Troubleshoot Extension Mobility Cross Cluster (EMCC)

Contents

Introduction

This document describes the Extension Mobility Cross Cluster (EMCC) feature for Cisco Unified Communications Manager (CUCM). This document covers the purpose of the feature, configuration of the feature, important diagnostic data, example analysis of the data, and related resources for additional research.

Prerequisites

Requirements

Cisco recommends that you have knowledge of these topics:

- Phone Registration
- Extension Mobility
- Multi Cluster Environments

Components Used

This document is not restricted to specific software and hardware versions as currently supported

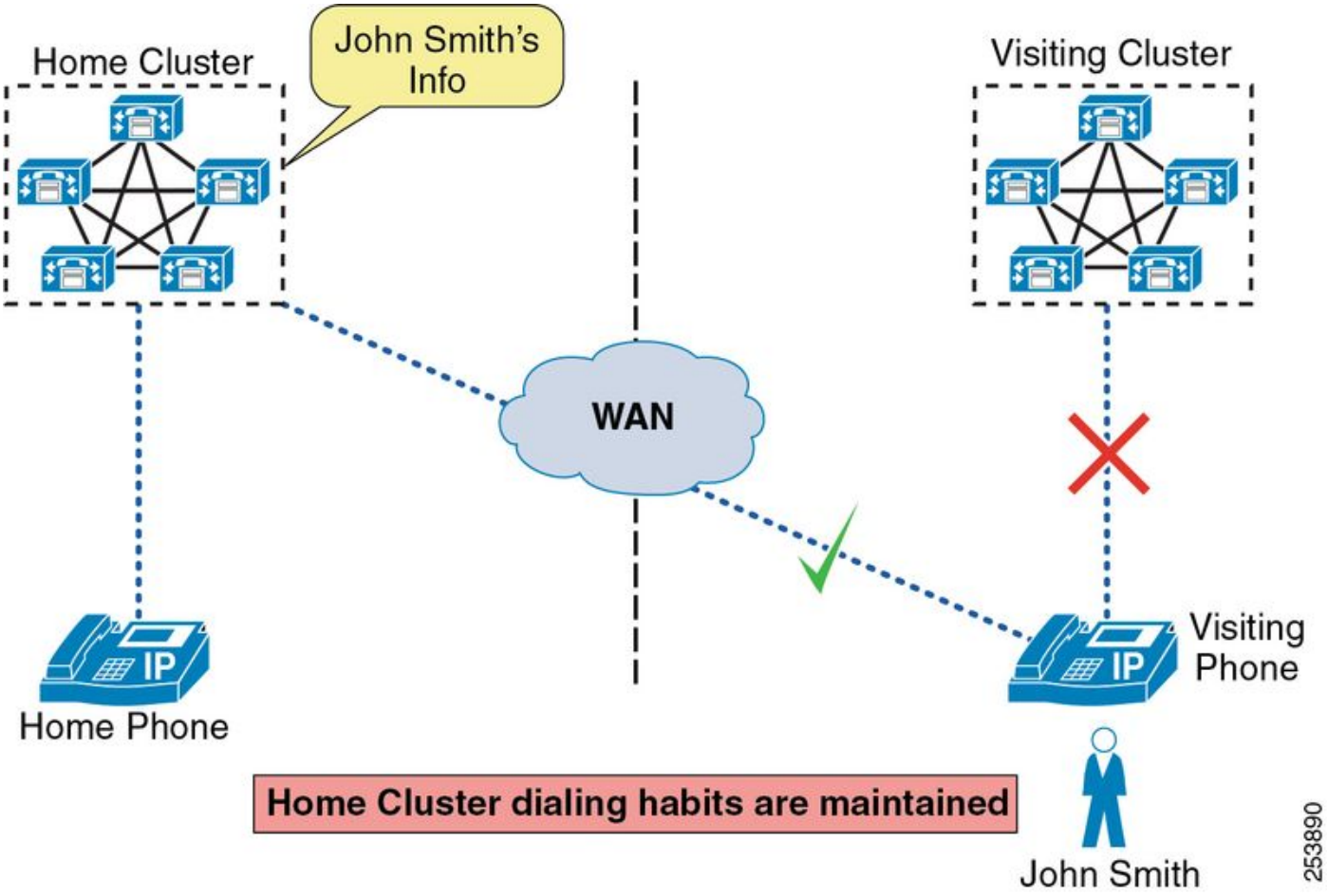
software and hardware include this feature.

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, ensure that you understand the potential impact of any command.

Background Information

The purpose of this feature is to allow end users to travel from one cluster to another cluster while maintaining their Home Cluster dialing habits. The user doesn't need to bring their phone, but instead they simply log in to a phone at the remote site with their device profile.

Network Diagram



Configuration

EMCC configuration is covered in the document Enable UC servers for Extension Mobility Cross Cluster (EMCC)

Troubleshoot

Data to Collect

When you troubleshoot an EMCC issue you must collect this information from each CUCM cluster:

- show version active from the CUCM publisher’s CLI on both clusters.
- show network cluster from the CUCM publisher’s CLI on both clusters.
- Cisco CallManager logs from all nodes on both clusters.
- Cisco Extension Mobility logs from all nodes on both clusters.
- Cisco Extension Mobility Application logs from all nodes on both clusters.
- Cisco Tftp logs from all nodes on both clusters.
- Cisco Trust Verification Service logs from all nodes on both clusters.
- Event Viewer-Application Log from all nodes on both clusters.
- Event Viewer-System Log from all nodes on both clusters.
- It can be beneficial to get Packet Capture Logs from all nodes on both clusters; however, most scenarios don't require them.
- If there was a login/logout failure, details about the login attempt you must review:
  User id:

  Phone MAC address:

  Phone IP address:

  Time Stamp:

  The EMCC Service URL:

- If there was a call failure, details about the problem you must review:
  Calling Number:

  Called Number:

  Time Stamp:

  What did the user experience (fast busy, other noises, phone went back to idle display, etc…)

You must also collect the following data from the phone:

- What did the user experience (Exact error on the screen, sequence of events on the phone screen, etc...)
- A PRT from the phone where the user was loged in.
- It can be beneficial to get a pcap from the phone; however, most scenarios don't require it.

