

# **Compendium 9 extra: Not allowed during the exam**

**Last revision: 3 Feb 2001**

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# Font Size Comparisons as shown on Screen

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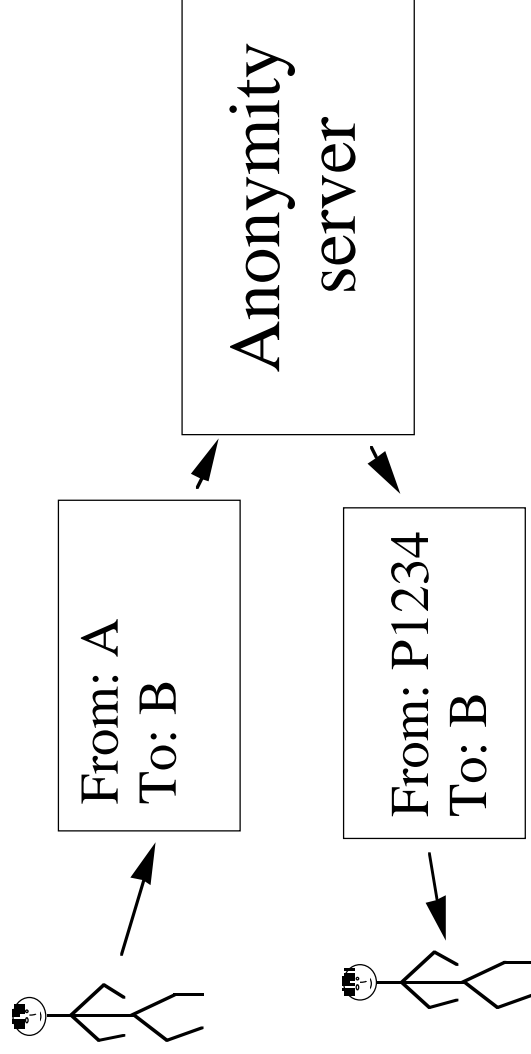
Last change: 2001-02-01

Fonts marked with an asterisk in the table below are unreadable with some web browsers on some platforms.

With Explorer 5.0,  
10 pt corresponds to 12 px and  
12 pt corresponds to 16 px.

|                |                |                       |                       |
|----------------|----------------|-----------------------|-----------------------|
| Times 7 pt *   | Times 7 px *   | Times xx-small *      | Times size=1 *        |
| Times 8 pt *   | Times 8 px *   | Times x-small *       | Times size=2 *        |
| Times 9 pt *   | Times 9 px *   | Times small *1        | Times size=3          |
| Times 10 pt    | Times10px      | <b>Times medium</b>   | <b>Times size=4</b>   |
| Times 12 pt    | Times 14px     | <b>Times large</b>    | Verdana size=1        |
|                | Times 16px     | Times smaller         | Verdana size=2        |
|                |                | <b>Times larger</b>   | Verdana size=3        |
|                |                |                       | <b>Verdana size=4</b> |
| Verdana 7 pt * | Verdana 7 px * | Verdana xx-small *    |                       |
| Verdana 8 pt * | Verdana 8 px * | Verdana x-small *     |                       |
| Verdana 9 pt   | Verdana 9px    | Verdana small         |                       |
| Verdana 10 pt  | Verdana10px    | <b>Verdana medium</b> |                       |
| Verdana 12 pt  | Verdana12px    |                       |                       |
|                | Verdana 14px   |                       |                       |
|                | Verdana 16px   |                       |                       |

## Anonymity server



## Some Listserv commands

|                    |  |
|--------------------|--|
| <b>subscribe</b>   | Join a distribution list   |
| <b>unsubscribe</b> | Leave a distribution list  |
| <b>list</b>        | Get a list of distribution lists available from this list server |
| <b>list global</b> | Get a list of distribution lists available everywhere            |
| <b>review</b>      | Get more information about one particular list                   |
| <b>query</b>       | Find out your own subscription settings to a list                |

## More Listserv commands

|                 |  |
|-----------------|--|
| <b>set</b>      | Change your subscriptions settings to a list             |
| <b>confirm</b>  | Confirm that you want to stay on a list                  |
| <b>stats</b>    | Get statistics on a list                                 |
| <b>register</b> | Register your name and e-mail address with a list server |

## Listserv retrieval commands

|                   |   |
|-------------------|---|
| <b>index</b>      | Get a list of available documents                           |
| <b>get</b>        | Get a document  |
| <b>afd</b>        | Subscribe to a copy of a document, every time it is changed |
| <b>query file</b> | Get more information about a particular document            |
| <b>give</b>       | Send a document to someone else than yourself               |
| <b>pw</b>         | Change your password  |

