Mail transfer agent (2)

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1 Mailing loops

1.1 Sending email

To create mail loops every member of a loop had to create an alias to the neighbour, e.g.

tyvision horn@st2.os3.su

It is my configuration, written in file /etc/mail/aliases. After that sendmailconfig utility was launched to enable changes. The result of mail loop is shown in appendix A.

As you can see in logs, message is going around the circle, and stopped at st2.os3.su.

1.2 Changing behaviour of MTA in working loops

One of them is to use **FEATURE**(conncontrol) allows you to use the access database to control the number of simultaneous connections another machine may have to your server. * The number of simultaneous connections allowed each interval is based on the setting of the ConnectionRateWindowSize option, which defaults to 60 seconds. So, for example, if you want to reject a host that has more than 10 simultaneous connections to your server (sometime in the past 60 seconds), where that host has the IP address, you would put the following into your access database source file:

ClientRate <ip_address>: 10 # where 10 - is a number of connections

If number of connections will be more than 10 (in a 60sec) so they will be refused If not to set IP address - this rule will be common for all IP's.

2 Virtual Domains

2.1 Create a new subdomain wothin your domain

To create a new subdomain we have to add an MX record to the zone file. I've created subdomain called **resmail** and set 2nd priority after main mailserver record. Here you can see this record.

resmail.st5.os3.su. 1800 IN MX 15 mail.st5.os3.su.

2.2 Handling virtual domains

The following sequence have to be done:

- enable feature virtusertable in /etc/mail/sendmail.mc file
- create and fill /etc/mail/virtusertable file with records about virtual users

• compile configurations using sendmailconfig command

2.3 Show test results

Using my @innopolis.ru mailbox I've sent messages for both myboy@resmail.st5.os3.su and myboy@st5.os3.su. As we can see in screenshots of mutt mail agent (figures 1 and 2

```
L:Exit -:PrevPg <Space>:NextPg v:View Attachm. d:Del r:Reply j:Next ?:Help
Date: Wed, 21 Sep 2016 12:02:22 +0000
From: Tykushin Aantoly <a.tykushin@innopolis.ru>
To: "myboy@st5.os3.su" <myboy@st5.os3.su>
Subject: virtdomain

123123qweqwe

-N - 17/18: Tykushin Aantoly virtdomain
```

Figure 1: Message for myboy@st5.os3.su

3 SPAM and Security

3.1 Advantages and disadvantages of SPF and DomainKeys Identified Mail (DKIM)

There are many authentication methods, but there isn't a single one that's the best. SPF and SenderID allow a domain owner to add a file or record on the server that the recipient server cross-checks. These are easy to implement, but some suggest they aren't as secure. DKIM and DomainKeys embed information within the email, making it harder to forge (but they can also be harder to implement for senders and receivers.

DKIM alone doesn't grant in any way that the sender server is allowed to send outgoing mail for the specific domain.

SPF is powerless with messages forged in shared hosting scenario as all the mail will appear as the same coming IP.

```
L:Exit -:PrevPg <Space>:NextPg v:View Attachm. d:Del r:Reply j:Next ?:Help
Date: Wed, 21 Sep 2016 12:02:56 +0000
From: Tykushin Aantoly <a.tykushin@innopolis.ru>
To: "myboy@resmail.st5.os3.su" <myboy@resmail.st5.os3.su>
Subject: virtdomain

qweqewasdasd123123qweqew

-N - 18/18: Tykushin Aantoly virtdomain
```

Figure 2: Message for mybot@resmail.st5.os3.su

3.2 What would you choose at a first glance and why?

I've choosed DKIM because of it's availability of improved forge-protection. Also in point of implementation, spf is RAATHER easier, but we don't look for an easy way, isn't it?

3.3 Installing spf and opendkim

```
sudo apt-get install opendkim
```

```
echo "127.0.0.1 st5.os3.su st4.os3.su st3.os3.su st2.os3.su" > /etc/opendkim/TrustedHosts echo "@st5.os3.su default._domainkey.st5.os3.su" > /etc/opendkim/SigningTable echo "default._domainkey.st5.os3.su st5.os3.su:default:/etc/opendkim/keys/st5.os3.su/default.private" > /etc
```

subl /etc/opendkim.conf # fix the config

OversignHeaders	From	
TrustAnchorFile AutoRestart AutoRestartRate UMask Syslog SyslogSuccess LogWhy	/1	usr/local/etc/unbound/root.key Yes 10/1h 002 yes Yes Yes
Canonicalization		relaxed/simple
ExternalIgnoreLis InternalHosts KeyTable SigningTable Mode PidFile SignatureAlgorith		refile:/etc/opendkim/TrustedHosts refile:/etc/opendkim/TrustedHosts refile:/etc/opendkim/KeyTable refile:/etc/opendkim/SigningTable sv /var/run/opendkim/opendkim.pid rsa-sha256
UserID		opendkim:opendkim
Socket		inet:23412@localhost
Domain s	t5.os3.	su

```
Selector
                        default
         KevTable
                   refile:/etc/opendkim/KeyTable
         SigningTable
                         refile:/etc/opendkim/SigningTable
         ExternalIgnoreList refile:/etc/opendkim/TrustedHosts
         InternalHosts
                          refile:/etc/opendkim/TrustedHosts
sudo apt install opendkim-tools # install utility for key generation
sudo opendkim-genkey -D /etc/opendkim/key/st5.os3.su/ -d st5.os3.su -s default # generate keys: 2
     new files created: default.txt and default.private
cat /etc/opendkim/keys/st5.os3.su/default.txt >> /etc/nsd/zones/st5.os3.su.zone # add record from
    file mail.txt to the zonefile
echo "st5.os3.su. 1800 IN TXT "v=spf1 ip4:188.130.155.38 all" >> /etc/nsd/zones/st5.os3.su.zone
     # add SPF signature for the st5.os3.su
./resign.sh # this script resigned the zone (because of DNSSEC)
sudo service nsd restart # restart dns service to apply new txt record
dig default._domainkey.st5.os3.su TXT # check if it's all right
     The reply:
        ; <<>> DiG 9.10.3-P4-Ubuntu <<>> txt default._domainkey.st5.os3.su +dnssec
         ;; global options: +cmd
         ;; Got answer:
         ;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 28036
         ;; flags: qr aa rd; QUERY: 1, ANSWER: 2, AUTHORITY: 3, ADDITIONAL: 3
         ;; WARNING: recursion requested but not available
         ;; OPT PSEUDOSECTION:
         ; EDNS: version: 0, flags: do; udp: 4096
         ;; QUESTION SECTION:
         ;default._domainkey.st5.os3.su. IN TXT
         ;; ANSWER SECTION:
         default._domainkey.st5.os3.su. 1800 IN TXT "v=DKIM1; k=rsa; " ""
         "p=MIGfMAOGCSqGSIb3DQEBAQUAA4GNADCBiQKBgQDHoFp3oshKGuGM/riWF1FzaA/
         z8e+u02qwwsXoUXrbkWPUF6jMiC7SMQJRe1/TE/uzfd83mVVtbMsR0Td0ymu36vkD7
         UjlJyOV9jEFbbw5QuFZAOgEG+Jhi9VdBYRclYpatS16Nc+EeUcovCr2glz2Ls
         /+V2DaWdvYu716ncKRawIDAQAB"
         default._domainkey.st5.os3.su. 1800 IN RRSIG TXT 12 5 1800 20161025140330
         20160927140330 55325 st5.os3.su. Mg6XF7tD11ZRZDC4AQeLK446PmNMrMGMz7o6Qq20ZzqbhoiqkHSZW57b
         VOceAKiV/dDSRjkafdpo9VZ3JUc62w==
         56:24 MSK 2016
         ;; MSG SIZE rcvd: 351
                                          ... other sections ...
         ;; Query time: 0 msec
         ;; SERVER: 188.130.155.38#53(188.130.155.38)
         ;; WHEN: Tue Sep 27 19:40:19 MSK 2016
         ;; MSG SIZE rcvd: 673
```