Example Analysis For Log in

Device information from Cisco lab

Phone:

Model: 7821
Firmware version: sip78xx.12-1-1-12
IP address: 192.168.7.104
eth.addr==c8:00:84:aa:87:43

Home Cluster:

Version: 11.5.1.15900-18
IP addresses: 192.168.7.200

Visiting Cluster:

Version: 11.5.1.15900-18
IP addresses: 192.168.7.100, 192.168.7.101, 192.168.7.102, 192.168.7.103

EMCC URL:
http://192.168.7.100:8080/emapp/EMAppServlet?device=#DEVICENAME#&EMCC=#EMCC#

User information:

User ID: adgjm

Login Time: 11:15

Log review for Visiting Cluster CUCM

Note: The sequential order of logs shows messages between emapp and emservice. Be mindful of this while you read these log snippets.

emapp

```
 ##### 13:32:15,947 EMApp on the visiting cluster prints that it received a request pertaining
to EMCC for Device Name SEPC80084AA8743
2019-03-09 13:32:15,947 INFO  [http-bio-80-exec-8  ] EMAppServlet              - EMApp Request#
----->2
2019-03-09 13:32:15,948 INFO  [http-bio-80-exec-8  ] EMAppServlet              - EMAppServlet:
Request protocol is :http


 ##### 13:32:15,948 we can see the request isn't for logout, the device name, the ip address,
and that EMCC is set to true
2019-03-09 13:32:15,948 INFO  [http-bio-80-exec-8  ] EMAppServlet              - EMApp Request
parameters: Logout=null Device Name=SEPC80084AA8743 User Id=null Device Profile=null
Refresh=null Remote Host IP Address = 192.168.7.104 Via Header Set = false getClusterInfo = null
Lang = en_US Charset=utf-8,;q=0.8 Emcc = true
```

emservice

```
 ##### 13:32:16,109 The device is being queried for a user
2019-03-09 13:32:16,109 INFO  [http-bio-443-exec-6 ] DBRequestor               - 1:Querying
device user for device SEPC80084AA8743
2019-03-09 13:32:16,110 INFO  [http-bio-443-exec-6 ] DBRequestor               - 1:Getting
device object - three params
2019-03-09 13:32:16,110 INFO  [http-bio-443-exec-6 ] DBRequestor               - 1:
DBRequestor.queryDeviceUser: Dev: 'SEPC80084AA8743' - Getting device object


 ##### 13:32:16,115 The result of the query is returned and we can see there isn't anyone logged
```

```
in at the moment: currentuserid=,
2019-03-09 13:32:16,115 INFO  [http-bio-443-exec-6 ] CMDatabase                -
getDeviceInfo:Result of the query: {tkproduct=508, loginduration=, lastuserid=adgjm,
tkdeviceprotocol=11, pkid=b5a73ec1-a04d-5ad3-fa7f-e38c501800f7, tkmodel=621, logintime=,
currentuserid=, allowhotelingflag=t, fkdevicepool=1b1b9eb6-7803-11d3-bdf0-00108302ead1,
tkuserlocale=}
2019-03-09 13:32:16,115 INFO  [http-bio-443-exec-6 ] DBRequestor               - 1:
DBRequestor.queryDeviceUser: Dev: 'SEPC80084AA8743' - Device object returned
2019-03-09 13:32:16,115 INFO  [http-bio-443-exec-6 ] DBRequestor               - 1:
QueryDeviceUser: Device Logged out
2019-03-09 13:32:16,115 INFO  [http-bio-443-exec-6 ] DBRequestor               - 1:Device query
info contains userid=
2019-03-09 13:32:16,116 INFO  [http-bio-443-exec-6 ] DBRequestor               - 1:Device query
info contains last login userid= adgjm
2019-03-09 13:32:16,116 INFO  [http-bio-443-exec-6 ] EMServiceServlet          - 1:Query
Processing Time: 68
```

emapp

```
 ##### 13:32:16,124 We can see the device doesn't have anyone logged in and that the profile is
not already in use elsewhere
2019-03-09 13:32:16,124 INFO  [http-bio-80-exec-8  ] EMAppServlet              - The login
status result for :SEPC80084AA8743:null:adgjm:null:no
2019-03-09 13:32:16,124 INFO  [http-bio-80-exec-8  ] CMDatabase                -
CMDatabase:checkDeviceAllowsAlternateScript
2019-03-09 13:32:16,126 INFO  [http-bio-80-exec-8  ] CMDatabase                - SEPC80084AA8743
with model 621 and locale 1 does not support alternate script
2019-03-09 13:32:16,126 INFO  [http-bio-80-exec-8  ] EMAppServlet              - Sent login page
for device SEPC80084AA8743
2019-03-09 13:32:16,126 INFO  [http-bio-80-exec-8  ] EMAppServlet              - Context:/emapp
::URI:/jsp/form1.jsp
2019-03-09 13:32:16,127 INFO  [http-bio-80-exec-8  ] EMAppServlet              -
findPreferredCharSet on utf-8,;q=0.8
2019-03-09 13:32:16,127 INFO  [http-bio-80-exec-8  ] EMAppServlet              - token1 = utf-8
2019-03-09 13:32:16,127 INFO  [http-bio-80-exec-8  ] EMAppServlet              -  token2 = utf-8
2019-03-09 13:32:16,127 INFO  [http-bio-80-exec-8  ] EMAppServlet              -  charset with q
value is 1 utf-8
2019-03-09 13:32:16,127 INFO  [http-bio-80-exec-8  ] EMAppServlet              -  returning
charset as q value is 1 utf-8
2019-03-09 13:32:16,127 INFO  [http-bio-80-exec-8  ] EMAppServlet              -  my charset
=utf-8


 ##### 13:32:27,814 another request comes in via HTTP
2019-03-09 13:32:27,814 INFO  [http-bio-80-exec-7  ] EMAppServlet              - EMApp Request#
----->3
2019-03-09 13:32:27,815 INFO  [http-bio-80-exec-7  ] EMAppServlet              - EMAppServlet:
Request protocol is :http


 ##### 13:32:27,815 we can see the same info from before, but this time there is a user id
specified
2019-03-09 13:32:27,815 INFO  [http-bio-80-exec-7  ] EMAppServlet              - EMApp Request
parameters: Logout=null Device Name=SEPC80084AA8743 User Id=adgjm Device Profile=null
Refresh=null Remote Host IP Address = 192.168.7.104 Via Header Set = false getClusterInfo = null
Lang = en_US Charset=utf-8,;q=0.8 Emcc = true
2019-03-09 13:32:27,816 INFO  [http-bio-80-exec-7  ] EMServiceCommunicator     - Posting to EM
Query Service:https://localhost:8443/emservice/EMServiceServlet
2019-03-09 13:32:27,835 INFO  [http-bio-80-exec-7  ] EMAppServlet              - EMCC Request
for adgjm
2019-03-09 13:32:27,836 INFO  [http-bio-80-exec-7  ] EMAppServlet              - EMURI =
http%3A%2F%2F192.168.7.100%3A8080%2Femapp%2FEMAppServlet%3Fdevice%3DSEPC80084AA8743%26doLogout%3
```

```
Dtrue
2019-03-09 13:32:27,836 INFO  [http-bio-80-exec-7  ] EMServiceCommunicator     -
postMsgToLoginService: Service URL :https://localhost:8443/emservice/EMServiceServlet
```