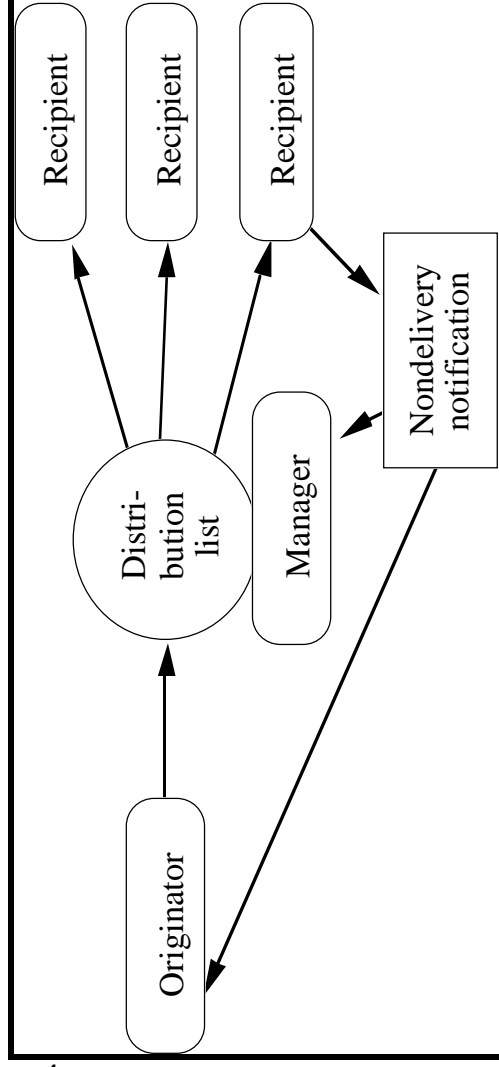
## Risks

- Denial of service
- Masquerade
- Nonauthorized access
- Data modification or destruction
- Traffic analysis
- Deduction of information
- Illegal activities

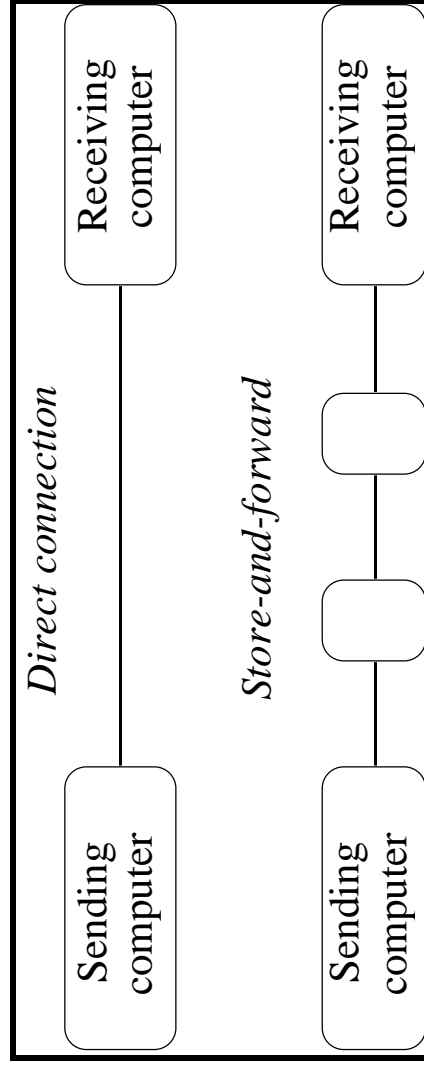
## Cryptographic Security Services

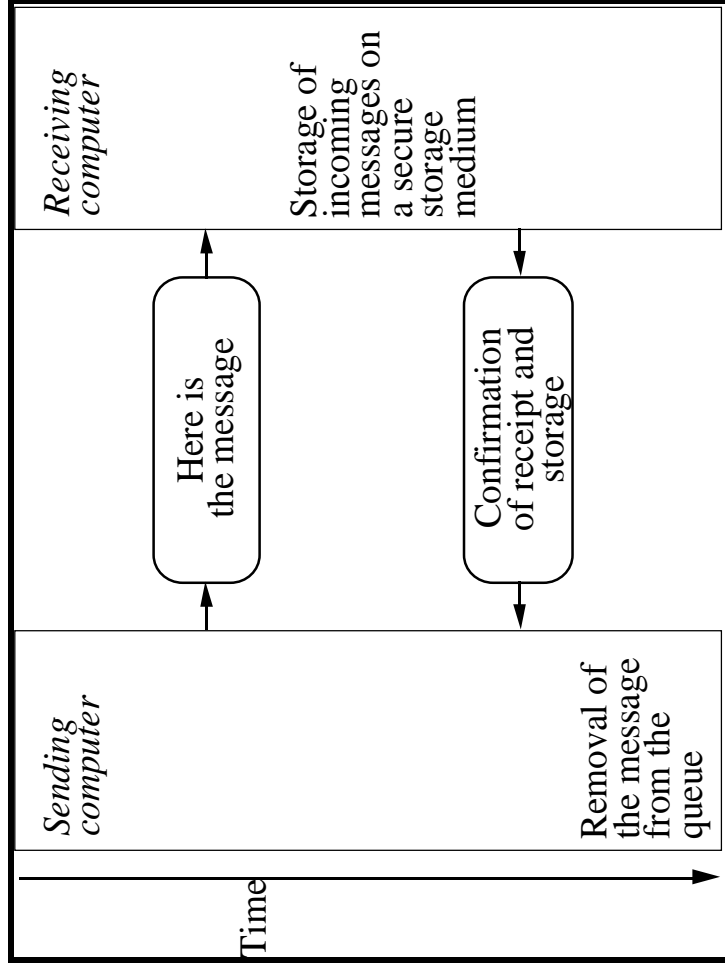
- Encrypted transmission of data
- Digital signatures
- Digital seals
- Digital authentication
- Digital authorization