sudo service opendkim restart # apply changes: catch errors

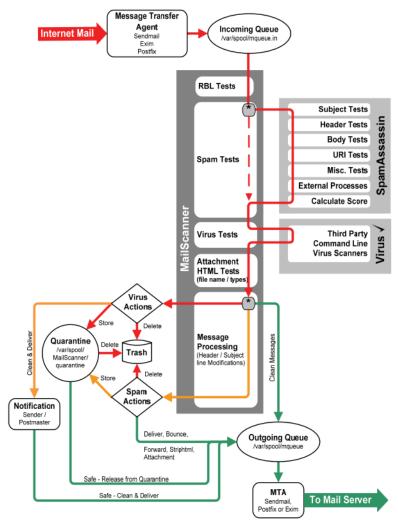
journalctl -xe # try to know what went wrong

```
Sep 22 18:58:56 st5.os3.su opendkim[30778]: /etc/mail/dkim.key:
        key data is not secure: /etc/mail is writeable and owned by uid 123
        which is not the executing uid (125) or the superuser
                                                                                                              # that's it!!!!!
        Sep 22 18:58:56 st5.os3.su opendkim[30778]: opendkim: /etc/opendkim.conf:
        /etc/mail is writeable and owned by uid 123
        which is not the executing uid (125) or the superuser
        Sep 22 18:58:56 st5.os3.su systemd[1]: opendkim.service: Control process exited,
        code=exited status=78
        Sep 22 18:58:56 st5.os3.su systemd[1]: Failed to start DomainKeys Identified Mail (DKIM) Milter.
        Sep 22 18:58:56 st5.os3.su systemd[1]: opendkim.service: Unit entered failed state.
        Sep 22 18:58:56 st5.os3.su systemd[1]: opendkim.service: Failed with result 'exit-code'.
sudo addgroup opendkim
sudo adduser opendkim opendkim \# add group and user opendkim
sudo chgrp opendkim /etc/opendkim/key/st5.os3.su/ # fix the problem
sudo chgrp opendkim /etc/opendkim/key/st5.os3.su/default.private
sudo chmod 0640 /etc/opendkim/key/st5.os3.su/default.private # set permissions
sudo service opendkim restart # apply changes
journalctl -xe # check if some any error committed, but it's okay
     This configuration still had problems. After 3 days I've found that in a magicway option -x /etc/opendkim.conf
didn't work, I mean, configuration was loading from the /etc/default/opendkim file.
subl /etc/default/opendkim # Adding couple records to this file helped me a lot
        SOCKET="inet:23412@localhost"
        ExternalIgnoreList refile:/etc/opendkim/TrustedHosts
        InternalHosts
                                         refile:/etc/opendkim/TrustedHosts
                                                 refile:/etc/opendkim/KeyTable
        KeyTable
                                                 refile:/etc/opendkim/SigningTable
        SigningTable
     Here's what I've got after
                                                 ----- OUTGOING MESSAGE -----
       (inserting DKIM-signature in it)
Sep 27 18:49:30 st5 sm-mta[3278]: u8RFnTnn003278: Milter insert (1): header:
DKIM-Signature: v=1; a=rsa-sha256; c=relaxed/simple;
\n\th=Date:From:To:Subject:From;\n
\tb=pJ1Mpp5jDBQiAcNwhE02zlu4CxfxSZrPWpr6Qq/+6TyloWFbAHYMLQU5TzI6XJAqB\n\t
\label{local_problem} {\tt OiBQq4G+zQIDxQwrmBlJrJfSpNYYMiiM5XpZ56PUWa/KGrpp6E0WvScRU8BI1MXjmv\n\tablesembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembersembers
lo2sVgKQmHw0I8cv77kUZyuIutHmrX0f2L7c25ig=
                                                  ----- INCOMING MESSAGE -----
       (fetching DKIM-signature in it)
Sep 27 18:49:48 st5 sm-mta[3288]: u8RFnixA003288: Milter insert (1): header: Authentication-Results:
st5.os3.su;\n\tdkim=pass (2048-bit key;
unprotected) header.d=port25.com header.i=auth-results@verifier.port25.com header.b=MSMoNX7i;\n
\tdkim-atps=neutral
```

```
Date: Tue, 27 Sep 2016 11:49:38 -0400
From: auth-results@verifier.port25.com
To: tyvision@st5.os3.su
Subject: Authentication Report
Thank you for using the verifier,
The Port25 Solutions, Inc. team
______
Summary of Results
______
SPF check:
              pass
DomainKeys check: neutral
DKIM check: pass
SpamAssassin check: ham
_____
Details:
HELO hostname: st5.os3.su
Source IP: 188.130.155.38
mail-from: tyvision@st5.os3.su
SPF check details:
_____
Result:
           pass
ID(s) verified: smtp.mailfrom=tyvision@st5.os3.su
DNS record(s):
   st5.os3.su. SPF (no records)
   st5.os3.su. 370 IN TXT "v=spf1 ip4:188.130.155.38 ~all"
  -----
DomainKeys check details:
______
           neutral (message not signed)
ID(s) verified: header.From=tyvision@st5.os3.su
DNS record(s):
DKIM check details:
            pass (matches From: tyvision@st5.os3.su)
ID(s) verified: header.d=st5.os3.su
Canonicalized Headers:
   date:Tue,'20'27'20'Sep'20'2016'20'18:49:29'20'+0300'0D''0A'
   from:tyvision'20'<tyvision@st5.os3.su>'OD''OA'
   to:check-auth@verifier.port25.com'0D''OA'
   subject:1'0D''OA'
   dkim-signature:v=1;'20'a=rsa-sha256;'20'c=relaxed/simple;'20'd=st5.os3.su;
   '20's=default;'20't=1474991370;'20'b
+h=OCJ1Yvy7qpc1PZcis8+1CuN7W/zEsgYDgUBPDdBxtrE=;'20'h=Date:From:To:Subject:From;
,20,p=
Canonicalized Body:
   i'OD''OA'
----- other sections -----
----- end of message -----
```

