

# Marketers Talking Tech

→ Communicating better with your IT Group, your ESP and your deliverability specialist.

Why do we care?

tracking ab testing  
organic influencer  
dark social content  
promoted  
cpm  
viral  
hashtag  
influencer  
open rate  
emoji  
target market  
Reputation

REVENUE  
MIME  
EHLO  
DMARC  
IPV6  
Red Carpet  
SPF  
TLS  
HTTP  
DNS  
RFC  
HELO  
554  
UNRESOLVED  
ENVELOPE  
SMTP  
FBI  
OKIM

**Foundations and Concepts**

**Pulling Back the Covers**

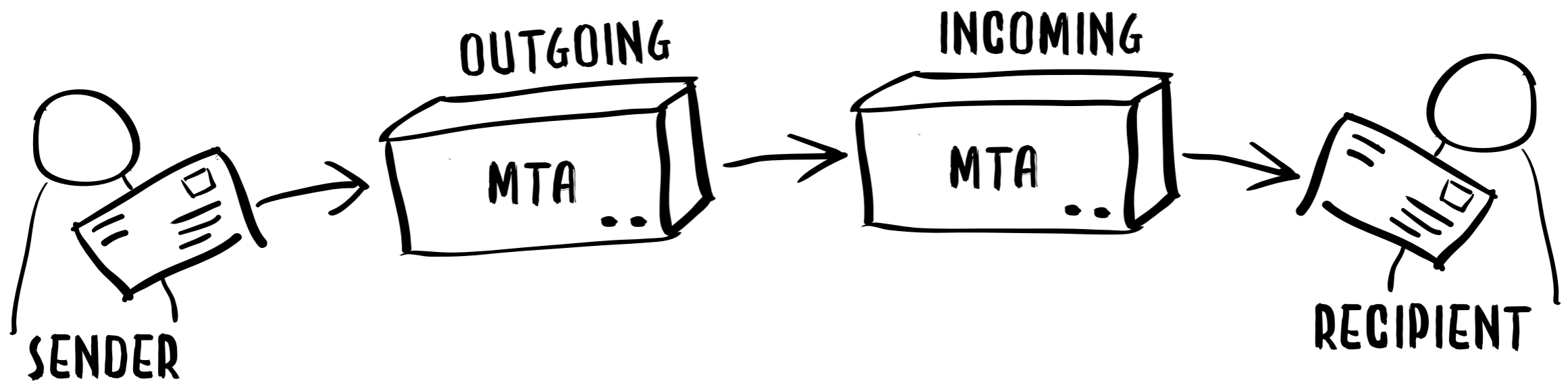
**Advice and Language**



# → Foundations and Concepts



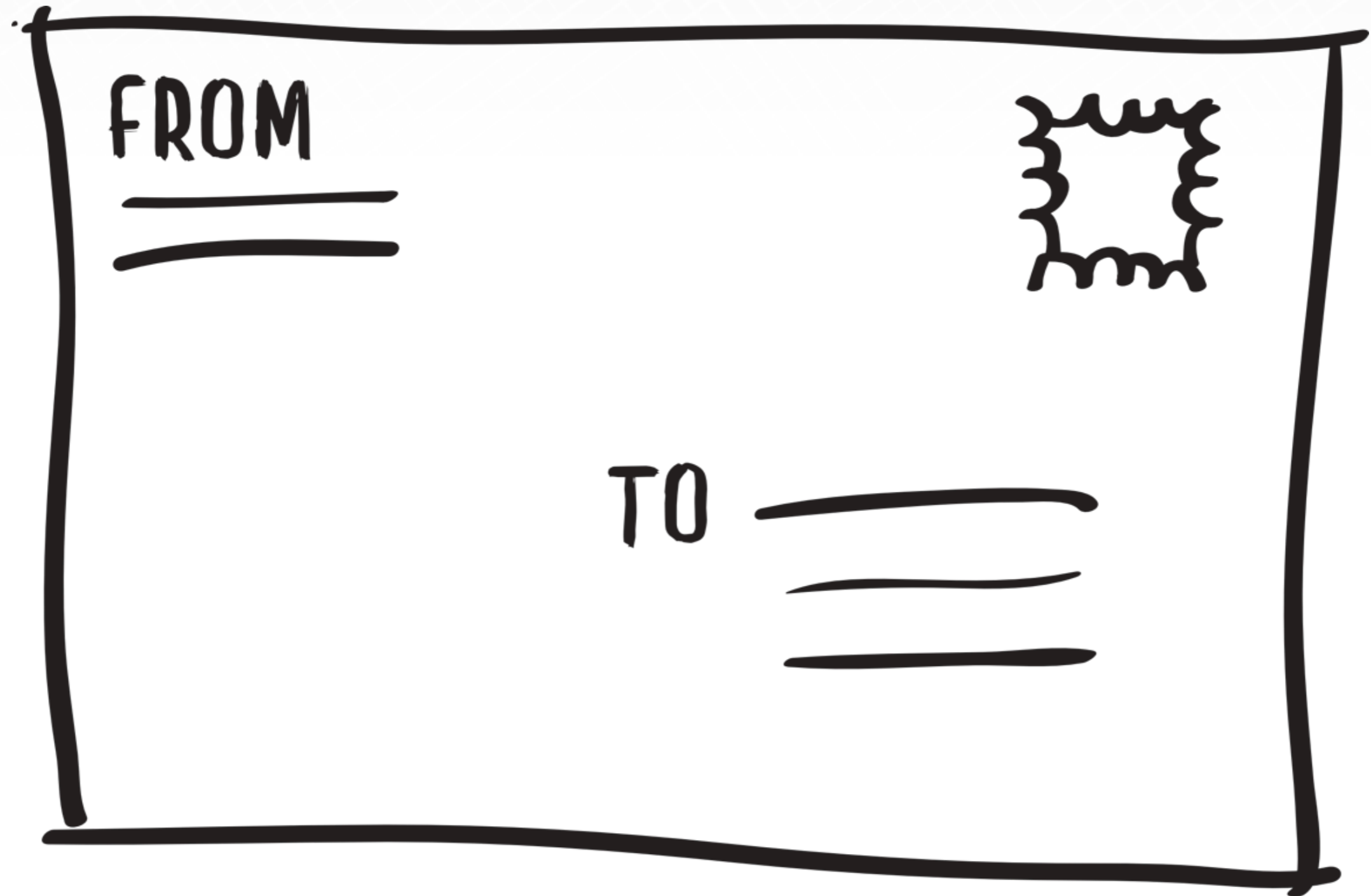