emservice

```
 ##### 13:32:27,826 There is an authenticate request
2019-03-09 13:32:27,826 INFO  [http-bio-443-exec-10] EMServiceServlet          - 2:
authenticate2: Authenticate request.
2019-03-09 13:32:27,827 INFO  [http-bio-443-exec-10] Authenticator             -
2:Authenticator.authenticateTransaction: AppID: CCMSysUser- Checking values in credential cache
2019-03-09 13:32:27,827 INFO  [http-bio-443-exec-10] Authenticator             -
2:Authenticator.authenticateTransaction: AppID: CCMSysUser- Approved through credential cache,
108234 ms remaining


 ##### 13:32:27,827 The authentication succeeds and there is a check for the user
2019-03-09 13:32:27,827 INFO  [http-bio-443-exec-10] EMServiceServlet          - 2:EMService
Authentication succeeded
2019-03-09 13:32:27,827 INFO  [http-bio-443-exec-10] EMServiceServlet          - 2:EMService
Check User Status
2019-03-09 13:32:27,827 INFO  [http-bio-443-exec-10] Authenticator             -
2:Authenticator.userExists: UserID: adgjm- Calling cmdb.isLocalUser(osUserID)...


 ##### 13:32:27,831 we see no user exists with id: adgjm
2019-03-09 13:32:27,831 ERROR [http-bio-443-exec-10] CMDatabase                -
CMDatabase:isLocalUser: no user exists with id: adgjm
2019-03-09 13:32:27,831 ERROR [http-bio-443-exec-10] CMDatabase                -
CMDatabase:isLocalUser: com.cisco.ccm.database.CMDBLException: Uknown user: adgjm
2019-03-09 13:32:27,832 ERROR [http-bio-443-exec-10] Authenticator             - Exception :
Uknown user: adgjm
2019-03-09 13:32:27,832 WARN  [http-bio-443-exec-10] EMServiceServlet          - 2: executeQuery
MyException.
2019-03-09 13:32:27,832 INFO  [http-bio-443-exec-10] EMServiceServlet          - 2:Query
Processing Time: 11
2019-03-09 13:32:27,839 INFO  [http-bio-443-exec-2 ] EMServiceServlet          - EMService
Request# ----> : 3


 ##### 13:32:27,839 The request type is noted as EMCC
2019-03-09 13:32:27,839 INFO  [http-bio-443-exec-2 ] EMServiceServlet          - 3:EMService:
Request Type=EMCC
2019-03-09 13:32:27,843 INFO  [http-bio-443-exec-2 ] EMServiceServlet          - 3:
processEmccRequest: Received EMCC Login Request for :adgjm
2019-03-09 13:32:27,843 INFO  [http-bio-443-exec-2 ] EMServiceServlet          - 3: Executing
authenticate2...
2019-03-09 13:32:27,844 INFO  [http-bio-443-exec-2 ] EMServiceServlet          - 3:
authenticate2: Authenticate request.
2019-03-09 13:32:27,844 INFO  [http-bio-443-exec-2 ] Authenticator             -
3:Authenticator.authenticateTransaction: AppID: CCMSysUser- Checking values in credential cache
2019-03-09 13:32:27,844 INFO  [http-bio-443-exec-2 ] Authenticator             -
3:Authenticator.authenticateTransaction: AppID: CCMSysUser- Approved through credential cache,
108216 ms remaining
2019-03-09 13:32:27,844 INFO  [http-bio-443-exec-2 ] EMServiceServlet          - 3:EMService
Authentication succeeded
2019-03-09 13:32:27,846 INFO  [http-bio-443-exec-2 ] PolicyValidator           -
3:PolicyValidator.checkDeviceAllowsLogin: Dev: SEPC80084AA8743- Calling dbr.getDeviceObject
2019-03-09 13:32:27,847 INFO  [http-bio-443-exec-2 ] DBRequestor               - 3:Getting
device object - loginInfo, caller
2019-03-09 13:32:27,847 INFO  [http-bio-443-exec-2 ] DBRequestor               - 3:
PolicyValidator.checkDeviceAllowsLogin: Dev: SEPC80084AA8743- Getting device object
```

```
2019-03-09 13:32:27,850 INFO  [http-bio-443-exec-2 ] CMDatabase                -
getDeviceInfo:Result of the query: {tkproduct=508, loginduration=, lastuserid=adgjm,
tkdeviceprotocol=11, pkid=b5a73ec1-a04d-5ad3-fa7f-e38c501800f7, tkmodel=621, logintime=,
currentuserid=, allowhotelingflag=t, fkdevicepool=1b1b9eb6-7803-11d3-bdf0-00108302ead1,
tkuserlocale=}
2019-03-09 13:32:27,851 INFO  [http-bio-443-exec-2 ] DBRequestor               - 3:
PolicyValidator.checkDeviceAllowsLogin: Dev: SEPC80084AA8743- Device object returned
2019-03-09 13:32:27,851 INFO  [http-bio-443-exec-2 ] PolicyValidator           -
3:PolicyValidator.checkDeviceAllowsLogin: Dev: SEPC80084AA8743- dbr.getDeviceObject returned
2019-03-09 13:32:27,851 INFO  [http-bio-443-exec-2 ] EmccData                  - osQuery =
SELECT COUNT(*) as value FROM ProductSupportsFeature p INNER JOIN Device d on (p.tkProduct =
d.tkProduct AND p.tkDeviceProtocol IN (99, d.tkDeviceProtocol )) INNER JOIN TypeSupportsFeature
t ON p.tkSupportsFeature = t.Enum WHERE LOWER(d.name) = LOWER('SEPC80084AA8743') AND t.Moniker =
'SUPPORTS_FEATURE_EMCC'
2019-03-09 13:32:27,853 INFO  [http-bio-443-exec-2 ] PolicyValidator           -
3:PolicyValidator.checkCurrentLogin: getCurrentLoginTime return value- 0


 ##### 13:32:27,854 No user is logged into the phone and we are going to look for the user's
home cluster (only 1 cluster is listed in cluster view for this lab setup)
2019-03-09 13:32:27,854 INFO  [http-bio-443-exec-2 ] PolicyValidator           -
3:PolicyValidator.checkCurrentLogin: no user currently logged in
2019-03-09 13:32:27,854 INFO  [http-bio-443-exec-2 ] EMServiceServlet          - 3
findHomeCluster: Finding Home Cluster for User: adgjm


 ##### 13:32:27,928 The home cluster is determined to be 192.168.7.200 which is "ClusterTwo"
with a pkid of b986ff55-4374-43d2-8d99-ad6db704e672
2019-03-09 13:32:27,928 INFO  [http-bio-443-exec-2 ] EMServiceServlet          - 3:
EmccLoginRequest: Home Cluster URL for User:adgjm is :
https://192.168.7.200:8443/emservice/EMServiceServlet
2019-03-09 13:32:27,929 INFO  [http-bio-443-exec-2 ] EMServiceServlet          - 3:
EmccLoginRequest: Device Profile for this user is: test_emcc_udp
2019-03-09 13:32:27,969 INFO  [http-bio-443-exec-2 ] EmccData                  - 3:
getRemoteClusterInfo: Pkid for cluster ClusterTwo is b986ff55-4374-43d2-8d99-ad6db704e672


 ##### 13:32:27,970 The login request is sent to the home cluster
2019-03-09 13:32:27,970 INFO  [http-bio-443-exec-2 ] EmccCommunicator          - 3:
performDoLogin : Sending home login XML to
:https://192.168.7.200:8443/emservice/EMServiceServlet and Parsing the response
2019-03-09 13:32:28,052 INFO  [http-bio-443-exec-2 ] EMServiceServlet          - 3:
EmccLoginRequest: Performing Visiting Device Login for :adgjm
2019-03-09 13:32:28,052 INFO  [http-bio-443-exec-2 ] EMServiceServlet          -
3:performVisitingDeviceLogin - SEPC80084AA8743
2019-03-09 13:32:28,072 INFO  [http-bio-443-exec-2 ] EMServiceServlet          - 3: EmccRequest
Processing Time: 233
```

