

厂家	爱立信	问题编号		设备类型	ENODEB																																																																																																																																																																																			
问题类型	切换类	问题影响	VoLTE 用户切换成功率	问题状态	已解决																																																																																																																																																																																			
上报省份	广西	上报时间	2016-11-21	上报人	花庆栋																																																																																																																																																																																			
问题描述	在 11 月 17 日的 VOLTE 指标监控中，发现 BHYHFuChengZhenHaiLuCunLTE-ELH-1VOLTE 用户切换成功率较低（为 60.53%），失败占比超过多，严重影响用户体验，以及全网 KPI。																																																																																																																																																																																							
原因定位	问题描述：																																																																																																																																																																																							
	➢ 11 月 17 日通过指标 KPI 监控发现，BHYHFuChengZhenHaiLuCunLTE-ELH-1 小区的 VOLTE 用户切换成功率较低，为 60.53%，严重影响整体指标以及全网切换 KPI，具体统计如下：																																																																																																																																																																																							
	<table><tr><th>A</th><th>B</th><th>D</th><th>E</th><th>F</th><th>G</th><th>H</th><th>I</th><th>J</th><th>K</th></tr><tr><th>时间</th><th>地市/州</th><th>LTE-Tdd小区</th><th>VoLTE用户切换成功率</th><th>VoLTE用户eNB间X2切换成功率</th><th>VoLTE用户eNB间S1切换成功率</th><th>VoLTE用户eNB间切换成功率</th><th>VoLTE用户eNB内切换成功率</th><th>VoLTE用户切换请求次数</th><th>VoLTE用户切换失败次数</th></tr><tr><td>2016-11-16</td><td>北海</td><td>BHYHFuChengZhenHaiLuCunLTE-ELH-1</td><td>46.60%</td><td>40.86%</td><td>100.00%</td><td>40.86%</td><td>100.00%</td><td>103</td><td>55</td></tr><tr><td>2016-11-16</td><td>北海</td><td>BHYHFuChengZhenHaiLuCunLTE-ELH-2</td><td>100.00%</td><td>100.00%</td><td>100.00%</td><td>100.00%</td><td>100.00%</td><td>26</td><td>0</td></tr><tr><td>2016-11-16</td><td>北海</td><td>BHYHFuChengZhenHaiLuCunLTE-ELH-3</td><td>100.00%</td><td>100.00%</td><td>100.00%</td><td>100.00%</td><td>100.00%</td><td>34</td><td>0</td></tr><tr><td>2016-11-17</td><td>北海</td><td>BHYHFuChengZhenHaiLuCunLTE-ELH-1</td><td>60.53%</td><td>50.82%</td><td>100.00%</td><td>50.82%</td><td>100.00%</td><td>76</td><td>30</td></tr><tr><td>2016-11-17</td><td>北海</td><td>BHYHFuChengZhenHaiLuCunLTE-ELH-2</td><td>100.00%</td><td>100.00%</td><td>100.00%</td><td>100.00%</td><td>100.00%</td><td>45</td><td>0</td></tr><tr><td>2016-11-17</td><td>北海</td><td>BHYHFuChengZhenHaiLuCunLTE-ELH-3</td><td>97.06%</td><td>96.77%</td><td>100.00%</td><td>96.77%</td><td>100.00%</td><td>34</td><td>1</td></tr></table>					A	B	D	E	F	G	H	I	J	K	时间	地市/州	LTE-Tdd小区	VoLTE用户切换成功率	VoLTE用户eNB间X2切换成功率	VoLTE用户eNB间S1切换成功率	VoLTE用户eNB间切换成功率	VoLTE用户eNB内切换成功率	VoLTE用户切换请求次数	VoLTE用户切换失败次数	2016-11-16	北海	BHYHFuChengZhenHaiLuCunLTE-ELH-1	46.60%	40.86%	100.00%	40.86%	100.00%	103	55	2016-11-16	北海	BHYHFuChengZhenHaiLuCunLTE-ELH-2	100.00%	100.00%	100.00%	100.00%	100.00%	26	0	2016-11-16	北海	BHYHFuChengZhenHaiLuCunLTE-ELH-3	100.00%	100.00%	100.00%	100.00%	100.00%	34	0	2016-11-17	北海	BHYHFuChengZhenHaiLuCunLTE-ELH-1	60.53%	50.82%	100.00%	50.82%	100.00%	76	30	2016-11-17	北海	BHYHFuChengZhenHaiLuCunLTE-ELH-2	100.00%	100.00%	100.00%	100.00%	100.00%	45	0	2016-11-17	北海	BHYHFuChengZhenHaiLuCunLTE-ELH-3	97.06%	96.77%	100.00%	96.77%	100.00%	34	1																																																																																																			
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2016-11-17	北海	BHYHFuChengZhenHaiLuCunLTE-ELH-3	97.06%	34	1	31	31	31	30	3	3	0	0																																																																																																																																																																											
➢ 通过切换邻区对指标分析发现，BHYHFuChengZhenHaiLuCunLTE-ELH-1 小区与北海铁山港福成镇海陆村 2-HLH 切换失败较多，属于异厂家切换，具体统计如下：																																																																																																																																																																																								
<table><tr><th>Date</th><th>Site_id</th><th>EUtranCellTDD</th><th>EUtranCellRelation</th><th>EU0306-Handover Succ Rate(%)</th><th>EU0306-HO succ times</th><th>EU0306-HO fail times (preatt-exesucc)</th><th>EU0306-HO fail times (preatt-presucc)</th><th>EU0306-HO fail 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Succ Rate(%)	EU0306-HO succ times	EU0306-HO fail times (preatt-exesucc)	EU0306-HO fail times (preatt-presucc)	EU0306-HO fail times(exeatt-exesucc)	2016-11-17	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	4600-83323-133	42.82	9798	13083	12816	267	2016-11-17	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	4600-505406-12	96.84	5646	184	0	184	2016-11-17	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	4600-83170-133	98.85	6216	72	0	72	2016-11-17	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	4600-505583-13	99.69	21942	69	0	69	2016-11-17	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	4600-505406-13	99.56	11308	50	0	50	2016-11-17	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	4600-505583-11	99.03	3993	39	0	39	2016-11-17	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	4600-505358-13	88.43	298	39	0	39	2016-11-17	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	4600-505403-11	93.86	321	21	0	21	2016-11-17	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	4600-505601-11	97.5	780	20	0	20	2016-11-17	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	4600-505601-12	99.34	2098	14	0	14	2016-11-17	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	4600-505583-12	100	423	0	0	0	2016-11-17	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	4600-505601-13	100	165	0	0	0	2016-11-17	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	4600-82438-132	100	12	0	0	0	2016-11-17	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	4600-505358-11	100	0	0	0	0	2016-11-17	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	4600-505411-12	100	0	0	0	0	2016-11-17	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	4600-505423-12	100	9	0	0	0	2016-11-17	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	4600-82751-131	100	0	0	0	0	2016-11-17	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	4600-82999-131	100	0	0	0	0	2016-11-17	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	4600-83323-131	100	0	0	0	0