# Overall Email Pathway



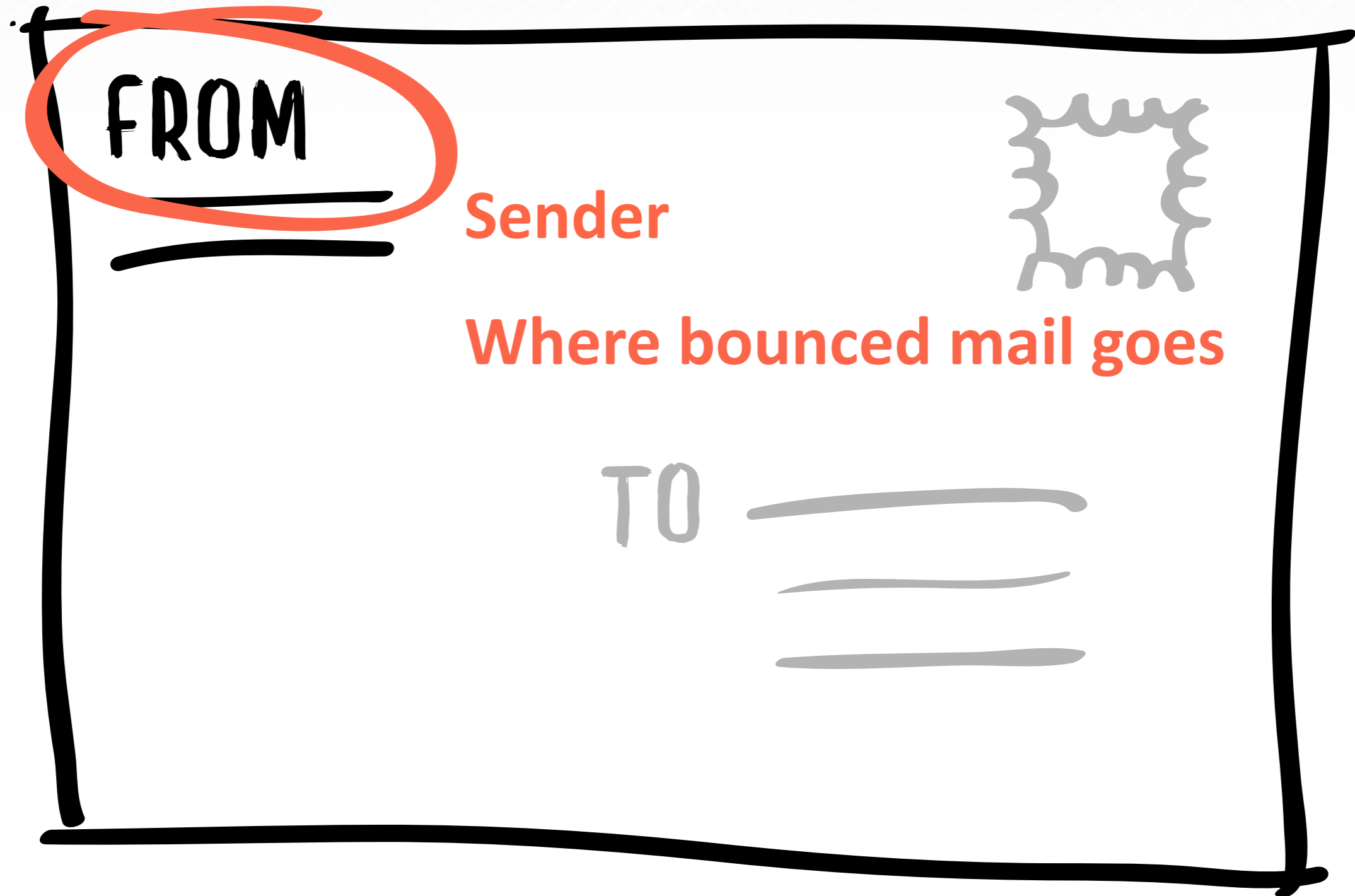
# Email Structure



# Postal Envelope

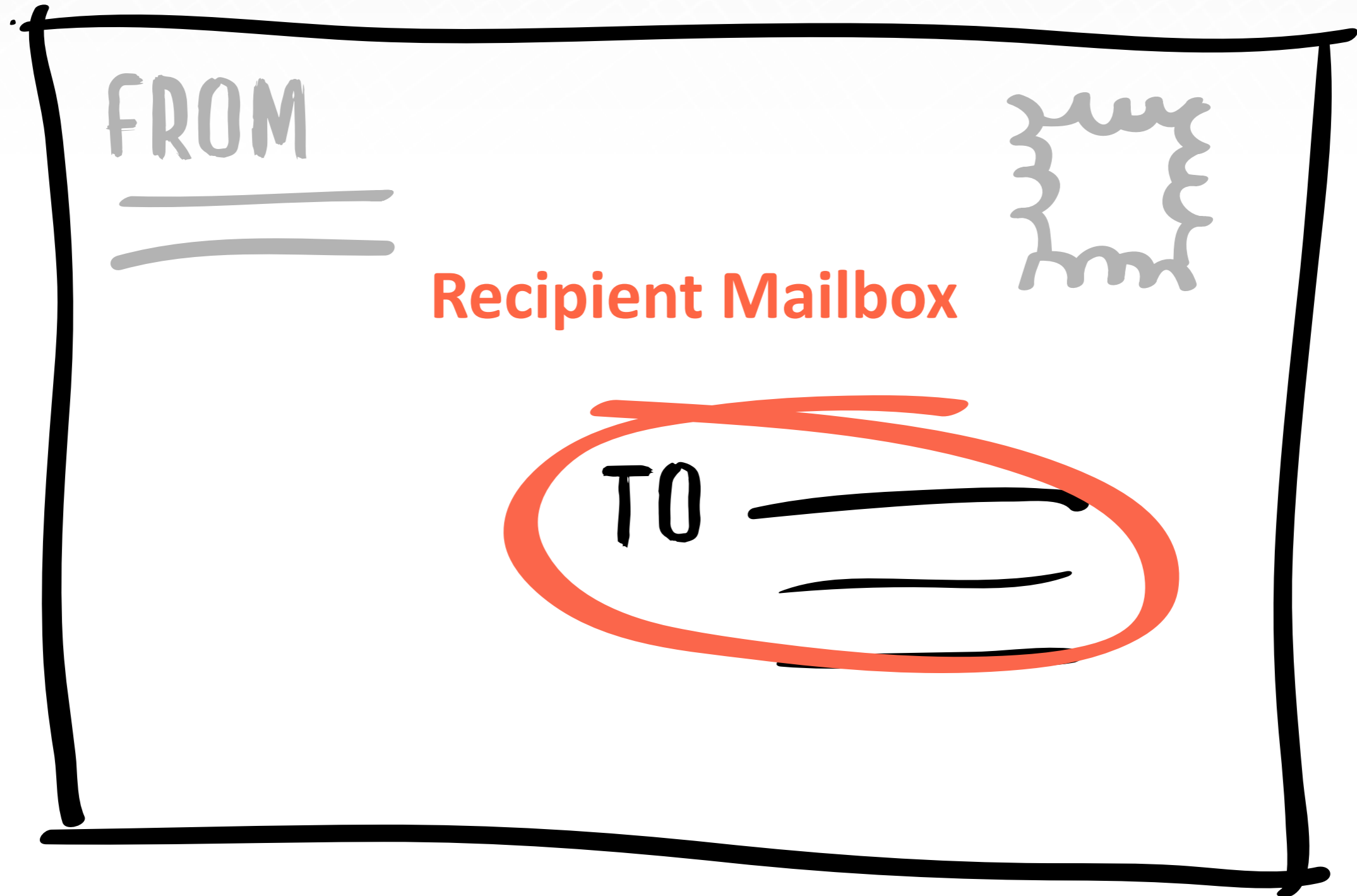


# Postal Envelope

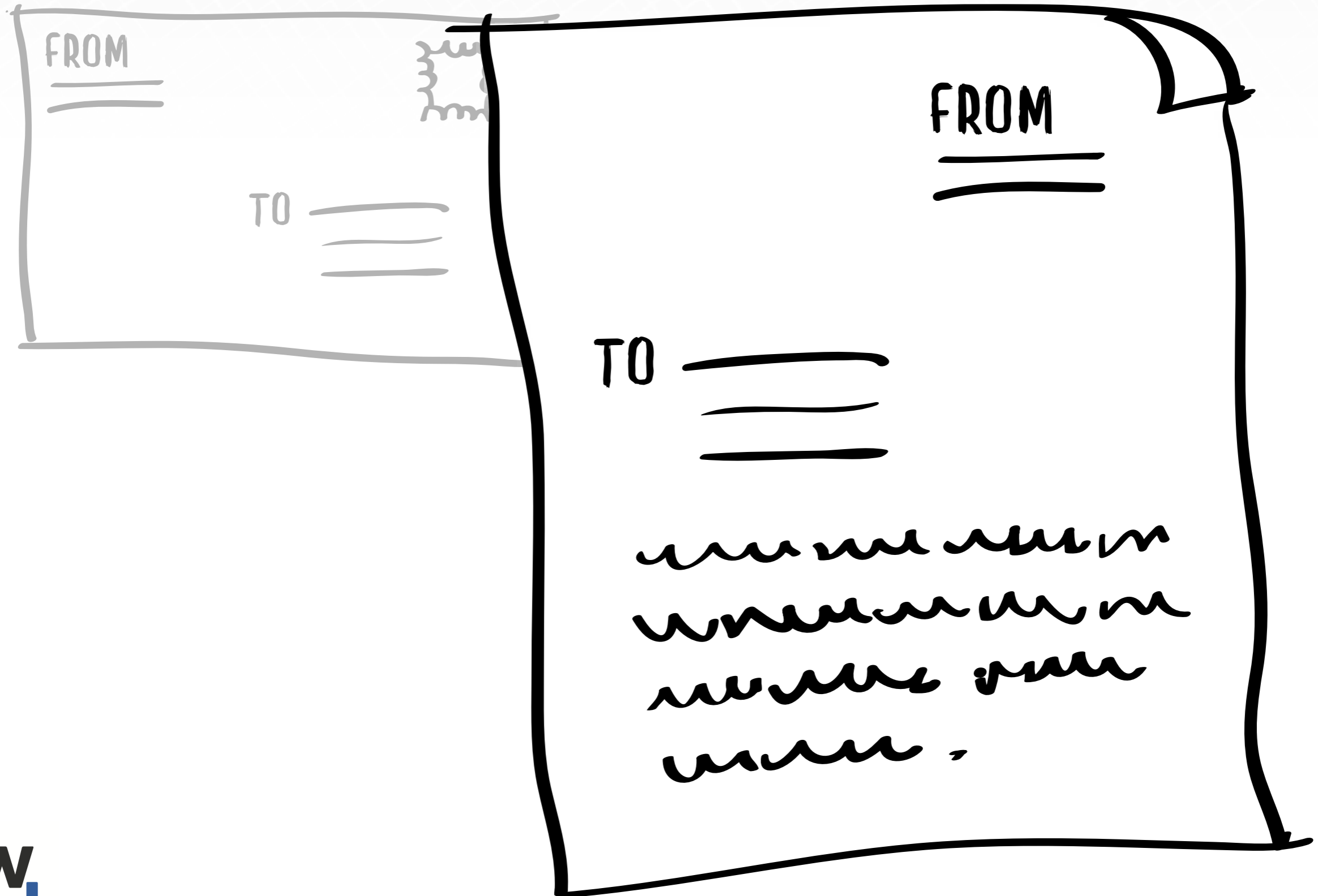




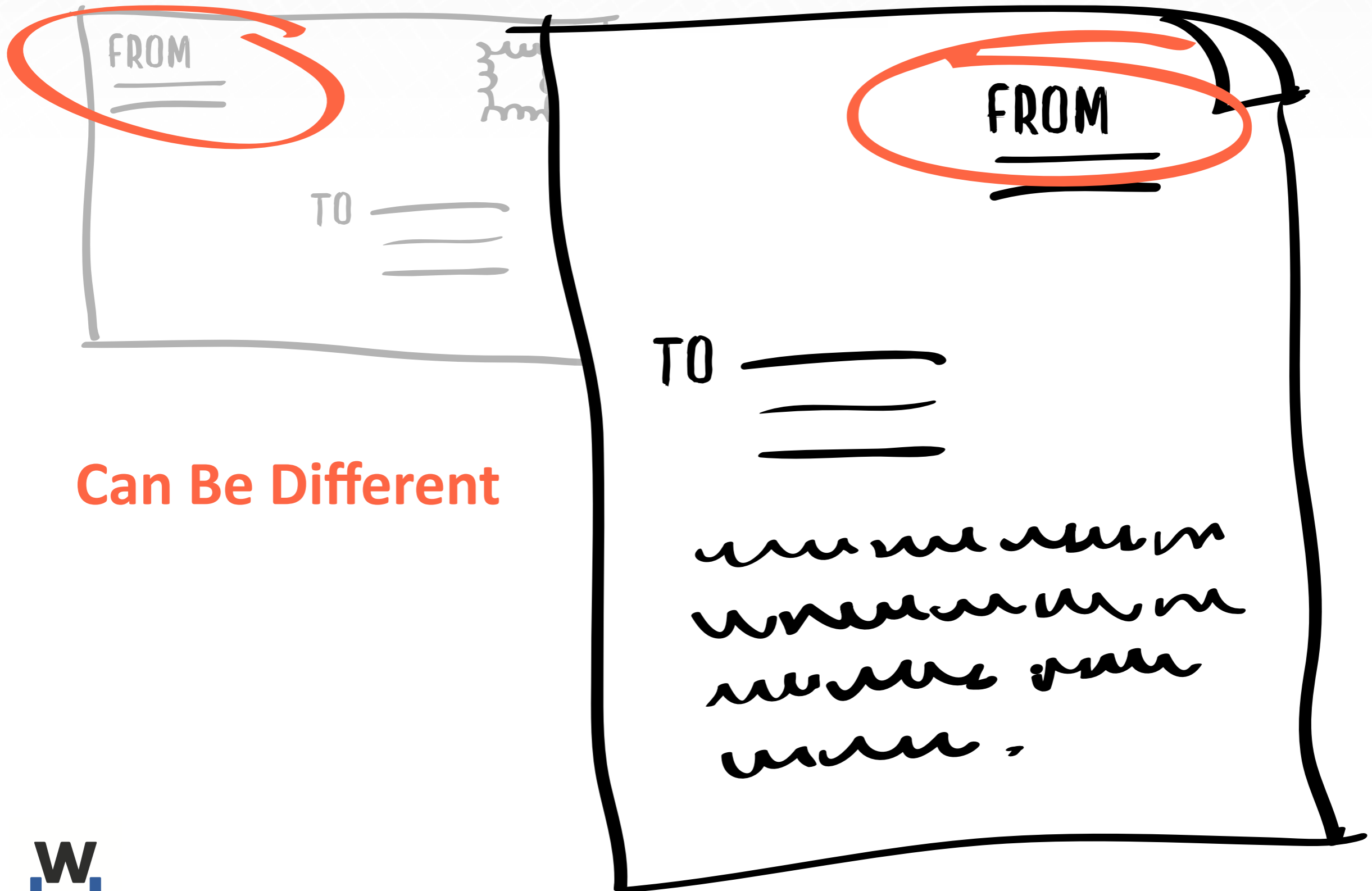
# Postal Envelope



# Postal Letter

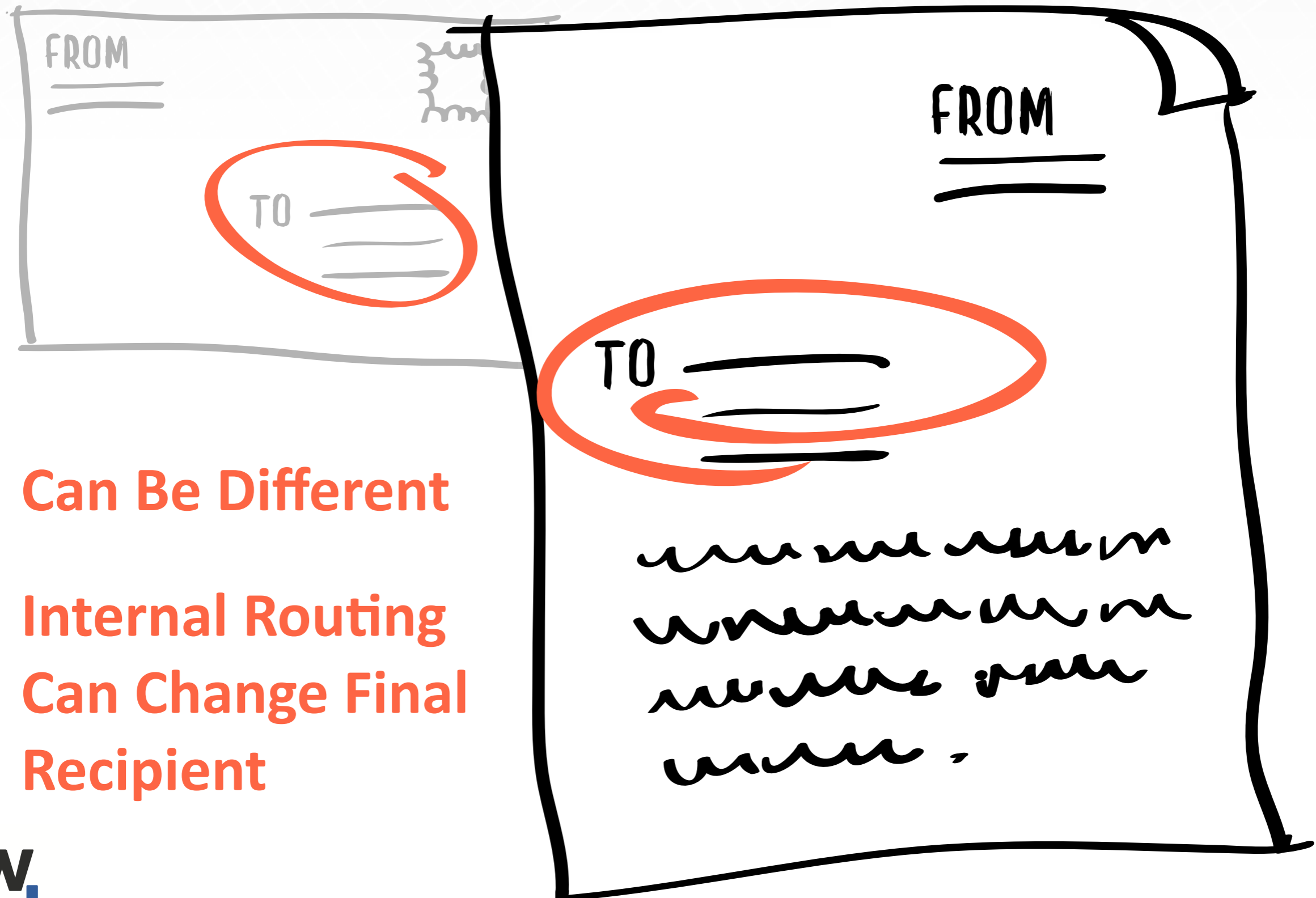


# Postal Letter



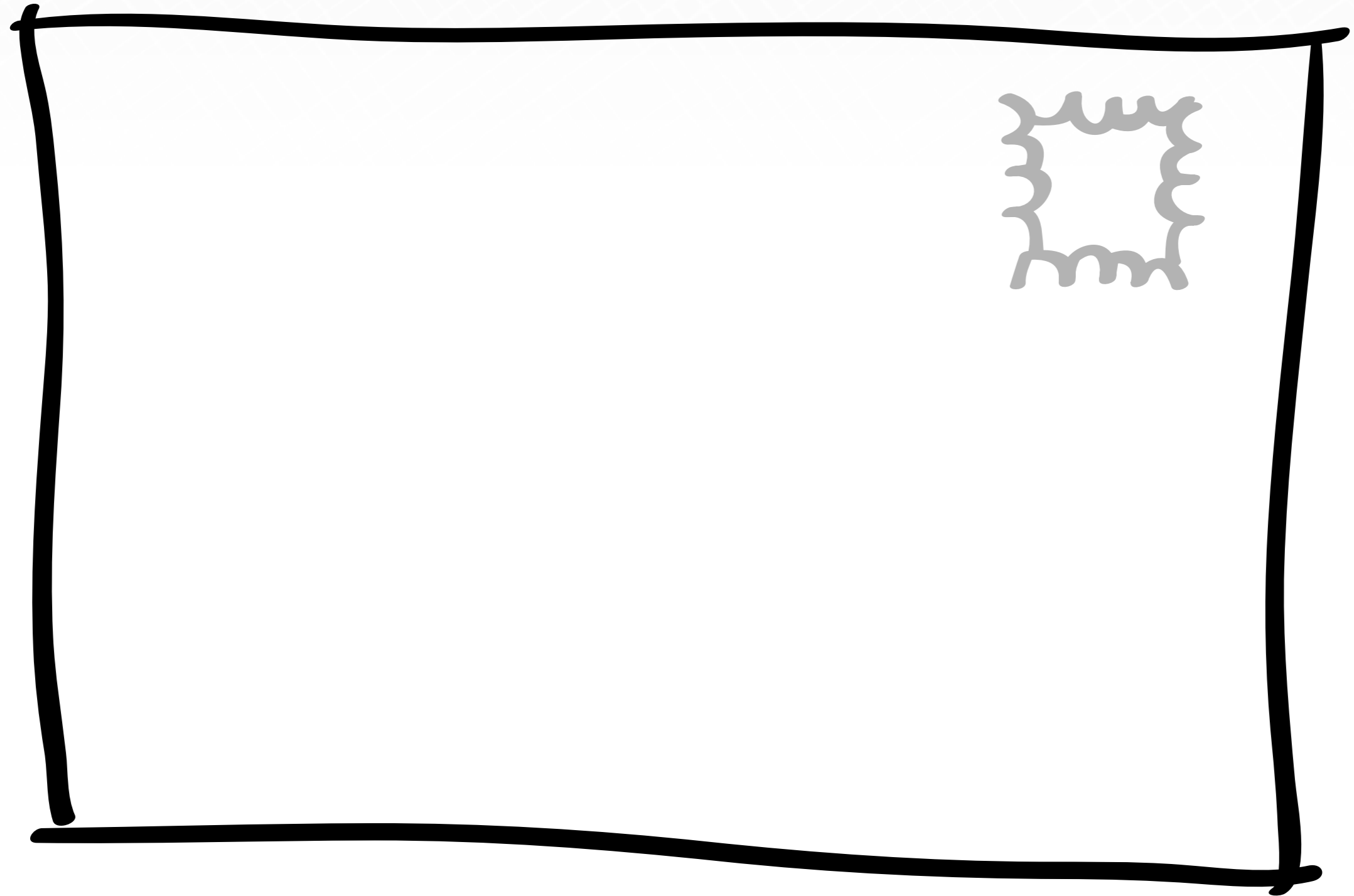
Can Be Different

# Postal Letter



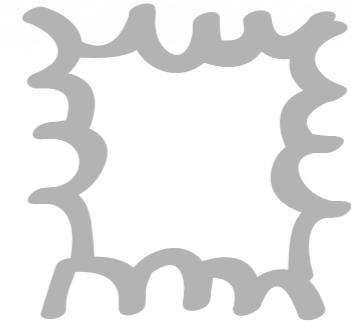
**Can Be Different  
Internal Routing  
Can Change Final  
Recipient**

