

# Windows MBox Viewer

## User Manual 1.0.3.41

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## 1 Modification History

Revision	Date	Comments
1.0	February 28, 2018	Initial Release
< 1.0.3.1		See ReadMe.markdown 1.0.3.1 included with the release package.
>= 1.0.3.1	September 26, 2019	See the section “What is new and what changed in version 1.0.3.x”.

## 2 What is new and what changed in version 1.0.3.41

### 2.1 What is new

1. Added Export Mails option to more easily share mails with other people.
2. Added option to configure on how to open linked document.

### 2.2 What changed

1. Fixed print of footer and header enable/disable option.
2. Improved handling of Mbox File Parsing Cancellation.

## 3 LICENSE

The mbox viewer source code created by authors of the mbox viewer project is licensed under GNU AFFERO GENERAL PUBLIC LICENSE version 3 which permits free use of the code by individuals and organizations. Small portion of the source code is from Code Project site and licensed under the Code Project Open License (CPOL) 1.02 which permits, as we understand, free use of the that code except in a few unusual cases such as for example the immoral usage. MailKit open source free library linked to connect to SMTP servers is licensed under MIT.

The mbox viewer executable doesn't link any non-free usage library and therefore it can be freely used, as we understand, by individuals and organizations.

The mbox viewer software is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.

Please check the below links for the detailed information on GPL, CPOL and MIT license terms.

<https://mit-license.org/>

<https://github.com/jstedfast/MailKit/blob/master/LICENSE>

<https://www.gnu.org/licenses/agpl-3.0.txt>

<https://www.codeproject.com/info/cpol10.aspx>

Links to additional publications that can be useful.

<https://www.codeproject.com/info/Licenses.aspx>

<https://opensource.guide/legal/#which-open-source-license-is-appropriate-for-my-project>

## 4 About this document

Starting with 1.0.3.27 version of MBox Viewer, icons representing folders and mail archives have changed. Mail archive used to be represented by the folder icon and now is represented as the stack of mail envelopes. Mail folder was represented by the computer icon and now it is represented by the folder icon. However, not all screen snapshots were updated yet to reflect the change.

## 5 Feedback

To help to improve MBox Viewer, please post reviews what works and what doesn't, create bug reports and request for enhancements. Provide as many details as possible, such as country, screenshots, etc.

## 6 Overview

MBox Viewer (or mboxview) is Windows GUI based program to view mbox files such as Thunderbird Archives, Google mail archives or simple Eml files.

The mbox viewer is a simple but quite powerful email viewer that supports the following features:

1. large file support > 4Gb
2. fast parsing of mbox archives
3. quick access to all attachments
4. preview picture attachments
5. zoom in/out a picture
6. export of single mail in Eml
7. export of all mails in Eml format

8. export attachments of all mails
9. print all or multiple selected mails to CSV or Text or HTML or PDF files or send to PDF printer
10. print single mail to Text or HTML or PDF file or send to PDF printer
11. group all related mails as conversations
12. print mail conversation/related mails group to CSV or Text or HTML or PDF file or send to PDF printer
13. open single or multiple selected mails or group of related mails in a browser
14. find user defined text in mail's message and highlight all occurrences
15. search the date, subject, sender, cc, bcc, message text, appendix text and appendix names
16. search for mails that didn't match the search criteria
17. sort by date, from, to, subject, size and conversation groups
18. support for mail's header fields and body encoded with different character sets
19. support for mail list editing capability to enable users to compose mail list by merging results of multiple searches and/or by merging one or more user selected mails
20. ability to set Message Window position to Bottom, Right or Left
21. ability to merge/concatenate multiple archive files and remove duplicate mails
22. ability to customize background colors of display panes and mail message
23. ability to customize HTML/PDF mail header output
24. view raw mail headers
25. forward mails directly from MBox Viewer
26. support for Gmail Labels
27. support for exported hierarchy of mail files from Thunderbird or similar mail clients

## **7 Known Issues**

### **7.1 Running MBox Viewer**

Only a single instance of MBox Viewer should be running at any given time. The second instance of MBox Viewer is allowed when opening mail file directly.

### **7.2 Printing to PDF**

MBox Viewer relies on Microsoft Edge and/or Google Chrome browsers to print directly to PDF.

Customization of printing is limited when printing directly to PDF.

Opening mails in a browser and printing from the browser offers additional options such as ability to remove color in the output or scale the pages.

### **7.3 Printing Multiple Selected Mails**

Mbox Viewer simply concatenates multiple mails in HTML format into a single HTML file and opens the created file within a browser. The format of the created file is basically as follows:

```
<div><html><mail 1 header in HTML format></html></div>
<div><html><mail 1 body in HTML format></html></div>
<div><html><mail 2 header in HTML format></html></div>
<div><html><mail 2 body in HTML format></html></div>
<div><html><mail 3 header in HTML format></html></div>
<div><html><mail 3 body in HTML format></html></div>
.....
```

The <div> tags are used in an attempt to create independent sections within HTML document.

The approach doesn't always work reliably for variety of reasons. One known issue is that some mails with content in HTML format rely on default values such as the font size and may inherit the font size from other mails. MBox Viewer was enhanced to minimize such issues.

In rare cases, when printing multiple selected mails to PDF, use "Merge" option to resolve the potential issues.

## 7.4 Mail Date and Time

Mails older than the epoch time, i.e. older than year 1970 are supported but the date and time of such mails will be mapped to Jan 1 1970. Windows supports many different date and time functions but only Unix style date and time functions support Daylight Saving Time. However, these functions do not support date older than year 1970.

## 7.5 Searching

Search for words is quite reliable for words composed characters from ASCII and ISO-8859-1 (Also known as ISO Latin 1) character sets. Option to search for words should not be set when searching emails not composed from ASCII and ISO-8859-1 character sets.

## 8 Installation

The executable and the source code can be downloaded from Sourceforge or Github.

<https://sourceforge.net/projects/mbox-viewer/files/>

<https://github.com/eneam/mboxviewer/releases>

Download the executable package, the latest mbox-viewer.exe-v1.0.3.41.zip, to the working directory and unzip. This will create the mbox-viewer.exe-v1.0.3.41 directory containing the standalone mboxview.exe executable, User Guide, the scripts sub-directory and ReleasePlusStackTrace sub-directory. No administrator privileges are needed to install and run the mbox viewer.

Review the HELP.txt file in case of the Mbox Viewer crash.

## 9 Running MBox viewer

The mboxview program can be executed by double clicking the executable from the explorer window or from the command line by typing the command name and argument list to it.

### 9.1 Argument List Summary

The mboxview accept the following command line options.

**-FOLDER=folderPath** – the full path to the folder containing one or more mbox or eml files. Persists in the registry across multiple runs.

**-MAIL\_FILE=fileName** – full file path or just file name of mbox/eml file to load. If the full path is not specified, the full path is created from the folderPath and the fileName. Doesn't persist in the registry across multiple runs.

**-EML\_PREVIEW\_MODE** command line option to hide Mbox Tree and Mail List panes when -MAIL\_FILE is configured. ESCAPE key will terminate the mbox viewer.

**-EXPORT\_EML=y|n** – enables or disables automatic export of eml files generated from mbox archive. Improves traversing performance of mail if set to 'n'. Persists in the registry across multiple runs.

**-PROGRESS\_BAR\_DELAY=seconds** – search progress bar is activated when the search duration lasts longer than the value set for PROGRESS\_BAR\_DELAY. If set to **-1**, the progress bar is disables. Default value is set to **1** seconds. Persists in the registry across multiple runs.

**-MBOX\_MERGE\_LIST\_FILE=listFile** Name and **-MBOX\_MERGE\_TO\_FILE=mergedFile** Name command line options to merge content of mbox files listed in the listFile Name. The merged mbox file is automatically open in mbox viewer.

If desired, instead of typing directly desired command line options, a simple .cmd or .bat file can be created for convenience and run from the explorer.

### 9.2 Setting Options from GUI

The **EXPORT\_EML** and **PROGRESS\_BAR\_DELAY** values can be changed on the fly at any time from GUI.

Click on the “File” to open the drop menu and then select the “Options” option. The below dialog will be presented. Set the desired values followed by OK button.

Note that if exporting of EML files is disabled, you can still export the eml file for the selected mail by selecting “View EML” under the “View” drop menu.

Two options, “**Show Charsets**” and “**Set Character Sets for Header Fields**”, can help to properly display header fields in the Message Window. See 9.30.1.1 for additional details.



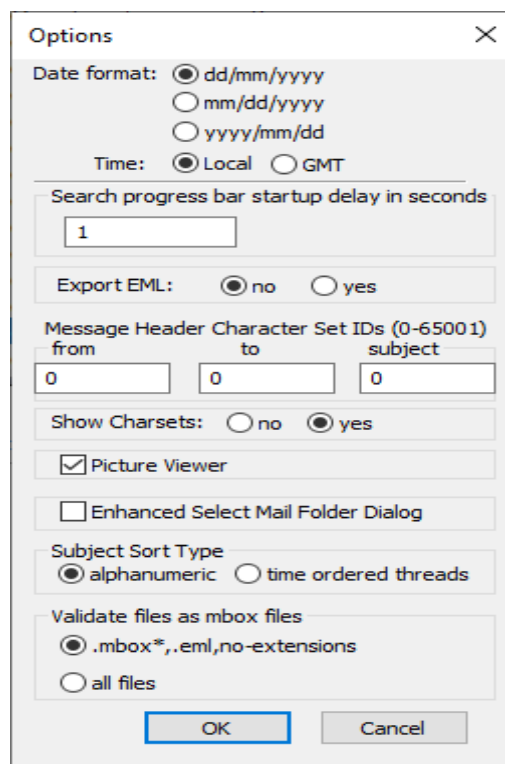
The “**Picture Viewer**” check box enables/disables the dialog option to preview the picture attachments, see 9.24 for additional details.

The “**Enhanced Select Mail Folder Dialog**” is different version of the “**Select Folder**” option and allows user to see if the mail archives are in the folder. User needs to select any mail file to select containing folder.

The “**Time**” option allows to display time as Local or GMT.

The “**Subject Sort Type**” option creates subject threads when sorting by subject. Emails within each subject thread are sorted by time. By default subject threads are sorted alphanumerically. Subject threads can be sorted by time by selecting "File->Options->time ordered threads" option.

The “**Validate files as mbox files**” option enables user to control what files will be considered for validation as mbox files. Validation is done based on the content of files.



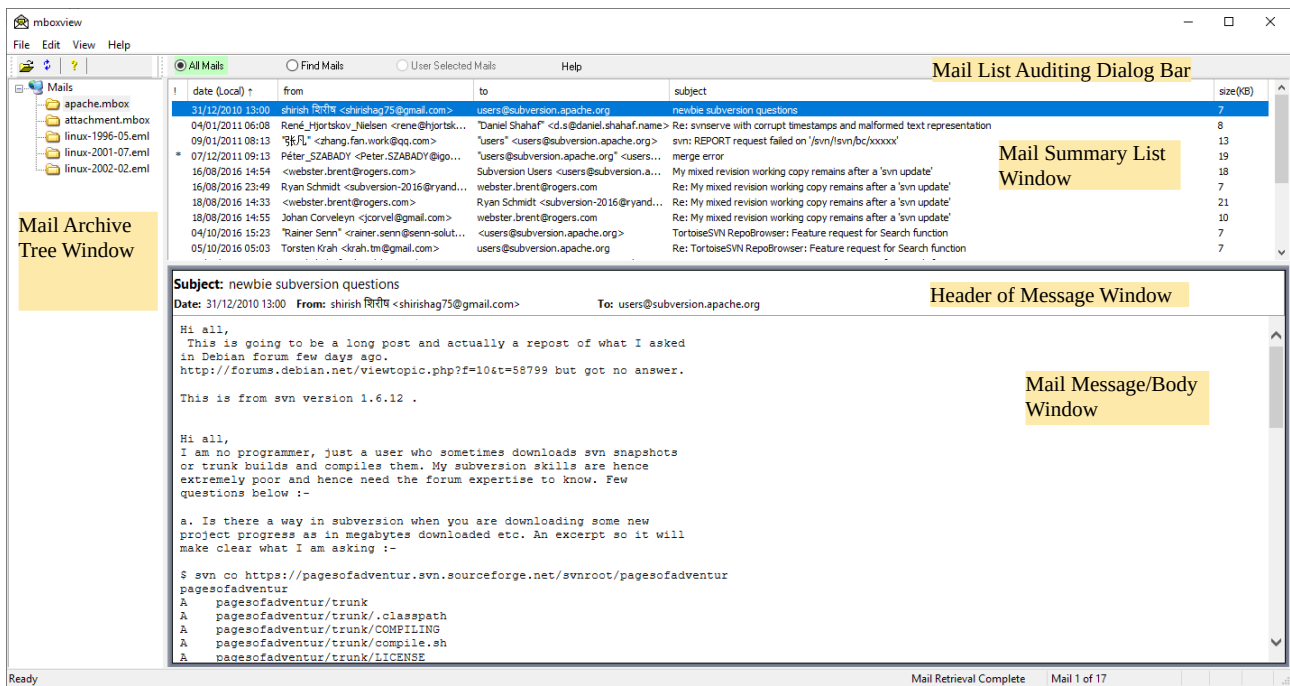
The screenshot shows the 'Options' dialog box with the following settings:

- Date format: ☒ dd/mm/yyyy, ☐ mm/dd/yyyy, ☐ yyyy/mm/dd
- Time: ☒ Local, ☐ GMT
- Search progress bar startup delay in seconds: 1
- Export EML: ☒ no, ☐ yes
- Message Header Character Set IDs (0-65001): from: 0, to: 0, subject: 0
- Show Charsets: ☐ no, ☒ yes
- ☒ Picture Viewer
- ☐ Enhanced Select Mail Folder Dialog
- Subject Sort Type: ☒ alphanumeric, ☐ time ordered threads
- Validate files as mbox files: ☒ .mbox\*,.eml,no-extensions, ☐ all files

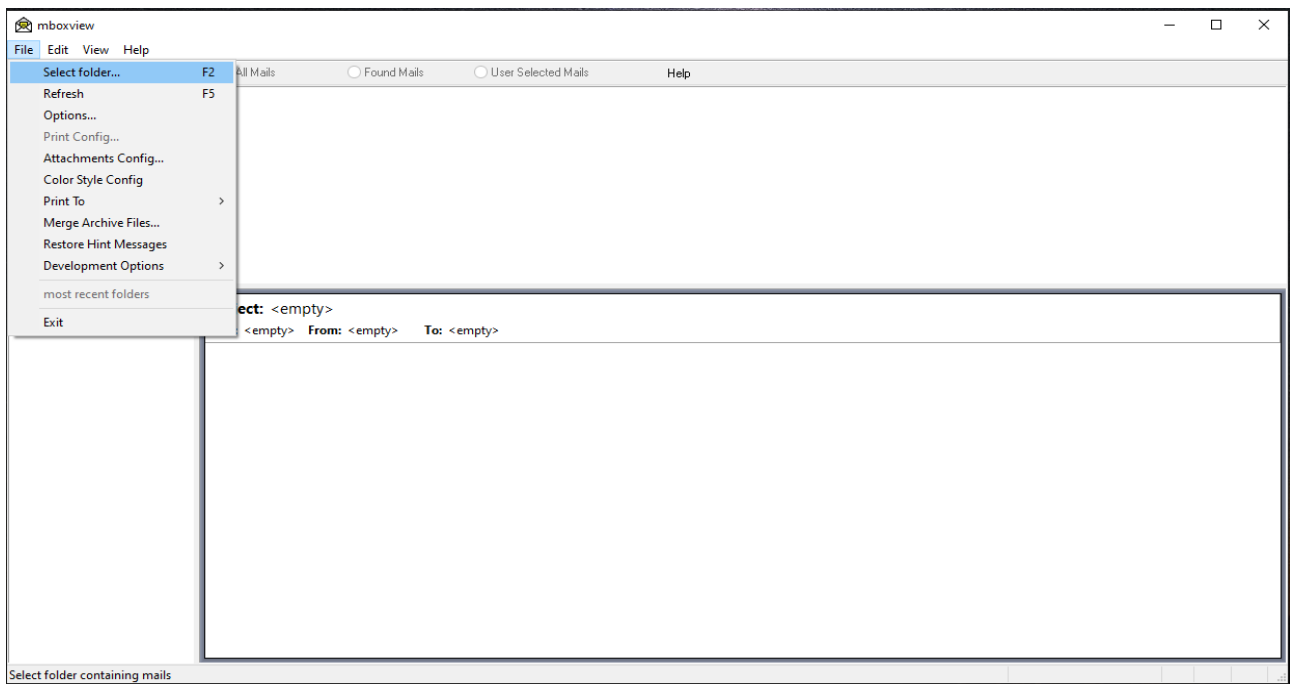
Buttons: OK, Cancel

## 9.3 Basic Use Case

Double click of the mboxview to start the viewer. The picture below shows the screen created by the mboxview after few steps performed by a user. Mail Archive, Summary and Message windows are initially blank after start-up. Steps to load a mail archive and display the content are described next.

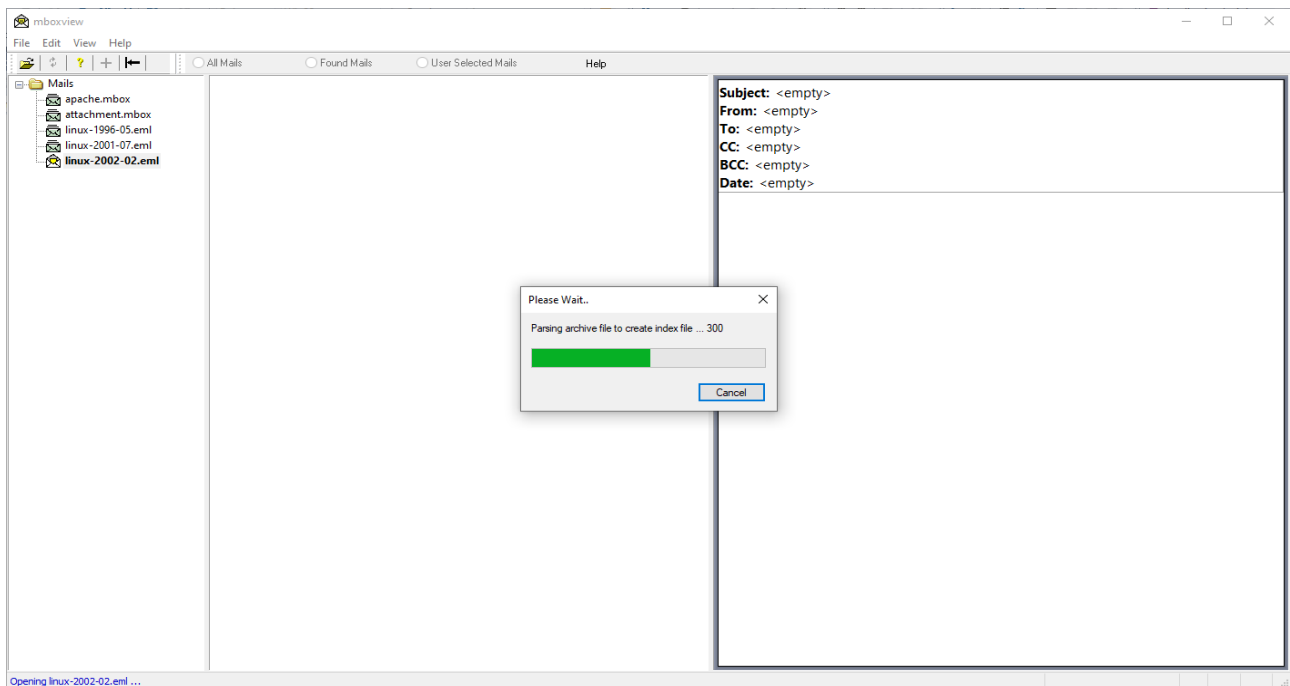


1. Click on the “File” to open the drop menu and then select the “Select folder...” option. Browse to the folder containing one or more mbox and/or eml mail archive files and select it. All valid mail archive files will appear in the Mail Archive Tree window. **Note that different “Select Folder” dialog can be configured via File → Options menu dialog.**

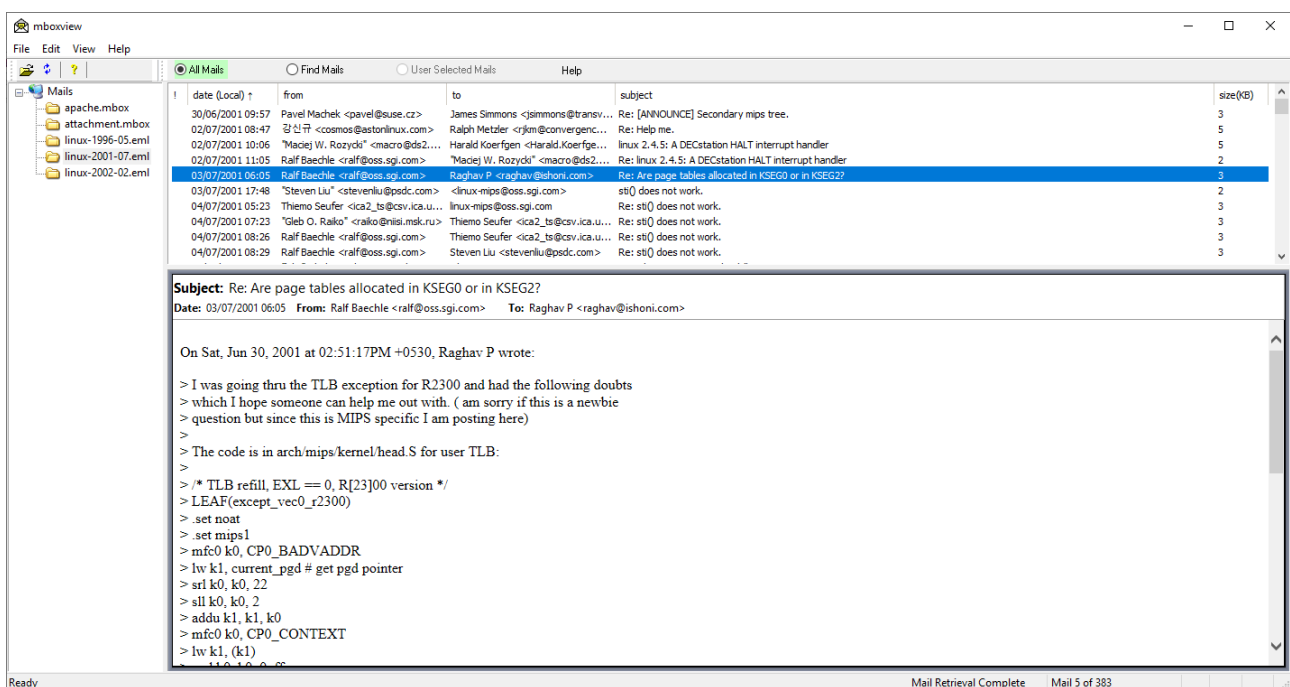


2. Left click on one of the archive files to load all mails within that archive. Progress bar will appear and automatically close after the selected archive is fully processed. Mail header information of each email will appear in the Summary window. Note that parsing of very large archive file may take some time since the mail archives are text files and every character has to be examine one by one.

