GPRS Attach and PDP Context Activation (GPRS Attach and PDP Context Activation for a Class B Terminal)

GSM Coverage	GSM GPRS Network											EventHelix.com/EventStudio 2.5
Cell	BSS	Core Network			Old Core Network		GGSN Site			GSM Databases		
UT	BSC	SGSN	DNS Server	MSC VLR	Old SGSN	Old MSC VLR	GGSN	Radius Server	DHCP Server	EIR	HLR	01-Feb-05 07:06 (Page 1)

This sequence diagram was generated with EventStudio 2.5 (http://www.EventHelix.com/EventStudio).

We explore the sequence of interactions involved in a GPRS terminal attaching to the network. The combined attach and PDP context activation of a Class B GPRS terminal will be covered here.

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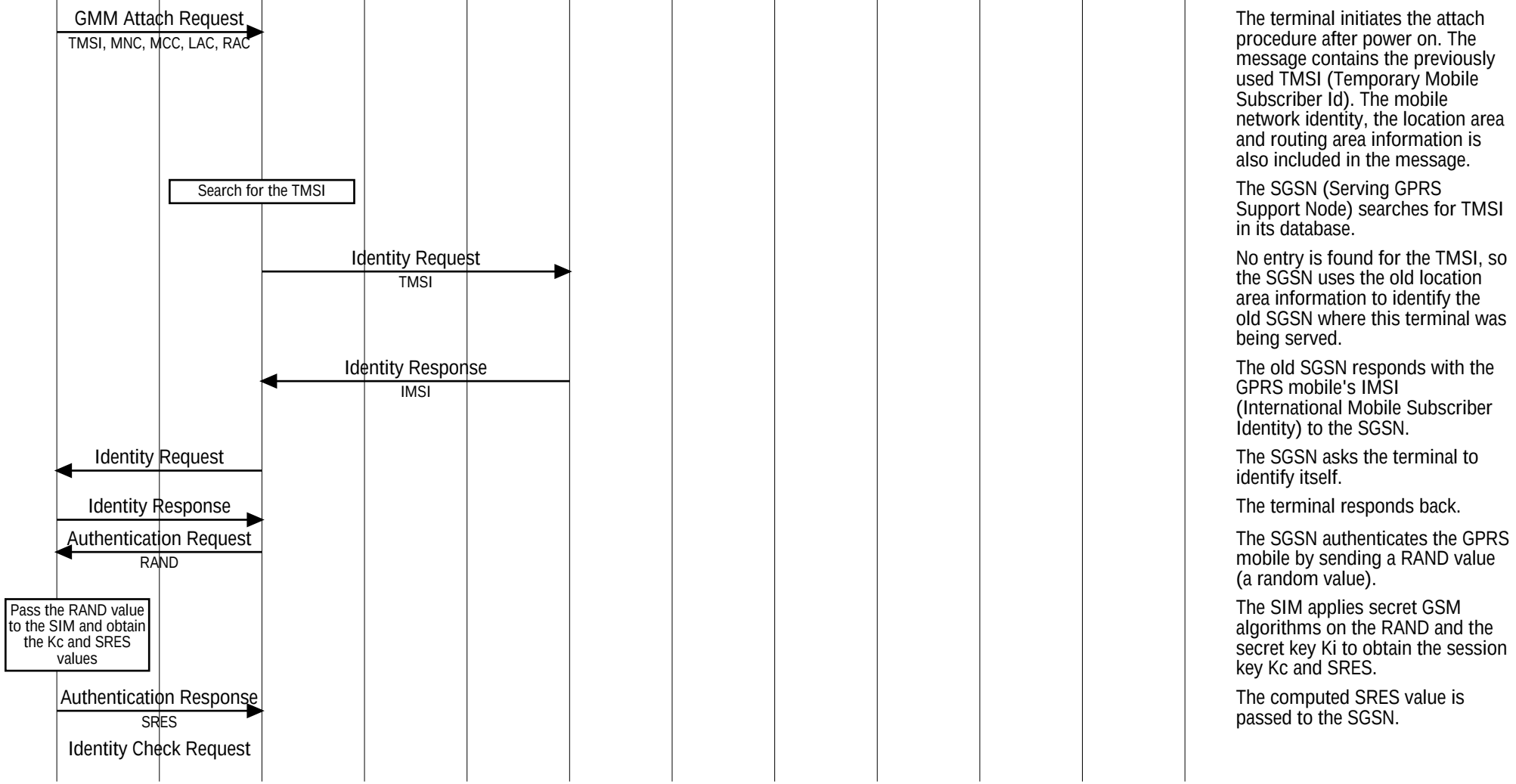
GPRS Attach