emapp

```
 ##### 13:32:28,075 The login is successful
2019-03-09 13:32:28,075 INFO  [http-bio-80-exec-7  ] EMAppServlet               - Successfully
performed Login for user adgjm at SEPC80084AA8743
2019-03-09 13:32:28,076 INFO  [http-bio-80-exec-7  ] EMAppServlet               - Context:/emapp
::URI:/jsp/phone_refresh.jsp
2019-03-09 13:32:28,076 INFO  [http-bio-80-exec-7  ] EMAppServlet               -
findPreferredCharSet on utf-8,;q=0.8
2019-03-09 13:32:28,076 INFO  [http-bio-80-exec-7  ] EMAppServlet               - token1 = utf-8
2019-03-09 13:32:28,076 INFO  [http-bio-80-exec-7  ] EMAppServlet               -  token2 = utf-8
2019-03-09 13:32:28,076 INFO  [http-bio-80-exec-7  ] EMAppServlet               -  charset with q
value is 1 utf-8
2019-03-09 13:32:28,076 INFO  [http-bio-80-exec-7  ] EMAppServlet               -  returning
```

charset as q value is 1 utf-8
2019-03-09 13:32:28,076 INFO [http-bio-80-exec-7] EMAppServlet - my charset =utf-8

Log review for Home Cluster CUCM

emservice logs:

13:32:27,863 EMService on the home cluster receives an EMCC Check User Request 2019-03-09 13:32:27,863 INFO [http-bio-443-exec-17] EMServiceServlet - EMService Request# ----> : 1 2019-03-09 13:32:27,863 INFO [http-bio-443-exec-17] EMServiceServlet - 1:EMService: Request Type=EMCC 2019-03-09 13:32:27,872 INFO [http-bio-443-exec-17] EMServiceServlet - 1: Setting remoteIPAddr to connection IP=192.168.7.100 2019-03-09 13:32:27,873 INFO [http-bio-443-exec-17] EMServiceServlet - 1 : 3 : ClusterOne: processEmccRequest: Received Check User Request for :adgjm ##### 13:32:27,873 The EMService on the home cluster checks if the user exists in the local database 2019-03-09 13:32:27,873 INFO [http-bio-443-exec-17] EMServiceServlet - 1 : 3 : ClusterOne: EmccCheckUser : Checking if User adgjm exists in local database 2019-03-09 13:32:27,873 INFO [http-bio-443-exec-17] Authenticator - 1:Authenticator.userExists: UserID: adgjm- Calling cmdb.isLocalUser(osUserID)... ##### 13:32:27,889 EMService on the home cluster finds the user then looks up the information for the remote cluster and responds with the user id and associated device profiles 2019-03-09 13:32:27,889 INFO [http-bio-443-exec-17] Authenticator - 1:Authenticator.userExists: UserID: adgjm- cmdb.isLocalUser(osUserID) returned 2019-03-09 13:32:27,889 INFO [http-bio-443-exec-17] DBRequestor - 1: queryUDP2: User Exists 2019-03-09 13:32:27,892 INFO [http-bio-443-exec-17] DBRequestor - UserInfo: UserID: adgjm Password: Locale: 0 Authentication proxy rights: falseDevice Profiles: test_emcc_udp 2019-03-09 13:32:27,892 INFO [http-bio-443-exec-17] EMServiceServlet - 1: authenticate pin for adgjm 2019-03-09 13:32:27,923 INFO [http-bio-443-exec-17] EmccData - 1: getRemoteClusterInfo: Pkid for cluster ClusterOne is f672bb12-5e1b-4795-81fa-d06d5ce07e84 2019-03-09 13:32:27,925 INFO [http-bio-443-exec-17] EMServiceServlet - 1 : 3 : ClusterOne: EmccCheckUser <emccResponse><checkUser><user id="adgjm"><numProfiles>1</numProfiles><exists/><deviceProfile1>test_emcc_udp</deviceProfile1></user></checkUser></emccResponse> 2019-03-09 13:32:27,925 INFO [http-bio-443-exec-17] EMServiceServlet - 1: EmccRequest Processing Time: 61 ##### 13:32:27,975 EMService on the home cluster receives an EMCC Login Request 2019-03-09 13:32:27,975 INFO [http-bio-443-exec-19] EMServiceServlet - EMService Request# ----> : 2 2019-03-09 13:32:27,975 INFO [http-bio-443-exec-19] EMServiceServlet - 2:EMService: Request Type=EMCC 2019-03-09 13:32:27,978 INFO [http-bio-443-exec-19] EMServiceServlet - 2: Setting remoteIPAddr to connection IP=192.168.7.100 2019-03-09 13:32:27,978 INFO [http-bio-443-exec-19] EMServiceServlet - 2 : 3 : ClusterOne: processEmccRequest: Received EMCC Home Cluster Login Request for :adgjm 2019-03-09 13:32:27,978 INFO [http-bio-443-exec-19] EMServiceServlet - 2 : 3 : DeviceSecurityMode: 1 HomeCluster SecurityMode: 0 2019-03-09 13:32:27,978 INFO [http-bio-443-exec-19] EMServiceServlet - 2: authenticate pin for adgjm 2019-03-09 13:32:27,980 INFO [http-bio-443-exec-19] EMServiceServlet - 2 : 3 : ClusterOne: EmccHomeLogin : Performing Home Device Login for :adgjm 2019-03-09 13:32:27,981 INFO [http-bio-443-exec-19] EmccData - 2: getRemoteClusterInfo: Pkid for cluster ClusterOne is f672bb12-5e1b-4795-81fa-d06d5ce07e84 2019-03-09 13:32:27,981 INFO [http-bio-443-exec-19] EMServiceServlet - 2: computeLoginDuration: Device: SEPC80084AA8743 - Checking autologout settings... 2019-03-09 13:32:28,048 INFO [http-bio-443-exec-19] EMServiceServlet - 2: scheduleLogout: Device: SEPC80084AA8743-Setting autologout request with logout scheduler for : 36000 secs 2019-03-09 13:32:28,049 INFO [http-bio-443-exec-19] LogoutScheduler - 2:LogoutScheduler.setLogout(): Dev: SEPC80084AA8743- Set logout for 36000 seconds 2019-03-09 13:32:28,049 INFO [http-bio-443-exec-19] EMServiceServlet - 2: EmccRequest Processing Time: 74 ##### 13:32:28,154 EMService on the home cluster then updates the extensionmobilitydynamic database table 2019-03-09 13:32:28,154 INFO [Thread-35] CMDatabase - [CMDatabase] process(<msg><type>DBL</type><table>extensionmobilitydynamic</table><tableid>170</tableid><action>U</action><user>dbemweb</user><time>1552156348</time><old><cdrserver>2</cdrserver><cdrtime>1550846224</cdrtime><pkid>180363d9-ed4b-4d5c-b299-751aa3e06cfd</pkid><logintime>NULL</logintime><loginduration>NULL</loginduration><fkdevice_currentloginprofile>NULL</fkdevice_currentloginprofile><fkenduser_lastlogin>97f2a05c-f973-6fd4-fd5e-2048b7f70530</fkenduser_lastlogin><fkdevice>180363d9-ed4b-4d5c-b299-751aa3e06cfd</fkdevice><allowcticontrolflag>t</allowcticontrolflag><ctiidbase>3</ctiidbase><datetimestamp>1550846224</datetimestamp><fkcallingsearchspace_restrict>NULL</fkcallingsearchspace_restrict><fkenduser>NULL</fkenduser><fkmatrix_presence>NULL</fkmatrix_presence><fkmlppdomain>NULL<