Date	Site_id	EUtranCellTDD	EUtranCellRelation	EU0306-Handover Succ Rate(%)	EU0306-HO succ times	EU0306-HO fail times (preatt-exesucc)	EU0306-HO fail times (preatt-presucc)	EU0306-HO fail times(exeatt-exesucc)																																																																																																																																																																																
2016-11-17	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	4600-83323-133	42.82	9798	13083	12816	267																																																																																																																																																																																
2016-11-17	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	4600-505406-12	96.84	5646	184	0	184																																																																																																																																																																																
2016-11-17	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	4600-83170-133	98.85	6216	72	0	72																																																																																																																																																																																
2016-11-17	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	4600-505583-13	99.69	21942	69	0	69																																																																																																																																																																																
2016-11-17	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	4600-505406-13	99.56	11308	50	0	50																																																																																																																																																																																
2016-11-17	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	4600-505583-11	99.03	3993	39	0	39																																																																																																																																																																																
2016-11-17	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	4600-505358-13	88.43	298	39	0	39																																																																																																																																																																																
2016-11-17	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	4600-505403-11	93.86	321	21	0	21																																																																																																																																																																																
2016-11-17	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	4600-505601-11	97.5	780	20	0	20																																																																																																																																																																																
2016-11-17	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	4600-505601-12	99.34	2098	14	0	14																																																																																																																																																																																
2016-11-17	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	4600-505583-12	100	423	0	0	0																																																																																																																																																																																
2016-11-17	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	4600-505601-13	100	165	0	0	0																																																																																																																																																																																
2016-11-17	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	4600-82438-132	100	12	0	0	0																																																																																																																																																																																
2016-11-17	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	4600-505358-11	100	0	0	0	0																																																																																																																																																																																
2016-11-17	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	4600-505411-12	100	0	0	0	0																																																																																																																																																																																
2016-11-17	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	4600-505423-12	100	9	0	0	0																																																																																																																																																																																
2016-11-17	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	4600-82751-131	100	0	0	0	0																																																																																																																																																																																
2016-11-17	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	4600-82999-131	100	0	0	0	0																																																																																																																																																																																
2016-11-17	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	4600-83323-131	100	0	0	0	0																																																																																																																																																																																
问题原因：																																																																																																																																																																																								
1. 通过 VoLTE 指标分析，发现 BHYHFuChengZhenHaiLuCunLTE-ELH-1 小区 VoLTE 切换失败均发生在 X2 切换资源准备阶段失败，提取邻区级切换指标，只有 BHYHFuChengZhenHaiLuCunLTE-ELH-1 小区与与北海铁山港福成镇海																																																																																																																																																																																								