The terminal initiates the attach procedure after power on. The message contains the previously used TMSI (Temporary Mobile Subscriber Id). The mobile network identity, the location area and routing area information is also included in the message.

The SGSN (Serving GPRS Support Node) searches for TMSI in its database.

No entry is found for the TMSI, so the SGSN uses the old location area information to identify the old SGSN where this terminal was being served.

The old SGSN responds with the GPRS mobile's IMSI (International Mobile Subscriber Identity) to the SGSN.

The SGSN asks the terminal to identify itself.

The terminal responds back.

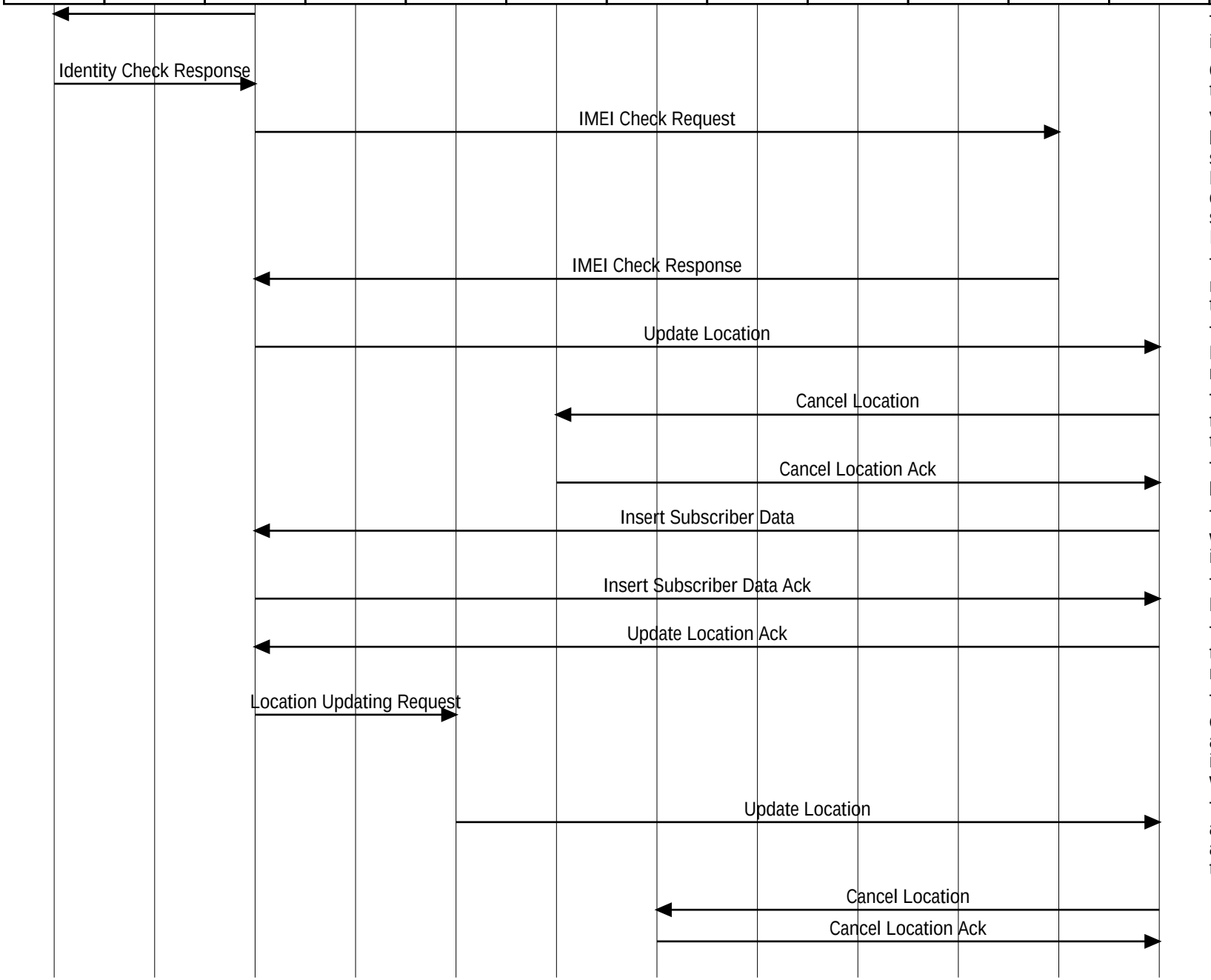
The SGSN authenticates the GPRS mobile by sending a RAND value (a random value).

