M³AAWG DMARC Training Series

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DMARC.org
October 22, 2012
**M³AAWG DMARC Training Videos**

(2.5 hours of training)

This is Segment 2 of 6
The complete series of DMARC training videos is available at:
https://www.m3aawg.org/activities/maawg-training-series-videos

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DMARC Identifier Alignment
DMARC Segment 2 – about 20 minutes

Mike Adkins, DMARC.org and M³AAWG Co-Vice Chairman
October 22, 2012
DMARC Spec Overview

1. Check SPF & DKIM
2. DMARC Identifier Alignment
3. Act on unaligned mail

Inbound MTAs

Aggregate MTAs

Mail Storage

Aligned Email

Unaligned Email
DMARC tests and enforces Identifier Alignment

Authenticated Identifiers are checked against Mail User Agent (MUA) visible "RFC5322.From" domain

Only one Authenticated Identifier has to Align for the email to be considered in Alignment
DMARC Spec – Identifier Alignment

• Identifier Alignment can be strict (match exactly) or relaxed:

• Relaxed SPF: The Organizational Domain of the SPF Authenticated RFC5321:Mail From and RFC5322:From must match.

• Relaxed DKIM: The Organizational domain from 'd=' value of DKIM authenticated signature and RFC5322:From must match.
Organizational Domain

• TLD + 1 atom
  • groups.facebook.com = facebook.com
  • aol.co.uk = aol.co.uk
  • foo.bar.example.ne.jp = example.ne.jp

• Uses publicsuffix.org for TLD list

• More robust methods being considered
SPF and DKIM Strict Identifier Alignment

Return-Path:postmaster@example.com
Authentication-Results: mx.mail.com; spf=pass (mail.com: domain of postmaster@example.com; designates 10.1.1.1 as permitted sender) smtp.mail=postmaster@example.com;
dkim=pass header.i=@example.com
DKIM-Signature: v=1; a=rsa-sha256; d=example.com; s=s1024-2011-q2; c=relaxed/simple;
q=dns/txt; i=@example.com; t=1337318096; h=From:Subject:Date:To:MIME-Version:Content-Type; bh=015o8r4ftEPBr083MbUpe0mIrWKR5yT46DR6CGk/Mk=;
b=T6m3ZvppP3OLGNQVoR/llW+RxsBQiRlaCcwZpXTF/xjWk0xjY1/8S0UUvtFPHZ11 0cy+
+svp5ymrqBgnDEN/ZQEcfmzYEOg1BNL/I8z1MKpMVOf/9cLiPtvbaWi/G2VBY
LX0NpLsSymtoeqTBYOJqoiNlzdDNP01pVgZYunf8h90=;
From: "Postmaster" <postmaster@example.com>

- SPF domain = example.com
- DKIM domain = example.com
- From domain = example.com
SPF Strict Identifier Alignment

Return-Path: postmaster@example.com
Authentication-Results: mx.mail.com; spf=pass (mail.com: domain of postmaster@example.com
designates 10.1.1.1 as permitted sender) smtp.mail=postmaster@example.com
From: "Postmaster" <postmaster@example.com>

• SPF domain = example.com
• From domain = example.com
DKIM Strict Identifier Alignment

Return-Path: postmaster@example.com
Authentication-Results: mx.mail.com; spf=neutral (mail.com: domain of postmaster@example.com does not designate 10.1.1.1 as permitted sender)
 smtp.mail=postmaster@example.com; dkim=pass header.i=@example.com
DKIM-Signature: v=1; a=rsa-sha256; d=example.com; s=s1024-2011-q2; c=relaxed/simple;
 q=dns/txt; i=@example.com; t=1337318096; h=From:Subject:Date:To:MIME-Version:Content-Type;
 b=015o8r4ftEPBr083MbUpe0mIrWKRs5yT46DR6CGk/Mk=;
b=T6m3ZvppP3OLGQVoR/l1W+RxSbQiriAaCcwZpXTF/xjWk0xjY1/8S0UUvtFPHZ11 0cy+s
 b=svp5ymrqBgnDEN/ZQEcfnYEOg1BNL/18z1MKpVOf/9cLlPTvbaWi/G2VB
 LXONpLSSymteq1BYOJqoiNLzDNP01pVgzYUnf8h90=;
From: "Postmaster" <postmaster@example.com>

