

Single Inbox Synchronization Issues with Microsoft Exchange On–Premises Deployments



Document ID: 118883

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Apr 02, 2015

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Introduction

This document provides information on the synchronization issues seen between Cisco Unity Connection (CUC) and Microsoft Exchange On–Premises deployments.

Prerequisites

Requirements

Cisco recommends that you have knowledge of CUC.

Components Used

This document is not restricted to specific software and hardware versions.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

Issues

There are three types of synchronization issues:

- No synchronization
- Delayed synchronization from both sides (CUC to Exchange Server and vice versa)
- Delayed synchronization from Exchange Server to CUC

Troubleshoot

This section provides information on how to troubleshoot the three issues. The first two issues are combined into one section as the approach to troubleshoot the issues is the same.

Delayed or No Synchronization between CUC and Exchange

There could be various reasons for which there is no or delayed synchronization between CUC and Exchange. In this scenario, check communication failures between CUC and the Exchange Server either via the CLI or by log collection via the Real-Time Monitoring Tool (RTMT).

RTMT

Choose *Trace & Log Central > Collect Files*. Choose *Connection Mailbox Sync* logs and proceed.

Root

On CUC (/var/log/active/cuc) via the CLI:

```
[root@ucbu-aricent-vm163 log]# ls -ltr | grep MbxSync
-rw-rw-r-- 1 cumboxsync cuservice 37223 Jun 5 09:18 diag_CuMbxSync_00000086.uc
-rw-rw-r-- 1 cumboxsync cuservice 37223 Jun 5 09:18 diag_CuMbxSync_00000087.uc
-rw-rw-r-- 1 cumboxsync cuservice 37223 Jun 5 09:19 diag_CuMbxSync_00000088.uc
-rw-rw-r-- 1 cumboxsync cuservice 37223 Jun 5 09:19 diag_CuMbxSync_00000089.uc
-rw-rw-r-- 1 cumboxsync cuservice 36919 Jun 5 09:20 diag_CuMbxSync_00000090.uc
```

In order to view the file, enter *cat <filename>* or *vi <filename>*, where <filename> is *diag_CuMbxSync_XXXXXXXX.uc*.

Admin CLI

The logs can also be viewed via the Admin CLI, but it is quite difficult.

In order to list the files, enter *file list activelog /cuc/diag_CuMbxSync* detail reverse*.

In order to view a file, enter *file view activelog /cuc/diag_CuMbxSync_XXXXXXXX.uc* where XXXXXXXX is the file number.

In order to transfer the files to a Secure FTP (SFTP) server, enter *file get activelog /cuc/diag_CuMbxSync**.

Check the latest CuMbxSync logs for any HTTP failures or warnings. Since errors or warnings are written by default in the traces, there is no need to enable traces at this point.

HTTP failures could stop (intermittently or completely) messaging operation synchronization from CUC to the Exchange server and vice versa. If HTTP failures are seen in the logs, then the next step is to troubleshoot and fix these issues.

The Unity Connection Single Inbox Troubleshooting TechNote document provides some information on the various errors seen in the CuMbxSync logs.

If there are no errors / failures in the CuMbxSync log, then enable CsEws and CuMbxSync micro traces – all levels. Choose *Cisco Unity Connection Serviceability > Trace > Micro Trace*. Click the reset option on the Unified Messaging Account page of the User and collect the logs once again. Contact the Cisco Technical Assistance Center (TAC) for further assistance.

Delayed Synchronization from Exchange Server to CUC

Exchange communicates to the CUC server on port 7080. This section provides steps in order to troubleshoot the issue.

1. Ensure port 7080 is open and CUC listens on this port.

Admin CLI

```
admin:show open ports regexp 7080

Executing.. please wait.
jetty      14655          jetty 117u IPv6      117863      0t0  TCP *:7080 (LISTEN)
admin:
admin:
```

Root

```
[root@ucbu-aricent-vm163 ~]#
[root@ucbu-aricent-vm163 ~]# netstat -ano|grep 7080
tcp        0      0 :::7080                :::*                  LISTEN
[root@ucbu-aricent-vm163 ~]#
[root@ucbu-aricent-vm163 ~]#
[root@ucbu-aricent-vm163 ~]# lsof -i -P | grep :7080
jetty      19481          jetty 120u IPv6      123391      TCP *:7080 (LISTEN)
[root@ucbu-aricent-vm163 ~]#
```

2. Collect a network capture at both the Exchange server and the CUC server in order to confirm that the Exchange server sends Jetty notifications and CUC receives these Jetty notifications.

In the CUC CLI, enter *utils network capture file SIBTrace count 100000 size ALL*.

On Exchange, download and run Wireshark.