## Explanation of undesirable non-delivery notification

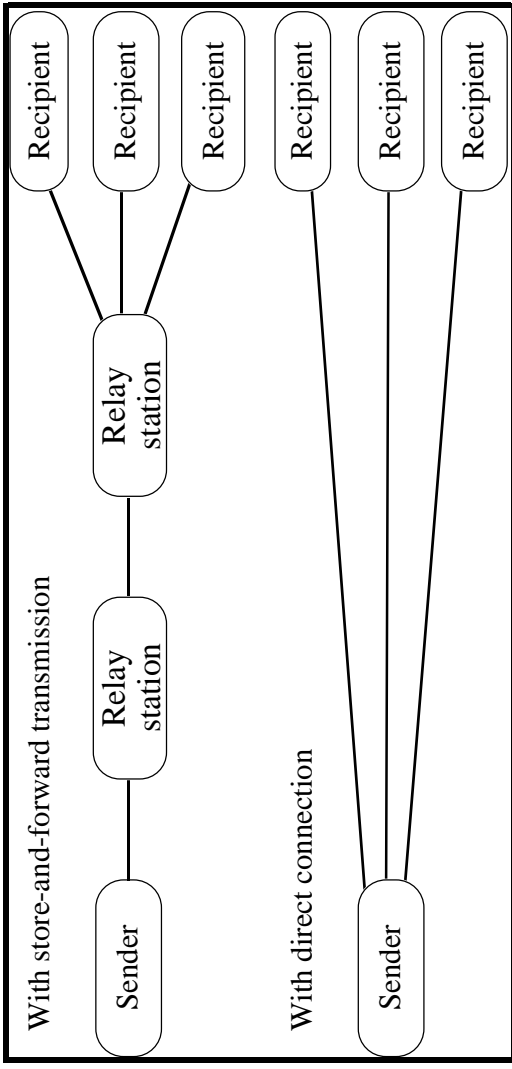


## Direct connection and store-and-forward

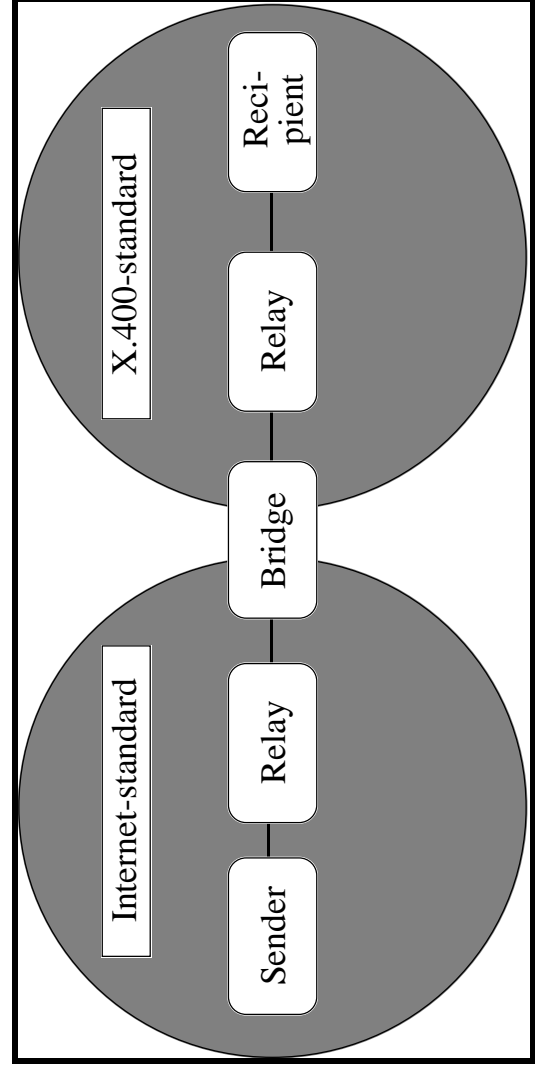




## Many distant recipients



## Gateways' use of store-and-forward



## Store-and-forward pros and cons

- + Distribution of tasks between specialized servers. But direct transmission can employ special routing information servers.
  - + Reduced cost for message to many distant recipients.
  - + Gateways usually store-and-forward-based.
  - Reliability
  - Can be more expensive because relayers must be paid.
- Spooling - a limited kind of store-and-forward**
- No direct and immediate confirmation that the message has been delivered.
  - + The sender need not wait during the transmission.
  - + Temporary connection problems hidden from the user.

## Absolute and relative addresses

An *absolute address* is the same address for a certain recipient, irrespective of where the message is sent from. A *relative address* indicates one or more relay stations on the route to the recipients.