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kuserlocale>1</tkuserlocale><userholdmohaudiosourceid>NULL</userholdmohaudiosourceid><versionsta
mp>1550846224-ca3abf91-97c3-4ce7-9a3d-
4373eb132289</versionstamp><tkringsetting_dnd>NULL</tkringsetting_dnd><tkdndoption>2</tkdndoptio
n><tkstatus_joinacrosslines>0</tkstatus_joinacrosslines><tkbarge>0</tkbarge><tkstatus_alwaysusep
rimeline>2</tkstatus_alwaysuseprimeline><tkstatus_alwaysuseprimelineforvm>2</tkstatus_alwaysusep
rimelineforvm><fkcallingsearchspace_emcc>NULL</fkcallingsearchspace_emcc><fkfeaturecontrolpolicy
>NULL</fkfeaturecontrolpolicy><ifx_replcheck>6660833813205221397</ifx_replcheck></old><new><tkst
atus_alwaysuseprimelineforvm>2</tkstatus_alwaysuseprimelineforvm><tkstatus_alwaysuseprimeline>2<
/tkstatus_alwaysuseprimeline><ignorepi>f</ignorepi><tkringsetting_dnd>NULL</tkringsetting_dnd><f
kcallingsearchspace_restrict>NULL</fkcallingsearchspace_restrict><fkmlppdomain>NULL</fkmlppdomai
n><fkmatrix_presence>ad243d17-98b4-4118-8feb-
5ff2e1b781ac</fkmatrix_presence><fkphonetemplate>16f15a8c-63f6-44ba-b240-
82c24714ec12</fkphonetemplate><allowcticontrolflag>t</allowcticontrolflag><tkuserlocale>1</tkuse
rlocale><fksoftkeytemplate>NULL</fksoftkeytemplate><userholdmohaudiosourceid>NULL</userholdmohau
diosourceid><tkstatus_mlppindicationstatus>2</tkstatus_mlppindicationstatus><tkpreemption>2</tkp
reemption><tkdndoption>2</tkdndoption><ctiidbase>1</ctiidbase><mismatchedlogin>f</mismatchedlogi
n><lastnumplanindex>0</lastnumplanindex><fkenduser>97f2a05c-f973-6fd4-fd5e-
2048b7f70530</fkenduser><logintime>1552156348</logintime><loginduration>36000</loginduration><fk
device_currentloginprofile>91ac8680-48d3-48c1-956e-
f6e10d046ce4</fkdevice_currentloginprofile><datetimestamp>1552156347</datetimestamp><versionstam
p>1552156347-145cec2d-3b45-430f-acaf-d79657a15c58</versionstamp></new></msg>) started 2019-03-
09 13:32:28,154 INFO [Thread-35] CMDatabase - [CMDatabase] process() -
table=extensionmobilitydynamic

CCM logs:

13:32:28.155 The database on the home cluster receives the update and processes it
00009522.001 |13:32:28.155 |AppInfo |ProcessCnf N: extensionmobilitydynamic U 180363d9-ed4b-
4d5c-b299-751aa3e06cfd, size(2864) fkmatrix_presence(NULL/ad243d17-98b4-4118-8feb-5ff2e1b781ac)
fkphonetemplate(NULL/16f15a8c-63f6-44ba-b240-82c24714ec12) ctiidbase(3/1)
fkenduser(NULL/97f2a05c-f973-6fd4-fd5e-2048b7f70530) logintime(NULL/1552156348)
loginduration(NULL/36000) fkdevice_currentloginprofile(NULL/91ac8680-48d3-48c1-956e-
f6e10d046ce4) datetimestamp(1550846224/1552156347) versionstamp(1550846224-ca3abf91-97c3-4ce7-
9a3d-4373eb132289/1552156347-145cec2d-3b45-430f-acaf-d79657a15c58)

Service as seen in the phone config file

CCM logs:

13:32:28.155 The database on the home cluster receives the update and processes it
00009522.001 |13:32:28.155 |AppInfo |ProcessCnf N: extensionmobilitydynamic U 180363d9-ed4b-
4d5c-b299-751aa3e06cfd, size(2864) fkmatrix_presence(NULL/ad243d17-98b4-4118-8feb-5ff2e1b781ac)
fkphonetemplate(NULL/16f15a8c-63f6-44ba-b240-82c24714ec12) ctiidbase(3/1)
fkenduser(NULL/97f2a05c-f973-6fd4-fd5e-2048b7f70530) logintime(NULL/1552156348)
loginduration(NULL/36000) fkdevice_currentloginprofile(NULL/91ac8680-48d3-48c1-956e-
f6e10d046ce4) datetimestamp(1550846224/1552156347) versionstamp(1550846224-ca3abf91-97c3-4ce7-
9a3d-4373eb132289/1552156347-145cec2d-3b45-430f-acaf-d79657a15c58)

Log review for the phone

Note: No debugs were enabled when these logs were collected.

CCM logs:

13:32:28.155 The database on the home cluster receives the update and processes it
00009522.001 |13:32:28.155 |AppInfo |ProcessCnf N: extensionmobilitydynamic U 180363d9-ed4b-
4d5c-b299-751aa3e06cfd, size(2864) fkmatrix_presence(NULL/ad243d17-98b4-4118-8feb-5ff2e1b781ac)

```
fkphonetemplate(NULL/16f15a8c-63f6-44ba-b240-82c24714ec12) ctiidbase(3/1)
fkenduser(NULL/97f2a05c-f973-6fd4-fd5e-2048b7f70530) logintime(NULL/1552156348)
loginduration(NULL/36000) fkdevice_currentloginprofile(NULL/91ac8680-48d3-48c1-956e-
f6e10d046ce4) datetimestamp(1550846224/1552156347) versionstamp(1550846224-ca3abf91-97c3-4ce7-
9a3d-4373eb132289/1552156347-145cec2d-3b45-430f-acaf-d79657a15c58)
```

