

Analysis of EAI Software Support

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What is EAI?

- E-mail Address Internationalization
- UTF-8 in e-mail addresses

测试@电子邮件测试.中国

اختبار@اختبارالبريد.شبكة

yés@nø.sp.am

What is **not** EAI

- Subject lines
- Address comments
- Message bodies
 - MIME provides all those in conventional mail
- Any character set other than UTF-8

EAI Level 1 and Level 2 support

- Level 1: can exchange mail with EAI addresses

bob@example.com ↔ 测试@电子邮件测试.中国

- Level 2: Level 1 + supports EAI addresses

yés@nø.sp.am ↔ 测试@电子邮件测试.中国

Mail system components

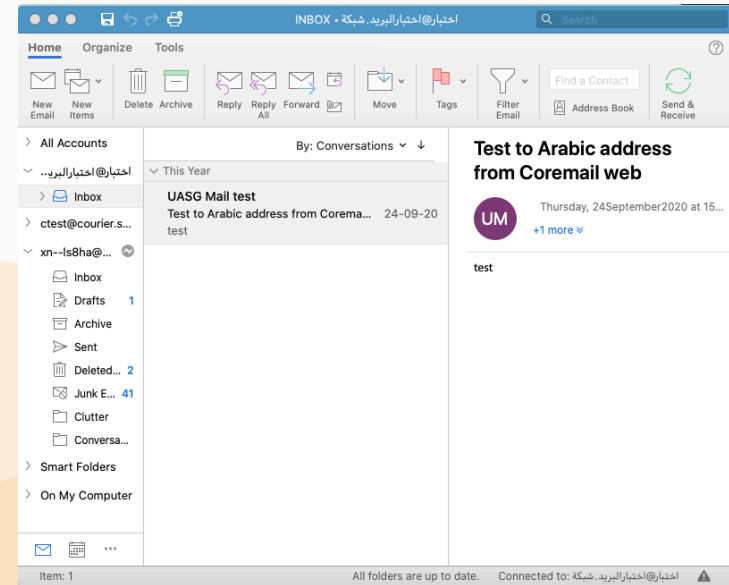


Different components

- Mail software has many components
- A package may provide EAI in some components but not others

Components: User-facing

- Mail User Agent (MUA)
 - Desktop mail program
 - Phone or tablet mail
- Webmail



Components: Mail Submission and Transfer Agents (MSA and MTA)

- MSA accepts mail from MUA for further handling
- MTA transfers mail to other systems
- MSA+MTA often combined in the same package

Components: Mail Delivery Agent (MDA)

- Stores incoming mail
- Clients manage with POP or IMAP
- Generally used by MUAs to retrieve mail

Components: Mail Service Provider (MSP)

- Does a service provide EAI addresses for its users

Test approach: MUA, MSP, Web mail

- Test manually
- Record results in database
- Export from database to report

Test Result

Packages Tasks Tests Summary Help Logout

Logged in as johnl

Type: MUA

Summary: Message with EAI address in destination address header is accessible

Description: If the software supports IMAP, it should be able to access messages with EAI values in destination address headers. This applies to the "To", "Cc", and "Bcc" headers. For this test case, the header values should be Unicode strings rather than in an ASCII encoding such as quoted-words.