Per\_Persson%FK.ABC.SE%MCVAX@WUI

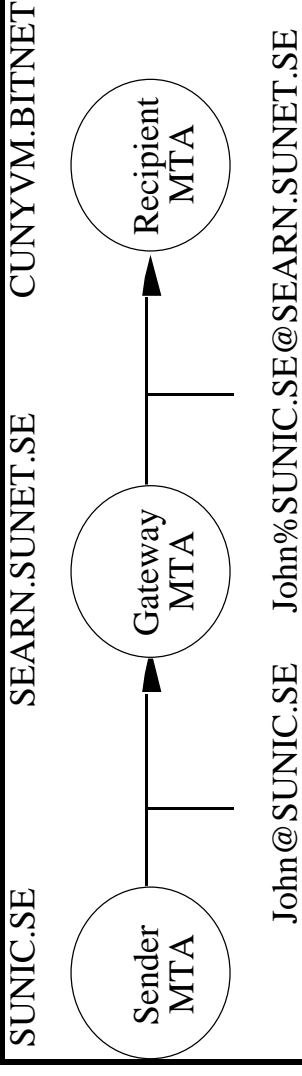
Grey book mail format

@WUI,@MCVAX:Per\_Persson@FK.ABC.SE

RFC 822 format

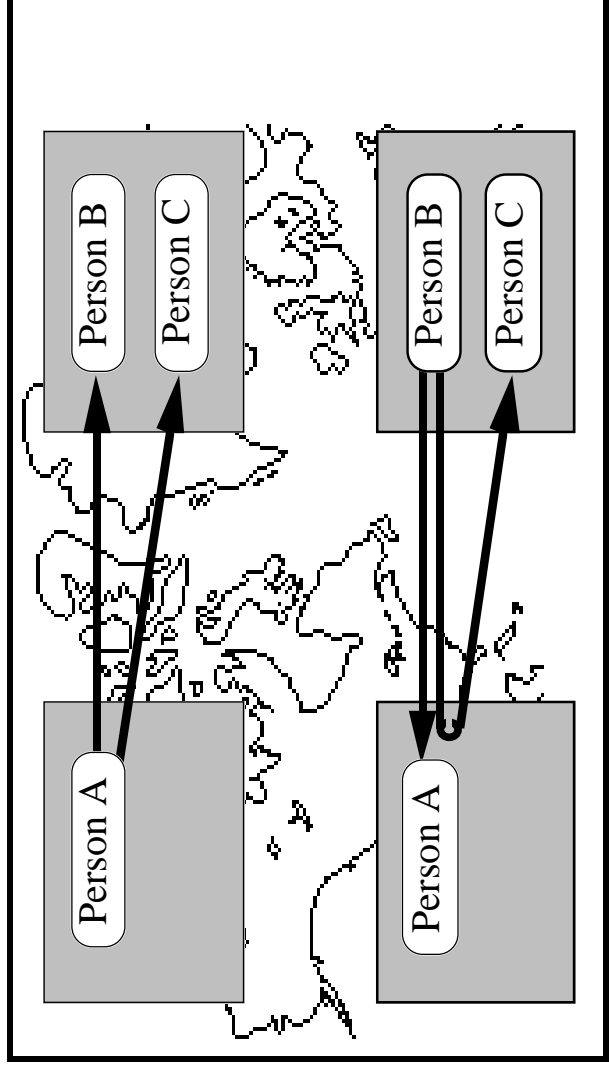
WUI!MCVAX!FK.ABC.SE!Per\_Persson

UUCP format

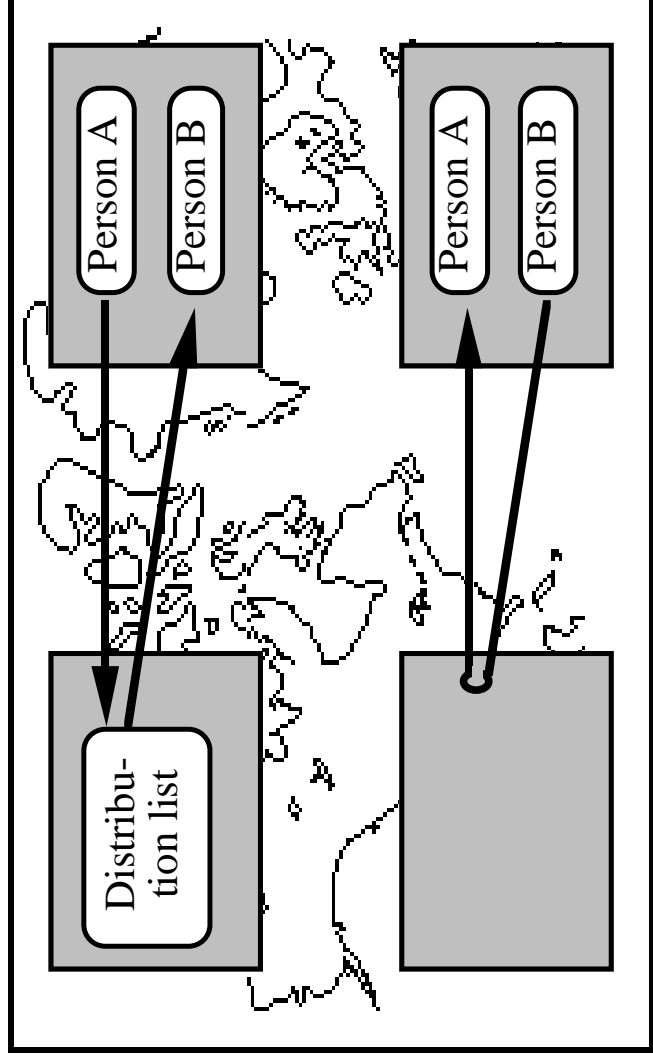


## Why gateways produce relative addresses

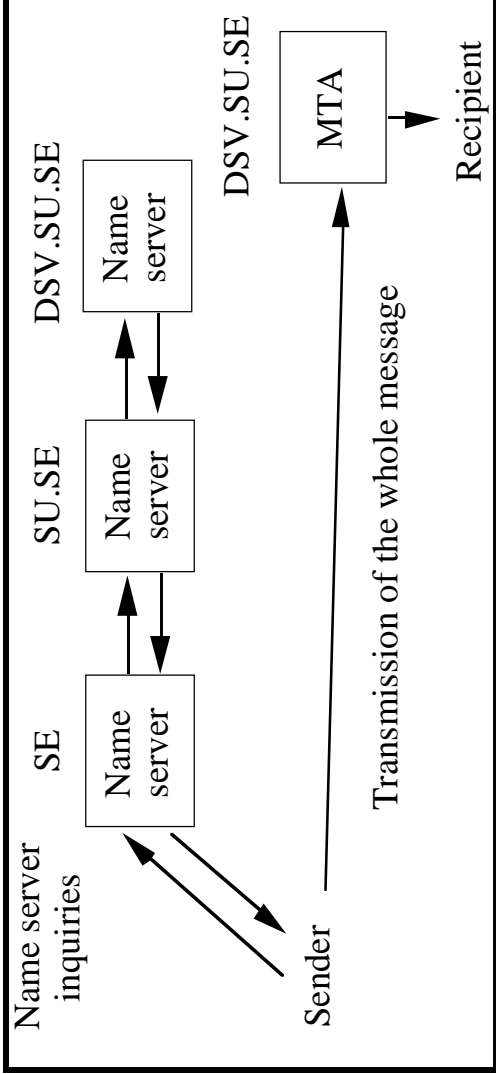
## Problems with replies with relative addressing