- DKIM domain = example.com
- From domain = example.com
SPF and DKIM Strict Unaligned

Return-Path: postmaster@phish.com
Authentication-Results: mx.mail.com; spf=pass (mail.com: domain of postmaster@phish.com
designates 10.1.1.1 as permitted sender) smtp.mail=postmaster@example.com;
dkim=fail header.i@example.com
DKIM-Signature: v=1; a=rsa-sha256; d=example.com; s=s1024-2011-q2; c=relaxed/simple;
  q=dns/txt; i@example.com; t=1337318096; h=From:Subject:Date:To:MIME-Version:Content-Type;
b=T6m3ZvppP3OLGNQVoR/11W+RxSbQiRlaCcwZpXTF/xjWk0xjY1/8S0UUvtFPHZ11 0cy
  +svp5ymrqBgndEN/ZQEcfmzYEo1BNL/18z1MKpVOF/9cLiPsvbaWi/G2VBY
  LXOnpLSyempoQTBYOJqoiNLzDNp0lpVqZUnf8h90=;
From: "Postmaster" <postmaster@example.com>

• SPF domain = phish.com
• From domain = example.com
SPF and DKIM Strict Unaligned

Return-Path: postmaster@foo.example.com
Authentication-Results: mx.mail.com; spf=pass (mail.com: domain of postmaster@example.com
designates 10.1.1.1 as permitted sender) smtp.mail=postmaster@example.com;
dkim=pass header.i=@bar.example.com
DKIM-Signature: v=1; a=rsa-sha256; d=bar.example.com; s=s1024-2011-q2; c=relaxed/simple;
q=dns/txt; i=@facebookmail.com; t=1337318096; h=From:Subject:Date:To:MIME-Version:Content-Type;
bh=01508r4ftEPBr083MbUpe0mIrWKRs5yT46DR6CGk/Mk=;
b=T6m3ZvppP3OLGNQVoR/11W+RxSbQiRlaCcwZpXTF/xjWk0xjY1/8S0UUvtFPHZ11 0cy
+svp5ymrqBgnDEN/ZQEcfmzYEoGlBNL/I8zlMKpmVOf/9cLiIpTVbaWi/G2VBY
LXONpLSymtoeqTBYOJqoiNLzDNP0lpVgZYunf8h90=;
From: "Postmaster" <postmaster@example.com>

- SPF domain = foo.example.com
- DKIM domain = bar.example.com
- From domain = example.com
SPF and DKIM Relaxed Alignment

Return-Path: postmaster@bounce.example.com
Authentication-Results: mx.mail.com; spf=pass (mail.com: domain of postmaster@bounce.example.com designates 10.1.1.1 as permitted sender)
smtp.mail=postmaster@bounce.example.com; dkim=pass header.i=@bounce.example.com DKIM-Signature: v=1; a=rsa-sha256; d=bounce.example.com; s=s1024-2011-q2; c=relaxed/ simple;
q=dns/txt; i=@bounce.example.com; t=1337318096;  h=From:Subject:Date:To:MIME-Version:Content-Type;
b=01508r4ftEPBr083Mbupe0mIrWKR5yT46DR6CGk/Mk=;b=T6m3ZvppP3OLGNQVoR/l1w+RxSbQiRlacCwZpXrT/XjWk0xjYl/8S0UUtFPH21l 0cy+svp5ymrqBgnDEN/ZQEcfmzYEoglBNL/ 18zlMKPmVOi/9cLiPtvbaWi/GZvyb
From: "Postmaster" <postmaster@foo.example.com>

- SPF domain = bounce.example.com
- SPF Organizational domain = example.com
- DKIM domain = bounce.example.com
- DKIM Organizational domain = example.com
- From domain = foo.example.com
- From Organizational domain = example.com
SPF Relaxed Alignment

Return-Path: postmaster@example.com
Authentication-Results: mx.mail.com; spf=pass (mail.com: domain of postmaster@example.com
designates 10.1.1.1 as permitted sender) smtp.mail=postmaster@example.com
From: "Postmaster" <postmaster@example.com>

