

CUCM Database Replication

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Training Session Agenda

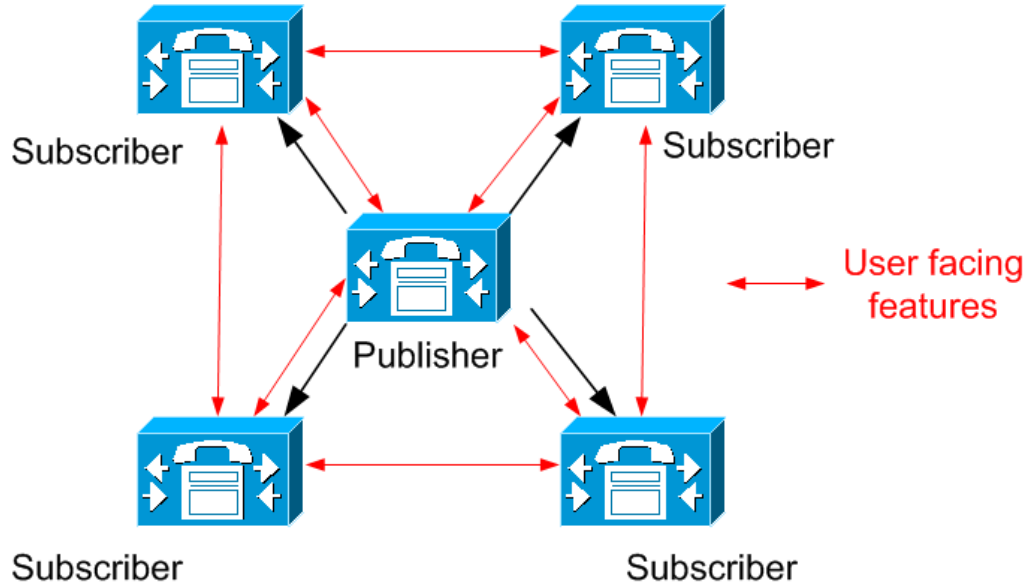
- Database Replication Architecture
- Database Replication Setup
- Monitoring Replication (setup)
- Troubleshooting steps
- Cli commands
- Q&A

Cisco Unified Communications Manager

Database Replication Architecture

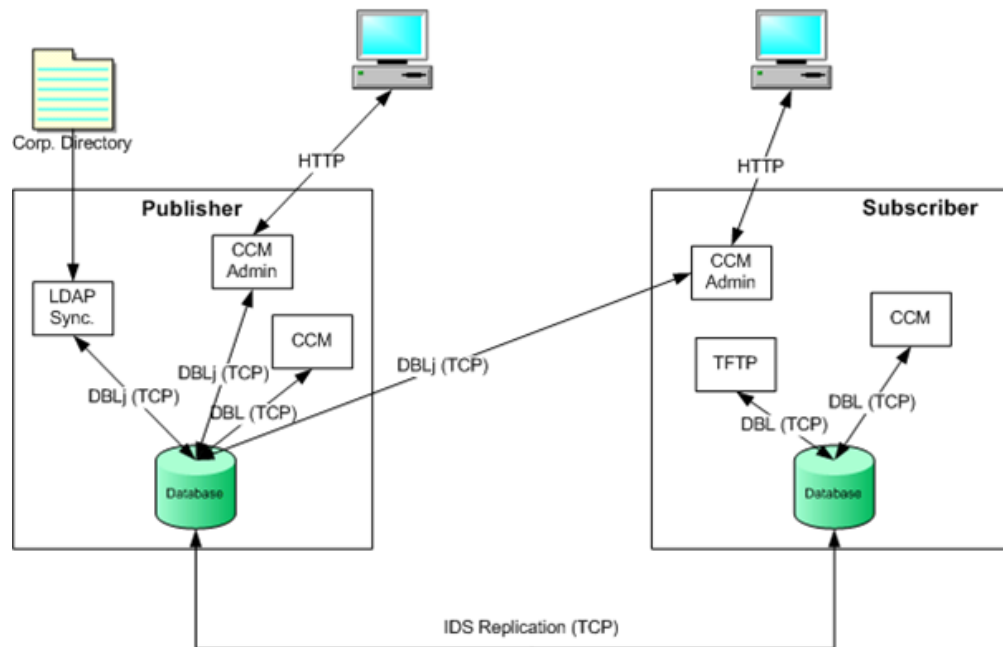


Architecture



- Most data is written in database of publisher and then replicated to subscribers
- User facing features can also be written in subscriber and are replicated to publisher

CUCM Data Access



- CCM Admin page on Subscriber queries database on Publisher
- Query local database via cli:
run sql select * from region
- A change is being replicated to the database of the Subscriber and the ccm service is updated via a change notify

