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3RD GENERATION
PARTNERSHIP
PROJECT 2
"3GPP2"

Mobile Application Part (MAP) -

VOICE FEATURE SCENARIOS: SUBSCRIBER PIN ACCESS, SUBSCRIBER PIN INTERCEPT

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REVISION HISTORY

Revision	Date	Remarks
X.S0004-333-E v1.0	January 2009	Initial publication.

1 INTRODUCTION

Unless otherwise noted, the scenarios in this section depict features operating individually; i.e., feature interactions are not considered unless specifically noted.

Also, please note that the scenarios in this section do not include a complete listing of operation parameters, either in the figures or in the accompanying text descriptions. Parameters are included where they are deemed necessary to improve the understanding of the scenario. For a complete description of the parameters associated with each operation, refer to Parts 540 and 550.

2 Subscriber PIN Access

This section depicts the interactions between network entities in various situations related to automatic roaming and Subscriber PIN Access (SPINA). These scenarios are for illustrative purposes only.

2.1 SPINA Variable Registration

This scenario describes a SPINA PIN registration change by an authorized MS.

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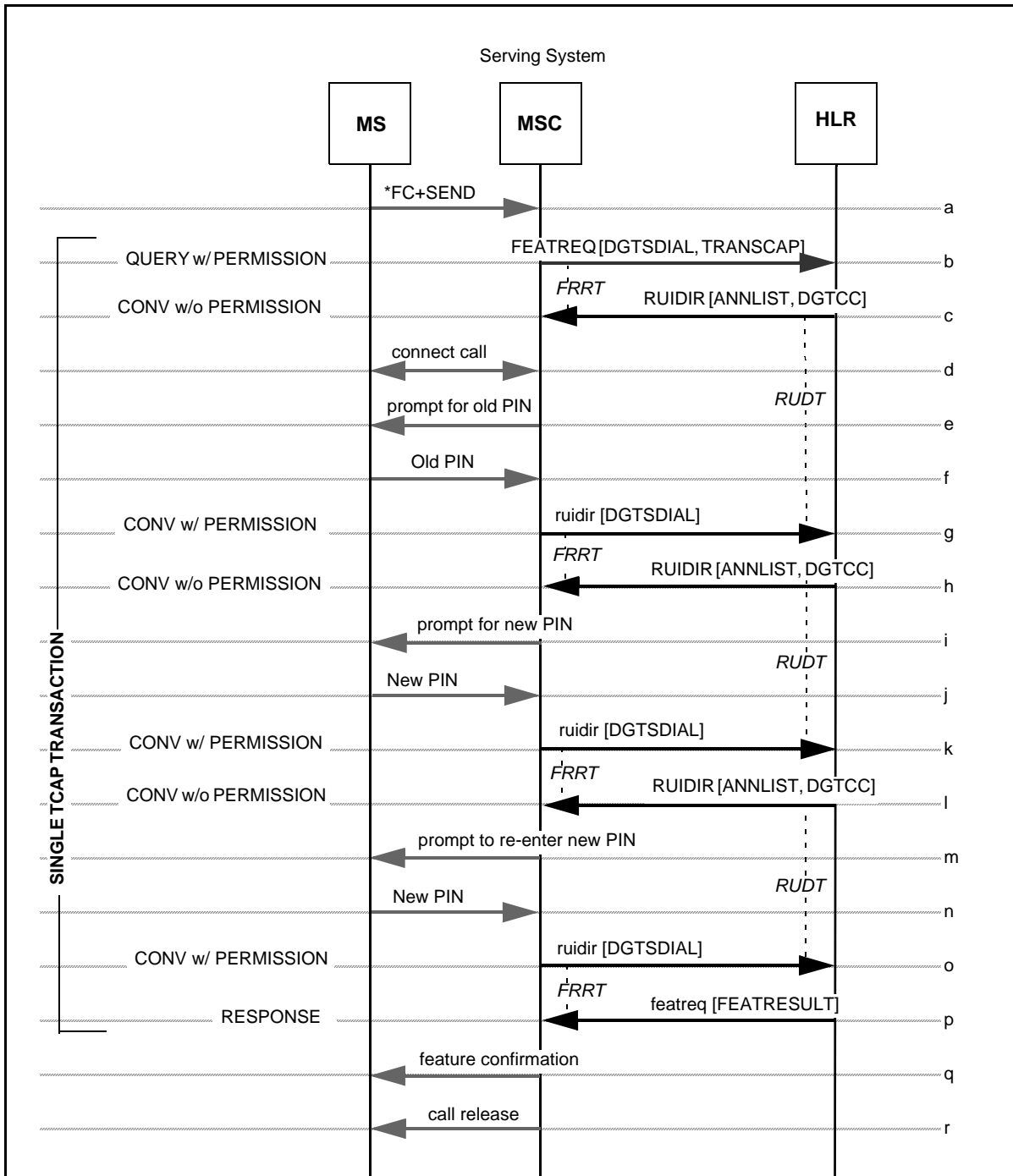