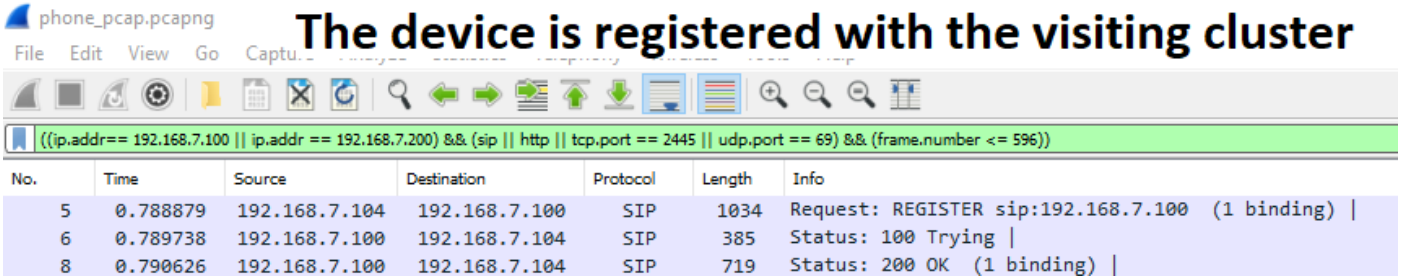
PCAP review for the phone

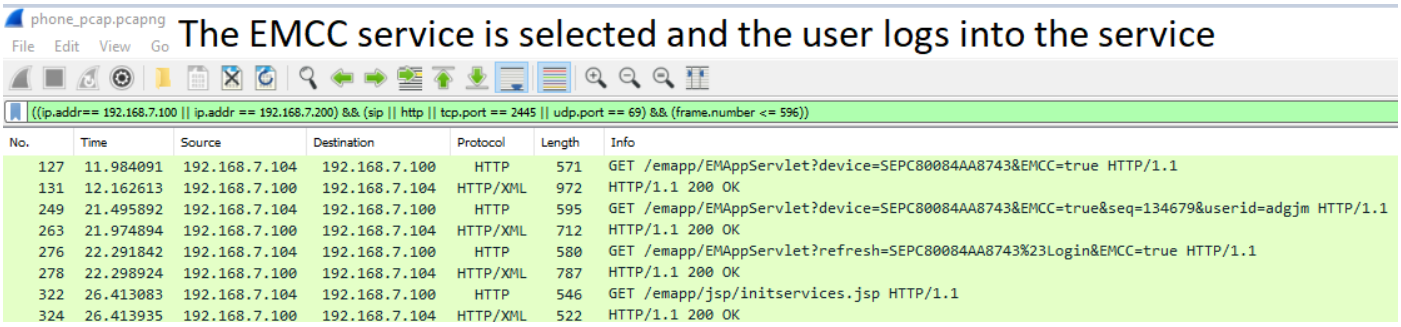
This filter shows all the traffic between the phone and the two clusters:

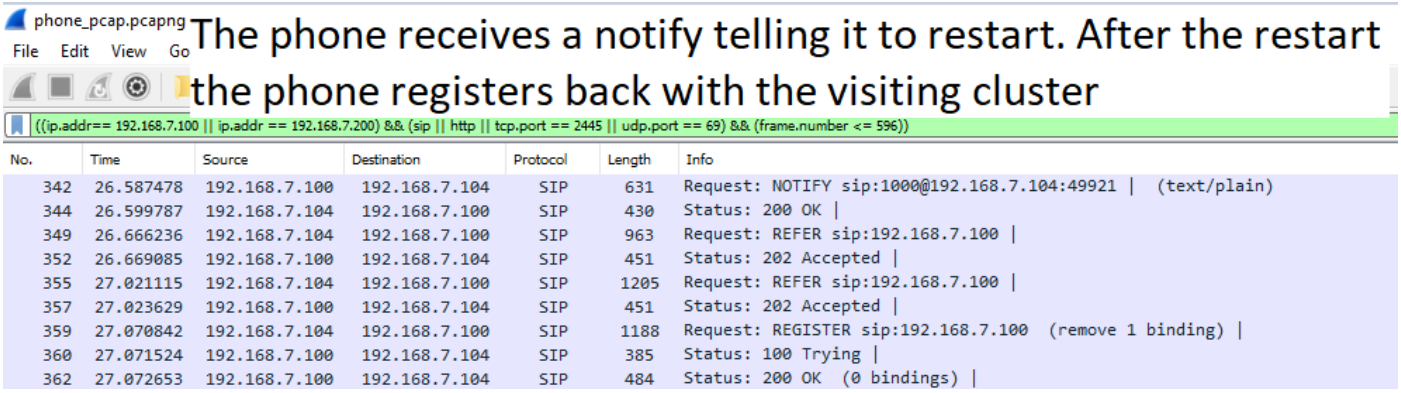
ip.addr == 192.168.7.100 || ip.addr == 192.168.7.100

This filter narrows it down to show the important traffic:

((ip.addr== 192.168.7.100 || ip.addr == 192.168.7.200) && (sip || http || tcp.port == 2445 || udp.port == 69) && (frame.number <= 596))







phone_pcap.pcapng

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The phone requests the CTL/ITL/CNF from the visiting cluster

((ip.addr== 192.168.7.100 || ip.addr == 192.168.7.200) && (sip || http || tcp.port == 2445 || udp.port == 69) && (frame.number <= 596))

No.	Time	Source	Destination	Protocol	Length	Info
372	27.468600	192.168.7.104	192.168.7.100	HTTP	131	GET /CTLSEPC80084AA8743.tlv HTTP/1.1
374	27.468859	192.168.7.100	192.168.7.104	HTTP	130	HTTP/1.1 404 Not Found
382	27.642250	192.168.7.104	192.168.7.100	HTTP	131	GET /ITLSEPC80084AA8743.tlv HTTP/1.1
397	27.643612	192.168.7.100	192.168.7.104	HTTP	686	HTTP/1.1 200 OK (*/*)
411	28.482515	192.168.7.104	192.168.7.100	HTTP	136	GET /SEPC80084AA8743.cnf.xml.sgn HTTP/1.1
415	28.492222	192.168.7.100	192.168.7.104	HTTP	831	HTTP/1.1 200 OK (*/*)

phone_pcap.pcapng

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The phone requests the CTL from the home cluster but there isn't one. Then the phone requests the ITL and needs to engage TVS on the VC to validate the signer.