Cisco Unified Communications Manager

Database Replication Setup



Steps in Replication

1. Define

Identifies which servers will participate and defines those nodes locally and on other nodes

(cdr define server)

2. Define Replicates

Define what tables will be replicated and what to do in case of collisions, stored in the syscdr database

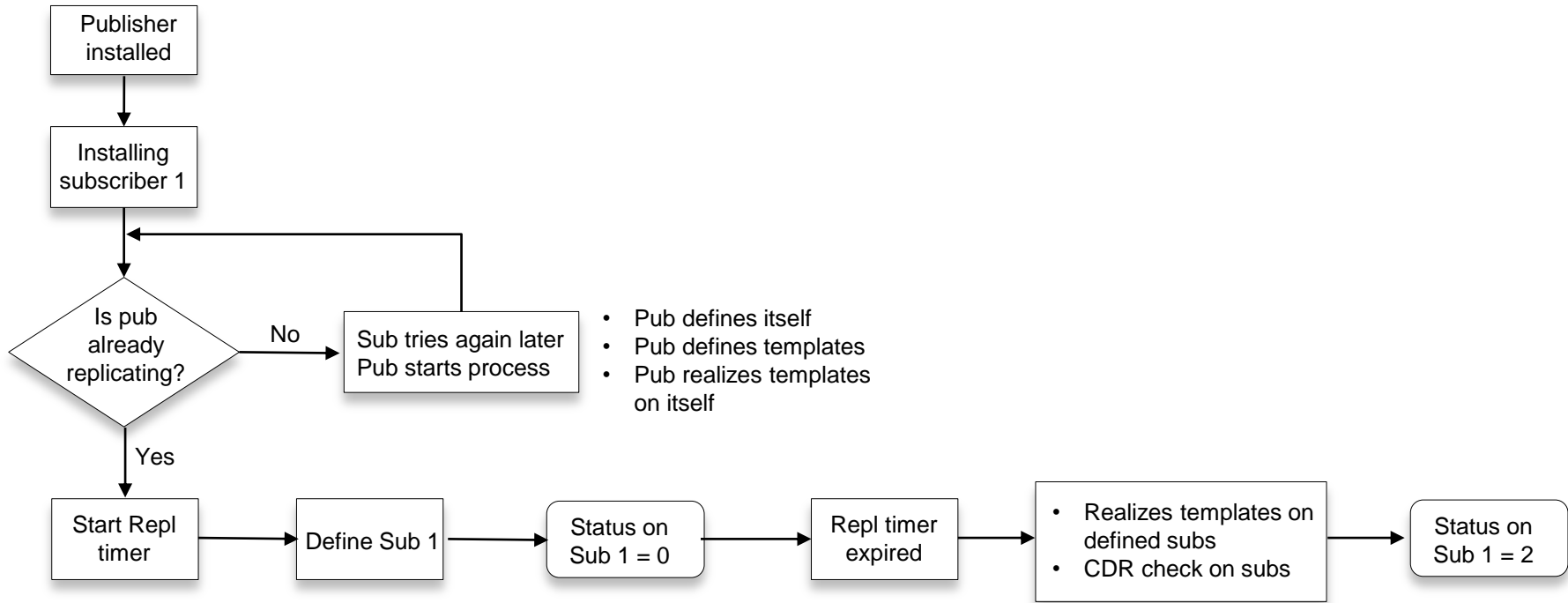
(cdr realize templates)

3. Replicate

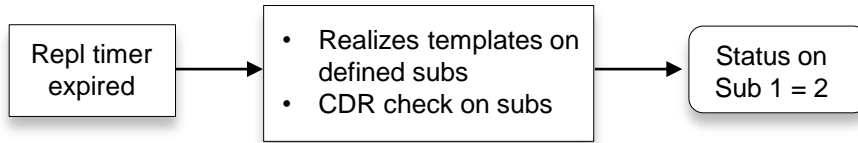
Actual sync of data

(cdr check)

Replication Process



Replication Process cont'd



- Once the Repl timer expired other Subscribers will only be able to start the replication setup process once the first batch is completed
 - During an upgrade don't switch version on nodes one by one with time interval larger than the Repl timer, switch version together or in 2 batches
 - Increase repl timer for large clusters to allow all subscribers setup the replication in one batch (see next slide)
 - When clustering over wan, consider to sync local servers first

Repl Timer

- Default set to 300 seconds:

```
admin:show tech repltimeout  
  
-----show tech repltimeout -----  
  
The Replication timeout is set to 300 seconds
```