However, subsequent loading of mails is done from the index file created by the mboxview during the initial parsing of the archive file and is much faster. The created index file contains content meta data of each mail in the archive file. i.e. the mail header information and the position of each mail within the mail file for quick access to the mail message/body. The index files have the .mboxview suffix.



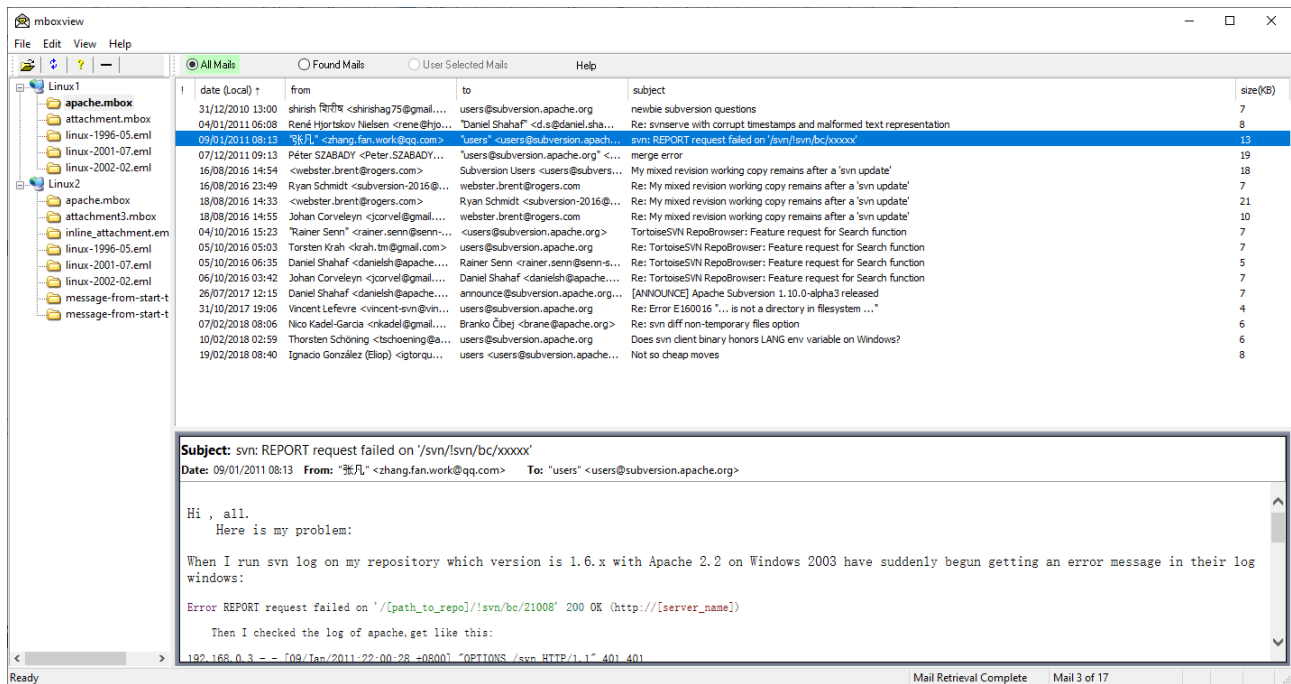
3. Left Click on one of the mails in the Summary window to show the Message/Body of that email in the Message window. The mail retrieval state, total number of mails in the archive and the position of the selected mail within the archive is shown on the status bar. Opening a heperlinks within an external browser is recommended since running Java or scripts or ActiveX controls is disabled in the internal browser to improve security.



## 9.4 Multiple Folders Support

Each time you click on the “File” to open the drop menu and select new mail archive folder via the “Select folder...” option, the selected folder will be added to list of folders under the Mail Archive

Tree.



Use +/- icon on the toolbar to expand/collapse the list of archive file under all folders.

To remove folder from the list:

1. Left click on the folder to select the folder and then
2. Right click on the folder and select Delete Folder menu option

List of the selected folders will persist across multiple runs.

## 9.5 Support for Hierarchy of Folders

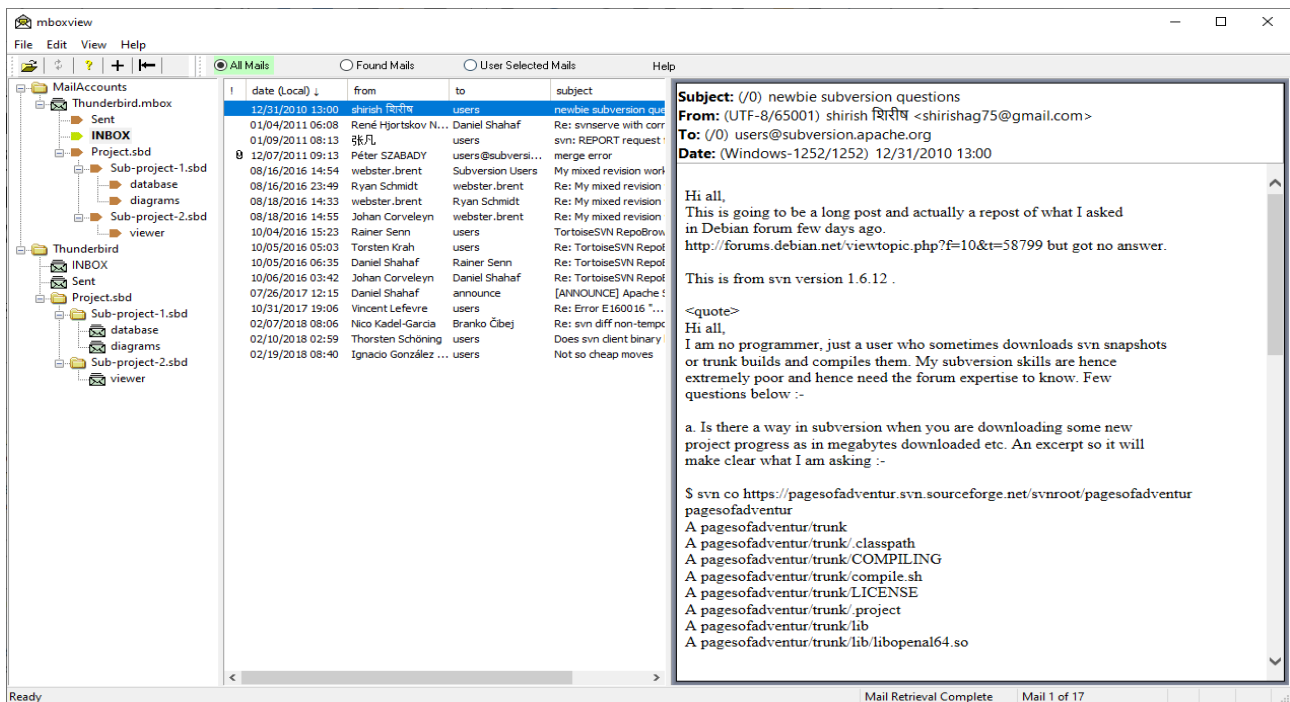
MBox Viewer can automatically open mail files residing under the root folder and all sub-folders. Using this capability, user can more easily view emails exported by Thunderbird or similar email clients.

User can select one of two options to leverage this feature.

1. Select “File → Select folder as root folder ...” option. MBox Viewer will traverse root folder and all sub-folders and recreate folder hierarchy under the Mail Tree.
2. Select “File → Select root folder for merging ...” option. MBox Viewer will traverse root folder and all sub-folders, merge all discovered mbox files and recreate folder structure as Gmail style labels. Duplicate email will be removed.

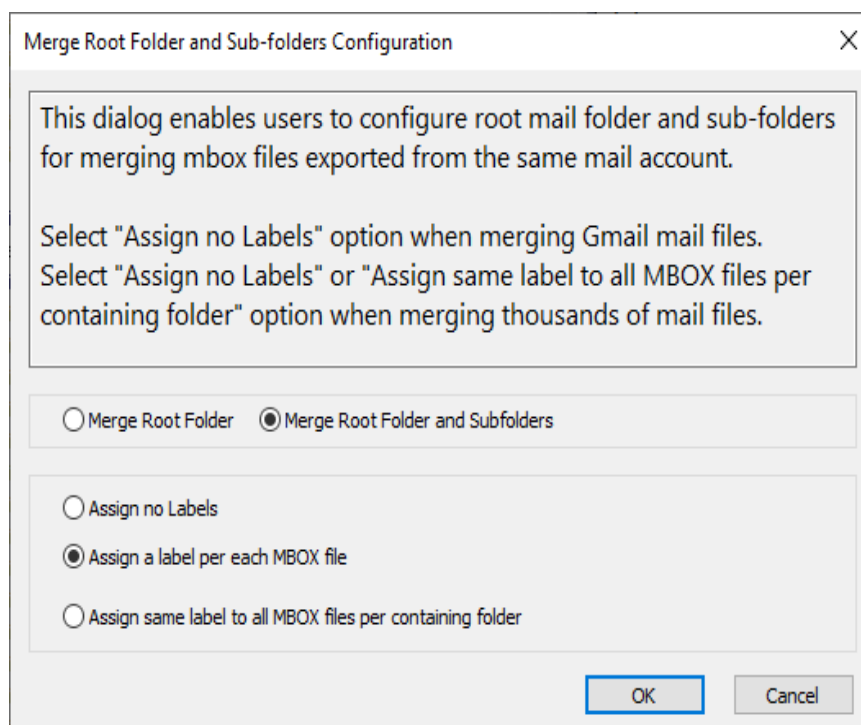
**Option 2, that is merging, allows searching across all discovered mail archives while option 1 allows searching within each mail file only.**

Screen snapshot illustrates both cases when applied to the same Thunderbird folder.



### 9.5.1 Select Root Folder for Merging Configuration Dialog

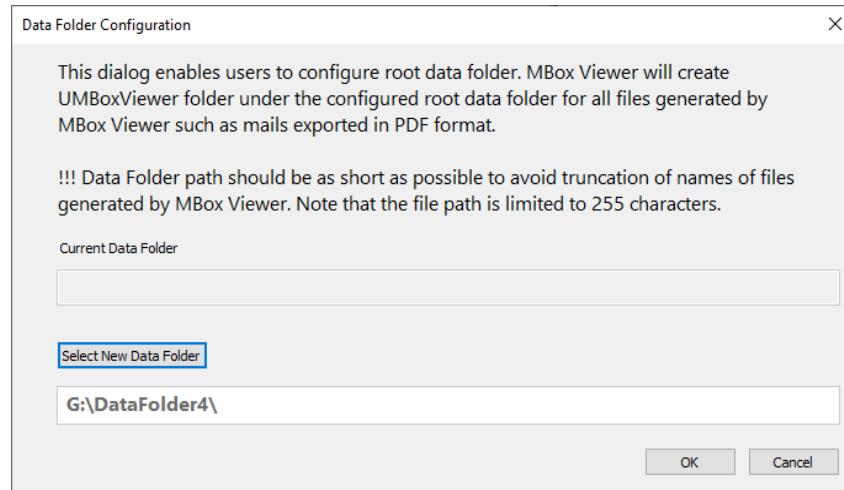
The following dialog is presented to users upon selection of the “Select root folder for merging..” option. In addition to support for folder hierarchy and Gmail style labels, other useful options for merging mbox or eml files are supported.



## 9.6 Data Folder Configuration

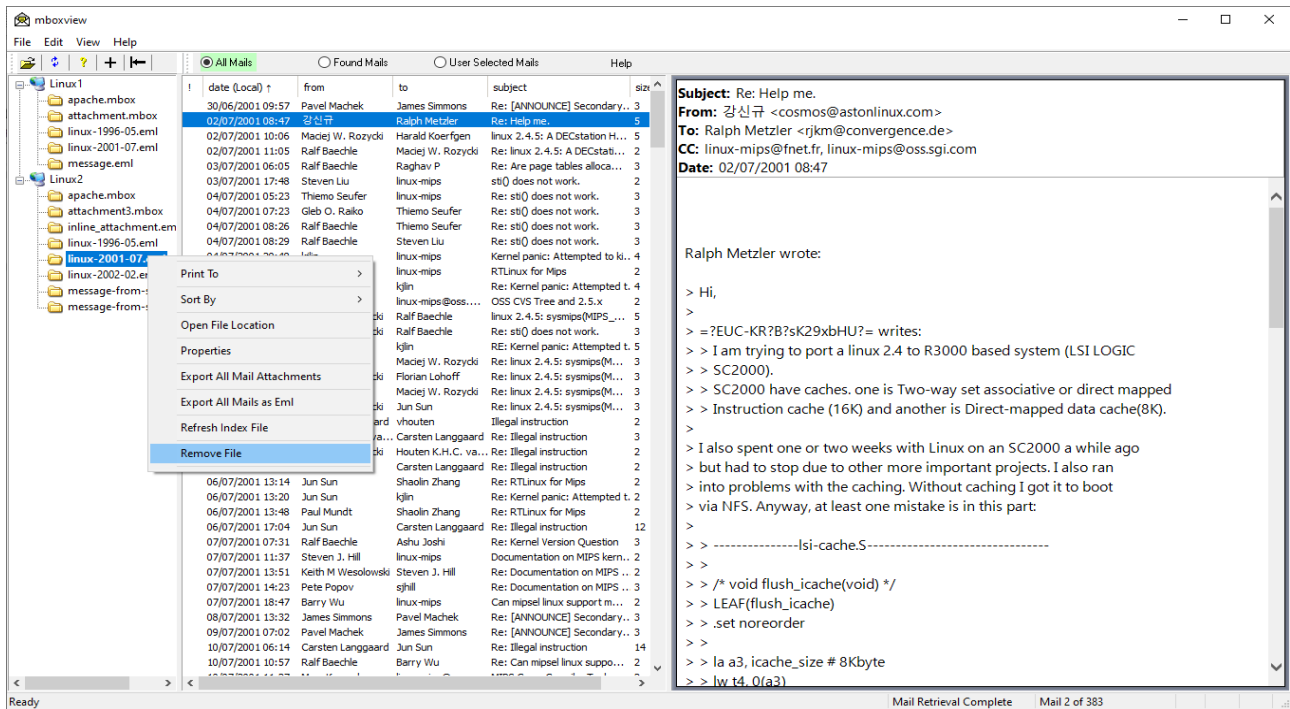
MBox Viewer will generate files and save them in the user selected data folder when executing some of the options such as “Print To...”, Export All Mails as Eml ..”, etc.

User can select data folder by selecting “File-->Data Folder Config” dialog.

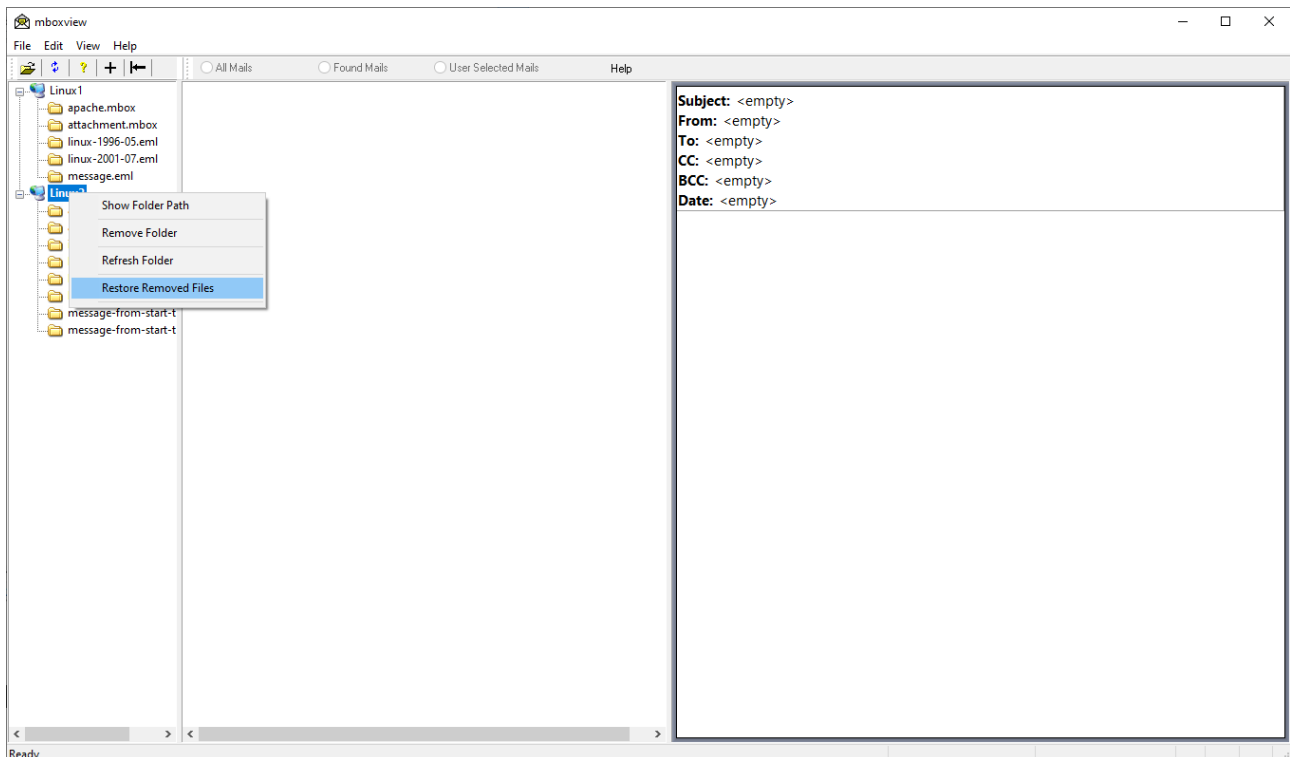


## 9.7 Hiding and Restoring Mbox Files in Mail Archive Tree Window

User can hide some mbox files temporarily if he is not actively working with these files and restore hidden files later when needed. To hide an mbox file, right click on a file and select “Remove File” option.