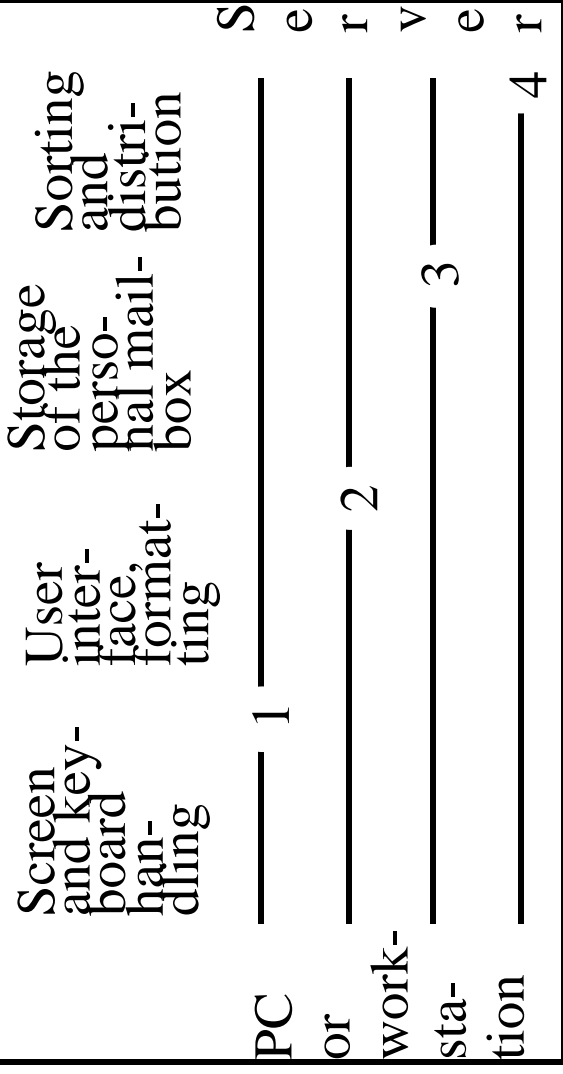
## Similar problem with distribution lists