The SIM applies secret GSM algorithms on the RAND and the secret key Ki to obtain the session key Kc and SRES.

The computed SRES value is passed to the SGSN.

GPRS Attach and PDP Context Activation (GPRS Attach and PDP Context Activation for a Class B Terminal)

GSM Coverage	GSM GPRS Network										EventHelix.com/EventStudio 2.5
Cell	BSS	Core Network			Old Core Network		GGSN Site			GSM Databases		01-Feb-05 07:06 (Page 2)
UT	BSC	SGSN	DNS Server	MSC VLR	Old SGSN	Old MSC VLR	GGSN	Radius Server	DHCP Server	EIR	HLR	



The SGSN then requests the identity of the GPRS mobile.

GPRS mobile responds back with the identity.

Verify that that GPRS mobile being used by the user is not a stolen one. The IMEI (Internaional Mobile Equipment Identity) obtained from the GPRS mobile is sent to the Equipment Identification Register (EIR).

The EIR clears the subscriber and responds back to the SGSN with the status.

The SGSN now informs the Home Location Register (HLR) about the new location of the GPRS mobile.

The HLR informs the old SGSN that the GPRS mobile has moved to a new location.

The old SGSN acknowledges back.

The HLR updates the new SGSN with all the subscriber information.

The SGSN responds back to the HLR.

