19.1. `email` — An email and MIME handling package

Source code: Lib/email/__init__.py

The `email` package is a library for managing email messages. It is specifically *not* designed to do any sending of email messages to SMTP (**RFC 2821**), NNTP, or other servers; those are functions of modules such as `smtplib` and `nntplib`. The `email` package attempts to be as RFC-compliant as possible, supporting **RFC 5233** and **RFC 6532**, as well as such MIME-related RFCs as **RFC 2045**, **RFC 2046**, **RFC 2047**, **RFC 2183**, and **RFC 2231**.

The overall structure of the email package can be divided into three major components, plus a fourth component that controls the behavior of the other components.

The central component of the package is an "object model" that represents email messages. An application interacts with the package primarily through the object model interface defined in the `message` sub-module. The application can use this API to ask questions about an existing email, to construct a new email, or to add or remove email subcomponents that themselves use the same object model interface. That is, following the nature of email messages and their MIME subcomponents, the email object model is a tree structure of objects that all provide the `EmailMessage` API.

The other two major components of the package are the `parser` and the `generator`. The parser takes the serialized version of an email message (a stream of bytes) and converts it into a tree of `EmailMessage` objects. The generator takes an `EmailMessage` and turns it back into a serialized byte stream. (The parser and generator also handle streams of text characters, but this usage is discouraged as it is too easy to end up with messages that are not valid in one way or another.)

The control component is the `policy` module. Every `EmailMessage`, every `generator`, and every `parser` has an associated `policy` object that controls its behavior. Usually an application only needs to specify the policy when an `EmailMessage` is created, either by directly instantiating an `EmailMessage` to create a new email, or by parsing an input stream using a `parser`. But the policy can be changed when the message is serialized using a `generator`. This allows, for example, a generic email message to be parsed from disk, but to serialize it using standard SMTP settings when sending it to an email server.

The email package does its best to hide the details of the various governing RFCs from the application. Conceptually the application should be able to treat the email

message as a structured tree of unicode text and binary attachments, without having to worry about how these are represented when serialized. In practice, however, it is often necessary to be aware of at least some of the rules governing MIME messages and their structure, specifically the names and nature of the MIME "content types" and how they identify multipart documents. For the most part this knowledge should only be required for more complex applications, and even then it should only be the high level structure in question, and not the details of how those structures are represented. Since MIME content types are used widely in modern internet software (not just email), this will be a familiar concept to many programmers.

The following sections describe the functionality of the `email` package. We start with the `message` object model, which is the primary interface an application will use, and follow that with the `parser` and `generator` components. Then we cover the `policy` controls, which completes the treatment of the main components of the library.

The next three sections cover the exceptions the package may raise and the defects (non-compliance with the RFCs) that the `parser` may detect. Then we cover the `headerregistry` and the `contentmanager` sub-components, which provide tools for doing more detailed manipulation of headers and payloads, respectively. Both of these components contain features relevant to consuming and producing non-trivial messages, but also document their extensibility APIs, which will be of interest to advanced applications.

Following those is a set of examples of using the fundamental parts of the APIs covered in the preceding sections.

The forgoing represent the modern (unicode friendly) API of the email package. The remaining sections, starting with the `Message` class, cover the legacy `compat32` API that deals much more directly with the details of how email messages are represented. The `compat32` API does *not* hide the details of the RFCs from the application, but for applications that need to operate at that level, they can be useful tools. This documentation is also relevant for applications that are still using the `compat32` API for backward compatibility reasons.

Changed in version 3.6: Docs reorganized and rewritten to promote the new `EmailMessage`/`EmailPolicy` API.

Contents of the `email` package documentation:

Legacy API:

See also:

Module `smtplib`
SMTP (Simple Mail Transport Protocol) client

Module `poplib`
POP (Post Office Protocol) client

Module `imaplib`
IMAP (Internet Message Access Protocol) client

Module `nntplib`
NNTP (Net News Transport Protocol) client

Module `mailbox`
Tools for creating, reading, and managing collections of messages on disk using a variety standard formats.

Module `smtpd`
SMTP server framework (primarily useful for testing)