3.4 Installing MailScanner

From the variety of tools for virus scanning, spam detection I've choosed MailScanner. It is a highly respected open source email security system design for Linux-based email gateways. It contains SpamAssasin inside, also has a built-in virus scanner. Structure of the MailScanner is shown of the figure 3.



MailScanner Process Diagram Fig 1.

Figure 3:

Installation process is very easy. In downloaded archive we can find file install.sh. By running it MailScanner is being installed to your system.

After that It requires some configuration process: new queue creation and pointing for MTA to it. Process for MailScanner is shown below.

After installing and configuring MailScanner I've reloaded MTA (sendmail) and mailscanner and then sent a message to Gmail mailbox. Here's the result of such kind of operation.

----- Mail.log -----

```
Sep 27 23:58:19 st5 sm-mta[13561]: u8RKwHb0013561: Milter insert (1): header: Authentication-Results:
st5.os3.su;\n\tdkim=pass (2048-bit key; unprotected) header.d=gmail.com header.i=@gmail.com
header.b=bGiVGPMN;\n\tdkim-atps=neutral
Sep 28 00:03:58 st5 sm-mta[13755]: STARTTLS=client, relay=gmail-smtp-in.l.google.com.,
\verb|version=TLSv1.2|, \verb|verify=OK|, \verb|cipher=ECDHE-RSA-AES128-GCM-SHA256|, \verb|bits=128/128| \\
Sep 28 00:03:58 st5 sm-mta[13755]: u8RKsTvP013374: to=<antykushin@gmail.com>,
ctladdr=<tyvision@st5.os3.su> (1000/1000), delay=00:09:29, xdelay=00:00:00, mailer=esmtp,
pri=120446, relay=gmail-smtp-in.l.google.com. [64.233.161.26], dsn=2.0.0,
stat=Sent (OK 1475010238 r133si1965874lff.312 - gsmtp)
Sep 28 00:03:59 st5 sm-mta[13755]: u8RKwHb0013561: to=tyvision@st5.os3.suclamav:
root, delay=00:05:41, xdelay=00:00:01, mailer=local, pri=122475, dsn=2.0.0, stat=Sent
----- Incoming message to Gmail -----
Delivered-To: antykushin@gmail.com
Received: by 10.25.37.132 with SMTP id 1126csp399071fl;
        Tue, 27 Sep 2016 14:03:58 -0700 (PDT)
X-Received: by 10.25.205.211 with SMTP id d202mr8703372lfg.64.1475010238870;
        Tue, 27 Sep 2016 14:03:58 -0700 (PDT)
Return-Path: <tyvision@st5.os3.su>
Received: from st5.os3.su (mail.st5.os3.su. [188.130.155.38])
        by mx.google.com with ESMTPS id r133si1965874lff.312.2016.09.27.14.03.58
        for <antykushin@gmail.com>
        (version=TLS1_2 cipher=ECDHE-RSA-AES128-GCM-SHA256 bits=128/128);
        Tue, 27 Sep 2016 14:03:58 -0700 (PDT)
Received-SPF: pass (google.com: domain of tyvision@st5.os3.su designates
188.130.155.38 as permitted sender) client-ip=188.130.155.38;
Authentication-Results: mx.google.com;
       dkim=pass header.i=@st5.os3.su;
       spf=pass (google.com: domain of tyvision@st5.os3.su
       designates 188.130.155.38 as permitted sender)
       smtp.mailfrom=tyvision@st5.os3.su
Received: from st5.os3.su (localhost [127.0.0.1]) by st5.os3.su (8.15.2/8.15.2/Debian-3) with ESMTPS
id u8RKsTvP013374 (version=TLSv1.2 cipher=ECDHE-RSA-AES256-GCM-SHA384 bits=256 verify=NOT)
for <antykushin@gmail.com>; Tue, 27 Sep 2016 23:54:29 +0300
DKIM-Signature: v=1; a=rsa-sha256; c=relaxed/simple; d=st5.os3.su; s=default; t=1475009669;
bh=/1ZBry+NdQjznJaib9+bpY+Y4vtYEcA6MqRIEawa78Q=; h=Date:From:To:Subject:From;
b=LkRGFsL5DLzXiYfad8dVFCmYc4HjKNbVbQ5zjAJKxAJfrjqUFAcMNkiKesRpTtPkB
 UVUzUXjcitdlI1LlQ/BVlrpQtpnDfc2nVZ3SpU0+mMiXXiABeUUiB/YfnaYRmY44mk
 aEAbOjmEQszuqH1WwUVR6zmJ8UicZOa5Q23CyXiQ=
Received: (from tyvision@localhost) by st5.os3.su (8.15.2/8.15.2/Submit) id u8RKsSt9013373
for antykushin@gmail.com; Tue, 27 Sep 2016 23:54:28 +0300
Date: Tue, 27 Sep 2016 23:54:28 +0300
From: tyvision <tyvision@st5.os3.su>
To: antykushin@gmail.com
Subject: CIA7
Message-ID: <20160927205428.GB12969@st5.os3.su>
MIME-Version: 1.0
Content-Type: text/plain; charset=us-ascii
Content-Disposition: inline
User-Agent: Mutt/1.5.24 (2015-08-30)
again
```

4 Extra Assignments (Optional): Also add transport encryption to your MTA.

It's very easy to add TLS/SSL security to sendmail. You should write down record to the $/{\rm etc/mail/sendmail.mc}$ file:

include('/etc/mail/tls/starttls.m4')dnl

And then use
> sendmailconfig

All keys are already generated by sendmail. Logs of how it works are shown below:

Sep 27 18:49:31 st5 sm-mta[3281]: STARTTLS=client, relay=verifier.port25.com., version=TLSv1.2, verify=OK, cipher=DHE-RSA-AES256-GCM-SHA384, bits=256/256

.