# Use of name servers for routing

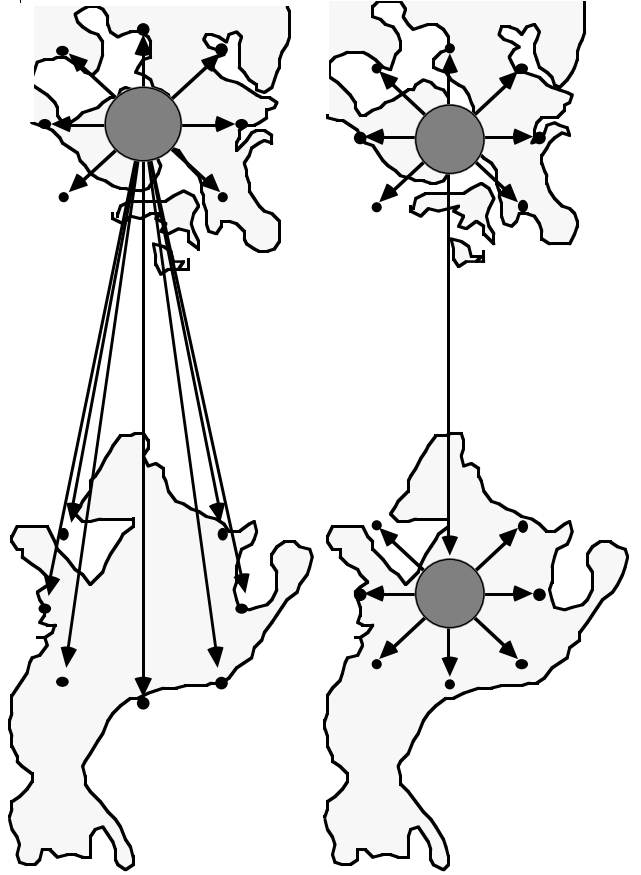


# Client-server architectures

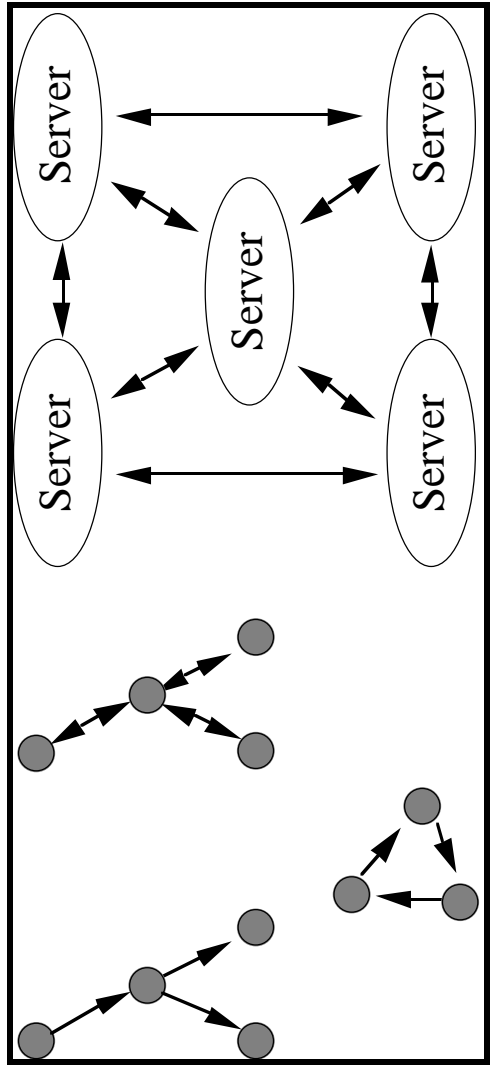


Protocols: P3, P7, POP, IMAP

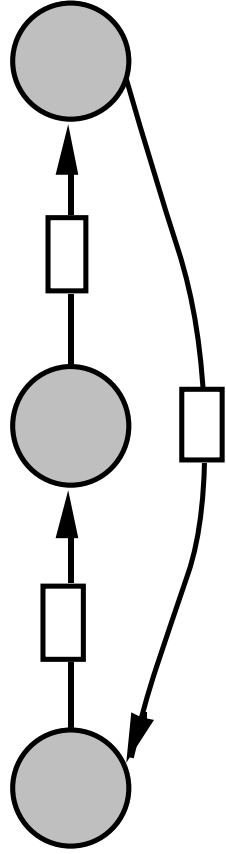
# Nested distribution lists



# Modes of distribution to many recipients



## Loop control for Nested Distribution Lists



- (1) Full expansion by the originating UA.
- (2a) Trace list on the envelope, use to stop incoming messages.
- (2b) Trace list on the envelope, use to stop outgoing messages.
- (3) Registration system.
- (4a) Storing Message-ID-s with DL expanders.
- (4b) Storing content checksums with DL expanders.

X.400: Primarily 2a, Listserv: 4b have seen.

## Public/secret key encryption

encrypted text =  $f_1$ (original text)

original text =  $f_2$ (encrypted text)

Can  $f_2$  be derived from  $f_1$ ?