# Email Envelope



# Email Envelope

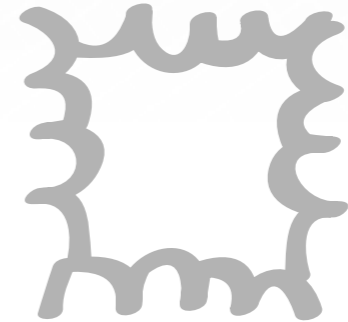
`bouncebox@bounce.example.com`



Where bounced mail goes

# Email Envelope

`bouncebox@bounce.example.com`



## Where bounced mail goes

*5321.from*

*Envelope From*

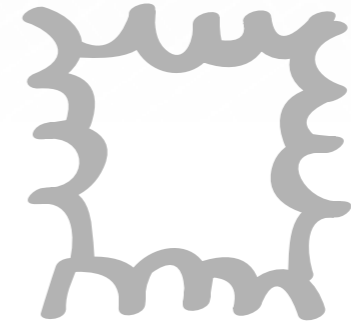
*Bounce String*

*VERP String*

*Return path*

# Email Envelope

bouncebox@bounce.example.com



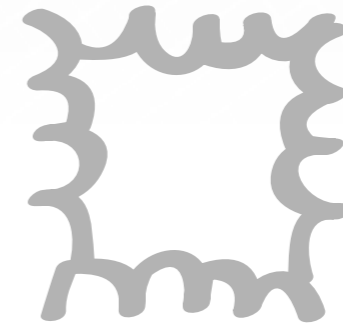
**Recipient's Mailbox**

recipient@isp.example



# Email Envelope

bouncebox@bounce.example.com



**Recipient's Mailbox**

**recipient@isp.example**

*Envelope To*

*5321.to*

*Recipient*

# Email Message

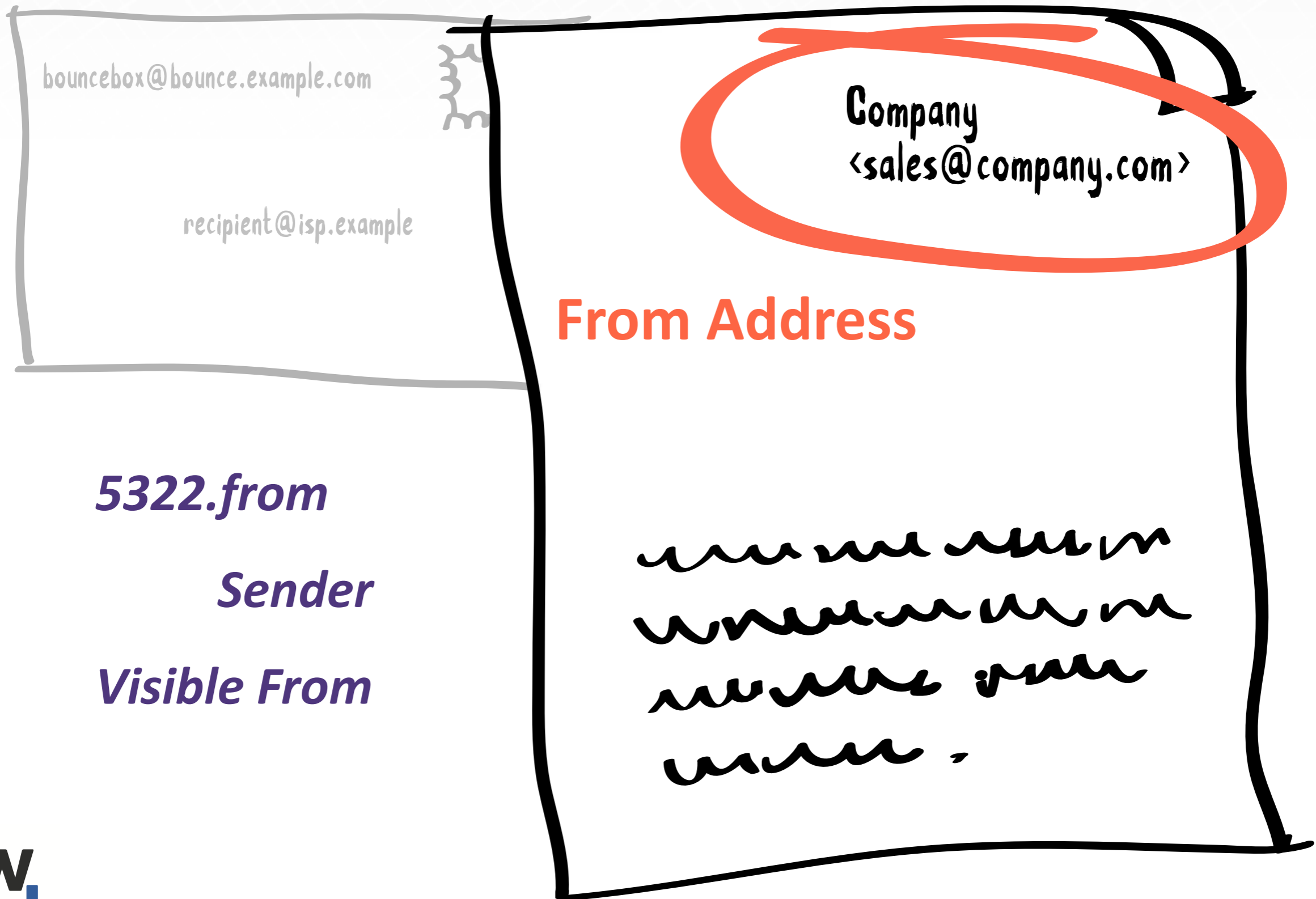
bouncebox@bounce.example.com

recipient@isp.example

Company  
<sales@company.com>

~~~~~  
~~~~~  
~~~~~  
~~~~~

# Email Message



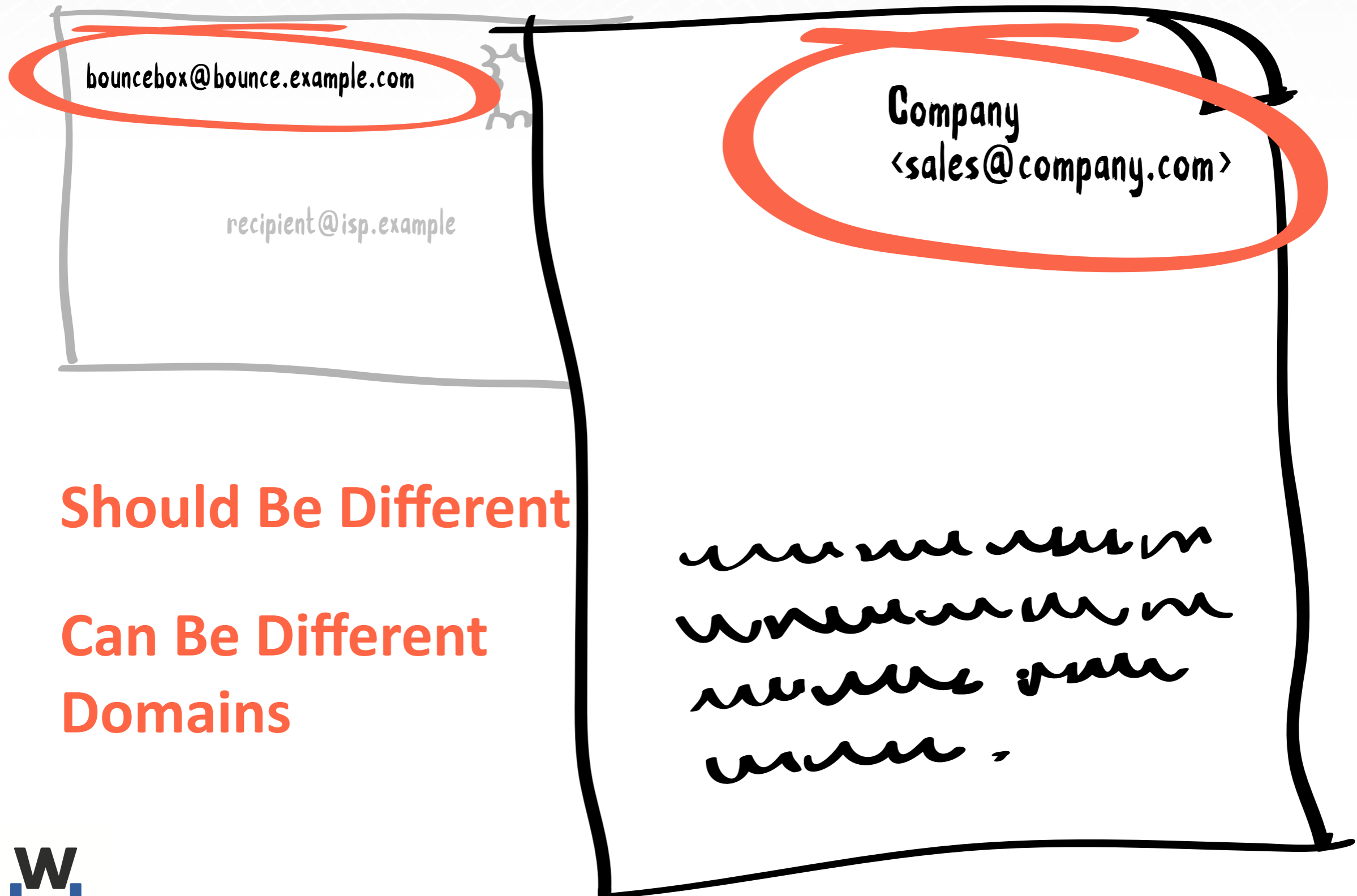
**5322.from**

**Sender**

**Visible From**



# Email Message



Should Be Different

Can Be Different  
Domains

# Email Message

bouncebox@bounce.example.com

recipient@isp.example

Company  
<sales@company.com>

Janet  
<janet128@isp.example

~~~~~  
~~~~~  
~~~~~  
~~~~~

# Email Message

bouncebox@bounce.example.com

recipient@isp.example

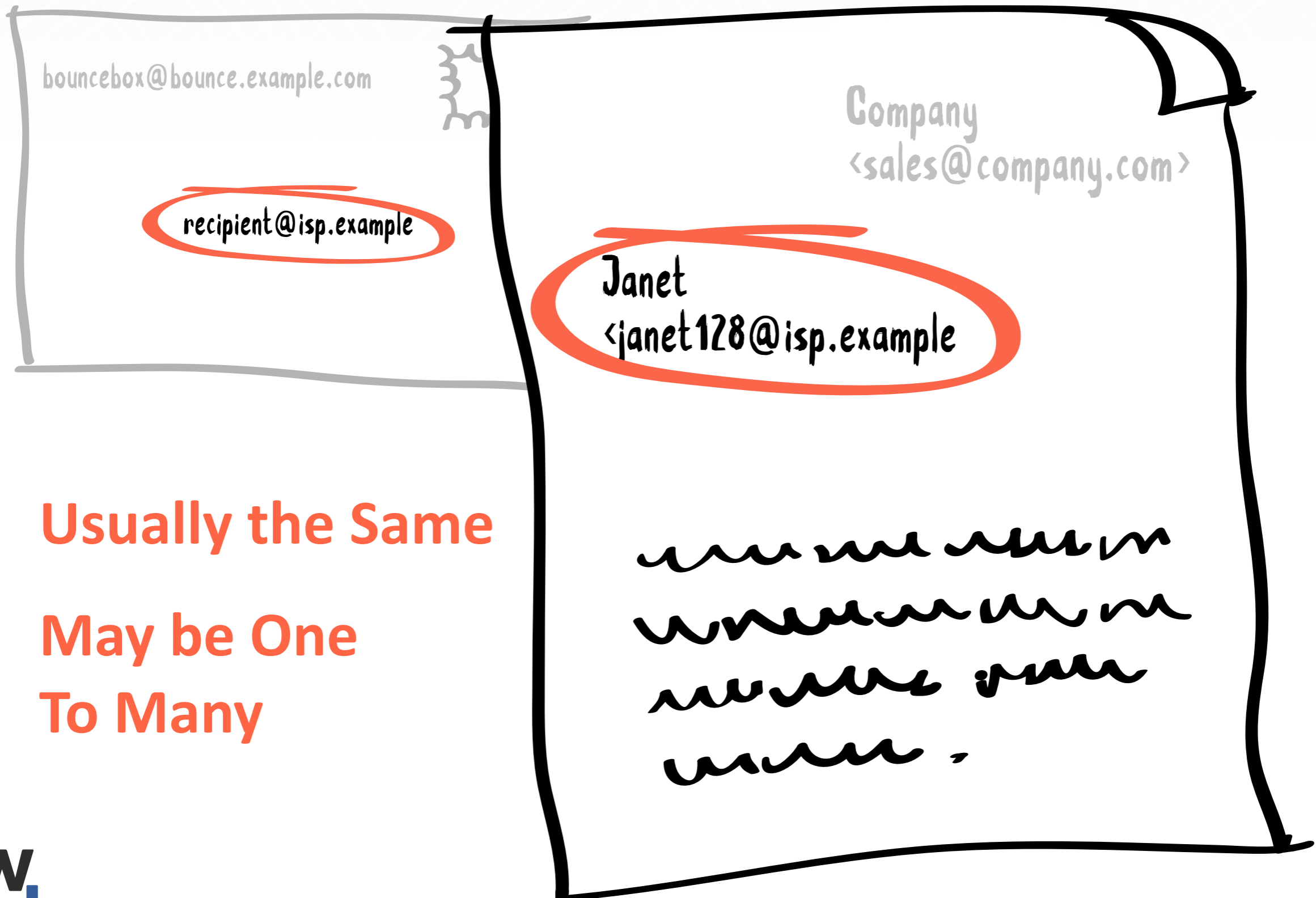
Company  
<sales@company.com>

Janet  
<janet128@isp.example

**Recipient**

~~~~~  
~~~~~  
~~~~~  
~~~~~

# Email Message

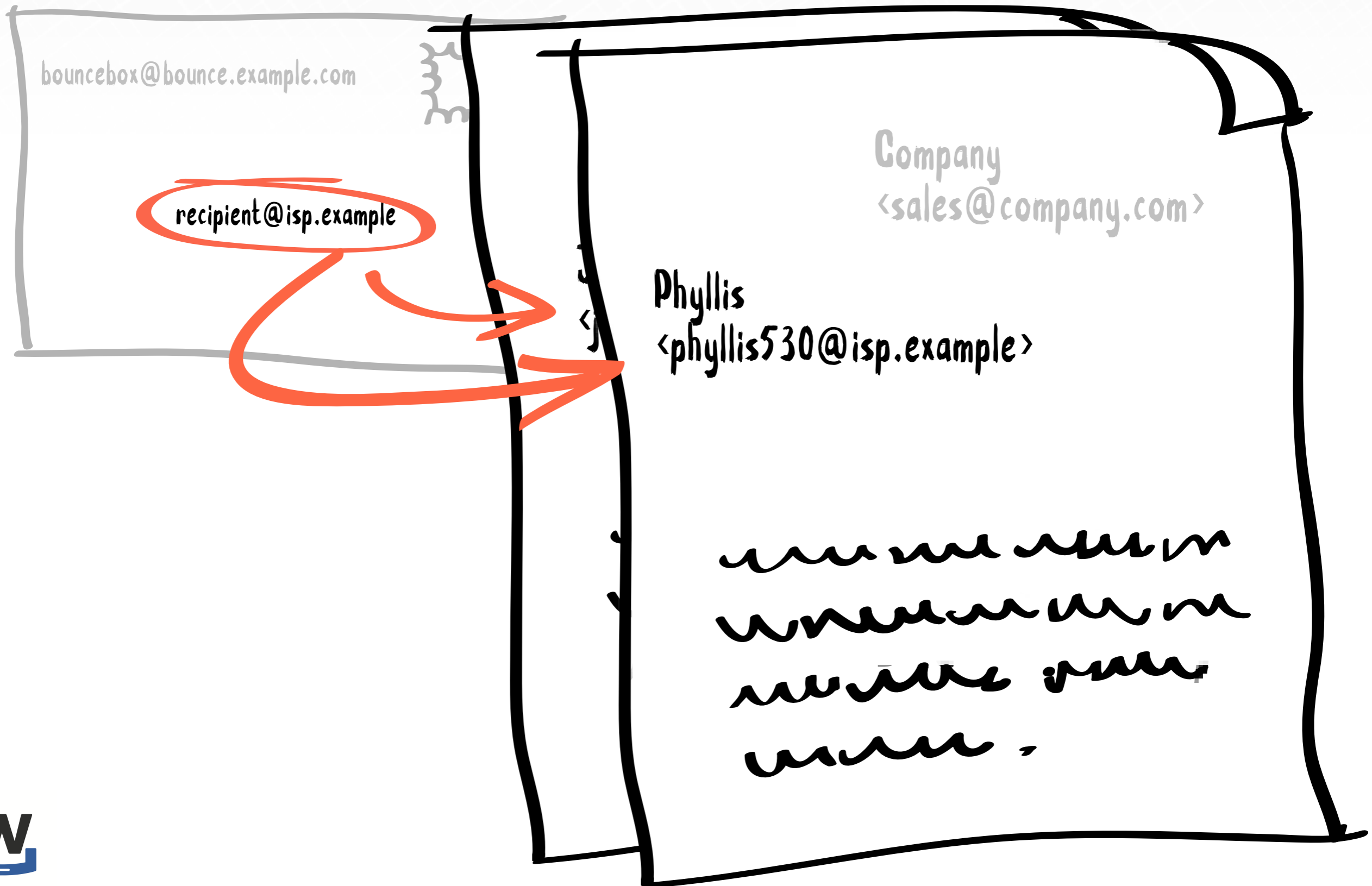


Usually the Same

May be One

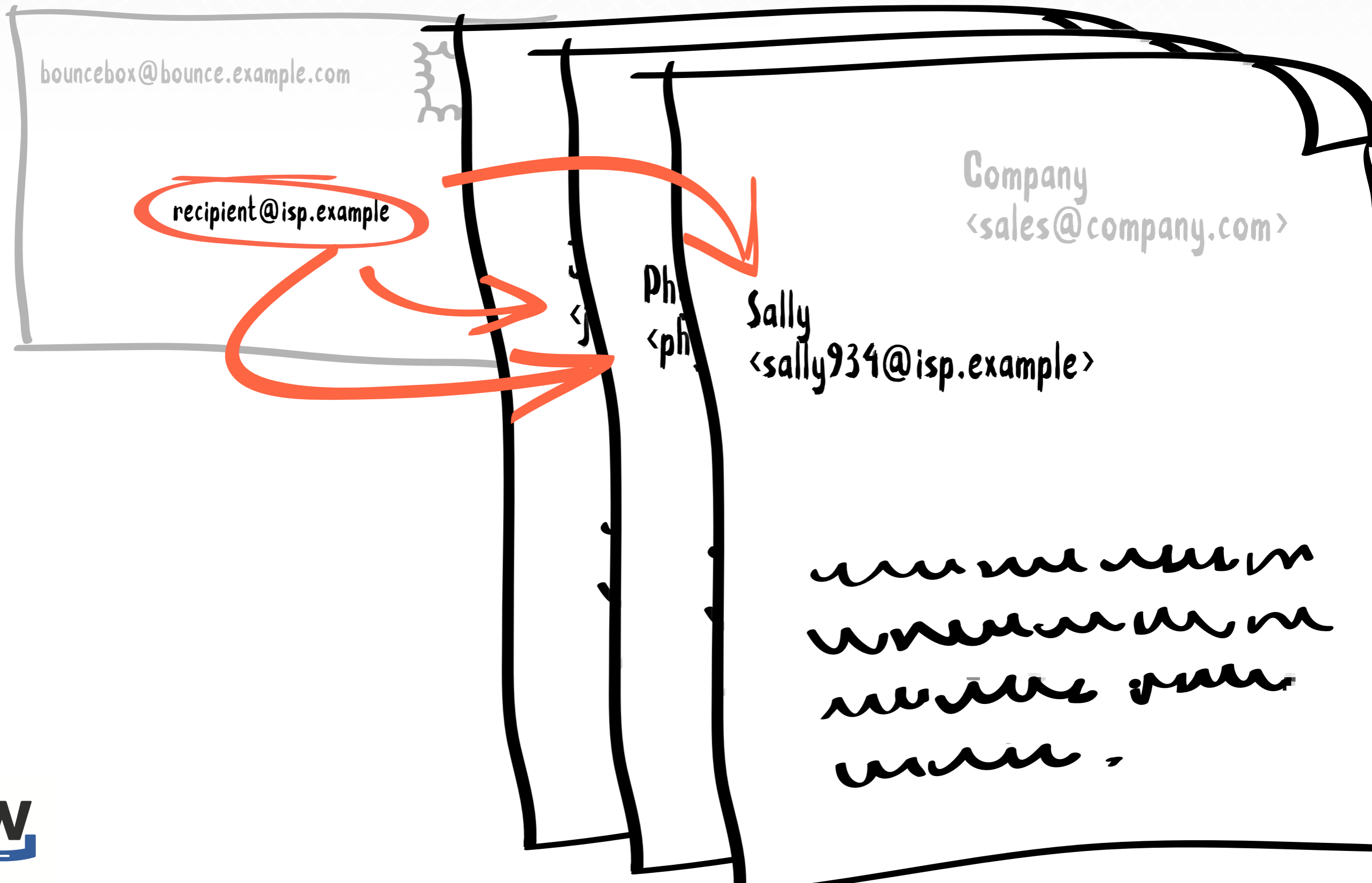
To Many

# Email Message





# Email Message



# Hidden Content: Headers

```
From: Laura Atkins <wttwlaura@gmail.com>
To: Me <laura@wordtothewise.com>
X-Spam-Level:
X-Received: by 10.50.137.33 with SMTP id qf1mr13116987igb.0.1463436875258; Mon, 16 May 2016 15:14:35 -0700 (PDT)
X-Gm-Message-State: A0Pr4FV28qjlnjISfEbZp0WHCIqUZiLJfy1kScSVjETCsgsBCNBK5gXKkiuMN+MMC+zlgm/a++HlGzoKw8XjA==
Return-Path: <wttwlaura@gmail.com>
Mime-Version: 1.0
X-Virus-Scanned: Debian amavisd-new at mx.wordtothewise.com
Authentication-Results: mx.wordtothewise.com (amavisd-new); dkim=pass (2048-bit key) header.d=gmail.com