Figure 1 — SPINA Variable Registration

- a. Dialed digits are received by the Serving MSC. During analysis of the dialed digits, the Serving MSC detects a feature code string.
- b. The dialed digits are included in a FEATREQ and sent from the Serving MSC to the HLR associated with the MS. The TransactionCapability parameter is also included in the FEATREQ, indicating that the Serving MSC supports receiving RUIDIRs.

- c. The HLR recognizes the SPINA registration request and sends a RUIDIR to the Serving MSC.
- d. On receipt of the RUIDIR, the Serving MSC turns off the FEATREQ timer and provides call treatment as indicated in the received message. In this case, the treatment is to answer the call (i.e., connect the calling party to subsystem capable of user interaction).
- e. The Serving MSC prompts the user based on the information in the received RUIDIR (in the DigitCollectionControl parameter) and waits for digits.
- f. The user responds with his or her old PIN.
- g. The Serving MSC sends a ruidir to the HLR, containing the digits dialed by the user, and restarts the FRRT timer.
- h. The HLR sends a RUIDIR to the Serving MSC, directing the Serving MSC (a) to prompt the calling user for its new PIN, and (b) to collect digits from user.
- i. The Serving MSC prompts the user based on the information in the received RUIDIR.
- j. The user responds with his or her new PIN digits.
- k. The Serving MSC sends a ruidir to the HLR, containing the digits dialed by the user, and restarts the FRRT timer.
- l. The HLR sends a RUIDIR to the Serving MSC, directing the Serving MSC (a) to prompt the calling user to re-enter its new PIN, and (b) to collect digits from the user.
- m. The Serving MSC prompts the user based on the information in the received RUIDIR.
- n. The user responds by re-entering its new PIN.
- o. The Serving MSC sends a ruidir to the HLR, containing the digits dialed by the user, and restarts the FRRT timer.
- p. The HLR updates the served MS's SPINA registration information and sends a featreq including the FeatureResult parameter indicating successful feature operation to the Serving MSC.
- q. The Serving MSC provides treatment to the served MS as indicated in the featreq. In this case, the treatment is to provide feature confirmation.
- r. The Serving MSC releases the call.

2.2 SPINA Demand Activation or De-Activation

This scenario describes the demand activation or de-activation of SPINA by an authorized MS.