Sep 27 18:49:46 st5 sm-mta[3288]: STARTTLS=server, relay=verifier.port25.com [38.95.177.125], version=TLSv1.2, verify=OK, cipher=ECDHE-RSA-AES256-GCM-SHA384, bits=256/256

Appendices

A Mailing Loops

A.1 Sendmail MTA (st5.os3.su) log

Sep 20 14:26:54 st5 sm-mta[5239]: u8KBQrsm005239: from=<a.bakhtin@innopolis.ru>, size=2510, class=0, nrcpts=1, msgid=<a4d3db9042d346a9a7fb3b4946caea8a@EXMB02.edu.innopolis.ru>, proto=ESMTP, daemon=MTA-v4, relay=mail.st3.os3.su [188.130.155.36]

Sep 20 14:26:55 st5 sm-mta[5240]: STARTTLS=client, relay=mail.st2.os3.su., version=TLSv1.2, verify=FAIL, cipher=ECDHE-RSA-AES256-GCM-SHA384, bits=256/256

Sep 20 14:26:58 st5 sm-mta[5240]: u8KBQrsm005239: to=horn@st2.os3.su, delay=00:00:04, xdelay=00:00:04, mailer=esmtp, pri=32696, relay=mail.st2.os3.su. [188.130.155.35], dsn=2.0.0, stat=Sent (OK id=1bmJCS-00047B-1J)

Sep 20 14:27:00 st5 sm-mta[5245]: u8KBQxTi005245: from=<a.bakhtin@innopolis.ru>, size=3323, class=0, nrcpts=1, msgid=<a4d3db9042d346a9a7fb3b4946caea8a@EXMB02.edu.innopolis.ru>, proto=ESMTP, daemon=MTA-v4, relay=mail.st3.os3.su [188.130.155.36]

Sep 20 14:27:01 st5 sm-mta[5246]: STARTTLS=client, relay=mail.st2.os3.su., version=TLSv1.2, verify=FAIL, cipher=ECDHE-RSA-AES256-GCM-SHA384, bits=256/256

Sep 20 14:27:04 st5 sm-mta[5246]: u8KBQxTi005245: to=horn@st2.os3.su, delay=00:00:04, xdelay=00:00:03, mailer=esmtp, pri=33504, relay=mail.st2.os3.su. [188.130.155.35], dsn=2.0.0, stat=Sent (OK id=1bmJCX-00047i-WB)

Sep 20 14:27:07 st5 sm-mta[5247]: u8KBR515005247: from=<a.bakhtin@innopolis.ru>, size=4136, class=0, nrcpts=1, msgid=<a4d3db9042d346a9a7fb3b4946caea8a@EXMB02.edu.innopolis.ru>, proto=ESMTP, daemon=MTA-v4, relay=mail.st3.os3.su [188.130.155.36]

Sep 20 14:27:07 st5 sm-mta[5248]: STARTTLS=client, relay=mail.st2.os3.su., version=TLSv1.2, verify=FAIL, cipher=ECDHE-RSA-AES256-GCM-SHA384, bits=256/256

Sep 20 14:27:10 st5 sm-mta[5248]: u8KBR515005247: to=horn@st2.os3.su, delay=00:00:03, xdelay=00:00:03, mailer=esmtp, pri=34312, relay=mail.st2.os3.su. [188.130.155.35], dsn=2.0.0, stat=Sent (OK id=1bmJCe-00048D-3c)

Sep 20 14:27:12 st5 sm-mta[5249]: u8KBRBQG005249: from=<a.bakhtin@innopolis.ru>, size=4949, class=0, nrcpts=1, msgid=<a4d3db9042d346a9a7fb3b4946caea8a@EXMB02.edu.innopolis.ru>, proto=ESMTP, daemon=MTA-v4, relay=mail.st3.os3.su [188.130.155.36]

Sep 20 14:27:13 st5 sm-mta[5250]: STARTTLS=client, relay=mail.st2.os3.su., version=TLSv1.2, verify=FAIL, cipher=ECDHE-RSA-AES256-GCM-SHA384, bits=256/256

Sep 20 14:27:16 st5 sm-mta[5250]: u8KBRBQG005249: to=horn@st2.os3.su, delay=00:00:04, xdelay=00:00:04, mailer=esmtp, pri=35120, relay=mail.st2.os3.su. [188.130.155.35], dsn=2.0.0, stat=Sent (OK id=1bmJCj-00048j-FW)

Sep 20 14:27:18 st5 sm-mta[5252]: u8KBRG57005252: from=<a.bakhtin@innopolis.ru>, size=5762, class=0, nrcpts=1, msgid=<a4d3db9042d346a9a7fb3b4946caea8a@EXMB02.edu.innopolis.ru>, proto=ESMTP, daemon=MTA-v4, relay=mail.st3.os3.su [188.130.155.36]

Sep 20 14:27:18 st5 sm-mta[5253]: STARTTLS=client, relay=mail.st2.os3.su., version=TLSv1.2, verify=FAIL, cipher=ECDHE-RSA-AES256-GCM-SHA384, bits=256/256

Sep 20 14:27:22 st5 sm-mta[5253]: u8KBRG57005252: to=horn@st2.os3.su, delay=00:00:04, xdelay=00:00:04, mailer=esmtp, pri=35928, relay=mail.st2.os3.su. [188.130.155.35], dsn=2.0.0, stat=Sent (OK id=1bmJCp-000497-DF)