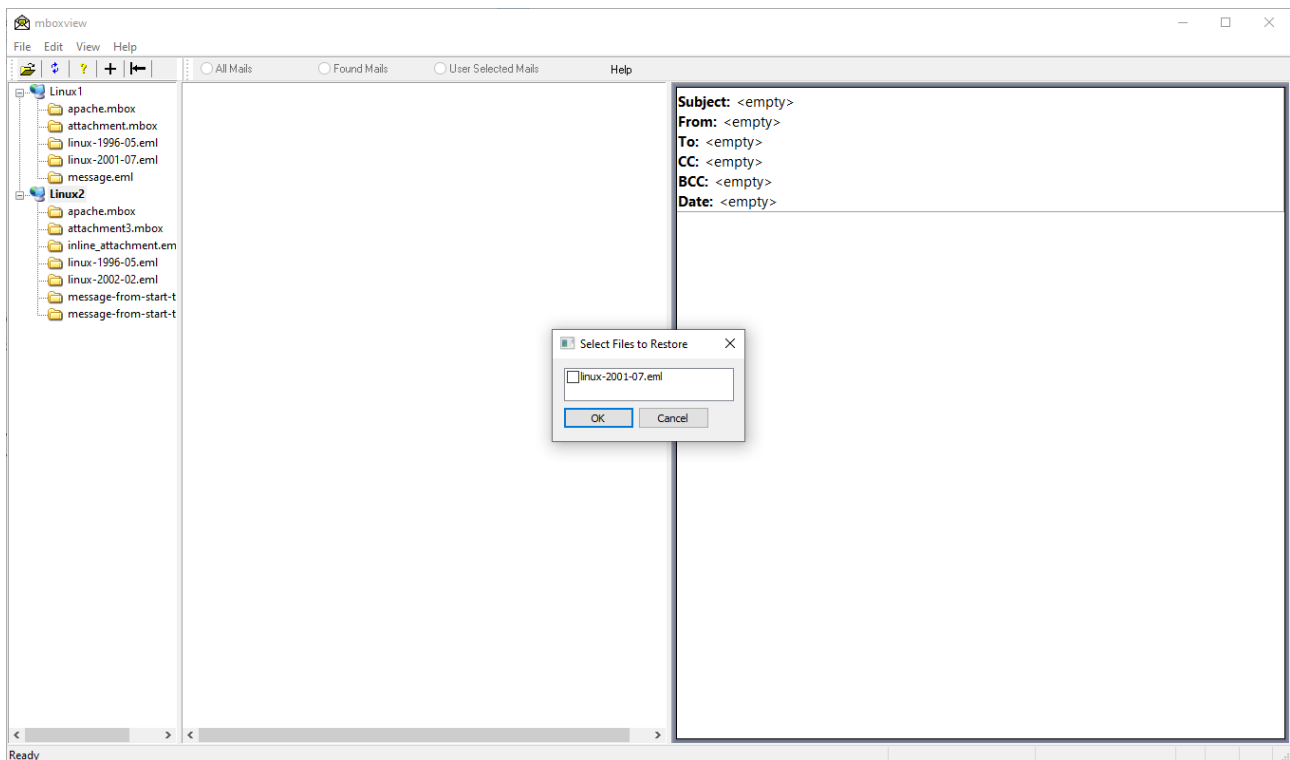


To restore hidden windows, left click on the folder to select the folder and then right click on a folder and select “Restore Removed Folders” option.



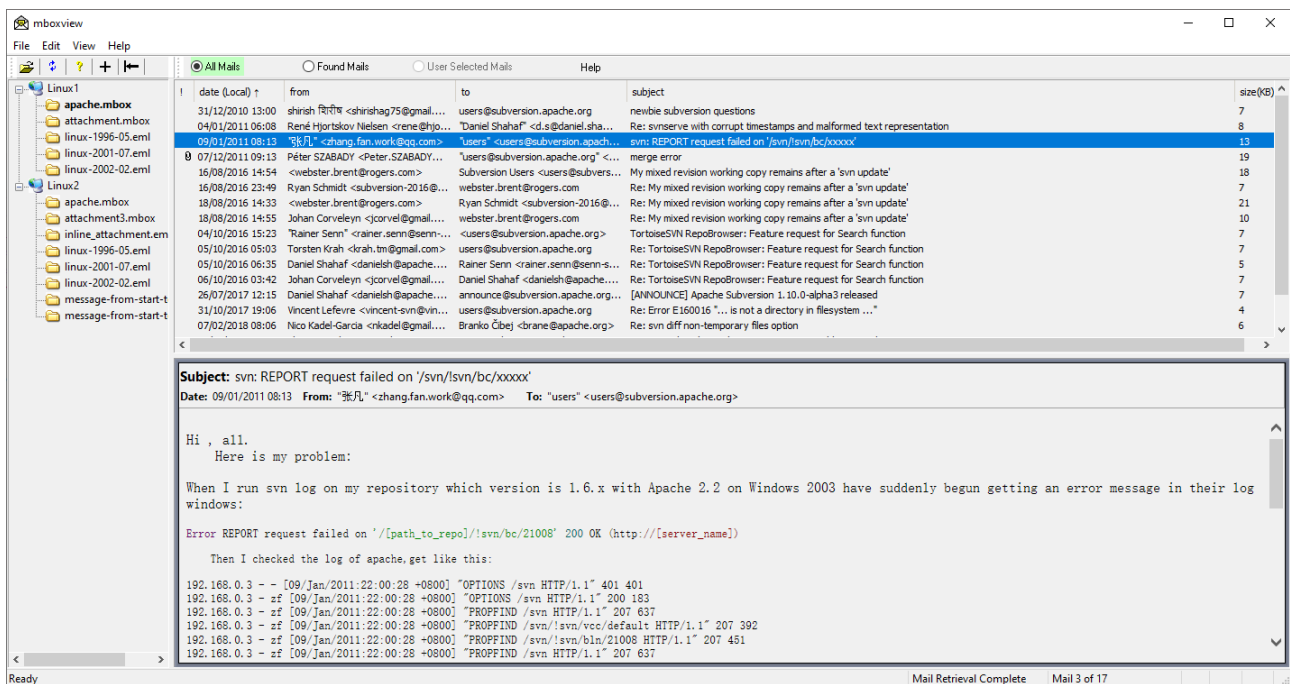
Check files to restore in “Select Files to Restore” dialog.





## 9.8 Hiding of Mail Archive Tree Window

User can hide Mail Archive Tree Window to make larger Mail Summary and Mail Message Windows. Select button  $\leftarrow$  or  $\rightarrow$  to hide/unhide the Tree Window. Tree Window can be hidden only when one of the mbox mail files is selected.



## 9.9 Set MBox Viewer as default application to open mail archive files

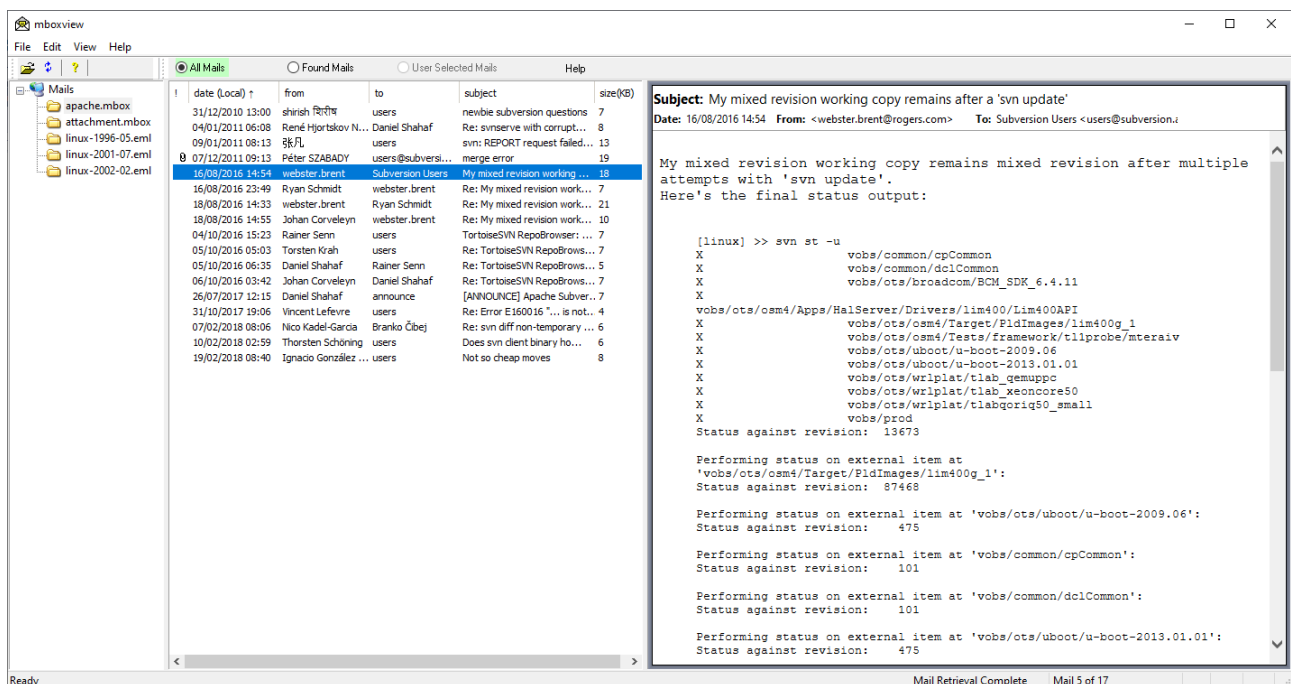
MBox Viewer can be configured as default application to open a mail file by double-left-click on the file. There are multiple ways to set MBox Viewer as default application. By default, when you double-left-click on a mail file, Windows will ask user to select program to open the mail file assuming no application was set as default yet. Make sure the “Always use this app to open ..” option is set. To redo the current assignment, right-click on the file and select “Open with” option.

## 9.10 Message Window Position

Message Window position can be set to Bottom, Right or Left via View → Message Window option. After setting new position, mbox viewer needs to be restarted for the change to take effect.

When position is set to Right or Left, the mail address format will change to show mail name only or mail address if the name is missing.

By default Message Window position is set to Bottom.

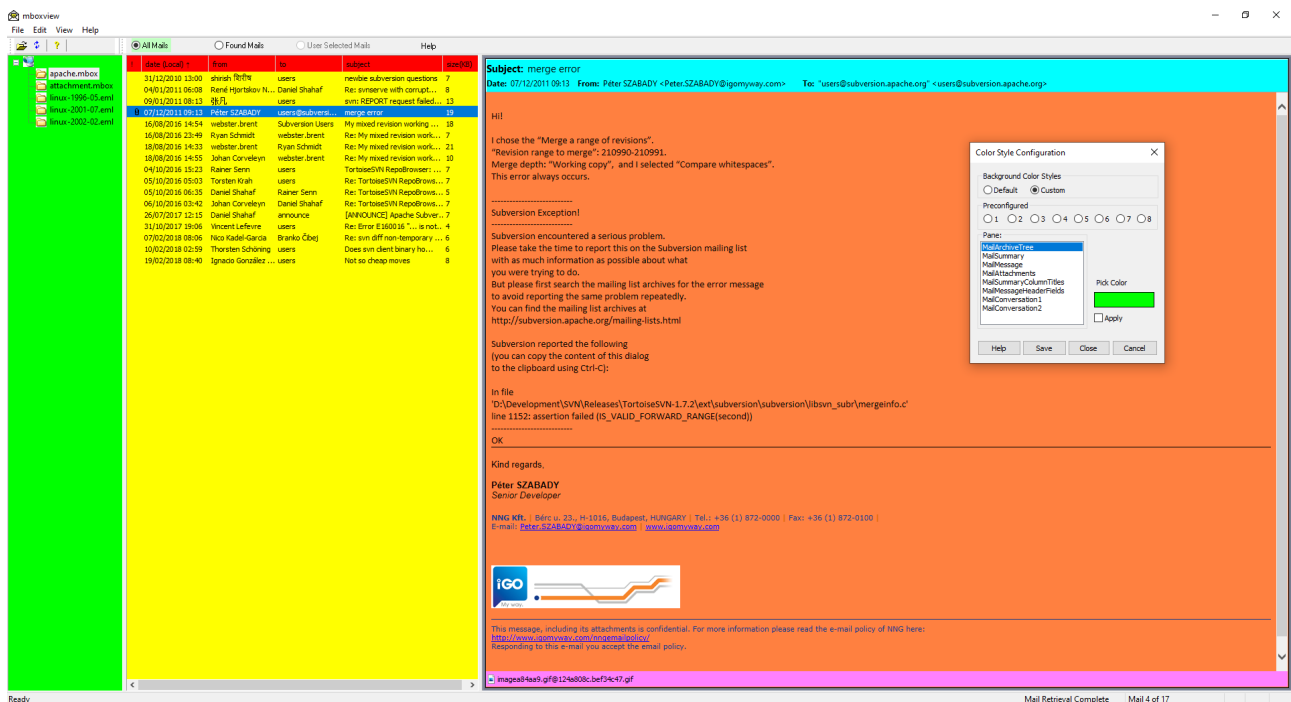


## 9.11 Preservation of Windows Placement

Mbox Viewer will save the windows placement upon exit and restore upon next run.

## 9.12 Background Color Style Customization

By default the background color of all display panes is set to the white color. Select the “File → Color Style Config” menu option to customize colors of display panes. Left click on the Custom button to start customization. The screen similar to the below will be created.



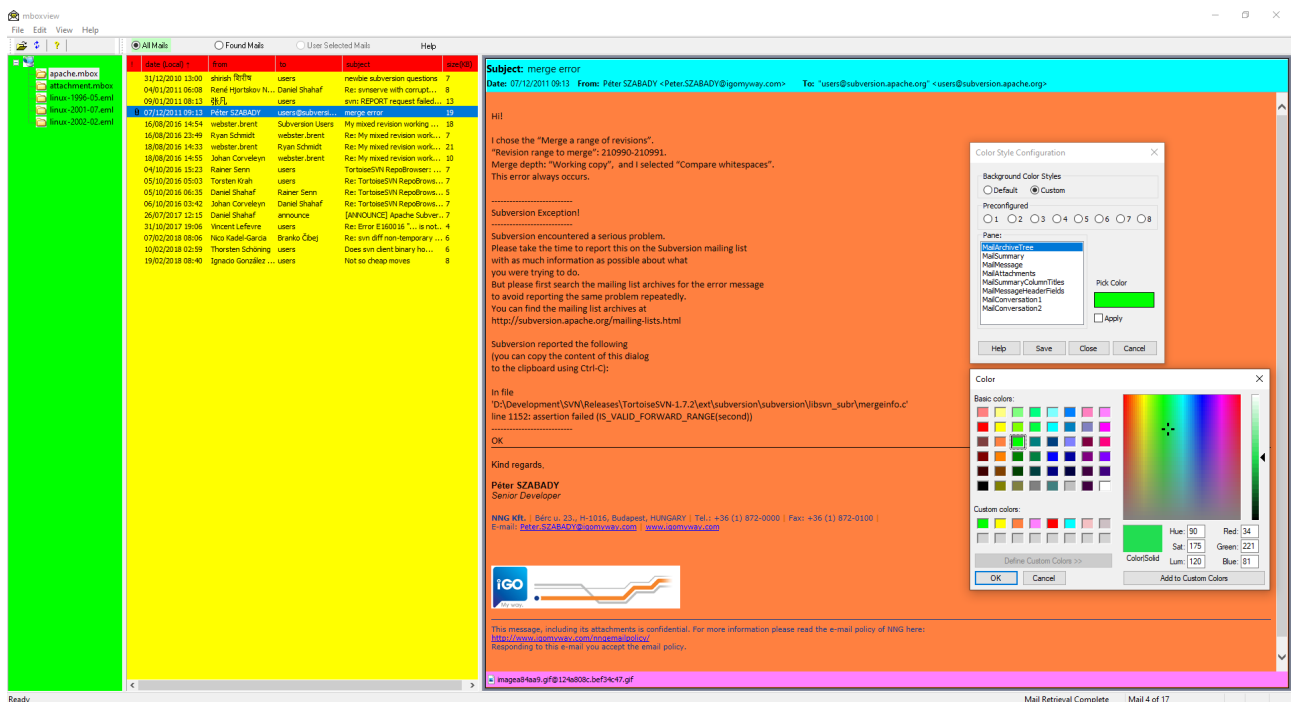
Color Style Configuration dialog allows users to replace the white background of the 8 panes listed on the dialog box with the predefined colors or custom colors defined by users.

The dialog offers eight predefined color styles users can evaluate before attempting to configure the custom color style. It is helpful to open one of the mails with attachments to help to evaluate predefined and custom color styles.

Select "Custom" radio button to start configuration of the custom color style.

Configure the same or different color for each pane (MailArchiveTree, etc).

Select one of the panes and left click on the "Pick Color" button to start the "Color Selection Dialog".



The "Pick Color" button will initially be populated with the color associated with the selected pane.

The top raw of the Custom Colors area will initially be populated with the colors associated with each pane.

You can change the color in four different areas. The top left section displays a list of 48 predefined colors.

If the desired color is not in that section, you can click on the crosshair and drag the mouse in the multi-colored palette.

You can also drag the right bar that displays a range based on the color of the palette.

For more precision, you can type the Red, Green and Blue values in the custom color editor area. Each uses an integral value that ranges from 1 to 255.

Once you are happy with the custom color, left click on the OK button in

the "Color Selection Dialog". The "Color Selection Dialog" will be closed and control will return to the "Color Style Configuration" dialog.

The "Pick Color" button will be painted with the created custom color. Left click on the "Apply" button to apply the new color to the selected pane. Left click on the "Apply" button again to cancel the change.

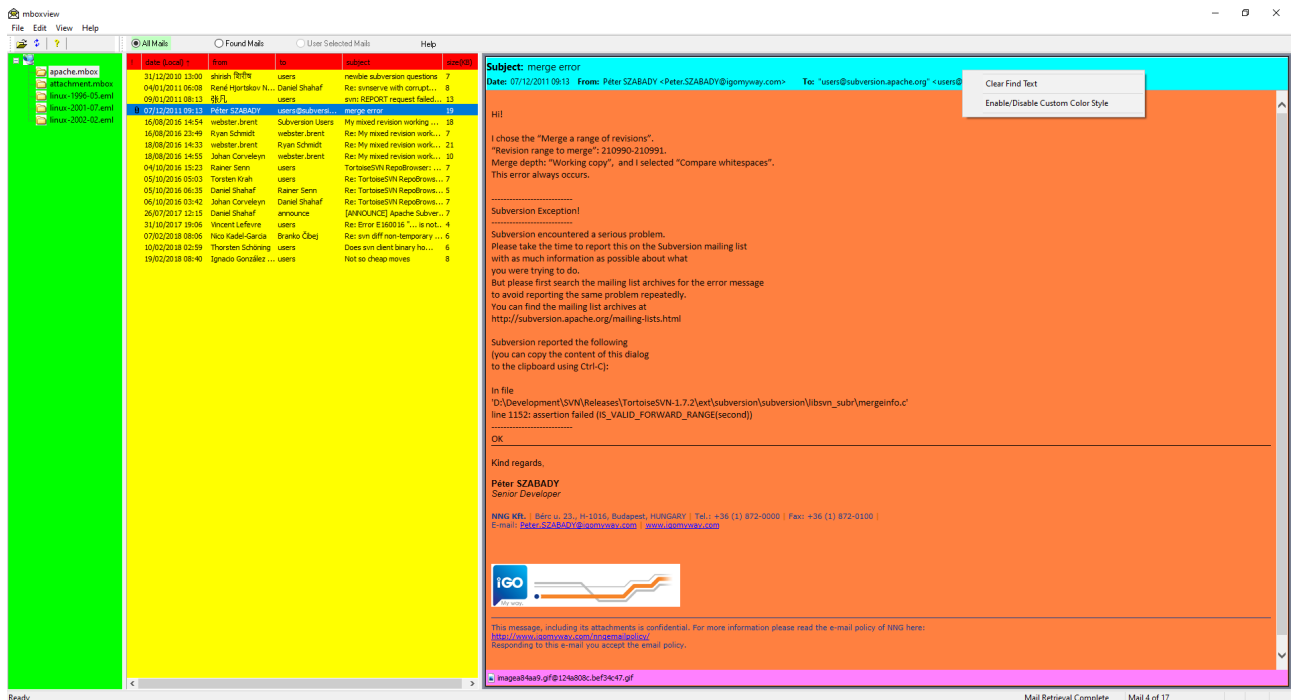
Left click on the Save button to save the change in order for the change to persist after the mbox viewer shutdown. Or, customize colors of all panes first and then left click on the Save button to save all changes.

Left click on the Cancel button to discard all changes made since the last Save or startup.

Left click on the Close button or standard Windows Close button to hide the "Color Selection Dialog". Changes made so far are not discarded.

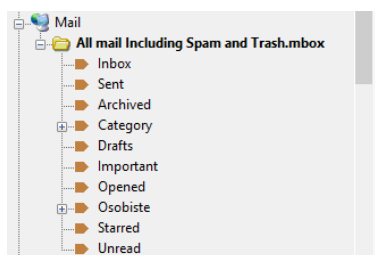
To reopen, select File -> Color Style Config menu option.

**NOTE** that the saved color style will be applied to all mails. You can temporarily disable custom color style for the active mail by right click on the mail header in the mail message window and selecting Enable/Disable Custom Color Style menu option.



## 9.13 Support for Gmail Labels

User can perform a separate step to recreate Gmail Labels on Gmail mbox mail archives. Gmail Label information is included in every email downloaded from Gmail. To recreate labels, user needs to right click on an active Gmail mail archive in Tree Pane and select "Gmail Labels → Create" option. This will create folders as in example below. Left click on the folder icon to view all mails within the label.



Select the folder icon to view all mails again. Button "All Mails and 'Found Mails'" are scoped to

the label when a label is selected. Content of “User Selected Mails” is shared across all labels of the active folder and the folder.