- 陆村 2-HLH-3 小区邻区间存在切换准备失败,判断为该 TOP 邻区对 导致 BHYHFuChengZhenHaiLuCunLTE-ELH-1 小区 VoLTE 切换指标差。
- 通过排查源小区 BHYHFuChengZhenHaiLuCunLTE-ELH-1 和目标小区北海铁山港福成镇海陆村 2-HLH-3 告警、干扰。发现目标小区北海铁山港福成镇海陆村 2-HLH-3, 无告警, 干扰值正常。源小区 BHYHFuChengZhenHaiLuCunLTE-ELH-1 存在天线校准告警, 但源小区与其它目标小区切换无影响, 初步排除告警导致。
 - 查看 CTR, 发现源小区发送 “HandoverRequest” 后, 目标小区回了 “HandoverPreparationFailure” 携带原因值为 “unknown-MME-Code”; 对比正常切换信令发现, 当 “HandoverRequest” 携带的 GUMMEID 为 “0064F00038430” 时, 目标小区全部响应失败; 而携带 “0064F0003840c” “0064F000384303c” 时, 目标小区全部响应成功, 初步判断为目标小区与源小区 MME code 不一致导致。

X2AP: HandoverPreparationFailure (UE:94979335)
ueX2id:1864

fail

```
RECEIVE:Decode X2AP
recordLength 80,
recordType 4,
eventId 2062,
X2_HANDOVER_PREPARATION_FAILURE {
  EVENT_PARAM_TIMESTAMP_HOUR 2,
  EVENT_PARAM_TIMESTAMP_MINUTE 52,
  EVENT_PARAM_TIMESTAMP_SECOND 19,
  EVENT_PARAM_TIMESTAMP_MILLISEC 487,
  EVENT_PARAM_SCANNER_ID 262144,
  EVENT_PARAM_RBS_MODULE_ID EVENT_VALUE_MASTER_DU (0),
  EVENT_PARAM_GLOBAL_CELL_ID 129383947,
  EVENT_PARAM_ENBSIAPID 275518,
  EVENT_PARAM_MMESIAPIID 389746042,
  EVENT_PARAM_GUMMEI '00 64 F0 00 03 84 30'H,
  EVENT_PARAM_RAC_UE_REF 94979335,
  EVENT_PARAM_TRACE_RECORDING_SESSION_REFERENCE '00 0B 88'H,
  EVENT_PARAM_MESSAGE_DIRECTION EVENT_VALUE_RECEIVED (0),
  EVENT_PARAM_L3MESSAGE_LENGTH 19,
  EVENT_PARAM_L3MESSAGE_CONTENTS '40 00 00 0F 00 00 02 00 0A 40 02 07 48 00 05 40 02 07 00'H,
  EVENT_PARAM_PADDING_1 '00'H
}
X2AP {
  pdu value X2AP-PDU ::= unsuccessfulOutcome : {
    procedureCode 0,
    criticality reject,
    value HandoverPreparationFailure : {
      protocolIEs {
        {
          id 10,
          criticality ignore,
          value UE-X2AP-ID : 1864
        },
        {
          id 5,
          criticality ignore,
          value Cause : radioNetwork : unknown-MME-Code
        }
      }
    }
  }
}
```

