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 cumbxsync	cuservice	37223	Jun	5 09:18	diag_CuMbxSync_00000086.uc
-ru-ru-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
-ru-ru-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_xxxxxx.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_xxxxxx.uc* where xxxxxxx 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	w open ports regexp	7080							
Executing	please wait.								
jetty	14655	jetty	117u	IPv6	117863	0t0	TCP *	:7080	(LISTEN)
admin:									

Root

Front Ruchu - aricant - 100162 -14		
[LOOCG debd-alleene-vinios -]#		
[root@ucbu-aricent-vm163 ~]# n	hetstat -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 08:25:44.298924	173.37.183.83	10.93.132.92	HTTP://w 1143 POST /Not1ficationservice/services/Not1ficationservice?1d=0a37d81c-bc62
1426 2014-06-29 08:25:44.305976	10.93.132.92	173.37.183.83	HTTP/X# 54 HTTP/1.1 200 0K
1556 2014-00-29 08:25:44.813027	173,37,183,83	10,93,132,92	 HTTP/X# 1143 POST /NotificationService/services/NotificationService?id=e0df8718-1a9c
1559 2014-05-29 08:25:44.821625	10.93.132.92	173.37.183.83	HTTE/X# 54 HTTE/1.1 200 0K
1560 2014-05-29 08:25:44.828731	173.37.183.83	10.93.132.92	 HTTP://P_1143_POST_/NotificationService/services/NotificationService?id=Abca6b5d=8a70
1563 2014-06-29 08:25:44.831264	10.93.132.92	1/3.3/.165.85	HTTE/0# 54 HTTP/1.1 200 DK
1575 2014-06-29 08:25:44.985286	173.37.183.83	10.93.132.92	HTTP/OP_1143_POST_/Notificationservice/services/Notificationservice?id=f9c1661a=5a31
1578 2014-06-29 08:25:44.999111	10.93.132.92	173,37,183,83	HTTP/X# 54 HTTP/1.1 200 ok
1593 2014-06-29 08:25:45.767927	173.37.183.83	10.93.132.92	HTTP://w 1143 POST /NotificationService/services/NotificationService?id=e3bebe03-Dca3
1596 2014-00-29 08:25:45.783788	10,93,132,92	1/3.3/.185.83	HTTP/X# 54 HTTP/1.1 200 0K
1638 2014-06-29 08:25:46.607312	173,37,183,83	10.93.132.92	HTTP://w 1143 POST /NotificationService/services/NotificationService?id=11b5def5-o45d
1641 2014-05-29 08:25:46.616058	10.93.132.92	173.37.183.83	HTTP/AP 54 HTTP/1-1 200 0K
1644 2014-05-29 08:25:46.638317	173.37.183.83	10.93.132.92	HTTE/OP 1143 POST /NOTIFicationservice/services/Notificationservice?id=c2280dea=654d
1647 2014-05-29 08:25:46.640719	10.03.132.92	1/3.3/.185.85	HTTP/0P 54 HTTP/1.1 200 OK
1657 2014-06-29 08:25:46.750081	173.37.183.83	10.93.132.92	HTTP/XP_1143_PDST_/NDT1ffcat1enservice/services/NDT1ffcat1enservice?1d=88c58ed5-d413
1660 2014-06-29 08:25:46.769839	10.93.132.92	173.37.183.83	HTTE/X# 54 HTTE/1.1 200 0K
1070 2014-00-29 08:25:47.543860	173,37,183,83	10,93,132,92	HTTP/XM 1143 POST /NotificationService/services/NotificationService?id=bd3fcbd0=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 3rfo							
22 2014-06-29 08:10:55.247508	173.37.183.83	10.93.132.92		66.41984 > empower16 [SYM] Seq=0 din=8102 Len=0 MSS=1432 WS=256 SACK_PERM							
23 2014-05-29 08:10:55.247541	10.93.132.92	173.37.183.83	TOP	66 empowerid > 41984 [SYN, ACK] Sig=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 > expower1d [Ack] seq=1 +ck=1 w1n=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 reassance bu]							
26 2014-06-29 08:10:55.311521	10.93.132.92	173.37.183.83	TCP	54 expower1d > 41984 [Ack] seg-1 Ack-332 win-15744 Len-0							
30 2014-06-29 08:10:55.374463	173.37.183.83	10.93.132.92	HTTP/OP	334 Post /Hotificationservice/services/Hotificationservice?id=2348c723=244							
31 2014-06-29 08:10:55.374478	10.93.132.92	173.37.183.83	TCP	S4 aspowerid > 41984 [Ack] Seq=1 Ack=1421 Win=1/920 Len=0							