• SPF domain = example.com
• SPF Organizational domain = example.com
• From domain = example.com
• From Organizational domain = example.com
DKIM Relaxed Alignment

Return-Path: postmaster@example.com
Authentication-Results: mx.mail.com; spf=neutral (mail.com: domain of postmaster@example.com does not designate 10.1.1.1 as permitted sender)
smtp.mail=postmaster@example.com; dkim=pass header.i=@foo.example.com

DKIM-Signature: v=1; a=rsa-sha256; d=foo.example.com; s=s1024-2011-q2; c=relaxed/simple;
q=dns/txt; i=@foo.example.com; t=1337318096; h=From:Subject:Date:To:MIME-Version:Content-Type; bh=01508r4ftEPBr083MbUpe0mIrWKR5yT46DR6CGk/MK=;
b=T6m3ZvppP3OLGNQVoR/11W+RxSbQiRlaCcwZpXTF/xjWk0xjY1/8SO0UvtfPHZ11 0cy+svp5ymrqBgnDEN/ZQEcfmzYEOg1BNL/I8zlMKPmVOf/9cL1pTVbaWi/G2VBYLX0NpLsSymtoeqTBYOJqoiNLzDNp0lpVgZYunf8h90=;

From: "Postmaster" <postmaster@example.com>

- DKIM domain = foo.example.com
- DKIM Organizational domain = example.com
- From domain = example.com
- From Organizational domain = example.com
SPF and DKIM Relaxed Unaligned

Return-Path: postmaster@phish.com
Authentication-Results: mx.mail.com; spf=pass (mail.com: domain of postmaster@phish.com designates 10.1.1.1 as permitted sender) smtp.mail=postmaster@example.com;
dkim=fail header.i=@example.com
DKIM-Signature: v=1; a=rsa-sha256; d=bar.example.com; s=s1024-2011-q2; c=relaxed/simple;
q=dns/txt; i=@example.com; t=1337318096; h=From:Subject:Date:To:MIME-Version:Content-Type;
b=015o8r4ftEPBr083MbUpe0mIrWKRs5yT46DR6CGk/Mk=;
b=T6m3ZvppP3OLGNQVoR/11W+RxSbQiRlaCcwZpXTF/xjWk0xjY1/8S0UUvtFPHZ1l
0cy+svp5ymrqBgnDEN/ZQEcfnmYEo1BNL/I8zlMKPmVOf/9cLIPtvbaWi/G2VBY
LX0NpLsSymtoeqTBYOJqoiNLzDNP01pVgZYunf8h90=;
From: "Postmaster" <postmaster@example.com>

- SPF domain = phish.com
- SPF Organizational domain = phish.com
- From domain = example.com
- From Organizational domain = example.com
Exercise 1
Is SPF in Strict Alignment?

Return-Path: postmaster@example.com
Authentication-Results: mx.mail.com; spf=neutral (mail.com: domain of postmaster@example.com does not designate 10.1.1.1 as permitted sender)
smtp.mail=postmaster@example.com; dkim=pass header.i=@example.com
DKIM-Signature: v=1; a=rsa-sha256; d=example.com; s=s1024-2011-q2; c=relaxed/simple;
q=dns/txt; i=@example.com; t=1337318096; h=From:Subject:Date:To:MIME-Version:Content-Type; bh=01508r4ftEPBr083MbUpe0mIrWKR5yT46DR6CGk/Mk=;
b=T6m3ZvppP3OLGNQVoR/11W+RxSbQiRlaCcwZpXTF/xjWk0xjY1/8SUUvtFPHZ11 0cy+
svp5ymrqBgnDEN/ZQEcfmzYE0g1BNL/I8zI5MKPmVof/9cLiPtvbaWi/G2VBY
LX0NPfLSymmoTgY0OJqoiNLzDNp01pVgZYunf8h90=;
From: "Postmaster" <postmaster@example.com>
Exercise 1
Is SPF in Strict Alignment?