Message-Id: <CAAWe4NHdQu9Ecdvo80GBhfiWA3PykoJn1PJfCeAatHShgbTgwA@mail.gmail.com>
Dkim-Signature: v=1; a=rsa-sha256; c=relaxed/relaxed; d=gmail.com; s=20120113; h=mime-version:date:message-id:subject:from:to;
bh=XzIp7m0LY7Ja0xnE9hWwozvN4QRb2M+KSZ9opUNSQSE=; b=jbn29Eu9L3K7srY+YMEQZiUFUJ+8Tjxe3+61CGUtPBfzSKSQ74yv+xK8U9FmqrX/nU
eH0Gq0o3xK1tumxo0MuDcVwTm+++4Y/J0e0EU3dGMsDPR/n7+eFUPJrJY00EN+vPucj/
xPmbn3xYTPqEwc7a95TYxdgkbWRcz0DjI45Q0XQXITEXnf2yQ9YpvmZoZNBueCh09trf w7/
SyZF78qEfg1zy0l0Ix9ePfnDl7lmFcrx1fTFiW2h4GbHpNVizYUd3AwLxwqf289v/ RufsYicdwHUwNs3Uhpl/
xiDzgg20w1jaEaaKe8uJAzSyzPaSjDgddKsAHML2+PCbIVk8 jUbQ==
X-Spam-Score: -2.697
Content-Type: multipart/alternative; boundary=001a11c3bc0219e3400532fcf337
Received-Spf: Pass (sender SPF authorized) identity=mailfrom; client-ip=2607:f8b0:4001:c05::22a; helo=mail-ig0-x22a.google.com;
envelope-from=wttwlaura@gmail.com; receiver=laura@wordtothewise.com
Delivered-To: <wttwlaura@mx.wordtothewise.com>
X-Original-To: laura@wordtothewise.com
Received: from mx.wordtothewise.com by mx.wordtothewise.com (Dovecot) with LMTP id MTE7E19G0ldzCAAA4J7wGw for
<wttwlaura@mx.wordtothewise.com>; Mon, 16 May 2016 15:14:55 -0700
Received: from localhost (localhost [127.0.0.1]) by mx.wordtothewise.com (Postfix) with ESMTMP id 4BC5D200929 for
<wttwlaura@mx.wordtothewise.com>; Mon, 16 May 2016 15:14:55 -0700 (PDT)
Received: from mx.wordtothewise.com ([127.0.0.1]) by localhost (mx.wordtothewise.com [127.0.0.1]) (amavisd-new, port 10024) with
ESMTMP id EahSo4DrZTtN for <wttwlaura@mx.wordtothewise.com>; Mon, 16 May 2016 15:14:36 -0700 (PDT)
Received: from mail-ig0-x22a.google.com (mail-ig0-x22a.google.com [IPv6:2607:f8b0:4001:c05::22a]) by mx.wordtothewise.com
(Postfix) with ESMTPS id 044B320088D for <laura@wordtothewise.com>; Mon, 16 May 2016 15:14:35 -0700 (PDT)
Received: by mail-ig0-x22a.google.com with SMTP id m9so417171ige.1 for <laura@wordtothewise.com>; Mon, 16 May 2016 15:14:35
-0700 (PDT)
Received: by 10.107.181.131 with HTTP; Mon, 16 May 2016 15:14:35 -0700 (PDT)
Example Headers
```



