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# DK Naming and Routing Part 1: General Rules

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## 1. Introduction

This document describes naming and routing in the research and higher education domain in Denmark. It consists of two parts: the present part 1 containing the general rules, and a second part containing classifications of various domains. As the first part is general in nature, it is not expected to change within the project period; the second part will however change frequently as the domains change status, new domains are introduced or disappears. It will be updated as needed.

Whenever the text in part one contains a reference to a table without further qualifaction, this is found in part two.

## 2. Domain trees and subdomain trees relative to DK

The RFC 822 namespace and the X.400 namespace are both hierarchical, i.e. may be pictured as tree structures. A tree with root e.g. ".dk" has as next level all branches with the names "x.dk", where "x" is registered second-level name, and "." indicates that "x" is one level down. The hierarchical ordering of the X.400 namespace follows the hierarchy, where the first level under the root has names corresponding to countries (abbreviated C), the names coming from the two letter codes found in ISO 3166. The next levels are ADMD (A), PRMD (or P), ORG (or O), OU. Below this hierarchy is shown using a non-standard notation, where "a/b/c/d" stands for C=a;ADMD=b;PRMD=c;ORG=d.

The RFC 822 namespace under the branch ".dk" was organized by an agreement between DKNET, EARN-DK, R&D Decnet-DK, and DUNET. In section 4 below these addresses are classified. The map described in the following is based on this agreement.

The following sub-trees are used in the description of the mapping:

| Abbrev. | Root | Comment |
|---|---|---|
| A: | .org.dk | where org is an RFC 822 native name |
| B: | .org.dk | where org is a mapped X.400 native name (see table 1) |
| C: | .y-net.dk | mapped X.400 addresses belonging to Y-NET in DK |
| D: | .teldk.dk | mapped X.400 addresses belonging to A=TELDK |
| E: | .dk400.dk | mapped X.400 addresses belonging to A=dk400 |
| F: | .cc | where cc is an ISO 3166 country with a defined COSINE map (see table 6 and 7) |
| G: | .dom | where dom is either an ISO 3166 country without a defined map (see table 8), or a pseudodomain (see table 9) |
| a: | dk/dk400/minerva/org | where org is an 822 mapped name |
| b: | dk/dk400/minerva/org | where org is an X.400 native organization |
| c: | dk/dk400/y-net | |
| d: | dk/dk400/inet | |
| e: | dk/dk400/pp | pp is a recognized PRMD under dk400 (not minerva, y-net or inet) |
| f: | dk/teldk | |
| g: | dk/ | other ADMD (see table 4) |
| h: | cc/aa/pp | COSINE PRMD/ADMD in country cc (see table 5) |
| i: | cc | non COSINE domain in country cc |

## 3. Mapping rules

### 3.1. RFC 822 topdomain ".dk" (A and B)

Equivalence of A and a (table 3), and B and b (table 1):

u@s.t.v.dk <--> C=dk;A=dk400;P=minerva;ORG=v;OU=t;OU=s;S=u

This is the standard case, where subdomains map to ORG. For exceptions, see rules for C, D and E below.

### 3.2. RFC 822 topdomains after ISO 3166, with defined COSINE mapping (F)

Equivalence between F and h, after the COSINE definition (see table 5).

### 3.3. RFC 822 topdomains (no COSINE map or not ISO 3166) (G)

Equivalence between G and d:

u@v.dom <---> C=dk;A=dk400;P=inet;ORG=dom;OU=v;S=u

Permitted "dom" are found in table 8, 9 or 10. Note that even if this map exists, it does not guarantee that mail can be routed to that domain (e.g. the domains in table 10).

### 3.4. RFC 822 special cases (C, D, E)

Equivalence between E and e:

u@s.t.dk400.dk <---> C=dk;A=dk400;P=t;ORG=s;S=u

Equivalence between D and f:

u@s.t.teldk.dk <---> C=dk;A=teldk;P=t;ORG=s;S=u

Equivalence between C and c:

u@s.y-net.dk <---> C=dk;A=dk400;P=y-net;ORG=s;S=u

RFC 822 addresses not found above may in some UA's be specified as

C=dk;A=dk400;P=minerva;ORG=<somegateway>;DD.rfc-822="822address"

822address being the RFC 822 address rewritten after the rules in RFC 1327.

Note that it is recommended NOT to use this form for addresses, which are actually just the mapping of a real X.400 address. The address form is purely intended for specifying RFC 822 addresses with no direct X.400 equivalent.

### 3.5. X.400, C=dk (g,h,j)

g and i are not mappable.

However, such addresses may be specified as

"ORname"@<somegateway>

Where <somegateway> is some RFC 1327 gateway, and ORname is represented using the rules in RFC 1327.