In the CUC capture, you should see this packet pattern on port 7080 (port used to receive notifications):

Time	Source	Destination	Protocol	Length	Info
1422	2014-06-29 08:25:44.208924	173.37.183.83	10.93.132.92	HTTP/OK	2143 POST /notificationService/services/notificationService?id=ca37681c-ba00
1426	2014-06-29 08:25:44.305976	10.93.132.92	173.37.183.83	HTTP/OK	54 HTTP/1.1 200 OK
1556	2014-06-29 08:25:44.813627	173.37.183.83	10.93.132.92	HTTP/OK	2143 POST /notificationService/services/notificationService?id=e6df8718-1a9e
1559	2014-06-29 08:25:44.821625	10.93.132.92	173.37.183.83	HTTP/OK	54 HTTP/1.1 200 OK
1560	2014-06-29 08:25:44.828973	173.37.183.83	10.93.132.92	HTTP/OK	2143 POST /notificationService/services/notificationService?id=4bcaeb5d-8a7e
1563	2014-06-29 08:25:44.831264	10.93.132.92	173.37.183.83	HTTP/OK	54 HTTP/1.1 200 OK
1573	2014-06-29 08:25:44.985286	173.37.183.83	10.93.132.92	HTTP/OK	2143 POST /notificationService/services/notificationService?id=f0c1661a-5a3f
1578	2014-06-29 08:25:44.999111	10.93.132.92	173.37.183.83	HTTP/OK	54 HTTP/1.1 200 OK
1593	2014-06-29 08:25:45.767927	173.37.183.83	10.93.132.92	HTTP/OK	2143 POST /notificationService/services/notificationService?id=e3bcb03-0ca7
1596	2014-06-29 08:25:45.783788	10.93.132.92	173.37.183.83	HTTP/OK	54 HTTP/1.1 200 OK
1638	2014-06-29 08:25:46.607312	173.37.183.83	10.93.132.92	HTTP/OK	2143 POST /notificationService/services/notificationService?id=11b5eef5-043c
1641	2014-06-29 08:25:46.616088	10.93.132.92	173.37.183.83	HTTP/OK	54 HTTP/1.1 200 OK
1644	2014-06-29 08:25:46.638317	173.37.183.83	10.93.132.92	HTTP/OK	2143 POST /notificationService/services/notificationService?id=c2286dea-654c
1647	2014-06-29 08:25:46.640719	10.93.132.92	173.37.183.83	HTTP/OK	54 HTTP/1.1 200 OK
1657	2014-06-29 08:25:46.750081	173.37.183.83	10.93.132.92	HTTP/OK	2143 POST /notificationService/services/notificationService?id=88c58ed5-d417
1660	2014-06-29 08:25:46.769839	10.93.132.92	173.37.183.83	HTTP/OK	54 HTTP/1.1 200 OK
1670	2014-06-29 08:25:47.543860	173.37.183.83	10.93.132.92	HTTP/OK	2143 POST /notificationService/services/notificationService?id=bd3fcb00-0d3c

Confirm (with the help of the IP address highlighted in the screen capture) that the notification has been sent from the Exchange server to CUC and not to some proxy server. If you do not see the same pattern at port 7080 (or do not see any traffic on port 7080), check with the Exchange server team. Notifications from Exchange to CUC could be of two types:

- ◆ Keep-alive notifications
- ◆ Message operation notification

Keep-alive messages are sent from Exchange to CUC. Here is a sample keep-alive notification message:

Time	Source	Destination	Protocol	Length	Info
22 2014-06-29 08:10:55.247508	173.37.183.83	10.93.132.92	TCP	66	41984 > ewpower10 [SYN] Seq=0 Win=0 Len=0 MSS=1460 WS=154 SACK_PERM=0
23 2014-06-29 08:10:55.247541	10.93.132.92	173.37.183.83	TCP	66	ewpower10 > 41984 [SYN, ACK] Seq=0 Ack=1 Win=14600 Len=0 MSS=1460 SACK_PERM=0
24 2014-06-29 08:10:55.310282	173.37.183.83	10.93.132.92	TCP	60	41984 > ewpower10 [ACK] Seq=1 Win=131584 Len=0
25 2014-06-29 08:10:55.311495	173.37.183.83	10.93.132.92	TCP	385	[TCP segment of a flow established PDU]
26 2014-06-29 08:10:55.311521	10.93.132.92	173.37.183.83	TCP	54	ewpower10 > 41984 [ACK] Seq=1 Ack=332 Win=15744 Len=0
30 2014-06-29 08:10:55.374463	173.37.183.83	10.93.132.92	HTTP/1.1	134	POST /notificationservice/services/notificationservice?id=2348c723-2466-4fcd-bda0-b9e19fb0215e&pid=25672 HTTP/1.1
31 2014-06-29 08:10:55.374478	10.93.132.92	173.37.183.83	TCP	54	ewpower10 > 41984 [ACK] Seq=1 Ack=422 Win=17920 Len=0
32 2014-06-29 08:10:55.379307	10.93.132.92	173.37.183.83	TCP	54	ewpower10 > 41984 [ACK] Seq=1 Ack=422 Win=17920 Len=0
33 2014-06-29 08:10:55.379520	10.93.132.92	173.37.183.83	HTTP/1.1	5	HTTP/1.1 200 OK
34 2014-06-29 08:10:55.442377	173.37.183.83	10.93.132.92	TCP	60	41984 > ewpower10 [ACK] Seq=1491 Ack=491 Win=131072 Len=0
35 2014-06-29 08:10:55.442632	173.37.183.83	10.93.132.92	TCP	60	41984 > ewpower10 [FIN, ACK] Seq=1421 Ack=491 Win=131072 Len=0
36 2014-06-29 08:10:55.442654	10.93.132.92	173.37.183.83	TCP	54	ewpower10 > 41984 [ACK] Seq=491 Ack=3422 Win=17920 Len=0

```

POST /notificationservice/services/notificationservice?id=2348c723-2466-4fcd-bda0-b9e19fb0215e&pid=25672 HTTP/1.1
Content-Type: text/xml; charset=utf-8
Accept: text/xml
SOAPAction: http://schemas.microsoft.com/exchange/services/2006/messages/sendnotification
Host: 10.93.132.92:7080
Content-Length: 1089
Connection: close

<?xml version="1.0" encoding="utf-8"?><soap11:Envelope xmlns:soap11="http://schemas.xmlsoap.org/soap/envelope/"><soap11:Header><RequestServerVersion xmlns:cm="http://schemas.microsoft.com/exchange/services/2006/messages" version="Exchange2007_SP1" xmlns:t="http://schemas.microsoft.com/exchange/services/2006/types" /></soap11:Header><soap11:Body><SendNotification xmlns:t="http://schemas.microsoft.com/exchange/services/2006/types" xmlns:sm="http://schemas.microsoft.com/exchange/services/2006/messages"><ResponseMessages><SendNotificationResponseMessage xmlns:sm="http://schemas.microsoft.com/exchange/services/2006/messages"><SubscriptionId>0b163c0f-74b5-4982-99c1-144cd23df0a4</SubscriptionId><PreviousWatermark>AQAAAAH2TsqJ1L/g8cRiQFFGFaf5A9AAAAAE</PreviousWatermark><StatusEvent><StatusEvent></StatusEvent></SendNotificationResponseMessages></SendNotificationBody></soap11:Body></soap11:Envelope>HTTP/1.1 200 OK
Date: Sun, 29 Jun 2014 15:10:55 GMT
Content-Type: text/xml; charset=UTF-8
Connection: close
Server: Jetty(8.1.14.v20131031)

<?xml version="1.0" encoding="UTF-8"?><soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"><soapenv:Body><ns2:SendNotificationResult xmlns:ns2="http://schemas.microsoft.com/exchange/services/2006/messages"><ns2:SubscriptionStatus>OK</ns2:SubscriptionStatus></ns2:SendNotificationResult></soapenv:Body></soapenv:Envelope>

```

The Exchange server sends this notification every five minutes (by default) for every subscribed user. This notification is sent by Exchange to the Exchange Web Services (EWS) client (CUC in this case) in order to keep subscriptions alive in CUC.

Notifications from the Exchange server are received at the CUC server by Jetty, which parses the notifications and updates data in the *tbl_ExSubscription* table.

