopExpandRow ROP Request Buffer

The following descriptions define valid fields for the **RopExpandRow ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								MaxRowCount							
...								CategoryId																							
...																															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x59.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

MaxRowCount (2 bytes): An unsigned integer that specifies the maximum number of expanded rows to return data for.

CategoryId (8 bytes): An identifier that specifies the category to be expanded.

2.2.5.16.2 RopExpandRow ROP Success Response Buffer

The following descriptions define valid fields for the **RopExpandRow ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																ExpandedRowCount															

Copyright © 2025 Microsoft Corporation

...	RowCount
RowData (variable)	
...	

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x59.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

ExpandedRowCount (4 bytes): An unsigned integer that specifies the total number of rows available in the expanded category.

RowCount (2 bytes): An unsigned integer that specifies the number of structures present in the **RowData** field.

RowData (variable): A list of **PropertyRow** structures. The number of structures contained in this field is specified by the **RowCount** field. The format of the **PropertyRow** structure is specified in [MS-OXCDATA] section 2.8.1. The columns used for these rows were those previously set on this table by a **RopSetColumns ROP request** (section 2.2.5.1).

2.2.5.16.3 RopExpandRow ROP Failure Response Buffer

The following descriptions define valid fields for the **RopExpandRow ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x59.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.5.17 RopCollapseRow ROP

The **RopCollapseRow ROP** collapses a categorized row. For more details about this operation, see [MS-OXCTABL] section 2.2.2.18.

2.2.5.17.1 RopCollapseRow ROP Request Buffer

The following descriptions define valid fields for the **RopCollapseRow ROP request buffer**.

Copyright © 2025 Microsoft Corporation

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								CategoryId							
...																															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x5A.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

CategoryId (8 bytes): An identifier that specifies the category to be collapsed.

2.2.5.17.2 RopCollapseRow ROP Success Response Buffer

The following descriptions define valid fields for the **RopCollapseRow ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																CollapsedRowCount															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x5A.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

CollapsedRowCount (4 bytes): An unsigned integer that specifies the total number of rows in the collapsed category.

2.2.5.17.3 RopCollapseRow ROP Failure Response Buffer

The following descriptions define valid fields for the **RopCollapseRow ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															

Copyright © 2025 Microsoft Corporation

...

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x5A.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.5.18 RopGetCollapseState ROP

The **RopGetCollapseState ROP** gets the current collapse state of rows in a categorized table. For more details about this operation, see [MS-OXCTABL] section 2.2.2.19.

2.2.5.18.1 RopGetCollapseState ROP Request Buffer

The following descriptions define valid fields for the **RopGetCollapseState ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
RopId								LogonId								InputHandleIndex				RowId											
...																															
...																								RowInstanceNumber							
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x6B.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

RowId (8 bytes): An identifier that specifies the row to be preserved as the cursor. The cursor is returned as part of the collapse state in the **CollapseState** field of the response.

RowInstanceNumber (4 bytes): An unsigned integer that specifies the instance number of the row that is to be preserved as the cursor.

2.2.5.18.2 RopGetCollapseState ROP Success Response Buffer

The following descriptions define valid fields for the **RopGetCollapseState ROP** success response buffer.

Copyright © 2025 Microsoft Corporation

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
RopId								InputHandleIndex								ReturnValue															
...																CollapseStateSize															
CollapseState (variable)																															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x6B.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

CollapseStateSize (2 bytes): An unsigned integer that specifies the size of the **CollapseState** field.

CollapseState (variable): An array of bytes that specifies a collapse state for a categorized table. The size of this field, in bytes, is specified by the **CollapseStateSize** field.

2.2.5.18.3 RopGetCollapseState ROP Failure Response Buffer

The following descriptions define valid fields for the **RopGetCollapseState ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x6B.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.5.19 RopSetCollapseState ROP

The **RopSetCollapseState ROP** restores the collapse state of rows in a categorized table. For more details about this operation, see [MS-OXCTABL] section 2.2.2.20.

2.2.5.19.1 RopSetCollapseState ROP Request Buffer

The following descriptions define valid fields for the **RopSetCollapseState ROP request buffer**.

Copyright © 2025 Microsoft Corporation

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								CollapseStateSize							
...								CollapseState (variable)																							
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x6C.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

CollapseStateSize (2 bytes): An unsigned integer that specifies the size of the **CollapseState** field.

CollapseState (variable): An array of bytes that specifies a collapse state for a categorized table. The size of this field, in bytes, is specified by the **CollapseStateSize** field.

2.2.5.19.2 RopSetCollapseState ROP Success Response Buffer

The following descriptions define valid fields for the **RopSetCollapseState ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																BookmarkSize															
Bookmark (variable)																															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x6C.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

BookmarkSize (2 bytes): An unsigned integer that specifies the size of the **Bookmark** field.

Bookmark (variable): An array of bytes that specifies the current cursor position. The size of this field, in bytes, is specified by the **BookmarkSize** field.

2.2.5.19.3 RopSetCollapseState ROP Failure Response Buffer

Copyright © 2025 Microsoft Corporation

The following descriptions define valid fields for the **RopSetCollapseState** **ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x6C.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.6 Message ROPs

2.2.6.1 RopOpenMessage ROP

The **RopOpenMessage** **ROP** opens an existing message in a **mailbox**. For more details about this operation, see [MS-OXCMSG] section 2.2.3.1.

2.2.6.1.1 RopOpenMessage ROP Request Buffer

The following descriptions define valid fields for the **RopOpenMessage** **ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								OutputHandleIndex							
CodePageId																FolderId															
...																															
...																OpenModeFlags								MessageId							
...																															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x03.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

Copyright © 2025 Microsoft Corporation

OutputHandleIndex (1 byte): An unsigned integer index that specifies the location in the Server object handle table where the handle for the output Server object will be stored.

CodePageId (2 bytes): An identifier that specifies which **code page** will be used for string values associated with the message.

FolderId (8 bytes): An identifier that identifies the parent folder of the message to be opened.

OpenModeFlags (1 byte): A **flags** structure that contains flags that control the access to the message. The possible values are specified in [MS-OXCMSG] section 2.2.3.1.1.

MessageId (8 bytes): An identifier that identifies the message to be opened.

2.2.6.1.2 RopOpenMessage ROP Success Response Buffer

The following descriptions define valid fields for the **RopOpenMessage ROP** success response buffer.

<table>
<tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>20</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>30</td><td>1</td></tr>
<tr><td colspan="8">RopId</td><td colspan="8">OutputHandleIndex</td><td colspan="16">ReturnValue</td></tr>
<tr><td colspan="16">...</td><td colspan="8">HasNamedProperties</td><td colspan="8">SubjectPrefix (variable)</td></tr>
<tr><td colspan="32">...</td></tr>
<tr><td colspan="32">NormalizedSubject (variable)</td></tr>
<tr><td colspan="32">...</td></tr>
<tr><td colspan="16">RecipientCount</td><td colspan="16">ColumnCount</td></tr>
<tr><td colspan="32">RecipientColumns (variable)</td></tr>
<tr><td colspan="32">...</td></tr>
<tr><td colspan="8">RowCount</td><td colspan="24">RecipientRows (variable)</td></tr>
<tr><td colspan="32">...</td></tr>
</table>

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x03.

OutputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **OutputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

HasNamedProperties (1 byte): A Boolean that specifies whether the message has **named properties**.

SubjectPrefix (variable): A **TypedString** structure that specifies the subject prefix of the message. The format of the **TypedString** structure is specified in [MS-OXCDATA] section 2.11.7.

Copyright © 2025 Microsoft Corporation

NormalizedSubject (variable): A **TypedString** structure that specifies the normalized subject of the message.

RecipientCount (2 bytes): An unsigned integer that specifies the number of **recipients (1)** on the message.

ColumnCount (2 bytes): An unsigned integer that specifies the number of structures in the **RecipientColumns** field.

RecipientColumns (variable): An array of **PropertyTag** structures that specifies the property values that can be included in each row that is specified in the **RecipientRows** field. The number of structures contained in this field is specified by the **ColumnCount** field. The format of the **PropertyTag** structure is specified in [MS-OXCDATA] section 2.9.

RowCount (1 byte): An unsigned integer that specifies the number of structures in the **RecipientRows** field.

RecipientRows (variable): A list of **OpenRecipientRow** structures. The number of structures contained in this field is specified by the **RowCount** field. The format of the **OpenRecipientRow** structure is defined in section 2.2.6.1.2.1.

2.2.6.1.2.1 OpenRecipientRow Structure

The following descriptions define valid fields for the **OpenRecipientRow** structure.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RecipientType								CodePageId																Reserved							
...								RecipientRowSize																RecipientRow (variable)							
...																															

RecipientType (1 byte): An enumeration that specifies the type of **recipient (2)**. The possible values for this enumeration are specified in [MS-OXCMSG] section 2.2.3.1.2.

CodePageId (2 bytes): An identifier that specifies the **code page** for the recipient (2).

Reserved (2 bytes): Reserved. The server MUST set this field to 0x0000.

RecipientRowSize (2 bytes): An unsigned integer that specifies the size of the **RecipientRow** field.

RecipientRow (variable): A **RecipientRow** structure. The format of this structure is specified in [MS-OXCDATA] section 2.8.3. The size of this field, in bytes, is specified by the **RecipientRowSize** field.

2.2.6.1.3 RopOpenMessage ROP Failure Response Buffer

The following descriptions define valid fields for the **RopOpenMessage ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								OutputHandleIndex								ReturnValue															

Copyright © 2025 Microsoft Corporation

...

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x03.

OutputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **OutputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.6.2 RopCreateMessage ROP

The **RopCreateMessage ROP** creates a **Message object** in a **mailbox**. For more details about this operation, see [MS-OXCMSG] section 2.2.3.2.

2.2.6.2.1 RopCreateMessage ROP Request Buffer

The following descriptions define valid fields for the **RopCreateMessage ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								OutputHandleIndex							
CodePageId																FolderId															
...																															
...																AssociatedFlag															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x06.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

OutputHandleIndex (1 byte): An unsigned integer index that specifies the location in the Server object handle table where the handle for the output Server object will be stored.

CodePageId (2 bytes): An identifier that specifies the **code page** for the message.

FolderId (8 bytes): An identifier that specifies the parent folder.

AssociatedFlag (1 byte): A Boolean that specifies whether the message is an **FAI** message.

2.2.6.2.2 RopCreateMessage ROP Success Response Buffer

The following descriptions define valid fields for the **RopCreateMessage ROP** success response buffer.

Copyright © 2025 Microsoft Corporation

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								OutputHandleIndex								ReturnValue															
...																HasMessageId				MessageId (optional)											
...																															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x06.

OutputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **OutputHandleIndex** specified in field the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

HasMessageId (1 byte): A Boolean that specifies whether the **MessageId** field is present.

MessageId (8 bytes): An identifier that is present if **HasMessageId** is nonzero and is not present if it is zero. This value is an identifier that is associated with the created message.

2.2.6.2.3 RopCreateMessage ROP Failure Response Buffer

The following descriptions define valid fields for the **RopCreateMessage ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								OutputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x06.

OutputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **OutputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.6.3 RopSaveChangesMessage ROP

The **RopSaveChangesMessage ROP** commits the changes made to a message. For more details about this operation, see [MS-OXCMSG] section 2.2.3.3.

2.2.6.3.1 RopSaveChangesMessage ROP Request Buffer

The following descriptions define valid fields for the **RopSaveChangesMessage ROP request buffer**.

Copyright © 2025 Microsoft Corporation

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
RopId								LogonId								ResponseHandleIndex								InputHandleIndex							
SaveFlags																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x0C.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

ResponseHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** that is referenced in the response. For more information about **Server objects**, see section 1.3.1.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the Server object handle table where the **handle** for the input Server object is stored.

SaveFlags (1 byte): A **flags** structure that contains flags that specify how the save operation behaves. The possible values are specified in [MS-OXCMSG] section 2.2.3.3.1.

2.2.6.3.2 RopSaveChangesMessage ROP Success Response Buffer

The following descriptions define valid fields for the **RopSaveChangesMessage ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
RopId								ResponseHandleIndex								ReturnValue															
...																InputHandleIndex				MessageId											
...																															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x0C.

ResponseHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **ResponseHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

MessageId (8 bytes): An identifier that specifies the ID of the message saved.

2.2.6.3.3 RopSaveChangesMessage ROP Failure Response Buffer

The following descriptions define valid fields for the **RopSaveChangesMessage ROP** failure response buffer.

Copyright © 2025 Microsoft Corporation

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
RopId								ResponseHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x0C.

ResponseHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **ResponseHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.6.4 RopRemoveAllRecipients ROP

The **RopRemoveAllRecipients** **ROP** deletes all **recipients (1)** from a message. For more details about this operation, see [MS-OXCMSG] section 2.2.3.4.

2.2.6.4.1 RopRemoveAllRecipients ROP Request Buffer

The following descriptions define valid fields for the **RopRemoveAllRecipients** **ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
RopId								LogonId								InputHandleIndex								Reserved							
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x0D.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

Reserved (4 bytes): Reserved. The client SHOULD set this field to 0x00000000. The server MUST ignore this field, regardless of its value.

2.2.6.4.2 RopRemoveAllRecipients ROP Response Buffer

The following descriptions define valid fields for the **RopRemoveAllRecipients** **ROP response buffer**.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
RopId								InputHandleIndex								ReturnValue															

Copyright © 2025 Microsoft Corporation

...

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x0D.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

2.2.6.5 RopModifyRecipients ROP

The **RopModifyRecipients** **ROP** adds or modifies **recipients (1)** on a message. For more details about this operation, see [MS-OXCMSG] section 2.2.3.5.

2.2.6.5.1 RopModifyRecipients ROP Request Buffer

The following descriptions define valid fields for the **RopModifyRecipients** **ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
RopId								LogonId								InputHandleIndex				ColumnCount											
...								RecipientColumns (variable)																							
...																															
RowCount																RecipientRows (variable)															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x0E.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

ColumnCount (2 bytes): An unsigned integer that specifies the number of structures in the **RecipientColumns** field.

RecipientColumns (variable): An array of **PropertyTag** structures that specifies the property values that can be included for each **recipient (1)**. The number of structures contained in this field is specified by the **ColumnCount** field. The format of the **PropertyTag** structure is specified in [MS-OXCDATA] section 2.9.

RowCount (2 bytes): An unsigned integer that specifies the number of rows in the **RecipientRows** field.

RecipientRows (variable): A list of **ModifyRecipientRow** structures. The number of structures contained in this field is specified by the **RowCount** field. The format of the **ModifyRecipientRow** structure is defined in section 2.2.6.5.1.1.

Copyright © 2025 Microsoft Corporation

2.2.6.5.1.1 ModifyRecipientRow Structure

The following descriptions define valid fields for the **ModifyRecipientRow** structure.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RowId																															
RecipientType								RecipientRowSize																RecipientRow (variable)							
...																															

RowId (4 bytes): An unsigned integer that specifies the ID of the **recipient (1)**.

RecipientType (1 byte): An enumeration that specifies the type of recipient (1). The possible values for this enumeration are specified in [MS-OXCMSG] section 2.2.3.1.2.

RecipientRowSize (2 bytes): An unsigned integer that specifies the size of the **RecipientRow** field.

RecipientRow (variable): A **RecipientRow** structure. This field is present when the **RecipientRowSize** field is nonzero and is not present otherwise. The format of the **RecipientRow** structure is specified in [MS-OXCDATA] section 2.8.3. The size of this field, in bytes, is specified by the **RecipientRowSize** field.

2.2.6.5.2 RopModifyRecipients ROP Response Buffer

The following descriptions define valid fields for the **RopModifyRecipients ROP response buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x0E.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

2.2.6.6 RopReadRecipients ROP

The **RopReadRecipients ROP** gets **recipient (2)** details from a message. For more details about this operation, see [MS-OXCMSG] section 2.2.3.6.

2.2.6.6.1 RopReadRecipients ROP Request Buffer

The following descriptions define valid fields for the **RopReadRecipients ROP request buffer**.

Copyright © 2025 Microsoft Corporation

0	1	2	3	4	5	6	7	8	9	1 0	1	2	3	4	5	6	7	8	9	2 0	1	2	3	4	5	6	7	8	9	3 0	1
RopId								LogonId								InputHandleIndex								RowId							
...																								Reserved							
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x0F.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

RowId (4 bytes): An unsigned integer that specifies the starting index for the **recipients (2)** to be retrieved.

Reserved (2 bytes): Reserved. This field MUST be set to 0x0000. Server behavior is undefined if this field is not set to 0x0000.

2.2.6.6.2 RopReadRecipients ROP Success Response Buffer

The following descriptions define valid fields for the **RopReadRecipients ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	1 0	1	2	3	4	5	6	7	8	9	2 0	1	2	3	4	5	6	7	8	9	3 0	1
RopId								InputHandleIndex								ReturnValue															
...																RowCount								RecipientRows (variable)							
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x0F.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

RowCount (1 byte): An unsigned integer that specifies the number of structures in the **RecipientRows** field.

RecipientRows (variable): A list of **ReadRecipientRow** structures. The number of structures contained in this field is specified by the **RowCount** field. The format of the **ReadRecipientRow** structure is defined in section 2.2.6.6.2.1.

2.2.6.6.2.1 ReadRecipientRow Structure

Copyright © 2025 Microsoft Corporation

The following descriptions define valid fields for the **ReadRecipientRow** structure.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RowId																															
RecipientType								CodePageId																Reserved							
...								RecipientRowSize																RecipientRow (variable)							
...																															

RowId (4 bytes): An unsigned integer that specifies the row ID of the **recipient (2)**.

RecipientType (1 byte): An enumeration that specifies the type of recipient (2). The possible values for this enumeration are specified in [MS-OXCMSG] section 2.2.3.1.2.

CodePageId (2 bytes): An identifier that specifies the **code page** for the recipient (2).

Reserved (2 bytes): Reserved. The server MUST set this field to 0x0000.

RecipientRowSize (2 bytes): An unsigned integer that specifies the size of the **RecipientRow** field.

RecipientRow (variable): A **RecipientRow** structure. The format of this structure is specified in [MS-OXCDATA] section 2.8.3. The size of this field, in bytes, is specified by the **RecipientRowSize** field.

2.2.6.6.3 RopReadRecipients ROP Failure Response Buffer

The following descriptions define valid fields for the **RopReadRecipients ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x0F.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.6.7 RopReloadCachedInformation ROP

The **RopReloadCachedInformation ROP** gets message and **recipient (2)** information from a message. For more details about this operation, see [MS-OXCMSG] section 2.2.3.7.

2.2.6.7.1 RopReloadCachedInformation ROP Request Buffer

Copyright © 2025 Microsoft Corporation

The following descriptions define valid fields for the **RopReloadCachedInformation** **ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								Reserved							
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x10.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

Reserved (2 bytes): Reserved. This field MUST be set to 0x0000. Server behavior is undefined if this field is not set to 0x0000.

2.2.6.7.2 RopReloadCachedInformation ROP Success Response Buffer

The following descriptions define valid fields for the **RopReloadCachedInformation** **ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																HasNamedProperties								SubjectPrefix (variable)							
...																															
NormalizedSubject (variable)																															
...																															
RecipientCount																ColumnCount															
RecipientColumns (variable)																															
...																															
RowCount								RecipientRows (variable)																							
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x10.

Copyright © 2025 Microsoft Corporation

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** specified field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

HasNamedProperties (1 byte): A Boolean that specifies whether the message has **named properties**.

SubjectPrefix (variable): A **TypedString** structure that specifies the subject prefix of the message. The format of the **TypedString** structure is specified in [MS-OXCDATA] section 2.11.7.

NormalizedSubject (variable): A **TypedString** structure that specifies the normalized subject of the message.

RecipientCount (2 bytes): An unsigned integer that specifies the number of **recipients (2)** on the message.

ColumnCount (2 bytes): An unsigned integer that specifies the number of structures in the **RecipientColumns** field.

RecipientColumns (variable): An array of **PropertyTag** structures that specifies the property values that can be included for each recipient (2). The number of structures contained in this field is specified by the **ColumnCount** field. The format of the **PropertyTag** structure is specified in [MS-OXCDATA] section 2.9.

RowCount (1 byte): An unsigned integer that specifies the number of rows in the **RecipientRows** field.

RecipientRows (variable): A list of **OpenRecipientRow** structures. The number of structures contained in this field is specified by the **RowCount** field. The format of the **OpenRecipientRow** structure is defined in section 2.2.6.1.2.1.

2.2.6.7.3 RopReloadCachedInformation ROP Failure Response Buffer

The following descriptions define valid fields for the **RopReloadCachedInformation ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x10.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.6.8 RopSetMessageStatus ROP

The **RopSetMessageStatus ROP** sets the status of a message in a folder. For more details about this operation, see [MS-OXCMSG] section 2.2.3.8.

Copyright © 2025 Microsoft Corporation

2.2.6.8.1 RopSetMessageStatus ROP Request Buffer

The following descriptions define valid fields for the **RopSetMessageStatus** **ROP request buffer**.

0 1 2 3 4 5 6 7	8 9 10 11 12 13 14 15	16 17 18 19 20 21 22 23	24 25 26 27 28 29 30 31
RopId	LogonId	InputHandleIndex	MessageId
...			
...			MessageStatusFlags
...			MessageStatusMask
...			

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x20.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

MessageId (8 bytes): An identifier that specifies the message for which the status will be changed.

MessageStatusFlags (4 bytes): A **flags** structure that contains status flags to set on the message. The possible values are specified in [MS-OXCMSG] section 2.2.3.8.1.

MessageStatusMask (4 bytes): A bitmask that specifies which bits in the **MessageStatusFlags** field are to be changed.

2.2.6.8.2 RopSetMessageStatus ROP Success Response Buffer

The following descriptions define valid fields for the **RopSetMessageStatus** **ROP** success response buffer.

0 1 2 3 4 5 6 7	8 9 10 11 12 13 14 15	16 17 18 19 20 21 22 23	24 25 26 27 28 29 30 31
RopId	InputHandleIndex	ReturnValue	
...		MessageStatusFlags	
...			

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x20.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

Copyright © 2025 Microsoft Corporation

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

MessageStatusFlags (4 bytes): A **flags** structure that contains the status flags that were set on the message before this operation. The possible values are specified in [MS-OXCMSG] section 2.2.3.8.2.

2.2.6.8.3 RopSetMessageStatus ROP Failure Response Buffer

The following descriptions define valid fields for the **RopSetMessageStatus ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x20.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.6.9 RopGetMessageStatus ROP

The **RopGetMessageStatus ROP** returns the status of a message in a folder. For more details about this operation, see [MS-OXCMSG] section 2.2.3.9.

2.2.6.9.1 RopGetMessageStatus ROP Request Buffer

The following descriptions define valid fields for the **RopGetMessageStatus ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								MessageId							
...																															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x1F.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

MessageId (8 bytes): An identifier that specifies the message for which the status will be returned.

Copyright © 2025 Microsoft Corporation

2.2.6.9.2 RopGetMessageStatus ROP Response Buffers

The response buffers for this **ROP** are the same as those for the **RopSetMessageStatus** ROP, as specified in sections 2.2.6.8.2 and 2.2.6.8.3. The value of the **RopId** field for **RopGetMessageStatus** responses MUST be 0x20, which is the same as that for the **RopSetMessageStatus** responses.

2.2.6.10 RopSetReadFlags ROP

The **RopSetReadFlags ROP** sets the read flag for messages in a folder. For more details about this operation, see [MS-OXCMSG] section 2.2.3.10.

2.2.6.10.1 RopSetReadFlags ROP Request Buffer

The following descriptions define valid fields for the **RopSetReadFlags ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								WantAsynchronous							
ReadFlags								MessageIdCount																MessageIds (variable)							
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x66.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

WantAsynchronous (1 byte): A Boolean that specifies whether the operation is to be processed asynchronously with status reported via the **RopProgress** ROP (section 2.2.8.13).