Return-Path: postmaster@example.com
Authentication-Results: mx.mail.com; spf=neutral (mail.com: domain of postmaster@example.com does not designate 10.1.1.1 as permitted sender)
smtp.mail=postmaster@example.com; dkim=pass header.i=@example.com
DKIM-Signature: v=1; a=rsa-sha256; d=example.com; s=s1024-2011-q2; c=relaxed/simple;
q=dns/txt; i=@example.com; t=1337318096; h=From:Subject:Date:To:MIME-Version:Content-Type; bh=01508r4ftEPBr083MbUpe0mIrWKRs5yT46DR6CGk/Mk=;
b=T6m3ZvppP3OLGNQVoR/llW+RxBqQiR1aCcwZpXTF/xjWk0xjY1/8S0UUvtFPHZi1 0cy+syp5ymrqBgnDEN/ZQEcfmzYEOglBNL/I8z1MKPmVOf/9cLiPtvbaWi/G2VB
From: "Postmaster" <postmaster@example.com>

Answer: No, SPF did not pass.

Is the email Aligned anyway?
DMARC Spec – Alignment Exercises

**Exercise 1**
**Is SPF in Strict Alignment?**

Return-Path: postmaster@example.com
Authentication-Results: mx.mail.com; spf=neutral (mail.com: domain of postmaster@example.com does not designate 10.1.1.1 as permitted sender)
smtp.mail=postmaster@example.com; dkim=pass header.i=@example.com
DKIM-Signature: v=1; a=rsa-sha256; d=example.com; s=s1024-2011-q2; c=relaxed/simple;
q=dns/txt; i=@example.com; t=1337318096; h=From:Subject:Date:To:MIME-Version:Content-Type; bh=015o8r4ftEPBr083MbUpe0mIrWKRs5yT46DR6CGk/Mk=;
b=T6m3ZvppP3OLGNQVoR/1Iw+RxSbQiRlaCcwZpXTF/xjWk0xjY1/8S0UUvtFPHZ11 0cy+syp5ymrqBgnDEN/ZQEcfnzYEOg1BNL/I8zlMKPmVoF/9cLlTvbaWi/G2VBY
LX0NPgLsSymtoeqTBYOJqoiNLzDNP01pVgZYunf8h90=

From: "Postmaster" <postmaster@example.com>

Answer: No, SPF did not pass.

**Is the email Aligned anyway?**

Answer: Yes, DKIM is in Strict Alignment, so the email is Aligned regardless.
Exercise 2
Is SPF in Relaxed Alignment?

Return-Path:postmaster@foo.example.com
Authentication-Results: mx.mail.com; spf=pass (mail.com: domain of postmaster@example.com
designates 10.1.1.1 as permitted sender) smtp.mail=postmaster@example.com;
dkim=pass header.i=@bar.example.com
DKIM-Signature: v=1; a=rsa-sha256; d=bar.example.com; s=s1024-2011-q2; c=relaxed/simple;
q=dns/txt; i=@facebookmail.com; t=1337318096; h=From:Subject:Date:To:MIME-Version:Content-Type; bh=01508r4ftEPBr083MbUpe0mIrWKR5yT46DR6CGk/Mk=;
b=T6m3ZvppP3OLGNQVoR/11W+RxSbQiRlaCcwZpXTF/xjWk0xjY1/8S0UUtFPHZ11 0cy+
svp5ymrqBgnDEN/ZQEcfmzYEOg1BNL/I8z1MKPmVOf/9cL1pTVbaWi/G2VBY
LXONpLsSymtoeqTBYO0JqoiNLzDNP01pVgZYunf8h90=;
From: "Postmaster" <postmaster@example.com>
Exercise 2
Is SPF in Relaxed Alignment?

Return-Path: postmaster@foo.example.com
Authentication-Results: mx.mail.com; spf=pass (mail.com: domain of postmaster@example.com
designates 10.1.1.1 as permitted sender) smtp.mail=postmaster@example.com;
dkim=pass header.i=@bar.example.com
  q=dns/txt; i=@facebookmail.com; t=1337318096; h=From:Subject:Date:To:MIME-Version:Content-Type;
bh=0l5o8r4ftEPBr083MbUpe0mIrWKRs5yT46DR6CGK/Mk=
  b=T6m3ZvppP3OLGNQVoR/1lW+RxSbQiriRlaCcwZpXTF/xjWk0xjY1/8SUUVtFPHZi1 0cy
  +svp5ymrqBgnDEN/ZQEcfmzYEOg1BNL/I8zlMKPmVOf/9cLIpTVbawI/G2VBY
  LXONpLsSymtoeqTBY00JqoiNLzDNP01pVgZyYunf8h90=
From: "Postmaster" <postmaster@example.com>

Answer: Yes, foo.example.com shares the same Organizational domain as example.com.
Exercise 3
Is DKIM in Strict Alignment?