32 2014-06-29 08:10:55.379307	10.93.132.92	173.37.183.83	TCP	543 [http://second.of_a reassentbled PDU]							
33 2014-06-29 08:10:55.379520	10.93.132.92	173.37.183.83	HTTP/OP	54 HTTP/1.1 200 OK							
34 2014-06-29 08:10:55.442377	173.37.183.83	10.93.132.92	TCP	60.41984 > ampowerts [Ack] seq=142, Ack=401 win=131072 Len=0							
35 2014-06-29 08:10:55.442632	173.37.183.83	10.93.132.92	TOP	60 41984 > expower1d [FIN, ACK] se1421 Ack-401 W1n-131072 Len-0							
36 2014-06-29 08:10:55.442654	10.93.132.92	173.37.183.83	TCP	54 empower1d > 41984 [Ack] seg=491 Ack=1422 w1n=17920 Len=0							
tontent-type: text/xml; cha Accept: text/xml Forestime: http://schemes	rset-utf-8 miccosoft com/eycb:	anna ís amiñicas 13006	(escerne)	ac /sanduot4#3 cat i on							
sccent: Text/vel	a second of the										
SOAPAction: http://schemas.	microsoft.com/excha	ande/serv1ces/2006.	/nessag	es/sendNotification							
Host: 10.93.132.92:7080											
content-Length: 1089											
connection: close											
k?xml version="1.0" encodin	<pre>id="utf-8"?><soap11;< pre=""></soap11;<></pre>	Envelope xmlns:so	apii-"h	tto://schemas.xmlsgap.org/spac/							
envelppe/"> <soap11:header><</soap11:header>	T:RequestServerver:	sion xmlns:m="http:	://scher	nas.microsoft.com/exchange/services/2006/messages"							
version="Exchange2007_SP1"	xmlns:t="http://sch	hemas.microsoft.com	n/exchai	npe/services/2006/types" /> </td							
soap11:Header> <soap11:body></soap11:body>	<pre><m:sendwotification< pre=""></m:sendwotification<></pre>	n xmlns:t="http://	schemas	.microsoft.com/exchange/services/2006/types" xmlns:m="http://							
schemas.microsoft.com/excha	inge/services/2006/m	nessages"> <m:respo< td=""><td>nseviess</td><td>ages><m:sendnotificationresponsemessage< td=""></m:sendnotificationresponsemessage<></td></m:respo<>	nseviess	ages> <m:sendnotificationresponsemessage< td=""></m:sendnotificationresponsemessage<>							
Responseclass="success"> <m:< td=""><td>ResponsecodevNoEccr</td><td>ors (</td><td></td><td></td></m:<>	ResponsecodevNoEccr	ors (
m:ResponseCode> <m:notificat< td=""><td>fon><t subscription<="" td=""><td>NIC>FOB483MUCMNRLX</td><td>ownstila:</td><td>KNÍRVSÍ BZODAAAABWIZKÚR 95 OGGIT BUNLKGRUOS NKKRY VER 💋</td></t></td></m:notificat<>	fon> <t subscription<="" td=""><td>NIC>FOB483MUCMNRLX</td><td>ownstila:</td><td>KNÍRVSÍ BZODAAAABWIZKÚR 95 OGGIT BUNLKGRUOS NKKRY VER 💋</td></t>	NIC>FOB483MUCMNRLX	ownstila:	KNÍRVSÍ BZODAAAABWIZKÚR 95 OGGIT BUNLKGRUOS NKKRY VER 💋							
t:SubscriptionId> <t:previou< td=""><td>iswat ennemezau asaan</td><td></td><td>FIGEROAL SAVE</td><td>and the second second</td></t:previou<>	iswat ennemezau asaan		FIGEROAL SAVE	and the second							
t:MoneEvents>kt:StatusEvent	> <t:watermark>AOAA/</t:watermark>	AAHr1faSotljt/déon	OFFGFAF	saNAAAAAAE=k/m:Notification> </td							
m:SendNotificationResponseM	lessage> <td>eMessages><td>Notific</td><td>ation>HTTP/1.1 200 OK</td></td>	eMessages> <td>Notific</td> <td>ation>HTTP/1.1 200 OK</td>	Notific	ation>HTTP/1.1 200 OK							
Date: Sun, 29 Jun 2014 15:1	0:55 GMT										
Content-Type: text/xml:char	set=UTF-8										
Connection: close											
Server: Jettv(8.1.14.v20131	.0310										
<pre><?xml version='1.0' encoding='UTF-8'?><soapenv:envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/
envelope/"><soapenv:body><ns2:senduotificationresult xmlns:ns2="http://schemas.microsoft.com/exchange/services/2006/
messages"><ns2:subscriptionstatus>OK</ns2:subscriptionstatus></ns2:senduotificationresult></soapenv:body></soapenv:envelope></pre>											