- Configurable on publisher via cli:

```
admin:utils dbreplication setrepltimeout ?  
Syntax: utils dbreplication setrepltimeout [integer value of new timeout in seconds]
```

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Monitoring Replication



Utils dbreplication runtimestate

```
admin:utils dbreplication runtimestate
```

```
DB and Replication Services: ALL RUNNING
```

```
DB CLI Status: No other dbreplication CLI is running...
```

```
Cluster Replication State: BROADCAST SYNC Completed on 2 servers at: 2013-04-18-15-41  
Last Sync Result: SYNC COMPLETED 603 tables sync'ed out of 603  
Sync Errors: NO ERRORS
```

```
DB Version: ccm9_0_1_10000_37
```

```
Number of replicated tables: 603
```

```
Repltimeout set to: 300s
```

```
Cluster Detailed View from MFC11Pub (3 Servers):
```

SERVER-NAME	IP ADDRESS	PING (msec)	RPC?	CDR Server (ID) & STATUS	REPL. QUEUE	DBver& TABLES	REPL. LOOP?	REPLICATION SETUP (RTMT) & details
MFC11Pub	10.48.36.203	0.041	Yes	(2) Connected	0	match	Yes	(2) PUB Setup Completed
MFC11Sub2	10.48.36.149	1.158	Yes	(4) Connected	0	match	Yes	(2) Setup Completed
MFC11Sub1	10.48.36.206	0.177	Yes	(3) Connected	0	match	Yes	(2) Setup Completed

Summary Text

Summary Table of Servers

Utils dbreplication runtimestate cont'd

```
admin:utils dbreplication runtimestate
```

```
DB and Replication Services: ALL RUNNING
```

```
DB CLI Status: No other dbreplication CLI is running...
```

```
Cluster Replication State: BROADCAST SYNC Completed on 2 servers at: 2013-04-18-15-41
```

```
  Last Sync Result: SYNC COMPLETED 603 tables sync'ed out of 603
```

```
  Sync Errors: NO ERRORS
```

```
DB Version: ccm9_0_1_10000_37
```

```
Number of replicated tables: 603
```

```
Repltimeout set to: 300s
```

```
Cluster Detailed View from MFC11Pub (3 Servers):
```

SERVER-NAME	IP ADDRESS	PING (msec)	RPC?	CDR Server (ID) & STATUS	REPL. QUEUE	DBver& TABLES	REPL. LOOP?	REPLICATION SETUP (RTMT) & details
MFC11Pub	10.48.36.203	0.041	Yes	(2) Connected	0	match	Yes	(2) PUB Setup Completed
MFC11Sub2	10.48.36.149	1.158	Yes	(4) Connected	0	match	Yes	(2) Setup Completed
MFC11Sub1	10.48.36.206	0.177	Yes	(3) Connected	0	match	Yes	(2) Setup Completed

Shows if A Cisco DB Replicator is working

Utils dbreplication runtimestate cont'd

```
admin:utils dbreplication runtimestate
```

```
DB and Replication Services: ALL RUNNING
```

```
DB CLI Status: No other dbreplication CLI is running...
```

```
Cluster Replication State: BROADCAST SYNC Completed on 2 servers at: 2013-04-18-15-41
```

```
  Last Sync Result: SYNC COMPLETED  603 tables sync'ed out of 603
```

```
  Sync Errors: NO ERRORS
```

```
DB Version: ccm9_0_1_10000_37
```

```
Number of replicated tables: 603
```

```
Repltimeout set to: 300s
```

```
Cluster Detailed View from MFC11Pub (3 Servers):
```

SERVER-NAME	IP ADDRESS	PING (msec)	RPC?	CDR Server (ID) & STATUS	REPL. QUEUE	DBver& TABLES	REPL. LOOP?	REPLICATION SETUP (RTMT) & details
MFC11Pub	10.48.36.203	0.041	Yes	(2) Connected	0	match	Yes	(2) PUB Setup Completed
MFC11Sub2	10.48.36.149	1.158	Yes	(4) Connected	0	match	Yes	(2) Setup Completed
MFC11Sub1	10.48.36.206	0.177	Yes	(3) Connected	0	match	Yes	(2) Setup Completed