Return-Path: postmaster@example.com
Authentication-Results: mx.mail.com; spf=neutral (mail.com: domain of postmaster@example.com does not designate 10.1.1.1 as permitted sender)
smtp.mail=postmaster@example.com; dkim=pass header.i=@foo.example.com
DKIM-Signature: v=1; a=rsa-sha256; d=foo.example.com; s=s1024-2011-q2; c=relaxed/simple; q=dns/txt; i=@foo.example.com; t=1337318096; h=From:Subject:Date:To:MIME-Version:Content-Type; bh=015o8r4ftEPBr083Mbupe0mIrWKRs5yT46DR6CGk/Mk=;
b=T6m3ZvppP3OLGNQVoR/11W+RxSbQiRlaCcwZpXTF/xjWk0xjY1/8S0UUvtfPHZ11 0cy+svp5ymrqBgnDEN/ZQEcfmzYEOgiBNL/I8zlMKPmVOf/9cLIpTVbaWi/G2VBY
From: "Postmaster" <postmaster@example.com>
Exercise 3
Is DKIM in Strict Alignment?

Return-Path: postmaster@example.com
Authentication-Results: mx.mail.com; spf=neutral (mail.com: domain of postmaster@example.com does not designate 10.1.1.1 as permitted sender)
smtp.mail=postmaster@example.com; dkim=pass header.i=@foo.example.com
DKIM-Signature: v=1; a=rsa-sha256; d=foo.example.com; s=s1024-2011-q2; c=relaxed/simple;
q=dns/txt; i=@foo.example.com; t=1337318096; h=From:Subject:Date:To:MIME-Version:Content-Type; bh=015o8r4ftEPBr083MbUpe0mIrWKR5yT46DR6CGk/Mk=;
b=T6m3ZvppP3OLGNQV0b/11W+RxSbQiRlaCcwZpXTF/xjWk0xjY1/8S0UUvtFPHZ11 0cy+
svp5ymrqBgnDEN/ZEcfmzYEOg1BNL/I8z1MKPmVOf/9cLIPtvbaWi/G2VBY
LXONpLsSymtoeqTBYO0JqoiNLzDNP01pVgZYunf8h90=

From: "Postmaster" <postmaster@example.com>

Answer: No, foo.example.com does not exactly match example.com

Under what conditions would the email be Aligned?
Exercise 3  
Is DKIM in Strict Alignment?

Return-Path: postmaster@example.com
Authentication-Results: mx.mail.com; spf=neutral (mail.com: domain of postmaster@example.com does not designate 10.1.1.1 as permitted sender)
smtp.mail=postmaster@example.com; dkim=pass header.i=@foo.example.com
DKIM-Signature: v=1; a=rsa-sha256; d=foo.example.com; s=s1024-2011-q2; c=relaxed/simple;
q=dns/txt; i=@foo.example.com; t=1337318096; h=From:Subject:Date:To:MIME-Version:Content-Type; bh=015o8r4ftEPBr083MbUpe0mIrWKRs5yT46DR6CGk/Mk=;
b=T6m3ZvppP3OLGNQVoR/11W+RxSbQiRlaCcwxZpXTF/xjWk0xjY1/8S0UUvtFPHZ1l 0cy+ssvp5ymrQgBnDEN/ZQEcfmzYEoGlBNL/I8zlMKPmVOfo/9cLJpTVbaWi/G2VBY
LXONpLsSymtoeqTBYOJg0iNLzDNP0lpVgZYunf8h90=;
From: "Postmaster" <postmaster@example.com>

Answer: No, foo.example.com does not exactly match example.com

Under what conditions would the email be Aligned?

Answer: Since SPF does not pass, the email would only be Aligned if Relaxed DKIM Alignment was allowed.
Exercise 4
Under what conditions would this email be considering in Alignment?

