



Quick Guide to Email Address Internationalization (EAI)

Background

Universal Acceptance (UA) is the state where all domain names and email addresses are accepted, validated, stored, processed and displayed correctly and consistently by all applications, devices and systems.

Due to the rapidly changing domain name landscape, many systems do not recognize or appropriately process new domain names, primarily because the top-level domain may be more than three characters in length or in a non-ASCII format (Internationalized Domain Names, or IDNs). The same is true for email addresses that incorporate these new domain names or use Unicode in the Mailbox names.

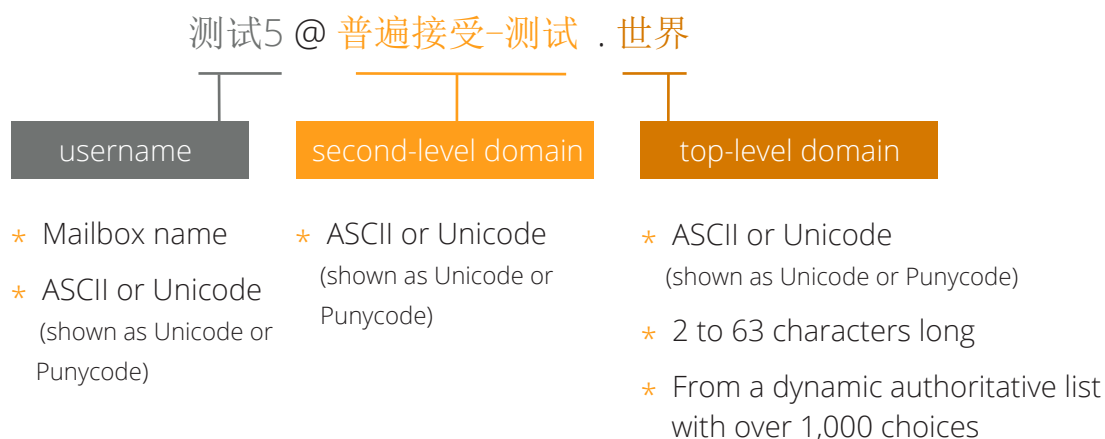
The Universal Acceptance Steering Group (UASG), supported by Internet Corporation for Assigned Names and Numbers (ICANN), is a community-led initiative working on creating awareness and identifying and resolving problems associated with Universal Acceptance. The purpose of these efforts is to help ensure a consistent and positive experience for Internet users globally.

For more information on the UASG and recent developments, visit www.uasg.tech.

Email Address Internationalization

EAI (Email Address Internationalization) is the protocol that allows email addresses with IDNs in the domain part and/or Unicode (non-ASCII) characters in the Mailbox name to function within the traditional email environment. Email programs need to make specific changes to support EAI.

Example of Internationalized Email Address:





Items for Email Software Developers to Consider

Email software developers need to take the following items into consideration as they make their products EAI-ready:

Client Software (MUA – Mail User Agent)

- * Should display the domain name in Unicode.
- * Should pass the domain name to the MTA (Mail Transport Agent) in A-Label format (RFC 5890).
- * Should store and display the Mailbox name in Unicode.
- * Should follow good practice guides for Linkification within the body of the email.
- * Should follow good practice guides for validation of domain name.

Server Software (MTA – Mail Transport Agent)

- * Should confirm EAI-readiness (e.g. advertise SMTPUTF8 support) when making connection to another MTA.

Challenges During Transition

Until all the email software deployed is EAI-ready, there will be some challenging situations that arise in the sending and receiving of emails.

- * IDNs may display in their Punycode¹ (A-Label) form. While undesirable, this should not stop messages from being delivered.
- * Unicode in the Mailbox name of an email address may cause unexpected and undesirable results, including:
 - Non-delivery of messages.
 - Messages received by some recipients in a multi-recipient message but not received by others.
 - Inconsistency between sending messages to multiple recipients and Reply-All to those same recipients.
 - Inconsistency or failure in error message creation and delivery.
- * How to ensure delivery to non-EAI-ready mail systems:
 - Creating aliases by applying Punycode to the Mailbox name.
 - Normalizing mailbox names in non-ASCII scripts.

¹ Punycode is an algorithm that converts an IDN into an ASCII string that starts with xn--. The Punycode algorithm is bi-directional.

Relevant RFCs

EAI developments should conform to the relevant RFCs:

Internationalized Domain Names for Applications (IDNA): Definitions and Document Framework	https://tools.ietf.org/html/rfc5890
Overview and Framework for Internationalized Email	https://tools.ietf.org/html/rfc6530
SMTP Extension for Internationalized Email	https://tools.ietf.org/html/rfc6531
Internationalized Email Headers	https://tools.ietf.org/html/rfc6532
Internationalized Delivery Status and Disposition Notifications	https://tools.ietf.org/html/rfc6533
IMAP Support for UTF-8	https://tools.ietf.org/html/rfc6855
Post Office Protocol Version 3 (POP3) Support for UTF-8	https://tools.ietf.org/html/rfc6856
Post-Delivery Message Downgrading for Internationalized Email Messages	https://tools.ietf.org/html/rfc6857
Simplified POP and IMAP Downgrading for Internationalized Email	https://tools.ietf.org/html/rfc6858