Unique ID in cluster and shows if replication has been set-up

Utils dbreplication runtimestate cont'd

```
admin:utils dbreplication runtimestate
```

```
DB and Replication Services: ALL RUNNING
```

```
DB CLI Status: No other dbreplication CLI is running...
```

```
Cluster Replication State: BROADCAST SYNC Completed on 2 servers at: 2013-04-18-15-41
```

```
  Last Sync Result: SYNC COMPLETED  603 tables sync'ed out of 603
```

```
  Sync Errors: NO ERRORS
```

```
DB Version: ccm9_0_1_10000_37
```

```
Number of replicated tables: 603
```

```
Repltimeout set to: 300s
```

```
Cluster Detailed View from MFC11Pub (3 Servers):
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SERVER-NAME	IP ADDRESS	PING (msec)	RPC?	CDR Server (ID) & STATUS	REPL. QUEUE	DBver& TABLES	REPL. LOOP?	REPLICATION SETUP (RTMT) & details
MFC11Pub	10.48.36.203	0.041	Yes	(2) Connected	0	match	Yes	(2) PUB Setup Completed
MFC11Sub2	10.48.36.149	1.158	Yes	(4) Connected	0	match	Yes	(2) Setup Completed
MFC11Sub1	10.48.36.206	0.177	Yes	(3) Connected	0	match	Yes	(2) Setup Completed

Replication data and control queues in bytes

Utils dbreplication runtimestate cont'd

```
admin:utils dbreplication runtimestate
```

```
DB and Replication Services: ALL RUNNING
```

```
DB CLI Status: No other dbreplication CLI is running...
```

```
Cluster Replication State: BROADCAST SYNC Completed on 2 servers at: 2013-04-18-15-41
```

```
  Last Sync Result: SYNC COMPLETED  603 tables sync'ed out of 603
```

```
  Sync Errors: NO ERRORS
```

```
DB Version: ccm9_0_1_10000_37
```

```
Number of replicated tables: 603
```

```
Repltimeout set to: 300s
```

Shows if Pub and Sub versions of CUCM match

```
Cluster Detailed View from MFC11Pub (3 Servers):
```

SERVER-NAME	IP ADDRESS	PING (msec)	RPC?	CDR Server (ID) & STATUS	REPL. QUEUE	DBver& TABLES	REPL. LOOP?	REPLICATION SETUP (RTMT) & details
MFC11Pub	10.48.36.203	0.041	Yes	(2) Connected	0	match	Yes	(2) PUB Setup Completed
MFC11Sub2	10.48.36.149	1.158	Yes	(4) Connected	0	match	Yes	(2) Setup Completed
MFC11Sub1	10.48.36.206	0.177	Yes	(3) Connected	0	match	Yes	(2) Setup Completed

Utils dbreplication runtimestate cont'd

```
admin:utils dbreplication runtimestate
```

```
DB and Replication Services: ALL RUNNING
```

```
DB CLI Status: No other dbreplication CLI is running...
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```
Cluster Replication State: BROADCAST SYNC Completed on 2 servers at: 2013-04-18-15-41
```

```
  Last Sync Result: SYNC COMPLETED 603 tables sync'ed out of 603
```

```
  Sync Errors: NO ERRORS
```

```
DB Version: ccm9_0_1_10000_37
```

```
Number of replicated tables: 603
```

```
Repltimeout set to: 300s
```

Indicator if replication-
dynamic real-time
replication is working

```
Cluster Detailed View from MFC11Pub (3 Servers):
```

SERVER-NAME	IP ADDRESS	PING (msec)	RPC?	CDR Server (ID) & STATUS	REPL. QUEUE	DBver& TABLES	REPL. LOOP?	REPLICATION SETUP (RTMT) & details
MFC11Pub	10.48.36.203	0.041	Yes	(2) Connected	0	match	Yes	(2) PUB Setup Completed
MFC11Sub2	10.48.36.149	1.158	Yes	(4) Connected	0	match	Yes	(2) Setup Completed
MFC11Sub1	10.48.36.206	0.177	Yes	(3) Connected	0	match	Yes	(2) Setup Completed

Utils dbreplication runtimestate cont'd

```
admin:utils dbreplication runtimestate
```

```
DB and Replication Services: ALL RUNNING
```

```
DB CLI Status: No other dbreplication CLI is running...
```

```
Cluster Replication State: BROADCAST SYNC Completed on 2 servers at: 2013-  
Last Sync Result: SYNC COMPLETED 603 tables sync'ed out of 603  
Sync Errors: NO ERRORS
```

```
DB Version: ccm9_0_1_10000_37  
Number of replicated tables: 603  
Repltimeout set to: 300s
```

```
Cluster Detailed View from MFC11Pub (3 Servers):
```

SERVER-NAME	IP ADDRESS	PING (msec)	RPC?	CDR Server (ID) & STATUS	REPL. QUEUE	DBver& TABLES	REPL. LOOP?	REPLICATION SETUP (RTMT) & details
MFC11Pub	10.48.36.203	0.041	Yes	(2) Connected	0	match	Yes	(2) PUB Setup Completed
MFC11Sub2	10.48.36.149	1.158	Yes	(4) Connected	0	match	Yes	(2) Setup Completed
MFC11Sub1	10.48.36.206	0.177	Yes	(3) Connected	0	match	Yes	(2) Setup Completed

- 0= Replication set-up in progress
- 1= Not Used
- 2= Replication set-up successful
- 3= Real-Time replication out of sync or not available
- 4= Replication set-up failure

RTMT Replication
counter

Steps in Replication - Define

- Publisher is waiting for Subscribers to define “Batching Sync Requests”:

```
admin:utils dbreplication runtimestate

DB and Replication Services: ALL RUNNING

DB CLI Status: No other dbreplication CLI is running...