### **9.13.1 Limitations**

If you decide to hide/remove the folder from the Tree Pane Via “Remove File” option and later restore via “Restore Removed Files” option, Gmail labels will not be automatically restored until you recreate the labels.

## 9.14 Expand Message Header Field List

When message window position is configured at the bottom, the message header list doesn't show CC and BCC message header fields. This can be changed via "View → Message Header Pane Layout → Expanded" option.

## 9.15 Viewing raw message header

The raw message headers can be viewed in the message window by setting "View → View Raw Message Headers" option. This is the global change and it needs to be disabled to view messages content again. The raw message header can be viewed by doing the right click on the message header pane and setting "View Raw Header" option. The setting doesn't persists when new mail is selected.

## 9.16 HTML/PDF Mail Header Customization

The HTML/PDF Header Configuration dialog allows users to select mail header fields for output and to configure fonts for the field name and field text. User can also configure to output the list of all attachments. The customization dialog is selected via "File" --> "Print Config" --> "HTML/PDF Header Configuration" button.

There are two options to configure fonts: Default and Custom.

The Default option allows to configure:

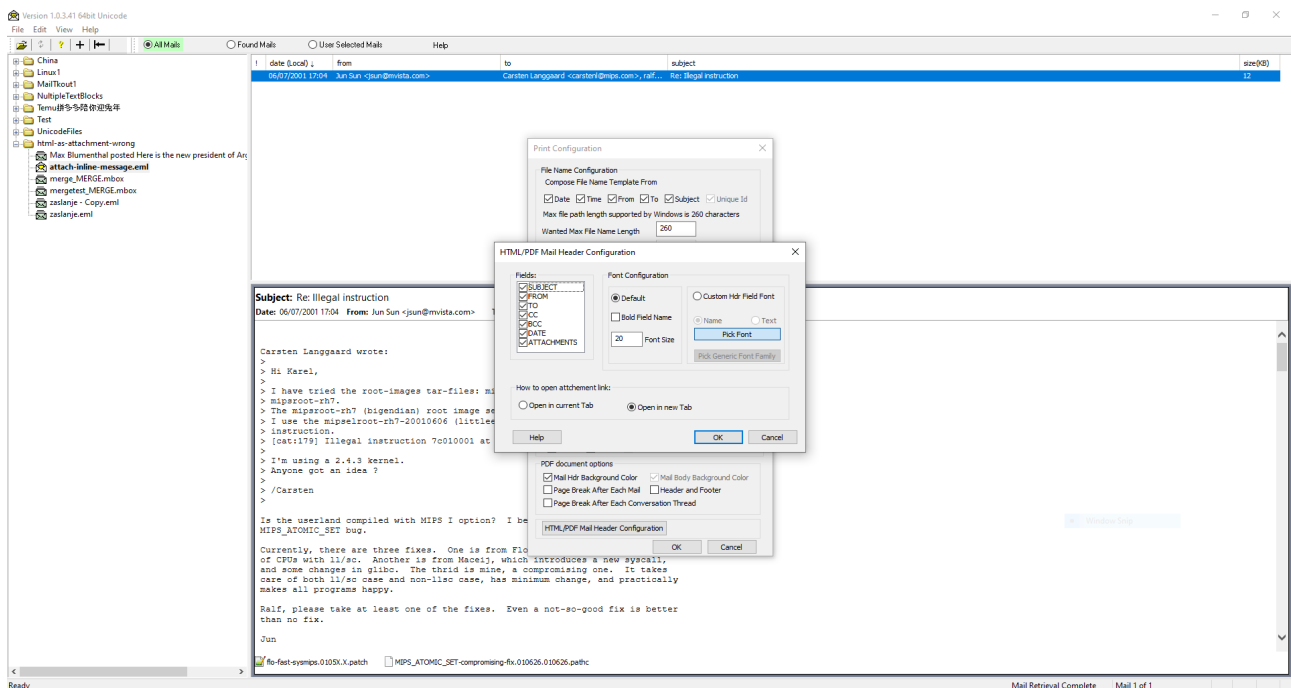
1. the font size which be applied to both the field name and text.
2. the bold font style which will be applied to the field names only.

The Custom option allows to configure:

1. the same or different font for the header field names and text.
2. the font dialog allows to configure the font name, style and size.
3. the generic family font in addition to the primary font configured via the font dialog.

The following links contain helpful information on HTML fonts.

[HTML Fonts](#)  
[Fonts and Formatting](#)



User can also configure how to open document/attachment link in Web browser.

## 9.17 Single Mail Context Menu

Right Click on a selected mail in the Summary Window to open the context menu as shown below.

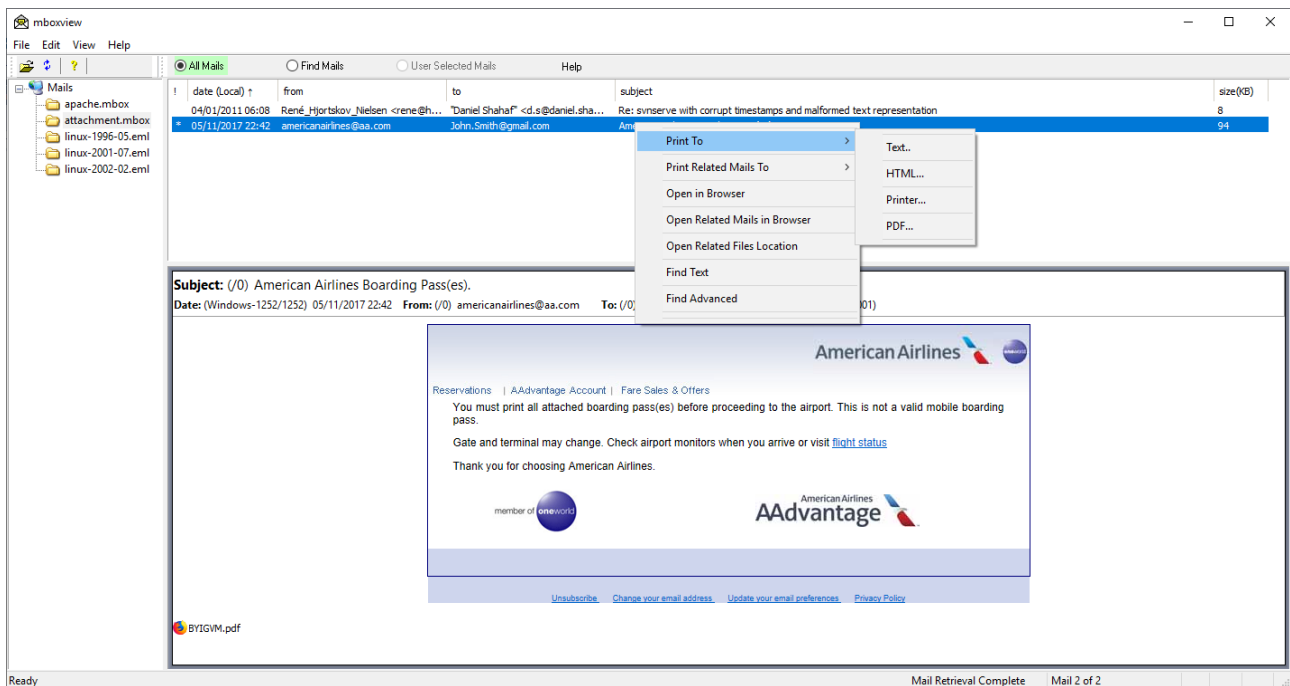
The “Print to” context menu allows to print the selected mail to Text, HTML or PDF file or to send to the user selected PDF printer.

The “Open in Browser” menu option will open the selected mail in the external default Web Browser.

The “Find Text” option allows to find user specified text and highlight all occurrences in the Message window.

The “Find Advanced” options will start the advanced search dialog and pre-populate From, To and Subject fields from the mail.





### 9.17.1 File Names

User can configure file name pattern/template to apply when printing single mail by selecting File - > Print Config dialog. Pattern is composed from Date, Time, From, To, Subject and Unique Id fields. Only alpha numeric characters are selected from the Subject, other characters will be replaced with the underscore.

Files will be saved in the FolderHousingMailArchives/PrintCache/MailArchiveName folder, where MailArchiveName denotes the archive file name without the .mbox extension.

User must enter the target file name manually when printing to PDF printer, i.e. when selecting Print to → Printer mail option or when printing mail to pdf file from the browser.

Print Config dialog allows users to configure the maximum length of created file name. The maximum file path length supported by Windows is 260 characters for non Unicode applications. Therefore the file name will be limited to (260 – length of FolderHousingMailArchives/PrintCache/MailArchiveName/MailFileName) path. User can set wanted file name length limit and the mbox viewer will adjust the configured length if needed.

## 9.18 Multiple Selected Mails Context Menu

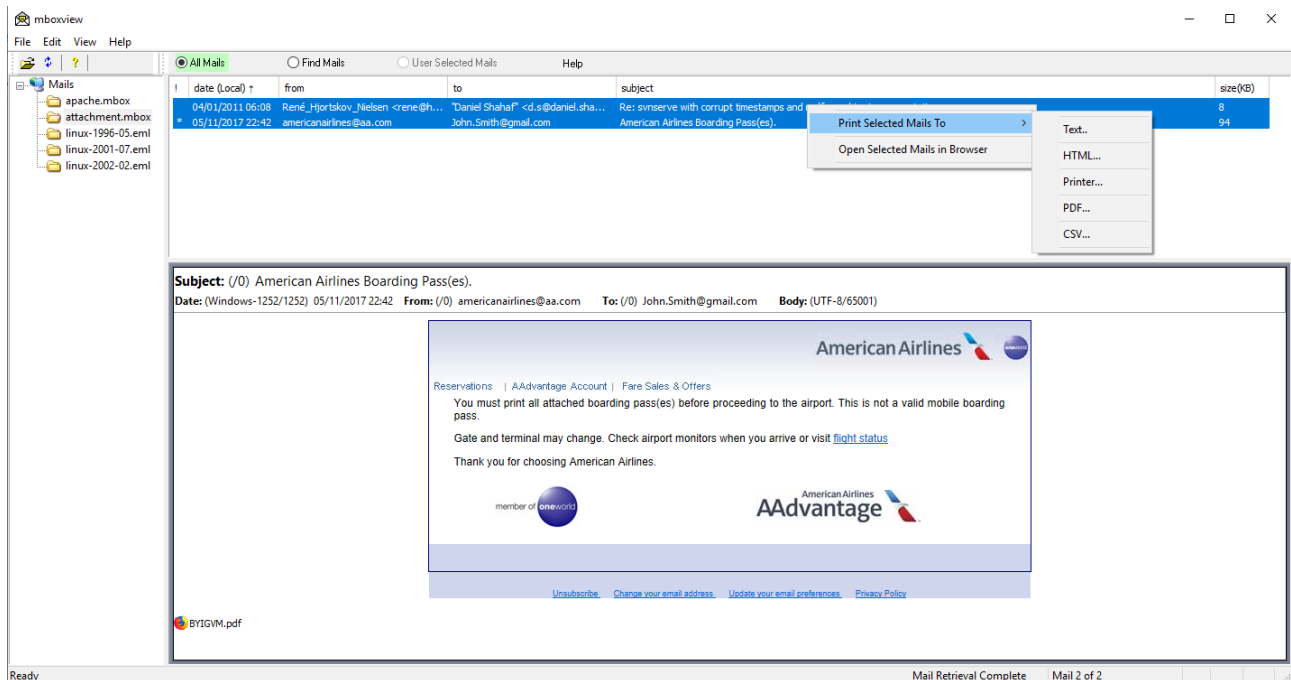
Multiple mails can be selected using Windows standard method, i.e. Left click followed by Shift+LeftClick or CTRL+LeftClick or CTRL+A.

Right Click on a multiple selected email in the Summary Window to open the context menu as shown below.

The “Print Selected Mails to” context menu option allows to print the selected mails to single Text or HTML or CSV or PDF files or send to the user selected PDF printer. See also 9.32.7 “Mail

Printing to PDF files by Power Users” section.

The “Open Selected Mails in Browser” menu option will open the selected mails in the external default Web Browser.



### 9.18.1 File Names

User can't configure file name pattern/template to apply when printing multiple mails to a single file. The file name is automatically composed from the archive file name with appropriate extension, i.e. .txt or .htm or .csv or .pdf.

Files will be saved in the FolderHousingMailArchives/PrintCache/MailArchiveName folder, where MailArchiveName denotes the archive file name without the mbox extension.

User must enter the target file name manually when printing to PDF printer, i.e. when selecting Print Selected mails to → Printer mail option or when printing mail to PDF file from the browser.

## 9.19 Conversation Mail Group Context Menu

All Mails must be sorted by the conversation first before context options can be processed. See 9.26 section.

Right Click on any mail within the selected conversation group in the Summary Window to open the context menu as shown in 9.17 section.

The “Print Related Mails to” context menu option allows to print the selected group of mails (conversation) to Text, HTML, CSV or PDF file or to send to the user selected PDF printer.

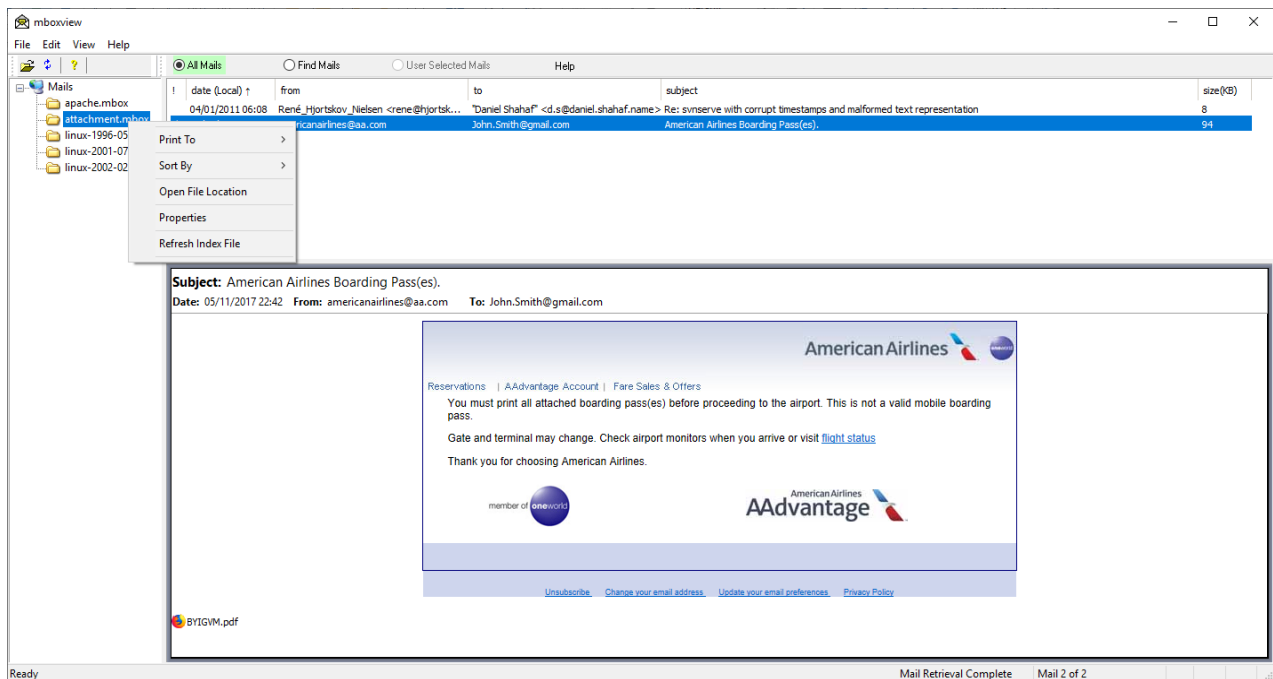
The “Open Related Mails in Browser” menu option will open the selected mail group in the external default Web Browser.

## 9.19.1 File Names

See 9.18.1 section.

## 9.20 Mail Archive Context menu

Right click on the active mail archive under the Mail Archive Tree Window to open the context menu as shown below.



The context menu allows to print all email to single CSV, Text , HTML and PDF files. The name of the created file will be created based on the archive file name with the .csv or .txt or .html or .pdf suffix in the FolderHousingMailArchives/PrintCache/MailArchiveName folder, where MailArchiveName denotes the archive file name without the mbox extension. NOTE that mails will be printed according to the sort order in the summary window.

Size of HTML file can be very large and opening in most of the browsers can be problematic. Microsoft Edge and Google Chrome browser seem to perform best as far as handling large HTML files.

When printing to TEXT file, HTML to Text conversion was added in 1.0.2.8 to handle mails with HTML text block and no Plain text. Conversion can be quite slow and print time could increase significantly compared to 1.0.2.7 in case the large number of conversions is required. Progress bar was added to indicate progress, possibly slow progress.

Printing to single PDF file is the most time consuming. See also 9.32.7 “Mail Printing to PDF files by Power Users” sections for larger scale printing to single PDF file.

All mails of the active archive can be sorted by date, from, to subject, size and conversations in the Summary Window. This feature is the same as the left click on the selected column in the Summary Window.

The “Properties” option shows the archive file location, size and email count

The “Refresh Index File” option will perform fresh parse of the archive file if needed.

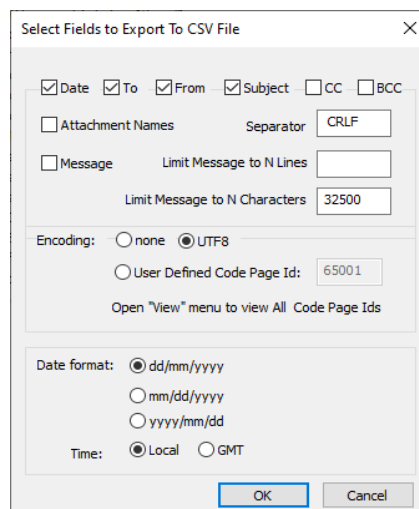
### 9.20.1 Print to CSV File Dialog

When printing selected mail archive or selected set of mails by a user to CSV file, user can select what fields to export, the date format and one of two time zones.

Option to normalize content encoding is also available. Default encoding is set to UTF-8 and should not be changed except possibly in special cases.

The “Limit Message to N Characters” value is set by default to 32500 characters and it should not be set higher otherwise Excel and LibreOffice will complain that the character count limit per spreadsheet cell was exceeded. LibreOffice will gracefully handle the text overflow, Excel spreadsheet will get **corrupted**.

User can configure string that separates attachment names. The special CRLF string will be replaced with \r\n string in the CSV output.

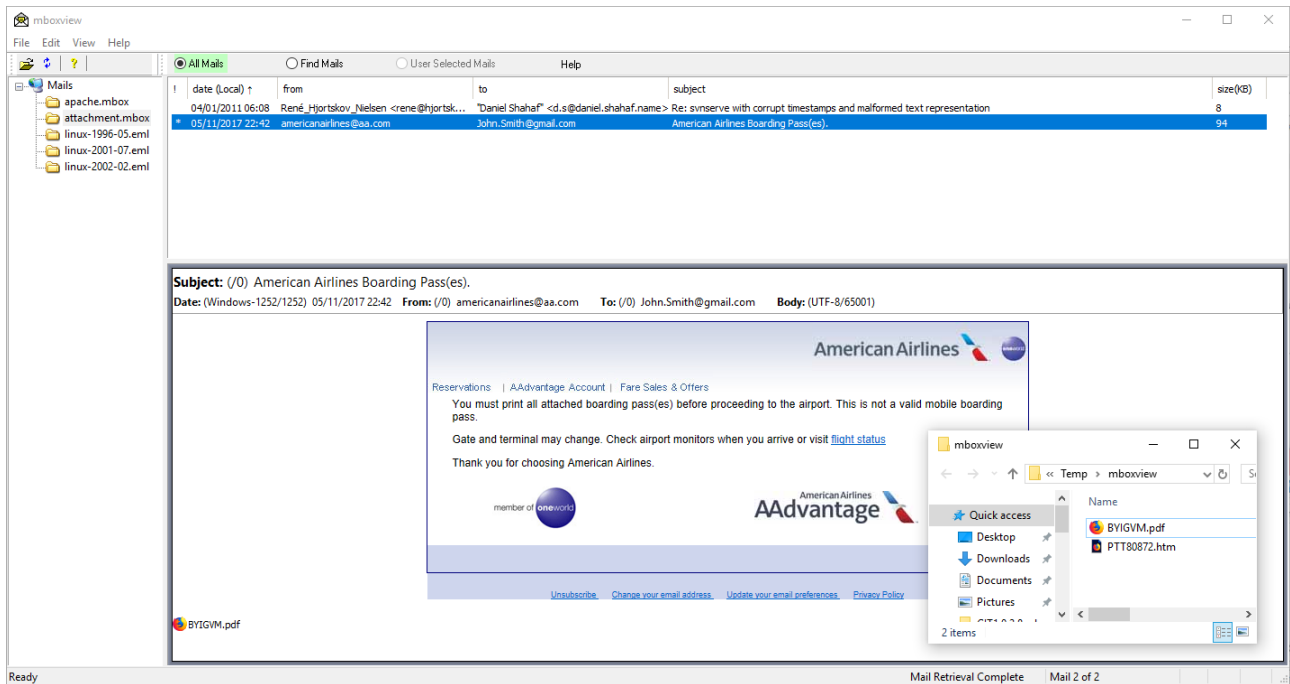


## 9.21 Mail Attachments

Mail attachments are shown at the bottom of the Message window. Note that the “\*” character may appear in the first column for the associated mail to indicate presence of associated attachments. To open location of attachments, double click on the mail in the Summary window or select “View” → “ViewEML” menu option. Temporary folder will open containing all attachments for the email. Use standard Windows applications to view attachments.