## Pros and cons of public key encryption

- + Solves partly key transportation problem
- More CPU-time consuming

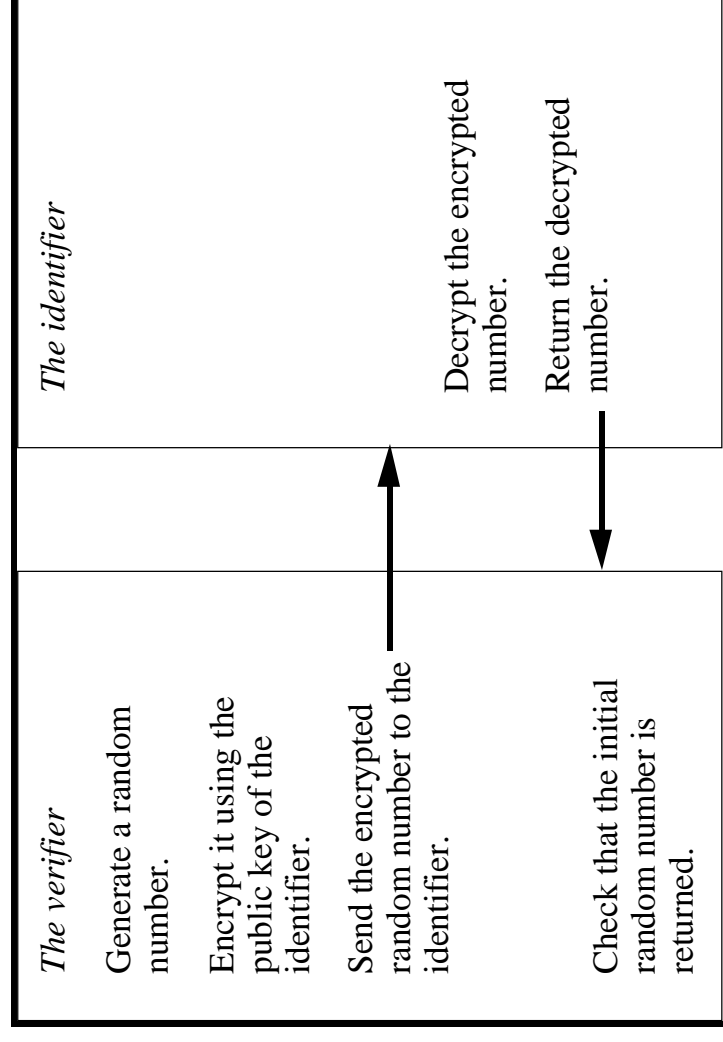
## Authentication, authorization

- To verify the sender of a message
- Payments, agreements
- UA-UA or MTA-MTA



## Authentication methods

- (a) Passwords
- (b) Specially designed networks
- (c) Public key cryptography



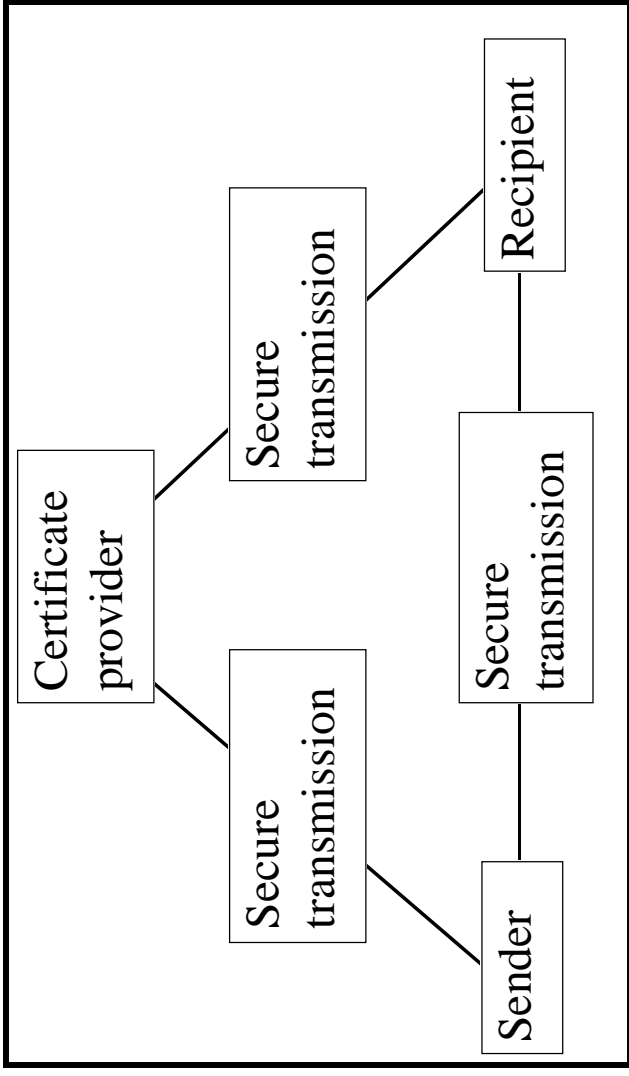


# Digital Signatures and Digital Seals

Methods: Secret key encryption of signature or checksum, which anyone can decrypt with public key

- Number of interactions
- Need of a neutral third party
- Bilateral or open to groups

# Certificate Authorities



## The Multipart/Related Content Type

The Multipart/related content type is designed when you are sending several files, which are related by URL-links. It is used, for example, to send HTML, SGML and XML with embedded pictures or applets as separate files.

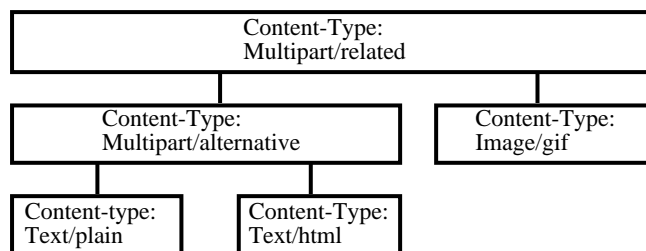
Each file is a separate body parts. Each body part is labelled by either Content-ID or Content-Location. The URL referring to the body part from another body part, is of the URL type "cid:" to refer to a Content-ID, or can be any kind of URL (absolute or relative) to refer to a Content-Location with the same content.