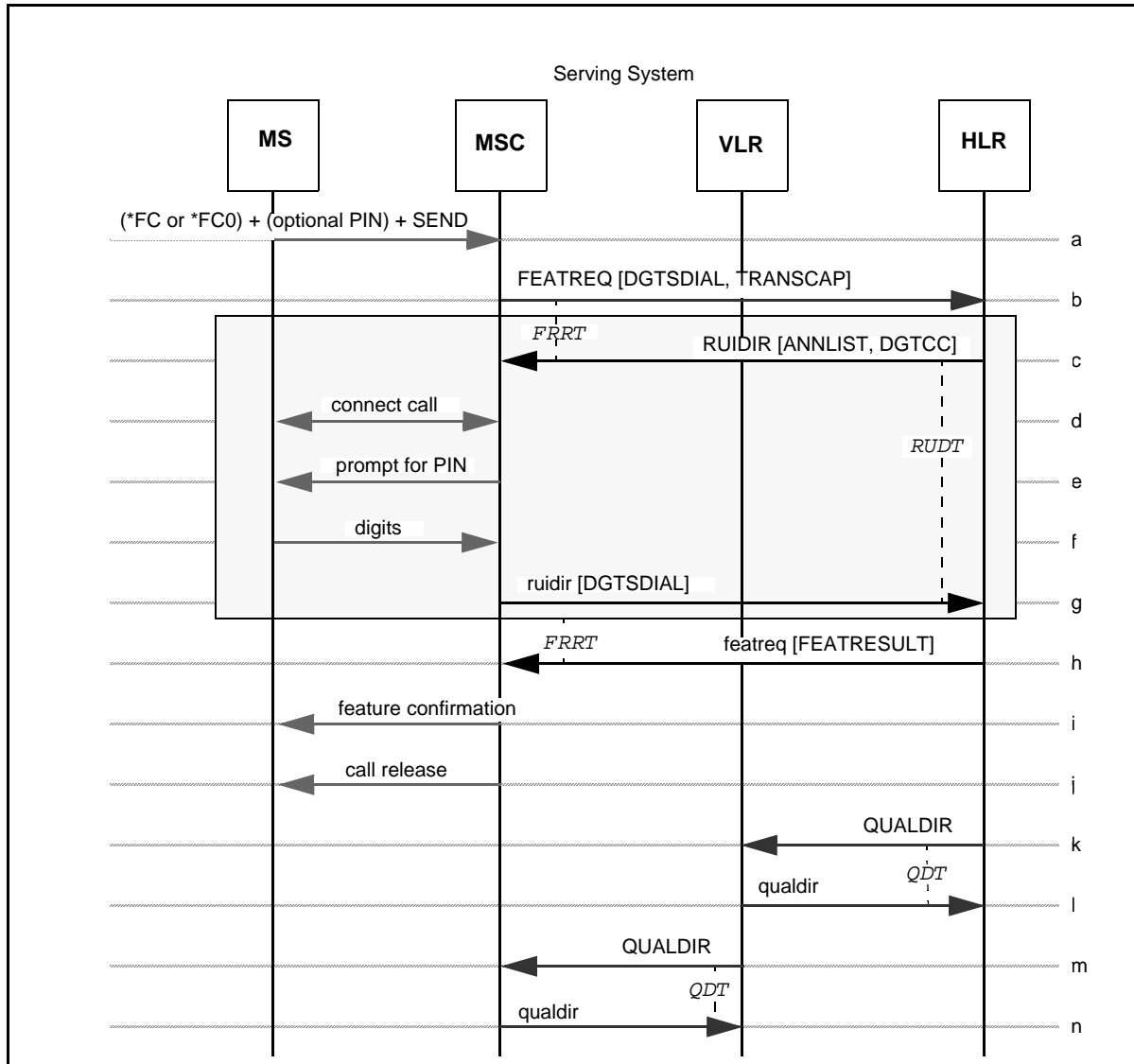


Figure 2 — SPINA Demand Activation or De-Activation

- a. Dialed digits are received by the Serving MSC. During analysis of the dialed digits, the Serving MSC detects a feature code string.
- b. The dialed digits are included in a `FEATREQ` and sent from the Serving MSC to the HLR associated with the MS. The TransactionCapability parameter is also included in the `FEATREQ`, indicating that the Serving MSC supports receiving `RUIDIR`s. The HLR recognizes the SPINA activation or de-activation request. If the subscriber's PIN is included in the feature code string received then go to Step h.
- c. Otherwise, the HLR sends a `RUIDIR` to the Serving MSC. The message directs the Serving MSC (a) to answer the call, (b) to prompt the calling user for its PIN, and (c) to collect digits from the user.

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- d. On receipt of the RUIDIR, the Serving MSC turns off the FEATREQ timer and provides call treatment as indicated in the received message. In this case, the treatment is to answer the call (i.e., connect the calling party to subsystem capable of user interaction).
 - e. The Serving MSC prompts the user based on the information in the received RUIDIR (in the DigitCollectionControl parameter) and waits for digits.
 - f. The user responds with his or her PIN.
 - g. The Serving MSC sends a `ruidir` to the HLR, containing the digits dialed by the user, and restarts the FRRT timer.
 - h. After validating the PIN, the HLR updates the served MS's SPINA activation status and sends a `featreq` including the FeatureResult parameter indicating successful feature operation to the Serving MSC.
 - i. The Serving MSC provides treatment to the served MS as indicated in the `featreq`. In this case, the treatment is to provide feature confirmation.
 - j. The Serving MSC releases the call.
 - k. The HLR reports the change in the MS's service profile by sending a `QUALDIR`, including the OriginationIndicator parameter indicating origination denied or allowed, to the VLR where the MS is registered.
 - l. The VLR returns an empty `qualdir` to the HLR.
 - m. The VLR reports the change in the MS's service profile by relaying the OriginationIndicator parameter in a `QUALDIR` sent to the Serving MSC.
 - n. The Serving MSC returns an empty `qualdir` to the VLR.

2.3 Call Origination with SPINA Active

This scenario describes the normal operation of the SPINA feature when it is active and the served MS attempts a call origination. If SPINA is active, the previously received OriginationIndicator for the subscriber shall have indicated that originations were denied.