ReadFlags (1 byte): A **flags** structure that contains flags that specify the flags to set. The possible values for these flags are specified in [MS-OXCMSG] section 2.2.3.10.1.

MessageIdCount (2 bytes): An unsigned integer that specifies the number of identifiers in the **MessageIds** field.

MessageIds (variable): An array of 64-bit identifiers that specify the messages that are to have their read flags changed. The number of identifiers contained in this field is specified by the **MessageIdCount** field.

2.2.6.10.2 RopSetReadFlags ROP Response Buffer

The following descriptions define valid fields for the **RopSetReadFlags ROP response buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																PartialCompletion															

Copyright © 2025 Microsoft Corporation

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x66.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

PartialCompletion (1 byte): A Boolean that indicates whether the operation was only partially completed. The operation is partially completed if the server was unable to modify one or more of the **Message objects** that are specified in the **MessageIds** field of the request.

2.2.6.11 RopSetMessageReadFlag ROP

The **RopSetMessageReadFlag ROP** sets or clears the message read flag. For more details about this operation, see [MS-OXCMSG] section 2.2.3.11.

2.2.6.11.1 RopSetMessageReadFlag ROP Request Buffer

The following descriptions define valid fields for the **RopSetMessageReadFlag ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								ResponseHandleIndex								InputHandleIndex							
ReadFlags								ClientData (optional)																							
...																															
...																															
...																															
...																															
...																															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x11.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

ResponseHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** that is referenced in the response. For more information about Server objects, see section 1.3.1.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the Server object handle table where the **handle** for the input **Server object** is stored.

ReadFlags (1 byte): A **flags** structure. The possible values for these flags are specified in [MS-OXCMSG] section 2.2.3.11.1.

Copyright © 2025 Microsoft Corporation

ClientData (24 bytes): An array of bytes that is present when the logon associated with **LogonId** was created with the **Private** flag, as specified in [MS-OXCSTOR] section 2.2.1.1.1, unset and is not present otherwise. This value specifies the information that is returned to the client in a successful response.

2.2.6.11.2 RopSetMessageReadFlag ROP Success Response Buffer

The following descriptions define valid fields for the **RopSetMessageReadFlag** **ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								ResponseHandleIndex								ReturnValue															
...																ReadStatusChanged								LogonId (optional)							
ClientData (optional)																															
...																															
...																															
...																															
...																															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x11.

ResponseHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **ResponseHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

ReadStatusChanged (1 byte): A Boolean that specifies whether the read status of a **public folder's** message has changed.

LogonId (1 byte): An unsigned integer index that is present when the value in the **ReadStatusChanged** field is nonzero and is not present otherwise. This field MUST be set to the value of the **LogonId** field in the request.

ClientData (24 bytes): An array of bytes that is present when the value in the **ReadStatusChanged** field is nonzero and is not present otherwise. This field MUST be set to the value of the **ClientData** field in the request.

2.2.6.11.3 RopSetMessageReadFlag ROP Failure Response Buffer

The following descriptions define valid fields for the **RopSetMessageReadFlag** **ROP** failure response buffer.

Copyright © 2025 Microsoft Corporation

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
RopId								ResponseHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x11.

ResponseHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **ResponseHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.6.12 RopOpenAttachment ROP

The **RopOpenAttachment ROP** opens an attachment to a message. For more details about this operation, see [MS-OXCMSG] section 2.2.3.12.

2.2.6.12.1 RopOpenAttachment ROP Request Buffer

The following descriptions define valid fields for the **RopOpenAttachment ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
RopId								LogonId								InputHandleIndex								OutputHandleIndex							
OpenAttachmentFlags								AttachmentID																							
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x22.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

OutputHandleIndex (1 byte): An unsigned integer index that specifies the location in the Server object handle table where the handle for the output Server object will be stored.

OpenAttachmentFlags (1 byte): A **flags** structure that contains flags for opening attachments. The possible values for these flags are specified in [MS-OXCMSG] section 2.2.3.12.1.

AttachmentID (4 bytes): An unsigned integer index that identifies the attachment to be opened. The value of this field is equivalent to the value of the **PidTagAttachNumber** property ([MS-OXCMSG] section 2.2.2.6).

2.2.6.12.2 RopOpenAttachment ROP Response Buffer

The following descriptions define valid fields for the **RopOpenAttachment ROP response buffer**.

Copyright © 2025 Microsoft Corporation

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								OutputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x22.

OutputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **OutputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

2.2.6.13 RopCreateAttachment ROP

The **RopCreateAttachment ROP** creates a new attachment on a message. For more details about this operation, see [MS-OXCMSG] section 2.2.3.13.

2.2.6.13.1 RopCreateAttachment ROP Request Buffer

The following descriptions define valid fields for the **RopCreateAttachment ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								OutputHandleIndex							

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x23.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

OutputHandleIndex (1 byte): An unsigned integer index that specifies the location in the Server object handle table where the handle for the output Server object will be stored.

2.2.6.13.2 RopCreateAttachment ROP Success Response Buffer

The following descriptions define valid fields for the **RopCreateAttachment ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								OutputHandleIndex								ReturnValue															
...																AttachmentID															
...																															

Copyright © 2025 Microsoft Corporation

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x23.

OutputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **OutputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

AttachmentID (4 bytes): An unsigned integer identifier that refers to the attachment created. The value of this field is equivalent to the value of the **PidTagAttachNumber** property ([MS-OXCMSG] section 2.2.2.6).

2.2.6.13.3 RopCreateAttachment ROP Failure Response Buffer

The following descriptions define valid fields for the **RopCreateAttachment ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								OutputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x23.

OutputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **OutputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.6.14 RopDeleteAttachment ROP

The **RopDeleteAttachment ROP** deletes an attachment on a message. For more details about this operation, see [MS-OXCMSG] section 2.2.3.14.

2.2.6.14.1 RopDeleteAttachment ROP Request Buffer

The following descriptions define valid fields for the **RopDeleteAttachment ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								AttachmentID							
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x24.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

Copyright © 2025 Microsoft Corporation

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

AttachmentID (4 bytes): An unsigned integer that identifies the attachment to be deleted. The value of this field is equivalent to the **PidTagAttachNumber** property ([MS-OXCMSG] section 2.2.2.6).

2.2.6.14.2 RopDeleteAttachment ROP Response Buffer

The following descriptions define valid fields for the **RopDeleteAttachment ROP response buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x24.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

2.2.6.15 RopSaveChangesAttachment ROP

The **RopSaveChangesAttachment ROP** commits the changes made to an attachment. For more details about this operation, see [MS-OXCMSG] section 2.2.3.15.

2.2.6.15.1 RopSaveChangesAttachment ROP Request Buffer

The following descriptions define valid fields for the **RopSaveChangesAttachment ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								ResponseHandleIndex								InputHandleIndex							
SaveFlags																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x25.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

ResponseHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** that is referenced in the response. For more information about Server objects, see section 1.3.1.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the Server object handle table where the **handle** for the input **Server object** is stored.

Copyright © 2025 Microsoft Corporation

SaveFlags (1 byte): A **flags** structure that contains flags that specify how the save operation behaves. The possible values for these flags are specified in [MS-OXCMSG] section 2.2.3.3.1.

2.2.6.15.2 RopSaveChangesAttachment ROP Response Buffer

The following descriptions define valid fields for the **RopSaveChangesAttachment ROP response buffer**.

<table>
<tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>20</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>30</td><td>1</td></tr>
<tr><td colspan="8">RopId</td><td colspan="8">ResponseHandleIndex</td><td colspan="16">ReturnValue</td></tr>
<tr><td colspan="16">...</td><td colspan="16"></td></tr>
</table>

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x25.

ResponseHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **ResponseHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

2.2.6.16 RopOpenEmbeddedMessage ROP

The **RopOpenEmbeddedMessage ROP** opens an attachment as a message. For more details about this operation, see [MS-OXCMSG] section 2.2.3.16.

2.2.6.16.1 RopOpenEmbeddedMessage ROP Request Buffer

The following descriptions define valid fields for the **RopOpenEmbeddedMessage ROP request buffer**.

<table>
<tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>20</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>30</td><td>1</td></tr>
<tr><td colspan="8">RopId</td><td colspan="8">LogonId</td><td colspan="8">InputHandleIndex</td><td colspan="8">OutputHandleIndex</td></tr>
<tr><td colspan="16">CodePageId</td><td colspan="8">OpenModeFlags</td><td colspan="8"></td></tr>
</table>

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x46.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

OutputHandleIndex (1 byte): An unsigned integer index that specifies the location in the Server object handle table where the handle for the output Server object will be stored.

CodePageId (2 bytes): An identifier that specifies which **code page** is used for string values associated with the message.

Copyright © 2025 Microsoft Corporation

OpenModeFlags (1 byte): A **flags** structure that contains flags that control the access to the message. The possible values are specified in [MS-OXCMSG] section 2.2.3.16.1.

2.2.6.16.2 RopOpenEmbeddedMessage ROP Success Response Buffer

The following descriptions define valid fields for the **RopOpenEmbeddedMessage ROP** success response buffer.

<table>
<tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>20</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>30</td><td>1</td></tr>
<tr><td colspan="8">RopId</td><td colspan="8">OutputHandleIndex</td><td colspan="16">ReturnValue</td></tr>
<tr><td colspan="16">...</td><td colspan="8">Reserved</td><td colspan="8">MessageId</td></tr>
<tr><td colspan="32">...</td></tr>
<tr><td colspan="24">...</td><td colspan="8">HasNamedProperties</td></tr>
<tr><td colspan="32">SubjectPrefix (variable)</td></tr>
<tr><td colspan="32">...</td></tr>
<tr><td colspan="32">NormalizedSubject (variable)</td></tr>
<tr><td colspan="32">...</td></tr>
<tr><td colspan="16">RecipientCount</td><td colspan="16">ColumnCount</td></tr>
<tr><td colspan="32">RecipientColumns (variable)</td></tr>
<tr><td colspan="32">...</td></tr>
<tr><td colspan="8">RowCount</td><td colspan="24">RecipientRows (variable)</td></tr>
<tr><td colspan="32">...</td></tr>
</table>

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x46.

OutputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **OutputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

Reserved (1 byte): Reserved. This field MUST be set to 0x00.

MessageId (8 bytes): An identifier that specifies the ID of the **Embedded Message object**.

HasNamedProperties (1 byte): A Boolean that specifies whether the message has **named properties**.

Copyright © 2025 Microsoft Corporation

SubjectPrefix (variable): A **TypedString** structure that specifies the subject prefix of the message. The format of the **TypedString** structure is specified in [MS-OXCDATA] section 2.11.7.

NormalizedSubject (variable): A **TypedString** structure that specifies the normalized subject of the message.

RecipientCount (2 bytes): An unsigned integer that specifies the number of **recipients (2)** on the message.

ColumnCount (2 bytes): An unsigned integer that specifies the number of structures in the **RecipientColumns** field.

RecipientColumns (variable): An array of **PropertyTag** structures. The number of structures contained in this field is specified by the **ColumnCount** field. The format of the **PropertyTag** structure is specified in [MS-OXCDATA] section 2.9. This field specifies the property values that can be included for each recipient (2).

RowCount (1 byte): An unsigned integer that specifies the number of rows in the **RecipientRows** field.

RecipientRows (variable): A list of **OpenRecipientRow** structures. The number of structures contained in this field is specified by the **RowCount** field. The format of the **OpenRecipientRow** structure is defined in section 2.2.6.1.2.1.

2.2.6.16.3 RopOpenEmbeddedMessage ROP Failure Response Buffer

The following descriptions define valid fields for the **RopOpenEmbeddedMessage ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								OutputHandleIndex								ReturnValue															
…																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x46.

OutputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **OutputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.6.17 RopGetAttachmentTable ROP

The **RopGetAttachmentTable ROP** gets the attachment table of a message. For more details about this operation, see [MS-OXCMSG] section 2.2.3.17.

2.2.6.17.1 RopGetAttachmentTable ROP Request Buffer

The following descriptions define valid fields for the **RopGetAttachmentTable ROP request buffer**.

Copyright © 2025 Microsoft Corporation

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								OutputHandleIndex							
TableFlags																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x21.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

OutputHandleIndex (1 byte): An unsigned integer index that specifies the location in the Server object handle table where the handle for the output Server object will be stored.

TableFlags (1 byte): A **flags** structure that contains flags that control the type of table. The possible values are specified in [MS-OXCMSG] section 2.2.3.17.1.

2.2.6.17.2 RopGetAttachmentTable ROP Response Buffer

The following descriptions define valid fields for the **RopGetAttachmentTable ROP response buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								OutputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x21.

OutputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **OutputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

2.2.6.18 RopGetValidAttachments ROP

The **RopGetValidAttachments ROP** gets the valid attachment identifiers of a message. For more details about this operation, see [MS-OXCMSG] section 2.2.3.18.

2.2.6.18.1 RopGetValidAttachments ROP Request Buffer

The following descriptions define valid fields for the **RopGetValidAttachments ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex															

Copyright © 2025 Microsoft Corporation

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x52.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

2.2.6.18.2 RopGetValidAttachments ROP Success Response Buffer

The following descriptions define valid fields for the **RopGetValidAttachments ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																AttachmentIdCount															
AttachmentIdArray (variable)																															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x52.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

AttachmentIdCount (2 bytes): An unsigned integer that specifies the number of integers in the **AttachmentIdArray** field.

AttachmentIdArray (variable): An array of 32-bit integers that represent the valid attachment identifiers of the message. The number of integer values contained in this field is specified by the **AttachmentIdCount** field.

2.2.6.18.3 RopGetValidAttachments ROP Failure Response Buffer

The following descriptions define valid fields for the **RopGetValidAttachments ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x52.

Copyright © 2025 Microsoft Corporation

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.7 Transport ROPs

2.2.7.1 RopSubmitMessage ROP

The **RopSubmitMessage ROP** submits a message for sending. For more details about this operation, see [MS-OXOMSG] section 2.2.4.1.

2.2.7.1.1 RopSubmitMessage ROP Request Buffer

The following descriptions define valid fields for the **RopSubmitMessage ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								SubmitFlags							

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x32.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

SubmitFlags (1 byte): A **flags** structure that contains flags that specify special behavior for submitting the message. The possible values are specified in [MS-OXOMSG] section 2.2.4.1.1.

2.2.7.1.2 RopSubmitMessage ROP Response Buffer

The following descriptions define valid fields for the **RopSubmitMessage ROP response buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
…																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x32.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

Copyright © 2025 Microsoft Corporation

2.2.7.2 RopAbortSubmit ROP

The **RopAbortSubmit ROP** aborts a previous message submission. For more details about this operation, see [MS-OXOMSG] section 2.2.4.2.

2.2.7.2.1 RopAbortSubmit ROP Request Buffer

The following descriptions define valid fields for the **RopAbortSubmit ROP request buffer**.

<table>
<tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>20</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>30</td><td>1</td></tr>
<tr><td colspan="8">RopId</td><td colspan="8">LogonId</td><td colspan="8">InputHandleIndex</td><td colspan="8">FolderId</td></tr>
<tr><td colspan="32">...</td></tr>
<tr><td colspan="24">...</td><td colspan="8">MessageId</td></tr>
<tr><td colspan="32">...</td></tr>
<tr><td colspan="24">...</td><td colspan="8"></td></tr>
</table>

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x34.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

FolderId (8 bytes): An identifier that identifies the folder in which the submitted message is located.

MessageId (8 bytes): An identifier that specifies the submitted message.

2.2.7.2.2 RopAbortSubmit ROP Response Buffer

The following descriptions define valid fields for the **RopAbortSubmit ROP response buffer**.

<table>
<tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>20</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>30</td><td>1</td></tr>
<tr><td colspan="8">RopId</td><td colspan="8">InputHandleIndex</td><td colspan="16">ReturnValue</td></tr>
<tr><td colspan="16">...</td><td colspan="16"></td></tr>
</table>

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x34.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

Copyright © 2025 Microsoft Corporation

2.2.7.3 RopGetAddressTypes ROP

The **RopGetAddressTypes ROP** returns the type of **recipient (2)** handled by a transport provider. For more details about this operation, see [MS-OXOMSG] section 2.2.4.3.

2.2.7.3.1 RopGetAddressTypes ROP Request Buffer

The following descriptions define valid fields for the **RopGetAddressTypes ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x49.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

2.2.7.3.2 RopGetAddressTypes ROP Success Response Buffer

The following descriptions define valid fields for the **RopGetAddressTypes ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																AddressTypeCount															
AddressTypeSize																AddressTypes (variable)															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x49.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

AddressTypeCount (2 bytes): An unsigned integer that specifies the number of strings in the **AddressTypes** field.

AddressTypeSize (2 bytes): An unsigned integer that specifies the length of the **AddressTypes** field.

Copyright © 2025 Microsoft Corporation

AddressTypes (variable): A list of null-terminated **ASCII** strings. The number of strings contained in this field is specified by the **AddressTypeCount** field. The size of this field, in bytes, is specified by the **AddressTypeSize** field.

2.2.7.3.3 RopGetAddressTypes ROP Failure Response Buffer

The following descriptions define valid fields for the **RopGetAddressTypes ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x49.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.7.4 RopSetSpooler ROP

The **RopSetSpooler ROP** informs the server that the client intends to act as a mail spooler. For more details about this operation, see [MS-OXOMSG] section 2.2.5.1.

2.2.7.4.1 RopSetSpooler ROP Request Buffer

The following descriptions define valid fields for the **RopSetSpooler ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x47.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

2.2.7.4.2 RopSetSpooler ROP Response Buffer

The following descriptions define valid fields for the **RopSetSpooler ROP response buffer**.

Copyright © 2025 Microsoft Corporation

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x47.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the **ROP**.

2.2.7.5 RopSpoolerLockMessage ROP

The **RopSpoolerLockMessage ROP** locks the specified message for spooling. For more details about this operation, see [MS-OXOMSG] section 2.2.5.3.

2.2.7.5.1 RopSpoolerLockMessage ROP Request Buffer

The following descriptions define valid fields for the **RopSpoolerLockMessage ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								MessageId							
...																															
...																								LockState							

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x48.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

MessageId (8 bytes): An identifier that specifies the message for which the status will be changed.

LockState (1 byte): An enumeration. The possible values for this enumeration are specified in [MS-OXOMSG] section 2.2.5.3.1.

2.2.7.5.2 RopSpoolerLockMessage ROP Response Buffer

The following descriptions define valid fields for the **RopSpoolerLockMessage ROP response buffer**.

Copyright © 2025 Microsoft Corporation

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x48.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

2.2.7.6 RopTransportSend ROP

The **RopTransportSend ROP** sends the specified **Message object** out for message delivery. For more details about this operation, see [MS-OXOMSG] section 2.2.5.4.

2.2.7.6.1 RopTransportSend ROP Request Buffer

The following descriptions define valid fields for the **RopTransportSend ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x4A.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

2.2.7.6.2 RopTransportSend ROP Success Response Buffer

The following descriptions define valid fields for the **RopTransportSend ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																NoPropertiesReturned								PropertyValueCount (optional)							
...								PropertyValues (variable)																							
...																															

Copyright © 2025 Microsoft Corporation

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x4A.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

NoPropertiesReturned (1 byte): A Boolean that specifies whether property values are returned.

PropertyValueCount (2 bytes): An unsigned integer that specifies the number of structures returned in the **PropertyValues** field.

PropertyValues (variable): An array of **TaggedPropertyValue** structures that specifies the properties to copy. The format of the **TaggedPropertyValue** structure is specified in [MS-OXCDATA] section 2.11.4. The number of structures contained in this field is specified by the **PropertyValueCount** field.

2.2.7.6.3 RopTransportSend ROP Failure Response Buffer

The following descriptions define valid fields for the **RopTransportSend ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x4A.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.7.7 RopTransportNewMail ROP

The **RopTransportNewMail ROP** informs the server of new mail. For more details about this operation, see [MS-OXOMSG] section 2.2.5.5.

2.2.7.7.1 RopTransportNewMail ROP Request Buffer

The following descriptions define valid fields for the **RopTransportNewMail ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								MessageId							
...																															
...																								FolderId							

Copyright © 2025 Microsoft Corporation

...	
...	MessageClass (variable)
...	
MessageFlags	

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x51.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

MessageId (8 bytes): An identifier that specifies the new **Message object**.

FolderId (8 bytes): An identifier that specifies the folder of the new Message object.

MessageClass (variable): A null-terminated **ASCII** string that specifies the **message class** of the new Message object.

MessageFlags (4 bytes): A **flags** structure that contains the message flags of the new Message object. The possible values are specified in [MS-OXOMSG] section 2.2.5.5.1.

2.2.7.7.2 RopTransportNewMail ROP Response Buffer

The following descriptions define valid fields for the **RopTransportNewMail ROP response buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x51.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the **ROP**.

2.2.7.8 RopGetTransportFolder ROP

The **RopGetTransportFolder ROP** retrieves the Folder ID structure, as specified in [MS-OXCDATA] section 2.2.1.1, of the temporary transport folder. For more details about this operation, see [MS-OXOMSG] section 2.2.5.2.

2.2.7.8.1 RopGetTransportFolder ROP Request Buffer

The following descriptions define valid fields for the **RopGetTransportFolder ROP request buffer**.

Copyright © 2025 Microsoft Corporation

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x6D.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

2.2.7.8.2 RopGetTransportFolder ROP Success Response Buffer

The following descriptions define valid fields for the **RopGetTransportFolder ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																FolderId															
...																															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x6D.

InputHandleIndex (1 byte): An unsigned integer that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

FolderId (8 bytes): An identifier that specifies the transport folder.

2.2.7.8.3 RopGetTransportFolder ROP Failure Response Buffer

The following descriptions define valid fields for the **RopGetTransportFolder ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x6D.

Copyright © 2025 Microsoft Corporation

InputHandleIndex (1 byte): An unsigned integer that MUST be set to the **InputHandleIndex** specified in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.7.9 RopOptionsData ROP

The **RopOptionsData ROP** retrieves the options data that is associated with an **address type**.<6> For more details about this operation, see [MS-OXOMSG] section 2.2.4.4.

2.2.7.9.1 RopOptionsData ROP Request Buffer

The following descriptions define valid fields for the **RopOptionsData ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								AddressType (variable)							
...																															
WantWin32																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x6F.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

AddressType (variable): A null-terminated **ASCII** string that specifies the **address type** that options are to be returned for.

WantWin32 (1 byte): A Boolean that specifies whether the help file data is to be returned in a format that is suited for 32-bit machines.

2.2.7.9.2 RopOptionsData ROP Success Response Buffer

The following descriptions define valid fields for the **RopOptionsData ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																Reserved								OptionsInfoSize							
...								OptionsInfo (variable)																							
...																															

Copyright © 2025 Microsoft Corporation

HelpFileSize	HelpFile (variable)
...	
HelpFileName (variable)	
...	

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x6F.

InputHandleIndex (1 byte): An unsigned integer that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

Reserved (1 byte): Reserved. This field MUST be set to 0x01.

OptionsInfoSize (2 bytes): An unsigned integer that specifies the size of the **OptionsInfo** field.

OptionsInfo (variable): An array of bytes that contains opaque data from the server. Clients SHOULD ignore this field. Servers SHOULD return this field as an empty array.<7> The size of this field, in bytes, is specified by the **OptionsInfoSize** field.

HelpFileSize (2 bytes): An unsigned integer that specifies the size of the **HelpFile** field.

HelpFile (variable): An array of bytes that contains the help file associated with the specified **address type**. The size of this field, in bytes, is specified by the **HelpFileSize** field. This field is present only when the value of the **HelpFileSize** field is nonzero.

HelpFileName (variable): A null-terminated multibyte string that specifies the name of the help file that is associated with the specified address type. The string is composed of multibyte characters. This field is present if **HelpFileSize** is nonzero and is not present otherwise.