Return-Path: postmaster@foo.example.com
Authentication-Results: mx.mail.com; spf=neutral (mail.com: domain of postmaster@example.com does not designate 10.1.1.1 as permitted sender)
smtp.mail=postmaster@foo.example.com; dkim=fail header.i=@bar.example.com
DKIM-Signature: v=1; a=rsa-sha256; d=bar.example.com; s=s1024-2011-q2; c=relaxed/simple;
q=dns/txt; i=@bar.example.com; t=1337318096; h=From:Subject:Date:To:MIME-Version:Content-Type; bh=01508r4ftEPBr083MbUpe0mIrWKRs5yT46DR6CGk/Mk=;
b=T6m3ZvppP3OLGNQVoR/11W+RxSbQiRlaCcwZpXTF/xjWk0xjYl/8S0UUvtFPHZ11 0cy+svp5ymrqBgnDEN/ZQEcfmzYeOg1BNL/I8zlMKPvOv/9cLiTvbaWi/G2VBY
LXONpLsSymtoeqTBYO0JqoiNLzDNP01pVgZyuning8h90=;
From: "Postmaster" <postmaster@example.com>
Exercise 4
Under what conditions would this email be considering in Alignment?

Return-Path:postmaster@foo.example.com
Authentication-Results: mx.mail.com; spf=neutral (mail.com: domain of
postmaster@example.com does not designate 10.1.1.1 as permitted sender)
smtp.mail=postmaster@foo.example.com; dkim=fail header.i=@bar.example.com
DKIM-Signature: v=1; a=rsa-sha256; d=bar.example.com; s=s1024-2011-q2; c=relaxed/simple;
q=dns/txt; i=@bar.example.com; t=1337318096; h=From:Subject:Date:To:MIME-Version:Content-Type;
bh=01508r4ftEPBr083MbUpe0mIrWKR5yT46DR6CGk/Mk=;
b=T6m3ZvppP3OLGNQVoR/11W+RxSbQiRlaCcwZpXTF/xjWy0xjY1/8S0UUtFPHZ11 0cy+
svp5ymrqBgnDEN/ZQEcfnzYE0g1BNL/I8zlMKPmVOf/9cLiPvbaWi/G2VBY
LX0NpLsSyntoeqTBY00JqoiNLzDNp01pVgZyunf8h90=;
From: "Postmaster" <postmaster@example.com>

Answer: None. Neither DKIM nor SPF are valid.

Assuming DKIM and SPF were actually valid, under what conditions would this email be considered Aligned?
Exercise 4
Under what conditions would this email be considering in Alignment?

Return-Path: postmaster@foo.example.com
Authentication-Results: mx.mail.com; spf=neutral (mail.com: domain of
postmaster@example.com does not designate 10.1.1.1 as permitted sender)
smtp.mail=postmaster@foo.example.com; dkim=fail header.i=@bar.example.com
DKIM-Signature: v=1; a=rsa-sha256; d=bar.example.com; s=s1024-2011-q2; c=relaxed/simple;
q=dns/txt; i=@bar.example.com; t=1337318096; h=From:Subject:Date:To:MIME-Version:Content-Type; bh=01508r4ftEPBr083MbUpe0mIrWKRs5yT46DR6CGk/Mk=;
b=T6m3ZvppP3OLGNQVoR/11W+RxSbQiRlaCcwZpXTF/xjWk0xjY1/8S0UUtFPHZ1l 0cy+
svp5ymrqBgnDEN/ZQEcfmzYEo1BNL/I8zlMKPmVOf/9cLlPTrbaWi/G2VBY
LXOnpLsSymtoeqtBYO0Jq0iNLzDNP01pVqZyUnf8h90=

From: "Postmaster" <postmaster@example.com>

Answer: None. Neither DKIM nor SPF are valid.

Assuming DKIM and SPF were actually valid, under what conditions would this email be considered Aligned?

Answer: If Relaxed Alignment was allowed for either DKIM or SPF, the email would be Aligned.
This has been the second of six DMARC video segments

View the entire

**M³AAWG DMARC Training Series**

from the public training video pages on the M³AAWG website at: [https://www.m3aawg.org/activities/maawg-training-series-videos](https://www.m3aawg.org/activities/maawg-training-series-videos)

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This video is presented by the

Messaging, Malware and Mobile Anti-Abuse Working Group
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