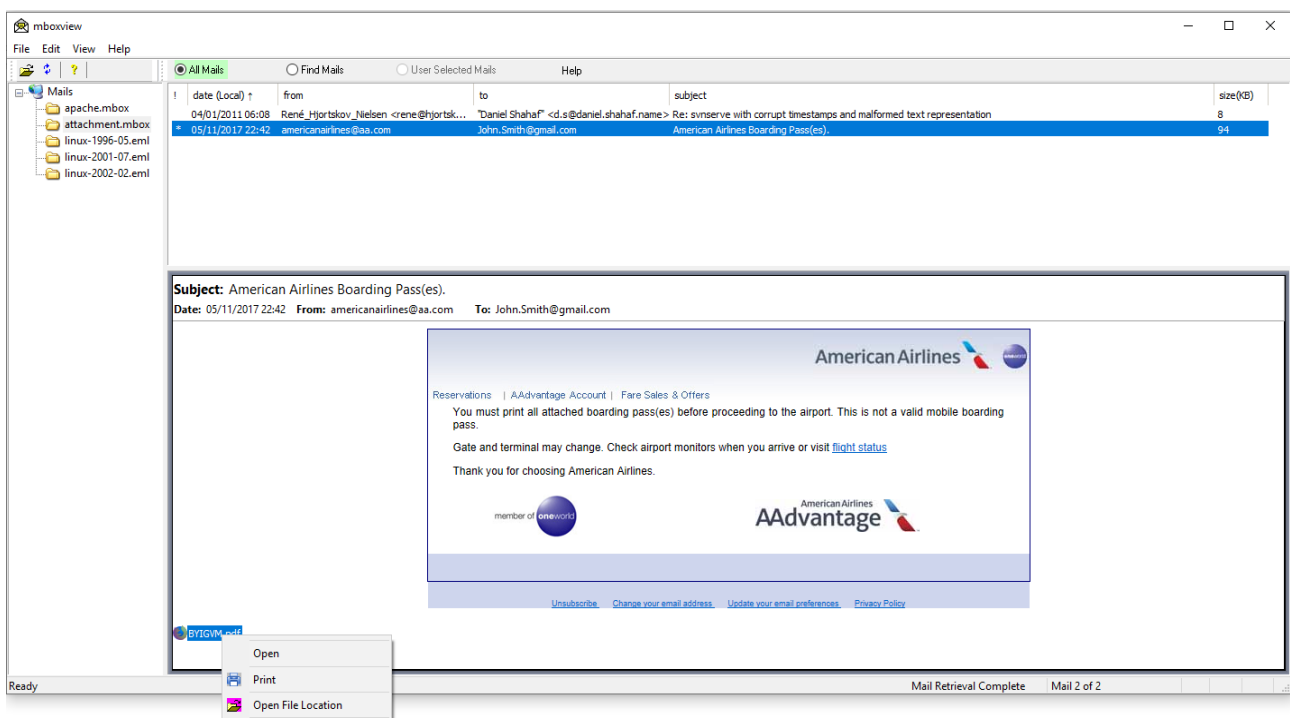
You can also double left click to view attachments. Picture attachments will be viewed in the Picture Viewer (if configured in the global Options) and other file types will be viewed by the

associated default Windows applications.



### 9.21.1 Attachment context menu

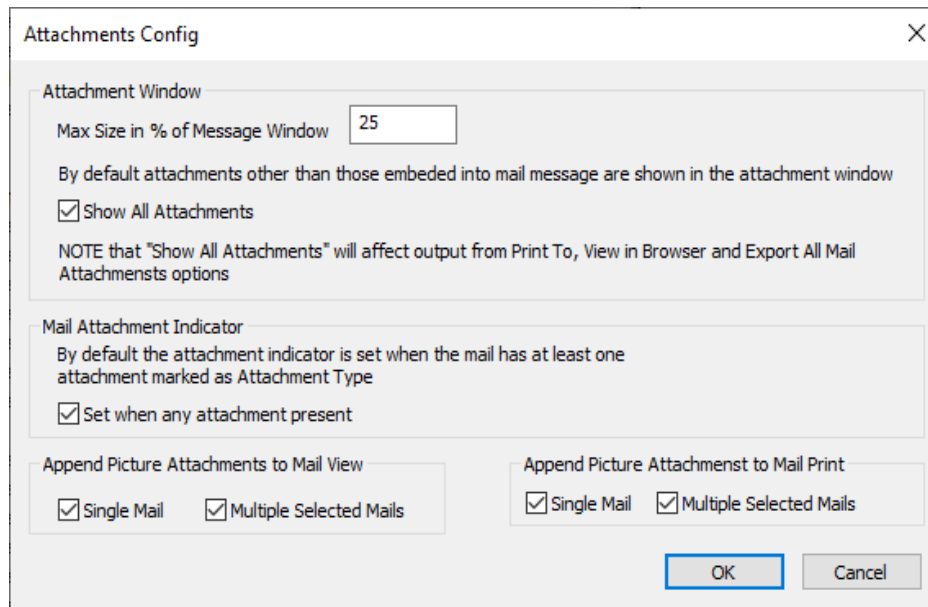
Right click on the selected attachment to open the context menu. The context menu allows to open or print the attachment by the associated default application. You can also open the folder housing the attachment. The selected attachment will be highlighted in the folder.



### 9.21.2 Attachments Configuration

The “Attachment Config” dialog enables users to configure attachment window size, content and attachment indicator criteria. Users can also configure whether image attachments should be appended to mails when showing and/or printing.

Select “File → Attachment Config” to access the dialog.



### 9.21.3 Exporting All Attachments of All Mails

User can export all attachments to the AttachmentCache folder by right clicking on the active mail archive and selecting “Export All Mail Attachments” option. To avoid appendix name clashes, Mbox Viewer will prepend the following prefix to each attachment name:

YYYYMMDD-HHMMSS-IDDDDDDD attachment name

where YYYY denotes the year, MM denotes the month, DD denotes day, HH denotes hour, MM denotes minues, SS denotes second of a mail abd IDDDDDDD denotes unique ID assign to this email.

## 9.22 Inline Image Cache

The mboxview will create the cache of inline images to support images embedded directly into the mail body/message. The cache with all images can be created during the initial parsing of the mail archive file or subset of images can be created later when needed. Separate cache sub-folder is created per each archive file (assuming at least one inline image was found) in the FolderHousingMailArchives/ImageCache folder. If the inline image cache is missing for any reason, try to refresh the index file by selecting “Refresh Index File” context option on the respective file archive.

## 9.23 Export of all Mails to a Separate Eml files

User can export all mails to separate Eml files via mail archive context menu. Right click on the selected mail archive and select “Export All Mails as Eml” option. Eml files will be created in the FolderHousingAllMailArchives/EmlCache/SelectedMailArchiveName folder.

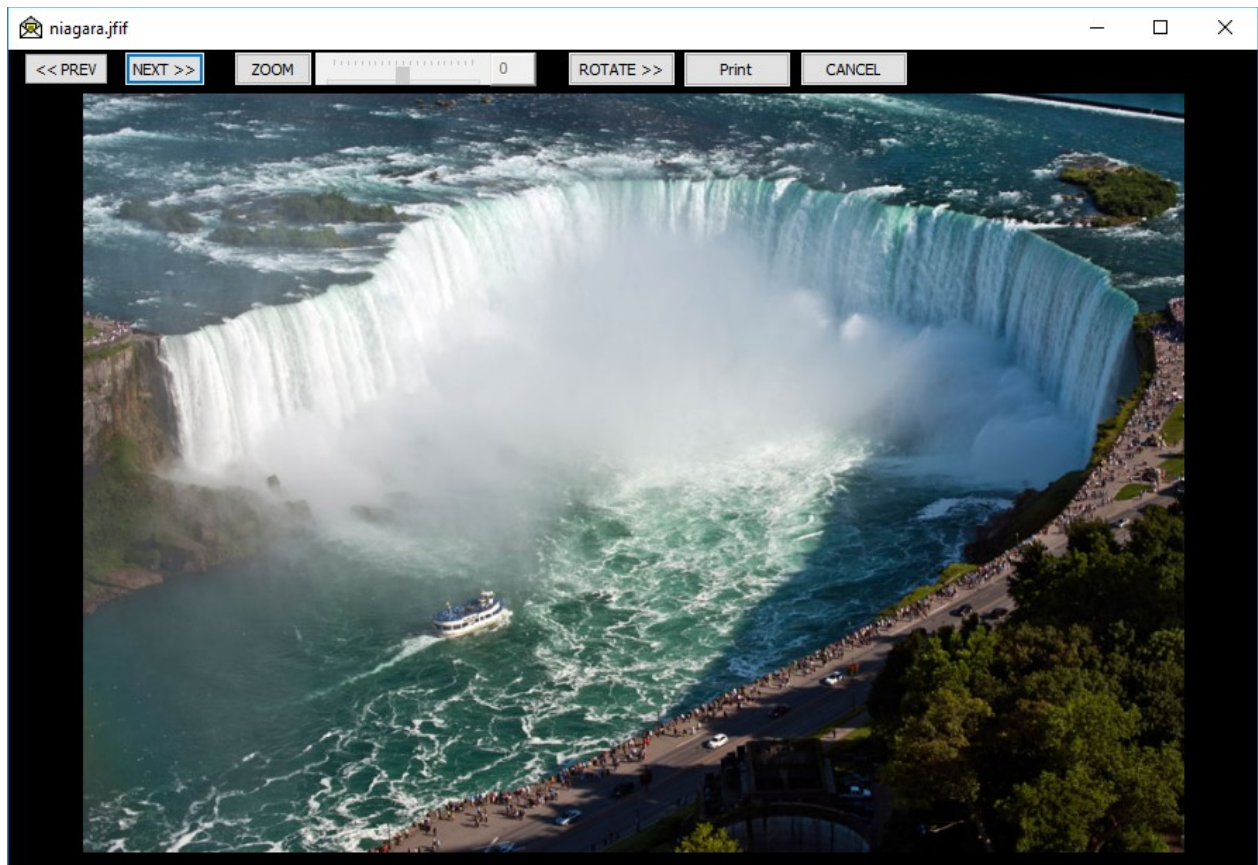
Mbox Viewer will create Eml file names as follow:

YYYYMMDD-HHMMSS-IDDDDDDD name using File Name Configuration under File → Print Config dialog.

where YYYY denotes the year, MM denotes the month, DD denotes day, HH denotes hour, MM denotes minutes, SS denotes second of a mail and IDDDDDDD denotes unique ID assigned to this email.

## 9.24 Picture Viewer

Double left Click on any attachment to start Picture Viewer dialog, example below.



The Picture Viewer supports files with the png, jpg, pjpg, jpeg, pjpeg, jpe, gif, bmp, ico, tif, tiff, jfif, emf, wmf, dib suffixes.

The NEXT and PREV controls enable user to browse all picture/image attachments associated with the selected email. You can select specific attachment to be displayed. You can later browse through all picture attachments.

The ROTATE control allow to rotate clockwise the current/visible picture.

The ZOOM control allows to zoom in/out picture. Click on ZOOM to enable/disable zooming. Slide to right to enlarge an image, slide to left to shrink. Enlarged image can be dragged using the left and scroll buttons of the mouse. Click ZOOM to disable zooming and reset the image to original size.

The PRINT control allow to print via default application.

The Picture Viewer is enabled by default but it can be disabled via FILE → Options dialog. Setting persists in the Registry across multiple runs.



All attachments are also accessible by double clicking on the selected mail in the Summary window or by selecting “View” → ”ViewEML” menu option.

## 9.25 Mail Navigation

Click on a specific mail in the Summary window and use **UP**, **DOWN** keys to move to the next or previous mail respectively.

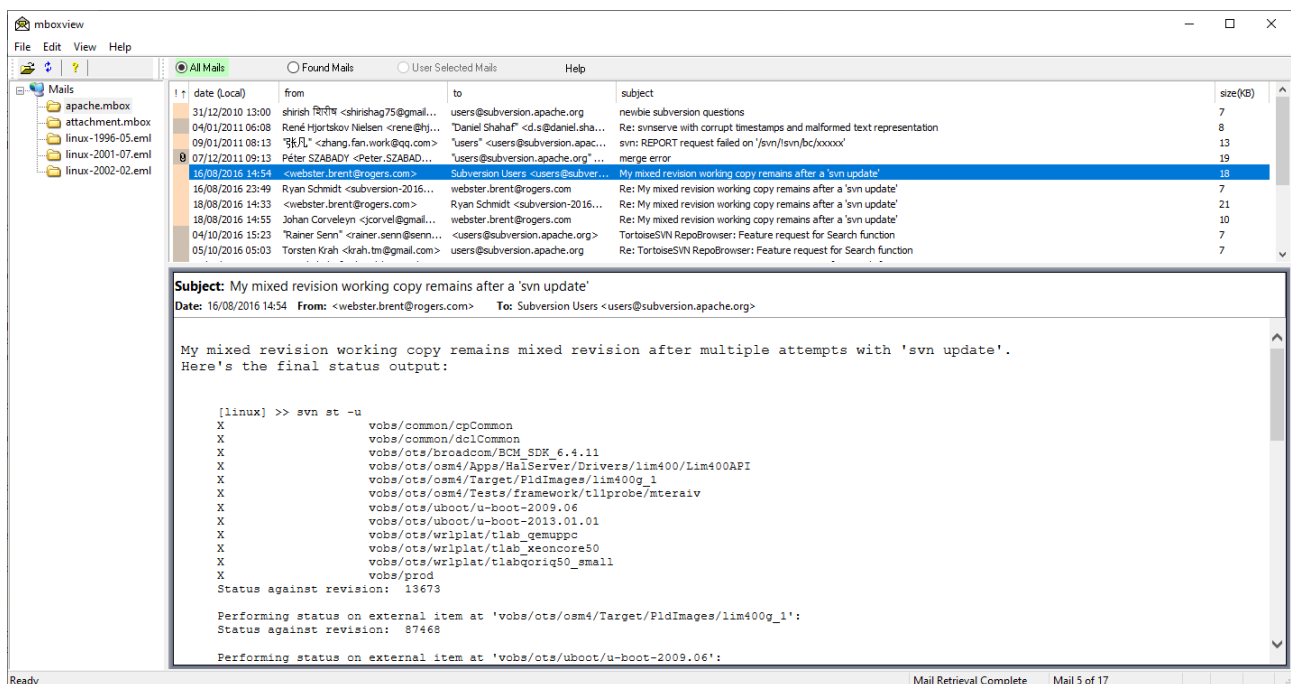
Use **HOME** key to jump to the first mail. Use **END** key to jump to the last mail.

Use the mouse wheel or vertical bar to scroll up and down mails and then select one of the mails.

## 9.26 Mail Sorting

The Summary window is divided into 6 columns: attachment indicator, date, from, to, subject and mail size. Each column can be sorted by clicking on the column title. Subsequent click on the same column title will reverse the sorting rule. By clicking on the first column title, emails are sorted by conversations and mark by different color as shown below.

Mail can also be sorted via the mail archive context menu or by selecting “File”->“Sort By” menu option.



### 9.26.1.1 Subject Sorting Rules

Subject sorting creates subject threads, that is a group of mails (or threads) with the same subject. Emails within a thread are sorted by time.

By default the subject threads are sorted alphanumerically.

Subject threads can be sorted by time by selecting “File- → Options → time ordered threads” option.

## **9.27      Dynamic Column Resize**

Columns in the Summary windows are automatically resized when the window is resized.

However, if columns are resized manually, some of the columns may no longer be present in visible area/window.

You may need to use the scroll bar to see missing columns, otherwise maximize and then restore the window to see all columns within the Summary window again.

## **9.28      Mail Searching**

Mbox viewer supports two search options, i.e. basic Find and Advanced Find.

The basic Find option allows users to specify single keyword for searching across header fields, mail text, attachment text and attachment names.

The advanced Find option allows user to specify keyword per each header field, mail text, attachment names and attachments.

### **9.28.1      Basic Find**

The basic Find option allows users to specify single keyword/string for searching across header fields, mail text and attachments.

Users can configure the search scope by selecting all or subset of the from, to, subject, message text, attachment names and attachment text options. The search succeeds if the specified keyword matches any of the checked fields.

Click the “Edit” drop menu and select “Find” option to configure and start the search. Alternatively the CTRL+F will also present the search dialog.

The search dialog box allows user to specify the search string, whether to match the whole word, whether the search is case sensitive, configure the search scope, the start and end dates to consider for filtering, the Next/Previous search direction and whether to highlight all occurrences of the matched text.

Note that the Next search start with the oldest email while the Previous search starts with the latest.

The search logic simple, i.e. mail is considered a match if the search string is found in any of the checked fields in that mail.

**Find**

Find what:

☐ Whole word ☐ Case sensitive

☐ Highlight all occurrences in Message

Search scope

☒ From ☒ To ☒ Subject ☐ Message ☐ CC ☐ BCC

☐ Attachment Text ☐ Attachment Name

☐ Filter dates:  
To set new dates, open calendar by selecting down arrow, or  
Left click on month, day or year field and type new value

start date:

end date:

☐ Find all occurrences ☐ Find mails that don't match

Search Direction ☐ previous ☒ next

To repeat the search in order to find the next matching mail, click the “Edit” drop menu and select “Find again” option, or select F3 key.

If “Find again” or F3 key is selected without prior “Find” or CTRL+F, the search dialog box will be presented to a user.

### 9.28.1.1 Find All Occurrences Option

User can check “Find all occurrences” to find all matching mails. Automatic highlighting of all keyword occurrences is not supported in this case. Matched mails will be displayed under the Found Mails List and the corresponding button in the dialog bar will be highlighted. User can left click on All Mails button to switch mail list back to All Mails.

The basic Find can also be run while in the Found Mails list and while in User Selected Mails list when the list is enabled.

**Find**

Find what:

☐ Whole word ☐ Case sensitive

☐ Highlight all occurrences in Message

Search scope

☒ From ☒ To ☒ Subject ☐ Message ☐ CC ☐ BCC

☐ Attachment Text ☐ Attachment Name

☐ Filter dates:  
To set new dates, open calendar by selecting down arrow, or  
Left click on month, day or year field and type new value

start date:

end date:

☒ Find all occurrences ☐ Find mails that don't match

Search Direction ☐ previous ☒ next

### 9.28.1.2 Find mails that don't match option

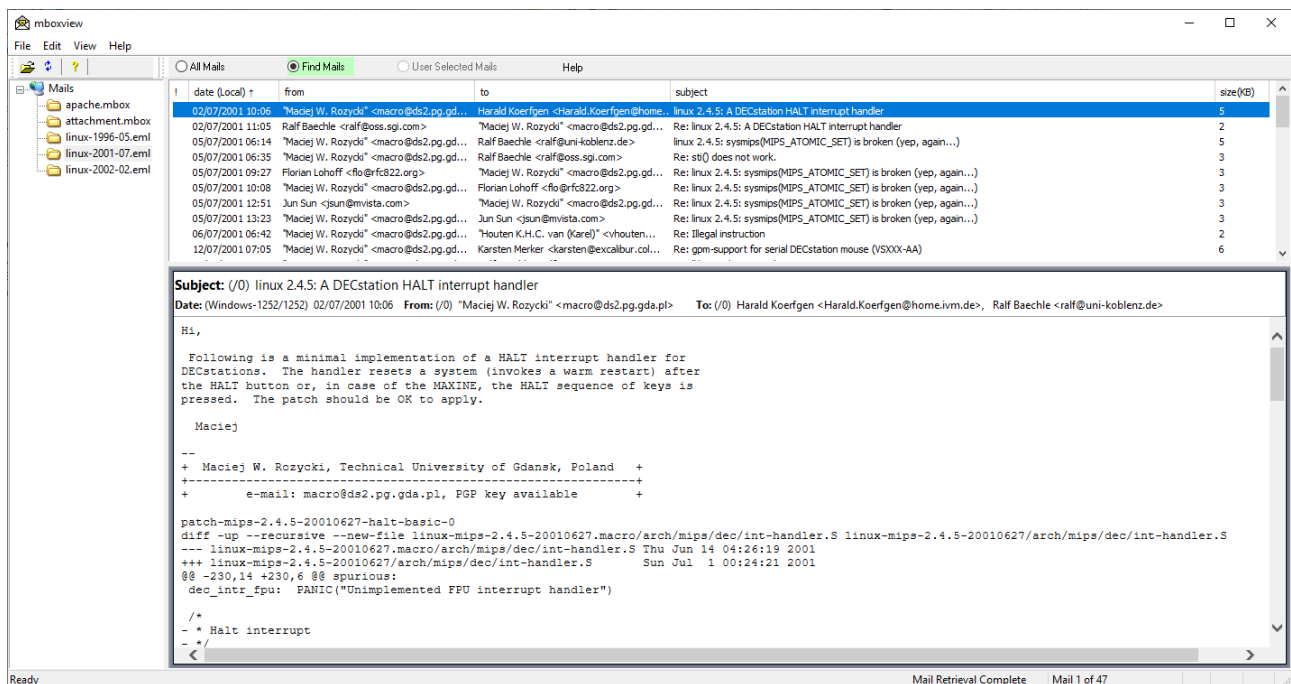
User can check “Find mails that don't match” option to find mails that don't match search criteria.