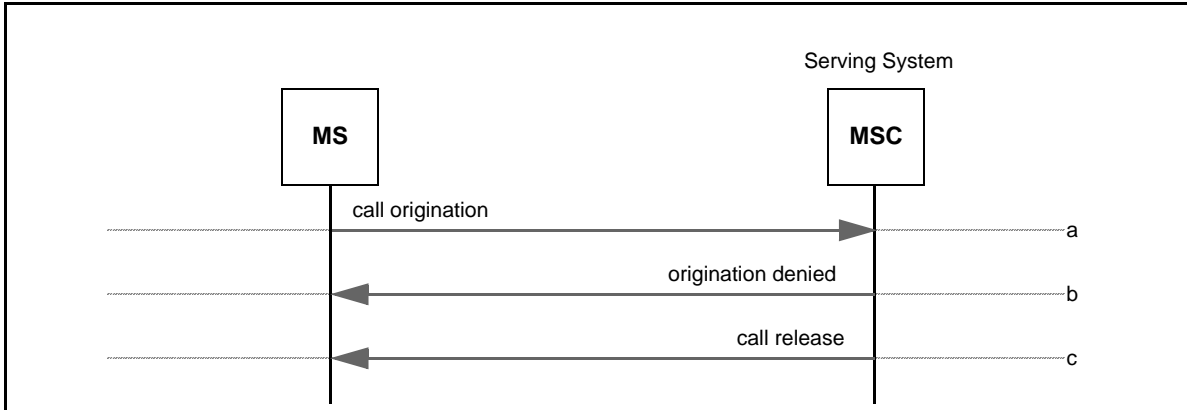


Figure 3 — Call Origination with SPINA Active

- a. Dialed digits are received by the Serving MSC. The Serving MSC determines that this represents an call origination and that SPINA is active (i.e., the OriginationIndicator is set to deny the call).
- b. Therefore, the Serving MSC notifies the served MS that origination is denied.
- c. The Serving MSC releases the call.

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2.4 Feature Request with SPINA Active

This scenario describes the normal operation of the SPINA feature when it is active and the served MS issues a feature request.

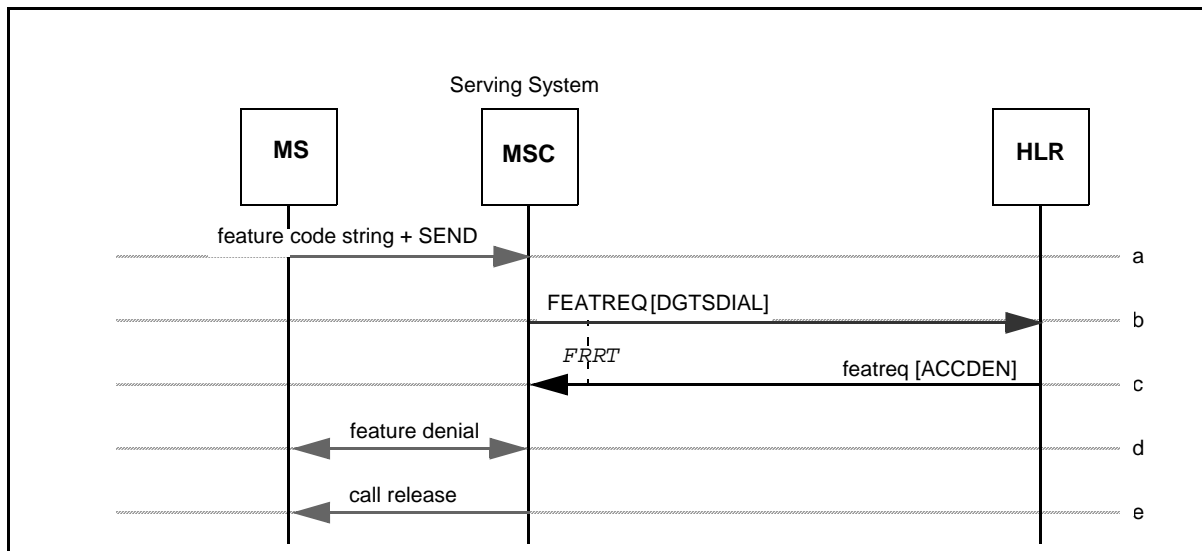


Figure 4 — Feature Request with SPINA Active

- a. Dialed digits are received by the Serving MSC. During analysis of the dialed digits, the Serving MSC detects a feature code string.
- b. The dialed digits are included in a `FEATREQ` and sent from the Serving MSC to the HLR associated with the MS.
- c. The HLR determines that SPINA is active for the subscriber and that the feature request is not for SPINA de-activation; therefore, it sends a `featreq` to the Serving MSC including the `FeatureResult` parameter indicating unsuccessful feature operation and, optionally, parameters which specifically indicate the treatment the Serving MSC shall provide to the served MS.
- d. When the `featreq` is received from the HLR, the Serving MSC provides treatment to the served MS based on the information contained in the response. In this case, the treatment is to apply feature denial.
- e. The Serving MSC releases the call.