# Headers Added by Receiver

```
From: Laura Atkins <wttwlaura@gmail.com>
To: Me <laura@wordtothewise.com>
X-Spam-Level:
X-Received: by 10.50.137.33 with SMTP id qf1mr13116987igb.0.146343
X-Gm-Message-State: AUPf...M28qjlnjISfEbZp0WHCIqUZiLJfy1kScSVjETCsg
Return-Path: <wttwlaura@gmail.com>
Mime-Version: 1.0
X-Virus-Scanned: Debian amavisd-new at mx.wordtothewise.com
Authentication-Results: mx.wordtothewise.com (amavisd-new); dkim=p
Message-Id: <CAAWe4NHdQu9Ecdvye8uGBhfiWA3PykoJn1PJfCeAatHShgbTgwA@
Dkim-Signature: v=1; a=rsa-sha256; c=relaxed/relaxed; d=gmail.com;
id:subject:from:to; bh=XzIp7m0LY7Ja0xnE9hWwozvN4QRb2M+KSZ9opUNSQSE
+8Tjxe3+61CGUtPBfzSKSQ74yv+xK8U9FmqrX/nU eH0Gq0o3xK1tumxo0MuDcVwTm
xPmbn3xYTPqEwc7a95TYxdgkbWRcz0DjI45Q0XQXITEXnf2yQ9YpvmZoZNBueCh09t
SyZF78qEfg1zy0l0Ix9ePfnDl7lmFcrx1fTFiW2h4GbHpNVizYUd3AwLxwqf289v/
xiDzgg20w1jaEaaKe8uJAzSyzPaSjdGddKsAHML2+PCbIVk8 jUbQ==
X-Spam-Score: -2.697
Content-Type: multipart/alternative; boundary=001a11c3bc0219e34005
Received-Spf: Pass (sender SPF authorized) identity=mailfrom; clie
x22a.google.com; envelope-from=wttwlaura@gmail.com, receiver=laura
Delivered-To: <wttwlaura@mx.wordtothewise.com>
X-Original-To: laura@wordtothewise.com
Received: from mx.wordtothewise.com by mx.wordtothewise.com (Dovec
<wttwlaura@mx.wordtothewise.com>; Mon, 16 May 2016 15:14:55 -0700
Received: from localhost (localhost [127.0.0.1]) by mx.wordtothewi
<wttwlaura@mx.wordtothewise.com>; Mon, 16 May 2016 15:14:55 -0700
Received: from mx.wordtothewise.com ([127.0.0.1]) by localhost (mx
10024) with ESMTP id 1C-15-7T... for <wttwlaura@mx.wordtothewise.
Received: from mail-ig0-x22a.google.com (mail-ig0-x22a.google.com
mx.wordtothewise.com (Postfix) with ESMTPS id 044B320088D for <lau
(PDT)
Received: by mail-ig0-x22a.google.com with SMTP id m9so417171ige.1
15:14:35 -0700 (PDT)
Received: by 10.107.181.131 with HTTP; Mon, 16 May 2016 15:14:35 -
Example Headers
```

- Authentication Results
- Original-To
- Spam Status



# Headers Added by Sender

```
From: Laura Atkins <wttwlaura@gmail.com>
To: Me <laura@wordtothewise.com>
X-Spam-Level:
X-Received: by 10.50.137.33 with SMTP id qrlmr13116987igb.0.146343
X-Gm-Messsage-State: A0Pr4FV28qjlnjISfEbZp0WHCIqUZiLJfy1kScSVjETCsg
Return-Path: <wttwlaura@gmail.com>
Mime-Version: 1.0
X-Virus-Scanned: Debian amavisd-new at mx.wordtothewise.com
Authentication-Results: mx.wordtothewise.com (amavisd-new); dkim=p
Message-Id: <CAAWe4NHdQu9Ecdvo80GBht1WA3Pyrk5M1D7fCeAatHShgbTgwA@
Dkim-Signature: v=1; a=rsa-sha256; c=relaxed/relaxed; d=gmail.com;
id:subject:from:to; bh=XzIp7m0LY7Ja0xnE9hWwozvN4QK...KS79opUNSQSE
+8Tjxe3+61CGUtPBfzSKSQ74yv+xK8U9FmqrX/nU_eH0Gq0o3xK1tumx...ScVwTm
xPmbn3xYTPqEwc7a95TYxdgkbWRcz0DjI45Q0XQXITEXnf2yQ9YpvmZoZNBue...nt
SvZF78qEfg1zy0l0Ix9ePfnDl7lmFcrx1fTFiW2h4GbHpNVizYUd3AwLxwqf2
XIDzg...1iaFaaKe8uJAzSyzPaSjdGddKsAHML2+PCbIVk8_jUbQ==
X-Spam-Score: -2.057
Content-Type: multipart/alternative; boundary=001a11c3bc0219e34005
Received-Spf: Pass (sender SPF authorized) identity=mailfrom; clie
x22a.google.com; envelope-from=wttwlaura@gmail.com; receiver=laura
Delivered-To: <wttwlaura@mx.wordtothewise.com>
X-Original-To: laura@wordtothewise.com
Received: from mx.wordtothewise.com by mx.wordtothewise.com (Dovec
<wttwlaura@mx.wordtothewise.com>; Mon, 16 May 2016 15:14:55 -0700
Received: from localhost (localhost [127.0.0.1]) by mx.wordtothewi
<wttwlaura@mx.wordtothewise.com>; Mon, 16 May 2016 15:14:55 -0700
Received: from mx.wordtothewise.com ([127.0.0.1]) by localhost (mx
10024) with ESMTTP id EahSo4DrZTtN for <wttwlaura@mx.wordtothewise.
Received: from mail-ig0-x22a.google.com (mail-ig0-x22a.google.com
mx.wordtothewise.com (Postfix) with ESMTTPS id 044B320088D for <lau
(PDT)
Received: by mail-ig0-x22a.google.com with SMTP id m9so417171ige.1
15:14:35 -0700 (PDT)
Received: by 10.107.181.131 with HTTP; Mon, 16 May 2016 15:14:35 -0700 (PDT)
Subject: Example Headers
```

- Envelope From
- DKIM Signatures
- Campaign ID
- List Unsubscribe



# Hidden Content: HTML

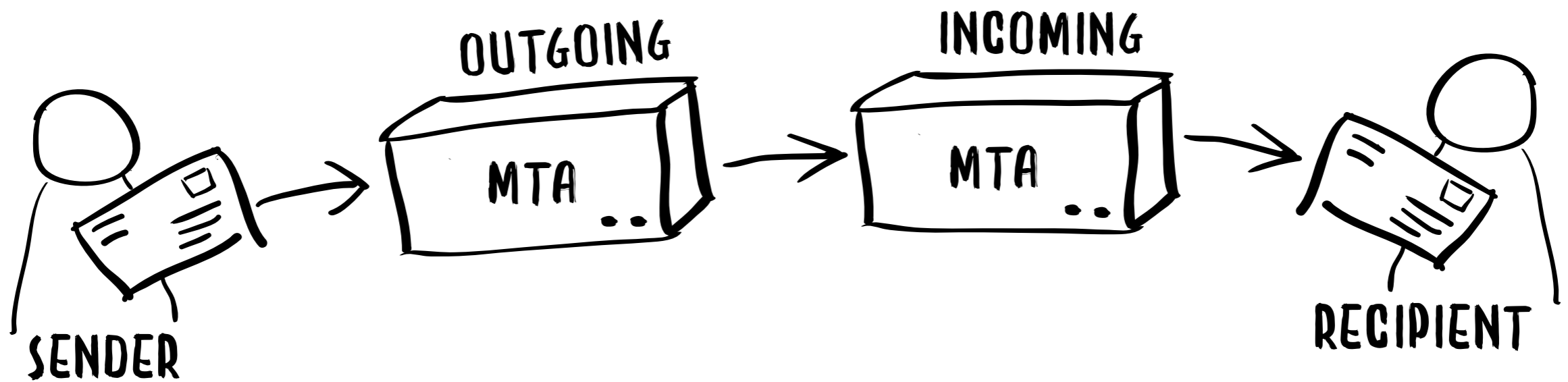
```
</style>
<table border=3D"0" cellpadding=3D"0" cellspacing=3D"0" width=3D"100%" st=
yle=3D"width: 100%; border: 0; margin: 0;">
  <tbody>
    <tr>
      <td align=3D"center">
        <table border=3D"0" bgcolor=3D"#ecec" cellpadding=3D"0" cellspa=
cing=3D"0" width=3D"660" style=3D"margin: 0; background-color: #ecec; bor=
der-width: 8px; border-style: solid; border-color: #d1d5ce; width: 660px; b=
order-radius: 8px; -webkit-border-radius: 8px; -moz-border-radius: 8px;">
          <tbody>
            <tr bgcolor=3D"#152721" style=3D"background-color: #152721;">
              <td align=3D"left">
                <table border=3D"0" cellpadding=3D"0" cellspacing=3D"0" w=
idth=3D"100%">
                  <tbody>
                    <tr>
                      <td colspan=3D"7" height=3D"10" style=3D"font-size:=
0;"><img src=3D"https://s3.amazonaws.com/static.appsumo.com/80df30cf596f24=
3d476c4179f21e601b7208976a/email/spacer.png" alt=3D"" width=3D"1" height=3D=
"10" border=3D"0" style=3D"border: 0;" /></td>
                    </tr>
                    <tr>
                      <td width=3D"40" style=3D"font-size: 0;"><img src=
=3D"https://s3.amazonaws.com/static.appsumo.com/80df30cf596f243d476c4179f21=
e601b7208976a/email/spacer.png" alt=3D"" width=3D"40" height=3D"1" border=
=3D"0" style=3D"border: 0;" /></td>
                      <td width=3D"228" style=3D"width: 228px;"><a href=
=3D"http://www.appsumo.com/click/?e=3D214d542ae896417f8679a6a379956a20&=
u=3Dhttps%3A//www.appsumo.com/BetterBrandingCourse/%3Freviewing%3D1" style=
=3D"text-decoration: none;"><img src=3D"https://s3.amazonaws.com/static.app=
sumo.com/80df30cf596f243d476c4179f21e601b7208976a/email/header-5.png" alt=
=3D"AppSumo" height=3D"42" width=3D"228" border=3D"0" style=3D"border: 0;" =
/></a></td>
                      <td width=3D"30" style=3D"font-size: 0;"><img src=
=3D"https://s3.amazonaws.com/static.appsumo.com/80df30cf596f243d476c4179f21=
e601b7208976a/email/spacer.png" alt=3D"" width=3D"30" height=3D"1" border=
=3D"0" style=3D"border: 0;" /></td>
```



# Let's Review

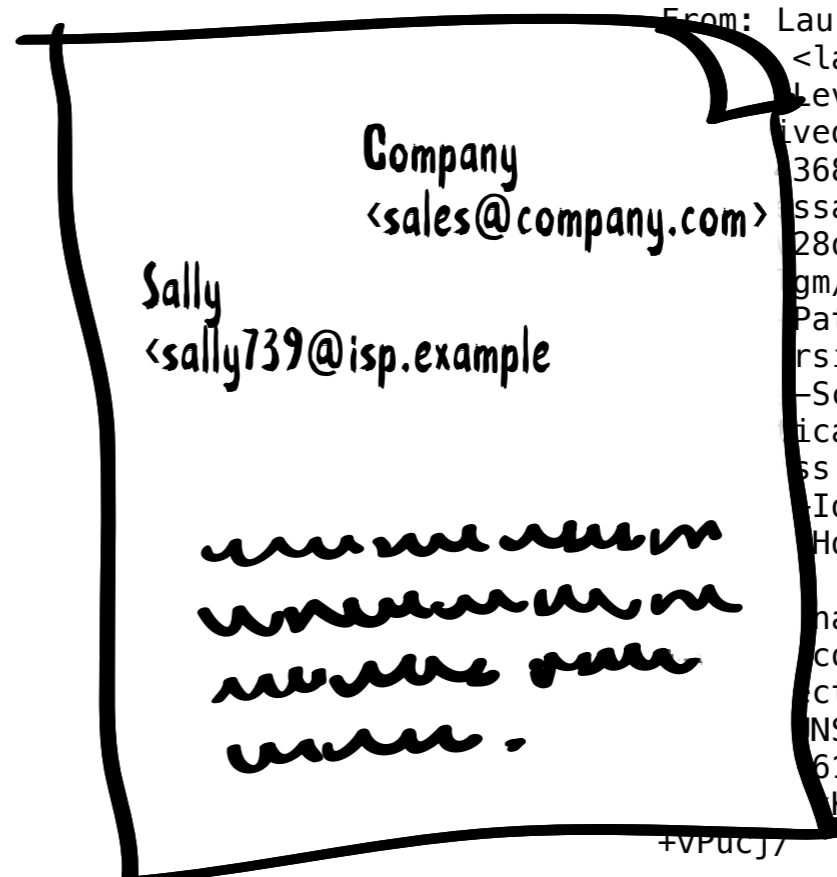
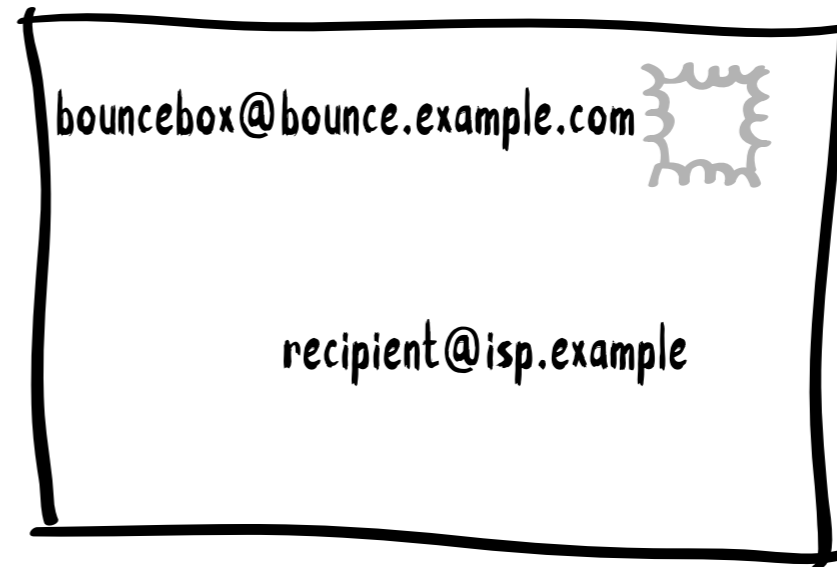