### 9.28.1.3 Handling of special '\*' search string

User can specify single '\*' character as the search string to find subset of mails as follows:

1. Find mails that have CC header field by checking out CC check box only.
2. Find mails that have BCC header field by checking only BCC check box only.
3. Find mails that have at least one attachment by checking out Attachment Name check box only.
4. Match all mails by checking out any of others check boxes only.

NOTE that if the Find all occurrences option is not selected, user will be traversing the subset of mails/matched mails between the start and end dates.



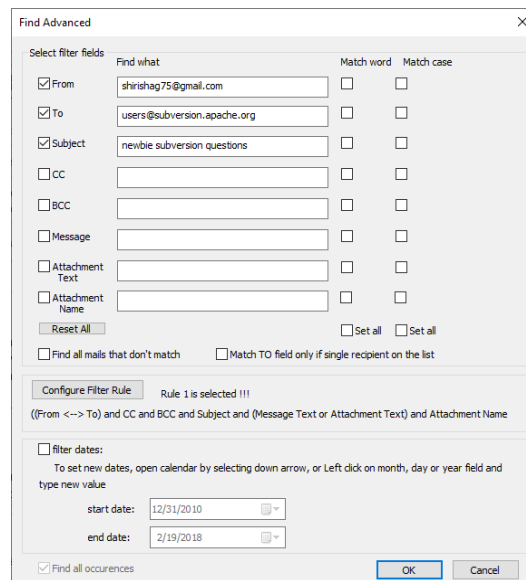
### 9.28.2 Advanced Find

The advanced Find option allows user to specify different keyword per each header field, mail text, attachment name and attachments.

Users can configure the search scope by selecting all or subset of the from, to, subject, cc, bcc, message text, attachment name and text attachments options.

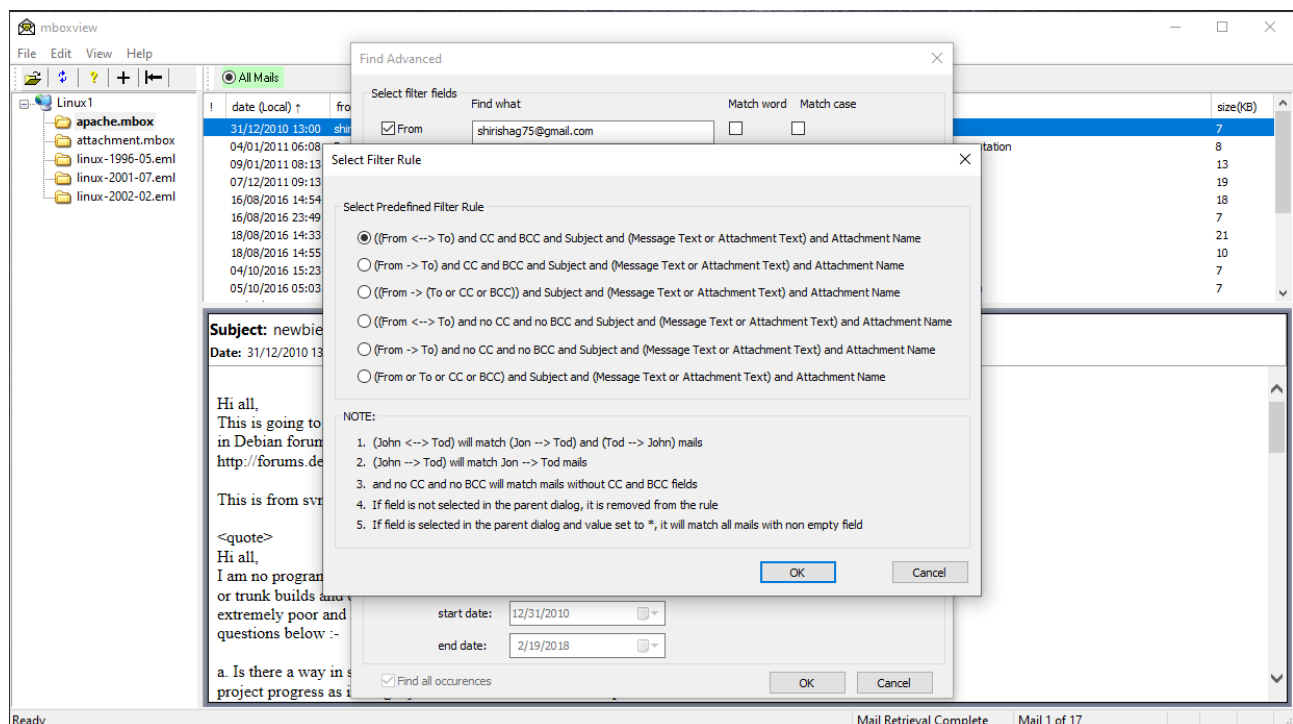
Click the "Edit" drop menu and select "Find Advanced" option to configure and start the search.

The Find Advanced is also available as menu option for the selected mail. Right click on the mail and select Find Advanced option. Mbox Viewer will pre-populate From, To and Subject fields in this case.



Only checked fields are used by matching logic and search strings are ignored if present unless field is checked.

The search logic is hard-coded for the most common cases. Select “Configure Filter Rule” button to start dialog and select one of the predefined filter rules.



More complex searching can be achieved by leveraging User Selected mails list. User can run multiple advanced searches and merge results into User Selected Mails list.

### 9.28.2.1 Find all mails that don't match option

User can check “Find all mails that don't match” option to find mails that don't match search

criteria.

### 9.28.2.2 Handling of special '\*' search string

User can specify single '\*' character as the search string in any of the Filter fields to find subset of mails as follows:

1. Find all mails that have CC header field by checking out CC check box only.
2. Find all mails that have BCC header field by checking only BCC check box only.
3. Find all mails that have at least one attachment by checking out Attachment Name check box only.
4. Match all mails by checking out any of others check boxes only.

### 9.28.3 Search Reliability

MBox Viewer searching is Unicode based since version 1.0.3.40. The search string, mail header fields and mail content are encoded first as Unicode UTF8 strings. Encoding into UTF8 is done on the fly in most cases.

Comparing Unicode strings has challenges since the same character may have multiple binary representation. To overcome the problem, Unicode strings need to be normalized before they can be compared. MBox Viewer relies on non-canonical normalization form KC. String normalization is not without issues. **To help to resolve or minimize issues, please create tickets and provide as many details as possible to help to diagnose the issue.**

In most cases the received mail data contains plain text and html text blocks. Both encode the same/similar content. If the mail contains plain text blocks, only the plain text blocks will be searched. If the mail doesn't contain any plain text blocks, the html text blocks will be searched.

False positive results may sometimes happen when searching text/html content blocks. MBox Viewer will attempt to extract text from html but the extraction solution is not perfect due to simplistic but low cpu overhead approach.

### 9.28.4 Search for Words

Search for words is quite reliable for words composed from the following characters from ASCII and ISO-8859-1 (Also known as ISO Latin 1) character sets:

"0123456789abcdefghijklmnopqrstuvwxyz\_ABCDEFGHIJKLMNOPQRSTUVWXYZÀÁÂÃÄÅÆÇÈÉÊËÌÍÎÏÐÑÒÓÔÕÖØÙÚÛÜÝÞßàáâãäåæçèéêëìíîïðñòóôõöøùúûüýþ"

Any other characters from ASCII and ISO-8859-1 sets are considered as word delimiters.

Searching for words in other character sets/languages is currently not reliable for the following reasons:

1. Some languages don't have word delimiters

2. Set of all UNICODE delimiters is very large and currently not known to MBox Viewer. Future releases may enhance the search.

Option to search for words should not be set when searching emails not composed from ASCII and ISO-8859-1 character sets.

### **9.28.5 Search Progress Bar**

Search progress bar displays the progress along the configured search string and enables user to cancel the search is so desired. The progress bar is not created unless a given search duration lasts longer than the delay time controlled by `-PROGRESS_BAR_DELAY` command line option or specified via GUI. Default value is 1 second.

### **9.28.6 Search Performance**

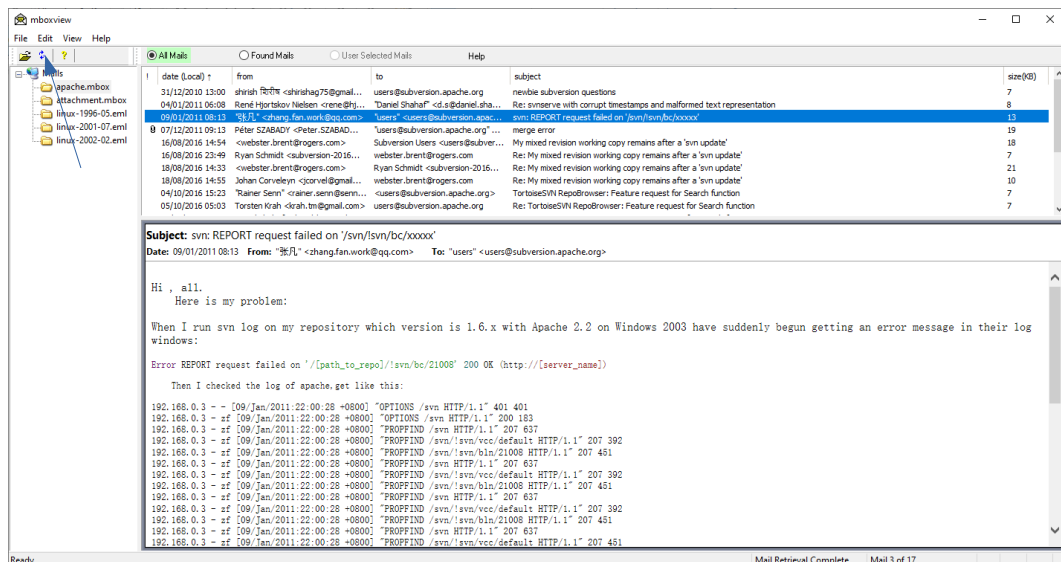
Searching of header fields performs best since all fields reside in the memory.

Searching of messages and text attachments may take some time for very large files, say larger than 10-20 Gbytes. Search requires to read the content blocks from the email file and decode the content when required. Worse case scenario is when the specified search string is not present in the mail archive. When activated, the search progress bar shows the configured search string and enables user to cancel the search is so desired.

Note that when searching of message and text attachments is configured, all mails will be sorted by date first, except when sorted by conversations, to maximize search performance.

## **9.29 Refreshing Archive Tree Window**

If an additional mbox or eml file is placed in the already selected folder, the Archive Tree window needs to be refreshed to see the new additions. This can be done by selecting “Refresh” option under the “File” drop menu or by clicking on the button showed below. Individual Folder can be refreshed by the right click on the folder and selecting “Refresh Folder” menu option.

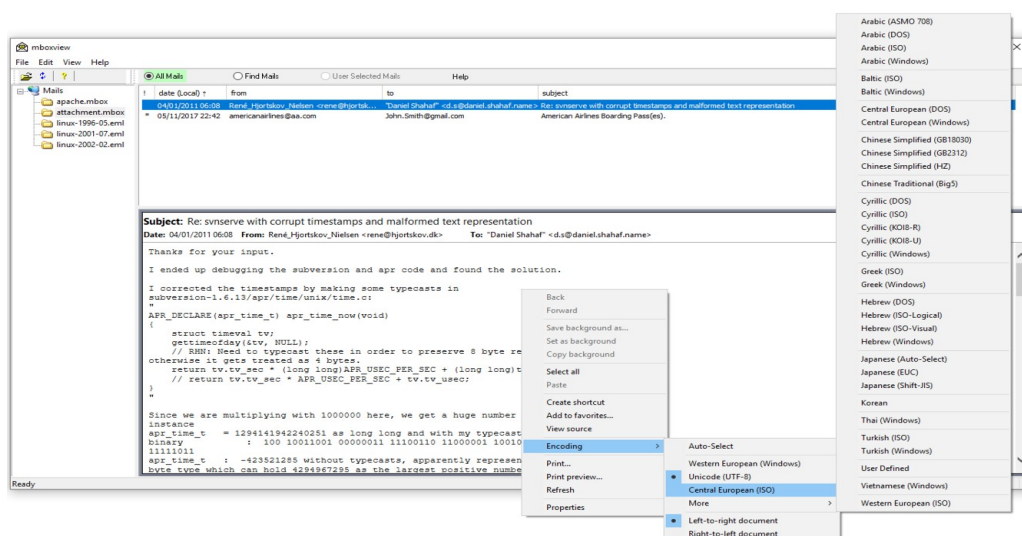


## 9.30 Language (Character Sets) Support

### 9.30.1 Message Window

Different languages (character sets) are properly supported in the Message Window. This is thanks to the Microsoft Web Browser emulation/control class integrated into the mboxview. The mboxview generates the htm file from the mail's body and Web Browser displays the generated file in the Message window.

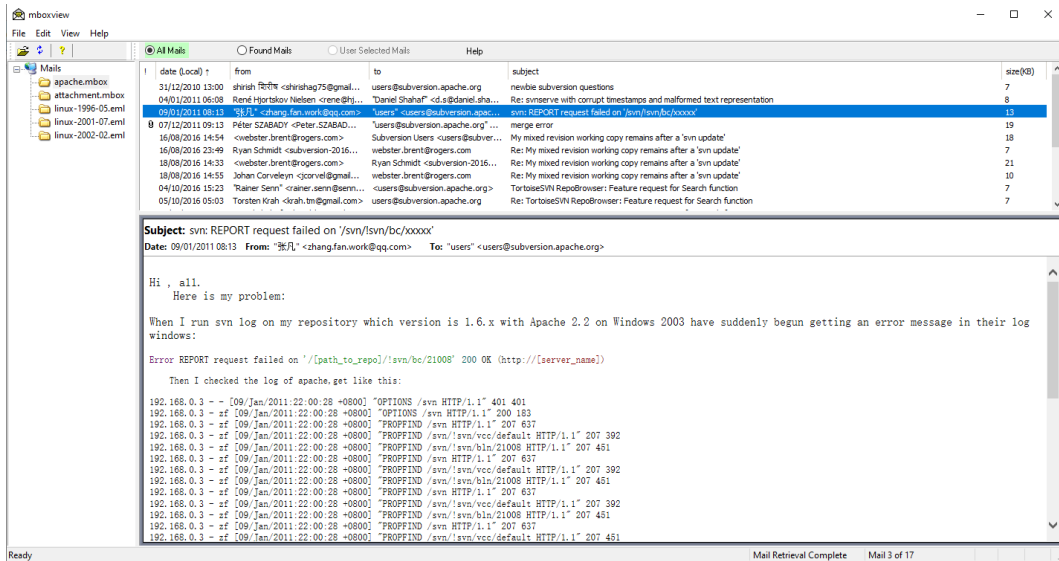
Display may not be correct if the character set for the mail's body is not defined in the mail. To resolve the incorrect display, you can try to apply different encoding by right clicking within the window, selecting "encoding" and "more" options to apply different language.





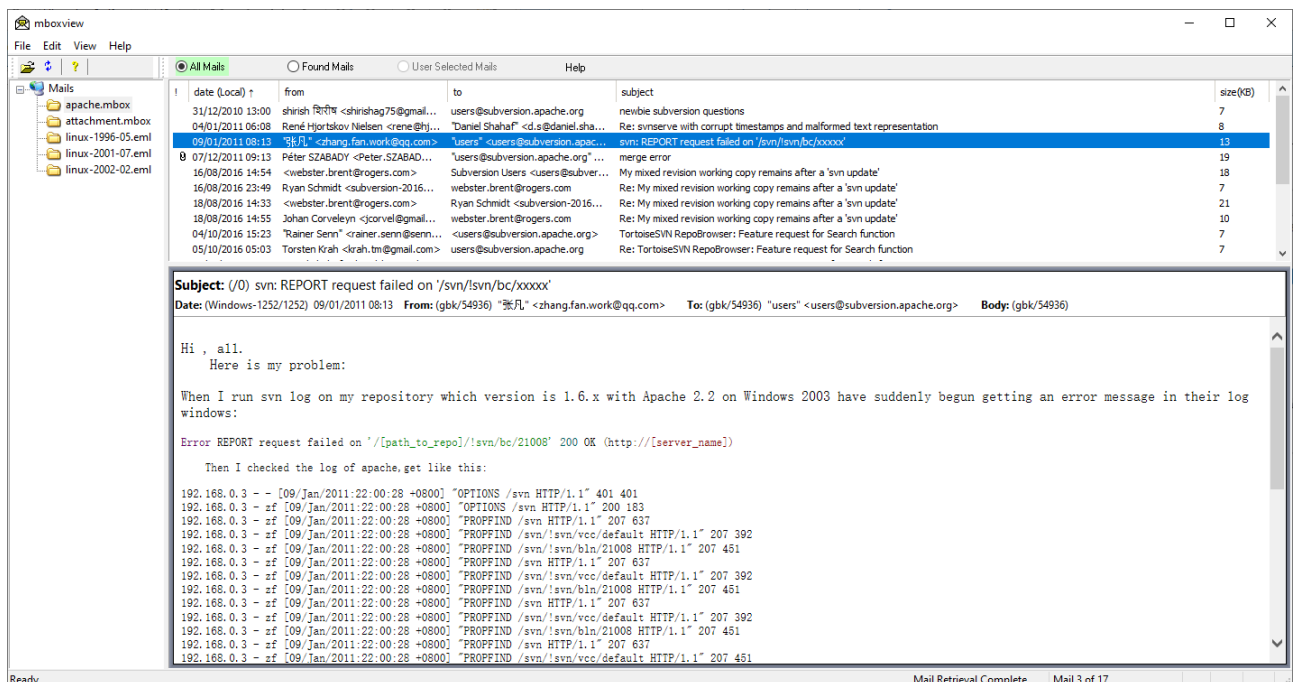
### 9.30.1.1 Header of Message Window

The text of the mail header fields is displayed correctly as long as the corresponding field encoding type is present in the email.



Two global options can be used to address incorrect field presentation in the Message Header in case the field encoding is not present in the email. Missing field encoding type may or may not be a problem. It should not be a problem if the default/local character set installed on your computer matches the original encoding of the header fields. It might be an issue if you are receiving emails from different countries.

As shown below, you can see all encoding/character sets applied to the header fields by enabling “Show Charsets” option. To enable, select “Options” from the “File” drop menu and enable “Show Charsets”.



If the field text presentation is not correct, you can try to configure character set (or so called code page according to Microsoft terminology) for the selected header fields and see if that helps. Per field code pages can be configured via Options dialog box. Note that the user provided encoding doesn't override encoding in the email, if present, which is denoted by the code page greater than zero. Code Page set to zero indicates missing or unknown character set.

If you change the code page value(s) in the Options Dialog box, you need to refresh the selected email by going up and down (or down and up).

All Windows supported code pages are listed in chapter 12 or can be viewed in the external Browser by selecting "View" → "View Code Page Ids".

The character set information appears after the field title and is formatted as "(character set name/code page)". The "\*" star character is appended after the code page if the user specified code is applied). Example "(UTF-8/65001\*)".

The character set information after the "Date:" title shows the local/default character set installed on your computer.

### 9.30.2 Summary Window

Mail header fields are displayed correctly as long as the corresponding field encoding type is present in the email.

## 9.31 Mail List Auditing

Mail list auditing capability enables users to compose mail list from all mails by merging results of multiple searches and/or by merging one or more user selected mails.

To support list auditing, the Mbox Viewer maintains 3 internal mail lists:

- **All Mails** list is populated from the selected archive file under the Mail Tree.
- **Found Mails** list is populated by the search results. User can run Find Advanced dialog or set the Find All Occurrences option in the Find dialog.
- **User Selected Mails** list is composed by a user from the mails in the All Mails and Found Mails lists. Mails on All Mails and Found Mails lists are marked by the red vertical bar in the first column if they are also on User Selected Mails list.

Each internal mail list has associated button in the dialog bar located next to the tool bar. When a particular mail list is shown in the Mail Summary Window, associated button is highlighted.

Access to the User Selected Mails list is disabled upon startup and the associated Button gray out. It can be enabled by the user to perform simple list auditing if desired by selecting View->User Selected Mail List to enable/disable.

When User Selected Mails list is enabled, additional mail menu options will also be enabled such as Copy Selected Mails to User Selected Mails.

Content of the User Selected Mails list is controlled by the user. User can merge search results with

the content of the User Selected List.

User can run the search multiples time and merge results multiple times with the User Selected List. Search results can be pruned before merging.