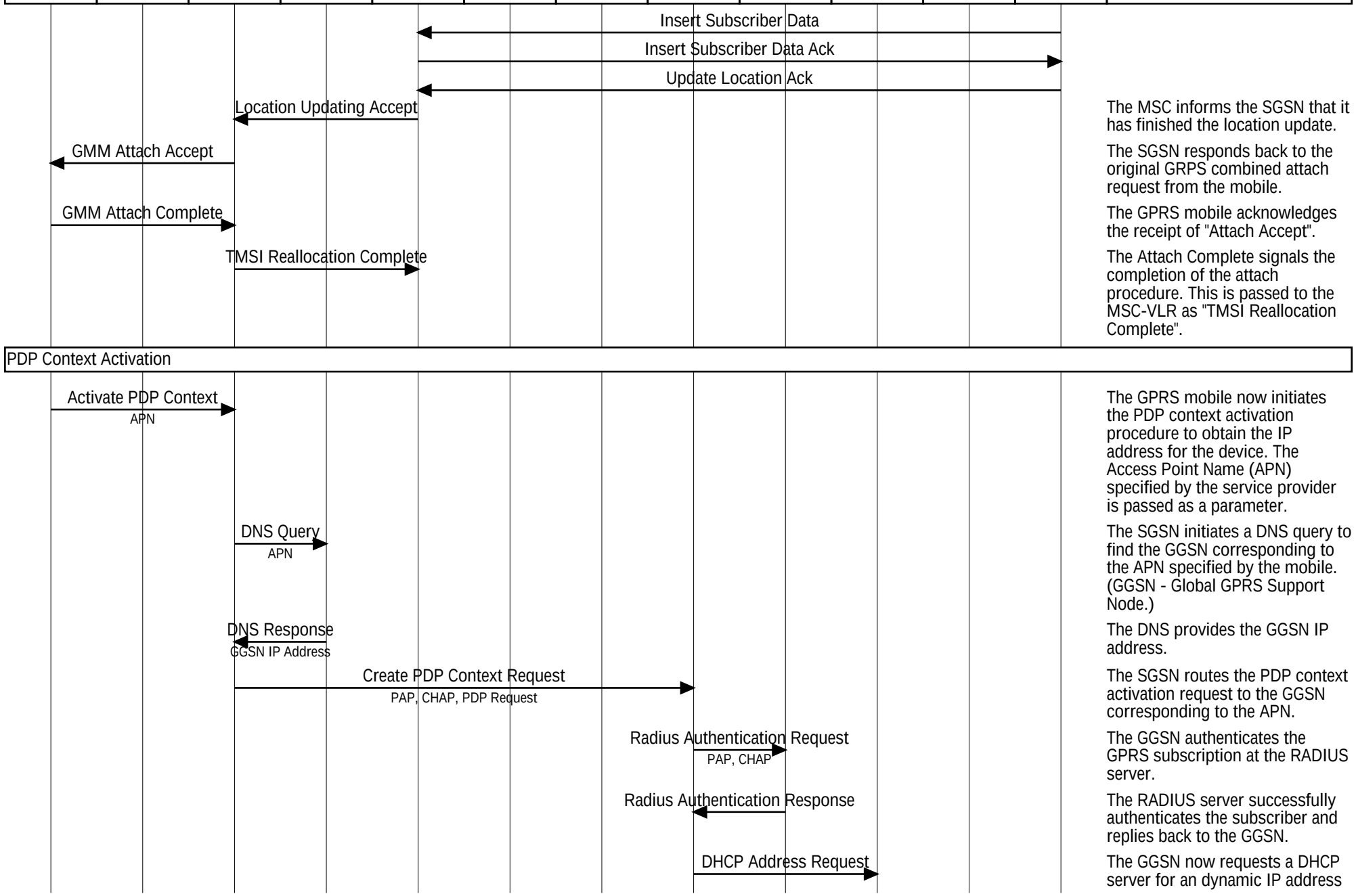
The HLR now responds back to the SGSN's "Update Location" message.