Action: Access message with destination address header <Email>

Expected: Message is accessible

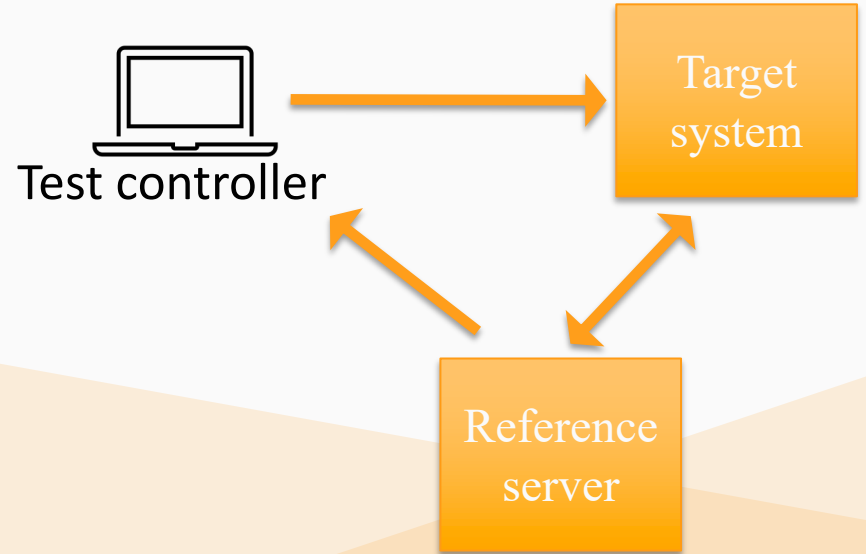
Class: required

Results of EAI-MUA-055 on Apple Mail	
Status	<input type="radio"/> NA <input type="radio"/> PASS <input checked="" type="radio"/> FAIL <input type="radio"/> Pending
Comments	Message is accessible Header not viewable in ios Header viewable on MacOS but characters not displayed correctly
Picture	Choose File No file chosen (PNG or JPEG only)
Update Update/Return Update/Next Return Next	

Organization: 电子邮件测试.中国
Mime-Version: 1.0
Content-Type: text/plain; charset=UTF-8; format=flowed
Return-Path: <æµè~@xn--5nqx41au4nqohsp3axcg.xn--fiqs8s>

Test approach: MSA, MTA, MDA

- Script for each test
- Fast, reliable results
- Automatically logged in database



Summary results

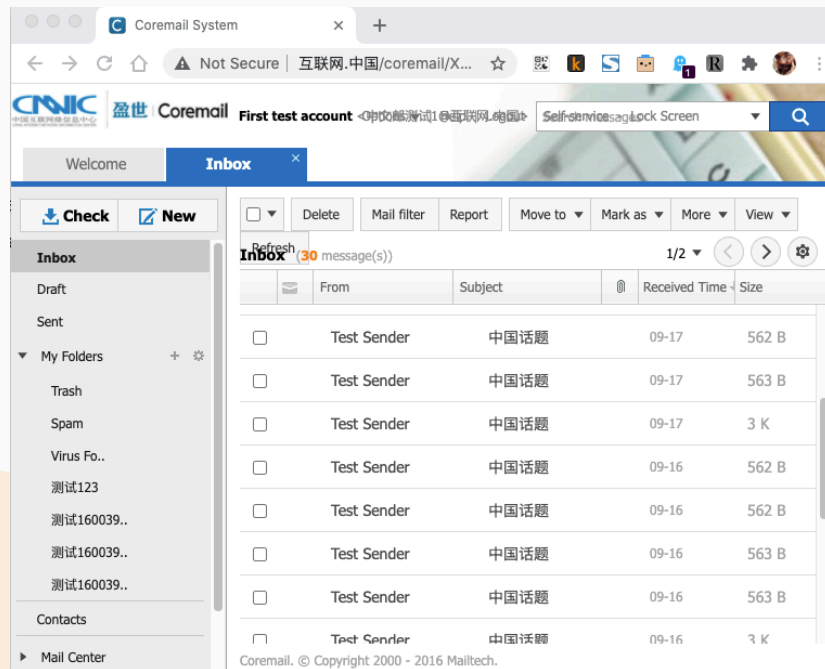
Name	MUA	MSA	MTA	MDA	MSP	Web mail
Coremail	Few	All L2	Most L2	Few	All L2	Most L2
MS Outlook.com	Most L1	Most L1	Most L1	None	None	Most L1
Yandex Mail	Few	None	None	Few	Part	Few
Roundcube	Most L2					
Apple Mail	Few					
Mozilla Thunderbird	Few					
MS Outlook	Most L1					
MS Exchange Server (hosted)		All L1	All L1	Few		
Exim		Most L2	All L2			
Postfix		All L2	All L2			
Sendmail		Not tested	Not tested			
Fetchmail				Not tested		
Courier		All L2	All L2	All L2		
Gmail	All L1	All L1	All L1	Few		
XgenPlus		Not tested	Not tested	Not tested	All L2	Not tested

