Single Inbox Synchronization Issues with Microsoft Exchange On–Premises Deployments

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Contents

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 cumbxsync      cuservice      37223 Jun  5 09:18 diag_CuMbxSync_00000086.uc
-rw-rw-r-- 1 cumbxsync      cuservice      37223 Jun  5 09:18 diag_CuMbxSync_00000087.uc
-rw-rw-r-- 1 cumbxsync      cuservice      37223 Jun  5 09:19 diag_CuMbxSync_00000088.uc
-rw-rw-r-- 1 cumbxsync      cuservice      37223 Jun  5 09:19 diag_CuMbxSync_00000089.uc
-rw-rw-r-- 1 cumbxsync      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_xxxxxxx.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

    Root

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):

    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 > empowerid  [SYN] seq=0  Win=8192 Len=0 MSS=1432 WS=256 SACK_PERM
23 2014-06-29 08:10:55.247541    10.93.132.92       173.37.183.83      TCP       66  empowerid > 41984  [SYN, ACK] seq=0 Ack=1 Win=14600 Len=0 MSS=1460 SACK
24 2014-06-29 08:10:55.310282    173.37.183.83      10.93.132.92       TCP       60  41984 > empowerid  [ACK] seq=1 Ack=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 reassembled PDU]
26 2014-06-29 08:10:55.311521    10.93.132.92       173.37.183.83      TCP       54  empowerid > 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/XM  114  POST /NotificationService/services/Notificationservice?id=2348c723-24
31 2014-06-29 08:10:55.374478    10.93.132.92       173.37.183.83      TCP       54  empowerid > 41984  [ACK] seq=1 Ack=1421 Win=17920 Len=0
32 2014-06-29 08:10:55.379307    10.93.132.92       173.37.183.83      TCP      543  [TCP segment of a reassembled PDU]
33 2014-06-29 08:10:55.379520    10.93.132.92       173.37.183.83      HTTP/XM   54  HTTP/1.1 200 OK
34 2014-06-29 08:10:55.442391    173.37.183.83      10.93.132.92       TCP       60  41984 > empowerid  [ACK] seq=142  Ack=491 Win=131072 Len=0
35 2014-06-29 08:10:55.442632    10.93.132.92       173.37.183.83      TCP       60  41984 > empowerid  [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  empowerid > 41984  [ACK] seq=491 Ack=1422 Win=17920 Len=0
```

```
POST /NotificationService/services/Notificationservice?id=2348c723-2466-4fcd-bda0-b9419fb0215e&p1d=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: 10.93.132.92:7090
Content-Length: 1089
Connection: close

<?xml version="1.0" encoding="utf-8"?><soap11:Envelope xmlns:soap11="http://schemas.xmlsoap.org/soap/
envelope/"><soap11:Header><t:RequestServerVersion xmlns:m="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><m:SendNotification xmlns:t="http://schemas.microsoft.com/exchange/services/2006/types" xmlns:m="http://
schemas.microsoft.com/exchange/services/2006/messages"><m:ResponseMessages><m:SendNotificationResponseMessage
ResponseClass="Success"><m:ResponseCode>NoError</
m:ResponseCode><m:Notification><t:SubscriptionId>FQB4a3MtcmMkLXqwOS1jaxNfby5jb2Q3AAAABWIZKOk9sOqqIT9yMLkqnyOsNKKkYDEI</
t:SubscriptionId><t:PreviousWatermark>AQAAAH1TaSqtL1t/qBpnG7GF2CMANAAAAAAE=</t:PreviousWatermark><t:MoreEvents>False</
t:MoreEvents><t:StatusEvent><t:Watermark>AQAAAH1TaSqt1Jt/qBpnQFFSFAfSaNAAAAAAE=</t:Watermark></t:StatusEvent></m:Notification></
m:SendNotificationResponseMessage></m:ResponseMessages></m:SendNotification></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                          timestamputc                  subscriberexternalservicemapobjectid
-----------------------------------------------------------------------------------------------------------
0a37d81c-bc62-47b3-a3d9-30b3c7384211    2014-06-29 16:00:45.775000    0b163c0f-74b5-4982-99c1-144cd23df0a4
4bca6b5d-6a79-41b7-ac1c-5cf3be3229a8    2014-06-29 16:00:46.351000    1fcdb64d-3448-44a0-9833-74201579569f
e6df8718-1a9c-4df5-bfa9-3ad6f1f69fd1    2014-06-29 16:00:46.351000    2068ca60-118d-46c4-a202-8d52321df908
f9c1d61a-5a3f-477e-8cea-66ac6881c0f9    2014-06-29 16:00:46.475000    27acbf3b-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-b758-4fa2825c5ef0
bd3fcbd0-0d3d-42ff-a95e-a1006a6cf046    2014-06-29 16:00:49.019000    4c8b025d-81d2-4f62-a075-42f7d063b66f
a8cc85da-e03b-4718-b07a-6486a1ef8f59    2014-06-29 16:02:11.486000    4c9d3b84-5824-499d-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. *timestamputc* (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 *timestamputc < (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*).

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 recieves 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.

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