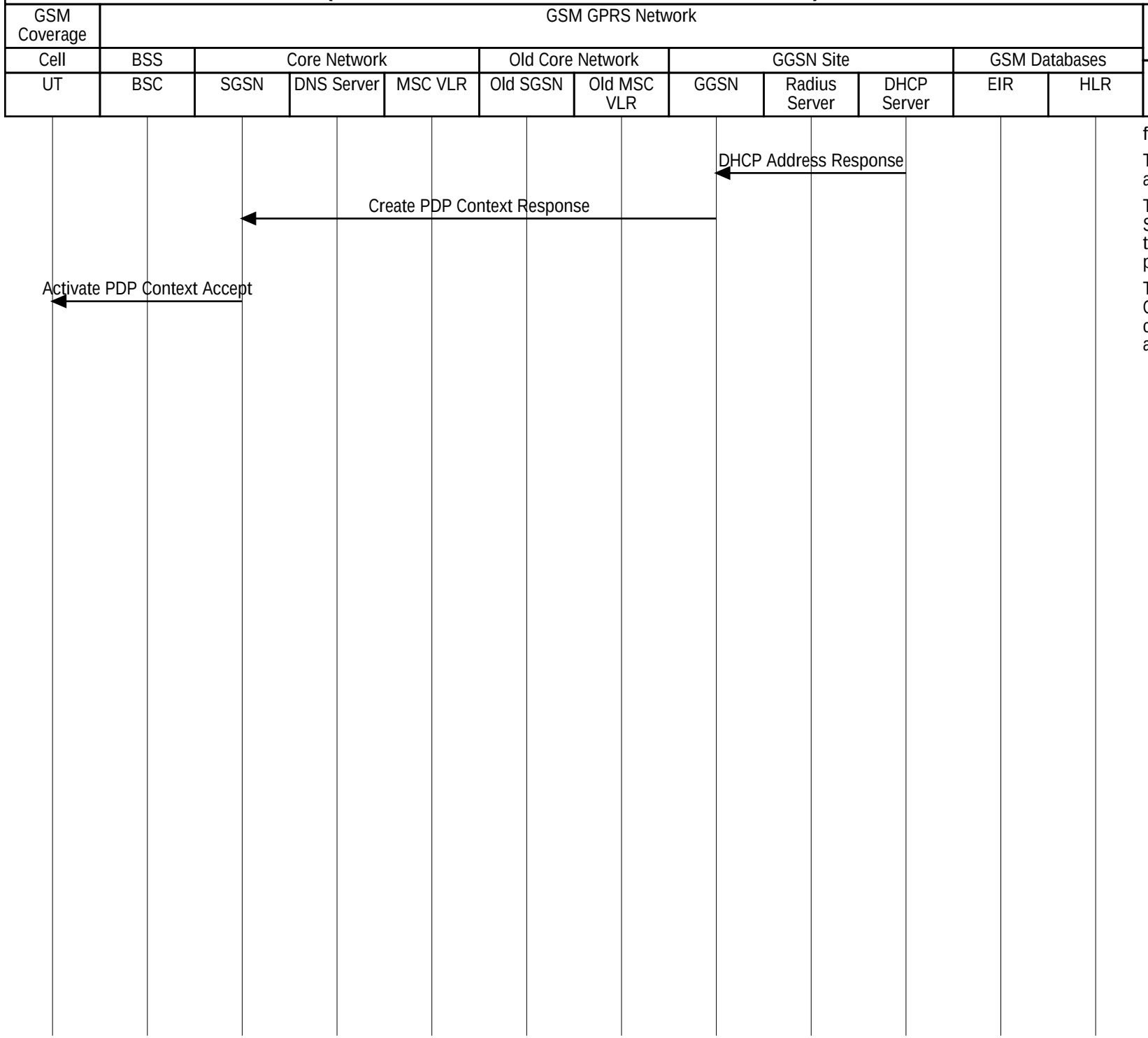
The mobile had initiated a combined attach, so the SGSN also updates the location information at the MSC-VLR that will handle the voice calls.

The MSC also initiates an update at the HLR. The sequence of actions here is identical to that of the SGSN's HLR update.

GPRS Attach and PDP Context Activation (GPRS Attach and PDP Context Activation for a Class B Terminal)

GSM Coverage	GSM GPRS Network										EventHelix.com/EventStudio 2.5
Cell	BSS	Core Network			Old Core Network		GGSN Site			GSM Databases		01-Feb-05 07:06 (Page 3)
UT	BSC	SGSN	DNS Server	MSC VLR	Old SGSN	Old MSC VLR	GGSN	Radius Server	DHCP Server	EIR	HLR	





for the GPRS mobile.

The DNS server provides the IP address.

The GGSN responds back to the SGSN, indicating completion of the PDP context activation procedure.

The SGSN replies back to the GPRS mobile. This signals completion of the PDP context activation.