Results by product



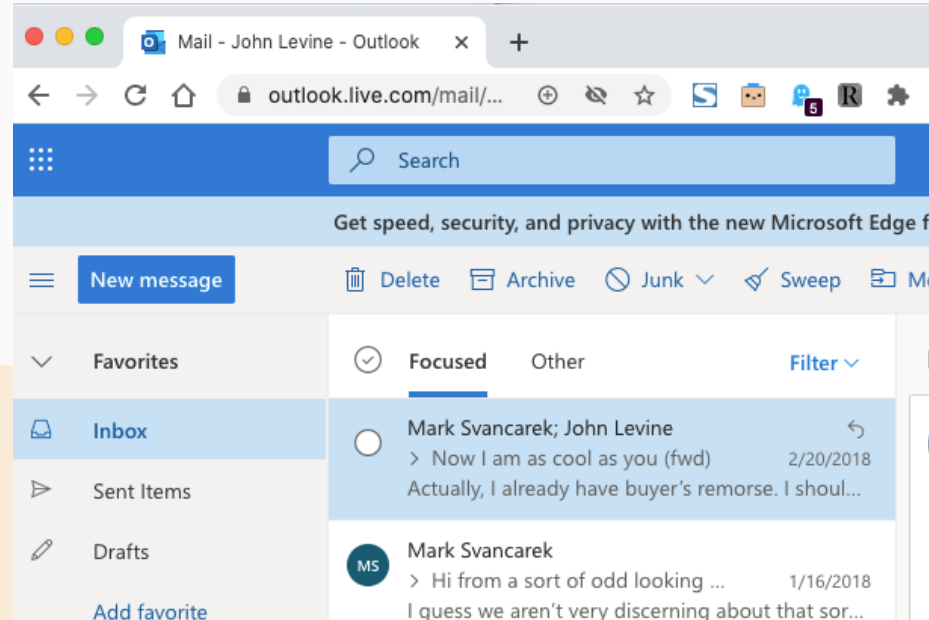
Coremail

- Good L2 Chinese web mail
- Good L2 MSA and MTA
- Lunkr app not EAI ready
- MDA EAI very buggy



MS Outlook.com

- Webmail is L1 ready
- MSA, MTA L1 ready with minor bugs
- MDA not EAI ready



Yandex Mail

- Provides ASCII addresses in Cyrillic domains доменное-имя.рф and ёпочта.рф
- No EAI support yet in MUA, webmail, MTA, MSA, or MDA