X2AP: HandoverRequestAcknowledge (UE:94978410)

ueX2Id:821 ueX2Id:485 eRabId:5 gtpTid:00005da6 gtpTid:00005cbf

RECEIVE:Decode X2APRR

```
recordLength 192,
recordType 4,
eventId 2059,
X2_HANDOVER_REQUEST_ACKNOWLEDGE {
  EVENT_PARAM_TIMESTAMP_HOUR 2,
  EVENT_PARAM_TIMESTAMP_MINUTE 45,
  EVENT_PARAM_TIMESTAMP_SECOND 12,
  EVENT_PARAM_TIMESTAMP_MILLISEC 491,
  EVENT_PARAM_SCANNER_ID 262144,
  EVENT_PARAM_RBS_MODULE_ID EVENT_VALUE_MASTER_DU (0),
  EVENT_PARAM_GLOBAL_CELL_ID 129383947,
  EVENT_PARAM_ENBSIAPID 274177,
  EVENT_PARAM_MMESIAPIID 385404194,
  EVENT_PARAM_GUMMEI '00 64 F0 00 03 84 3C'H,
  EVENT_PARAM_RAC_UE_REF 94978410,
  EVENT_PARAM_TRACE_RECORDING_SESSION_REFERENCE '00 07 E9'H,
  EVENT_PARAM_MESSAGE_DIRECTION EVENT_VALUE_RECEIVED (0),
  EVENT_PARAM_L3MESSAGE_LENGTH 130,
  EVENT_PARAM_L3MESSAGE_CONTENTS '20 00 00 7E 00 00 04 00 0A 40 02 03 35 00 09 40 02 01 E5 00 01
40 1A 00 00 00 40 15 62 81 F0 64 51 CA 92 00 00 5D A6 03 E0 64 51 CA 92 00 00 5C BF 00 0C 40 4D 4C
02 51 10 59 21 74 B0 04 3C 69 6E DC 31 18 6F E4 67 0D 22 E7 B8 D0 00 01 00 91 80 93 DB 2D 57 54 CF
C1 AD 80 8F DC E0 18 3B 1C 08 FD CE 01 93 B0 0D 11 40 76 1D 45 3B 17 9D 10 6E 88 CF 95 CC 30 A6 D9
62 50 54 14 34 03 03 C2 44 00'H,
  EVENT_PARAM_PADDING_2 '00 64'H
}
X2AP {
  pdu value X2AP-PDU ::= successfulOutcome : {
    procedureCode 0,
    criticality reject,
    value HandoverRequestAcknowledge : {
      protocolIEs {
        {
          id 10,
          criticality ignore,
```

切换准备响应成功

X2AP: HandoverRequestAcknowledge (UE:94978417)