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 t}	ol exsubscription;	
subscriptionid	timestamputc	subscriberexternalservicemapobjectid
Oa37d81c-bc62-47b3-a3d9-30b3c7384211	2014-06-29 16:00:45.775000	Ob163cOf-74b5-4982-99c1-144cd23dfOa4
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-66ac8881c0f9	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).

173.2	7.189	.83 -	[29/3]	an/2014	111230	1251	-00001	*POST	/Not	ticar	tionfe	rvice	/aecv:	ices/N	otiti	ostio	aßerv	ice?id	THE STOP	079-е	156-4	444-2	ee7-	433b3	aca49#	ispid	25672	HTTP/	1-17	200
343																														
173.3	7.183	.85 -	[29/3]	in/2019	:11:35	4:51	00001	"POST	/Not:	ificat	cionfe		/servi	ices/M	lotifi	leatio	aßerv:	ice?id	11610	679-е	156 - 1		ice?-	15853	0.00101	14pid	28672	ETTP/		200
343																														
173.3	7.103	.03 -	[29/30	in/2019	:11:40	1:54	-00001	"POST	/Not:	ificat	cionfe	cvice	/aecv:	icez/N	otifi	catio	aServ:	ice7id	22 G 200	679-e	156 - 4	444-8	iee7-	400b3	8.0849£	Lipide	-25672	RITP/	1.1^{n}	200
343																														
178.3	7.183	.85 -	(29/3)	in/2019	11:48	1154	-0000]	*POST	/Not:	ificat	cionfe	rvice	/decvi	ices/N	otifi	leatio	aserv:	ice?id	11610	079−e	156-4	444-6	iee?-	13353	0.00191	14pid	*26672	ELL5/	1.1"	200
343																														
173.3	7.163	.53 -	[29/30	in/2019	11:50	1:54	-00001	"POST	/Mot:	ificat	cionfe	cvice.	/servs	ices/M	otifi	catio	oferv:	ice7id	ffoffo	979-e	156-4	444-8	ee7-	456b3	aca492	lépid	+25672	RLID/	1.1"	200
343																														
173.3	7.183	.83 -	(39/3)	in/2019	11:55	1155	+0000]	*POST	/Not:	ificat	cionde	rvice	/aetvi	ices/N	otifi	loatio	aserv:	ice?id	11610	079-е	156-4	444-8	ee?-	49953	a.o.a.491	14010	*25672	ELLE/	1.1"	200
343																														
173.3	7.183	.82 -	[29/30	in/2019	12:00	192	+000001	"POST	/Not:	lficat	cionfe	cvice	/2007/3	1062/N	otifi	catio	aferv:	ice7id	ff6f56	979-e	156-4	444-8	vere 7-	422P31	0.00172	lépid	+23672	RUID/	1.1"	200
0.40																														

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.

Updated: Apr 02, 2015

Document ID: 118883