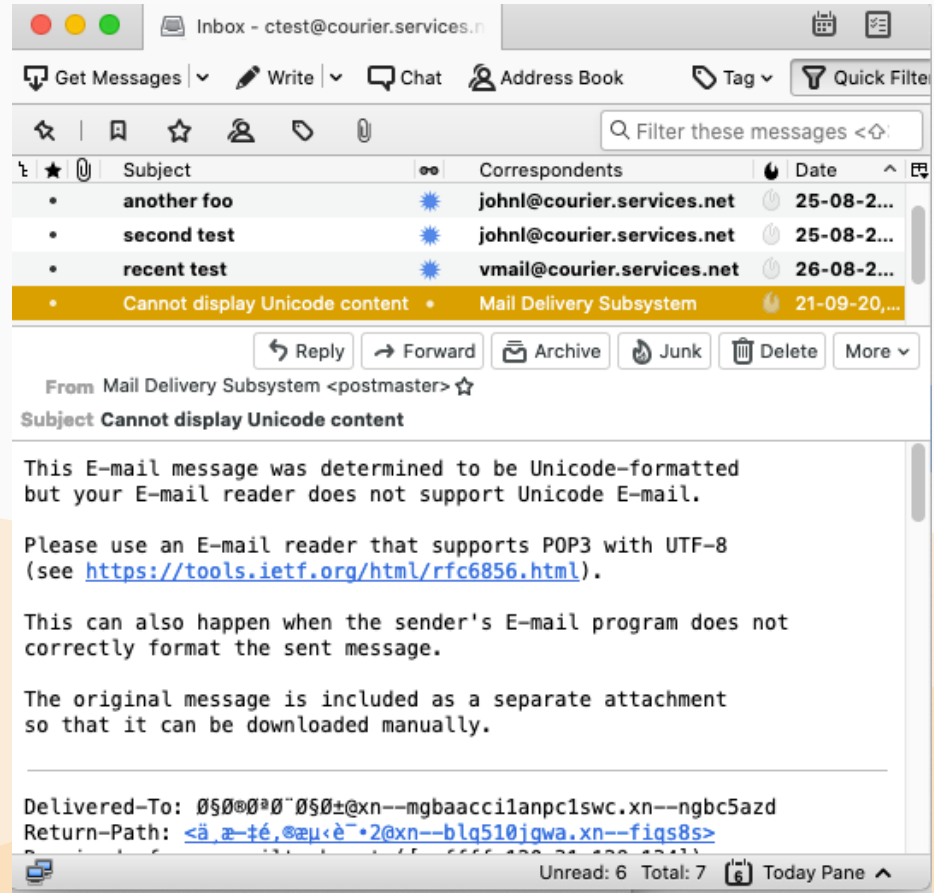
Apple Mail

- Tested iOS app and MacOS desktop mail
- No EAI support in MacOS and iOS 13
 - Good EAI support added on iOS 14
- Some support for Unicode folders



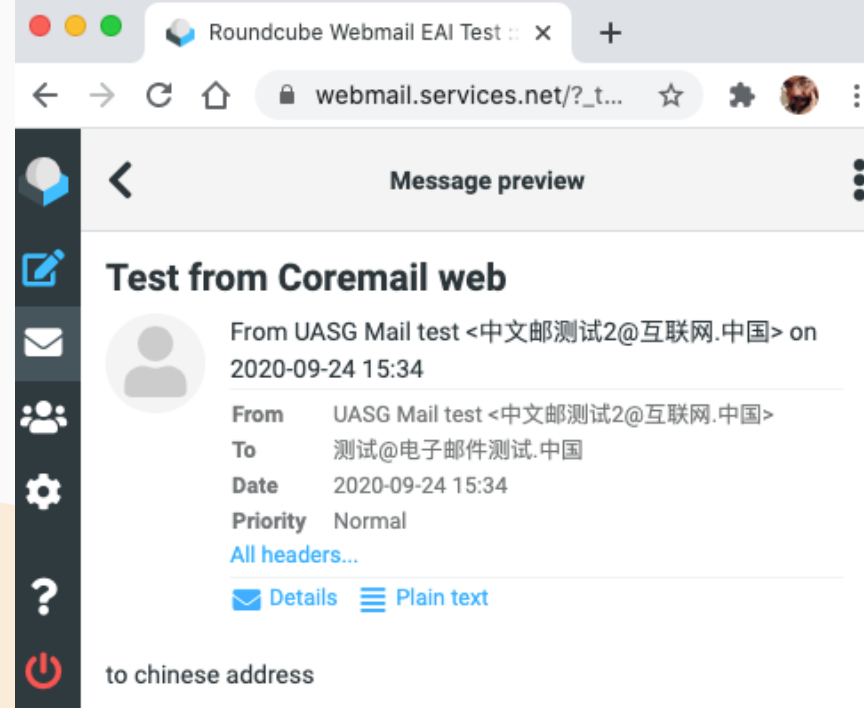
Thunderbird

- Open-source desktop mail
- No EAI support
- Some support for Unicode folders



Roundcube web mail client

- Mostly L2 ready
 - if used with L2 MDA and MSA
- Some cosmetic display problems



MS Exchange Server (hosted)

- L1 ready MSA and MTA
- MDA not EAI ready
- Minor bugs in Received headers
- Webmail not tested, similar to Outlook.com

Exim and Postfix

- Popular open-source Linux/BSD mail
- Both EAI L2 ready MSA and MTA
- Separate MDA needed for a full mail system

Prior tests by Catalyst: webmail

- Gmail
 - L1 ready webmail
 - Our test: MTA/MSA L1 ready, MDA not ready
- Xgenplus
 - L2 ready webmail

Prior tests by Catalyst: MSA/MTA/MDA

- Courier
 - Open source Linux/BSD mail package
 - L2 ready MTA, MSA, MDA
 - The **only** EAI ready MDA we know

Not tested

- Sendmail
 - Open-source MSA/MTA
 - No EAI support in released versions
 - Recent beta test of future EAI patches
- Fetchmail
 - No EAI support, no apparent plans for it

Final thoughts



Software tools

- Web application written in python3
- Test scripts written in python3
- Released on github with BSD license

<https://github.com/jrlevine/eaitesttools>

Summary

- Several L1 ready MUA and webmail
- Some L2 ready MSP with MUA
- Several L1 ready MSA, MTA
- Only one L1/L2 ready MDA

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