Cluster Replication State: BATCHING SYNC Requests from nodes at: 2013-04-18-15-14
  Sync Request Progress: Received 2 node requests for DB sync
  Sync Request Errors: NO ERRORS

DB Version: ccm9_0_1_10000_37
Number of replicated tables: 603
Repltimeout set to: 300s

Cluster Detailed View from MFC11Pub (3 Servers):
```

SERVER-NAME	IP ADDRESS	PING (msec)	RPC?	CDR Server (ID) & STATUS	REPL. QUEUE	DBver& TABLES	REPL. LOOP?	REPLICATION SETUP (RTMT) & details
MFC11Pub	10.48.36.203	0.045	Yes	(2) Connected	0	match	Yes	(2) PUB Batching Sub Req's
MFC11Sub1	10.48.36.206	0.181	Yes	(3) Connected	0	match	Yes	(0) Setup Requested
MFC11Sub2	10.48.36.149	0.783	Yes	(4) Connected	0	match	Yes	(0) Setup Requested

Steps in Replication – Define cont'd

- For every subscriber there will be a define log file on the publisher:

```
admin:file list activelog cm/trace/dbl date detail
18 Apr,2013 15:38:20 <dir> ncsj
18 Apr,2013 15:38:20 <dir> dblj
18 Apr,2013 15:38:20 <dir> sdi
18 Apr,2013 15:35:11 2,590 2013_04_18_15_34_36_mfc11sub1_ccm9_0_1_10000_37_dbl_repl_cdr_define.log
18 Apr,2013 15:38:10 3,194 2013_04_18_15_37_35_mfc11sub2_ccm9_0_1_10000_37_dbl_repl_cdr_define.log
```

- This file will end with a checksum of [64] if the define was successful:

```
admin:file view activelog cm/trace/dbl/2013_04_18_15_34_36_mfc11sub1_ccm9_0_1_10000_37_dbl_repl_cdr_define.log
...
[18/04/2013 15:35:11] size of cdr_err_define.out is [64]
```

Steps in Replication – Repl Timer Expires

- Broadcast Sync is proceeding, progress can be followed in “Sync Progress”:

```
admin:utils dbreplication runtimestate

DB and Replication Services: ALL RUNNING

DB CLI Status: No other dbreplication CLI is running...

Cluster Replication State: BROADCAST SYNC Started on 2 server(s) at: 2013-04-18-15-40
  Processing Table: typevipfilterelement
  Sync Progress: 199 tables sync'ed out of 603
  Sync Errors: NO ERRORS

DB Version: ccm9_0_1_10000_37
Number of replicated tables: 603
Repltimeout set to: 300s

Cluster Detailed View from MFC11Pub (3 Servers):
```

SERVER-NAME	IP ADDRESS	PING (msec)	RPC?	CDR Server (ID) & STATUS	REPL. QUEUE	DBver& TABLES	REPL. LOOP?	REPLICATION SETUP (RTMT) & details
MFC11Pub	10.48.36.203	0.033	Yes	(2) Connected	0	match	Yes	(2) PUB Setting Subs
MFC11Sub1	10.48.36.206	0.143	Yes	(3) Connected	160	match	Yes	(0) Setup in Progress
MFC11Sub2	10.48.36.149	0.741	Yes	(4) Connected	160	match	Yes	(0) Setup in Progress

Steps in Replication – Repl Timer Expires cont'd

- Broadcast started after the Repl Timer expired, timer started when first Subscriber was defined:

```
admin:file list activelog cm/trace/dbl date detail
18 Apr,2013 15:41:34      <dir>    ncsj
18 Apr,2013 15:41:34      <dir>    dblj
18 Apr,2013 15:41:34      <dir>    sdi
18 Apr,2013 15:35:11      2,590   2013_04_18_15_34_36_mfcl1sub1_ccm9_0_1_10000_37_dbl_repl_cdr_define.log
18 Apr,2013 15:38:10      3,194   2013_04_18_15_37_35_mfcl1sub2_ccm9_0_1_10000_37_dbl_repl_cdr_define.log
18 Apr,2013 15:40:11      0       2013_04_18_15_40_11_dbl_repl_output_Broadcast.log
18 Apr,2013 15:41:34      569,378 2013_04_18_15_40_11_dbl_repl_cdr_Broadcast.log
```

Replication finished:

- Status is 2 on every server in the cluster:

```
admin:utils dbreplication runtimestate
```

```
DB and Replication Services: ALL RUNNING
```

```
DB CLI Status: No other dbreplication CLI is running...
```

```
Cluster Replication State: BROADCAST SYNC Completed on 2 servers at: 2013-04-18-15-41  
Last Sync Result: SYNC COMPLETED 603 tables sync'ed out of 603  
Sync Errors: NO ERRORS
```

```
DB Version: ccm9_0_1_10000_37
```

```
Number of replicated tables: 603
```

```
Repltimeout set to: 300s
```

```
Cluster Detailed View from MFC11Pub (3 Servers):
```

SERVER-NAME	IP ADDRESS	PING (msec)	RPC?	CDR Server (ID) & STATUS	REPL. QUEUE	DBver& TABLES	REPL. LOOP?	REPLICATION SETUP (RTMT) & details
MFC11Pub	10.48.36.203	0.062	Yes	(2) Connected	0	match	Yes	(2) PUB Setup Completed
MFC11Sub1	10.48.36.206	0.152	Yes	(3) Connected	160	match	Yes	(2) Setup Completed
MFC11Sub2	10.48.36.149	0.789	Yes	(4) Connected	160	match	Yes	(2) Setup Completed

Replication finished cont'd:

- Replication setup is finished when Output Broadcast file has size:

```
admin:file list activelog cm/trace/dbl date detail
...
18 Apr,2013 15:35:11      2,590  2013_04_18_15_34_36_mfc11sub1_ccm9_0_1_10000_37_dbl_repl_cdr_define.log
18 Apr,2013 15:38:10      3,194  2013_04_18_15_37_35_mfc11sub2_ccm9_0_1_10000_37_dbl_repl_cdr_define.log
18 Apr,2013 15:41:43      1,766  2013_04_18_15_40_11_dbl_repl_output_Broadcast.log
18 Apr,2013 15:41:43    635,615  2013_04_18_15_40_11_dbl_repl_cdr_Broadcast.log
```

- This file will end with a checksum of [64] if the replication setup was successful:

```
admin:file view activelog cm/trace/dbl/2013_04_18_15_40_11_dbl_repl_output_Broadcast.log
...
[18/04/2013 15:41:43] size of cdr_check.out is [64]