- Sep 20 14:27:23 st5 sm-mta[5254]: u8KBRMtP005254: from=<a.bakhtin@innopolis.ru>, size=6575, class=0, nrcpts=1, msgid=<a4d3db9042d346a9a7fb3b4946caea8a@EXMB02.edu.innopolis.ru>, proto=ESMTP, daemon=MTA-v4, relay=mail.st3.os3.su [188.130.155.36]
- Sep 20 14:27:24 st5 sm-mta[5256]: STARTTLS=client, relay=mail.st2.os3.su., version=TLSv1.2, verify=FAIL, cipher=ECDHE-RSA-AES256-GCM-SHA384, bits=256/256
- Sep 20 14:27:27 st5 sm-mta[5256]: u8KBRMtP005254: to=horn@st2.os3.su, delay=00:00:04, xdelay=00:00:03, mailer=esmtp, pri=36736, relay=mail.st2.os3.su. [188.130.155.35], dsn=2.0.0, stat=Sent (OK id=1bmJCu-00049c-KE)
- Sep 20 14:27:29 st5 sm-mta[5257]: u8KBRRST005257: from=<a.bakhtin@innopolis.ru>, size=7388, class=0, nrcpts=1, msgid=<a4d3db9042d346a9a7fb3b4946caea8a@EXMB02.edu.innopolis.ru>, proto=ESMTP, daemon=MTA-v4, relay=mail.st3.os3.su [188.130.155.36]
- Sep 20 14:27:29 st5 sm-mta[5258]: STARTTLS=client, relay=mail.st2.os3.su., version=TLSv1.2, verify=FAIL, cipher=ECDHE-RSA-AES256-GCM-SHA384, bits=256/256
- Sep 20 14:27:32 st5sm-mta[5258]: u8KBRRST005257: to=horn@st2.os3.su, delay=00:00:04, xdelay=00:00:03, mailer=esmtp, pri=37544, relay=mail.st2.os3.su. [188.130.155.35], dsn=2.0.0, stat=Sent (OK id=1bmJCz-0004A8-NV)
- Sep 20 14:27:34 st5 sm-mta[5274]: u8KBRXGZ005274: from=<a.bakhtin@innopolis.ru>, size=8201, class=0, nrcpts=1, msgid=<a4d3db9042d346a9a7fb3b4946caea8a@EXMB02.edu.innopolis.ru>, proto=ESMTP, daemon=MTA-v4, relay=mail.st3.os3.su [188.130.155.36]
- Sep 20 14:27:34 st5 sm-mta[5277]: STARTTLS=client, relay=mail.st2.os3.su., version=TLSv1.2, verify=FAIL, cipher=ECDHE-RSA-AES256-GCM-SHA384, bits=256/256
- Sep 20 14:27:40 st5 sm-mta[5277]: u8KBRXGZ005274: to=horn@st2.os3.su, delay=00:00:06, xdelay=00:00:06, mailer=esmtp, pri=38352, relay=mail.st2.os3.su. [188.130.155.35], dsn=2.0.0, stat=Sent (OK id=1bmJD4-0004AU-SH)
- Sep 20 14:27:41 st5 sm-mta[5285]: u8KBReDI005285: from=<a.bakhtin@innopolis.ru>, size=9014, class=0, nrcpts=1, msgid=<a4d3db9042d346a9a7fb3b4946caea8a@EXMB02.edu.innopolis.ru>, proto=ESMTP, daemon=MTA-v4, relay=mail.st3.os3.su [188.130.155.36]
- Sep 20 14:27:42 st5 sm-mta[5289]: STARTTLS=client, relay=mail.st2.os3.su., version=TLSv1.2, verify=FAIL, cipher=ECDHE-RSA-AES256-GCM-SHA384, bits=256/256
- Sep 20 14:27:45 st5 sm-mta[5289]: u8KBReDI005285: to=horn@st2.os3.su, delay=00:00:04, xdelay=00:00:03, mailer=esmtp, pri=39160, relay=mail.st2.os3.su. [188.130.155.35], dsn=2.0.0, stat=Sent (OK id=1bmJDC-0004B9-Lx)
- Sep 20 14:27:47 st5 sm-mta[5290]: u8KBRjx8005290: from=<a.bakhtin@innopolis.ru>, size=9827, class=0, nrcpts=1, msgid=<a4d3db9042d346a9a7fb3b4946caea8a@EXMB02.edu.innopolis.ru>, proto=ESMTP, daemon=MTA-v4, relay=mail.st3.os3.su [188.130.155.36]
- Sep 20 14:27:47 st5 sm-mta[5291]: STARTTLS=client, relay=mail.st2.os3.su., version=TLSv1.2, verify=FAIL, cipher=ECDHE-RSA-AES256-GCM-SHA384, bits=256/256
- Sep 20 14:27:50 st5 sm-mta[5291]: u8KBRjx8005290: to=horn@st2.os3.su, delay=00:00:03, xdelay=00:00:03, mailer=esmtp, pri=39968, relay=mail.st2.os3.su. [188.130.155.35], dsn=2.0.0, stat=Sent (OK id=1bmJDH-0004BW-Mm)