2.2.7.9.3 RopOptionsData ROP Failure Response Buffer

The following descriptions define valid fields for the **RopOptionsData ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x6F.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field SHOULD be set to a value other than 0x00000000.<8>

Copyright © 2025 Microsoft Corporation

2.2.8 Property ROPs

2.2.8.1 RopGetPropertyIdsFromNames ROP

The **RopGetPropertyIdsFromNames** **ROP** gets **property IDs** for specified **property names**. For more details about this operation, see [MS-OXCPRPT] section 2.2.12.

2.2.8.1.1 RopGetPropertyIdsFromNames ROP Request Buffer

The following descriptions define valid fields for the **RopGetPropertyIdsFromNames** **ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								Flags							
PropertyNameCount																PropertyNames (variable)															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x56.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

Flags (1 byte): A **flags** structure that contains flags that control the behavior of this operation. The possible values are specified in [MS-OXCPRPT] section 2.2.12.1.

PropertyNameCount (2 bytes): An unsigned integer that specifies the number of structures in the **PropertyNames** field.

PropertyNames (variable): A list of **PropertyName** structures that specifies the **property names** requested. The number of structures contained in this field is specified by the **PropertyNameCount** field. The format of the **PropertyName** structure is specified in [MS-OXCPRPT] section 2.2.12.1.

2.2.8.1.2 RopGetPropertyIdsFromNames ROP Success Response Buffer

The following descriptions define valid fields for the **RopGetPropertyIdsFromNames** **ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																PropertyIdCount															
PropertyIds (variable)																															

Copyright © 2025 Microsoft Corporation

...

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x56.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

PropertyIdCount (2 bytes): An unsigned integer that specifies the number of integers contained in the **PropertyIds** field.

PropertyIds (variable): An array of unsigned 16-bit integers. Each integer in the array is the **property ID** associated with a **property name**. The number of integers in the array is specified by the **PropertyIdCount** field.

2.2.8.1.3 RopGetPropertyIdsFromNames ROP Failure Response Buffer

The following descriptions define valid fields for the **RopGetPropertyIdsFromNames ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x56.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.8.2 RopGetNamesFromPropertyIds ROP

The **RopGetNamesFromPropertyIds ROP** gets **property names** for specified **property IDs**. For more details about this operation, see [MS-OXCPRPT] section 2.2.13.

2.2.8.2.1 RopGetNamesFromPropertyIds ROP Request Buffer

The following descriptions define valid fields for the **RopGetNamesFromPropertyIds ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								PropertyIdCount							
...								PropertyIds (variable)																							

Copyright © 2025 Microsoft Corporation

...

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x55.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

PropertyIdCount (2 bytes): An unsigned integer that specifies the number of integers contained in the **PropertyIds** field.

PropertyIds (variable): An array of unsigned 16-bit integers. Each integer in the array is the **property ID** associated with a **property name** to be returned in the response. The number of integers in the array is specified by the **PropertyIdCount** field.

2.2.8.2.2 RopGetNamesFromPropertyIds ROP Success Response Buffer

The following descriptions define valid fields for the **RopGetNamesFromPropertyIds ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
RopId								InputHandleIndex								ReturnValue															
...																PropertyNameCount															
PropertyNames (variable)																															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x55.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

PropertyNameCount (2 bytes): An unsigned integer that specifies the number of structures in the **PropertyNames** field.

PropertyNames (variable): A list of **PropertyName** structures that specifies the **property names** for the **property IDs** requested. The number of structures contained in this field is specified by the **PropertyNameCount** field. The format of the **PropertyName** structure is specified in [MS-OXCDATA] section 2.6.1.

2.2.8.2.3 RopGetNamesFromPropertyIds ROP Failure Response Buffer

The following descriptions define valid fields for the **RopGetNamesFromPropertyIds ROP** failure response buffer.

Copyright © 2025 Microsoft Corporation

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x55.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.8.3 RopGetPropertiesSpecific ROP

The **RopGetPropertiesSpecific ROP** gets property values for specified **property tags**. For more details about this operation, see [MS-OXCPRPT] section 2.2.2.

2.2.8.3.1 RopGetPropertiesSpecific ROP Request Buffer

The following descriptions define valid fields for the **RopGetPropertiesSpecific ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								PropertySizeLimit							
...								WantUnicode																PropertyTagCount							
...								PropertyTags (variable)																							
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x07.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

PropertySizeLimit (2 bytes): An unsigned integer that specifies the maximum size allowed for a property value returned.

WantUnicode (2 bytes): A Boolean that specifies whether to return string properties in multibyte **Unicode**.

PropertyTagCount (2 bytes): An unsigned integer that specifies the number of tags present in the **PropertyTags** field.

Copyright © 2025 Microsoft Corporation

PropertyTags (variable): An array of **PropertyTag** structures that specifies the properties requested. The number of structures contained in this field is specified by the **PropertyTagCount** field. The format of the **PropertyTag** structure is specified in [MS-OXCDATA] section 2.9.

2.2.8.3.2 RopGetPropertiesSpecific ROP Success Response Buffer

The following descriptions define valid fields for the **RopGetPropertiesSpecific ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																RowData (variable)															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x07.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

RowData (variable): A **PropertyRow** structure. The format of the **PropertyRow** structure is specified in [MS-OXCDATA] section 2.8. The columns used for these rows were those specified in the **PropertyTags** field in the **ROP request**.

2.2.8.3.3 RopGetPropertiesSpecific ROP Failure Response Buffer

The following descriptions define valid fields for the **RopGetPropertiesSpecific ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x07.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

Copyright © 2025 Microsoft Corporation

2.2.8.4 RopGetPropertiesAll ROP

The **RopGetPropertiesAll** ROP gets all the property values for an object. For more details about this operation, see [MS-OXCPRPT] section 2.2.3.

2.2.8.4.1 RopGetPropertiesAll ROP Request Buffer

The following descriptions define valid fields for the **RopGetPropertiesAll** **ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								PropertySizeLimit							
...								WantUnicode																							

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x08.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

PropertySizeLimit (2 bytes): An unsigned integer that specifies the maximum size allowed for a property value returned.

WantUnicode (2 bytes): A Boolean that specifies whether to return string properties in multibyte **Unicode**.

2.2.8.4.2 RopGetPropertiesAll ROP Success Response Buffer

The following descriptions define valid fields for the **RopGetPropertiesAll** **ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																PropertyValueCount															
PropertyValues (variable)																															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x08.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

Copyright © 2025 Microsoft Corporation

PropertyValueCount (2 bytes): An unsigned integer that specifies the number of structures present in the **PropertyValues** field.

PropertyValues (variable): An array of **TaggedPropertyValue** structures that are the properties defined on the object. The number of structures contained in this field is specified by the **PropertyValueCount** field. The format of the **TaggedPropertyValue** structure is specified in [MS-OXCDATA] section 2.11.4.

2.2.8.4.3 RopGetPropertiesAll ROP Failure Response Buffer

The following descriptions define valid fields for the **RopGetPropertiesAll** **ROP** failure response buffer.

<table>
<tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>20</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>30</td><td>1</td></tr>
<tr><td colspan="8">RopId</td><td colspan="8">InputHandleIndex</td><td colspan="16">ReturnValue</td></tr>
<tr><td colspan="16">...</td></tr>
</table>

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x08.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.8.5 RopGetPropertiesList ROP

The **RopGetPropertiesList** **ROP** gets the list of **property tags** for an object. For more details about this operation, see [MS-OXCPRPT] section 2.2.4.

2.2.8.5.1 RopGetPropertiesList ROP Request Buffer

The following descriptions define valid fields for the **RopGetPropertiesList** **ROP request buffer**.

<table>
<tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>20</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>30</td><td>1</td></tr>
<tr><td colspan="8">RopId</td><td colspan="8">LogonId</td><td colspan="8">InputHandleIndex</td></tr>
</table>

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x09.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

2.2.8.5.2 RopGetPropertiesList ROP Success Response Buffer

The following descriptions define valid fields for the **RopGetPropertiesList** **ROP** success response buffer.

Copyright © 2025 Microsoft Corporation

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																PropertyTagCount															
PropertyTags (variable)																															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x09.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

PropertyTagCount (2 bytes): An unsigned integer that specifies the number of **property tags** in the **PropertyTags** field.

PropertyTags (variable): An array of **PropertyTag** structures that lists the property tags on the object. The number of structures contained in this field is specified by the **PropertyTagCount** field. The format of the **PropertyTag** structure is specified in [MS-OXCDATA] section 2.9.

2.2.8.5.3 RopGetPropertiesList ROP Failure Response Buffer

The following descriptions define valid fields for the **RopGetPropertiesList ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x09.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.8.6 RopSetProperties ROP

The **RopSetProperties ROP** sets property values for an object. For more details about this operation, see [MS-OXCPRPT] section 2.2.5.

2.2.8.6.1 RopSetProperties ROP Request Buffer

Copyright © 2025 Microsoft Corporation

The following descriptions define valid fields for the **RopSetProperties** **ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								PropertyValueSize							
...								PropertyValueCount																PropertyValues (variable)							
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x0A.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

PropertyValueSize (2 bytes): An unsigned integer that specifies the number of bytes used for the **PropertyValueCount** field and the **PropertyValues** field.

PropertyValueCount (2 bytes): An unsigned integer that specifies the number of **PropertyValue** structures listed in the **PropertyValues** field.

PropertyValues (variable): An array of **TaggedPropertyValue** structures that specifies the property values to be set on the object. The number of structures contained in this field is specified by the **PropertyValueCount** field. The size of this field, in bytes, is equal to the value of the **PropertyValueSize** field - 2. The format of the **TaggedPropertyValue** structure is specified in [MS-OXCDATA] section 2.11.4.

2.2.8.6.2 RopSetProperties ROP Success Response Buffer

The following descriptions define valid fields for the **RopSetProperties** **ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																PropertyProblemCount															
PropertyProblems (variable)																															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x0A.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

Copyright © 2025 Microsoft Corporation

PropertyProblemCount (2 bytes): An unsigned integer that specifies the number of **PropertyProblem** structures in the **PropertyProblems** field.

PropertyProblems (variable): An array of **PropertyProblem** structures. The number of structures contained in this field is specified by the **PropertyProblemCount** field. The format of the **PropertyProblem** structure is specified in [MS-OXCDATA] section 2.7.

2.2.8.6.3 RopSetProperties ROP Failure Response Buffer

The following descriptions define valid fields for the **RopSetProperties ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x0A.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.8.7 RopSetPropertiesNoReplicate ROP

The **RopSetPropertiesNoReplicate ROP** sets property values for an object without invoking replication. For more details about this operation, see [MS-OXCPRPT] section 2.2.6.

2.2.8.7.1 RopSetPropertiesNoReplicate ROP Request Buffer

The following descriptions define valid fields for the **RopSetPropertiesNoReplicate ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								PropertyValueSize							
...								PropertyValueCount																PropertyValues (variable)							
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x79.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

Copyright © 2025 Microsoft Corporation

PropertyValueSize (2 bytes): An unsigned integer that specifies the number of bytes used for the **PropertyValueCount** field and the **PropertyValues** field.

PropertyValueCount (2 bytes): An unsigned integer that specifies the number of structures listed in the **PropertyValues** field.

PropertyValues (variable): An array of **TaggedPropertyValue** structures that specifies the property values to be set on the object. The number of structures contained in this field is specified by the **PropertyValueCount** field. The size of this field, in bytes, is equal to the value of the **PropertyValueSize** field - 2. The format of the **TaggedPropertyValue** structure is specified in [MS-OXCDATA] section 2.11.4.

2.2.8.7.2 RopSetPropertiesNoReplicate ROP Success Response Buffer

The following descriptions define valid fields for the **RopSetPropertiesNoReplicate ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																PropertyProblemCount															
PropertyProblems (variable)																															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x79.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

PropertyProblemCount (2 bytes): An unsigned integer that specifies the number of **PropertyProblem** structures in the **PropertyProblems** field.

PropertyProblems (variable): An array of **PropertyProblem** structures. The number of structures contained in this field is specified by the **PropertyProblemCount** field. The format of the **PropertyProblem** structure is specified in [MS-OXCDATA] section 2.7.

2.2.8.7.3 RopSetPropertiesNoReplicate ROP Failure Response Buffer

The following descriptions define valid fields for the **RopSetPropertiesNoReplicate ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

Copyright © 2025 Microsoft Corporation

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x79.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.8.8 RopDeleteProperties ROP

The **RopDeleteProperties ROP** deletes property values for an object. For more details about this operation, see [MS-OXCPRPT] section 2.2.7.

2.2.8.8.1 RopDeleteProperties ROP Request Buffer

The following descriptions define valid fields for the **RopDeleteProperties ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								PropertyTagCount							
...								PropertyTags (variable)																							
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x0B.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

PropertyTagCount (2 bytes): An unsigned integer that specifies the number of **PropertyTag** structures in the **PropertyTags** field.

PropertyTags (variable): An array of **PropertyTag** structures that specifies the property values to be deleted from the object. The number of structures contained in this field is specified by the **PropertyTagCount** field. The format of the **PropertyTag** structure is specified in [MS-OXCDATA] section 2.9.

2.2.8.8.2 RopDeleteProperties ROP Success Response Buffer

The following descriptions define valid fields for the **RopDeleteProperties ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																PropertyProblemCount															

Copyright © 2025 Microsoft Corporation

PropertyProblems (variable)
...

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x0B.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

PropertyProblemCount (2 bytes): An unsigned integer that specifies the number of **PropertyProblem** structures in the **PropertyProblems** field.

PropertyProblems (variable): An array of **PropertyProblem** structures. The number of structures contained in this field is specified by the **PropertyProblemCount** field. The format of the **PropertyProblem** structure is specified in [MS-OXCDATA] section 2.7.

2.2.8.8.3 RopDeleteProperties ROP Failure Response Buffer

The following descriptions define valid fields for the **RopDeleteProperties ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x0B.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.8.9 RopDeletePropertiesNoReplicate ROP

The **RopDeletePropertiesNoReplicate ROP** deletes property values from an object without invoking replication. For more details about this operation, see [MS-OXCPRPT] section 2.2.8.

2.2.8.9.1 RopDeletePropertiesNoReplicate ROP Request Buffer

The following descriptions define valid fields for the **RopDeletePropertiesNoReplicate ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								PropertyTagCount							

Copyright © 2025 Microsoft Corporation

...	PropertyTags (variable)
...	

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x7A.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

PropertyTagCount (2 bytes): An unsigned integer that specifies the number of **PropertyTag** structures in the **PropertyTags** field.

PropertyTags (variable): An array of **PropertyTag** structures that specifies the property values to be deleted from the object. The number of structures contained in this field is specified by the **PropertyTagCount** field. The format of the **PropertyTag** structure is specified in [MS-OXCDATA] section 2.9.

2.2.8.9.2 RopDeletePropertiesNoReplicate ROP Success Response Buffer

The following descriptions define valid fields for the **RopDeletePropertiesNoReplicate ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																PropertyProblemCount															
PropertyProblems (variable)																															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x7A.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

PropertyProblemCount (2 bytes): An unsigned integer that specifies the number of **PropertyProblem** structures in the **PropertyProblems** field.

PropertyProblems (variable): An array of **PropertyProblem** structures. The number of structures contained in this field is specified by the **PropertyProblemCount** field. The format of the **PropertyProblem** structure is specified in [MS-OXCDATA] section 2.7.

2.2.8.9.3 RopDeletePropertiesNoReplicate ROP Failure Response Buffer

Copyright © 2025 Microsoft Corporation

The following descriptions define valid fields for the **RopDeletePropertiesNoReplicate ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x7A.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.8.10 RopQueryNamedProperties ROP

The **RopQueryNamedProperties ROP** retrieves all the **named properties** for an object. For more details about this operation, see [MS-OXCPRPT] section 2.2.9.

2.2.8.10.1 RopQueryNamedProperties ROP Request Buffer

The following descriptions define valid fields for the **RopQueryNamedProperties ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								QueryFlags							
HasGuid								PropertyGuid (optional)																							
...																															
...																															
...																															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x5F.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

Copyright © 2025 Microsoft Corporation

QueryFlags (1 byte): A **flags** structure that contains flags control how this ROP behaves. The possible values are specified in [MS-OXCPRPT] section 2.2.9.1.

HasGuid (1 byte): A Boolean that specifies whether the **PropertyGuid** field is present.

PropertyGuid (16 bytes): A **GUID** that is present if **HasGuid** is nonzero and is not present if the value of the **HasGuid** field is zero. This value specifies the subset of **named properties** to be returned.

2.2.8.10.2 RopQueryNamedProperties ROP Success Response Buffer

The following descriptions define valid fields for the **RopQueryNamedProperties ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
RopId								InputHandleIndex								ReturnValue															
...																IdCount															
PropertyIds (variable)																															
...																															
PropertyNames (variable)																															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x5F.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000 or 0x00040380.

IdCount (2 bytes): An unsigned integer that specifies the number of elements contained in the **PropertyIds** and **PropertyNames** fields.

PropertyIds (variable): An array of unsigned 16-bit integers. Each integer in the array is the **property ID** associated with a **property name**. The number of integers in the array is specified by the **IdCount** field.

PropertyNames (variable): A list of **PropertyName** structures that specifies the property names for the property IDs specified in the **PropertyIds** field. The number of structures contained in this field is specified by the **IdCount** field. The format of the **PropertyName** structure is specified in [MS-OXCDATA] section 2.6.1.

2.2.8.10.3 RopQueryNamedProperties ROP Failure Response Buffer

The following descriptions define valid fields for the **RopQueryNamedProperties ROP** failure response buffer.

Copyright © 2025 Microsoft Corporation

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x5F.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000 or 0x00040380.

2.2.8.11 RopCopyProperties ROP

The **RopCopyProperties ROP** copies property values from one object to another. For more details about this operation, see [MS-OXCPRPT] section 2.2.10.

2.2.8.11.1 RopCopyProperties ROP Request Buffer

The following descriptions define valid fields for the **RopCopyProperties ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								SourceHandleIndex								DestHandleIndex							
WantAsynchronous								CopyFlags								PropertyTagCount															
PropertyTags (variable)																															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x67.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

SourceHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the source **Server object** is stored. For more information about Server objects, see section 1.3.1.

DestHandleIndex (1 byte): An unsigned integer index that specifies the location in the Server object handle table where the handle for the destination Server object is stored.

WantAsynchronous (1 byte): A Boolean that specifies whether the operation is to be processed asynchronously with status reported via the **RopProgress** ROP (section 2.2.8.13).

CopyFlags (1 byte): A **flags** structure that contains flags that control the operation behavior. The possible values are specified in [MS-OXCPRPT] section 2.2.10.1.

Copyright © 2025 Microsoft Corporation

PropertyTagCount (2 bytes): An unsigned integer that specifies how many tags are present in the **PropertyTags** field.

PropertyTags (variable): An array of **PropertyTag** structures that specifies the properties to copy. The number of structures contained in this field is specified by the **PropertyTagCount** field. The format of the **PropertyTag** structure is specified in [MS-OXCDATA] section 2.9.

2.2.8.11.2 RopCopyProperties ROP Success Response Buffer

The following descriptions define valid fields for the **RopCopyProperties ROP** success response buffer.

0 1 2 3 4 5 6 7 8 9 10 1 2 3 4 5 6 7 8 9 20 1 2 3 4 5 6 7 8 9 30 1		
RopId	SourceHandleIndex	ReturnValue
...		PropertyProblemCount
PropertyProblems (variable)		
...		

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x67.

SourceHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **SourceHandleIndex** field specified in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

PropertyProblemCount (2 bytes): An unsigned integer that specifies the number of **PropertyProblem** structures in the **PropertyProblems** field.

PropertyProblems (variable): An array of **PropertyProblem** structures. The number of structures contained in this field is specified by the **PropertyProblemCount** field. The format of the **PropertyProblem** structure is specified in [MS-OXCDATA] section 2.7.

2.2.8.11.3 RopCopyProperties ROP Null Destination Failure Response Buffer

The following descriptions define valid fields for the **RopCopyProperties ROP** null destination failure response buffer.

0 1 2 3 4 5 6 7 8 9 10 1 2 3 4 5 6 7 8 9 20 1 2 3 4 5 6 7 8 9 30 1		
RopId	SourceHandleIndex	ReturnValue
...		DestHandleIndex
...		

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x67.

Copyright © 2025 Microsoft Corporation

SourceHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **SourceHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000503.

DestHandleIndex (4 bytes): An unsigned integer index that MUST be set to the value specified in the **DestHandleIndex** field in the request.

2.2.8.11.4 RopCopyProperties ROP Failure Response Buffer

The following descriptions define valid fields for the **RopCopyProperties ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								SourceHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x67.

SourceHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **SourceHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000 or 0x00000503.

2.2.8.12 RopCopyTo ROP

The **RopCopyTo ROP** copies properties from one **Server object** to another. For more details about this operation, see [MS-OXCPRPT] section 2.2.11.

2.2.8.12.1 RopCopyTo ROP Request Buffer

The following descriptions define valid fields for the **RopCopyTo ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								SourceHandleIndex								DestHandleIndex							
WantAsynchronous								WantSubObjects								CopyFlags								ExcludedTagCount							
...								ExcludedTags (variable)																							
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x39.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

Copyright © 2025 Microsoft Corporation

SourceHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the source **Server object** is stored. For more information about Server objects, see section 1.3.1.

DestHandleIndex (1 byte): An unsigned integer index that specifies the location in the Server object handle table where the handle for the destination Server object is stored.

WantAsynchronous (1 byte): A Boolean that specifies whether the operation is to be processed asynchronously with status reported via the **RopProgress** ROP (section 2.2.8.13).

WantSubObjects (1 byte): A Boolean that specifies whether to copy subobjects.

CopyFlags (1 byte): A **flags** structure that contains flags that control the operation behavior. The possible values are specified in [MS-OXCPRPT] section 2.2.11.1.

ExcludedTagCount (2 bytes): An unsigned integer that specifies how many tags are present in the **ExcludedTags** field.

ExcludedTags (variable): An array of **PropertyTag** structures that specifies the properties to exclude from the copy. The number of structures contained in this field is specified by the **ExcludedTagCount** field. The format of the **PropertyTag** structure is specified in [MS-OXCDATA] section 2.9.

2.2.8.12.2 RopCopyTo ROP Success Response Buffer

The following descriptions define valid fields for the **RopCopyTo ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								SourceHandleIndex								ReturnValue															
...																PropertyProblemCount															
PropertyProblems (variable)																															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x39.

SourceHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **SourceHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

PropertyProblemCount (2 bytes): An unsigned integer that specifies the number of **PropertyProblem** structures in the **PropertyProblems** field.

PropertyProblems (variable): An array of **PropertyProblem** structures. The number of structures contained in this field is specified by the **PropertyProblemCount** field. The format of the **PropertyProblem** structure is specified in [MS-OXCDATA] section 2.7.

2.2.8.12.3 RopCopyTo ROP Null Destination Failure Response Buffer

Copyright © 2025 Microsoft Corporation

The following descriptions define valid fields for the **RopCopyTo ROP** null destination failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								SourceHandleIndex								ReturnValue															
...																DestHandleIndex															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x39.

SourceHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **SourceHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000503.

DestHandleIndex (4 bytes): An unsigned integer index that MUST be set to the **DestHandleIndex** specified in the request.

2.2.8.12.4 RopCopyTo ROP Failure Response Buffer

The following descriptions define valid fields for the **RopCopyTo ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								SourceHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x39.

SourceHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **SourceHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000 or 0x00000503.

2.2.8.13 RopProgress ROP

The **RopProgress ROP** gets the status of an asynchronous operation. For more details about this operation, see [MS-OXCPRPT] section 2.2.23.

2.2.8.13.1 RopProgress ROP Request Buffer

The following descriptions define valid fields for the **RopProgress ROP request buffer**.