# Overall Email Pathway



# Foundation and Concepts

- Envelope
  - ▶ From Address
  - ▶ To Address
- Message
  - ▶ From Address
  - ▶ To Address
  - ▶ Message Body
  - ▶ Hidden Information



From: Laura Atkins <wttwlaura@gmail.com>  
<laura@wordtothewise.com>  
Level:  
Received: by 10.50.137.33 with SMTP  
36875258; Mon, 16 May 2016 15:1  
Message-Id:  
28qjlnjISfEbZp0WHCIqUZiLJfy1kSc  
gm/a++HlGzoKw8XjA==  
Path: <wttwlaura@gmail.com>  
Version: 1.0  
-Scanned: Debian amavisd-new at  
Application-Results: mx.wordtothewi  
ss (2048-bit key) header.d=gmai  
Id:  
HdQu9Ecdvo80GBhfiWA3PykoJn1PJf  
Signature: v=1; a=rsa-sha256; c=r  
com; s=20120113; h=mime-versio  
ct:from:to; bh=XzIp7m0LY7Ja0xr  
NSQSE=; b=jbn29Eu9L3K7srY+YMEC  
61CGUtPBfzSKSQ74yv+xK8U9FmqrX/  
K1tumxo0MuDcVwTm+++4Y/J0e0EU3



→ **Pulling Back the Covers**



# IP Addresses

## IPv4

194.130.31.50

Deprecated

Lots of old systems out there

## IPv6

2607:f8b0:4001:c05::22a

New

Stricter requirements for email delivery



# CIDR Notation

**193.57.19.0/24**

255 IPs

**193.57.19.0/25**

127 IPs

**193.57.19.0/32**

1 IP



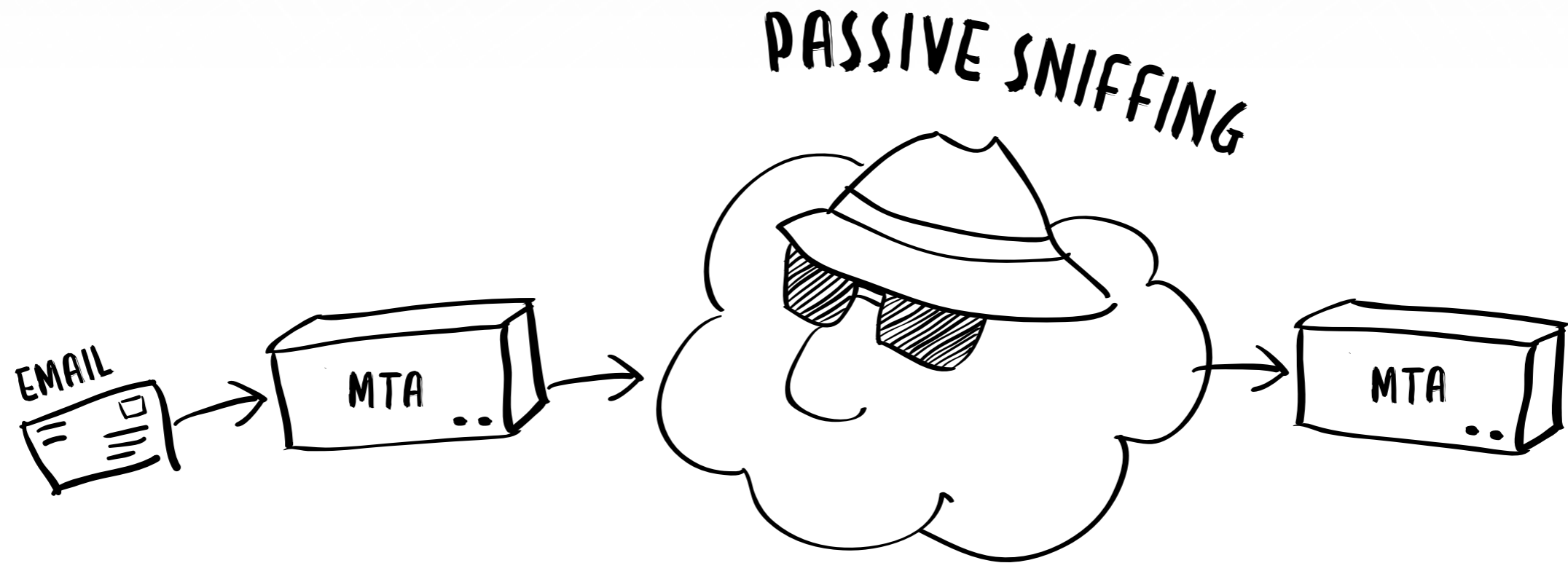
# The Red Lock

**Laura Atkins** <laura@blight

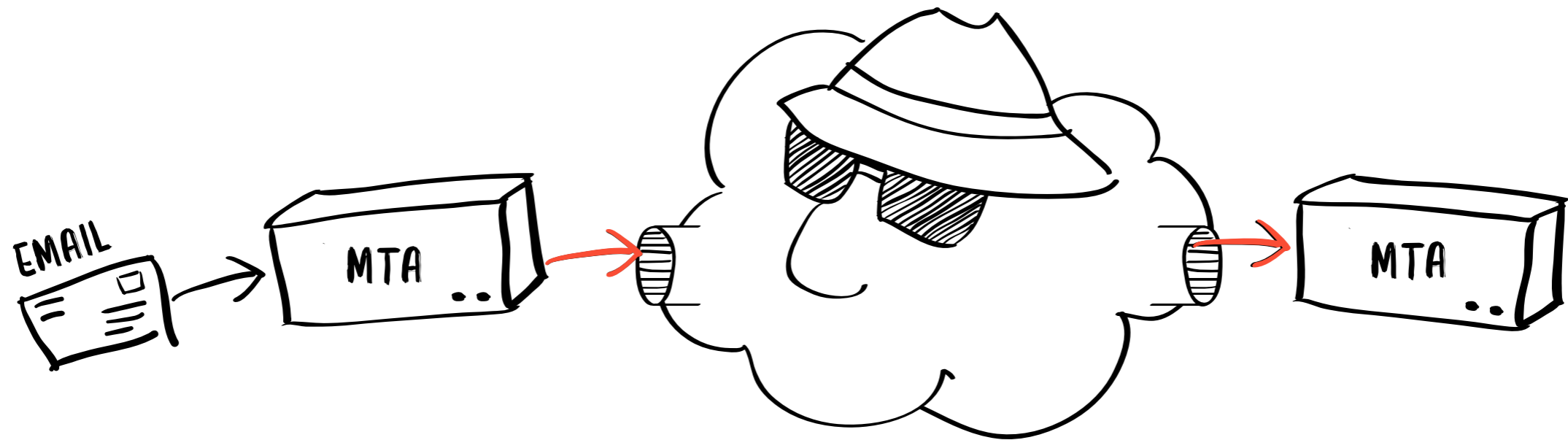
 to me 

So what does this look like

# Open Lock



# No Lock

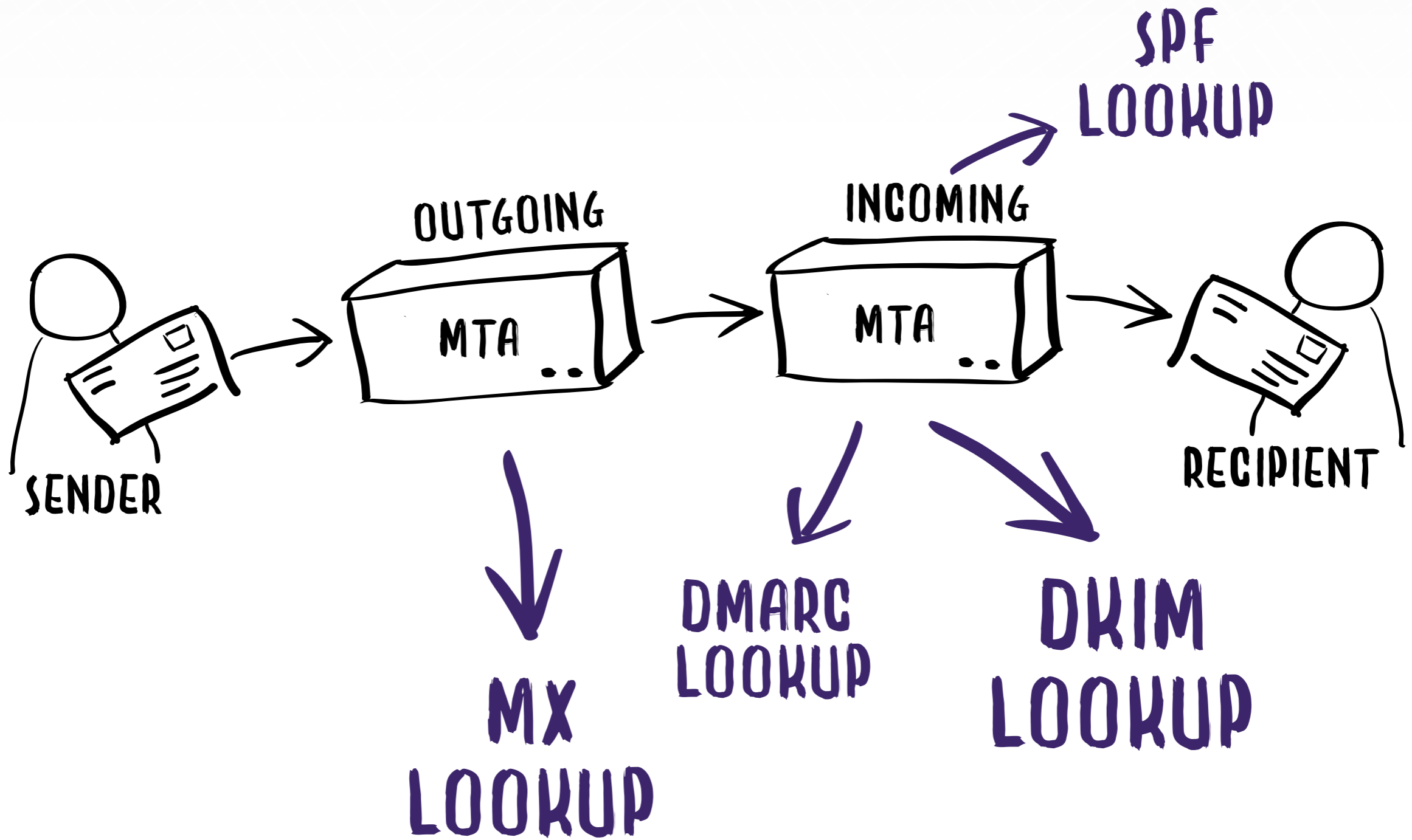


**TLS**

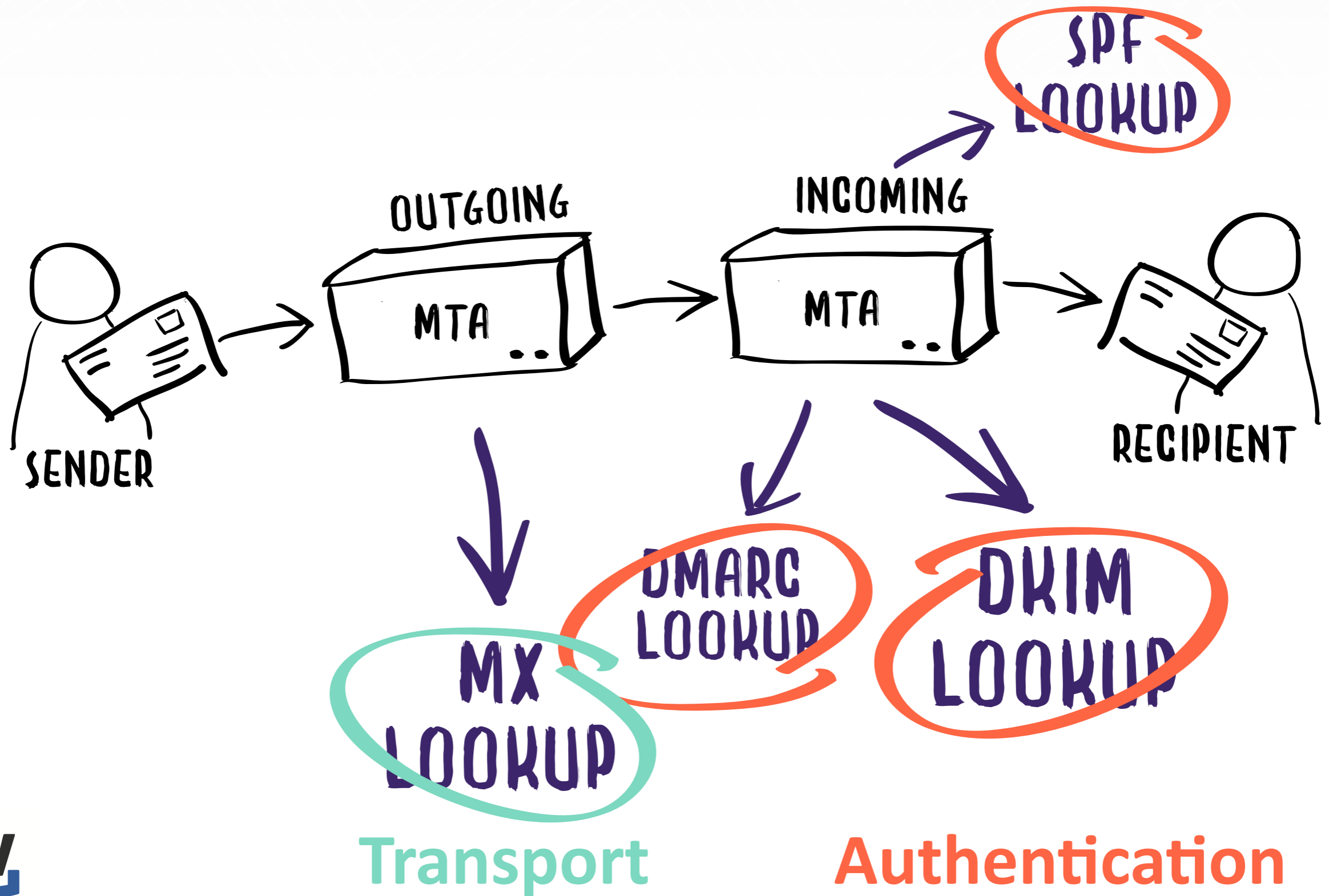
Transport Layer Security

Prevents 3rd Parties from  
Passively Sniffing Traffic

# DNS and Email



# DNS and Email





# DNS

- Way to share information about a hostname
- Widely used
- Can share IP addresses
- Can be delegated to other entities
- Can share text based information