A.2 Postfix MTA (st3.os3.su) log

```
Sep 20 14:27:37 a-pc postfix/qmgr[4165]: A06C636C0528: from=<a.bakhtin@innopolis.ru>, size=5879,
nrcpt=1 (queue active)
Sep 20 14:27:37 a-pc postfix/smtpd[4456]: disconnect from mail.st2.os3.su[188.130.155.35] ehlo=1 mail=1
rcpt=1 data=1 quit=1 commands=5
Sep 20 14:27:39 a-pc postfix/smtp[4460]: A06C636C0528: to=<tyvision@st5.os3.su>,
orig_to=\mail@st3.os3.su\, relay=mail.st5.os3.su[188.130.155.38]:25, delay=1.7, delays=0.07/0/1.4/0.23,
dsn=2.0.0, status=sent (250 2.0.0 u8KBRG57005252 Message accepted for delivery)
Sep 20 14:27:39 a-pc postfix/qmgr[4165]: A06C636C0528: removed
Sep 20 14:27:43 a-pc postfix/smtpd[4456]: connect from mail.st2.os3.su[188.130.155.35]
Sep 20 14:27:43 a-pc postfix/smtpd[4456]: 83E8E36C0528: client=mail.st2.os3.su[188.130.155.35]
Sep 20 14:27:43 a-pc postfix/cleanup[4459]: 83E8E36C0528:
{\tt message-id=<a4d3db9042d346a9a7fb3b4946caea8a@EXMB02.edu.innopolis.ru>}
Sep 20 14:27:43 a-pc postfix/qmgr[4165]: 83E8E36C0528: from=<a.bakhtin@innopolis.ru>, size=6706,
nrcpt=1 (queue active)
Sep 20 14:27:43 a-pc postfix/smtpd[4456]: disconnect from mail.st2.os3.su[188.130.155.35] ehlo=1 mail=1
rcpt=1 data=1 quit=1 commands=5
Sep 20 14:27:45 a-pc postfix/smtp[4460]: 83E8E36C0528: to=<tyvision@st5.os3.su>,
orig_to=\mail@st3.os3.su\, relay=mail.st5.os3.su[188.130.155.38]:25, delay=1.6, delays=0.04/0/1.4/0.19,
dsn=2.0.0, status=sent (250 2.0.0 u8KBRMtP005254 Message accepted for delivery)
Sep 20 14:27:45 a-pc postfix/qmgr[4165]: 83E8E36C0528: removed
Sep 20 14:27:48 a-pc postfix/smtpd[4456]: connect from mail.st2.os3.su[188.130.155.35]
Sep 20 14:27:48 a-pc postfix/smtpd[4456]: ADF8136C0528: client=mail.st2.os3.su[188.130.155.35]
Sep 20 14:27:48 a-pc postfix/cleanup[4459]: ADF8136C0528:
{\tt message-id=<a4d3db9042d346a9a7fb3b4946caea8a@EXMB02.edu.innopolis.ru>}
Sep 20 14:27:48 a-pc postfix/qmgr[4165]: ADF8136C0528: from=<a.bakhtin@innopolis.ru>, size=7533,
nrcpt=1 (queue active)
Sep 20 14:27:48 a-pc postfix/smtpd[4456]: disconnect from mail.st2.os3.su[188.130.155.35] ehlo=1 mail=1
rcpt=1 data=1 quit=1 commands=5
Sep 20 14:27:50 a-pc postfix/smtp[4460]: ADF8136C0528: to=<tyvision@st5.os3.su>,
orig_to=\mail@st3.os3.su\, relay=mail.st5.os3.su[188.130.155.38]:25, delay=1.5, delays=0.05/0/1.3/0.17,
dsn=2.0.0, status=sent (250 2.0.0 u8KBRRST005257 Message accepted for delivery)
Sep 20 14:27:50 a-pc postfix/qmgr[4165]: ADF8136C0528: removed
Sep 20 14:27:53 a-pc postfix/smtpd[4456]: connect from mail.st2.os3.su[188.130.155.35]
Sep 20 14:27:53 a-pc postfix/smtpd[4456]: BA02C36C0528: client=mail.st2.os3.su[188.130.155.35]
Sep 20 14:27:53 a-pc postfix/cleanup[4459]: BA02C36C0528:
message-id=<a4d3db9042d346a9a7fb3b4946caea8a@EXMB02.edu.innopolis.ru>
Sep 20 14:27:53 a-pc postfix/qmgr[4165]: BA02C36C0528: from=<a.bakhtin@innopolis.ru>, size=8360,
nrcpt=1 (queue active)
Sep 20 14:27:53 a-pc postfix/smtpd[4456]: disconnect from mail.st2.os3.su[188.130.155.35] ehlo=1 mail=1
```

```
rcpt=1 data=1 quit=1 commands=5
Sep 20 14:27:55 a-pc postfix/smtp[4460]: BA02C36C0528: to=<tyvision@st5.os3.su>,
orig_to=\mail@st3.os3.su\, relay=mail.st5.os3.su[188.130.155.38]:25, delay=1.6, delays=0.08/0/1.4/0.14,
dsn=2.0.0, status=sent (250 2.0.0 u8KBRXGZ005274 Message accepted for delivery)
Sep 20 14:27:55 a-pc postfix/qmgr[4165]: BA02C36C0528: removed
Sep 20 14:28:01 a-pc postfix/smtpd[4456]: connect from mail.st2.os3.su[188.130.155.35]
Sep 20 14:28:01 a-pc postfix/smtpd[4456]: A1EE836C0528: client=mail.st2.os3.su[188.130.155.35]
Sep 20 14:28:01 a-pc postfix/cleanup[4459]: A1EE836C0528:
{\tt message-id=<a4d3db9042d346a9a7fb3b4946caea8a@EXMB02.edu.innopolis.ru>}
Sep 20 14:28:01 a-pc postfix/qmgr[4165]: A1EE836C0528: from=<a.bakhtin@innopolis.ru>, size=9187,
nrcpt=1 (queue active)
Sep 20 14:28:01 a-pc postfix/smtpd[4456]: disconnect from mail.st2.os3.su[188.130.155.35] ehlo=1 mail=1
rcpt=1 data=1 quit=1 commands=5
Sep 20 14:28:03 a-pc postfix/smtp[4460]: A1EE836C0528: to=<tyvision@st5.os3.su>,
orig_to=\mail@st3.os3.su\, relay=mail.st5.os3.su[188.130.155.38]:25, delay=1.5, delays=0.04/0/1.3/0.16,
dsn=2.0.0, status=sent (250 2.0.0 u8KBReDI005285 Message accepted for delivery)
Sep 20 14:28:03 a-pc postfix/qmgr[4165]: A1EE836C0528: removed
Sep 20 14:28:06 a-pc postfix/smtpd[4456]: connect from mail.st2.os3.su[188.130.155.35]
Sep 20 14:28:06 a-pc postfix/smtpd[4456]: B180136C0528: client=mail.st2.os3.su[188.130.155.35]
Sep 20 14:28:06 a-pc postfix/cleanup[4459]: B180136C0528:
message-id=<a4d3db9042d346a9a7fb3b4946caea8a@EXMB02.edu.innopolis.ru>
Sep 20 14:28:06 a-pc postfix/qmgr[4165]: B180136C0528: from=<a.bakhtin@innopolis.ru>, size=10014,
nrcpt=1 (queue active)
Sep 20 14:28:06 a-pc postfix/smtpd[4456]: disconnect from mail.st2.os3.su[188.130.155.35] ehlo=1 mail=1
rcpt=1 data=1 quit=1 commands=5
```

Sep 20 14:28:08 a-pc postfix/smtp[4460]: B180136C0528: to=<tyvision@st5.os3.su>, orig_to=<mail@st3.os3.su>, relay=mail.st5.os3.su[188.130.155.38]:25, delay=1.6, delays=0.1/0/1.3/0.17,

Sep 20 14:28:08 a-pc postfix/qmgr[4165]: B180136C0528: removed

dsn=2.0.0, status=sent (250 2.0.0 u8KBRjx8005290 Message accepted for delivery)