ueX2Id:823 ueX2Id:824 eRabId:5 gtpTid:800003b2 eRabId:6 gtpTid:800003b3

RECEIVE:Decode X2APRR

```
recordLength 184,
recordType 4,
eventId 2059,
X2_HANDOVER_REQUEST_ACKNOWLEDGE {
  EVENT_PARAM_TIMESTAMP_HOUR 2,
  EVENT_PARAM_TIMESTAMP_MINUTE 45,
  EVENT_PARAM_TIMESTAMP_SECOND 12,
  EVENT_PARAM_TIMESTAMP_MILLISEC 556,
  EVENT_PARAM_SCANNER_ID 262144,
  EVENT_PARAM_RBS_MODULE_ID EVENT_VALUE_MASTER_DU (0),
  EVENT_PARAM_GLOBAL_CELL_ID 129383947,
  EVENT_PARAM_ENBSIAPID 274193,
  EVENT_PARAM_MMESIAPIID 150378470,
  EVENT_PARAM_GUMMEI '00 64 F0 00 03 84 0C'H,
  EVENT_PARAM_RAC_UE_REF 94978417,
  EVENT_PARAM_TRACE_RECORDING_SESSION_REFERENCE '00 07 F0'H,
  EVENT_PARAM_MESSAGE_DIRECTION EVENT_VALUE_RECEIVED (0),
  EVENT_PARAM_L3MESSAGE_LENGTH 123,
  EVENT_PARAM_L3MESSAGE_CONTENTS '20 00 00 77 00 00 04 00 0A 40 02 03 37 00 09 40 02 03 38 00 01
40 1F 01 00 00 40 0B 22 81 F0 00 00 00 00 00 03 B2 00 00 40 0B 23 01 F0 00 00 00 00 00 00 03 B3
00 0C 40 41 40 01 F1 00 D9 50 00 01 00 22 10 02 23 9B 8A 08 6B 62 FF 99 43 7E E8 20 6C 0B 39 00 10
02 00 80 C8 27 B6 55 7B AA 66 80 15 FA 00 4C C4 E0 BB 2A 0E 00 60 10 7A D9 C0 00 B0 50 85 0D 00 22
D0 89 00'H,
  EVENT_PARAM_PADDING_1 '00'H
}
X2AP {
  pdu value X2AP-PDU ::= successfulOutcome : {
    procedureCode 0,
    criticality reject,
    value HandoverRequestAcknowledge : {
      protocolIEs {
        {
          id 10,
```

切换响应成功

4. 查询现网 S1-MME 信息，在现网下配置的 S1-MME 为三条，分别为 4600-900-12; 4600-900-48; 4600-900-60,

源小区配置如下:

```
=====
2114                               ENodeBFunction=1,TermPointToMme=5
=====
TermPointToMmeId                   5
administrativeState                 1 (UNLOCKED)
availabilityStatus                  0 (NO_STATUS)
domainName
ipAddress1                         100.81.50.186
ipAddress2                         100.81.50.187
ipv6Address1                       ::
ipv6Address2                       ::
logicalName                        BHE00392
mmeCodeListLTERelated              i[1] = 60
mmeCodeListOtherRATs              i[1] = 60
mmeGIListLTERelated                i[1] = 900
mmeName                            NNMME54BER
operationalState                   1 (ENABLED)
relativeMmeCapacity                128
servedPlmnListLTERelated           t[1] =
>>> Struct[0] has 3 members:
>>> 1.mcc = 460
>>> 2.mnc = 0
>>> 3.mncLength = 2
servedPlmnListOtherRATs           t[1] =
>>> Struct[0] has 3 members:
>>> 1.mcc = 460
>>> 2.mnc = 0
>>> 3.mncLength = 2
usedIpAddress                      100.81.50.186
=====
Total: 4 MOS
```