[18/04/2013 15:41:43] Replication Setup Successful
end of the file reached
```


Cisco Unified Communications Manager

Troubleshooting



What can go wrong?

- Typical scenarios causing database replications to break:
 1. Network connectivity issues between nodes
 - general connectivity issues
 - MTU
 - Firewall blocking ports
 2. Changing ip/hostname
 - It is important to follow the documented procedure
 3. Mismatch in security password
 - CSCth87452: A Cisco DB service will not start after changing security password
 - CSCtn79868: pwrecovery tool resetting only sftpuser password

Verify status

System Reports

- Report Descriptions
- Unified CM Cluster Overview
- Unified CM Data Summary
- Unified CM Database Replication Debug
- Unified CM Database Status
- Unified CM Device Counts Summary
- Unified CM Device Distribution Summary
- Unified CM Duplicate Directory URIs
- Unified CM Extension Mobility
- Unified CM GeoLocation Policy
- Unified CM GeoLocation Policy with Filter
- Unified CM Lines Without Phones
- Unified CM Multi-Line Devices
- Unified CM Phone Feature List
- Unified CM Phones With Mismatched Load
- Unified CM Phones Without Lines
- Unified CM Shared Lines
- Unified CM Table Count Summary
- Unified CM User Device Count
- Unified CM Users Sharing Primary Extensions
- Unified CM VG2XX Gateway
- Unified CM Voice Mail

OK: Report generated successfully.

Unified CM Database Status

Provides a snapshot of the Unified CM database health. This report can be useful to monitor periodically, and should be used to ensure the database is healthy before an upgrade.

Created on Thu Apr 18 16:39:45 CEST 2013



Unified CM Cluster Name

Cluster Name	Publisher Name/IP
StandAloneCluster	MFC11Pub

Unified CM Database Access

Local and publisher databases accessible.

[View Details](#)

Unified CM Database Status

RTMT Counter Information

All servers have a replication count of 603.

All servers have a good replication status.

[View Details](#)

Server	Number of Replicates Created	Replicate_State
10.48.36.203	603	2 - good
10.48.36.206	603	2 - good
10.48.36.149	603	2 - good

See also Database Summary Screen in RTMT.

Run CLI command (show tech dbstateinfo) for more detail.

Replication Server List (cdr list serv) from every server for debugging purposes only.

[View Details](#)

Replication Server Template (cdr list template) from every server for debugging purposes only.

[View Details](#)

Database Prefs File

[View Details](#)

Verify files are in sync

- Available in the Unified CM Database Status report:

Unified CM Hosts

- ✓ All servers have equivalent host files
- [+View Details](#)

Unified CM Rhosts

- ✓ All servers have equivalent rhosts files.
 - ✓ All servers have equivalent rhosts files.
- [+View Details](#)

Unified CM Sqlhosts

- ✓ All servers have equivalent sqlhosts files.
 - ✓ All servers have equivalent sqlhosts files.
- [+View Details](#)

Verify files are in sync - Hosts file

- Subscriber authenticates to Publisher using the security password
- When successful Cluster Manager inject entry in hosts file and add policy in firewall

Unified CM Hosts

All servers have equivalent host files
[View Details](#)

Server	Host Information
10.48.36.203	<pre>#This file was generated by the /etc/hosts cluster manager. #It is automatically updated as nodes are added, changed, removed from the cluster. 127.0.0.1 localhost ::1 localhost 10.48.36.203 MFCl1Pub 10.48.36.206 MFCl1Sub1 10.48.36.149 MFCl1Sub2</pre>
10.48.36.206	<pre>#This file was generated by the /etc/hosts cluster manager. #It is automatically updated as nodes are added, changed, removed from the cluster. 127.0.0.1 localhost ::1 localhost 10.48.36.206 MFCl1Sub1 10.48.36.203 MFCl1Pub 10.48.36.149 MFCl1Sub2</pre>

Verify files are in sync - Rhosts file

- Used by the Informix database authentication mechanism
- Build based on HOSTS file
- Created by A Cisco DB

Unified CM Rhosts

All servers have equivalent rhosts files.

All servers have equivalent rhosts files.

[View Details](#)

Server	rhosts File
	localhost
	MFC11Sub1
	MFC11Pub
	### IDS BEGIN - DO NOT REMOVE
	MFC11Pub
	MFC11Pub
10.48.36.203	MFC11Sub1
	MFC11Sub1
	MFC11Sub2
	MFC11Sub2
	### IDS END - DO NOT REMOVE

Verify files are in sync - Sqlhosts file

- Contains the connectivity information for each database server
- Created by A Cisco DB

Unified CM Sqlhosts

All servers have equivalent sqlhosts files.

All servers have equivalent sqlhosts files.

[View Details](#)

Server	sqlhosts File					
	g_hdr	group	-	-	i=1	
	g_mfcl1pub_ccm9_0_1_10000_37	group	-	-	i=2	
	mfcl1pub_ccm9_0_1_10000_37	onsoctcp	10.48.36.203	mfcl1pub_ccm9_0_1_10000_37	g=g_mfcl1pub_ccm9_0_1_10000_37	b=32767,rto=300
	g_mfcl1sub1_ccm9_0_1_10000_37	group	-	-	i=3	
10.48.36.203	mfcl1sub1_ccm9_0_1_10000_37	onsoctcp	10.48.36.206	mfcl1sub1_ccm9_0_1_10000_37	g=g_mfcl1sub1_ccm9_0_1_10000_37	b=32767,rto=300
	g_mfcl1sub2_ccm9_0_1_10000_37	group	-	-	i=4	
	mfcl1sub2_ccm9_0_1_10000_37	onsoctcp	10.48.36.149	mfcl1sub2_ccm9_0_1_10000_37	g=g_mfcl1sub2_ccm9_0_1_10000_37	b=32767,rto=300
	###NOTE: Need to use ipv4 address in host column of sqlhosts file and not hostname					
	mfcl1pub_car9_0_1_10000_37	onsoctcp	10.48.36.203	mfcl1pub_car9_0_1_10000_37	b=32767	

Verify ntp - Publisher

- Publisher syncs to external ntp server

```
admin:utils ntp status
ntpd (pid 4983) is running...

      remote           refid      st t when poll reach  delay  offset  jitter
=====
*10.48.36.200    144.254.15.121  2 u   24 1024  377   2.162  -14.815  8.595
+10.48.79.200    144.254.15.121  2 u   773 1024  377   6.494   0.361  5.795

synchronised to NTP server (10.48.36.200) at stratum 3
time correct to within 71 ms
polling server every 1024 s