# DNSSEC

## DNS Is Vulnerable

DNSSEC Signs DNS Records to Prevent Tampering and Hacking



**WHEW!**



# Authentication

**SPF** Sender Policy Framework

**DKIM** Domain Keys Identified Email

**DMARC** Domain-based Message Authentication,  
Reporting & Conformance



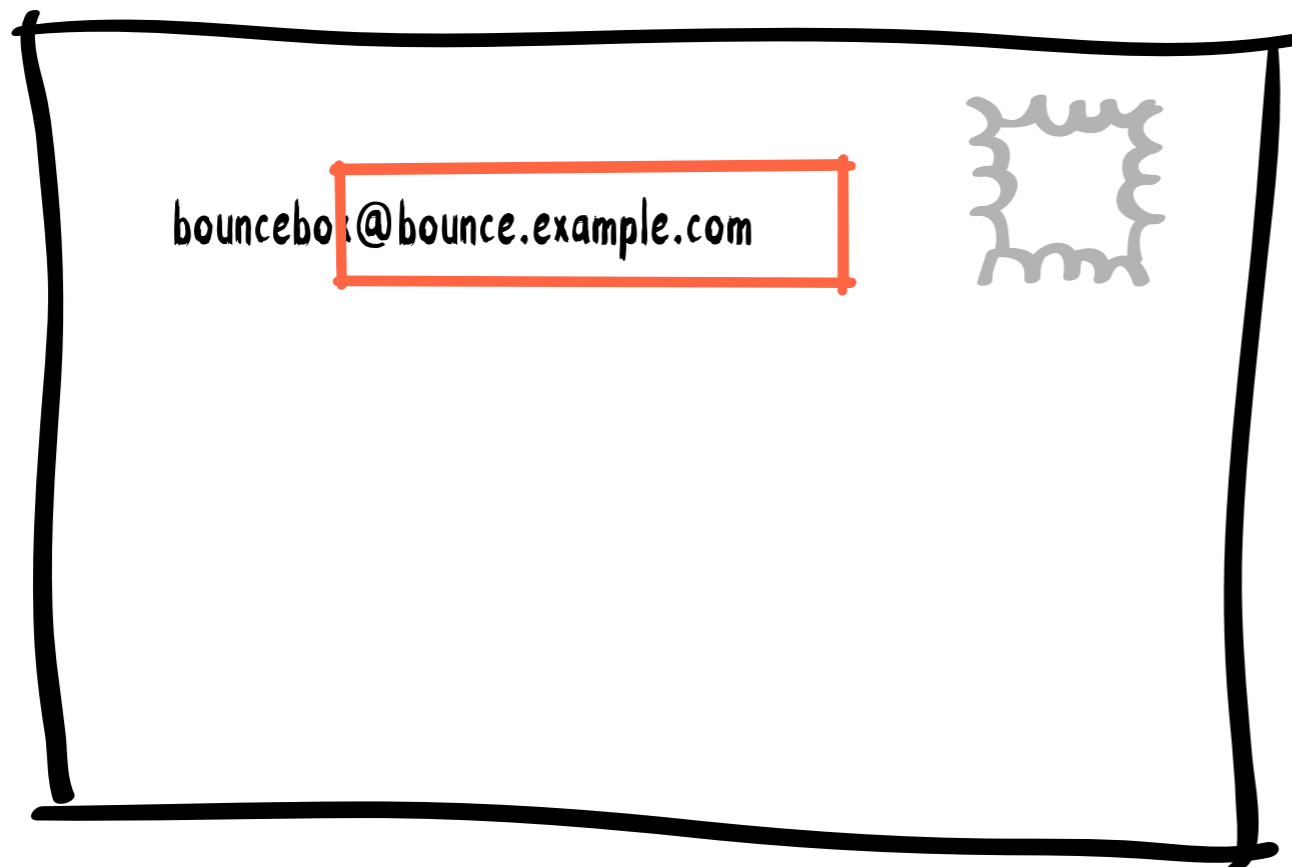
# Authentication Information

- Envelope From
- Sending IP address
- d = value
- Visible From

**All Contained  
In The Email**



# SPF



## DNS Lookup on Envelope From Domain

```
v=spf1 ip4:184.105.179.130  
ip4:184.105.179.154 ip6:2001:470:1:6d::  
9a include:zoho.com  
include:servers.mcsv.net ~all
```

## Check for Sending IP Address

Sending IP in SPF = Authenticated



# DKIM

```
Dkim-Signature: v=1; a=rsa-sha256; c=relaxed/relaxed; d=gmail.com;  
s=20120113; h=mime-version:date:message-id:subject:from:to;  
bh=XzIp7m0LY7Ja0xnE9hWwozvN4QRb2M+KSZ9opUNSQSE=; b=jbn29Eu9L3K7srY  
+YMEQZiUFUJ+8Tjxe3+61CGUtPBfzSKSQ74yv+xK8U9FmqrX/nU  
eH0Gq0o3xK1tumxo0MuDcVwTm+++4Y/J0e0EU3dGMsDPR/n7+eFUPJrJY00EN+vPucj/  
xPmbn3xYTPqEwc7a95TYxdgkbWRcz0DjI45Q0XQXITEXnf2yQ9YpvmZoZNBueCh09trf  
w7/SyZF78qEfg1zy0l0Ix9ePfnDl7lmFcrx1fTFiW2h4GbHpNVIzYUd3AwLxwqf289v/  
RufsYicdwHUwNs3UhpL/xiDzgg20w1jaEaaKe8uJAzSyzPaSJdGddKsAHMl2+PCbIVk8  
jUbQ==
```

DNS lookup on d=value

Verify signature

Signature verified = DKIM Authenticated

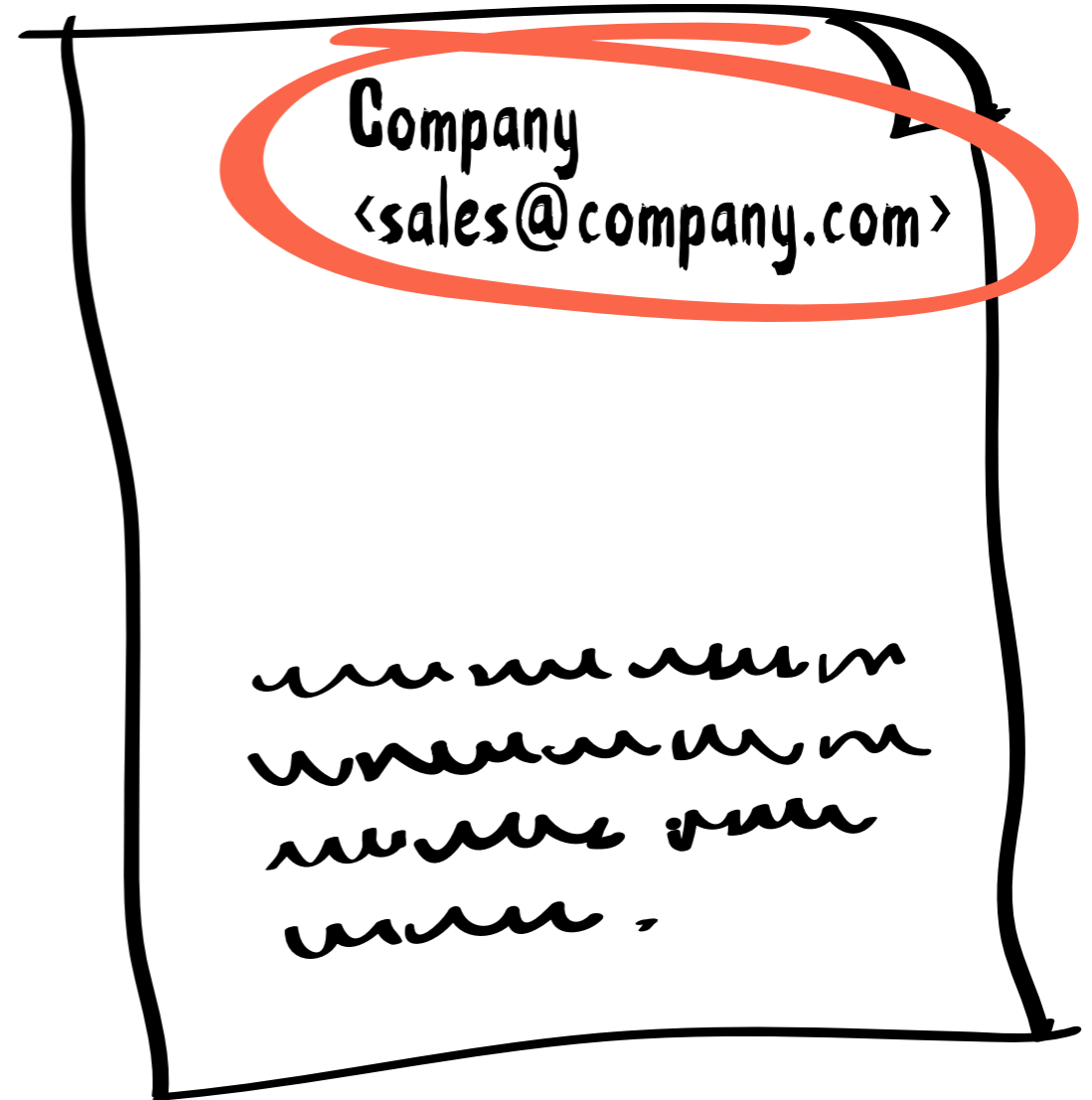


# What Isn't Authenticated by SPF or DKIM??





# What Isn't Authenticated by SPF or DKIM??

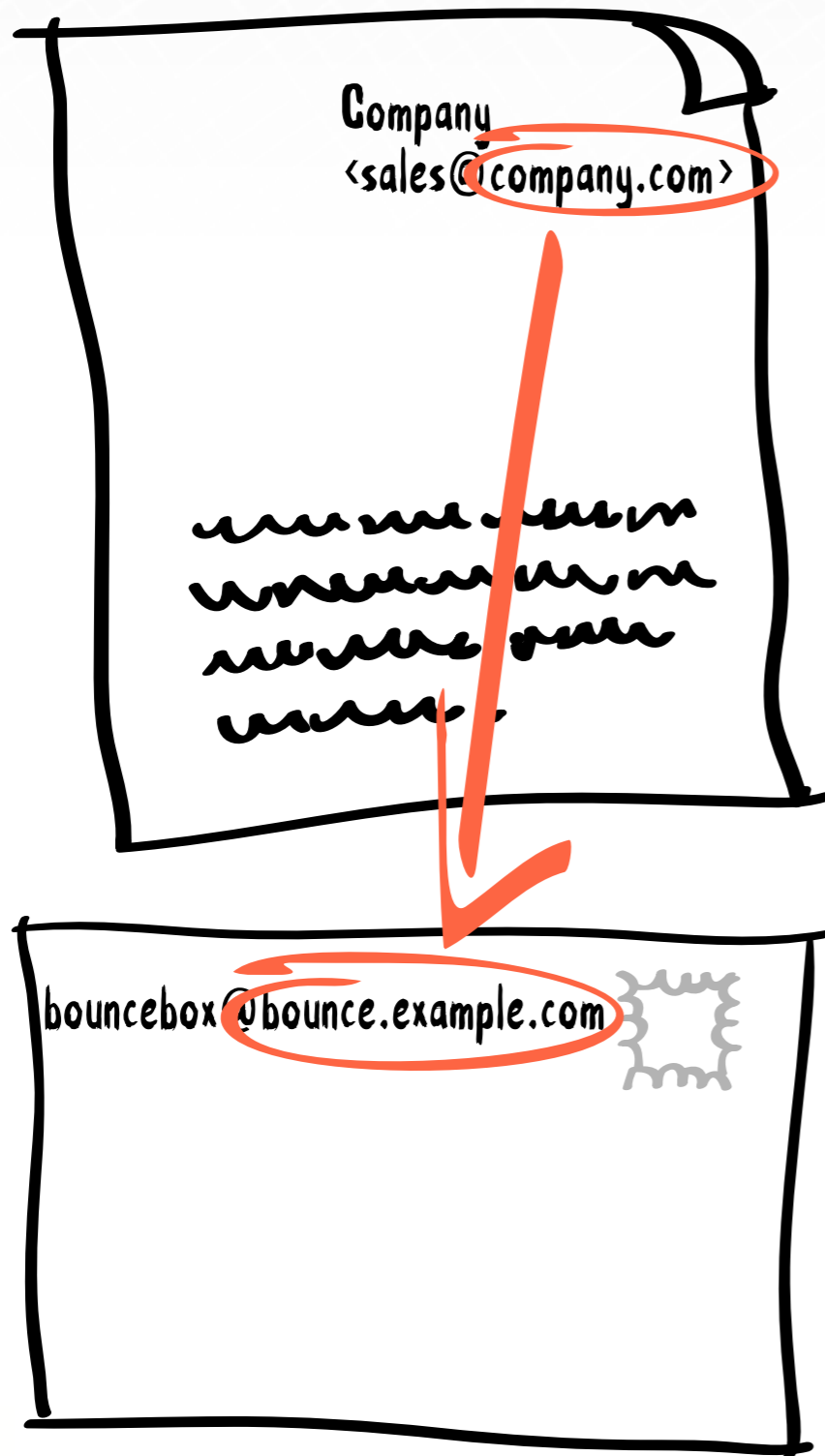


# DMARC

- Authenticates the from address the user sees
- Uses SPF and DKIM as a framework for that authentication
- Lets domain owners request handling of unauthenticated email
- Lets receivers send reports about email failing authentication