Example (abbreviated):

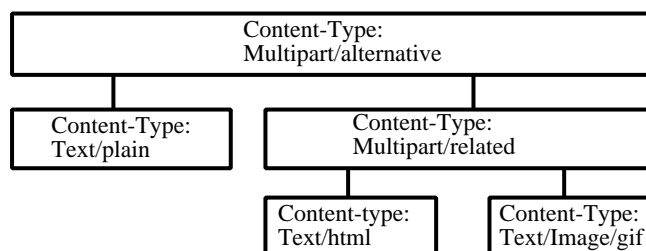
|   |  |
|---|--|
| Content-type:<br>Multipart/related  | The compound object of the HTML text and the embedded message.   |
| Content-Type: Text/html<br><br><IMG SRC="cid:1*foo@bar.net"><br><br><IMG SRC="picture.gif"> | The main text in HTML format.<br><br>Link to an embedded image using a "cid:" type URL.<br><br>Link to an embedded image using a relative URL. |
| Content-Type: Image/gif<br>Content-ID: 1*foo@bar.net  | The first embedded image, identified by a Content-ID.  |
| Content-Type: Image/gif<br>Content-Location: picture.gif                                    | The second embedded image, identified by a Content-Location URL.   |

Since some mailers do not support this, messages are usually sent using multipart/alternative, with plain text in the first branch and HTML in the second branch. This can be done in two ways:

*With the multipart/alternative inside the multipart/related:*



*With the multipart/alternative outside the multipart/related:*



Some mailers send messages using each of these methods, so a good mailer will have to be able to receive messages in both formats.