Copyright © 2025 Microsoft Corporation

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
RopId								LogonId								InputHandleIndex								WantCancel							

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x50.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

WantCancel (1 byte): A Boolean that specifies whether to cancel the operation.

2.2.8.13.2 RopProgress ROP Success Response Buffer

The following descriptions define valid fields for the **RopProgress ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
RopId								InputHandleIndex								ReturnValue															
...																LogonId								CompletedTaskCount							
...																								TotalTaskCount							
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x50.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

CompletedTaskCount (4 bytes): An unsigned integer that specifies the number of tasks completed.

TotalTaskCount (4 bytes): An unsigned integer that specifies the total number of tasks.

2.2.8.13.3 RopProgress ROP Failure Response Buffer

The following descriptions define valid fields for the **RopProgress ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
RopId								InputHandleIndex								ReturnValue															

Copyright © 2025 Microsoft Corporation

...

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x50.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.9 Stream ROPs

2.2.9.1 RopOpenStream ROP

The **RopOpenStream ROP** opens a property for streaming access. For more details about this operation, see [MS-OXCPRPT] section 2.2.14.

2.2.9.1.1 RopOpenStream ROP Request Buffer

The following descriptions define valid fields for the **RopOpenStream ROP request buffer**.

<table>
<tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>20</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>30</td><td>1</td></tr>
<tr><td colspan="8">RopId</td><td colspan="8">LogonId</td><td colspan="8">InputHandleIndex</td><td colspan="8">OutputHandleIndex</td></tr>
<tr><td colspan="32">PropertyTag</td></tr>
<tr><td colspan="8">OpenModeFlags</td></tr>
</table>

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x2B.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

OutputHandleIndex (1 byte): An unsigned integer index that specifies the location in the Server object handle table where the handle for the output Server object will be stored.

PropertyTag (4 bytes): A **PropertyTag** structure that specifies the property of the object to stream. The format of the **PropertyTag** structure is specified in [MS-OXCDATA] section 2.9.

OpenModeFlags (1 byte): A **flags** structure that contains flags that control how the stream is opened. The possible values are specified in [MS-OXCPRPT] section 2.2.14.1.

2.2.9.1.2 RopOpenStream ROP Success Response Buffer

The following descriptions define valid fields for the **RopOpenStream ROP** success response buffer.

Copyright © 2025 Microsoft Corporation

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
RopId								OutputHandleIndex								ReturnValue															
...																StreamSize															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x2B.

OutputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **OutputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

StreamSize (4 bytes): An unsigned integer that indicates the size of the stream opened.

2.2.9.1.3 RopOpenStream ROP Failure Response Buffer

The following descriptions define valid fields for the **RopOpenStream ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
RopId								OutputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x2B.

OutputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **OutputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.9.2 RopReadStream ROP

The **RopReadStream ROP** reads bytes from a stream. For more details about this operation, see [MS-OXCPRPT] section 2.2.15.

2.2.9.2.1 RopReadStream ROP Request Buffer

The following descriptions define valid fields for the **RopReadStream ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
RopId								LogonId								InputHandleIndex								ByteCount							

Copyright © 2025 Microsoft Corporation

...	MaximumByteCount (optional)
...	

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x2C.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

ByteCount (2 bytes): An unsigned integer that specifies the maximum number of bytes to read if the value is not equal to 0xBABE.

MaximumByteCount (4 bytes): An unsigned integer that specifies the maximum number of bytes to read if the value of the **ByteCount** field is equal to 0xBABE.<9> The **MaximumByteCount** field is present when the **ByteCount** field is equal to 0xBABE and is not present otherwise. If the value of the **MaximumByteCount** field is greater than 0x80000000, then the **RPC** SHOULD fail with error code 0x000004B6.

2.2.9.2.2 RopReadStream ROP Response Buffer

The following descriptions define valid fields for the **RopReadStream ROP response buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																DataSize															
Data (variable)																															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x2C.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

DataSize (2 bytes): An unsigned integer that specifies the size, in bytes, of the **Data** field. The maximum size is specified in the request buffer by one of the following:

- The **ByteCount** field, when the value of the **ByteCount** field is not equal to 0xBABE.
- The **MaximumByteCount** field, when the value of the **ByteCount** field is equal to 0xBABE.

Data (variable): An array of bytes that are the bytes read from the stream. The size of this field, in bytes, is specified by the **DataSize** field.

Copyright © 2025 Microsoft Corporation

2.2.9.3 RopWriteStream ROP

The **RopWriteStream** **ROP** writes bytes to a stream. For more details about this operation, see [MS-OXCPRPT] section 2.2.16.

2.2.9.3.1 RopWriteStream ROP Request Buffer

The following descriptions define valid fields for the **RopWriteStream** **ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								DataSize							
...								Data (variable)																							
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x2D.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

DataSize (2 bytes): An unsigned integer that specifies the size of the **Data** field.

Data (variable): An array of bytes that specifies the bytes to be written to the stream. The size of this field, in bytes, is specified by the **DataSize** field.

2.2.9.3.2 RopWriteStream ROP Response Buffer

The following descriptions define valid fields for the **RopWriteStream** **ROP response buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																WrittenSize															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x2D.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the **ROP**.

WrittenSize (2 bytes): An unsigned integer that specifies the number of bytes actually written.

Copyright © 2025 Microsoft Corporation

2.2.9.4 RopWriteStreamExtended ROP

The **RopWriteStreamExtended ROP** writes bytes to a stream. For more details about this operation, see [MS-OXCPRPT] section 2.2.17.

2.2.9.4.1 RopWriteStreamExtended ROP Request Buffer

The following descriptions define valid fields for the **RopWriteStreamExtended ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								DataSize							
...								Data (variable)																							
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0xA3.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

DataSize (2 bytes): An unsigned integer that specifies the size of the **Data** field.

Data (variable): An array of bytes that specifies the bytes to be written to the stream. The size of this field, in bytes, is specified by the **DataSize** field.

2.2.9.4.2 RopWriteStreamExtended ROP Response Buffer

The following descriptions define valid fields for the **RopWriteStreamExtended ROP response buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																WrittenSize															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation, this field is set to 0xA3.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the **ROP**.

WrittenSize (4 bytes): An unsigned integer that specifies the number of bytes actually written.

Copyright © 2025 Microsoft Corporation

2.2.9.5 RopCommitStream ROP

The **RopCommitStream ROP** commits stream operations. For more details about this operation, see [MS-OXCPRPT] section 2.2.18.

2.2.9.5.1 RopCommitStream ROP Request Buffer

The following descriptions define valid fields for the **RopCommitStream ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
RopId								LogonId								InputHandleIndex															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x5D.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

2.2.9.5.2 RopCommitStream ROP Response Buffer

The following descriptions define valid fields for the **RopCommitStream ROP response buffer**.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x5D.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

2.2.9.6 RopGetStreamSize ROP

The **RopGetStreamSize ROP** gets the size of a stream. For more details about this operation, see [MS-OXCPRPT] section 2.2.19.

2.2.9.6.1 RopGetStreamSize ROP Request Buffer

The following descriptions define valid fields for the **RopGetStreamSize ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
RopId								LogonId								InputHandleIndex															

Copyright © 2025 Microsoft Corporation

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x5E.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

2.2.9.6.2 RopGetStreamSize ROP Success Response Buffer

The following descriptions define valid fields for the **RopGetStreamSize ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																StreamSize															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x5E.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

StreamSize (4 bytes): An unsigned integer that is the current size of the stream.

2.2.9.6.3 RopGetStreamSize ROP Failure Response Buffer

The following descriptions define valid fields for the **RopGetStreamSize ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x5E.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

Copyright © 2025 Microsoft Corporation

2.2.9.7 RopSetStreamSize ROP

The **RopSetStreamSize ROP** sets the size of a stream. For more details about this operation, see [MS-OXCPRPT] section 2.2.20.

2.2.9.7.1 RopSetStreamSize ROP Request Buffer

The following descriptions define valid fields for the **RopSetStreamSize ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								StreamSize							
...																															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x2F.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

StreamSize (8 bytes): An unsigned integer that specifies the size of the stream. The server limits the maximum size of the stream to the value specified in a configuration file. If no value is specified in a configuration file, then the maximum size is 2^{31} bytes.<10>

2.2.9.7.2 RopSetStreamSize ROP Response Buffer

The following descriptions define valid fields for the **RopSetStreamSize ROP response buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x2F.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

2.2.9.8 RopSeekStream ROP

The **RopSeekStream ROP** sets a pointer to a specific offset within a stream. For more details about this operation, see [MS-OXCPRPT] section 2.2.21.

Copyright © 2025 Microsoft Corporation

2.2.9.8.1 RopSeekStream ROP Request Buffer

The following descriptions define valid fields for the **RopSeekStream ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								Origin							
Offset																															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x2E.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

Origin (1 byte): An enumeration that specifies the origin location for the seek operation. The possible values for this enumeration are specified in [MS-OXCPRPT] section 2.2.21.1.

Offset (8 bytes): An unsigned integer that specifies the seek offset.

2.2.9.8.2 RopSeekStream ROP Success Response Buffer

The following descriptions define valid fields for the **RopSeekStream ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																NewPosition															
...																															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x2E.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

NewPosition (8 bytes): An unsigned integer that represents the new position in the stream after the operation.

2.2.9.8.3 RopSeekStream ROP Failure Response Buffer

Copyright © 2025 Microsoft Corporation

The following descriptions define valid fields for the **RopSeekStream ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x2E.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.9.9 RopCopyToStream ROP

The **RopCopyToStream ROP** copies a specified number of bytes from a source stream to a destination stream. For more details about this operation, see [MS-OXCPRPT] section 2.2.22.

2.2.9.9.1 RopCopyToStream ROP Request Buffer

The following descriptions define valid fields for the **RopCopyToStream ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								SourceHandleIndex								DestHandleIndex							
ByteCount																															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x3A.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

SourceHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the source **Server object** is stored. For more information about Server objects, see section 1.3.1.

DestHandleIndex (1 byte): An unsigned integer index that specifies the location in the Server object handle table where the handle for the destination Server object is stored.

ByteCount (8 bytes): An unsigned integer that specifies the number of bytes to be copied.

2.2.9.9.2 RopCopyToStream ROP Response Buffer

The following descriptions define valid fields for the **RopCopyToStream ROP response buffer**.

Copyright © 2025 Microsoft Corporation

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								SourceHandleIndex								ReturnValue															
...																ReadByteCount															
...																															
...																WrittenByteCount															
...																															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x3A.

SourceHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **SourceHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000503.

ReadByteCount (8 bytes): An unsigned integer that specifies the number of bytes read from the source object.

WrittenByteCount (8 bytes): An unsigned integer that specifies the number of bytes written to the destination object.

2.2.9.9.3 RopCopyToStream ROP Null Destination Failure Response Buffer

The following descriptions define valid fields for the **RopCopyToStream ROP** null destination failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								SourceHandleIndex								ReturnValue															
...																DestHandleIndex															
...																ReadByteCount															
...																															
...																WrittenByteCount															
...																															
...																															

Copyright © 2025 Microsoft Corporation

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x3A.

SourceHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **SourceHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000503.

DestHandleIndex (4 bytes): An unsigned integer index that MUST be set to the value specified in the **DestHandleIndex** field in the request.

ReadByteCount (8 bytes): An unsigned integer that, for this response, SHOULD be set to 0x0000000000000000.<11>

WrittenByteCount (8 bytes): An unsigned integer that, for this response, SHOULD be set to 0x0000000000000000.<12>

2.2.9.10 RopLockRegionStream ROP

The **RopLockRegionStream ROP** locks a specified range of bytes in a stream. For more details about this operation, see [MS-OXCPRPT] section 2.2.24.

2.2.9.10.1 RopLockRegionStream ROP Request Buffer

The following descriptions define valid fields for the **RopLockRegionStream ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
RopId								LogonId								InputHandleIndex								RegionOffset							
...																															
...																								RegionSize							
...																															
...																								LockFlags							
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x5B.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

RegionOffset (8 bytes): An unsigned integer that specifies the byte location in the stream where the region begins.

RegionSize (8 bytes): An unsigned integer that specifies the size of the region, in bytes.

Copyright © 2025 Microsoft Corporation

LockFlags (4 bytes): A **flags** structure that contains flags specifying the behavior of the lock operation. The possible values for this structure are specified in [MS-OXCPRPT] section 2.2.24.1.

2.2.9.10.2 RopLockRegionStream ROP Response Buffer

The following descriptions define valid fields for the **RopLockRegionStream ROP response buffer**.

<table>
<tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>20</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>30</td><td>1</td></tr>
<tr><td colspan="8">RopId</td><td colspan="8">InputHandleIndex</td><td colspan="16">ReturnValue</td></tr>
<tr><td colspan="16">...</td><td colspan="16"></td></tr>
</table>

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x5B.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

2.2.9.11 RopUnlockRegionStream ROP

The **RopUnlockRegionStream ROP** unlocks a specified range of bytes in a stream. For more details about this operation, see [MS-OXCPRPT] section 2.2.25.

2.2.9.11.1 RopUnlockRegionStream ROP Request Buffer

The following descriptions define valid fields for the **RopUnlockRegionStream ROP request buffer**.

<table>
<tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>20</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>30</td><td>1</td></tr>
<tr><td colspan="8">RopId</td><td colspan="8">LogonId</td><td colspan="8">InputHandleIndex</td><td colspan="8">RegionOffset</td></tr>
<tr><td colspan="32">...</td></tr>
<tr><td colspan="24">...</td><td colspan="8">RegionSize</td></tr>
<tr><td colspan="32">...</td></tr>
<tr><td colspan="24">...</td><td colspan="8">LockFlags</td></tr>
<tr><td colspan="24">...</td><td colspan="8"></td></tr>
</table>

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x5C.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

Copyright © 2025 Microsoft Corporation

RegionOffset (8 bytes): An unsigned integer that specifies the byte location in the stream where the region begins.

RegionSize (8 bytes): An unsigned integer that specifies the size of the region, in bytes.

LockFlags (4 bytes): A **flags** structure that contains flags specifying the behavior of the lock operation. The possible values for this structure are specified in [MS-OXCPRPT] section 2.2.25.1.

2.2.9.11.2 RopUnlockRegionStream ROP Response Buffer

The following descriptions define valid fields for the **RopUnlockRegionStream** **ROP response buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x5C.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

2.2.9.12 RopWriteAndCommitStream ROP

The **RopWriteAndCommitStream** **ROP** writes bytes to a stream and commits the stream. For more details about this operation, see [MS-OXCPRPT] section 2.2.26.

2.2.9.12.1 RopWriteAndCommitStream ROP Request Buffer

The following descriptions define valid fields for the **RopWriteAndCommitStream** **ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								DataSize							
...								Data (variable)																							
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x90.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

Copyright © 2025 Microsoft Corporation

DataSize (2 bytes): An unsigned integer that specifies the size of the **Data** field.

Data (variable): An array of bytes to be written to the stream. The size of this field, in bytes, is specified by the **DataSize** field.

2.2.9.12.2 RopWriteAndCommitStream ROP Response Buffer

The response buffer for this **ROP** is the same as the response buffer for the **RopWriteStream** ROP, as specified in section 2.2.9.3.2, except the **RopId** field is set to 0x90.

2.2.9.13 RopCloneStream ROP

The **RopCloneStream ROP** creates a new **Stream object** based on the same data as another Stream object. For more details about this operation, see [MS-OXCPRPT] section 2.2.27.

2.2.9.13.1 RopCloneStream ROP Request Buffer

The following descriptions define valid fields for the **RopCloneStream ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								OutputHandleIndex							

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x3B.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

OutputHandleIndex (1 byte): An unsigned integer index that specifies the location in the Server object handle table where the handle for the output Server object will be stored.

2.2.9.13.2 RopCloneStream ROP Response Buffer

The following descriptions define valid fields for the **RopCloneStream ROP response buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								OutputHandleIndex								ReturnValue															
…																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x3B.

OutputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **OutputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

Copyright © 2025 Microsoft Corporation

2.2.10 Permission ROPs

2.2.10.1 RopModifyPermissions ROP

The **RopModifyPermissions ROP** modifies the permissions associated with a folder. For more details about this operation, see [MS-OXCPERM] section 2.2.2.

2.2.10.1.1 RopModifyPermissions ROP Request Buffer

The following descriptions define valid fields for the **RopModifyPermissions ROP request buffer**.

0 1 2 3 4 5 6 7	8 9 10 11 12 13 14 15	16 17 18 19 20 21 22 23	24 25 26 27 28 29 30 31
RopId	LogonId	InputHandleIndex	ModifyFlags
ModifyCount		PermissionsData (variable)	
...			

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x40.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

ModifyFlags (1 byte): A **flags** structure that contains flags that control the behavior of this operation. The possible values are specified in [MS-OXCPERM] section 2.2.2.1.

ModifyCount (2 bytes): An unsigned integer that specifies specifies the number of structures serialized in the **PermissionsData** field.

PermissionsData (variable): A list of **PermissionData** structures. The number of structures contained in this field is specified by the **ModifyCount** field. The format of the **PermissionData** structure is specified in section 2.2.10.1.1.1.

2.2.10.1.1.1 PermissionData Structure

The following descriptions define valid fields for the **PermissionData** Structure.

0 1 2 3 4 5 6 7	8 9 10 11 12 13 14 15	16 17 18 19 20 21 22 23	24 25 26 27 28 29 30 31
PermissionDataFlags	PropertyValueCount		PropertyValues (variable)
...			

PermissionDataFlags (1 byte): A **flags** structure that contains flags that specify the type of operation.

PropertyValueCount (2 bytes): An unsigned integer that specifies the number of structures present in the **PropertyValues** field.

Copyright © 2025 Microsoft Corporation

PropertyValues (variable): An array of **TaggedPropertyValue** structures that are used to specify and describe the modify operations. The number of structures contained in this field is specified by the **PropertyValueCount** field. The format of the **TaggedPropertyValue** structure is specified in [MS-OXCDATA] section 2.11.4.

2.2.10.1.2 RopModifyPermissions ROP Response Buffer

The following descriptions define valid fields for the **RopModifyPermissions** **ROP response buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x40.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

2.2.10.2 RopGetPermissionsTable ROP

The **RopGetPermissionsTable** **ROP** gets the **permissions table** for a folder. For more details about this operation, see [MS-OXCPERM] section 2.2.1.

2.2.10.2.1 RopGetPermissionsTable ROP Request Buffer

The following descriptions define valid fields for the **RopGetPermissionsTable** **ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								OutputHandleIndex							
TableFlags																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x3E.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

OutputHandleIndex (1 byte): An unsigned integer index that specifies the location in the Server object handle table where the handle for the output Server object will be stored.

TableFlags (1 byte): A **flags** structure that contains flags that control the type of table. The possible values are specified in [MS-OXCPERM] section 2.2.1.1.

2.2.10.2.2 RopGetPermissionsTable ROP Response Buffer

Copyright © 2025 Microsoft Corporation

The following descriptions define valid fields for the **RopGetPermissionsTable** **ROP response buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								OutputHandleIndex								ReturnValue															
…																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x3E.

OutputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **OutputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

2.2.11 Rule ROPs

2.2.11.1 RopModifyRules ROP

The **RopModifyRules** **ROP** modifies the **rules** associated with a folder. For more details about this operation, see [MS-OXORULE] section 2.2.1.

2.2.11.1.1 RopModifyRules ROP Request Buffer

The following descriptions define valid fields for the **RopModifyRules** **ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								ModifyRulesFlags							
RulesCount																RulesData (variable)															
…																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x41.

LogonId (1 byte): An unsigned integer that specifies the logon on which the operation is performed.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

ModifyRulesFlags (1 byte): A **flags** structure that contains flags that specify behavior of this operation. The possible values are specified in [MS-OXORULE] section 2.2.1.1.

RulesCount (2 bytes): An unsigned integer that specifies the number of structures serialized in the **RuleData** field.

Copyright © 2025 Microsoft Corporation

RulesData (variable): A list of **RuleData** structures. The number of structures contained in this field is specified by the **RulesCount** field. The format of the **RuleData** structure is specified in section 2.2.11.1.1.1.

2.2.11.1.1.1 RuleData Structure

The following descriptions define valid fields for the **RuleData** structure.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
RuleDataFlags								PropertyValueCount												PropertyValues (variable)											
...																															

RuleDataFlags (1 byte): A **flags** structure that specifies the type of operation.

PropertyValueCount (2 bytes): An unsigned integer that specifies the number of structures present in the **PropertyValues** field.

PropertyValues (variable): An array of **TaggedPropertyValue** structures that specify and describe the **rule** operations. The number of structures contained in this field is specified by the **PropertyValueCount** field. The format of the **TaggedPropertyValue** structure is specified in [MS-OXCDATA] section 2.11.4.

2.2.11.1.2 RopModifyRules ROP Response Buffer

The following descriptions define valid fields for the **RopModifyRules ROP response buffer**.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x41.

InputHandleIndex (1 byte): An unsigned integer index that refers to the **handle** in the **Server object handle table** used as input for this operation. For more information about **Server objects**, see section 1.3.1.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

2.2.11.2 RopGetRulesTable ROP

The **RopGetRulesTable ROP** gets the **rules table** of a folder. For more details about this operation, see [MS-OXORULE] section 2.2.2.

2.2.11.2.1 RopGetRulesTable ROP Request Buffer

The following descriptions define valid fields for the **RopGetRulesTable ROP request buffer**.

Copyright © 2025 Microsoft Corporation

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								OutputHandleIndex							
TableFlags																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x3F.

LogonId (1 byte): An unsigned integer that specifies the logon on which the operation is performed.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

OutputHandleIndex (1 byte): An unsigned integer index that specifies the location in the Server object handle table where the handle for the output Server object will be stored.

TableFlags (1 byte): A **flags** structure that contains flags that control the type of table. The possible values are specified in [MS-OXORULE] section 2.2.2.1.

2.2.11.2.2 RopGetRulesTable ROP Response Buffer

The following descriptions define valid fields for the **RopGetRulesTable ROP response buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								OutputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x3F.

OutputHandleIndex (1 byte): An unsigned integer index that refers to the **handle** in the **Server object handle table** specified. For more information about **Server objects**, see section 1.3.1.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

2.2.11.3 RopUpdateDeferredActionMessages ROP

The **RopUpdateDeferredActionMessages ROP** updates the **entry IDs** in the **Deferred Action Messages (DAMs)**. For more details about this operation, see [MS-OXORULE] section 2.2.3.

2.2.11.3.1 RopUpdateDeferredActionMessages ROP Request Buffer

The following descriptions define valid fields for the **RopUpdateDeferredActionMessages ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								ServerEntryIdSize							

Copyright © 2025 Microsoft Corporation

...	ServerEntryId (variable)
...	
ClientEntryIdSize	ClientEntryId (variable)
...	

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x57.

LogonId (1 byte): An unsigned integer that specifies the logon on which the operation is performed.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

ServerEntryIdSize (2 bytes): An unsigned integer that specifies the size of the **ServerEntryId** field.

ServerEntryId (variable): An array of bytes that specifies the ID of the message on the server. The size of this field, in bytes, is specified by the **ServerEntryIdSize** field.

ClientEntryIdSize (2 bytes): An unsigned integer that specifies the size of the **ClientEntryId** field.

ClientEntryId (variable): An array of bytes that specifies the ID of the downloaded message on the client. The size of this field, in bytes, is specified by the **ClientEntryIdSize** field.

2.2.11.3.2 RopUpdateDeferredActionMessages ROP Response Buffer

The following descriptions define valid fields for the **RopUpdateDeferredActionMessages ROP response buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x57.