A.3 Exim MTA (st2.os3.su) log

```
2016-09-20 14:26:48 1bmJCK-00046f-KD DKIM: d=innopolis.ru s=unimail1 c=simple/simple a=rsa-sha256
b=2048 t=1474370807 [verification succeeded]
2016-09-20 14:26:48 1bmJCK-00046f-KD NO DKIM FOUND!
2016-09-20 14:26:48 1bmJCK-00046f-KD DKIM test passed
2016-09-20 14:26:51 1bmJCK-00046f-KD <= a.bakhtin@innopolis.ru H=(smtp.university.innopolis.ru)
[10.90.104.83] P=esmtps X=TLSv1.2:ECDHE-RSA-AES256-SHA384:256 CV=no S=2335
id=a4d3db9042d346a9a7fb3b4946caea8a@EXMB02.edu.innopolis.ru
2016-09-20 14:26:52 1bmJCK-00046f-KD => mail@st3.os3.su <horn@st2.os3.su> R=dnslookup T=remote_smtp
H=mail.st3.os3.su [188.130.155.36] C="250 2.0.0 Ok: queued as 70E2236C0528"
2016-09-20 14:26:52 1bmJCK-00046f-KD Completed
2016-09-20 14:26:56 1bmJCS-00047B-1J DKIM: d=innopolis.ru s=unimail1 c=simple/simple a=rsa-sha256
b=2048 t=1474370807 [verification succeeded]
2016-09-20 14:26:56 1bmJCS-00047B-1J NO DKIM FOUND!
2016-09-20 14:26:56 1bmJCS-00047B-1J DKIM test passed
2016-09-20 14:26:58 1bmJCS-00047B-1J <= a.bakhtin@innopolis.ru H=mail.st5.os3.su (st5.os3.su)
[188.130.155.38] P=esmtps X=TLSv1.2:ECDHE-RSA-AES256-GCM-SHA384:256 CV=no S=3148
id=a4d3db9042d346a9a7fb3b4946caea8a@EXMB02.edu.innopolis.ru
2016-09-20 14:26:59 1bmJCS-00047B-1J => mail@st3.os3.su <a href="https://doi.org/10.108/10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.108-10.10
H=mail.st3.os3.su [188.130.155.36] C="250 2.0.0 Ok: queued as 7473936C0528"
2016-09-20 14:26:59 1bmJCS-00047B-1J Completed
2016-09-20 14:27:02 1bmJCX-00047i-WB DKIM: d=innopolis.ru s=unimail1 c=simple/simple a=rsa-sha256
b=2048 t=1474370807 [verification succeeded]
2016-09-20 14:27:02 1bmJCX-00047i-WB NO DKIM FOUND!
2016-09-20 14:27:02 1bmJCX-00047i-WB DKIM test passed
2016-09-20 14:27:04 1bmJCX-00047i-WB <= a.bakhtin@innopolis.ru H=mail.st5.os3.su (st5.os3.su)
[188.130.155.38] P=esmtps X=TLSv1.2:ECDHE-RSA-AES256-GCM-SHA384:256 CV=no S=3961
id=a4d3db9042d346a9a7fb3b4946caea8a@EXMB02.edu.innopolis.ru
H=mail.st3.os3.su [188.130.155.36] C="250 2.0.0 Ok: queued as 2FF9F36C0528"
2016-09-20 14:27:05 1bmJCX-00047i-WB Completed
2016-09-20 14:27:08 1bmJCe-00048D-3c DKIM: d=innopolis.ru s=unimail1 c=simple/simple a=rsa-sha256
b=2048 t=1474370807 [verification succeeded]
2016-09-20 14:27:08 1bmJCe-00048D-3c NO DKIM FOUND!
2016-09-20 14:27:08 1bmJCe-00048D-3c DKIM test passed
2016-09-20 14:27:10 1bmJCe-00048D-3c <= a.bakhtin@innopolis.ru H=mail.st5.os3.su (st5.os3.su)
[188.130.155.38] P=esmtps X=TLSv1.2:ECDHE-RSA-AES256-GCM-SHA384:256 CV=no S=4774
```

id=a4d3db9042d346a9a7fb3b4946caea8a@EXMB02.edu.innopolis.ru

```
H=mail.st3.os3.su [188.130.155.36] C="250 2.0.0 Ok: queued as 3D15036C0528"
2016-09-20 14:27:11 1bmJCe-00048D-3c Completed
2016-09-20 14:27:13 1bmJCj-00048j-FW DKIM: d=innopolis.ru s=unimail1 c=simple/simple a=rsa-sha256
b=2048 t=1474370807 [verification succeeded]
2016-09-20 14:27:13 1bmJCj-00048j-FW NO DKIM FOUND!
2016-09-20 14:27:13 1bmJCj-00048j-FW DKIM test passed
2016-09-20 14:27:16 1bmJCj-00048j-FW <= a.bakhtin@innopolis.ru H=mail.st5.os3.su (st5.os3.su)
[188.130.155.38] P=esmtps X=TLSv1.2:ECDHE-RSA-AES256-GCM-SHA384:256 CV=no S=5587
id=a4d3db9042d346a9a7fb3b4946caea8a@EXMB02.edu.innopolis.ru
2016-09-20 14:27:16 1bmJCj-00048j-FW => mail@st3.os3.su <horn@st2.os3.su> R=dnslookup T=remote_smtp
H=mail.st3.os3.su [188.130.155.36] C="250 2.0.0 Ok: queued as A06C636C0528"
2016-09-20 14:27:16 1bmJCj-00048j-FW Completed
2016-09-20 14:27:19 1bmJCp-000497-DF DKIM: d=innopolis.ru s=unimail1 c=simple/simple a=rsa-sha256
b=2048 t=1474370807 [verification succeeded]
2016-09-20 14:27:19 1bmJCp-000497-DF NO DKIM FOUND!
2016-09-20 14:27:19 1bmJCp-000497-DF DKIM test passed
```

2016-09-20 14:27:22 1bmJCp-000497-DF <= a.bakhtin@innopolis.ru H=mail.st5.os3.su (st5.os3.su) [188.130.155.38] P=esmtps X=TLSv1.2:ECDHE-RSA-AES256-GCM-SHA384:256 CV=no S=6400 id=a4d3db9042d346a9a7fb3b4946caea8a@EXMB02.edu.innopolis.ru

 $2016-09-20\ 14:27:22\ 1bmJCp-000497-DF => mail@st3.os3.su < horn@st2.os3.su > R=dnslookup\ T=remote_smtp \\ H=mail.st3.os3.su\ [188.130.155.36]\ C="250\ 2.0.0\ Ok: queued as 83E8E36C0528"$

2016-09-20 14:27:22 1bmJCp-000497-DF Completed

2016-09-20 14:27:24 1bmJCu-00049c-KE DKIM: d=innopolis.ru s=unimail1 c=simple/simple a=rsa-sha256 b=2048 t=1474370807 [verification succeeded]

2016-09-20 14:27:24 1bmJCu-00049c-KE NO DKIM FOUND!