BHYHFUCHENGZHENHAILUCUNLTE-ELH>

```

=====
2112                                     ENodeBFunction=1,TermPointToMme=3
=====
TermPointToMmeId                        3
administrativeState                     1 (UNLOCKED)
availabilityStatus                      0 (NO_STATUS)
domainName
ipAddress1                             100.81.50.182
ipAddress2                             100.81.50.183
ipv6Address1                           ::
ipv6Address2                           ::
logicalName                            BHE00392
mmeCodeListLTERelated                  i[1] = 12
mmeCodeListOtherRATs                  i[1] = 12
mmeGIListLTERelated                    i[1] = 900
mmeName                                NNMME52BER
operationalState                       1 (ENABLED)
relativeMmeCapacity                    128
servedPlmnListLTERelated               t[1] =
>>> Struct[0] has 3 members:
>>> 1.mcc = 460
>>> 2.mnc = 0
>>> 3.mncLength = 2
servedPlmnListOtherRATs               t[1] =
>>> Struct[0] has 3 members:
>>> 1.mcc = 460
>>> 2.mnc = 0
>>> 3.mncLength = 2
usedIpAddress                          100.81.50.182
=====
2113                                     ENodeBFunction=1,TermPointToMme=4
=====
TermPointToMmeId                        4
administrativeState                     1 (UNLOCKED)
availabilityStatus                      0 (NO_STATUS)
domainName
ipAddress1                             100.81.50.184
ipAddress2                             100.81.50.185
ipv6Address1                           ::
ipv6Address2                           ::
logicalName                            BHE00392
mmeCodeListLTERelated                  i[1] = 48
mmeCodeListOtherRATs                  i[1] = 48
mmeGIListLTERelated                    i[1] = 900
mmeName                                NNMME53BER
operationalState                       1 (ENABLED)
relativeMmeCapacity                    128
servedPlmnListLTERelated               t[1] =
>>> Struct[0] has 3 members:
>>> 1.mcc = 460
>>> 2.mnc = 0
>>> 3.mncLength = 2
servedPlmnListOtherRATs               t[1] =
>>> Struct[0] has 3 members:
>>> 1.mcc = 460
>>> 2.mnc = 0
>>> 3.mncLength = 2
usedIpAddress                          100.81.50.184
=====

```

目标小区配置如下：

接入该S1接口的用户数 核心网的具体名称 服务公共陆地移动网络 服务核心网的全局唯一标识 核心网的相对容量 S1链路故障原因

9 NNMME52BEr 460-00 460-00-900-12 128 无
7 NNMME54BEr 460-00 460-00-900-60 128 无

+++ 北海铁山港福成镇海陆村2-HLH 2016-11-21 11:47:08
OAM #7352
%%/*142069852*/LST SCTPPEER:;%%
RETCODE = 0 执行成功

查询SCTP对端配置信息

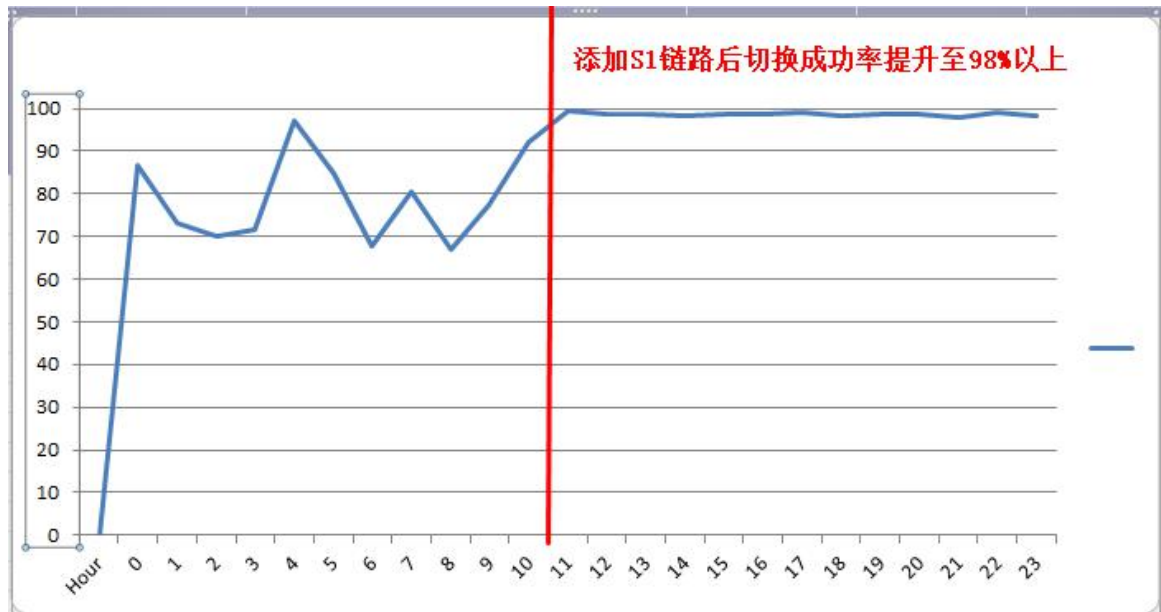
SCTP对端标识	VRF索引	IP协议版本	对端第一个IP地址	对端第一个IPv6地址	对端第一个IP的IPSec配置开关	对端第一个IP的安全对端标识	对端第二个IP地址	对端第二个IPv6地址	对
15	0	IPv4	100.81.208.201	NULL	禁止	NULL	0.0.0.0	NULL	禁
103	0	IPv4	100.81.50.182	NULL	禁止	NULL	100.81.50.183	NULL	禁
104	0	IPv4	100.81.50.184	NULL	禁止	NULL	100.81.50.185	NULL	禁
105	0	IPv4	100.81.50.186	NULL	禁止	NULL	100.81.50.187	NULL	禁
70000	0	IPv4	100.81.202.172	NULL	禁止	NULL	0.0.0.0	NULL	禁