In addition, user has an option to select/highlight one or more mails in the Summary Mail Window and copy to the User Selected Mails list.

Standard Windows method is used to select and highlight multiple mails, i.e. Shift+Left Click and CTRL+Left Click and CTRL+A.

Merging/copying process will not create duplicate mails in the User Selected List.

User can select and highlight one or more mails in the Summary Mail Window and remove from the active list. Mails can't be removed from the All Mails list.

All Mails list content persists until new mail archive is selected.

Found Mails list content persists until new search or when new mail archive is selected.

User Selected Mails list content persists until cleared by the user or new mail archive is selected.

### **9.31.1 Mail List Archiving**

Found Mails list and User Selected Mails list content can be saved to new mbox archive files or just to the .mboxlist mail list files.

Mail Archive and Mail List files will be created in the FolderHousingMailArchives/ArchiveCache/MailArchiveName folder.

Archive file created from the Found Mails list will be created by appending \_FIND suffix to the base name of the main archive file name.

The \_USER suffix will be appended when creating archive file from the User Selected Mails list.

For example, if the main mbox archive file from Gmail is called "All mail Including Spam and Trash.11.09.2018.mbox", then created archive file will be named "All mail Including Spam and Trash.11.09.2018\_USER.mbox."

When creation of the archive is completed, user is presented with the dialog to open the folder with the created archive file or to open the archive file within the Mbox Viewer.

Separately, user can save mails in User Select Mails list to .mboxlist file, for example "All mail Including Spam and Trash.11.09.2018\_USER.mbox.mboxlist". The .mboxlist files are much smaller than the mail archive files. To protect against catastrophic failure of the mbox viewer while saving mails to .mboxlist file, the mbox viewer maintains "All mail Including Spam and Trash.11.09.2018\_USER.mbox.mboxlist.bak1" and "All mail Including Spam and Trash.11.09.2018\_USER.mbox.mboxlist.bak2" files. To recover, user must copy one of these two files to "All mail Including Spam and Trash.11.09.2018\_USER.mbox.mboxlist" file.

User can reload the last mail list file into the User Select Mails. Reload can be requested at any time including after restart of the mbox viewer.

After mbox viewer is restarted or when User Selected Mails List is empty, User Selected Mails list can be restored when All Mails list is active.

When User Selected Mails list is active and not empty, it can be reloaded by a user from the last .mboxlist file.

**WARNING:** The .mboxlist file will no longer be valid if the master mail archive is changed.

## **9.31.2 Merging Multiple Mail Archives**

### **9.31.2.1 Merging files using command line options**

Multiple Mbox and Eml files (full path) can be listed in a file and concatenated into a single archive file using two command line options.

**-MBOX\_MERGE\_LIST\_FILE**=listFile Name and **-MBOX\_MERGE\_TO\_FILE**=mergedFile Name command line options to merge content of mbox files listed in the listFile Name. Wildcard file names to merge are supported. The merged mbox file is automatically open in the Mbox Viewer.

### **9.31.2.2 Merging files from GUI**

Multiple archives can be concatenated into a single archive using "File -> Merge Archive Files" option. This is useful if you need to analyze multiple mail views, provided as separate archive files, derived from the same archive file.

After merging is completed, select "File -> Refresh" to request the Mbox Viewer to discover new archive.

In order to remove duplicate mails from the concatenated file:

1. Select the created archive.
2. Select "View -> User Selected Mails" to enable User Select Mails list.
3. Right click on any mail to select "Copy All into User Selected Mails" option to copy all mails into User Selected Mails list.
4. Click on the "User Selected Mails" button to select User Select Mails list.
5. Right click on any mail to select "Remove Duplicate Mails" option to remove duplicate mails from User Select Mails list.
6. Mails are considered duplicate if the Date, From, To header fields and unique message ID generated by the mail provider match.
7. Select "Save as Mail Archive file" option to save mails on the User Selected Mails list.
8. Select "File -> Refresh" to discover new no duplicate mails archive file by the Mbox Viewer.
9. You may want to rename the default name assigned to the archive file before the above step.

## 9.32 Mail Printing Overview

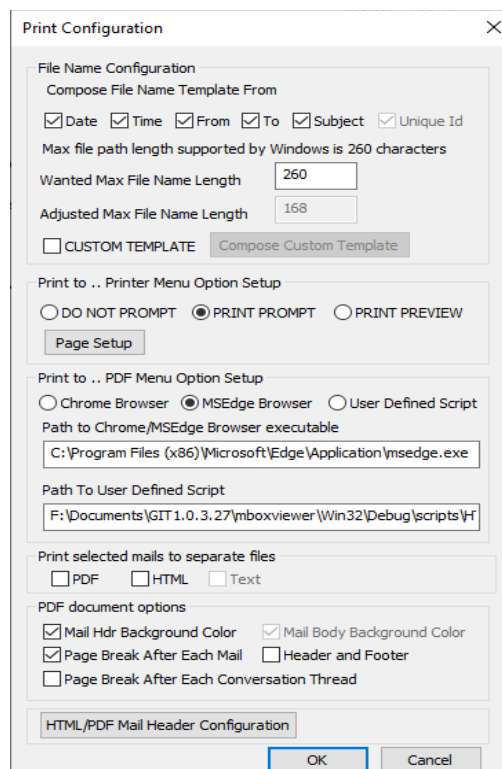
Mbox Viewer supports printing of all, single or multiple mails to CSV, Text, HTML, PDF files and to PDF printer. Mails can also be printed to PDF from any Web Browser by opening mails printed to HTML files.

By default all, single or multiple mails are printed to single CSV, Text, HTML and PDF files without any additional configuration or manual steps. However there is a limit how many mails can effectively be printed to a single file. Option is provided to print mails to separate files to scale to larger number of mails. See 9.32.7 section.

The next sections below will cover these limitations and alternate solutions.

### 9.32.1 Print Configuration Dialog

Many aspects of printing can be controlled via “File → Print Config” option. The dialog is shown below and the usage is covered in the subsequent sections.



The image shows a 'Print Configuration' dialog box with the following sections and options:

- File Name Configuration**
  - Compose File Name Template From: ☒ Date ☒ Time ☒ From ☒ To ☒ Subject ☒ Unique Id
  - Max file path length supported by Windows is 260 characters
  - Wanted Max File Name Length: 260
  - Adjusted Max File Name Length: 168
  - ☐ CUSTOM TEMPLATE Compose Custom Template
- Print to .. Printer Menu Option Setup**
  - ☐ DO NOT PROMPT ☒ PRINT PROMPT ☐ PRINT PREVIEW
  - Page Setup
- Print to .. PDF Menu Option Setup**
  - ☐ Chrome Browser ☒ MSEdge Browser ☐ User Defined Script
  - Path to Chrome/MSEdge Browser executable: C:\Program Files (x86)\Microsoft\Edge\Application\msedge.exe
  - Path To User Defined Script: F:\Documents\GIT1.0.3.27\mboxviewer\Win32\Debug\scripts\Hf
- Print selected mails to separate files**
  - ☐ PDF ☐ HTML ☐ Text
- PDF document options**
  - ☒ Mail Hdr Background Color ☒ Mail Body Background Color
  - ☒ Page Break After Each Mail ☐ Header and Footer
  - ☐ Page Break After Each Conversation Thread
- HTML/PDF Mail Header Configuration**
- OK Cancel

#### 9.32.1.1 Custom Name Template

User can create custom name template by checking “CUSTOM TEMPLATE” and then selecting “Compose Custom Template”. User will be presented with the below template configuration dialog.

Template Configuration

Template Format

%DATE\_TIME% %FROM\_NAME% %TO\_NAME% %SUBJECT% %UNIQUE\_ID%

%Y-%m-%d Date and Time Format

From Address: ☒ User Account Name @ ☒ Domain Name To Address: ☒ User Account Name @ ☒ Domain Name

☐ Replace white spaces with underscore

Valid template format keywords that will be replaced by values from mail. UNIQUE\_ID is generated by the mbox viewer to eliminate name clashes.

%DATE\_TIME% %FROM\_NAME% %FROM\_ADDR% %TO\_NAME% %TO\_ADDR% %SUBJECT% %UNIQUE\_ID%

Keywords can be specified in any order. Any text can be specified between keywords.

Date and Time Format follows format accepted by the standard `strftime` function. For example:

%Y-%m-%d %H:%M:%S will expand to for example 2020-1-31 16:59:59

OK Cancel

### 9.32.2 Mail Printing to CSV Spreadsheet file

By default, Mbox Viewer supports printing of all mails or selected group of mails to a single CSV file. All mails can be printed to single CSV file but a particular Spreadsheet tool may limit the maximum supported size of the spreadsheet file.

User can select and print groups/subset of mails to separate CVS files as a work around. There is no option to automatically split all mails into configurable number of mail groups for printing to separate CSV files.

### 9.32.3 Mail Printing to TEXT file

By default Mbox Viewer supports printing of all, single or selected group of mails to single Text file. All mails can be printed to single TEXT file but a particular Text viewer tool may limit the maximum supported size of the text file.

User can select and print groups/subset of mails to separate Text files as a work around. There is no option to automatically split all mails into configurable number of mail groups for printing to separate Text files

### 9.32.4 Mail Printing to HTML file

By default Mbox Viewer supports printing of all mails, single or selected group of mails to single HTML file. Mails can also be printed to a separate per mail HTML file for further processing as described in “Mail Printing to PDF” 9.32.6 section and “Mail Printing to PDF files by Power Users” 9.32.7 section.

All archive mails can be printed to single HTML file but HTML viewer tools/Web Browsers may

not be able to process large HTML files, become very slow or completely overloaded.

User can select and print groups/subset of mails to separate HTML files as a work around. There is no option to automatically split all mails into configurable number of mail groups for printing to separate HTML files.

There is no hard rule how many mails can be printed to a single HTML file and viewed by a Web Browser. It depends on the size and content (such as heavy graphics) of mails. It should be doable to print up to a couple of thousands small to medium size text mails to a single HTML file for further processing.

### **9.32.5 Mail Printing to PDF printer**

Mbox Viewer supports printing of all, single or selected group of mails to PDF printer.

Printing to PDF printer relies on Microsoft HTML Document object to print its content. First, Mbox Viewer will print mails to a single HTML file, then it will load this file into HTML Document object and request the document object to print itself.

The limitations as far as the maximum number of mails that can be printed are described in the "Printing Mails to HTML file" section.

The "File -> Print Config -> Page Setup" dialog option allows users to control the page title, header, footer and background color.

By default user is prompted to select PDF printer for printing mails. If the PDF printer is configured as the default printer, user can set "File -> Print Config -> Do Not Prompt" dialog option to skip the printer prompt step.

### **9.32.6 Mail Printing to PDF file**

Mbox Viewer supports multiple ways to print all, single or multiple mails to PDF file. All methods convert HTML files, created first from mails by the Mbox Viewer, to PDF format.

By default all, single or selected mails are printed to a single HTML file and then converted to PDF format. The default method limits the number of mails that can be effectively printed to single HTML file as noted in previous sections. More scalable method for is described in "Mail Printing to PDF files by Power Users" 9.32.7 section.

Mbox Viewer supports an option to print mails directly to PDF file without any user interaction. Direct printing to PDF file invokes external application to convert HTML files to PDF. Standard Google Chrome and/or Microsoft Edge browser in so called headless mode are used to perform conversion. Using MS Edge allows users to configure printing of pages without header and footer.

Two additional options are provided to leverage developer version of the Google Chrome Canary browser and free wkhtmltopdf application to convert HTML to PDF.

Options to leverage the Chrome Canary browser and wkhtmltopdf is provided since the standard Chrome browser in the headless mode doesn't support options to control the page title, header and

footer and the background color.

The Google Chrome Canary browser can be downloaded from [Chrome Canary browser downloads](#).

User can set "File -> Print Config -> Path To User Defined Script" to invoke HTML2PDF-single-wkhtmltopdf.cmd script included in the release package. HTML2PDF-single-wkhtmltopdf.cmd script creates PDF files with the right footer "Page Number of Total Pages" and no page Title and Header. The script can be customized by users if desired.

The wkhtmltopdf can be downloaded from [wkhtmltopdf.org downloads](#).

The wkhtmltopdf command line options are documented in [wkhtmltopdf.org usage](#).

User can replicate HTML2PDF-single-wkhtmltopdf.cmd or HTML2PDF-single-chrome-canary.cmd script to a new file and customize to leverage different converter possibly commercial. User will need to update "Path To User Defined Script" in "File -> Print Config" dialog to point to new script path.

In order to leverage the Chrome Canary browser, user will need to update "Path To User Defined Script" in "File -> Print Config" dialog to point to HTML2PDF-single-chrome-canary.cmd script.

When printing multiple mails to a single PDF file, user can

1. set "File -> Print Config -> Page Break After Each Mail" option to start each mail at new page, or
2. set "File -> Print Config -> Page Break After Each Conversation Thread" to start conversation or subject thread at new page.

User can unset "File -> Print Config -> Mail Hdr Background Color" option to remove mail header background color and save on the ink when printing. Useful option when using Chrome browser to print.

User can set/unset "File -> Print Config -> Header and Footer" option to control printing of page header and footer via MS Edge browser.

Lastly, HTML files can be open within Firefox, Chrome, MS Edge, etc. Browser and printed to PDF file. **Note that in order for links to attachments be clickable the “Save to PDF” option must be used when printing directly from Edge and Chrome browsers.**

**Note that links to attachments are clickable when PDF document is open in Edge or Chrome browser but they are not clickable in Firefox.**

#### **9.32.6.1 Impact on Font Size when Printing of Multiple Mails to a Single PDF**

MBox Viewer's solution to Print multiple mails to single PDF is non-standard and can affect font sizes in all mails. MBox Viewer concatenates content of all mails and headers in HTML format and ask Edge or Chrome Web Browser to convert HTML document into PDF.

Some of mails may have complex style definitions and "pollute" environment of other mails. Frequently, font sizes become smaller and may need to be zoomed in by the PDF viewer. There is



no similar solution for zooming when printing generated PDF documents to paper.

***The following approach is suggested when printing multiple mails into a single PDF.***

1. Print mails using default mode. Right-click on selected mails and select "Print Selected Mails to --> PDF --> Default". Evaluate generated PDF document and if not acceptable, follow step 2.
2. Print mails using Merge mode. Right-click on selected mails and select "Print Selected Mails to --> PDF --> Merge" option. This will print all selected mails into separate PDF files first and then merge them into a single target PDF file. Conversion of mails into PDF format by Edge or Chrome Browsers is typically high quality and the merging process typically preserves original quality. Each mail starts at the beginning of a page in the merged PDF. This may be considered less than optimal for small mails. In order to run Merge mode, user must install free java PDFBox command line tool and Java VM. Java VM is typically installed on Windows but PDFBox application must be downloaded from the following link.

<https://pdfbox.apache.org/download.html>

Please download the latest pdfbox-app-3.\*.jar file and install in the same directory as mboxview.exe. Also, check whether java.exe is installed on your system as follow.

Start Command Prompt and type “**where java**”. If java.exe is not listed in the output, you need to install java for Windows. You may also have to update PATH system environmental variable and restart Explorer and MBox Viewer.

Note that in approach 1 and 2 you can configure MBox Viewer to print page break after each mail or after each conversation thread of mails. Select "File- → Print Config-->PDF document options->Page Break After Each Mail/Page Break After Each Conversation Thread".

If none of the above print solutions works for you, you need to print each mail to a separate PDF file and use a professional tool such as PDF-XChange Editor to merge generated PDF files into a single PDF file. Reliability of these tools was not evaluated. To generate mails to separate PDF files, select "File-->Print Config- → Print selected mails to separate files- → PDF".

## **Performance**

Maximum number of mails that can be merged by 1 and 2 options depends on the complexity and size of mails to be merged.

Merging may take minutes when merging relatively small plain text mails or it may take hours when merging large number of business mails with hyperlinks, graphics, tables, etc.

For example, running option 2 (that is merge option), it took 3 hours to print 3926 mails, mix of simple and business mails, into separate PDFs and another 40 minutes to merge them by PDFBox. Task Manager was showing that PDFBox process memory utilization was close to 8gigabytes.

Option 1 never finished with the same set of mails. I canceled the test when it didn't finish within 5 hours.

### 9.32.7 Mail Printing to PDF files by Power Users

**NOTE:** The below capability was implemented as “Print Selected Mails to ->PDF ->Merge” option. The below description was left as an example to reuse with different PDF Merge application if desired.

Some users may need to print larger number of mails to a single PDF file. This is supported by Mbox Viewer but one or multiple manual steps are required. User must first print all mails to separate PDF files and then merge them into a single PDF file by running provided script.

In order to print mails to separate PDF files, user must first set "File -> Print Config -> Print mails to separate files -> PDF" option. After that, using standard mail print to PDF options, user can print all or large subset of mails to separate PDF files into sub-folder PDF\_GROUP created by Mbox Viewer.

Printing large number of mails to separate PDF files is time consuming. Depending on the size and content of a single mail, it may take fraction of a second to create PDF file or tens of seconds to print single mail.

PDFMerge-pdfbox.cmd script included in the release package can be used to merge PDF files. PDFMerge-pdfbox.cmd script invokes free PDFBox java tool to merge PDF files.

Free PDFBox java tool can be downloaded from [pdfbox.apache.org](http://pdfbox.apache.org).

PDFBox command line tools usage example can be found in [pdfbox.apache.org commandline tools](http://pdfbox.apache.org/commandline-tools).

Java 8 can must be installed and can be downloaded from [jdk8-downloads](http://jdk8-downloads).

PDFMerge-pdfbox.cmd script must be copied into the directory housing all per mail PDF files and executed. PDFMerge-pdfbox.cmd script will create one or more merged PDF files in the PDF\_MERGE sub-folder. If more than one merged PDF file is created in the PDF\_MERGE sub-folder, PDFMerge-pdfbox.cmd script needs to be copied to that sub-folder and script executed again. The above steps need to be repeated until PDFMerge-pdfbox.cmd script creates single PDF file only.

Printing mails to separate PDF files can also be done offline. User must first set "File -> Print Config -> Print mails to separate files -> HTML" option. After that, using standard mail print to HTML options, user can print all or large subset of mails to separate HTML files into sub-folder HTML\_GROUP created by Mbox Viewer.

HTML2PDF-all-chrome.cmd or HTML2PDF-all-wkhtmltopdf.cmd script included in the release package can then be used to convert HTML files to PDF files. One of these scripts must be copied into the directory housing all per mail HTML files, i.e. HTML\_GROUP, and executed. Created PDF files can then be merged into a single PDF file using PDFMerge-pdfbox.cmd script as described above.

### 9.32.8 Mail Sharing with other People

The Mail Sharing (or Mail Export) feature enables users to share one or more of the selected mails

with other people. The MBox Viewer will create the following files under ExportCache folder when exporting one or more selected mails. Only files related to selected mails are exported.

1. The “Export selected single mail to a file” option. When single mail is exported the following files are created:

- a. Single SelectedMailName.htm file under ExportCache folder, where SelectedMailName is a unique name constructed for the selected mail. User can define custom template for file name via “File->Print Config->Custom Template->Compose Custom Template” dialog.
- b. “Attachments” folder for all inline and non inline attachments.

2. The “Export selected multiple mails to separate files” option. When multiple mails are exported to separate files the following files and folders are created:

- a. The index.html file that shows all mails as the table with the following columns: attachment indicator, Date, Subject, From and To.
- b. “Mails” folder for all exported mails in Html format. MBox Viewer creates a separate file for each exported mail as SelectedMailName.htm file, where SelectedMailName is a unique name constructed for the selected mail. User can define custom template for file name via “File->Print Config->Custom Template->Compose Custom Template” dialog.
- c. “Attachments” folder for all inline non inline attachments

3. The “Export selected multiple mails to a single file” option. If multiple mails are exported to single file the following files are created:

- a. SelectedMailName.htm file under ExportCache folder, where SelectedMailName is a unique name constructed for the selected mails being concatenated.
- b. “Attachments” folder for all inline and non inline attachments

In all cases, the exportMails2Pdf.cmd file will also be created in the AttachmentCache folder to create PDF file from mails when needed by a user. By default MBox Viewer doesn’t export mails in PDF format since links to attachments are created as absolute links and work only on local computer. Instead, MBox Viewer creates command script to enable users to create PDF files locally. Edge or Chrome browser must be installed on the user computer.

MBox Viewer allows single export per mbox mail file at a time. If exported files exist already, user is asked to copy ExportCache folder to another location, or to agree to override the existing export folder, that is to delete existing files and create new files.

User can configure how to open linked documents via “Export Selected Mails-> Config” option, i.e. links to attachments or links to mails in the index.html file. The same configuration options are available via “Print Config->HTML/PDF Mail Header Configuration->How to open attachment link” options. The options are persistent.