InputHandleIndex (1 byte): An unsigned integer index that refers to the **handle** in the **Server object handle table** specified as the input handle. For more information about **Server objects**, see section 1.3.1.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

Copyright © 2025 Microsoft Corporation

2.2.12 Fast Transfer ROPs

2.2.12.1 RopFastTransferDestinationConfigure ROP

The **RopFastTransferDestinationConfigure ROP** creates a destination fast transfer object. For more details about this operation, see [MS-OXCFXICS] section 2.2.3.1.2.1.

2.2.12.1.1 RopFastTransferDestinationConfigure ROP Request Buffer

The following descriptions define valid fields for the **RopFastTransferDestinationConfigure ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								OutputHandleIndex							
SourceOperation								CopyFlags																							

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x53.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

OutputHandleIndex (1 byte): An unsigned integer index that specifies the location in the Server object handle table where the handle for the output Server object will be stored.

SourceOperation (1 byte): An enumeration that indicates how the data stream was created on the source. The possible values for this enumeration are specified in [MS-OXCFXICS] section 2.2.3.1.2.1.1.

CopyFlags (1 byte): A **flags** structure that contains flags that control the behavior of the transfer operation. The possible values are specified in [MS-OXCFXICS] section 2.2.3.1.2.1.1.

2.2.12.1.2 RopFastTransferDestinationConfigure ROP Response Buffer

The following descriptions define valid fields for the **RopFastTransferDestinationConfigure ROP response buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								OutputHandleIndex								ReturnValue															
…																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x53.

OutputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **OutputHandleIndex** field in the request.

Copyright © 2025 Microsoft Corporation

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

2.2.12.2 RopFastTransferDestinationPutBuffer ROP

The **RopFastTransferDestinationPutBuffer** **ROP** sends a stream of data to a fast transfer destination object. For more details about this operation, see [MS-OXCFXICS] section 2.2.3.1.2.2.

2.2.12.2.1 RopFastTransferDestinationPutBuffer ROP Request Buffer

The following descriptions define valid fields for the **RopFastTransferDestinationPutBuffer** **ROP request buffer**.

0 1 2 3 4 5 6 7	8 9 10 1 2 3 4 5	6 7 8 9 20 1 2 3	4 5 6 7 8 9 30 1
RopId	LogonId	InputHandleIndex	TransferDataSize
...	TransferData (variable)		
...			

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x54.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

TransferDataSize (2 bytes): An unsigned integer that specifies the size of the **TransferData** field.

TransferData (variable): An array of bytes that contains the data to be uploaded to the destination fast transfer object. The size of this field, in bytes, is specified by the **TransferDataSize** field.

2.2.12.2.2 RopFastTransferDestinationPutBuffer ROP Response Buffer

The following descriptions define valid fields for the **RopFastTransferDestinationPutBuffer** **ROP response buffer**.

0 1 2 3 4 5 6 7	8 9 10 1 2 3 4 5	6 7 8 9 20 1 2 3	4 5 6 7 8 9 30 1
RopId	InputHandleIndex	ReturnValue	
...		TransferStatus	
InProgressCount		TotalStepCount	
Reserved	BufferUsedSize		

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x54.

Copyright © 2025 Microsoft Corporation

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

TransferStatus (2 bytes): An enumeration that specifies the current status of the transfer. The possible values for this enumeration are specified in [MS-OXCFXICS] section 2.2.3.1.2.2.

InProgressCount (2 bytes): An unsigned integer that specifies the number of steps that have been completed in the current operation.

TotalStepCount (2 bytes): An unsigned integer that specifies the approximate total number of steps to be completed in the current operation.

Reserved (1 byte): Reserved. The server MUST set this field to 0x00.

BufferUsedSize (2 bytes): An unsigned integer that specifies the buffer size that was used.

2.2.12.3 RopFastTransferDestinationPutBufferExtended ROP

The **RopFastTransferDestinationPutBufferExtended ROP** sends a stream of data to a fast transfer destination object. For more details about this operation, see [MS-OXCFXICS] section 2.2.3.1.2.3.

2.2.12.3.1 RopFastTransferDestinationPutBufferExtended ROP Request Buffer

The following descriptions define valid fields for the **RopFastTransferDestinationPutBufferExtended ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								TransferDataSize							
...								TransferData (variable)																							
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation, this field is set to 0x9D.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

TransferDataSize (2 bytes): An unsigned integer that specifies the size of the **TransferData** field.

TransferData (variable): An array of bytes that contains the data to be uploaded to the destination fast transfer object. The size of this field, in bytes, is specified by the **TransferDataSize** field.

2.2.12.3.2 RopFastTransferDestinationPutBufferExtended ROP Response Buffer

The following descriptions define valid fields for the **RopFastTransferDestinationPutBufferExtended ROP response buffer**.

Copyright © 2025 Microsoft Corporation

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																TransferStatus															
InProgressCount																															
TotalStepCount																															
Reserved								BufferUsedSize																							

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation, this field is set to 0x9D.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

TransferStatus (2 bytes): An enumeration that specifies the current status of the transfer. The possible values for this enumeration are specified in [MS-OXCFXICS] section 2.2.3.1.2.2.

InProgressCount (4 bytes): An unsigned integer that specifies the number of steps that have been completed in the current operation.

TotalStepCount (4 bytes): An unsigned integer that specifies the approximate total number of steps to be completed in the current operation.

Reserved (1 byte): Reserved. The server MUST set this field to 0x00.

BufferUsedSize (2 bytes): An unsigned integer that specifies the buffer size that was used.

2.2.12.4 RopFastTransferSourceGetBuffer ROP

The **RopFastTransferSourceGetBuffer ROP** retrieves a stream of data from a fast transfer source object. For more details about this operation, see [MS-OXCFXICS] section 2.2.3.1.1.5.

2.2.12.4.1 RopFastTransferSourceGetBuffer ROP Request Buffer

The following descriptions define valid fields for the **RopFastTransferSourceGetBuffer ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								BufferSize							
...								MaximumBufferSize (optional)																							

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x4E.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

Copyright © 2025 Microsoft Corporation

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

BufferSize (2 bytes): An unsigned integer that specifies the buffer size requested.

MaximumBufferSize (2 bytes): An unsigned integer that is present when the **BufferSize** field is set to 0xBABE. This value specifies the maximum size limit when the server determines the buffer size.

2.2.12.4.2 RopFastTransferSourceGetBuffer ROP Response Buffer

The following descriptions define valid fields for the **RopFastTransferSourceGetBuffer** **ROP response buffer**.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
RopId								InputHandleIndex								ReturnValue															
...																TransferStatus															
InProgressCount																TotalStepCount															
Reserved								TransferBufferSize												TransferBuffer (variable)											
...																															
BackoffTime (optional)																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x4E.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

TransferStatus (2 bytes): An enumeration that specifies the current status of the transfer. The possible values for this enumeration are specified in [MS-OXCFXICS] section 2.2.3.1.1.5.2.

InProgressCount (2 bytes): An unsigned integer that specifies the number of steps that have been completed in the current operation.

TotalStepCount (2 bytes): An unsigned integer that specifies the approximate number of steps to be completed in the current operation.

Reserved (1 byte): Reserved. The server MUST set this field to 0x00.

TransferBufferSize (2 bytes): An unsigned integer that specifies the size of the **TransferBuffer** field.

TransferBuffer (variable): An array of bytes that is present if the **ReturnValue** is not 0x00000480 and is not present otherwise. If present, the size of this field, in bytes, is specified by the **TransferBufferSize** field.

Copyright © 2025 Microsoft Corporation

BackoffTime (4 bytes): An unsigned integer that is present if the **ReturnValue** is 0x00000480 and is not present otherwise. This value specifies the number of milliseconds for the client to wait before trying this operation again.

2.2.12.5 RopFastTransferSourceCopyFolder ROP

The **RopFastTransferSourceCopyFolder ROP** downloads properties and descendant subobjects of a specified folder. For more details about this operation, see [MS-OXCFXICS] section 2.2.3.1.1.4.

2.2.12.5.1 RopFastTransferSourceCopyFolder ROP Request Buffer

The following descriptions define valid fields for the **RopFastTransferSourceCopyFolder ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								OutputHandleIndex							
CopyFlags								SendOptions																							

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x4C.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

OutputHandleIndex (1 byte): An unsigned integer index that specifies the location in the Server object handle table where the handle for the output Server object will be stored.

CopyFlags (1 byte): A **flags** structure that contains flags that control the type of operation. The possible values are specified in [MS-OXCFXICS] section 2.2.3.1.1.4.1.

SendOptions (1 byte): A flags structure that contains flags that control the behavior of the operation. The possible values are specified in [MS-OXCFXICS] section 2.2.3.1.1.1.1.

2.2.12.5.2 RopFastTransferSourceCopyFolder ROP Response Buffer

The following descriptions define valid fields for the **RopFastTransferSourceCopyFolder ROP response buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								OutputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x4C.

OutputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **OutputHandleIndex** field in the request.

Copyright © 2025 Microsoft Corporation

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

2.2.12.6 RopFastTransferSourceCopyMessages ROP

The **RopFastTransferSourceCopyMessages ROP** downloads from a folder the content and descendant subobjects for messages identified by a given set of IDs. For more details about this operation, see [MS-OXCFXICS] section 2.2.3.1.1.3.

2.2.12.6.1 RopFastTransferSourceCopyMessages ROP Request Buffer

The following descriptions define valid fields for the **RopFastTransferSourceCopyMessages ROP request buffer**.

<table>
<tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>20</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>30</td><td>1</td></tr>
<tr><td colspan="8">RopId</td><td colspan="8">LogonId</td><td colspan="8">InputHandleIndex</td><td colspan="8">OutputHandleIndex</td></tr>
<tr><td colspan="16">MessageIdCount</td><td colspan="16">MessageIds (variable)</td></tr>
<tr><td colspan="32">...</td></tr>
<tr><td colspan="8">CopyFlags</td><td colspan="8">SendOptions</td><td colspan="16"></td></tr>
</table>

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x4B.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

OutputHandleIndex (1 byte): An unsigned integer index that specifies the location in the Server object handle table where the handle for the output Server object will be stored.

MessageIdCount (2 bytes): An unsigned integer that specifies the number of identifiers in the **MessageIds** field.

MessageIds (variable): An array of 64-bit identifiers that specifies the messages to copy. The number of identifiers contained in this field is specified by the **MessageIdCount** field.

CopyFlags (1 byte): A **flags** structure that contains flags that control the type of operation. The possible values are specified in [MS-OXCFXICS] section 2.2.3.1.1.3.1.

SendOptions (1 byte): A flags structure that contains flags that control the behavior of the operation. The possible values are specified in [MS-OXCFXICS] section 2.2.3.1.1.1.1.

2.2.12.6.2 RopFastTransferSourceCopyMessages ROP Response Buffer

The following descriptions define valid fields for the **RopFastTransferSourceCopyMessages ROP response buffer**.

Copyright © 2025 Microsoft Corporation

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								OutputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x4B.

OutputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **OutputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

2.2.12.7 RopFastTransferSourceCopyTo ROP

The **RopFastTransferSourceCopyTo ROP** downloads the properties of a given **messaging object** and its descendant subobjects. For more details about this operation, see [MS-OXCFXICS] section 2.2.3.1.1.1.

2.2.12.7.1 RopFastTransferSourceCopyTo ROP Request Buffer

The following descriptions define valid fields for the **RopFastTransferSourceCopyTo ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								OutputHandleIndex							
Level								CopyFlags																							
...								SendOptions								PropertyTagCount															
PropertyTags (variable)																															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x4D.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

OutputHandleIndex (1 byte): An unsigned integer index that specifies the location in the Server object handle table where the handle for the output Server object will be stored.

Level (1 byte): An unsigned integer that specifies whether descendant subobjects are copied.

CopyFlags (4 bytes): A **flags** structure that contains flags that control the behavior of the transfer operation. The possible values are specified in [MS-OXCFXICS] section 2.2.3.1.1.1.1.

Copyright © 2025 Microsoft Corporation

SendOptions (1 byte): A flags structure that contains flags that control the behavior of the operation. The possible values are specified in [MS-OXCFXICS] section 2.2.3.1.1.1.

PropertyTagCount (2 bytes): An unsigned integer that specifies the number of structures in the **PropertyTags** field.

PropertyTags (variable): An array of **PropertyTag** structures that specifies the properties to exclude during the copy. The format of the **PropertyTag** structure is specified in [MS-OXCDATA] section 2.9. The number of structures contained in this field is specified by the **PropertyTagCount** field.

2.2.12.7.2 RopFastTransferSourceCopyTo ROP Response Buffer

The following descriptions define valid fields for the **RopFastTransferSourceCopyTo** **ROP response buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								OutputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x4D.

OutputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **OutputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

2.2.12.8 RopFastTransferSourceCopyProperties ROP

The **RopFastTransferSourceCopyProperties** **ROP** copies properties from a **messaging object** to a fast transfer object. For more details about this operation, see [MS-OXCFXICS] section 2.2.3.1.1.2.

2.2.12.8.1 RopFastTransferSourceCopyProperties ROP Request Buffer

The following descriptions define valid fields for the **RopFastTransferSourceCopyProperties** **ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								OutputHandleIndex							
Level								CopyFlags								SendOptions								PropertyTagCount							
...								PropertyTags (variable)																							
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x69.

Copyright © 2025 Microsoft Corporation

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

OutputHandleIndex (1 byte): An unsigned integer index that specifies the location in the Server object handle table where the handle for the output Server object will be stored.

Level (1 byte): An unsigned integer that specifies whether descendant subobjects are copied.

CopyFlags (1 byte): A **flags** structure behavior of the transfer operation. The possible values are specified in [MS-OXCFXICS] section 2.2.3.1.1.2.1.

SendOptions (1 byte): A flags structure that contains flags that control the behavior of the operation. The possible values are specified in [MS-OXCFXICS] section 2.2.3.1.1.2.1.

PropertyTagCount (2 bytes): An unsigned integer that specifies the number of structures in the **PropertyTags** field.

PropertyTags (variable): An array of **PropertyTag** structures that specifies the properties to copy. The format of the **PropertyTag** structure is specified in [MS-OXCDATA] section 2.9. The number of structures contained in this field is specified by the **PropertyTagCount** field.

2.2.12.8.2 RopFastTransferSourceCopyProperties ROP Response Buffer

The following descriptions define valid fields for the **RopFastTransferSourceCopyProperties ROP response buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								OutputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x69.

OutputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **OutputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the **ROP**.

2.2.12.9 RopTellVersion ROP

The **RopTellVersion ROP** provides the version of the other server in a server-to-client-to-server upload. For more details about this operation, see [MS-OXCFXICS] section 2.2.3.1.1.6.

2.2.12.9.1 RopTellVersion ROP Request Buffer

The following descriptions define valid fields for the **RopTellVersion ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								Version							

Copyright © 2025 Microsoft Corporation

...	
...	

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x86.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

Version (6 bytes): An array of three unsigned 16-bit integers that contains the version information for the other server. The format of the version number is specified in [MS-OXCRPC] section 3.1.4.1.3.1.

2.2.12.9.2 RopTellVersion ROP Response Buffer

The following descriptions define valid fields for the **RopTellVersion ROP response buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x86.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

2.2.13 Incremental Change Synchronization ROPs

2.2.13.1 RopSynchronizationConfigure ROP

The **RopSynchronizationConfigure ROP** configures a synchronization object. For more details about this operation, see [MS-OXCFXICS] section 2.2.3.2.1.1.

2.2.13.1.1 RopSynchronizationConfigure ROP Request Buffer

The following descriptions define valid fields for the **RopSynchronizationConfigure ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								OutputHandleIndex							

Copyright © 2025 Microsoft Corporation

SynchronizationType	SendOptions	SynchronizationFlags
RestrictionDataSize		RestrictionData (variable)
...		
SynchronizationExtraFlags		
PropertyTagCount		PropertyTags (variable)
...		

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x70.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

OutputHandleIndex (1 byte): An unsigned integer index that specifies the location in the Server object handle table where the handle for the output Server object will be stored.

SynchronizationType (1 byte): An enumeration that controls the type of synchronization. The possible values for this enumeration are specified in [MS-OXCFXICS] section 2.2.3.2.1.1.1.

SendOptions (1 byte): A **flags** structure that controls the behavior of the operation. The possible values are specified in [MS-OXCFXICS] section 2.2.3.1.1.1.1.

SynchronizationFlags (2 bytes): A flags structure that contains flags that control the behavior of the synchronization. The possible values are specified in [MS-OXCFXICS] section 2.2.3.2.1.1.1.

RestrictionDataSize (2 bytes): An unsigned integer that specifies the length, in bytes, of the **RestrictionData** field.

RestrictionData (variable): A **restriction** packet, as specified in [MS-OXCDATA] section 2.12, that specifies the filter for this synchronization object. The size of this field, in bytes, is specified by the **RestrictionDataSize** field.

SynchronizationExtraFlags (4 bytes): A flags structure that contains flags control the additional behavior of the synchronization. The possible values are specified in [MS-OXCFXICS] section 2.2.3.2.1.1.1.

PropertyTagCount (2 bytes): An unsigned integer that specifies how many PropertyTag structures are present in the **PropertyTags** field.

PropertyTags (variable): An array of **PropertyTag** structures that specifies the **property tags** to be used for the synchronization process. The number of structures contained in this field is specified by the **PropertyTagCount** field. The format of the **PropertyTag** structure is specified in [MS-OXCDATA] section 2.9.

2.2.13.1.2 RopSynchronizationConfigure ROP Response Buffer

The following descriptions define valid fields for the **RopSynchronizationConfigure ROP response buffer**.

Copyright © 2025 Microsoft Corporation

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								OutputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x70.

OutputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **OutputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

2.2.13.2 RopSynchronizationImportMessageChange ROP

The **RopSynchronizationImportMessageChange ROP** imports new messages or full changes to existing messages into the **server replica**. For more details about this operation, see [MS-OXCFXICS] section 2.2.3.2.4.2.

2.2.13.2.1 RopSynchronizationImportMessageChange ROP Request Buffer

The following descriptions define valid fields for the **RopSynchronizationImportMessageChange ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								OutputHandleIndex							
ImportFlag								PropertyValueCount																PropertyValues (variable)							
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x72.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

OutputHandleIndex (1 byte): An unsigned integer index that specifies the location in the Server object handle table where the handle for the output Server object will be stored.

ImportFlag (1 byte): A **flags** structure that contains flags that control the behavior of the synchronization. The possible values are specified in [MS-OXCFXICS] section 2.2.3.2.4.2.1.

PropertyValueCount (2 bytes): An unsigned integer that specifies the number of structures present in the **PropertyValues** field.

PropertyValues (variable): An array of **TaggedPropertyValue** structures that specify extra properties on the message. The number of structures contained in this field is specified by the **PropertyValueCount** field. The format of the **TaggedPropertyValue** structure is specified in

Copyright © 2025 Microsoft Corporation

[MS-OXCDATA] section 2.11.4, and possible properties to be set are specified in [MS-OXCFXICS] section 2.2.3.2.4.2.1.

2.2.13.2.2 RopSynchronizationImportMessageChange ROP Success Response Buffer

The following descriptions define valid fields for the **RopSynchronizationImportMessageChange ROP** success response buffer.

<table>
<tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>20</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>30</td><td>1</td></tr>
<tr><td colspan="8">RopId</td><td colspan="8">OutputHandleIndex</td><td colspan="16">ReturnValue</td></tr>
<tr><td colspan="16">...</td><td colspan="16">MessageId</td></tr>
<tr><td colspan="32">...</td></tr>
<tr><td colspan="16">...</td></tr>
</table>

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x72.

OutputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **OutputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

MessageId (8 bytes): An identifier. This field MUST be set to 0x0000000000000000.

2.2.13.2.3 RopSynchronizationImportMessageChange ROP Failure Response Buffer

The following descriptions define valid fields for the **RopSynchronizationImportMessageChange ROP** failure response buffer.

<table>
<tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>20</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>30</td><td>1</td></tr>
<tr><td colspan="8">RopId</td><td colspan="8">OutputHandleIndex</td><td colspan="16">ReturnValue</td></tr>
<tr><td colspan="16">...</td></tr>
</table>

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x72.

OutputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **OutputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

Copyright © 2025 Microsoft Corporation

2.2.13.3 RopSynchronizationImportReadStateChanges ROP

The **RopSynchronizationImportReadStateChanges** ROP synchronizes a change in the read status for messages. More detailed information about this operation can be found in [MS-OXCFXICS] section 2.2.3.2.4.6.

2.2.13.3.1 RopSynchronizationImportReadStateChanges ROP Request Buffer

The following descriptions define valid fields for the **RopSynchronizationImportReadStateChanges ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
RopId								LogonId								InputHandleIndex								MessageReadStatesSize							
...								MessageReadStates (variable)																							
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x80.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

MessageReadStatesSize (2 bytes): An unsigned integer that specifies the size, in bytes, of the **MessageReadStates** field.

MessageReadStates (variable): A list of **MessageReadState** structures that specify the messages and associated read states to be changed. The format of the **MessageReadState** structure is defined in section 2.2.13.3.1.1. The size of this field, in bytes, is specified by the **MessageReadStatesSize** field.

2.2.13.3.1.1 MessageReadState Structure

The following descriptions define valid fields for the **MessageReadState** structure.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
MessageIdSize																MessageId (variable)															
...																															
MarkAsRead																															

MessageIdSize (2 bytes): An unsigned integer that specifies the size of the **MessageId** field.

MessageId (variable): An array of bytes that identifies the message to be marked as read or unread. The size of this field, in bytes, is specified by the **MessageIdSize** field.

MarkAsRead (1 byte): A Boolean that specifies whether to mark the message as read or not.

Copyright © 2025 Microsoft Corporation

2.2.13.3.2 RopSynchronizationImportReadStateChanges ROP Response Buffer

The following descriptions define valid fields for the **RopSynchronizationImportReadStateChanges ROP response buffer**.

0 1 2 3 4 5 6 7	8 9 10 11 12 13 14 15	16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
RopId	InputHandleIndex	ReturnValue
...		

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x80.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

2.2.13.4 RopSynchronizationImportHierarchyChange ROP

The **RopSynchronizationImportHierarchyChange ROP** synchronizes a change to the folder hierarchy. For more details about this operation, see [MS-OXCFXICS] section 2.2.3.2.4.3.

2.2.13.4.1 RopSynchronizationImportHierarchyChange ROP Request Buffer

The following descriptions define valid fields for the **RopSynchronizationImportHierarchyChange ROP request buffer**.

0 1 2 3 4 5 6 7	8 9 10 11 12 13 14 15	16 17 18 19 20 21 22 23	24 25 26 27 28 29 30 31
RopId	LogonId	InputHandleIndex	HierarchyValueCount
...	HierarchyValues (variable)		
...			
PropertyValueCount	PropertyValues (variable)		
...			

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x73.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

HierarchyValueCount (2 bytes): An unsigned integer that specifies the number of structures present in the **HierarchyValues** field.

Copyright © 2025 Microsoft Corporation

HierarchyValues (variable): An array of **TaggedPropertyValue** structures that specify hierarchy-related properties of the folder. The number of structures contained in this field is specified by the **HierarchyValueCount** field. The format of the **TaggedPropertyValue** structure is specified in [MS-OXCDATA] section 2.11.4, and possible properties to be set are specified in [MS-OXCFXICS] section 2.2.3.2.4.3.1.

PropertyValueCount (2 bytes): An unsigned integer that specifies the number of structures present in the **PropertyValues** field.

PropertyValues (variable): An array of **TaggedPropertyValue** structures that specify folder properties. The number of structures contained in this field is specified by the **PropertyValueCount** field. The format of the **TaggedPropertyValue** structure is specified in [MS-OXCDATA] section 2.11.4.

2.2.13.4.2 RopSynchronizationImportHierarchyChange ROP Success Response Buffer

The following descriptions define valid fields for the **RopSynchronizationImportHierarchyChange ROP** success response buffer.