(结果个数 = 5)

5. 根据爱立信站点与华为站点的 S1-MME 配置发现，华为站点只配置了 2 条 S1-MME 链路，缺少 460-00-900-48；导致此 MME 下的 UE 向华为站点切换时，由于缺少该配置，目标小区无法识别导致资源准备失败，反向时由于爱立信站点配置与现网保持一致，故华为往爱立信站点切换时正常。

华为站点补全 S1-MME 链路后，切换指标提升至 98%以上。

C	D	F	G	H	I	J	K
Hour	Site id	EUtranCellTDD	EU0306-Handover Succ Rate(%)	EU0306-HO succ times	EU0306-HO fail times (preatt-exesucc)	EU0306-HO fail times (preatt-presucc)	EU0306-HO fail times(exeatt-exesucc)
0	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	86.51	917	143	141	2
1	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	73.17	270	99	96	3
2	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	70.22	283	120	117	3
3	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	71.47	233	93	90	3
4	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	97.22	175	5	0	5
5	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	84.58	181	33	33	0
6	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	67.94	890	420	417	3
7	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	80.54	2733	664	630	31
8	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	66.8	3162	1567	1539	31
9	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	77.6	3222	930	900	30
10	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	91.97	3140	274	243	31
11	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	99.27	3663	27	0	27
12	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	98.69	3172	42	0	42
13	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	98.72	2768	36	0	36
14	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	98.39	2629	43	0	43
15	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	98.56	2603	38	0	38
16	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	98.62	3214	45	0	45
17	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	98.94	5132	55	0	55
18	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	98.45	4444	70	0	70
19	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	98.74	3773	48	0	48
20	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	98.55	1903	28	0	28
21	BeiHai	BHYHFuChengZhenHaiLuCunLTE-ELH-1	97.97	1837	38	0	38



总结：异厂家间 S1-MME 配置方式不一致，导致核查 S1-MME 链路时容易发生核查方向不准确的情况，本次核查 S1-MME 链路时发现华为站点 SCTP 链路配置与现网一致，但缺少一条 S1-MME 链路；后续核查时，需特别注意，SCTP 链路需核查，S1-MME 具体配置也需核查。

