Network Working Group
INTERNET-DRAFT

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# Use of the Directory to support routing for RFC 822 and related protocols

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## Abstract

This document defines a mechanism to route RFC 822 using the OSI Directory. The basic mechanisms are being developed for routing X.400 [HK92]. These offer a number of benefits relative to the current mechanisms available for RFC 822 routing. The prime goal of this specification is to provide integrated routing management for sites using both RFC 822 and X.400 [Cro82, MHS88].

This draft document will be submitted to the RFC editor as a protocol standard. Distribution of this memo is unlimited. Please send comments to the author or to the discussion group `<mhs-ds@mercury.udev.cdc.com>`.

The domain hierarchy of an RFC 822 mailbox information are represented in the directory according to RFC 1279 [HK91]. This will allow domains and mailboxes to be verified. This information is used primarily for address checking and for mapping onto specific RFC 822 protocols. Protocol modules should utilise native RFC 822 directory and routing services (e.g., SMTP should use DNS) [Pos82, Moc87a, Moc87b].

The structure of the MHS Use of Directory to Support Routing [HK92] is designed so that RFF 822 mailboxes and X.400 mailboxes can be the same entries with the same relative distinguished names. This will enable the level above the mailboxes to be linked with an alias. This will significantly reduce the complexity for a dual X.400/RFC 822 site.

Authoritative answers can be given for parts of the DNS tree where registration is complete (i.e., all of the children are present, and so any other purported child will be illegal). This is achieved by the `subtreeInformation` attribute as defined in [HK92] and referenced in Figure 1.

Once validity of a domain is determined, routing must be done. This information is not relevant to a site without RFC 822 support, as it will not be doing domain based routing. The basic node contains information specific for SMTP based routing is given in RFC 1279 (MX and A record information).

The attribute x400Domain indicates that some or all of the subtree under the domain specified uses X.400. If the value is “x400-only”, the domain exists purely to represent X.400 addresses in the RFC 822 world, and X.400 routing should be used if possible. If the value is “x400-and-822”, then protocol choice should reflect local policy (e.g., to prefer X.400 or to avoid protocol conversion). Protocol conversion should be avoided.

For sites with SMTP on the Internet, any valid domain may be routed through SMTP. DNS Information is also available in the tree, to facilitate route calculation (RFC 1279 and RFC 974 [Par86]).

For sites with JNT Mail support, the jNTMailSupport attribute indicates that the domain supports JNT Mail, and gives sufficient information to make a routing decision. This mechanism is included to show how the directory can handle RFC 822 mail routing beyond SMTP.

Local addresses are handled in the same way as for X.400, as described in [HK92]. The approach is designed to be convenient for either environment. Where a site supports both, the appropriate parts of the O/R Address and Domain namespaces should be linked by aliases. The object pointed to should be of object class domain-component *and* or-address component.

An MTA identifies a local address by finding its own name (Application Process) as one of the MTAs that supports the UA in question. This is the same as for O/R Address checking.

One problem with bootstrapping this approach is that there is a need to load the DNS namespace information into the DIT. This can only be done

```
822Node OBJECT−CLASS
   SUBCLASS OF domain
   MAY CONTAIN {
         authoritativeAddress,
         x400Domain,
         badAddressSearchPoint,
         badAddressSearchAttributes}
  ::= oc−822−node

x400Domain ATTRIBUTE
   WITH ATTRIBUTE−SYNTAX X400DomainType
   ::= at−x400−domain

X400DomainType ::= ENUMERATED {
         x400−only(1),
         x400−and−822(2) }


jNTMailNode OBJECT−CLASS
   SUBCLASS OF 822Node
   MAY CONTAIN {
      jntMailSupport }
   ::= oc−jnt−mail−node

jNTMailSupport ATTRIBUTE
   WITH ATTRIBUTE−SYNTAX JNTMailSupport
   ::= at−jnt−mail−support

JNTMailSupport ::= SEQUENCE {
         supported−nets BITSTRING {
            janet(1),
            pss(2),
            ipss(3),
            ixi(4) }
         application−relay DistinguishedName }
```

Figure 1: RFC 822 Node Information

gradually. Fortunately, there is no requirement for all of the domain name information to be in the DIT. The minimum needed is:

- Users local to the MTA, and the tree leading down to that
- All of the top level domains
- Information needed to verify or deny partially qualified domains.

The DNS could be used as an alternative checking mechanism at this point. The disadvantages of doing this are:

- No mailbox (UA) checking
- No support for multiple RFC 822 protocols

Multiple Domain Routing Trees can be established analogously to O/R Address routing trees. This is important for:

- Sites with RFC 822 support, but not JNT Mail or SMTP.
- Sites which gateway RFC 822 to other protocols (e.g., UUCP).

# 1 Example

*** tbs

# References

[Cro82] D.H. Crocker. Standard of the format of ARPA internet text messages. Request for Comments 822, University of Delaware, August 1982.

[HK91] S.E. Hardcastle-Kille. X.500 and domains. Request for Comments RFC 1279, Department of Computer Science, University College London, November 1991.

[HK92] S.E. Hardcastle-Kille. MHS use of the directory to support MHS routing, April 1992. Internet Draft.

[MHS88] CCITT recommendations X.400 / ISO 10021, April 1988. CCITT SG 5/VII / ISO/IEC JTC1, Message Handling: System and Service Overview.

[Moc87a] P. Mockapetris. Domain names - concepts and facilities. Request for Comments RFC 1034, USC/Information Sciences Institute, November 1987.

[Moc87b] P. Mockapetris. Domain names - implementation and specification. Request for Comments RFC 1035, USC/Information Sciences Institute, November 1987.

[Par86] C. Partridge. Mail routing and the domain system. Request for Comments 974, DDN Network Information Center, SRI International, February 1986.

[Pos82] J.B. Postel. Simple Mail Transfer Protocol. Request for Comments 821, DDN Network Information Center, SRI International, August 1982.

## 2 Security Considerations

Security considerations are not discussed in this INTERNET–DRAFT .

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# A Object Identifier Assignment

```
rfc-822 OBJECT IDENTIFIER ::= {mhs-ds 6}

oc OBJECT IDENTIFIER ::= {rfc-822 1}
at OBJECT IDENTIFIER ::= {rfc-822 2}



oc-822-node OBJECT IDENTIFIER ::= {oc 1}
oc-jnt-mail-node OBJECT IDENTIFIER ::= {oc 2}

at-x400-domain OBJECT IDENTIFIER ::= {at 1}
at-jnt-mail-support OBJECT IDENTIFIER ::= {at 2}
```

Figure 2: Object Identifier Assignment