<table>
<tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>20</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>30</td><td>1</td></tr>
<tr><td colspan="8">RopId</td><td colspan="8">InputHandleIndex</td><td colspan="16">ReturnValue</td></tr>
<tr><td colspan="16">...</td><td colspan="16">FolderId</td></tr>
<tr><td colspan="32">...</td></tr>
<tr><td colspan="16">...</td><td colspan="16"></td></tr>
</table>

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x73.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

FolderId (8 bytes): An identifier. This field MUST be set to 0x0000000000000000.

2.2.13.4.3 RopSynchronizationImportHierarchyChange ROP Failure Response Buffer

The following descriptions define valid fields for the **RopSynchronizationImportHierarchyChange ROP** failure response buffer.

<table>
<tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>20</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>30</td><td>1</td></tr>
<tr><td colspan="8">RopId</td><td colspan="8">InputHandleIndex</td><td colspan="16">ReturnValue</td></tr>
<tr><td colspan="16">...</td><td colspan="16"></td></tr>
</table>

Copyright © 2025 Microsoft Corporation

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x73.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.13.5 RopSynchronizationImportDeletes ROP

The **RopSynchronizationImportDeletes ROP** synchronizes deleted messages or folders. For more details about this operation, see [MS-OXCFXICS] section 2.2.3.2.4.5.

2.2.13.5.1 RopSynchronizationImportDeletes ROP Request Buffer

The following descriptions define valid fields for the **RopSynchronizationImportDeletes ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								ImportDeleteFlags							
PropertyValueCount																PropertyValues (variable)															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x74.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

ImportDeleteFlags (1 byte): A **flags** structure that contains flags that specify options for the imported deletions. The possible values for this field are specified in [MS-OXCFXICS] section 2.2.3.2.4.5.1.

PropertyValueCount (2 bytes): An unsigned integer that specifies the number of structures present in the **PropertyValues** field.

PropertyValues (variable): An array of **TaggedPropertyValue** structures that specify the folders or messages to delete. The number of structures contained in this field is specified by the **PropertyValueCount** field. The format of the **TaggedPropertyValue** structure is specified in [MS-OXCDATA] section 2.11.4, and possible properties to be set are specified in [MS-OXCFXICS] section 2.2.3.2.4.5.1.

2.2.13.5.2 RopSynchronizationImportDeletes ROP Response Buffer

The following descriptions define valid fields for the **RopSynchronizationImportDeletes ROP response buffer**.

Copyright © 2025 Microsoft Corporation

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x74.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the **ROP**.

2.2.13.6 RopSynchronizationImportMessageMove ROP

The **RopSynchronizationImportMessageMove ROP** synchronizes a move of a message from one folder to another. For more details about this operation, see [MS-OXCFXICS] section 2.2.3.2.4.4.

2.2.13.6.1 RopSynchronizationImportMessageMove ROP Request Buffer

The following descriptions define valid fields for the **RopSynchronizationImportMessageMove ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								SourceFolderIdSize							
...																								SourceFolderId (variable)							
...																															
SourceMessageIdSize																															
SourceMessageId (variable)																															
...																															
PredecessorChangeListSize																															
PredecessorChangeList (variable)																															
...																															
DestinationMessageIdSize																															
DestinationMessageId (variable)																															
...																															

Copyright © 2025 Microsoft Corporation

ChangeNumberSize
ChangeNumber (variable)
...

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x78.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

SourceFolderIdSize (4 bytes): An unsigned integer that specifies the size of the **SourceFolderId** field.

SourceFolderId (variable): An array of bytes that identifies the parent folder of the source message. The size of this field, in bytes, is specified by the **SourceFolderIdSize** field.

SourceMessageIdSize (4 bytes): An unsigned integer that specifies the size of the **SourceMessageId** field.

SourceMessageId (variable): An array of bytes that identifies the source message. The size of this field, in bytes, is specified by the **SourceMessageIdSize** field.

PredecessorChangeListSize (4 bytes): An unsigned integer that specifies the size of the **PredecessorChangeList** field.

PredecessorChangeList (variable): An array of bytes. The size of this field, in bytes, is specified by the **PredecessorChangeListSize** field. This field is specified in [MS-OXCFXICS] section 2.2.2.3.

DestinationMessageIdSize (4 bytes): An unsigned integer that specifies the size of the **DestinationMessageId** field.

DestinationMessageId (variable): An array of bytes that identifies the destination message. The size of this field, in bytes, is specified by the **DestinationMessageIdSize** field.

ChangeNumberSize (4 bytes): An unsigned integer that specifies the size of the **ChangeNumber** field.

ChangeNumber (variable): An array of bytes that specifies the change number of the message. The size of this field, in bytes, is specified by the **ChangeNumberSize** field.

2.2.13.6.2 RopSynchronizationImportMessageMove ROP Success Response Buffer

The following descriptions define valid fields for the **RopSynchronizationImportMessageMove ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															

Copyright © 2025 Microsoft Corporation

...	MessageId
...	
...	

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x78.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

MessageId (8 bytes): An identifier. This field MUST be set to 0x0000000000000000.

2.2.13.6.3 RopSynchronizationImportMessageMove ROP Failure Response Buffer

The following descriptions define valid fields for the **RopSynchronizationImportMessageMove ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x78.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.13.7 RopSynchronizationOpenCollector ROP

The **RopSynchronizationOpenCollector ROP** creates a new incremental change synchronization upload context. For more details about this operation, see [MS-OXCFXICS] section 2.2.3.2.4.1.

2.2.13.7.1 RopSynchronizationOpenCollector ROP Request Buffer

The following descriptions define valid fields for the **RopSynchronizationOpenCollector ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								OutputHandleIndex							
IsContentsCollector																															

Copyright © 2025 Microsoft Corporation

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x7E.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

OutputHandleIndex (1 byte): An unsigned integer index that specifies the location in the Server object handle table where the handle for the output Server object will be stored.

IsContentsCollector (1 byte): A Boolean that specifies whether this synchronization upload context is for contents or for hierarchy.

2.2.13.7.2 RopSynchronizationOpenCollector ROP Response Buffer

The following descriptions define valid fields for the **RopSynchronizationOpenCollector ROP response buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								OutputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x7E.

OutputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **OutputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

2.2.13.8 RopSynchronizationGetTransferState ROP

The **RopSynchronizationGetTransferState ROP** opens a synchronization transfer object to retrieve the storage state properties. For more details about this operation, see [MS-OXCFXICS] section 2.2.3.2.3.1.

2.2.13.8.1 RopSynchronizationGetTransferState ROP Request Buffer

The following descriptions define valid fields for the **RopSynchronizationGetTransferState ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								OutputHandleIndex							

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x82.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

Copyright © 2025 Microsoft Corporation

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

OutputHandleIndex (1 byte): An unsigned integer index that specifies the location in the Server object handle table where the handle for the output Server object will be stored.

2.2.13.8.2 RopSynchronizationGetTransferState ROP Response Buffer

The following descriptions define valid fields for the **RopSynchronizationGetTransferState ROP response buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								OutputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x82.

OutputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **OutputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

2.2.13.9 RopSynchronizationUploadStateStreamBegin ROP

The **RopSynchronizationUploadStateStreamBegin ROP** begins an operation to upload stream data. For more details about this operation, see [MS-OXCFXICS] section 2.2.3.2.2.1.

2.2.13.9.1 RopSynchronizationUploadStateStreamBegin ROP Request Buffer

The following descriptions define valid fields for the **RopSynchronizationUploadStateStreamBegin ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								StateProperty							
...																								TransferBufferSize							
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x75.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

Copyright © 2025 Microsoft Corporation

StateProperty (4 bytes): A **PropertyTag** structure. The possible values for this field are specified in [MS-OXCFXICS] section 2.2.3.2.2.1.1. The format of the **PropertyTag** structure is specified in [MS-OXCDATA] section 2.9.

TransferBufferSize (4 bytes): An unsigned integer that specifies the size of the stream to be uploaded.

2.2.13.9.2 RopSynchronizationUploadStateStreamBegin ROP Response Buffer

The following descriptions define valid fields for the **RopSynchronizationUploadStateStreamBegin ROP response buffer**.

<table>
<tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>20</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>30</td><td>1</td></tr>
<tr><td colspan="8">RopId</td><td colspan="8">InputHandleIndex</td><td colspan="16">ReturnValue</td></tr>
<tr><td colspan="16">...</td><td colspan="16"></td></tr>
</table>

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x75.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

2.2.13.10 RopSynchronizationUploadStateStreamContinue ROP

The **RopSynchronizationUploadStateStreamContinue ROP** uploads storage state property values. For more details about this operation, see [MS-OXCFXICS] section 2.2.3.2.2.2.

2.2.13.10.1 RopSynchronizationUploadStateStreamContinue ROP Request Buffer

The following descriptions define valid fields for the R**opSynchronizationUploadStateStreamContinue ROP request buffer**.

<table>
<tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>20</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>30</td><td>1</td></tr>
<tr><td colspan="8">RopId</td><td colspan="8">LogonId</td><td colspan="8">InputHandleIndex</td><td colspan="8">StreamDataSize</td></tr>
<tr><td colspan="24">...</td><td colspan="8">StreamData (variable)</td></tr>
<tr><td colspan="32">...</td></tr>
</table>

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x76.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

Copyright © 2025 Microsoft Corporation

StreamDataSize (4 bytes): An unsigned integer that specifies the size, in bytes, of the **StreamData** field.

StreamData (variable): An array of bytes that contains the state stream data to be uploaded. The size of this field, in bytes, is specified by the **StreamDataSize** field.

2.2.13.10.2 RopSynchronizationUploadStateStreamContinue ROP Response Buffer

The following descriptions define valid fields for the **RopSynchronizationUploadStateStreamContinue ROP response buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x76.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

2.2.13.11 RopSynchronizationUploadStateStreamEnd ROP

The **RopSynchronizationUploadStateStreamEnd ROP** marks the end of a storage state property upload operation. For more details about this operation, see [MS-OXCFXICS] section 2.2.3.2.2.3.

2.2.13.11.1 RopSynchronizationUploadStateStreamEnd ROP Request Buffer

The following descriptions define valid fields for the **RopSynchronizationUploadStateStreamEnd ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x77.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

2.2.13.11.2 RopSynchronizationUploadStateStreamEnd ROP Response Buffer

The following descriptions define valid fields for the **RopSynchronizationUploadStateStreamEnd ROP response buffer**.

Copyright © 2025 Microsoft Corporation

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x77.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

2.2.13.12 RopSetLocalReplicaMidsetDeleted ROP

The **RopSetLocalReplicaMidsetDeleted ROP** marks a set of messages in a given folder as deleted. For more details about this operation, see [MS-OXCFXICS] section 2.2.3.2.4.8.

2.2.13.12.1 RopSetLocalReplicaMidsetDeleted ROP Request Buffer

The following descriptions define valid fields for the **RopSetLocalReplicaMidsetDeleted ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
RopId								LogonId								InputHandleIndex								DataSize							
...								LongTermIdRangeCount																							
...								LongTermIdRanges (variable)																							
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x93.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

DataSize (2 bytes): An unsigned integer that specifies the size of both the **LongTermIdRangeCount** and **LongTermIdRanges** fields.

LongTermIdRangeCount (4 bytes): An unsigned integer that specifies the number of structures in the **LongTermIdRanges** field.

LongTermIdRanges (variable): An array of **LongTermIdRange** structures that specify the ranges of message identifiers that have been deleted. The number of structures contained in this field is specified by the **LongTermIdRangeCount** field. The format of the **LongTermIdRange** structure is specified in section 2.2.13.12.1.1.

Copyright © 2025 Microsoft Corporation

2.2.13.12.1.1LongTermIdRange Structure

The following descriptions define valid fields for the **LongTermIdRange** structure.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
MinLongTermId																															
...																															
...																															
...																															
...																															
...																															
MaxLongTermId																															
...																															
...																															
...																															
...																															
...																															

MinLongTermId (24 bytes): A **LongTermId** structure that specifies the beginning of a range. The format of the **LongTermId** structure is specified in [MS-OXCDATA] section 2.2.1.3.1.

MaxLongTermId (24 bytes): A **LongTermId** structure that specifies the end of a range. The format of the **LongTermId** structure is specified in [MS-OXCDATA] section 2.2.1.3.1.

2.2.13.12.2 RopSetLocalReplicaMidsetDeleted ROP Response Buffer

The following descriptions define valid fields for the **RopSetLocalReplicaMidsetDeleted ROP response buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x93.

Copyright © 2025 Microsoft Corporation

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

2.2.13.13 RopGetLocalReplicaIds ROP

The **RopGetLocalReplicaIds ROP** reserves a range of IDs to be used by a **local replica**. For more details about this operation, see [MS-OXCFXICS] section 2.2.3.2.4.7.

2.2.13.13.1 RopGetLocalReplicaIds ROP Request Buffer

The following descriptions define valid fields for the **RopGetLocalReplicaIds ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								IdCount							
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x7F.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

IdCount (4 bytes): An unsigned integer that specifies the number of IDs to reserve.

2.2.13.13.2 RopGetLocalReplicaIds ROP Success Response Buffer

The following descriptions define valid fields for the **RopGetLocalReplicaIds ROP** success response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																ReplGuid															
...																															
...																															
...																															
...																GlobalCount															
...																															

Copyright © 2025 Microsoft Corporation

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x7F.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to 0x00000000.

ReplGuid (16 bytes): **GUID**. This field contains the **replica GUID** that is shared by the IDs.

GlobalCount (6 bytes): An array of bytes that specifies the first value in the reserved range.

2.2.13.13.3 RopGetLocalReplicaIds ROP Failure Response Buffer

The following descriptions define valid fields for the **RopGetLocalReplicaIds ROP** failure response buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								InputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x7F.

InputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **InputHandleIndex** field in the request.

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP. For this response, this field is set to a value other than 0x00000000.

2.2.14 Notification ROPs

2.2.14.1 RopRegisterNotification ROP

The **RopRegisterNotification ROP** registers for notification events. For more details about this operation, see [MS-OXCNOTIF] section 2.2.1.2.1.

2.2.14.1.1 RopRegisterNotification ROP Request Buffer

The following descriptions define valid fields for the **RopRegisterNotification ROP request buffer**.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex								OutputHandleIndex							
NotificationTypes																Reserved								WantWholeStore							
FolderId (optional)																															

Copyright © 2025 Microsoft Corporation

...
MessageId (optional)
...

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x29.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

OutputHandleIndex (1 byte): An unsigned integer index that specifies the location in the Server object handle table where the handle for the output Server object will be stored.

NotificationTypes (2 bytes): A **flags** structure that contains flags that specify the types of events to register for. The possible values are specified in [MS-OXCNOTIF] section 2.2.1.2.1.1.

Reserved (1 byte): A flags structure. This field MUST be set to zero. It MUST be present if the **Extended** (0x0400) flag is set in the **NotificationTypes** field; otherwise, if the **Extended** flag is any other value, this field MUST be absent.

WantWholeStore (1 byte): A Boolean that specifies whether the notification is scoped to the **mailbox** instead of a specific folder or message.

FolderId (8 bytes): An identifier that is present when the value of the **WantWholeStore** field is zero and is not present when it is nonzero. This value specifies the folder to register notifications for. If the notification is scoped to a specific folder, **MessageId** SHOULD be zero.

MessageId (8 bytes): An identifier that is present when the value of the **WantWholeStore** field is zero and is not present when it is nonzero. This value specifies the message to register notifications for. If the notification is scoped to a specific message, **FolderId** SHOULD specify the parent folder of the message.

2.2.14.1.2 RopRegisterNotification ROP Response Buffer

The following descriptions define valid fields for the **RopRegisterNotification** **ROP response buffer**.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
RopId								OutputHandleIndex								ReturnValue															
...																															

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x29.

OutputHandleIndex (1 byte): An unsigned integer index that MUST be set to the value specified in the **OutputHandleIndex** field in the request.

Copyright © 2025 Microsoft Corporation

ReturnValue (4 bytes): An unsigned integer that specifies the status of the ROP.

2.2.14.2 RopNotify ROP

The **RopNotify** **ROP** provides notification event data to the client. There is no request buffer for this ROP. For more details about this operation, see [MS-OXCNOTIF] section 2.2.1.4.1.

2.2.14.2.1 RopNotify ROP Response Buffer

The following descriptions define valid fields for the **RopNotify** **ROP response buffer**.

<table>
<tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>20</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>30</td><td>1</td></tr>
<tr><td colspan="8">RopId</td><td colspan="24">NotificationHandle</td></tr>
<tr><td colspan="8">...</td><td colspan="8">LogonId</td><td colspan="16">NotificationData (variable)</td></tr>
<tr><td colspan="32">...</td></tr>
</table>

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x2A.

NotificationHandle (4 bytes): A **Server object handle** that specifies the notification **Server object** associated with this notification event.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this notification event.

NotificationData (variable): Various structures. The various structures for this field are specified in [MS-OXCNOTIF] section 2.2.1.4.1.1.

2.2.14.3 RopPending ROP

The **RopPending** **ROP** notifies the client that there are pending notifications on a session. There is no request buffer for this ROP. For more details about this operation, see [MS-OXCNOTIF] section 2.2.1.3.4.

2.2.14.3.1 RopPending ROP Response Buffer

The following descriptions define valid fields for the **RopPending** **ROP response buffer**.

<table>
<tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>20</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>30</td><td>1</td></tr>
<tr><td colspan="8">RopId</td><td colspan="16">SessionIndex</td><td colspan="8"></td></tr>
</table>

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0x6E.

SessionIndex (2 bytes): An unsigned integer index that specifies which session has pending notifications.

Copyright © 2025 Microsoft Corporation

2.2.15 Other ROPs

2.2.15.1 RopBufferTooSmall ROP

The **RopBufferTooSmall ROP** notifies the client that there is insufficient space to return all ROP responses.

2.2.15.1.1 RopBufferTooSmall ROP Response Buffer

The following descriptions define valid fields for the **RopBufferTooSmall ROP response buffer**.

0 1 2 3 4 5 6 7	8 9 10 11 12 13 14 15 16 17 18 19	20 21 22 23 24 25 26 27 28 29 30 31
RopId	SizeNeeded	RequestBuffers (variable)
...		

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0xFF.

SizeNeeded (2 bytes): An unsigned integer that specifies the size required for the ROP output buffer.

RequestBuffers (variable): An array of bytes that contains the section of the ROP input buffer that was not executed because of the insufficient size of the ROP output buffer. The size of the array is equal to the size of the space remaining in the ROP output buffer. The layout of the ROP input buffer and ROP output buffer is specified in section 2.2.1.

2.2.15.2 RopBackoff ROP

The **RopBackoff ROP** notifies the client that the server is busy and is requesting that the client retry later.

2.2.15.2.1 RopBackoff ROP Response Buffer

The following descriptions define valid fields for the **RopBackoff ROP response buffer**.

0 1 2 3 4 5 6 7	8 9 10 11 12 13 14 15	16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
RopId	LogonId	Duration
...		BackoffRopCount | BackoffRopData (variable)
...		
AdditionalDataSize		AdditionalData (variable)
...		

RopId (1 byte): An unsigned integer that specifies the type of **ROP**. For this operation this field is set to 0xF9.

Copyright © 2025 Microsoft Corporation

LogonId (1 byte): An unsigned integer that specifies the logon to which the **RopBackoff** ROP response applies.

Duration (4 bytes): An unsigned integer that specifies the number of milliseconds to apply a logon backoff.

BackoffRopCount (1 byte): An unsigned integer that specifies the number of structures in the **BackoffRopData** field.

BackoffRopData (variable): An array of **BackoffRop** structures. The format of the **BackoffRop** structure is specified in section 2.2.15.2.1.1. This array specifies the operations to be backed off and also the backoff duration for each.

AdditionalDataSize (2 bytes): An unsigned integer that specifies the size of the **AdditionalData** field.

AdditionalData (variable): An array of bytes that specifies additional information about the backoff response. The size of this field, in bytes, is specified by the **AdditionalDataSize** field.

2.2.15.2.1.1 BackoffRop Structure

The following descriptions define valid fields for the **BackoffRop** structure.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopIdBackoff								Duration																							
...																															

RopIdBackoff (1 byte): An unsigned integer index that identifies the **ROP** to apply the ROP backoff to.

Duration (4 bytes): An unsigned integer that specifies the number of milliseconds to apply a ROP backoff.

2.2.15.3 RopRelease ROP

The **RopRelease ROP** releases all resources associated with a **Server object**. For more details about the dependencies of Server objects, see section 3.1.5.3.

2.2.15.3.1 RopRelease ROP Request Buffer

The following descriptions define valid fields for the **RopRelease ROP** request buffer.

0	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1
RopId								LogonId								InputHandleIndex															

RopId (1 byte): An unsigned integer that specifies the type of ROP. For this operation this field is set to 0x01.

LogonId (1 byte): An unsigned integer that specifies the logon associated with this operation.

Copyright © 2025 Microsoft Corporation

InputHandleIndex (1 byte): An unsigned integer index that specifies the location in the **Server object handle table** where the **handle** for the input **Server object** is stored. For more information about Server objects, see section 1.3.1.

Copyright © 2025 Microsoft Corporation

3 Protocol Details

3.1 Client Details

3.1.1 Abstract Data Model

This section describes a conceptual model of possible data organization that an implementation maintains to participate in this protocol. The described organization is provided to facilitate the explanation of how the protocol behaves. This document does not mandate that implementations adhere to this model as long as their external behavior is consistent with that described in this document.

The following abstract data model (ADM) elements are maintained by the client.

Logon Collection: A collection of logon IDs in use.

Server Object Handle Collection: A collection of valid **Server object handles** received from the server but not yet released.

3.1.2 Timers

None.

3.1.3 Initialization

None.

3.1.4 Higher-Layer Triggered Events

The client creates a ROP input buffer consisting of **ROP requests** for operations to be performed on the server. The client sends the ROP input buffer the server and receives a ROP output buffer back from the server.

3.1.4.1 Creating a ROP Input Buffer

The layout of the ROP input buffer and the ROP output buffer is specified in section 2.2.1.

A ROP input buffer is constructed by the client and sent to the server. The client packages its **ROP requests** together in the intended processing order and creates an associated **Server object handle table**.

When assembling a ROP input buffer, the client MUST use a Server object handle table large enough to include an entry for the largest index used by the ROP requests. Each entry that is referenced only as input for **ROPs** MUST be filled in with the **handle** of the **Server object** that is intended to be the input of the operation. Each entry that is referenced only as output SHOULD be filled in with the 0xFFFFFFFF value. Each entry that is referenced first as an output index and then as an input index SHOULD also be initialized to the 0xFFFFFFFF value.

Multiple ROPs in a ROP input buffer can use the same Server object handle table index. For example, a **RopOpenFolder** ROP (section 2.2.4.1) can specify index 1 as the location to place the handle for the folder Server object. In the same ROP input buffer, a **RopGetContentsTable** ROP (section 2.2.4.14) can specify index 1 as the location for the input **Server object handle**.

Copyright © 2025 Microsoft Corporation

3.1.4.2 Logging On

The client logs on to a **message store** by using the **RopLogon ROP** (section 2.2.3.1) before attempting any additional ROPs on the message store. Prior to logging on, the client begins an **RPC** session by calling the **EcDoConnectEx** method, as specified in [MS-OXCRPC] section 3.1.4.1, or the **Connect** request type<13>, as specified in [MS-OXCMAPIHTTP] section 2.2.4.1. Once the client has successfully connected to the server, the client begins a logon session by sending a **RopLogon ROP request** (section 2.2.3.1.1).

Each logon session is identified by a logon ID created by the client. The logon ID is associated with a **Logon object**, which is created by the server during its processing of a **RopLogon** ROP request. The logon ID is initially used in the **RopLogon** ROP request and is then used in all subsequent ROPs that are issued on the logon session. The client specifies the logon ID in the **LogonId** field of the **ROP request buffer** of each ROP. Any 8-bit integer value is allowed for the logon ID, and the client does not have to specify logon IDs in a certain numeric order. The logon ID MUST be unique per RPC session (that is, per call to the **EcDoConnectEx** method).