### 9.32.9 Export and Print Directory Structure

MBox Viewer creates data directory and uses as target directory for files and sub-folders created by MboxViewer such as “Print...” export all mails as eml files, etc

The DIRECTORY is constructed as follow based on the selected data folder:

DIRECTORY= UserSelectedDataFolder\UMBoxViewer\MappedMboxFilePath

Mapping example. Assuming

MboxFilePath=F:\Account\Inbox.mbox, then it will be mapped to

MappedMboxFilePath=F\ Account\Inbox-mbox

and DIRECTORY to

DIRECTORY=UserSelectedDataFolder\UMBoxViewer\F\ Account\Inbox-mbox

The ‘.’ character will be removed and “.mbox” extension, if present, will be mapped to “-mbox”

**DIRECTORY** - target directory for files and sub-directories created by MBox Viewer

DIRECTORY\MailArchiveFile1.mbox

DIRECTORY\MailArchiveFile1.mbox.mboxview

DIRECTORY\MailArchiveFile2.mbox

DIRECTORY\MailArchiveFile2.mbox.mboxview

**DIRECTORY\ImageCache**

DIRECTORY\ImageCache\MailArchiveFile1- target directory for image files, such as png, jpg, etc, embedded into mails

DIRECTORY\ImageCache\MailArchiveFile2

**DIRECTORY\ArchiveCache**

DIRECTORY\ArchiveCache\MailArchiveFile1- target directory for saving Find Mails and User Selected Mails as .mbox archive files and .mboxlist mail list files

DIRECTORY\ArchiveCache\MailArchiveFile2

**DIRECTORY\PrintCache**

DIRECTORY\PrintCache\MailArchiveFile1 - target directory for printing to single CSV, TEXT, HTML and PDF files

DIRECTORY\PrintCache\MailArchiveFile1\PDF\_GROUP - target directory for printing to separate PDF files

DIRECTORY\PrintCache\MailArchiveFile1\HTML\_GROUP - target directory for printing to separate HTML files

DIRECTORY\PrintCache\MailArchiveFile2

DIRECTORY\AttachmentCache\MailArchiveFile1 - target directory for all attachment files

DIRECTORY\AttachmentCache\MailArchiveFile2

DIRECTORY\EmlCache\MailArchiveFile1 - target directory for all Eml files

DIRECTORY\EmlCache\MailArchiveFile2

DIRECTORY\LabelCache - target directory for all Label files

DIRECTORY\MergeCache - target directory for intermediate file created when “File- → Select root folder for merging” is selected.

DIRECTORY\ExportCache - target directory for exporting/sharing mails

DIRECTORY\ExportCache\Mails - target directory for mails encoded as HTML files.

DIRECTORY\ExportCache\Attachments - target directory for inline and non-inline attachments related to exported mails.

Mbox Viewer also creates and manages temporary directory C:\Users\UserName\AppData\Local\Temp\mbxview directory to store temporary files (attachments, eml and htm) created when a single mail is selected by the user.

Mbox Viewer created help files such as MailListsInfo.htm and MboxviewerHelp.htm are stored in the temporary directory C:\Users\UserName\AppData\Local\Temp\mboxview\MboxHelp directory.

## 10 Support for Read Only Media

MBox Viewer supports mbox mail archive files saved on Read Only media such as CDs.

MBox Viewer will create index files and other internal directories under the writable data directory as described sections 9.32.9 and 9.6.

## 11 Forward Mails directly from MBox Viewer

### 11.1 Overview

Users can forward single or selected group of emails directly from MBox Viewer. MBox Viewer connects to one of the preconfigured SMTP (Simple Mail Transport Protocol) Servers to forward emails. Emails can be forwarded via Gmail, Yahoo, Outlook Live mail service or user configured Mail Service.

MBox Viewer relies on a separate standalone process, ForwardEmlFile.exe, to connect to SMTP Server and to send emails using the TLS encrypted communication. MBox Viewer links proven MailKit software library to communicate with the SMTP server.

**Note that ForwardEmlFile.exe can't access user mail account data since SMTP Server can send data only.**

Be aware that all Mail Services impose limits on the rate, size of sending mails and other factors, see chapter 11.3 . For regular users, Gmail seems to offer better more predictable service than Yahoo or Outlook. However, Yahoo supports mails up to **39MB** in size vs **35MB** by Outlook and vs **25MB** by Gmail.

**Note that even so Yahoo can send large mails of 39MB, Outlook may ignore mails larger than 35MB. When forwarding important emails, it is good idea to ask recipient for confirmation.**

### 11.2 User Accounts and Passwords

Mail Service providers usually require third-party applications to follow special authentication requirements in order to gain access to their services, i.e. to SMTP Server in this case.

If for whatever reasons you would rather not make changes to your main mail account, you can always create additional mail account on another mail service just to be able forward emails directly from MBox Viewer.

#### 11.2.1 Yahoo Mail Service

In order for third-party SMTP client applications such as ForwardEmlFile.exe to access Yahoo SMTP Server, user must login to Yahoo mail account first and generate one time App Password that

can later be used to authenticate ForwardEmlFile application to SMTP Server.

App Password is long string of 16 random characters. Using App Password is very safe since it practically can't be guessed by hackers using brute force.

Select the below link and click on + sign next to "Generate an App Password" and follow all steps to generate globally unique password for application named **ForwardEmlFile**. You will need App Password and Yahoo mail user name to communicate with Yahoo SMTP Server.

<https://my.help.yahoo.com/kb/account/generate-third-party-passwords-sln15241.html>

### **11.2.2 Gmail Mail Service**

Third-party SMTP client application such as **ForwardEmlFile.exe** can connect to Gmail SMTP Server and be authenticated using either 1) Gmail user name and Gmail user password, or 2) Gmail user name and Gmail App Password.

**Note (Nov 2022). Authentication by user name and password is no longer supported by Gmail.**

#### ***11.2.2.1 Gmail user didn't enable 2-step verification to sign up into Gmail***

In order to use Gmail user name and Gmail user password, user must login to the Gmail account and enable "Less secure app access" option, see the link:

<https://myaccount.google.com/lesssecureapps?pli=1>

If you are concerned about this change, you can disable "Less secure app access" option after you are done forwarding emails.

#### ***11.2.2.2 Gmail user did enable 2-step verification to sign up into Gmail***

User must login to Google account and generate App Password for Gmail Account. App Password is long string of 16 random characters. Using App Password is very safe since it practically can't be guessed by hackers using brute force.

Use the link below to generate App Password:

<https://myaccount.google.com/security>

Alternatively, user can login to Gmail account and the select "Manage your Google Account" by clicking Google Account icon at the top right corner. Select Security option to generate 16-character long App Password. See also helpful links below.

<https://www.lifewire.com/get-a-password-to-access-gmail-by-pop-imap-2-1171882>

<https://www.systoolsgroup.com/gmail-backup/turn-off-two-step-verification.html>

### **11.2.3 Outlook Live Mail Service**

Testing was done using Outlook Live free mail account. Microsoft also offers payable Premium Outlook mail service under Office 365 and Microsoft 365 plans. These plans offer much higher sending limits but no evaluation was performed.

If a user did enable 2-step verification, user needs to generate App Password to be properly authenticated, see chapter 11.2.3.2 . App Password is long string of 16 random characters. Using App Password is very safe since it practically can't be guessed by hackers using brute force.

If a user didn't enable 2-step verification, there is no requirement to change any security setting for Outlook Live account to be able to send mails via Outlook SMTP Server.

Creating User name and Password to gain access to Outlook SMTP is not exactly clear and can be confusing to set up.

### **11.2.3.1 Create Outlook Account, User Name and Password**

I suggest the following steps to create valid user names and password. For more information, examine the following link.

[Everything you need to know about Microsoft accounts | Windows Community](#)

In my case I already had Microsoft and Outlook accounts but had to perform additional configuration.

#### **11.2.3.1.1 You don't have Microsoft Account (know as MSA) and you don't have Outlook Live account**

Use the following link to create Microsoft account page:

<https://account.microsoft.com/account>

Select "Sign in", then select "Create one!", then select "Get a new email address" and create your new MyName@outlook.com email address.

The below link has more details.

<https://support.microsoft.com/en-us/account-billing/how-to-create-a-new-microsoft-account-a84675c3-3e9e-17cf-2911-3d56b15c0aaf>

Use your new Outlook User name and Password to open SMTP Server Configuration dialog and configure user name and password. Attempt to forward one of the mails and check if all works.

#### **11.2.3.1.2 You already have both Microsoft Account and Outlook Live Account**

This is the case I faced. Forwarding of emails was not working properly until I created email alias and make this alias primary as described in following link:

<https://support.microsoft.com/en-us/office/add-or-remove-an-email-alias-in-outlook-com-459b1989-356d-40fa-a689-8f285b13f1f2>

For some reason, Outlook Account User Name and Password did not work for me but Microsoft Account User name and Password did work.

### **11.2.3.2 Generate App Password for Outlook**

User must login to Outlook account, enable 2-step verification and generate App Password for Outlook Account. Follow the link below to generate App Password:

<https://support.microsoft.com/en-us/account-billing/using-app-passwords-with-apps-that-don-t-support-two-step-verification-5896ed9b-4263-e681-128a-a6f2979a7944>

## 11.3 Mail Sending and Size Limits

The limits are listed here to the best of our knowledge and they might be changed by the mail service providers anytime without notice. For regular users, Gmail seems to offer better more predictable service than Yahoo or Outlook. However, Yahoo supports mails up to **39MB** in size vs **35MB** by Outlook and vs **25MB** by Gmail.

Users are mainly responsible for observing sending limits. MBox Viewer will limit the sending rate to 30 mails/minute.

### 11.3.1 Gmail Mail Service

Sending can be rejected by Gmail for variety of reasons. If a user exceeds various limits, user account can be locked for up to 24 hours. User can take manual steps to restore access.

Regular users are allowed to send up to 500 mails per day.

Mails can be rejected if they are being sent too fast or to too many recipients.

Mails of up to **25MB** are accepted.

### 11.3.2 Yahoo Mail Service

Sending can be rejected by Yahoo for variety of reasons. If a user exceeds various limits, user account can be locked for up to 24 hours. User can take manual steps to restore access.

Yahoo does not disclose sending and size limits.

Mails of up to **39MB** are accepted.

### 11.3.3 Outlook Mail Service

Sending can be rejected by Outlook for variety of reasons including suspicion of spamming. If a user exceeds various limits, user account can be locked for up to 24 hours. User can take manual steps to restore access.

Mails of up to **35MB** are accepted. If you attempt to send larger mail, it will appear that the sending was successful. However, Outlook will post rejection mail into your Outlook account.

The other sending limits are not known.

## 11.4 SMTP Server Configuration

Select “File → SMTP Mail Server Config” to open the configuration dialog. Select one of the listed mail services, enter User Account and Password and click on the “Save” button to save the changes.



When you select “Close” button, the SMTP.ini file is created for the selected service in C:\Users\%USERNAME%\AppData\Local\MBoxViewer\MailService and used by ForwardEmlFile.exe to support forwarding of emails.

The “Cancel” button is used to clear unsaved changes made in the dialog. If you switch to different mail service, the unsaved changes in the dialog are lost.

When you exit MBox Viewer, User Password is not saved in the system for safety reasons and must be reentered before any mail can be forwarded again.

### 11.4.1 SMTP Servers Default Settings

SMTP Server Address	smtp.gmail.com	smtp.mail.yahoo.com	smtp-mail.outlook.com
SMTP Server Port	587	587	587
SMTP Security	StartTls	StartTls	StartTls

## 11.5 Forwarding Mails

MBox viewer supports forwarding of a single and multiple emails.

**Note that From address can be specified by a user while in Custom SMTP Configuration option only.**

### 11.5.1 Forwarding a single email

Right click on any email and select “Forward Mail” option to open the dialog to forward the

selected email. The dialog can be manually resized if needed.

Forward Mail

Service: Gmail

Subject: Re: svnserve with corrupt timestamps and malformed text representation

From: john.silver@gmail.com

To: tom.feld@gmail.com

CC: barbara.forest@gmail.com

BCC:

User Text:

Please review the attachment and provide feedback.

Thank you,  
John

Clear Send Cancel

The non-empty To field is required. Other fields are optional. When you open the dialog, To, CC, BCC and User Text fields will show the values set in the last dialog. You can clear these fields by clicking on the “Clear” button.

It is important to make sure all addresses are correct and valid. If any address is not valid, a rejection email will be send by the mail service to the respective user’s mail account. **MBox Viewer doesn’t have access to user’s mail accounts.**

### 11.5.2 Forwarding a list of selected emails

User can select multiple email, then right click on any of the selected emails and select “Forward Mails” option to open the dialog to forward the selected email.

To avoid suspension of the user account, the user is warned if the user attempts to forward batch of emails larger than 100. User is also warned when any of the select mails to forward is larger than supported maximum size.

### 11.5.3 Error Reporting

If forwarding of a mail fails, MBox Viewer will create Message Box with relevant error text.

## 12 Windows Code Page Identifiers

The table below shows the supported character sets/code pages by Windows platform. The list is based on the following link.

[https://msdn.microsoft.com/en-us/library/windows/desktop/dd317756\(v=vs.85\).aspx](https://msdn.microsoft.com/en-us/library/windows/desktop/dd317756(v=vs.85).aspx)

Code Page	Name	Display Name
37	IBM037	IBM EBCDIC (US-Canada)
437	IBM437	OEM United States
500	IBM500	IBM EBCDIC (International)
708	ASMO-708	Arabic (ASMO 708)
720	DOS-720	Arabic (DOS)
737	ibm737	Greek (DOS)
775	ibm775	Baltic (DOS)
850	ibm850	Western European (DOS)
852	ibm852	Central European (DOS)
855	IBM855	OEM Cyrillic
857	ibm857	Turkish (DOS)
858	IBM00858	OEM Multilingual Latin I
860	IBM860	Portuguese (DOS)
861	ibm861	Icelandic (DOS)
862	DOS-862	Hebrew (DOS)
863	IBM863	French Canadian (DOS)
864	IBM864	Arabic (864)
865	IBM865	Nordic (DOS)
866	cp866	Cyrillic (DOS)
869	ibm869	Greek , Modern (DOS)
870	IBM870	IBM EBCDIC (Multilingual Latin-2)
874	windows-874	Thai (Windows)
875	cp875	IBM EBCDIC (Greek Modern)
932	shift_jis	Japanese (Shift-JIS)
936	gb2312	Chinese Simplified (GB2312)
949	ks_c_5601-1987	Korean
950	big5	Chinese Traditional (Big5)
1026	IBM1026	IBM EBCDIC (Turkish Latin-5)
1047	IBM01047	IBM Latin-1
1140	IBM01140	IBM EBCDIC (US-Canada-Euro)
1141	IBM01141	IBM EBCDIC (Germany-Euro)

Code Page	Name	Display Name
1142	IBM01142	IBM EBCDIC (Denmark-Norway-Euro)
1143	IBM01143	IBM EBCDIC (Finland-Sweden-Euro)
1144	IBM01144	IBM EBCDIC (Italy-Euro)
1145	IBM01145	IBM EBCDIC (Spain-Euro)
1146	IBM01146	IBM EBCDIC (UK-Euro)
1147	IBM01147	IBM EBCDIC (France-Euro)
1148	IBM01148	IBM EBCDIC (International-Euro)
1149	IBM01149	IBM EBCDIC (Icelandic-Euro)
1200	utf-16	Unicode
1201	unicodeFFFE	Unicode (Big-Endian)
1250	windows-1250	Central European (Windows)
1251	windows-1251	Cyrillic (Windows)
1252	Windows-1252	Western European (Windows)
1253	windows-1253	Greek (Windows)
1254	windows-1254	Turkish (Windows)
1255	windows-1255	Hebrew (Windows)
1256	windows-1256	Arabic (Windows)
1257	windows-1257	Baltic (Windows)
1258	windows-1258	Vietnamese (Windows)
1361	Johab	Korean (Johab)
10000	macintosh	Western European (Mac)
10001	x-mac-japanese	Japanese (Mac)
10002	x-mac-chinesetrad	Chinese Traditional (Mac)
10003	x-mac-korean	Korean (Mac)
10004	x-mac-arabic	Arabic (Mac)
10005	x-mac-hebrew	Hebrew (Mac)
10006	x-mac-greek	Greek (Mac)
10007	x-mac-cyrillic	Cyrillic (Mac)
10008	x-mac-chinesesimp	Chinese Simplified (Mac)
10010	x-mac-romanian	Romanian (Mac)
10017	x-mac-ukrainian	Ukrainian (Mac)
10021	x-mac-thai	Thai (Mac)
10029	x-mac-ce	Central European (Mac)
10079	x-mac-icelandic	Icelandic (Mac)
10081	x-mac-turkish	Turkish (Mac)
10082	x-mac-croatian	Croatian (Mac)
12000	utf-32	Unicode (UTF-32)
12001	utf-32BE	Unicode (UTF-32 Big-Endian)
20000	x-Chinese-CNS	Chinese Traditional (CNS)

Code Page	Name	Display Name
20001	x-cp20001	TCA Taiwan
20002	x-Chinese-Eten	Chinese Traditional (Eten)
20003	x-cp20003	IBM5550 Taiwan
20004	x-cp20004	TeleText Taiwan
20005	x-cp20005	Wang Taiwan
20105	x-IA5	Western European (IA5)
20106	x-IA5-German	German (IA5)
20107	x-IA5-Swedish	Swedish (IA5)
20108	x-IA5-Norwegian	Norwegian (IA5)
20127	us-ascii	US-ASCII
20261	x-cp20261	T.61
20269	x-cp20269	ISO-6937
20273	IBM273	IBM EBCDIC (Germany)
20277	IBM277	IBM EBCDIC (Denmark-Norway)
20278	IBM278	IBM EBCDIC (Finland-Sweden)
20280	IBM280	IBM EBCDIC (Italy)
20284	IBM284	IBM EBCDIC (Spain)
20285	IBM285	IBM EBCDIC (UK)
20290	IBM290	IBM EBCDIC (Japanese katakana)
20297	IBM297	IBM EBCDIC (France)
20420	IBM420	IBM EBCDIC (Arabic)
20423	IBM423	IBM EBCDIC (Greek)
20424	IBM424	IBM EBCDIC (Hebrew)
20833	x-EBCDIC-KoreanExtended	IBM EBCDIC (Korean Extended)
20838	IBM-Thai	IBM EBCDIC (Thai)
20866	koi8-r	Cyrillic (KOI8-R)
20871	IBM871	IBM EBCDIC (Icelandic)
20880	IBM880	IBM EBCDIC (Cyrillic Russian)
20905	IBM905	IBM EBCDIC (Turkish)
20924	IBM00924	IBM Latin-1
20932	EUC-JP	Japanese (JIS 0208-1990 and 0212-1990)
20936	x-cp20936	Chinese Simplified (GB2312-80)
20949	x-cp20949	Korean Wansung
21025	cp1025	IBM EBCDIC (Cyrillic Serbian-Bulgarian)
21866	koi8-u	Cyrillic (KOI8-U)
28591	iso-8859-1	Western European (ISO)
28592	iso-8859-2	Central European (ISO)
28593	iso-8859-3	Latin 3 (ISO)
28594	iso-8859-4	Baltic (ISO)

Code Page	Name	Display Name
28595	iso-8859-5	Cyrillic (ISO)
28596	iso-8859-6	Arabic (ISO)
28597	iso-8859-7	Greek (ISO)
28598	iso-8859-8	Hebrew (ISO-Visual)
28599	iso-8859-9	Turkish (ISO)
28603	iso-8859-13	Estonian (ISO)
28605	iso-8859-15	Latin 9 (ISO)
29001	x-Europa	Europa
38598	iso-8859-8-i	Hebrew (ISO-Logical)
50220	iso-2022-jp	Japanese (JIS)
50221	csISO2022JP	Japanese (JIS-Allow 1 byte Kana)
50222	iso-2022-jp	Japanese (JIS-Allow 1 byte Kana - SO/SI)
50225	iso-2022-kr	Korean (ISO)
50227	x-cp50227	Chinese Simplified (ISO-2022)
51932	euc-jp	Japanese (EUC)
51936	EUC-CN	Chinese Simplified (EUC)
51949	euc-kr	Korean (EUC)
52936	hz-gb-2312	Chinese Simplified (HZ)
54936	GB18030	Chinese Simplified (GB18030)
57002	x-iscii-de	ISCII Devanagari
57003	x-iscii-be	ISCII Bengali
57004	x-iscii-ta	ISCII Tamil
57005	x-iscii-te	ISCII Telugu
57006	x-iscii-as	ISCII Assamese
57007	x-iscii-or	ISCII Oriya
57008	x-iscii-ka	ISCII Kannada
57009	x-iscii-ma	ISCII Malayalam
57010	x-iscii-gu	ISCII Gujarati
57011	x-iscii-pa	ISCII Punjabi
65000	utf-7	Unicode (UTF-7)
65001	utf-8	Unicode (UTF-8)

## 12.1 Handling Unknown Code Page Names

In a few cases, mboxview will map unknown code names to the equivalent code names supported by Windows.

Unknown Code Name	Mapped To Code Name
gbk	GB18030

cp1252	Windows-1252
ascii	us-ascii
cp819	iso-8859-1
latin1	iso-8859-1
latin2	iso-8859-2
big-5	big5
SJIS	shift_jis