## 4. DK X.400 routing, from different viewpoints

Main MTA's:

| | | |
|---|---|---|
| | WEP | COSINE WEP |
| | SA GW | 987/1327 gateway |
| | DDA GW | gateway between SA and DDA |
| | EAN GW | old EAN-sendmail gateway |
| | PubMTA | MTA entry to public ADMD |
| | Y-NET | Y-NET service point in DK |
| Other MTA's: | | |
| | small | DK MTA with minimal routing |
| | large | DK MTA with full (or nearly full) routing |

An MTA in domain "minerva" must as a rule have a direct connection at least to the WEP MTA.

### 4.1. Simplest routing (new single MTA)

Rule 1: recognize own domain and deliver to mailbox

Rule 2: all other destinations routed to more capable MTA, which routes according to 4.2, 4.3 or 4.4 (WEP)

### 4.2. Well-connected MTA

serving own domain, and as fully connected as the subnetworks allow.

Rule 1: recognize own MTA destination and deliver to mailbox

Rule 2: own domain - route directly to relevant MTA

Rule 3: C=dk, domain "minerva" - route directly to MTA serving ORG (if possible), or a relaying MTA (e.g. WEP).

Rule 4: C=dk, 822 domain (PRMD inet) - route directly to SA GW MTA, or to a relaying MTA (e.g. WEP)

Rule 5: C=dk, other domain - route to WEP

Rule 6: C<>dk, with X.400 MHS (table 6, 7) - route to WEP
Rule 6a: if PRMD y-net - route directly to Y-NET MTA, if allowed
Rule 6b: if bilateral agreement with other MTA in C, route directly to that MTA

Rule 7: C<>dk, with 822 net (table 7, 8) - route to WEP or directly to SA GW MTA.

Rule 8: C<>dk, not in own tables - route to WEP

### 4.3. SA GW MTA serving DK

Rules 1,2,3: as 4.2, rules 1,2,3
Rule 1a: if address is encoded in DD.rfc-822, route through gateway.
Rule 3a: if address is mapped 822 address, route through gateway to 822 side

Rule 4: C=dk, 822 domain - route through gateway to 822 side

Rules 5,6,6a,6b: as 4.2, rules 5,6,6a,6b

Rule 7: C<>dk with 822 net, local gatewaying preferred - route through gateway to 822 side
Rule 7a: if remote gatewaying preferred - use rule 6

Rule 8: as 4.2, rule 8

### 4.4. WEP serving DK

Rule 1,2,3: as 4.2, rules 1,2,3

Rule 4: C=dk, 822 domain (table 2, 3) - route directly to SA GW MTA, or use alternative local gateway

Rule 5: C=dk, other domain - route to MTA serving domain

Rule 6: C<>dk, with X.400 MHS (table 6, 7) - route to international WEP serving C
Rule 6a: if PRMD y-net - route directly to DK Y-NET MTA
Rule 6b: by bilateral agreement - route directly to MTA in C

Rule 7: C<>dk, with 822 net (table 7, 8, 9) - route directly to SA GW MTA, or use alternative local gateway
Rule 7a: if remote gatewaying preferred (table 7, 8) - use rule 6

Rule 8: C<>dk, no e-mail (table 10) - return mail as destination is unreachable

### 4.5. MTA outside "minerva"

assumed to be either Y-NET MTA or a public MTA

Rule 1,2: as 4.2, rules 1,2

Rule 3: C=dk, domain "minerva" - route to WEP

Rule 4: C=dk, 822 domain (PRMD inet) - route to WEP

Rule 5: C=dk, other domain - do whatever, but don’t route to WEP

Rule 6: C<>dk, R&D domain (whether 822 or not) - route to WEP (see table 5)
Rule 7: C<>dk, not R&D domain - do whatever, but don’t route to WEP

### 4.6. Special rules covering DDA addressing

A DDA MTA (i.e. old EAN) is only connected to MTA's capable of doing something sensible, i.e. other DDA MTA's or the WEP.

The WEP has the following additional rules for DDA addresses:

Rule 3a: DDA domain under .dk (table 1) - route directly to MTA serving that domain

Rule 3b: other .dk domain - route to DDA GW MTA [DD side]

Rule 4a: 822 .dk domain - either as rule 3b, or use old EAN GW

Rule 6c: not .dk - route to DDA GW MTA [DD side]

Rule 7b: not .dk - either as 6b, or use old EAN GW

The WEP has the following additional rule for SA addresses:

Rule 3c: DDA domain in domain "minerva" - route to DDA GW MTA [SA side]

Other MTA's may implement similar rules, if capable. The gatewaying may be accomplished simply by using EAN MTA connect information specifying that the other MTA is DDA. This makes the above extra rules implicit.