The client can issue multiple **RopLogon** ROP requests per RPC session. If the client specifies an active logon ID, then the current logon session is released and replaced with the new one. The client manages the active logon ID by use of a **Logon Collection** abstract data model element.

3.1.5 Message Processing Events and Sequencing Rules

The client receives the **ROP responses** in the ROP output buffer. These ROP responses appear in the ROP output buffer in the same order as they were sent in the ROP input buffer. The ROP output buffer can also include ROP responses that do not have corresponding **ROP requests** in the ROP input buffer. These extra ROP responses include the **RopBackoff ROP** (section 2.2.15.2), the **RopBufferTooSmall** ROP (section 2.2.15.1), the **RopNotify** ROP (section 2.2.14.2), and the **RopPending** ROP (section 2.2.14.3).

3.1.5.1 Extra ROP Responses

3.1.5.1.1 Processing the RopBackoff ROP Response

Any client reporting its version as 12.00.4228.0000 or later, as specified in [MS-OXCRPC] section 3.2.4.1.3.2, MUST support processing the **RopBackoff ROP response buffer**. The layout of this **ROP** is specified in section 2.2.15.2.

The **RopBackoff** ROP can appear at any location within the **RopsList** field of the ROP output buffer. This **ROP response** indicates that the server requests the client delay the resending of **ROP requests** for the specified logon or for a type of ROP for a specified length of time. When this response contains a nonzero value in the **RopIdBackoff** field, as specified in section 2.2.15.2.1.1, it specifies the ROP request that is required to be delayed. The ROP response that was delayed and all subsequent ROP responses will not be in the buffer. When the **BackoffRopCount** field, as specified in section 2.2.15.2.1, is set to 0x00, all ROP requests for that logon are to be delayed.

3.1.5.1.2 Processing the RopBufferTooSmall Response Buffer

The layout of the **RopBufferTooSmall ROP** is specified in section 2.2.15.1.

The **RopBufferTooSmall ROP response** is the last ROP response within the **RopsList** field of the ROP output buffer, as specified in section 2.2.1. The **RopBufferTooSmall** ROP response indicates that the size of the ROP output buffer is insufficient to return responses for all of the **ROP requests** sent. The **RequestBuffers** field of the **RopBufferTooSmall** ROP response includes all ROP requests that were not processed by the server. The client SHOULD<14> resend the unprocessed ROP requests in a new call to the server via the **EcDoRpcExt2** method or the **Execute** request type<15>. The value that the client specifies in the *pcbOut* parameter of the **EcDoRpcExt2** method MUST be greater than

Copyright © 2025 Microsoft Corporation

or equal to the value of the **SizeNeeded** field of the **RopBufferTooSmall** ROP response. For more details about the **EcDoRpcExt2** method and the *pcbOut* parameter, see [MS-OXCRPC] section 3.1.4.2. For more details about the **Execute** request type, see [MS-OXCMAPIHTTP] section 2.2.4.2.

3.1.5.1.3 Processing the RopNotify and RopPending Responses

The **RopNotify** (section 2.2.14.2) and **RopPending** (section 2.2.14.3) **ROP responses** appear at the end of the **RopsList** field of the **ROP** output buffer, as specified in section 2.2.1. A **RopPending** ROP response SHOULD<16> be present only if the ROP output buffer does not contain all queued **RopNotify** ROP responses. For more details about how the client processes these ROPs, see [MS-OXCNOTIF] section 3.2.5.

3.1.5.2 Subsequent RopProgress ROP Requests

Once the client receives a **RopProgress ROP response** (section 2.2.8.13), all subsequent **RopProgress ROP requests** MUST use the same **Server object handle table** values as those used in the first **RopProgress** ROP request.

3.1.5.3 Server Object Dependencies

The client MUST use the **RopRelease ROP** (section 2.2.15.3) to release an object. The client MUST release an owned object before releasing the object's owner. For example, a **Stream object** that is owned by a folder is released before the owning folder is released. A summary of object owners and the objects that they can own is provided below.

An attachment owns the following:

- A Stream object that is opened on properties of the attachment
- An **Embedded Message object** that is created from the attachment
- A **FastTransfer download context** that is opened by a **RopFastTransferSourceCopyTo** ROP (section 2.2.12.7) or a **RopFastTransferSourceCopyProperties** ROP (section 2.2.12.8)
- A **FastTransfer upload context** that is opened by a **RopFastTransferDestinationConfigure** ROP (section 2.2.12.1)

A message owns the following:

- An attachment of the message
- A Stream object that is opened on properties of the message
- An **attachments table** that is opened on the message
- A FastTransfer download context that is opened by a **RopFastTransferSourceCopyTo** ROP or a **RopFastTransferSourceCopyProperties** ROP
- A FastTransfer upload context that is opened by a **RopFastTransferDestinationConfigure** ROP (section 2.2.12.1)

A folder owns the following:

- A Stream object that is opened on properties of the folder
- A **rules table** that is opened on the folder
- A **permissions table** that is opened on the folder

Copyright © 2025 Microsoft Corporation

- A fast-transfer download context that is opened by a **RopFastTransferSourceCopyTo** ROP or **RopFastTransferSourceCopyProperties** ROP
- A FastTransfer download context that is opened by a **RopFastTransferSourceCopyMessages** ROP (section 2.2.12.6) or a **RopFastTransferSourceCopyFolder** ROP (section 2.2.12.5)
- A synchronization download context that is opened by a **RopSynchronizationConfigure** ROP (section 2.2.13.1)
- A FastTransfer upload context that is opened by a **RopFastTransferDestinationConfigure** ROP
- A synchronization upload context that is opened by a **RopSynchronizationOpenCollector** ROP (section 2.2.13.7)

3.1.5.4 Code Page for Strings

In a **ROP request**, the **code page** for strings MUST match the code page associated with the affected **Server object**. The code page for a Server object is determined as follows:

- If the Server object is owned by a message, then the Server object uses the same code page that the message uses. The message's properties and the Server objects owned by the message use the same code page that the message uses.
- If the Server object is not owned by a message, then the Server object uses the code page specified in the **EcDoConnectEx** method or a similar **RPC** method, or the **Connect** request type<17>. For more details about the **EcDoConnectEx** method and RPC, see [MS-OXCRPC] section 3.1.4.1. For more details about the **Connect** request type, see [MS-OXCMAPIHTTP] section 2.2.4.1.

3.1.6 Timer Events

None.

3.1.7 Other Local Events

3.1.7.1 Shutting Down

When the client shuts down, before it disconnects from the server, it SHOULD send **RopRelease ROP requests** (section 2.2.15.3) to the server to clean up all **Server objects** it had created but had not yet released.

3.2 Server Details

3.2.1 Abstract Data Model

This section describes a conceptual model of possible data organization that an implementation maintains to participate in this protocol. The described organization is provided to facilitate the explanation of how the protocol behaves. This document does not mandate that implementations adhere to this model as long as their external behavior is consistent with that specified in this document.

The following ADM elements are maintained by the server.

Logon Map: A mapping of logon IDs and logon **Server objects**.

Server Object Map: A mapping of **Server object handles** and Server objects. There is one map for each logon Server object.

Copyright © 2025 Microsoft Corporation

3.2.2 Timers

None.

3.2.3 Initialization

When a connection is first set up between a client and server via either the **ExDoConnectEx** method, as specified in [MS-OXCRPC] section 3.1.4.1, or the **Connect** request type<18>, as specified in [MS-OXCMAPIHTTP] section 2.2.4.1, the **Server Object Map** and **Logon Map** ADM elements are empty.

3.2.4 Higher-Layer Triggered Events

3.2.4.1 Sending Notifications to the Client

When events that the client has registered for occur, the server sends one or more **RopNotify** **ROP responses** (section 2.2.14.2). If not all queued **RopNotify** ROP responses can fit in the **ROP** output buffer, the server SHOULD<19> include a **RopPending** ROP response (section 2.2.14.3.1) in the ROP output buffer. More detailed information about notifications can be found in [MS-OXCNOTIF].

3.2.4.2 Sending the RopBackoff ROP Response

When the server determines that a **ROP request** is required to be delayed, the server MUST either respond with a **RopBackoff** **ROP response** (section 2.2.15.2) or fail the **ExDoRpcExt2** method, as specified in [MS-OXCRPC] section 3.1.4.2, or the **Execute** request type,**<20>** as specified in [MS-OXCMAPIHTTP] section 2.2.4.2.

If the server version, as defined in [MS-OXCRPC] section 3.1.4.1.3.2. is greater than 08.00.0525.0 and the client version, as defined in [MS-OXCRPC] section 3.2.4.1.3.2, is greater than 12.0.4228.0, the server SHOULD substitute a **RopBackoff** ROP response in place of the response for the delayed ROP request. If either the client or the server is an earlier version, then the server MUST instead fail either the **ExDoRpcExt2** method by raising the RPC_S_SERVER_TOO_BUSY exception, as specified in [MS-OXCRPC], or the **Execute** request type with an **HTTP** status code of 200, a value of 0 (success) in the **X-ResponseCode** header, and a value of 0x000006BB in the **StatusCode** field of the **Execute** request type failure response body, as specified in [MS-OXCMAPIHTTP].

If **ROPs** are specified in a **RopBackoff** ROP response, all subsequent ROP requests SHOULD NOT be processed.

3.2.4.3 Responding to Insufficient Output Buffer Space

When the server determines that there is not enough space in the ROP output buffer, as specified in section 2.2.1, for the remaining **ROP responses**, it MUST NOT process the remaining **ROPs**. The server responds in one of the following ways.

- If the ROP output buffer can be resized to accommodate the remaining ROPs, then the server MUST send a **RopBufferTooSmall** ROP response (section 2.2.15.1). In this case, the client can resubmit the **ROP requests** in either a new **EcDoRpcExt2** method call with the *pcbOut* parameter set to an appropriate value, as specified in [MS-OXCRPC] section 3.1.4.2, or a new **Execute** request type with the **MaxRopOut** field set to an appropriate value,<21> as specified in [MS-OXCMAPIHTTP] section 2.2.4.2.1. For details about how the client processes a **RopBufferTooSmall** ROP response, see section 3.1.5.1.2.

- If one of the ROP responses will not fit in the ROP output buffer when either the *pcbOut* parameter of the **EcDoRpcExt2** response, as specified in [MS-OXCRPC] section 3.1.4.2, or the **RopBufferSize** field of the **Execute** request type success response body, as specified in [MS-OXCMAPIHTTP] section 2.2.4.2.2, is set to the maximum value, then the server SHOULD<22> fail

Copyright © 2025 Microsoft Corporation

the **EcDoRpcExt2** method with a return value of 0x0000047D or fail the **Execute** request type with a value of 0x0000047D in the **StatusCode** field.

Some **ROP response buffers** are dynamically sized based on the amount of available space in the ROP output buffer. If the ROP output buffer is not large enough for the minimum size of a dynamically sized ROP response buffer followed by subsequent ROP response buffers, then the server sends the **RopBufferTooSmall** ROP.

3.2.5 Message Processing Events and Sequencing Rules

3.2.5.1 Processing a ROP Input Buffer

The layout of the ROP input buffer is specified in section 2.2.1.

When processing a ROP input buffer received from a client, the server MUST process the ROP requests in the order they are specified in the **RopsList** field and MUST NOT process more than one ROP input buffer concurrently for a connection. The **ROP responses** in the ROP output buffer MUST be in the same order in which they were processed.

If the server is unable to parse the **ROP requests** in the ROP input buffer, the **RPC** MUST fail by returning 0x000004B6.

During processing of a ROP request, the server resolves the **Server object handle table** index to a **Server object**. If the index is invalid, the server SHOULD<23> fail the **ROP** with the **ReturnValue** field set to 0x000004B9. Any index used for input is converted into the corresponding Server object by looking up the **handle** in the Server object handle table and then looking up the Server object in the **Server Object Map** ADM element associated with the logon for the ROP request. If any lookup in either the **Logon Map** ADM element or the **Server Object Map** ADM element fails, the server SHOULD<24> fill in a failure ROP response with a nonzero return value.

After successful processing of a ROP request that created a Server object, the server MUST assign an unused **Server object handle** to the object and record the mapping in the **Server Object Map** ADM element for the logon associated with the ROP. The handle assigned is then set in the Server object handle table at the location specified by the output index in the ROP request and can be used by subsequent ROP requests in the same ROP input buffer.

Because the Server object handle value 0xFFFFFFFF is used to initialize unused entries of a Server object handle table, a server MUST NOT assign that value to a created Server object.

3.2.5.2 Creating a ROP Output Buffer

The format of the ROP output buffer is specified in section 2.2.1.

The server constructs the ROP output buffer after processing the ROP input buffer. The ROP output buffer includes a list of **ROP responses** and a modified **Server object handle table**. The ROP responses in the ROP output buffer MUST be in the same order in which they were processed.

The Server object handle table MUST be large enough to contain an entry for the highest Server object handle table index specified in the ROP responses. The table can be a smaller size compared to the table in the ROP input buffer if entries at the end of the table were not referenced. The server MUST preserve the order of entries in the Server object handle table between the ROP input buffer and the ROP output buffer.

3.2.5.3 Processing the RopRelease ROP Request

Copyright © 2025 Microsoft Corporation

When the server receives a **RopRelease** **ROP request**, as specified in section 2.2.15.3, the server MUST remove the mapping for the **Server object handle** from the **Server Object Map** ADM element and release the resources associated with it.<25> The same Server object handle can now be reused for another **Server object**. If the Server object specified is a logon Server object, then the server MUST also remove it from the **Logon Map** ADM element.

Unlike all other ROP requests, the **RopRelease** **ROP** does not have any associated **ROP response**. The server MUST NOT return any response for a **RopRelease** ROP request. Any errors resulting from the processing of this ROP MUST be ignored and not sent back to the client.

3.2.5.4 Error Codes Returned When an Object Is Invalid

The error codes returned by the server when the object on the server has been released or becomes invalid are contained in the following table. These codes are valid for whatever object is represented by the **Server object handle**.

Name	Value	Meaning
ecInvalidObject	0x80040108	Returned when the client attempts to reuse any Server object handle that the server has previously issued a **RopRelease** **ROP** on and that hasn't been recycled for a new object.
ecNullObject	0x000004B9	Returned when the client attempts to use a Server object handle value that was never assigned to an open object.
ecAccessDenied	0x80070005	Returned when the client attempts to use the Server object handle from a different logon.

3.2.6 Timer Events

None.

3.2.7 Other Local Events

3.2.7.1 Disconnecting

When the client disconnects, the server MUST release all **Server objects**, **Logon Map** ADM elements, and **Server Object Map** ADM elements associated with the connection.

Copyright © 2025 Microsoft Corporation

4 Protocol Examples

4.1 Empty ROP Buffer

In the empty buffer scenario, the **ROP request buffer** contains no **ROPs** and no **Server object handles**. This type of buffer can be used by a client when it expects to receive extra information in the ROP output buffer, such as pending notifications.

```
02 00
```

RopSize: 02 00

Rops: <empty>

ServerObjectHandleTable: <empty>

4.2 Single ROP Request

In the single **ROP request** scenario, the buffer contains a single **ROP** that has an input index. The **ServerObjectHandleTable** field is offset from the beginning of the buffer by the number of bytes specified in the **RopSize** field. The **Server object handle table** in this buffer contains an unused entry.

```
09 00 15 01 01 02 01 FF 0F 6D 00 00 00 56 00 00 00
```

RopSize: 09 00

Rop:

RopId: 15 (**RopQueryRows** (section 2.2.5.4))

LogonId: 01

InputHandleIndex: 01

QueryRowsFlags: 02

ForwardRead: 01

RowCount: FF 0F

ServerObjectHandleTable:

6D 00 00 00 (Handle 0, unused)

56 00 00 00 (Handle 1, input of **RopQueryRows**)

4.3 Multiple ROP Request

In the multiple **ROP request** scenario, the buffer consists of two ROP requests. The first is a **RopOpenFolder** ROP request (section 2.2.4.1), and the second is a **RopGetHierarchyTable** ROP request (section 2.2.4.13). The input for the second **ROP** is the output for the first ROP. All output **handles** are initialized to 0xFFFFFFFF.

Copyright © 2025 Microsoft Corporation

```
14 00 02 00 00 01 01 00 59 65 73 73 69 72 00 04 00 01 02 04 6E 00 00 00 FF FF FF FF FF FF FF
FF
```

RopSize: 14 00

Rops:

RopId: 02 (**RopOpenFolder**)

LogonId: 00

InputHandleIndex: 00

OutputHandleIndex 01

FolderId: 01 00 59 65 73 73 69 72 (ID of the folder to be opened)

OpenModeFlags: 00

RopId: 04 (**RopGetHierarchyTable**)

LogonId: 00

InputHandleIndex: 01

OutputHandleIndex: 02

TableFlags: 04

ServerObjectHandleTable:

6E 00 00 00 (Handle 0, input of **RopOpenFolder**)

FF FF FF FF (Handle 1, output of **RopOpenFolder**, input of **RopGetHierarchyTable**)

FF FF FF FF (Handle 2, output of **RopGetHierarchyTable)**

4.4 RopRelease ROP Request

In the **RopRelease** **ROP request** scenario, the buffer contains a pair of **RopRelease** ROP requests (section 2.2.15.3). These two **ROPs** are releasing two different **Server objects**, based on the different **Server object handles** that they reference.

```
08 00 01 00 00 01 00 01 6F 00 00 00 6E 00 00 00
```

RopSize: 08 00

Rops:

RopId: 01 (**RopRelease**)

LogonId: 00

InputHandleIndex: 00

RopId: 01 (**RopRelease**)

LogonId: 00

Copyright © 2025 Microsoft Corporation

InputHandleIndex: 01

ServerObjectHandleTable:

6F 00 00 00 (Handle 0, input of first **RopRelease**)

6E 00 00 00 (Handle 1, input of second **RopRelease**)

4.5 RopBufferTooSmall ROP Response

In the **RopBufferTooSmall** **ROP response** scenario, when a **RopOpenMessage** **ROP** (section 2.2.6.1) call produces a response that won't fit in the output buffer (the output buffer being much smaller than usual for this example), the **RopBufferTooSmall** ROP (section 2.2.15.1) indicates that an output buffer with at least 0x002C bytes is required to return the **ROP response buffer** from the **RopOpenMessage** ROP in the **ROP request**. The **RopOpenMessage** ROP request and the **Server object handle table** are the same as those specified in the input **ROP buffer**. In this scenario, the **RopBufferTooSmall** ROP is the first ROP, which indicates that no ROPs were processed before running out of room.

```
1C 00 FF 2C 00 03 00 00 01 FF 0F 01 00 15 89 00 78 27 1E 03 01 00 15 89 00 78 2F BB 12 00 00
00 FF FF FF FF
```

RopSize: 1C 00

Rops:

RopId: FF (**RopBufferTooSmall**)

SizeNeeded: 2C 00 (0x002C bytes)

RopId: 03 (**RopOpenMessage**)

LogonId: 00

InputHandleIndex: 00

OutputHandleIndex: 01

CodePageID: FF 0F

FolderId: 01 00 15 89 00 78 27 1E

OpenModeFlags: 03

MessageId: 01 00 15 89 00 78 2F BB

ServerObjectHandleTable:

12 00 00 00 (Handle 0, input of **RopOpenMessage**)

FF FF FF FF (Handle 1, output of **RopOpenMessage**)

4.6 Logon RopBackoff ROP Response

In the logon **RopBackoff** **ROP response** scenario, the response buffer contains a **RopBackoff** ROP response (section 2.2.15.2) in the same buffer as a **RopSetColumns** ROP response (section 2.2.5.1). The **RopBackoff** **ROP** contains no information specific to a ROP but instead a suggested duration of the delay before the logon be retried.

Copyright © 2025 Microsoft Corporation

```
12 00 12 00 00 00 00 00 00 F9 00 34 12 00 00 00 00 00 28 00 00 00
```

RopSize: 12 00

Rops:

RopId: 12 (**RopSetColumns**)

InputHandleIndex: 00

ReturnValue: 00 00 00 00

TableStatus: 00

RopId: F9 (**RopBackoff**)

LogonId: 00

Duration: 34 12 00 00 (suggested number of milliseconds before retry of logon (section 3.1.5.1.1))

BackoffRopCount: 00

AdditionalDataSize: 00 00

ServerObjectHandleTable:

28 00 00 00 (Handle 0, input of **RopSetColumns**)

4.7 RopBackoff ROP Response

In the **RopBackoff ROP response** scenario, the client has sent a **RopOpenFolder ROP request** (section 2.2.4.1) and a **RopCreateFolder** ROP request (section 2.2.4.2) in the same input buffer. The output buffer contains a **RopBackoff** ROP response (section 2.2.15.2) and a successful **RopOpenFolder** ROP response. The **RopBackoff** ROP response contains information about only the **RopCreateFolder ROP**. The server is including the **RopBackoff** ROP response because it is too busy to complete processing of the **RopCreateFolder** ROP request.

```
18 00 02 01 00 00 00 00 00 00 F9 00 00 00 00 00 01 1C 17 4F 04 00 00 00 0A 00 00 00 24 00 00
00
```

RopSize: 18 00

Rops:

RopId: 02 (**RopOpenFolder**)

OutputHandleIndex: 01

ReturnValue: 00 00 00 00 (success response for **RopOpenFolder**)

HasRules: 00

IsGhosted: 00

RopId: F9 (**RopBackoff**)

LogonId: 00

Duration: 00 00 00 00

Copyright © 2025 Microsoft Corporation

BackoffRopCount: 01

RopIdBackoff: 1C (**RopCreateFolder**)

Duration: 17 4F 04 00 (Suggested time in milliseconds before retrying **RopCreateFolder**)

AdditionalDataSize: 00 00

ServerObjectHandleTable:

0A 00 00 00 (Handle 0, unused)

24 00 00 00 (Handle 1, output of **RopOpenFolder**)

Copyright © 2025 Microsoft Corporation

5 Security

5.1 Security Considerations for Implementers

None.

5.2 Index of Security Parameters

None.

Copyright © 2025 Microsoft Corporation

6 Appendix A: Product Behavior

The information in this specification is applicable to the following Microsoft products or supplemental software. References to product versions include updates to those products.

- Microsoft Exchange Server 2003
- Microsoft Exchange Server 2007
- Microsoft Exchange Server 2010
- Microsoft Exchange Server 2013
- Microsoft Exchange Server 2016
- Microsoft Office Outlook 2003
- Microsoft Office Outlook 2007
- Microsoft Outlook 2010
- Microsoft Outlook 2013
- Microsoft Outlook 2016
- Microsoft Exchange Server 2019
- Microsoft Outlook 2019
- Microsoft Outlook 2021
- Microsoft Outlook LTSC 2024
- Microsoft Exchange Server Subscription Edition

Exceptions, if any, are noted in this section. If an update version, service pack or Knowledge Base (KB) number appears with a product name, the behavior changed in that update. The new behavior also applies to subsequent updates unless otherwise specified. If a product edition appears with the product version, behavior is different in that product edition.

Unless otherwise specified, any statement of optional behavior in this specification that is prescribed using the terms "SHOULD" or "SHOULD NOT" implies product behavior in accordance with the SHOULD or SHOULD NOT prescription. Unless otherwise specified, the term "MAY" implies that the product does not follow the prescription.

<1> Section 2.1: Exchange 2003, Exchange 2007, Exchange 2010, the initial release of Exchange 2013, Office Outlook 2003, Office Outlook 2007, Outlook 2010, and the initial release of Outlook 2013 do not support the **Execute** request type. The **Execute** request type was introduced in Microsoft Outlook 2013 Service Pack 1 (SP1) and Microsoft Exchange Server 2013 Service Pack 1 (SP1).