Sample Entries in *tbl_ExSubscription*:

```

unitydyndb> select first 10 * from tbl_exsubscription;
subscriptionid          timestampc              subscriberexternalserviceapobjectid
-----
0a37d81c-bc62-47b3-a3d9-30b3c7384211 2014-06-29 16:00:45.775000 0b163c0f-74b5-4982-99c1-144cd23df0a4
4bca6b5d-6a79-41b7-ac1c-5ef3be3229a8 2014-06-29 16:00:46.351000 1fcd64d-3448-44a0-9833-74201579569f
e6df8718-1a9c-4df5-bfa9-3ad6f1f69fd1 2014-06-29 16:00:46.351000 2068ca60-118d-46c4-a202-6d52321df908
f9c1d61a-5a3f-477e-8cea-66ac8881c0f9 2014-06-29 16:00:46.475000 27acb13b-9f47-4cbe-aa06-00966e1adcf0
e3bebe03-0ca7-4cec-956c-6d1d1ffea0e6 2014-06-29 16:00:47.256000 2cb8f81e-62b2-46cb-8fe4-97192131ce79
11b5def5-c45d-43b0-845b-12df8638f96c 2014-06-29 16:00:48.130000 2dfddfdc-a94d-42a8-b0fc-c32fe3ce2328
c2280dea-654d-49c1-a68c-467bf486db56 2014-06-29 16:00:48.131000 304f6f0e-d2b3-43ad-bed4-0d658c0292c6
88c58ed5-d417-44f4-811c-aeb959e0374b 2014-06-29 16:00:48.223000 32ad581d-650b-4106-b758-4fa2825e5f0
bd3fcbd0-0d3d-42ff-a95e-a1006a6cf046 2014-06-29 16:00:49.019000 4e8b025d-81d2-4f62-a075-42f7d063b66f
a8cc85da-e03b-4718-b07a-6486a1ef8f59 2014-06-29 16:02:11.486000 4e9d3b84-5824-499d-83dc-e3258484af8f

unitydyndb>

```

The same information can be viewed via the Admin CLI. Enter the *run cuc dbquery unitydyndb select first 10 * from tbl_exsubscription* command.

tbl_ExSubscription stores information about each mailbox subscription registered with Exchange via EWS. *timestampc* (highlighted in the previous screenshot) is one of the columns in this table. It contains Date-time in UTC time which indicates the time a notification for this subscription was last received by CUC from the Exchange server.

The *CuMbxSync* process has a thread that monitors for stale subscriptions every two minutes and does a resubscription for any stale entries. In the sample log, the thread considers a set of subscription entries as stale. This is not an ideal case (if everything is fine and Exchange sends keep-alive notifications in a timely manner). This field is used to detect stale subscriptions by the *CuMbxSync* process. The condition used to filter out the stale subscriptions is *timestampc < (CurrentTime - 15*

minutes).

Even if there is no change in a subscriber mailbox at the Exchange side, the Exchange Server by default still sends notifications for each and every subscriber (subscriber on Exchange server) at a five minute interval.

Keep-alive notifications that come from Exchange can be seen in 'Connection Jetty' logs. These logs can be collected from RTMT (choose *Trace & Log Central > Collect Files > Connection Jetty* and proceed) or via Root Access (*/usr/local/jetty/logs*).

```
173.27.183.83 - - [29/Jun/2014:11:30:53 -0000] "POST /NotificationService/services/NotificationService?id=f5f2b75-e156-4444-acc7-498b3aca492f1cpid*23672 HTTP/1.1" 200
343
173.27.183.83 - - [29/Jun/2014:11:35:54 -0000] "POST /NotificationService/services/NotificationService?id=f5f2b75-e156-4444-acc7-498b3aca492f1cpid*23672 HTTP/1.1" 200
343
173.27.183.83 - - [29/Jun/2014:11:40:54 -0000] "POST /NotificationService/services/NotificationService?id=f5f2b75-e156-4444-acc7-498b3aca492f1cpid*23672 HTTP/1.1" 200
343
173.27.183.83 - - [29/Jun/2014:11:45:54 -0000] "POST /NotificationService/services/NotificationService?id=f5f2b75-e156-4444-acc7-498b3aca492f1cpid*23672 HTTP/1.1" 200
343
173.27.183.83 - - [29/Jun/2014:11:50:54 -0000] "POST /NotificationService/services/NotificationService?id=f5f2b75-e156-4444-acc7-498b3aca492f1cpid*23672 HTTP/1.1" 200
343
173.27.183.83 - - [29/Jun/2014:11:55:55 -0000] "POST /NotificationService/services/NotificationService?id=f5f2b75-e156-4444-acc7-498b3aca492f1cpid*23672 HTTP/1.1" 200
343
173.27.183.83 - - [29/Jun/2014:12:00:55 -0000] "POST /NotificationService/services/NotificationService?id=f5f2b75-e156-4444-acc7-498b3aca492f1cpid*23672 HTTP/1.1" 200
343
```

This log shows the response sent by CUC corresponding to keep-alive notifications sent by the Exchange Server. If keep-alive notifications do not arrive at CUC from Exchange then the subscription will be resubscribed after every 16 minutes (approximately) and only then does mailbox synchronization occur.

Potential reasons for such behavior could be one of these:

- ◆ Proxy configuration at the Exchange Server
- ◆ Network Address Translation (NAT) configuration at CUC
- ◆ Firewall configuration between CUC and the Exchange Server, and so on

Involve the network team and Exchange team in order to get the actual reason of this behavior.

If CUC receives notification from the Exchange server on-time and the update is not reflected in the CUC mailbox, contact the TAC for assistance to troubleshoot the issue.