# DMARC with SPF



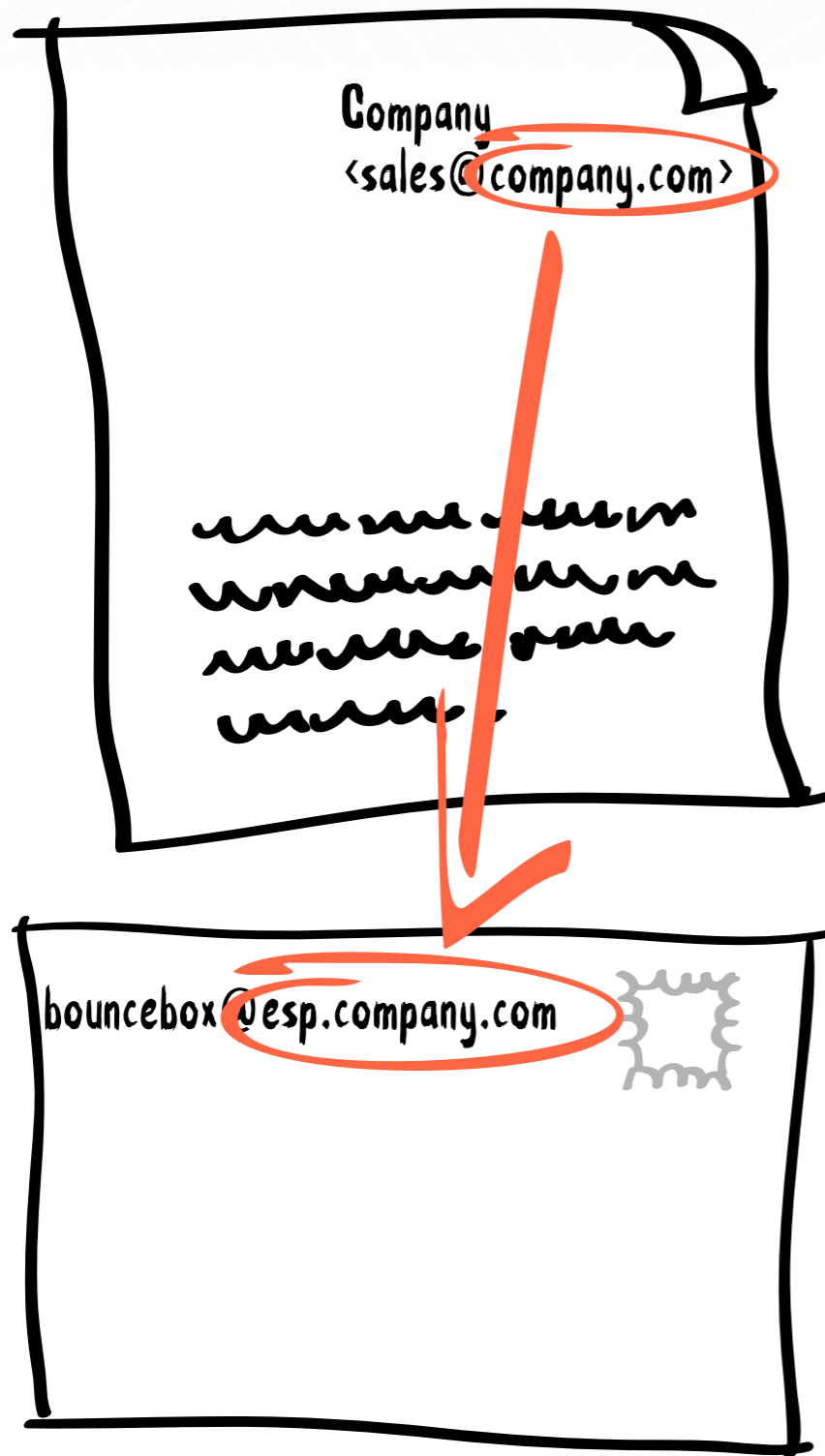
company.com

≠

bounce.example.com

Mail Cannot be DMARC  
Authenticated using SPF

# DMARC with SPF



company.com

=

esp.company.com

Mail Is DMARC  
Authenticated using SPF

# DMARC with DKIM

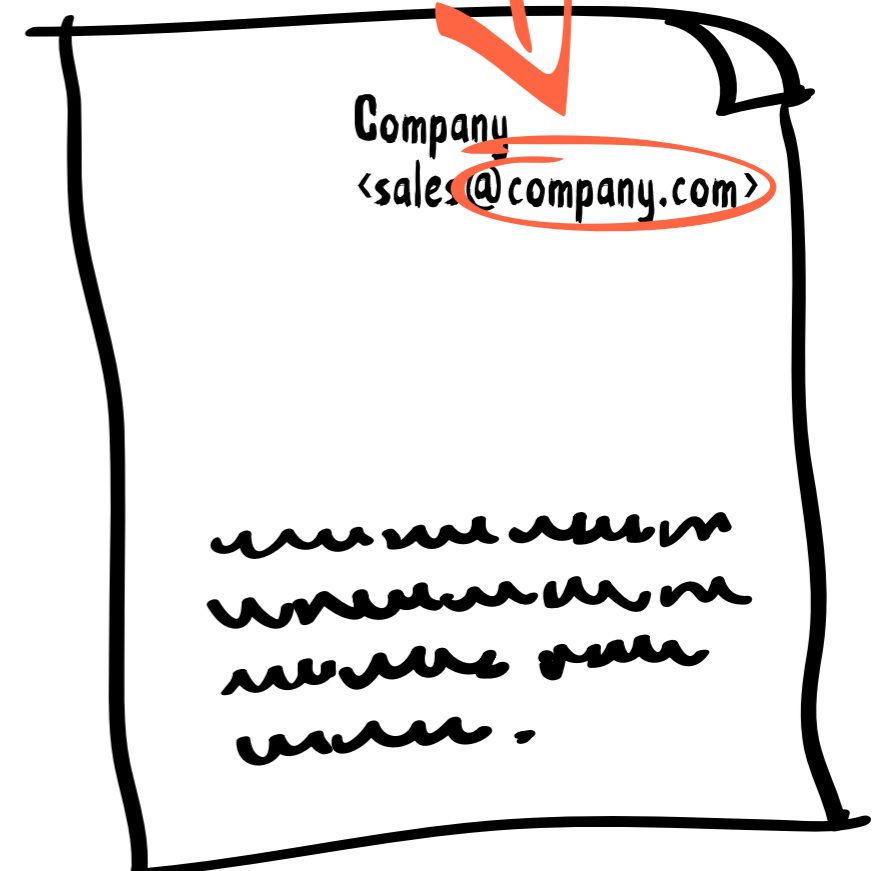
```
Dkim-Signature: v=1; a=rsa-sha256; c=relaxed/relaxed; d=esp.company.com; s=20120113; h=mime-version:date:message-id:subject:from:to:
bh=XzIp7m0LY7Ja0xnE9hWwozvN4QRb2M+KSZ9opUNSQSE=; b=jbn29Eu9L3K7srY
+YMEQZiUFUJ+8Tjxe3+61CGUtPBfzSKSQ74yv+xK8U9FmqrX/nU
eH0Gq0o3xK1tumxo0MuDcVwTm+++4Y/J0e0EU3dGMsDPR/n7+eFUPJrJY00EN+vPucj/
xPmbn3xYTPqEwc7a95TYxdgkbWRcz0DjI45Q0XQXITEXnf2yQ9YpvmZoZNBueCh09trf w7/
SyZF78qEfg1zy0l0Ix9ePfnDl7lmFcrx1fTFiW2h4GbHpNVIzYUd3AwLxwqf289v/
RufsYicdwHUwNs3UhpI/xiDzgg20w1jaEaaKe8uJAzSyzPaSJdGddKsAHMl2+PCbIVk8
jUbQ==
```

company.com

=

esp.company.com

Mail Is DMARC Authenticated  
using DKIM



**Will There Be A  
Test?**

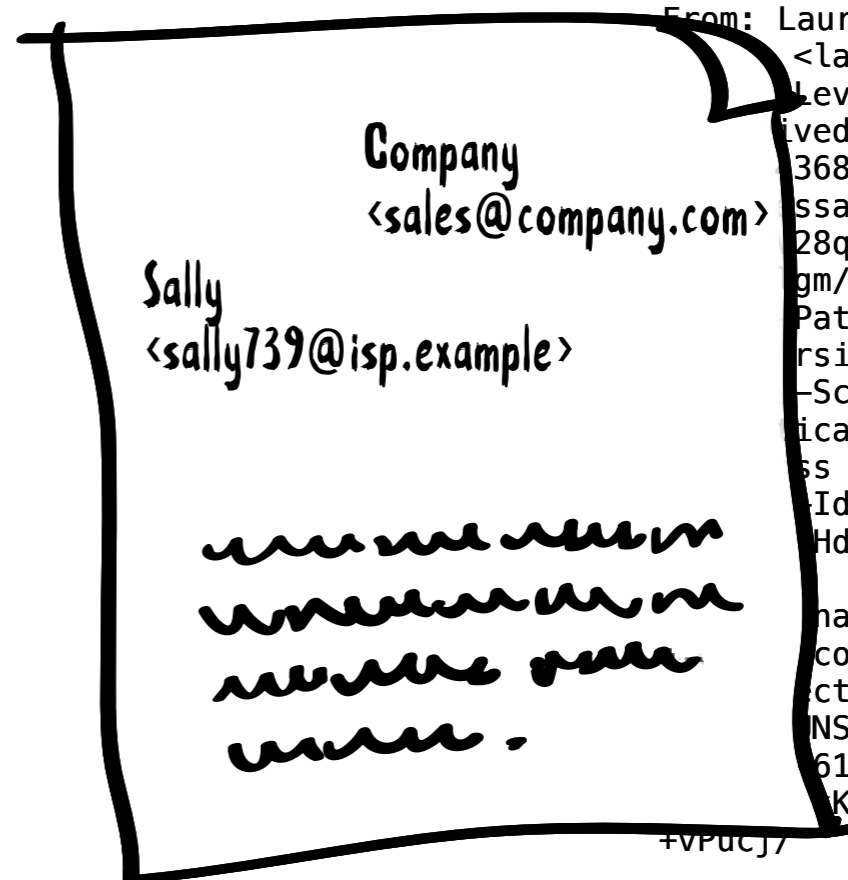
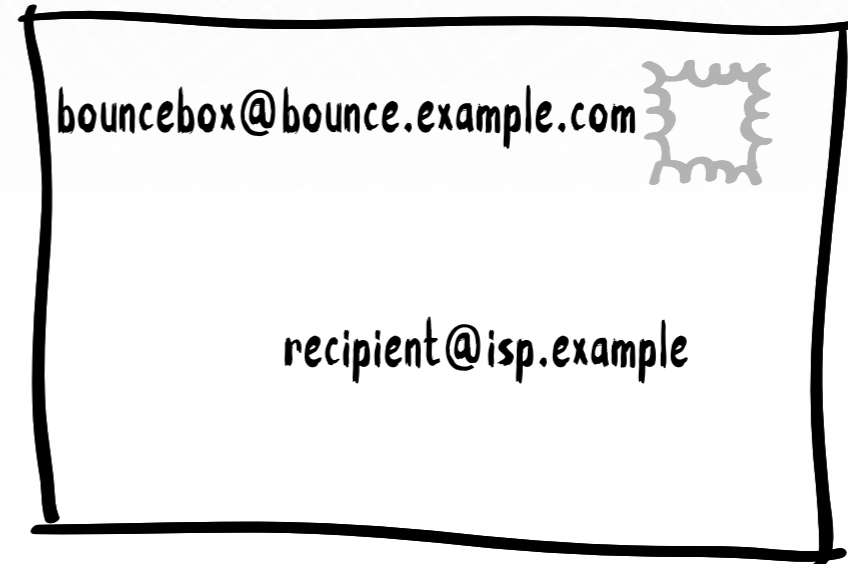


→ **Language and Advice**



# Email Structure

- Multiple From Addresses
- Hidden Content
  - Display
  - Info about Email
- Receiver Decides Final Recipient



From: Laura Atkins <wttwlaura@gmail.com>  
<laura@wordtothewise.com>  
Level:  
Received: by 10.50.137.33 with  
36875258; Mon, 16 May 2016  
Message-State:  
28qjlnjISfEbZp0WHCIqUZiLJf  
gm/a++HlGzoKw8XjA==  
Path: <wttwlaura@gmail.com>  
Version: 1.0  
Scanned: Debian amavisd-r  
Authentication-Results: mx.wordto  
ss (2048-bit key) header.c  
Id:  
HdQu9Ecdvo80GBhfiWA3PykoJ  
Signature: v=1; a=rsa-sha256  
com; s=20120113; h=mime-v  
ct:from:to; bh=XzIp7m0LY7  
NSQSE=; b=jbn29Eu9L3K7srY  
61CGUtPBfzSKSQ74yv+xK8U9F  
K1tumxo0MuDcVwTm+++4Y/J0  
+VPuCj7





# SPF Authentication

Authenticates Envelope  
From Address

Use DNS to Customize  
Envelope From

Delegate Sub-  
Domain to ESP

Point Sub-  
Domain to ESP  
Domain



# DKIM Authentication

d= is Domain Responsible  
for Email

Use DNS to Sign with  
Custom Domain

Delegate Sub-  
Domain to ESP

Point Sub-  
Domain to ESP  
Domain



# DMARC

Uses SPF or DKIM to  
Authenticate Visible From

Alignment is required for  
DMARC

Reporting Component

Policy Component

## Alignment

**d= Domain or  
Envelope From  
are in Same  
Domain Space as  
what the User  
Sees**



# Technical Tips

IPv6 Mail **MUST** be  
Authenticated for Delivery

Use Online Tools for Help



ISPs Will Show Users  
Authentication  
Information

**CIDR Calculator:**

Online Search

**Authentication  
Check:**

<http://tools.wordtothewise.com>

 to me 



# Questions?



# Laura Atkins

Word to the Wise

<http://wordtothewise.com/blog>

@wise\_laura

<https://www.linkedin.com/in/lauraatkins>