<2> Section 2.2.1: Exchange 2003, Exchange 2007, Exchange 2010, the initial release of Exchange 2013, Office Outlook 2003, Office Outlook 2007, Outlook 2010, and the initial release of Outlook 2013 do not support the **Execute** request type. The **Execute** request type was introduced in Outlook 2013 SP1 and Exchange 2013 SP1.

<3> Section 2.2.2: Exchange 2003 and Exchange 2007 behavior is undefined when they encounter a reserved value in a **RopId** field.

<4> Section 2.2.2: Exchange 2003, Exchange 2007, Exchange 2010, the initial release of Exchange 2013, Office Outlook 2003, Office Outlook 2007, Outlook 2010, and the initial release of Outlook 2013

Copyright © 2025 Microsoft Corporation

do not support the **Execute** request type. The **Execute** request type was introduced in Outlook 2013 SP1 and Exchange 2013 SP1.

<5> Section 2.2.3.1.3: Exchange 2007 does not set the **PerUserGuid** field to an empty **GUID**.

<6> Section 2.2.7.9: Outlook 2010 does not use the **RopOptionsData ROP** (section 2.2.7.9).

<7> Section 2.2.7.9.2: Exchange 2003, Exchange 2007, and Exchange 2010 do not return an empty array in the **OptionsInfo** field.

<8> Section 2.2.7.9.3: Exchange 2007 sets the **ReturnValue** field for the **RopOptionsData ROP response** (section 2.2.7.9) to 0x00000000 regardless of the failure of the ROP.

<9> Section 2.2.9.2.1: Exchange 2003 limits the stream size to 32 kilobytes. Therefore, if the value of the **ByteCount** field in the **RopReadStream ROP request buffer** (section 2.2.9.2) is greater than 0x8000, the server returns the **RopBufferTooSmall** ROP (section 2.2.15.1). The **MaximumByteCount** field is never present in the request buffer because the **ByteCount** field is never set to 0xBABE.

<10> Section 2.2.9.7.1: Exchange 2003 and Exchange 2007 do not use a configuration setting and limit the maximum size of the stream to 2^{31} bytes.

<11> Section 2.2.9.9.3: Exchange 2003 and Exchange 2007 do not set the field to 0x0000000000000000, but the nonzero value has no meaning.

<12> Section 2.2.9.9.3: Exchange 2003 and Exchange 2007 do not set the field to 0x0000000000000000, but the nonzero value has no meaning.

<13> Section 3.1.4.2: Exchange 2003, Exchange 2007, Exchange 2010, the initial release of Exchange 2013, Office Outlook 2003, Office Outlook 2007, Outlook 2010, and the initial release of Outlook 2013 do not support the **Connect** request type. The **Connect** request type was introduced in Outlook 2013 SP1 and Exchange 2013 SP1.

<14> Section 3.1.5.1.2: In Update Rollup 3 for Exchange Server 2010 Service Pack 2 (SP2), if the first ROP in the **RPC** buffer creates a response that exceeds the maximum **ROP buffer** size and there are no additional ROPs in the RPC buffer, then the server returns the ecBufferTooSmall error to fail the ROP instead of returning the **RopBufferTooSmall** ROP (section 2.2.15.1). Failing the ROP when it satisfies these conditions indicates to the client that there is no client action possible to make that ROP response fit in the ROP buffer.

<15> Section 3.1.5.1.2: Exchange 2003, Exchange 2007, Exchange 2010, the initial release of Exchange 2013, Office Outlook 2003, Office Outlook 2007, Outlook 2010, and the initial release of Outlook 2013 do not support the **Execute** request type. The **Execute** request type was introduced in Outlook 2013 SP1 and Exchange 2013 SP1.

<16> Section 3.1.5.1.3: Exchange 2003 and Exchange 2007 include a **RopPending** ROP response (section 2.2.14.3) even though the ROP output buffer contains all queued **RopNotify** ROP responses (section 2.2.14.2).

<17> Section 3.1.5.4: Exchange 2003, Exchange 2007, Exchange 2010, the initial release of Exchange 2013, Office Outlook 2003, Office Outlook 2007, Outlook 2010, and the initial release of Outlook 2013 do not support the **Connec**t request type. The **Connect** request type was introduced in Outlook 2013 SP1 and Exchange 2013 SP1.

<18> Section 3.2.3: Exchange 2003, Exchange 2007, Exchange 2010, the initial release of Exchange 2013, Office Outlook 2003, Office Outlook 2007, Outlook 2010, and the initial release of Outlook 2013 do not support the **Connect** request type. The **Connect** request type was introduced in Outlook 2013 SP1 and Exchange 2013 SP1.

Copyright © 2025 Microsoft Corporation

<19> Section 3.2.4.1: Exchange 2003 and Exchange 2007 include a **RopPending** ROP response (section 2.2.14.3) even though all queued **RopNotify** ROP responses (section 2.2.14.2) fit in the ROP output buffer.

<20> Section 3.2.4.2: Exchange 2003, Exchange 2007, Exchange 2010, the initial release of Exchange 2013, Office Outlook 2003, Office Outlook 2007, Outlook 2010, and the initial release of Outlook 2013 do not support the **Execute** request type. The **Execute** request type was introduced in Outlook 2013 SP1 and Exchange 2013 SP1.

<21> Section 3.2.4.3: Exchange 2003, Exchange 2007, Exchange 2010, the initial release of Exchange 2013, Office Outlook 2003, Office Outlook 2007, Outlook 2010, and the initial release of Outlook 2013 do not support the **Execute** request type. The **Execute** request type was introduced in Outlook 2013 SP1 and Exchange 2013 SP1.

<22> Section 3.2.4.3: Exchange 2003 and Exchange 2007 do not fail the **EcDoRpcExt2** RPC and instead fail the individual ROP with the **ReturnValue** field of the **ROP response buffer** set to 0x0000047D.

<23> Section 3.2.5.1: For some ROPs, Exchange 2003 and Exchange 2007 use different methods to resolve the Server object and, therefore, do not fail the ROP if the index is invalid.

<24> Section 3.2.5.1: Exchange 2003 and Exchange 2007 fail the RPC.

<25> Section 3.2.5.3: In Exchange 2010, in instances where multiple ROPs are being processed in one RPC and the **RopRelease** ROP is the last ROP in the call, the **RopRelease** ROP (section 2.2.15.3) replaces the **handle** of the released **Server object handle table** entry with a value that is considered invalid by both server and client and is not 0xFFFFFFFF. This invalid handle value is then returned as the **Server object handle** in the ROP responses for the other ROPs in the RPC.

Copyright © 2025 Microsoft Corporation

7 Change Tracking

This section identifies changes that were made to this document since the last release. Changes are classified as Major, Minor, or None.

The revision class **Major** means that the technical content in the document was significantly revised. Major changes affect protocol interoperability or implementation. Examples of major changes are:

- A document revision that incorporates changes to interoperability requirements.
- A document revision that captures changes to protocol functionality.

The revision class **Minor** means that the meaning of the technical content was clarified. Minor changes do not affect protocol interoperability or implementation. Examples of minor changes are updates to clarify ambiguity at the sentence, paragraph, or table level.

The revision class **None** means that no new technical changes were introduced. Minor editorial and formatting changes may have been made, but the relevant technical content is identical to the last released version.

The changes made to this document are listed in the following table. For more information, please contact dochelp@microsoft.com.

Section	Description	Revision class
6 Appendix A: Product Behavior	Updated list of supported products.	Major

Copyright © 2025 Microsoft Corporation

8 Index

A

Abstract data model
  client 216
  server 219
Applicability 20

C

Capability negotiation 20
Change tracking 232
Client
  abstract data model 216
  higher-layer triggered events 216
  initialization 216
  message processing 217
  sequencing rules 217
  timer events 219
  timers 216
Client - local events
  shutting down 219
Client - message processing events
  code page for strings 219
  Server object dependencies 218
  subsequent RopProgress ROP requests 218
Client - sequencing rules
  code page for strings 219
  Server object dependencies 218
  subsequent RopProgress ROP requests 218

D

Data model - abstract
  client 216
  server 219

E

Empty ROP buffer example 223
Examples
  empty ROP buffer 223
  Logon RopBackoff ROP response 225
  multiple ROP request 223
  ROP RopBackoff response 226
  RopBufferTooSmall ROP response 225
  RopRelease request 224
  single ROP request 223

F

Fast transfer ROPs
  RopFastTransferDestinationConfigure ROP 182
  RopFastTransferDestinationPutBuffer ROP (section 2.2.12.2 183, section 2.2.12.3 184)
  RopFastTransferSourceCopyFolder ROP 187
  RopFastTransferSourceCopyMessages ROP 188
  RopFastTransferSourceCopyProperties ROP 190
  RopFastTransferSourceCopyTo ROP 189
  RopFastTransferSourceGetBuffer ROP 185
  RopTellVersion ROP 191
Fields - vendor-extensible 20
Folder ROPs
  RopCopyFolder ROP 66
  RopCreateFolder ROP 56
  RopDeleteFolder ROP 58
  RopDeleteMessages ROP 69
  RopEmptyFolder ROP 67
  RopGetContentsTable ROP 73
  RopGetHierarchyTable ROP 72
  RopGetSearchCriteria ROP 60
  RopHardDeleteMessages ROP 70
  RopHardDeleteMessagesAndSubfolders ROP 68
  RopMoveCopyMessages ROP 62
  RopMoveFolder ROP 64
  RopOpenFolder ROP 54
  RopSetSearchCriteria ROP 59
Format of ROP buffers 19

G

Glossary 14

H

Higher-layer triggered events
  client 216
Higher-layer triggered events - server
  responding to insufficient output buffer space 220
  sending notifications to the client 220
  sending the RopBackoff ROP response 220

I

Implementer - security considerations 228
Incremental change synchronization ROPs
  RopGetLocalReplicaIds ROP 209
  RopSetLocalReplicaMidsetDeleted ROP 207
  RopSynchronizationConfigure ROP 192
  RopSynchronizationGetTransferState ROP 203
  RopSynchronizationImportDeletes ROP 199
  RopSynchronizationImportHierarchyChange ROP 197
  RopSynchronizationImportMessageChange ROP 194
  RopSynchronizationImportMessageMove ROP 200
  RopSynchronizationImportReadStateChanges ROP 196
  RopSynchronizationOpenCollector ROP 202
  RopSynchronizationUploadStateStreamBegin ROP 204
  RopSynchronizationUploadStateStreamContinue ROP 205
  RopSynchronizationUploadStateStreamEnd ROP 206
Index of security parameters 228
Informative references 18
Initialization
  client 216
  server 220
Introduction 14

L

Copyright © 2025 Microsoft Corporation

Local events - server
disconnecting 222
Logon RopBackoff ROP response example 225
Logon ROPs
RopGetOwningServers ROP 40
RopGetPerUserGuid ROP 48
RopGetPerUserLongTermIds ROP 47
RopGetReceiveFolder ROP 35
RopGetReceiveFolderTable ROP 38
RopGetStoreState ROP 39
RopIdFromLongTermId ROP 45
RopLogon ROP 30
RopLongTermIdFromId ROP 44
RopPublicFolderIsGhosted ROP 42
RopReadPerUserInformation ROP 50
RopSetReceiveFolder ROP 37
RopWritePerUserInformation ROP 52

M

Message processing
client 217
Message processing - client
code page for strings 219
Server object dependencies 218
subsequent RopProgress ROP requests 218
Message processing - server
creating a ROP output buffer 221
error codes returned when an object is invalid 222
processing a ROP input buffer 221
RopRelease 221
Message ROPs
RopCreateAttachment ROP 120
RopCreateMessage ROP 103
RopDeleteAttachment ROP 121
RopGetAttachmentTable ROP 125
RopGetMessageStatus ROP 115
RopGetValidAttachments ROP 126
RopModifyRecipients ROP 107
RopOpenAttachment ROP 119
RopOpenEmbeddedMessage ROP 123
RopOpenMessage ROP 101
RopReadRecipients ROP 109
RopReloadCachedInformation ROP 111
RopRemoveAllRecipients ROP 107
RopSaveChangesAttachment ROP 122
RopSaveChangesMessage ROP 105
RopSetMessageReadFlag ROP 117
RopSetMessageStatus ROP 113
RopSetReadFlags ROP 115
Messages
overview 21
ROP Input and Output Buffers 21
The Table of RopIds 21
transport 21
Multiple ROP request example 223

N

Normative references 17
Notification ROPs
RopNotify ROP 212
RopPending ROP 212
RopRegisterNotification ROP 210

O

Other local events - client
Shutting down 219
Other ROPs
RopBackoff ROP 213
RopBufferTooSmall ROP 213
RopRelease ROP 214
Overview
format of ROP buffers 19
Server objects 19
Overview (synopsis) 18

P

Parameters - security index 228
Permission ROPs
RopGetPermissionsTable ROP 177
RopModifyPermissions ROP 176
Preconditions 20
Prerequisites 20
Product behavior 229
Property ROPs
RopCopyProperties ROP 155
RopCopyTo ROP 157
RopDeleteProperties ROP 150
RopDeletePropertiesNoReplicate ROP 151
RopGetNamesFromPropertyIds ROP 140
RopGetPropertiesAll ROP 143
RopGetPropertiesList ROP 145
RopGetPropertiesSpecific ROP 142
RopGetPropertyIdsFromNames ROP 138
RopProgress ROP 159
RopQueryNamedProperties ROP 153
RopSetProperties ROP 146
RopSetPropertiesNoReplicate ROP 148

R

References 17
informative 18
normative 17
Relationship to other protocols 19
ROP Input and Output Buffers message 21
ROP RopBackoff response example 226
RopAbort ROP table ROP 80
RopAbortSubmit ROP transport ROP 128
RopBackoff ROP other ROP 213
RopBufferTooSmall ROP other ROP 213
RopBufferTooSmall ROP response example 225
RopCloneStream ROP stream ROP 175
RopCollapseRow ROP table ROP 96
RopCommitStream ROP stream ROP 165
RopCopyFolder ROP folder ROP 66
RopCopyProperties ROP property ROP 155
RopCopyTo ROP property ROP 157
RopCopyToStream ROP stream ROP 170
RopCreateAttachment ROP message ROP 120
RopCreateBookmark ROP table ROP 88
RopCreateFolder ROP folder ROP 56
RopCreateMessage ROP message ROP 103
RopDeleteAttachment ROP message ROP 121
RopDeleteFolder ROP folder ROP 58
RopDeleteMessages ROP folder ROP 69

Copyright © 2025 Microsoft Corporation

RopDeleteProperties ROP property ROP 150
RopDeletePropertiesNoReplicate ROP property ROP 151
RopEmptyFolder ROP folder ROP 67
RopExpandRow ROP table ROP 94
RopFastTransferDestinationConfigure ROP fast transfer ROP 182
RopFastTransferDestinationPutBuffer ROP fast transfer ROP (section 2.2.12.2 183, section 2.2.12.3 184)
RopFastTransferSourceCopyFolder ROP fast transfer ROP 187
RopFastTransferSourceCopyMessages ROP fast transfer ROP 188
RopFastTransferSourceCopyProperties ROP fast transfer ROP 190
RopFastTransferSourceCopyTo ROP fast transfer ROP 189
RopFastTransferSourceGetBuffer ROP fast transfer ROP 185
RopFindRow ROP table ROP 91
RopFreeBookmark ROP table ROP 93
RopGetAddressTypes ROP transport ROP 129
RopGetAttachmentTable ROP message ROP 125
RopGetCollapseState ROP table ROP 97
RopGetContentsTable ROP folder ROP 73
RopGetFolderIsGhosted ROP logon ROP 42
RopGetHierarchyTable ROP folder ROP 72
RopGetLocalReplicaIds ROP incremental change synchronization ROP 209
RopGetMessageStatus ROP message ROP 115
RopGetNamesFromPropertyIds ROP property ROP 140
RopGetOwningServers ROP logon ROP 40
RopGetPermissionsTable ROP permission ROP 177
RopGetPerUserGuid ROP logon ROP 48
RopGetPerUserLongTermIds ROP logon ROP 47
RopGetPropertiesAll ROP property ROP 143
RopGetPropertiesList ROP property ROP 145
RopGetPropertiesSpecific ROP property ROP 142
RopGetPropertyIdsFromNames ROP property ROP 138
RopGetReceiveFolder ROP logon ROP 35
RopGetReceiveFolderTable ROP logon ROP 38
RopGetRulesTable ROP rule ROP 179
RopGetSearchCriteria ROP folder ROP 60
RopGetStatus ROP table ROP 82
RopGetStoreState ROP logon ROP 39
RopGetStreamSize ROP stream ROP 166
RopGetTransportFolder ROP transport ROP 135
RopGetValidAttachments ROP message ROP 126
RopHardDeleteMessages ROP folder ROP 70
RopHardDeleteMessagesAndSubfolders ROP folder ROP 68
RopIdFromLongTermId ROP logon ROP 45
RopLockRegionStream ROP stream ROP 172
RopLogon ROP logon ROP 30
RopLongTermIdFromId ROP logon ROP 44
RopModifyPermissions ROP permission ROP 176
RopModifyRecipients ROP message ROP 107
RopModifyRules ROP rule ROP 178
RopMoveCopyMessages ROP folder ROP 62
RopMoveFolder ROP folder ROP 64
RopOpenAttachment ROP message ROP 119
RopOpenEmbeddedMessages ROP message ROP 123
RopOpenFolder ROP folder ROP 54
RopOpenMessage ROP message ROP 101
RopOpenStream ROP stream ROP 161
RopOptionsData ROP transport ROP 136
RopPending ROP notification ROP 212
RopProgress ROP property ROP 159
RopQueryColumnsAll ROP table ROP 90
RopQueryNamedProperties ROP property ROP 153
RopQueryPosition ROP table ROP 83
RopQueryRows ROP table ROP 79
RopReadPerUserInformation ROP logon ROP 50
RopReadRecipients ROP message ROP 109
RopReadStream ROP stream ROP 162
RopRegisterNotification ROP notification ROP 210
RopRegisterNotify ROP notification ROP 212
RopRelease request example 224
RopRelease ROP other ROP 214
RopReloadCachedInformation ROP message ROP 111
RopRemoveAllRecipients ROP message ROP 107
RopResetTable ROP table ROP 94
RopRestrict ROP table ROP 77
RopSaveChangesAttachment ROP message ROP 122
RopSaveChangesMessage ROP message ROP 105
RopSeekRow ROP table ROP 84
RopSeekRowBookmark ROP table ROP 86
RopSeekRowFractional ROP table ROP 87
RopSeekStream ROP stream ROP 168
RopSetCollapseState ROP table ROP 99
RopSetColumns ROP table ROP 74
RopSetLocalReplicaMidsetDeleted ROP incremental change synchronization ROP 207
RopSetMessageReadFlag ROP message ROP 117
RopSetMessageStatus ROP message ROP 113
RopSetProperties ROP property ROP 146
RopSetPropertiesNoReplicate ROP property ROP 148
RopSetReadFlags ROP message ROP 115
RopSetReceiveFolder ROP logon ROP 37
RopSetSearchCriteria ROP folder ROP 59
RopSetSpooler ROP transport ROP 131
RopSetStreamSize ROP stream ROP 167
RopSortTable ROP table ROP 76
RopSpoolerLockMessage ROP transport ROP 132
RopSubmitMessage ROP transport ROP 128
RopSynchronizationConfigure ROP incremental change synchronization ROP 192
RopSynchronizationGetTransferState ROP incremental change synchronization ROP 203
RopSynchronizationImportDeletes ROP incremental change synchronization ROP 199
RopSynchronizationImportHierarchyChange ROP incremental change synchronization ROP 197
RopSynchronizationImportMessageChange ROP incremental change synchronization ROP 194
RopSynchronizationImportMessageMove ROP incremental change synchronization ROP 200
RopSynchronizationImportReadStateChanges ROP incremental change synchronization ROP 196
RopSynchronizationOpenCollector ROP incremental change synchronization ROP 202
RopSynchronizationUploadStateStreamBegin ROP incremental change synchronization ROP 204
RopSynchronizationUploadStateStreamContinue ROP incremental change synchronization ROP 205
RopSynchronizationUploadStateStreamEnd ROP incremental change synchronization ROP 206

Copyright © 2025 Microsoft Corporation

RopTellVersion ROP fast transfer ROP 191
RopTransportNewMail ROP transport ROP 134
RopTransportSend ROP transport ROP 133
RopUnlockRegionStream ROP stream ROP 173
RopUpdateDeferredActionMessages ROP rule ROP 180
RopWriteandCommitStream ROP stream ROP 174
RopWritePerUserInformation ROP logon ROP 52
RopWriteStream ROP stream ROP (section 2.2.9.3 163, section 2.2.9.4 164)
Rule ROPs
  RopGetRulesTable ROP 179
  RopModifyRules ROP 178
  RopUpdateDeferredActionMessages ROP 180

S

Security
  implementer considerations 228
  parameter index 228
Sequencing rules
  client 217
Sequencing rules - client
  code page for strings 219
  Server object dependencies 218
  subsequent RopProgress ROP requests 218
Sequencing rules - server
  creating a ROP output buffer 221
  error codes returned when an object is invalid 222
  processing a ROP input buffer 221
  RopRelease 221
Server
  abstract data model 219
  initialization 220
  timer events 222
  timers 220
Server - higher-layer triggered events
  responding to insufficient output buffer space 220
  sending notifications to the client 220
  sending the RopBackoff ROP response 220
Server - local events
  disconnecting 222
Server - message processing events
  creating a ROP output buffer 221
  error codes returned when an object is invalid 222
  processing a ROP input buffer 221
  RopRelease 221
Server - sequencing rules
  creating a ROP output buffer 221
  error codes returned when an object is invalid 222
  processing a ROP input buffer 221
  RopRelease 221
Server objects 19
Single ROP request example 223
Standards assignments 20
Stream ROPs
  RopCloneStream ROP 175
  RopCommitStream ROP 165
  RopCopyToStream ROP 170
  RopGetStreamSize ROP 166
  RopLockRegionStream ROP 172
  RopOpenStream ROP 161
  RopReadStream ROP 162
  RopSeekStream ROP 168
  RopSetStreamSize ROP 167
  RopUnlockRegionStream ROP 173
  RopWriteAndCommitStream ROP 174
  RopWriteStream ROP (section 2.2.9.3 163, section 2.2.9.4 164)

T

Table ROPs
  RopAbort ROP 80
  RopCollapseRow ROP 96
  RopCreateBookmark ROP 88
  RopExpandRow ROP 94
  RopFindRow ROP 91
  RopFreeBookmark ROP 93
  RopGetCollapseState ROP 97
  RopGetStatus ROP 82
  RopQueryColumnsAll ROP 90
  RopQueryPosition ROP 83
  RopQueryRows ROP 79
  RopResetTable ROP 94
  RopRestrict ROP 77
  RopSeekRow ROP 84
  RopSeekRowBookmark ROP 86
  RopSeekRowFractional ROP 87
  RopSetCollapseState ROP 99
  RopSetColumns ROP 74
  RopSortTable ROP 76
The Table of RopIds message 21
Timer events
  client 219
  server 222
Timers
  client 216
  server 220
Tracking changes 232
Transport 21
Transport ROPs
  RopAbortSubmit ROP 128
  RopGetAddressTypes ROP 129
  RopGetTransportFolder ROP 135
  RopOptionsData ROP 136
  RopSetSpooler ROP 131
  RopSpoolerLockMessage ROP 132
  RopSubmitMessage ROP 128
  RopTransportNewMail ROP 134
  RopTransportSend ROP 133
Triggered events - higher-layer
  client 216
Triggered events - server
  responding to insufficient output buffer space 220
  sending notifications to the client 220
  sending the RopBackoff ROP response 220

V

Vendor-extensible fields 20
Versioning 20

Copyright © 2025 Microsoft Corporation