Экономия бензина

http://depositfiles.com/files/zsxl7kqoq

Tak.ru

Archives

среда, 2 сентября 2009 г.

1.14 MS Originated Call Flow

1.14.1 Enquiry

After the signaling link for the calling end is established, the Initial Address Message with Information (IAI) is send from the calling end to the GMSC. The IAI contains the MSISDN of the called party. GMSC analyzes the identification number of the CCS7 of the HLR and sends this HLR the SEND_ROUTING_INFORMATION message. After receiving this message, the HLR checks the user record, and then performs different procedures and responds the GMSC as follows:

Under normal circumstances, the HLR only has the partial information about the identification of the current VLR, such as the CCS7 address or the universal mark. To get the routing information for the call, the HLR sends the VLR a PROVIDE ROAMING_ NUMBER message that contains the user IMSI information, requiring the VLR to provide a MSRN for this call. When the MSC/VLR receives this message, it selects a roaming number from the idle numbers to temporarily connect it to the IMSI, and sends the PROVIDE_ROAMING_NUMBER_RESULT message with the MSRN assigned to this call in it to the HLR. When the HLR receives the MSRN, it transfers the information by sending a SEND_ROUTING_INFORMATION_RESULT message to the call originating GMSC. Then the GMSC can find the VLR with the obtained MSRN and sends the IAI to it. After receiving this message, the MSC restores the IMSI of this user in its memory record with the MSRN and starts the paging for the MS. After the call is established, this roaming number is released for another user.

If the record of the called party is set as Barring of All Incoming Calls (BAIC) or Barring of Incoming Calls when roaming is outside the home PLMN country (BIC_roam) according to the message sent by the VLR and the user is in roaming now, the HLR rejects this call.

If the user record is set as Call Forwarding Unconditional (CFU), the HLR sends the MSRN to the original GMSC to analyze this number and redefine the routing.

If no VLR number of the user is found and no call forwarding is set, Error message will be sent to the GMSC.

1.14.2 Paging

After receiving the IAI from the GMSC, the called MSC sends a SEND_INFO_I/C_CALL message to the VLR and the VLR will analyze the called number and the network resource capacity to check whether this requirement is acceptable. If certain item is not accepted, it informs the calling end that the call establishment fails. Under normal circumstances, the VLR sends the MSC a PAGING MAP message that contains the location area identification (LAI) and the IMSI or TMSI of the called party, informing the MSC to perform the paging procedure.

When the MSC obtains the LA information of the MS from the VLR, it sends all the BSCs in this LA the paging message that contains the cell list and the TMSI and IMSI information required for paging. The IMSI can be used in the paging for the MS through the cell paging channel. In addition, it is also used to confirm the paging subchannel in the discontinuous reception processing.

BSC sends the PAGING COMMAND to all the cells in the LA. This command message contains the paging channel group number and the timeslot number (obtained by the calculation of the last three numbers of the IMSI, the total number of the paging channels, and the total number of the paging timeslots).

When the cell receives this paging command, it sends the PAGING REQUEST message on the paging channel. The message contains the IMSI or TMSI of the user paged.

If the called MS detects the paging by decoding the paging information, it sends a channel request to initiate the channel allocation process. After receiving the immediate assignment command from the network, the MS sends the initial message of PAGING RESPOSE on the channel assigned through the SABM frame, and then implements the authentication, encryption, TMSI reallocation, and finally begins the call establishment process.

1.14.3 Call Establishment for the Called Party

After the TMSI reallocation is over, the MSC sends the MS a SETUP message that includes all the details required such as the service type and the calling number. After receiving this message, the called MS confirms the information and sends a CALL CONFIRMED message back if the service is available. The call confirmed message carries the parameters that the MS selects, such as the channel type (full rate TCH or half rate TCH) and the service type.

After receiving the call confirmed message, the MSC sends the assignment command to the BSC for the voice channel allocation. After the assignment procedure is over, the called MS sends an ALERTING message to the network and a ringing prompt occurs to the called MS. when the MSC receives this message, it sends an Address Complete Message (ACM) to the calling end. After receiving this message, the calling end makes a ring back tone as the originating user prompter.

The called user hears the ringing and responds, and then sends a CONNECT message to the MSC. After receiving this message, the MSC connects all the transmission links. The end-to-end transmission is established.

1.14.4 The Influence of Call Transfer to Routing

In the supplementary services, call transfer has the greatest influence on call routing. The call transfer is mainly caused by Call Forwarding Unconditional (CFU), Call Forwarding Busy (CFB), Call Forwarding on mobile subscriber Not Reachable (CFNRc), and Call Forwarding on No Reply (CFNRy). The routing selection for each function is as follows:

I. CFU

When the GMSC sends the SEND_ROUTING_INFORMATION message to the HLR, if the CFU function is available, the HLR sends the SEND_ROUTING_INFORMATION_RESULT message with the transfer number in it back to the GMSC for it to redefine the routing.

II. CFB

When the GMSC finds the VMSC/VLR with the MSRN obtained from the HLR, but the called end is busy and the CFB function is available, the VMSC/VLR implements the call transfer of the transfer number and sends it to the third party. If the CFB function is not available, the GNSC handles the call directly, such as playing the user bush record.

III. CFNRc

The routing selection for this function is based on how the network decides the called party is not reachable. The processing is different for different criteria.

If the last location registration of the called user fails, and the HLR keeps the record of this situation and knows the MS is unreachable, it makes the CFNRc decision by itself.