涉及功能介绍

切换流程图

图 C-1 给出了 eNodeB 间 X2 切换的信令交互过程

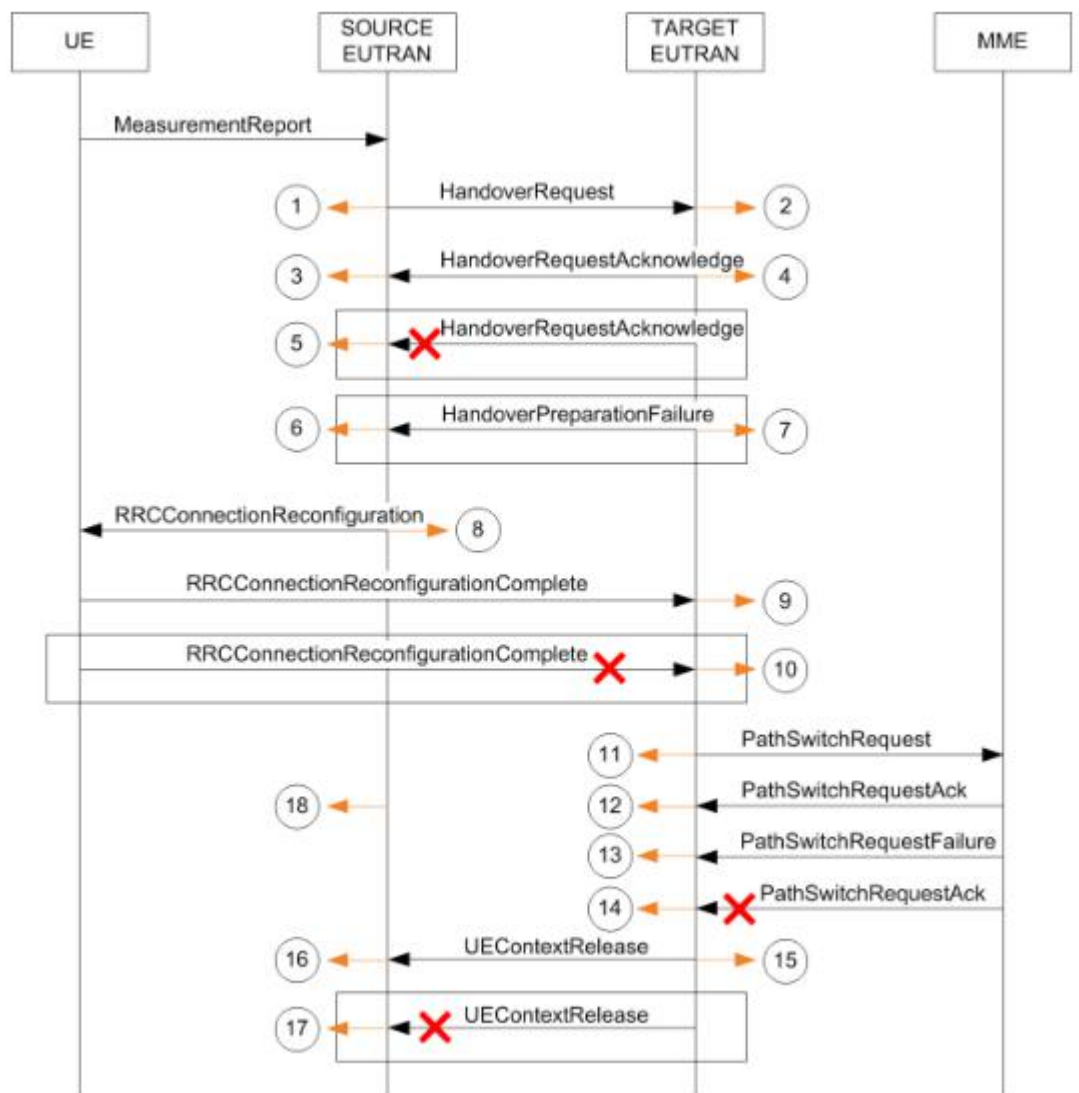


图 C-1 X2 切换的信令交互过程

当 eNodeB 接收到从 UE 来的测量报告消息,根据消息进行判决,如果条件满足 eNodeB 间 X2 切换,则触发 UE 在 eNodeB 间切换过程。eNodeB 发送切换请求消息给目标 eNodeB。

目标 eNodeB 接收到源 eNodeB 的切换请求消息,进入资源准备。如果资源准备成功,给源侧回复 Handover Request Acknowledge。如果资源准备失败,则给源侧回复 Handover Preparation Failure。切换准备过程结束。

源侧 eNodeB 接收到 Handover Request Acknowledge,则发起切换过程,给 UE 发送 Handover Command(i.e. RRC Connection Reconfiguration)。

目标侧 eNodeB 接收到 UE 的 RRC 重配完成消息后,发送 Path Switch Request 消息给 MME,请求切换 GTPU 的对端。

目标侧 eNodeB 接收到 MME 的 Path Switch Request Ack 消息,则发送 UE Context Release 消息给源 eNodeB。切换过程成功结束。

解决方案

1. 规范 S1 链路配置,补全 S1-MME 链路;

备注

微信扫描以下二维码，免费加入【5G 俱乐部】，还赠送整套：5G 前沿、NB-IoT、4G+ (VoLTE) 资料。