2016-09-20 14:27:24 1bmJCu-00049c-KE DKIM test passed

2016-09-20 14:27:27 1bmJCu-00049c-KE <= a.bakhtin@innopolis.ru H=mail.st5.os3.su (st5.os3.su) [188.130.155.38] P=esmtps X=TLSv1.2:ECDHE-RSA-AES256-GCM-SHA384:256 CV=no S=7213 id=a4d3db9042d346a9a7fb3b4946caea8a@EXMB02.edu.innopolis.ru

 $2016-09-20\ 14:27:27\ 1bmJCu-00049c-KE \Rightarrow mail@st3.os3.su < horn@st2.os3.su \\ R=dnslookup\ T=remote_smtp\\ H=mail.st3.os3.su\ [188.130.155.36]\ C="250\ 2.0.0\ 0k: queued\ as\ ADF8136C0528"$

2016-09-20 14:27:27 1bmJCu-00049c-KE Completed

2016-09-20 14:27:29 1bmJCz-0004A8-NV DKIM: d=innopolis.ru s=unimail1 c=simple/simple a=rsa-sha256 b=2048 t=1474370807 [verification succeeded]

2016-09-20 14:27:29 1bmJCz-0004A8-NV NO DKIM FOUND!

2016-09-20 14:27:29 1bmJCz-0004A8-NV DKIM test passed

2016-09-20 14:27:32 1bmJCz-0004A8-NV <= a.bakhtin@innopolis.ru H=mail.st5.os3.su (st5.os3.su) [188.130.155.38] P=esmtps X=TLSv1.2:ECDHE-RSA-AES256-GCM-SHA384:256 CV=no S=8026

```
id=a4d3db9042d346a9a7fb3b4946caea8a@EXMB02.edu.innopolis.ru
```

 $2016-09-20\ 14:27:32\ 1bmJCz-0004A8-NV \Rightarrow mail@st3.os3.su < horn@st2.os3.su > R=dnslookup\ T=remote_smtp \\ H=mail.st3.os3.su\ [188.130.155.36]\ C="250\ 2.0.0\ 0k: queued\ as\ BA02C36C0528"$

2016-09-20 14:27:32 1bmJCz-0004A8-NV Completed

2016-09-20 14:27:34 1bmJD4-0004AU-SH DKIM: d=innopolis.ru s=unimail1 c=simple/simple a=rsa-sha256 b=2048 t=1474370807 [verification succeeded]

2016-09-20 14:27:34 1bmJD4-0004AU-SH NO DKIM FOUND!

2016-09-20 14:27:34 1bmJD4-0004AU-SH DKIM test passed

2016-09-20 14:27:40 1bmJD4-0004AU-SH <= a.bakhtin@innopolis.ru H=mail.st5.os3.su (st5.os3.su) [188.130.155.38] P=esmtps X=TLSv1.2:ECDHE-RSA-AES256-GCM-SHA384:256 CV=no S=8839 id=a4d3db9042d346a9a7fb3b4946caea8a@EXMB02.edu.innopolis.ru

2016-09-20 14:27:40 1bmJD4-0004AU-SH => mail@st3.os3.su https://doi.org/10.1016/jos41.0s3.su R=dnslookup T=remote_smtp H=mail.st3.os3.su [188.130.155.36] C="250 2.0.0 Ok: queued as A1EE836C0528"

2016-09-20 14:27:40 1bmJD4-0004AU-SH Completed

2016-09-20 14:27:42 1bmJDC-0004B9-Lx DKIM: d=innopolis.ru s=unimail1 c=simple/simple a=rsa-sha256 b=2048 t=1474370807 [verification succeeded]

2016-09-20 14:27:42 1bmJDC-0004B9-Lx NO DKIM FOUND!

2016-09-20 14:27:42 1bmJDC-0004B9-Lx DKIM test passed

2016-09-20 14:27:45 1bmJDC-0004B9-Lx <= a.bakhtin@innopolis.ru H=mail.st5.os3.su (st5.os3.su) [188.130.155.38] P=esmtps X=TLSv1.2:ECDHE-RSA-AES256-GCM-SHA384:256 CV=no S=9652 id=a4d3db9042d346a9a7fb3b4946caea8a@EXMB02.edu.innopolis.ru

 $2016-09-20\ 14:27:45\ 1bmJDC-0004B9-Lx \Rightarrow mail@st3.os3.su < horn@st2.os3.su \\ R=dnslookup\ T=remote_smtp\\ H=mail.st3.os3.su\ [188.130.155.36]\ C="250\ 2.0.0\ 0k: queued\ as\ B180136C0528"$

2016-09-20 14:27:45 1bmJDC-0004B9-Lx Completed

2016-09-20 14:27:47 1bmJDH-0004BW-Mm DKIM: d=innopolis.ru s=unimail1 c=simple/simple a=rsa-sha256 b=2048 t=1474370807 [verification succeeded]

2016-09-20 14:27:47 1bmJDH-0004BW-Mm NO DKIM FOUND!

2016-09-20 14:27:47 1bmJDH-0004BW-Mm DKIM test passed

2016-09-20 14:27:50 1bmJDH-0004BW-Mm <= a.bakhtin@innopolis.ru H=mail.st5.os3.su (st5.os3.su) [188.130.155.38] P=esmtps X=TLSv1.2:ECDHE-RSA-AES256-GCM-SHA384:256 CV=no S=10465 id=a4d3db9042d346a9a7fb3b4946caea8a@EXMB02.edu.innopolis.ru

2016-09-20 14:27:50 1bmJDH-0004BW-Mm ** horn@st2.os3.su: Too many "Received" headers - suspected mail loop

2016-09-20 14:27:50 1bmJDK-0004Br-B1 <= <> R=1bmJDH-0004BW-Mm U=exim P=local S=11623

2016-09-20 14:27:50 1bmJDH-0004BW-Mm Completed

2016-09-20 14:27:51 1bmJDK-0004Br-B1 => a.bakhtin@innopolis.ru R=dnslookup T=remote_smtp H=smtpex.infobox.ru [109.120.160.243] C="250 ok: Message 20571722 accepted"

2016-09-20 14:27:51 1bmJDK-0004Br-B1 Completed