Current time in UTC is : Thu Apr 18 15:04:57 UTC 2013
Current time in CET is : Thu Apr 18 17:04:57 CEST 2013
```

- Cisco recommends synchronizing Unified CM with a Cisco IOS or Linux-based NTP server, Windows Time Services as an NTP server is not recommended or supported

Verify ntp - Subscriber

- Subscribers sync with publisher

```
admin:utils ntp status
ntpd (pid 20920) is running...

  remote          refid          st t when poll reach  delay  offset  jitter
=====
*10.48.36.203    10.48.36.200   3 u 684 1024 377   0.295  -5.539  0.568

synchronised to NTP server (10.48.36.203) at stratum 4
time correct to within 108 ms
polling server every 1024 s

Current time in UTC is : Thu Apr 18 15:05:15 UTC 2013
Current time in CET is : Thu Apr 18 17:05:15 CEST 2013
```

Verify network connectivity

- CLI command 'utils network connectivity':
 1. Subscriber nodes communicate to Publisher node via TCP and UDP (port 8500)
 2. Test validates that the Sub is properly authenticated against the Pub
 3. Echo request/reply packets via UDP and TCP validates proper handling of IP fragment
 4. Same test validates proper MTU settings
 5. Additionally, sends request to installed private ports used by other CCM application components

Verify network connectivity cont'd

- CLI command 'utils network connectivity:

```
admin:utils network connectivity

This command can take up to 3 minutes to complete.
Continue (y/n)?y
Running test, please wait ...
.
Network connectivity test with MFC11Pub completed successfully.
```

Verify firewall has entries for other servers

- Each server should have entry for all nodes in cluster:

```
admin:utils firewall ipv4 list
...
24  ACCEPT      tcp  --  10.48.36.149      0.0.0.0/0          tcp dpt:1500
...
27  ACCEPT      tcp  --  10.48.36.203     0.0.0.0/0          tcp dpt:1500
```

- Entries are added by Cluster Manager when authentication between nodes is successful

Cisco Unified Communications Manager

Cli commands explained



Before running any commands...

- Make sure all tests covered in troubleshooting section has been completed successfully, failing to do so will bring your cluster in worse scenario when executing the cli commands

Steps in Replication - recap

1. Define

Identifies which servers will participate and defines those nodes locally and on other nodes

(cdr define server)

2. Define Replicates

Define what tables will be replicated and what to do in case of collisions, stored in the syscdr database

(cdr realize templates)

3. Replicate

Actual sync of data

(cdr check)

Utils dbreplication status

- This command will verify if all tables are in sync and generates a report, the report contains what tables are not in sync (if any)

```
admin:utils dbreplication status

----- utils dbreplication status -----

Replication status check is now running in background.
Use command 'utils dbreplication runtimestate' to check its progress

The final output will be in file cm/trace/dbl/sdi/ReplicationStatus.2013_05_15_11_04_08.out

Please use "file view activelog cm/trace/dbl/sdi/ReplicationStatus.2013_05_15_11_04_08.out " command to see the output
```


Utils dbreplication status cont'd

- This command takes a while to complete, progress can be monitored via 'utils dbreplication runtimestate'

```
admin:utils dbreplication runtimestate

DB and Replication Services: ALL RUNNING

DB CLI Status: No other dbreplication CLI is running...

Cluster Replication State: Replication status command started at: 2013-05-15-11-04
Replication status command in PROGRESS 36 tables checked out of 603
Processing Table: typetimezone

Use 'file view activelog cm/trace/dbl/sdi/ReplicationStatus.2013_05_15_11_04_08.out' to see the details
```

Utils dbreplication repair

- This executes step 3 (actual sync of data)
- This fixes out of sync data
- Runs on all tables in replication on all servers that are included in the command
- Outcome to be confirmed by running 'utils dbreplication status'

Utils dbreplication repairtable or repairreplicate

- Same as repair command but runs on only one table or replicate (much faster)
- Useful on large clusters where only one/few tables are out of sync

Utils dbreplication stop

- This command stops the replication set-up
- The only way to recover from a stop is with a reset
- This command pauses for the duration of repltimeout timer and then kills currently running replication commands again
- This command also kills auto recovery
- Use with caution!

Utils dbreplication dropadmindb

- This command drops the syscdr database (created in step 2)
- Need to run 'utils dbreplication stop' prior this command
- Can be used when there is a looping attempt to define a server in replication (step 1), usually the issue is on the pub and not on the failing sub

Utils dbreplication reset

- This command causes replication to be torn down and set-up again
- Executes all three steps

Utils dbreplication rebuild

- This command does stop, drop and reset all in one command (available as of CUCM 9.x)

Cisco Unified Communications Manager

Q&A



Q&A

- Please post open questions to our support forums:
<https://supportforums.cisco.com>

Thank you.