If the HLR does not keep the record of this situation, the call flow continues until the MSC performs the paging for the user and gets no response from the user in due time. The user is decided not reachable. The MSC forwards this call. This kind of situation has many causes. One of them is that the user enters the dead zone or the MS is power-off, but the VMSC has not made the periodic check on the IMSI attached user yet, so it cannot judge the MS status and the paging fails. Another cause is that the MS is in frequent location updating on the edge of the LA and cannot respond the paging or the channel request fails, which leads to paging timeout.

If the MS is in IMSI detach (the MS is switched off or out of the service area for a long time), because the detach tag is in the VLR instead of the HLR, the call forwarding can only be initiated by the VMSC/VLR. When the VLR periodically deletes the long-term detached IMSI and informs the HLR, the HLR need not contact the VLR.

IV. CFNRy

If the paging of the VMSC for the user succeeds and the called end sends the ALERTING message to the system, but the called user makes no response in due time and the CFNRy function is activated, the call forwarding procedure is initiated.

V. CW and HOLD

Call Waiting (CW) is a supplementary service. When the MSC receives the IAI from the calling end, if the called user is in another conversation and the CW function is enabled, the MSC skips the paging procedure and directly sends a SETUP message to the MS by using the current signaling mode. When the CW function is enabled, the handover of the two calls can be performed.

When the CFB and the CW are enabled at the same time, the CW is initiated first if another call is coming. The CFB will be initiated when a third call is coming.

1.14.5 Exceptional Situations

This section only analyzes the common abnormal procedures. For other abnormal procedures, see "Mobile Originating Call Establishment Procedure."

Upon paging failure, the MSC prompts voice information to the calling party, indicating the called MS is outside the serving area or cannot be connected. In this case, trace the signaling on interfaces A and Abis to check whether the paging failure is caused by:

No PAGING COMMAND at A interface
No PAGING COMMAND at Abis interface
No PAGING RESPONSE at Abis interface
No PAGING RESPONSE at A interface

I. No Paging Command at A Interface

Through signaling tracing over interface A, the MSC is detected that it has not sent a PAGING message to the BSC. In this case, check the data configuration and MS information in the MSC/VLR and HLR on the NSS side. Additionally, power off the called MS, power it on and make a test call to check whether the MS is normal.

Checking user data in VLR

When an MS is paged, the MSC judges the current state of the MS by the user data (including MS active state, registered LA, cell information), and decides whether or how to send the PAGING message.

If the MS state has changed (for example, the MS is switched off, or has entered a different LA) and has not registered in the network normally or updated user data in VLR, the MS may probably be unable to be paged.

In that case, the MS only need to initiate a location updating procedure to ensure that the user data in VLR is correct. The period of periodic location updating is indicated in system information. On MSC side, there is also a location updating period (See "Location updating Procedure"). The two parameters of BSC and MSC must satisfy a certain relationship, which requires that MS must initiate a location updating procedure within the period specified in MSC.

Checking RA- or Cell-Related parameter settings in MSC

If a routing area or cell related parameter is incorrectly set in the MSC, the transmission of the PAGING message may fail. For example, if a wrong target BSC is selected, the PAGING message that should have been sent to the local BSC will be sent to another BSC.

II. No Paging Command at Abis Interface

Upon receiving the PAGING message from the MSC, the BSC detects that the MSC has not sent PAGING COMMAND to the BTS over interface Abis. In this case, check the operations and data configuration in the BSC。

Checking if flow control is enabled

Check if the system load suddenly increases due to centralized transmission of short messages or mass access bursts.

Checking relevant data configuration

Check if the CGI information in BSC data configuration is consistent with the LAC information in the PAGING message over A interface. Additionally, if RA- or cell-related parameter is not correctly set in the MSC, for example, a wrong target BSC is selected, the PAGING COMMAND message cannot be successfully sent over Abis interface.

Check whether the following parameters in the [System information table] are correctly set: "BS_AG_BLKS_RES", "CCCH-CONF" and "BS_PA_MFRMS".

III. No Paging Response at Abis Interface

Through signaling tracing over Abis interface, the BSC is detected that it has not received the Establishment Indication (PAGING RESPONSE) after sending PAGING COMMAND to the BTS. In this case, check the relevant data configuration and radio signal coverage.

Check if there is PCH or AGCH overload due to centralized short message transmission or mass access bursts.

Check the called MS or SIM in it.

Check BTS by making test calls in a different cell.

Check data configuration in BSCCheck whether the following parameters in the [System information

table] are correctly configured: "BS_AG_BLKS_RES", "CCCH-CONF", "BS_PA_MFRMS", "Tx-integer," and "MS MAX retrans". Check the setting for "location updating period" in BSC and that in MSC Check radio signal coverage

Due to the problem of radio signal coverage, there might be some blind coverage areas. The MS that has entered a blind coverage area cannot receive the PAGING REQUEST message. In that case, the MS cannot be paged. Such cases, if any, only exist in partial areas.

IV. No Paging Response at A Interface

Through signaling tracing at Abis interface, the BSC is detected that it has received an Establishment Indication (PAGING RESPONSE) message from the BTS but this message is not reported over interface A.

0 коммент.:

Отправить комментарий

Подпись комментария: Выбрать профиль... ▾

Отправить комментарий   Просмотр

Подписаться на: Комментарии к сообщению (Atom)