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Internationalized eMail Address (IMA)  
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Abstract

solution to  
preliminary  
support  
breaking any

An email address has two parts - local part and domain part - separated by "@" sign. This document describes a basic internationalized email address (IMA) and includes some survey results. The proposed solution enables SMTP servers to IMA. The solution discussed in this document is immediately deployable by interested parties without affecting or other existing systems.

Document Conventions

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The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC 2119](#) [[RFC2119](#)].

## **1. Introduction to IMA**

In order to use internationalized email addresses, we need to internationalize both domain part and local part of email address.

Domain part of email addresses had been internationalized through IDNA [[RFC3490](#)]. But the local part of email address still remains as non internationalized.

At present, the use of Internet email address is restricted to a subset of 7-bit ASCII [[RFC2821](#)][[RFC2822](#)]. The MIME extensions provides a mechanism for the transmission of non-ASCII data

that were previously unsupported in Internet mail. But it does not provide the mechanism for internationalized email address. [[RFC2047](#)] defines the message header extension for non ASCII 8-bit MIME messages.

However, it does not address the issue if email addresses include non-ASCII

internationalized email characters. Anticipating the need to use the address, the SMTP protocol should be extended to provide the transport mechanism for the internationalized email address.

The length restrict to the local part in the section of [RFC 2822](#) may need to be updated.

## **2. Problem statement**

Internationalized Domain Name (IDN) was standardized 2 years ago (2003) and several registries started to accept IDN registrations and

is a the name resolutions. While the take-up of IDN varies, there  
their strong demand for IDN in the regions where English is not  
native language.

registrants of IDN Particularly in the CJK community, we noticed that  
eMail often enquired about if they could use Internationalized  
Address (IMA) too. Unfortunately, while the domain name  
portion of the Email address could use IDN standards, there are no  
standards to internationalize the local-part (left hand side of the "@"  
mark).

IDN On the other hand, we envisage strong demands for IMA when  
becomes popular. IMA will also promote the deployment of IDN.  
(35.com, Several solutions for IMA have been deployed, e.g., in China  
zzy.cn, bizcn.com, ce.net.cn, dns.com.cn and topbiz.cn), but  
the lack of open and interoperable standards means that users of one  
system could not (reliably) communicate with users of another  
system.  
development Therefore, the Internet community would benefit from the  
of an open and interoperable IETF IMA standard.

### **3. Requirements**

Any IMA solution should qualify the following requirements:

#### **3.1 Short term (2-5 years) solution**

The solution should not extend too long, so that IMA can be adopted as soon as possible by interested companies. The solution also should be easily deployable, so that IMA can be easily deployed by most interested organizations during 2-5 years if they wish to.

#### **3.2 Backward compatible with the existing standards**

The email service is one of the most important Internet services. Any updating to Internet protocols should not interfere with the operation of the Internet. The IMA solution should not break the base of the email service and be backward with the existing email standards.

#### **3.3 Internationalized solution (over localized solution)**

The solution should be an internationalized one rather than localized one.

### **4. Architecture**

Solving the problem of IMA is not easy. We should divide it into two phases. In the first phase, we consider the ACE@ACE solution, which is easy to implement, backward compatible, short-term and internationalized solution. In the next phase, we may consider other mechanisms such as UTF-8@ACE. In the ACE@ACE solution, the local part of the IMA will be converted to ASCII Compatible Encoding; IDNA ([RFC3490](#)) will be applied to the domain part of the IMA. In this draft, we mainly focus on the ACE@ACE solution.

#### 4.1 Encoding

A good ACE converting algorithm should be considered according to the

following criteria:

- Popularity
- Length of the encoded name
- Implementation easiness
- Produce valid email address
- Case sensitivity
- Impact on existing protocol

#### 4.2 Normalization (IMAprep)

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dealing  
internationalized  
part of  
[Appendix  
whole email  
needed.  
details

There are profiles for Stringprep such as Nameprep[RFC3491] with the IDN preparation and Nodeprep[RFC3920] for node identifiers. IMAprep is introduced to prepare the local IMA. IMAprep is a profile of Stringprep [[RFC3454](#)]. IMAprep [Appendix A] is used to process only the local part of IMA, not the address. In IMAprep, no normalization and no case folding are needed. And there must be a prohibited list, but we will not discuss of IMAprep in this draft.

#### 4.3 Mail Delivery Agent (MDA)

delivery of  
server.  
while it  
over the  
local  
user, etc.  
format, it  
convert  
encoding) for

MDA is a part of mail servers, which are responsible for mails to local mail spool or sending out to another mail server. Usually, IMA is represented in the format of UTF-8 in a host should be converted into ACE format while being transported wire. There are various unofficial conventions for structured parts, like owner-listname, user+tag, sublocal.local, path! When internationalized local part being converted into ACE actually causes some problems. Therefore, MDA may need to internationalized local part back to UTF8 (or original further mailing processing.

#### 4.4 Prefix

that  
to

Since the prefix "xn--" had been used for IDNA, it is better other prefix such as "bq--" is used for the local part of IMA avoid of potential confusion.

### [5. Deployment](#)

disturb the  
around  
would be

Email is an important and popular internet service. Any new deployments of SMTP servers which support IMA should not running of current email system. Since all the SMTP servers the world can not support IMA immediately, ACE@ACE solution the most harmless solution to implement and deploy.

## **6. Potential problems**

when IMA

6.1 Impact to IRI  
The mailto: schema in IRI [[RFC3987](#)] may need to be modified is standardlized.

the  
clients,  
the server  
based on  
the POP

6.2 POP and IMAP  
While SMTP takes care of the transportation of messages and header fields correspond to the display management by the POP essentially handles the retrieval of mail objects from by a client. In order to use internationalized user names IMA for the retrieval of messages from a mail server using

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POP3 protocol, a new capability should be introduced following the extension mechanism [[RFC 2449](#)].

IMAP uses the traditional user name which is based on ASCII.

based should be updated to support the internationalized user names on IMA for the retrieval of messages from a mail server

## **7. Security Considerations**

domain/URLs There have been discussions on so called "IDN-spoofing". IDN homograph attacks allow an attacker/phisher to spoof the of businesses. The same kind of attack is also possible on the local part of internationalized email addresses.

of IMA IMA can also introduce new email spamming. Many local parts will be the names of the person or company, which could easily be used by email spammer to guess the email address to produce the rubbish emails.

attacks, Email spamming may combine with email spoofing and homograph making it more difficult to determine who actually sent the email.

must not be Any solution that meets the requirements in this document requirements less secure than the current Email Service. Specifying any new for internationalized email addresses does not itself raise affect security issues. However, any change to the email service may thorough the security of any protocol that uses the email address. A needed evaluation of those protocols for security concerns will be when they are developed.

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about

IMA

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[Appendix A](#): IMAPrep

define our  
Conclusion: no normalization, but there still prep needed,  
own prep for the email local part  
our own prep:  
    no normalization  
    no case folding  
    prohibited list - ..... (discussed later after  
meeting )  
local part ??problem:  
    No RFC standards define this part  
    The MDA must support internationalized local part,  
anyway  
No use of ACE deals the mail processing, so it should  
be  
converted back to UTF8, then be dealt with the mail  
processing



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