((ip.addr== 192.168.7.100 || ip.addr == 192.168.7.200) && (sip || http || tcp.port == 2445 || udp.port == 69) && (frame.number <= 596))

No.	Time	Source	Destination	Protocol	Length	Info
445	31.697951	192.168.7.200	192.168.7.104	HTTP	140	HTTP/1.1 503 Service Unavailable
456	32.470464	192.168.7.104	192.168.7.200	TFTP	73	Read Request, File: CTLSEPC80084AA8743.tlv, Transfer type: octet
461	32.652384	192.168.7.104	192.168.7.200	HTTP	131	GET /ITLSEPC80084AA8743.tlv HTTP/1.1
472	32.653307	192.168.7.200	192.168.7.104	HTTP	705	HTTP/1.1 200 OK (*/*)
482	32.833207	192.168.7.104	192.168.7.100	TCP	74	51672 → 2445 [SYN] Seq=0 Win=29200 Len=0 MSS=1460 SACK_PERM=1 TSval=215005 TSecr=0 WS=16
483	32.833282	192.168.7.100	192.168.7.104	TCP	74	2445 → 51672 [SYN, ACK] Seq=0 Ack=1 Win=14480 Len=0 MSS=1460 SACK_PERM=1 TSval=1807489 TSecr=215005 WS=128
484	32.833575	192.168.7.104	192.168.7.100	TCP	66	51672 → 2445 [ACK] Seq=1 Ack=1 Win=29200 Len=0 TSval=215005 TSecr=1807489
485	32.846664	192.168.7.104	192.168.7.100	TLSv1.2	190	Client Hello
486	32.846847	192.168.7.100	192.168.7.104	TCP	66	2445 → 51672 [ACK] Seq=1 Ack=125 Win=14592 Len=0 TSval=1807503 TSecr=215006
487	32.847319	192.168.7.100	192.168.7.104	TLSv1.2	1175	Server Hello, Certificate, Server Hello Done
488	32.847505	192.168.7.104	192.168.7.100	TCP	66	51672 → 2445 [ACK] Seq=125 Ack=1110 Win=31424 Len=0 TSval=215007 TSecr=1807503
490	33.362164	192.168.7.104	192.168.7.100	TLSv1.2	408	Client Key Exchange, Change Cipher Spec, Encrypted Handshake Message
491	33.370101	192.168.7.100	192.168.7.104	TLSv1.2	316	New Session Ticket, Change Cipher Spec, Encrypted Handshake Message
492	33.370374	192.168.7.104	192.168.7.100	TCP	66	51672 → 2445 [ACK] Seq=467 Ack=1360 Win=33648 Len=0 TSval=215059 TSecr=1808026
495	33.866946	192.168.7.104	192.168.7.100	TLSv1.2	295	Application Data
496	33.867758	192.168.7.100	192.168.7.104	TLSv1.2	1111	Application Data
497	33.867851	192.168.7.104	192.168.7.100	TCP	66	51672 → 2445 [ACK] Seq=696 Ack=2405 Win=35856 Len=0 TSval=215109 TSecr=1808523

phone_pcap.pcapng

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The phone requests it's config file and softkey template from the home cluster. Then the phone moves forward with registering to the home cluster.

((ip.addr== 192.168.7.100 || ip.addr == 192.168.7.200) && (sip || http || tcp.port == 2445 || udp.port == 69) && (frame.number <= 596))

No.	Time	Source	Destination	Protocol	Length	Info
509	35.090712	192.168.7.104	192.168.7.200	HTTP	136	GET /SEPC80084AA8743.cnf.xml.sgn HTTP/1.1
526	35.103308	192.168.7.200	192.168.7.104	HTTP	759	HTTP/1.1 200 OK (*/*)
548	37.509328	192.168.7.104	192.168.7.200	HTTP	155	GET /SKb0ec918f-b9ee-994b-57ae-345883c1fde8.xml.sgn HTTP/1.1
554	37.510070	192.168.7.200	192.168.7.104	HTTP	1307	HTTP/1.1 200 OK (*/*)
570	38.784266	192.168.7.104	192.168.7.200	SIP	121	Request: REFER sip:192.168.7.200 |
573	38.786423	192.168.7.200	192.168.7.104	SIP	450	Status: 202 Accepted |
576	38.794933	192.168.7.104	192.168.7.200	SIP	124	Request: REFER sip:192.168.7.200 |
578	38.796188	192.168.7.200	192.168.7.104	SIP	451	Status: 202 Accepted |
581	38.838310	192.168.7.104	192.168.7.200	SIP	1134	Request: REGISTER sip:192.168.7.200 (1 binding) | (application/x-cisco-remotecc-request+xml) (application/x-cisco-remotecc-request+xml)
583	38.838805	192.168.7.200	192.168.7.104	SIP	385	Status: 100 Trying |
585	38.955146	192.168.7.200	192.168.7.104	SIP	1175	Status: 200 OK (1 binding) |
586	38.955436	192.168.7.200	192.168.7.104	SIP	1299	Request: REFER sip:04984998-fe29-08c0-6d47-5593bf4ce606@192.168.7.104:50600;transport=tcp | (application/x-cisco-remotecc-request+xml) (text/plain)
590	39.251901	192.168.7.104	192.168.7.200	SIP	977	Request: REFER sip:192.168.7.200 |
592	39.253935	192.168.7.200	192.168.7.104	SIP	451	Status: 202 Accepted |
596	39.262602	192.168.7.104	192.168.7.200	SIP	637	Status: 200 OK |

Data from Cisco LAB

The data collected from the lab setup is attached to this TechZone.

Related Information

- Cisco Collaboration System 11.x Solution Reference Network Designs (SRND)
- EMCC Call Routing Explanation and Configuration
- Technical Support & Documentation - Cisco Systems