3 SUBSCRIBER PIN INTERCEPT

This section depicts the interactions between network entities in various situations related to automatic roaming and Subscriber PIN Intercept (SPINI). These scenarios are for illustrative purposes only.

3.1 SPINI Variable Registration

This scenario describes a SPINI PIN registration change by an authorized MS.

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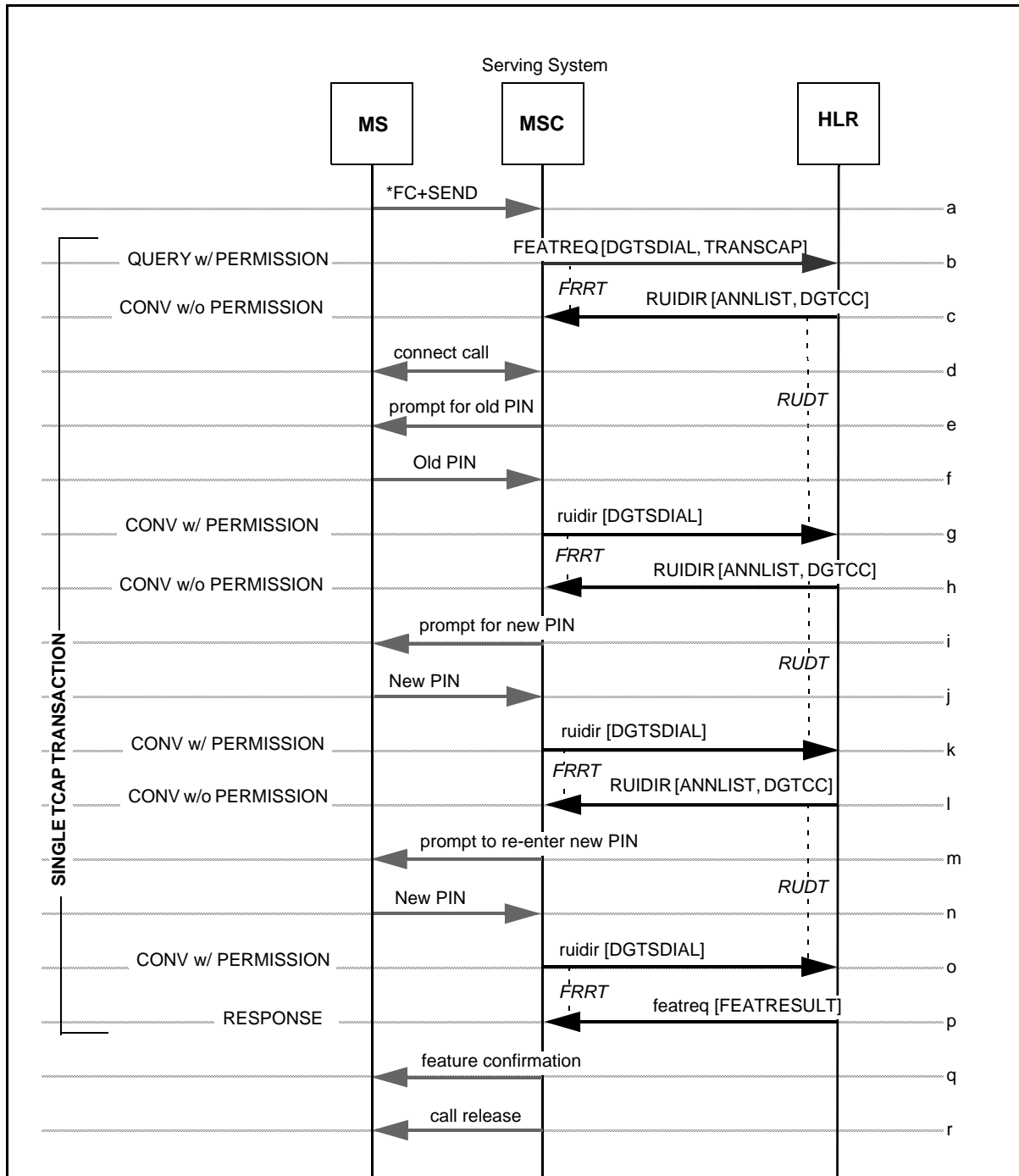


Figure 5 — SPINI Variable Registration

- a. Dialed digits are received by the Serving MSC. During analysis of the dialed digits, the Serving MSC detects a feature code string.
- b. The dialed digits are included in a FEATREQ and sent from the Serving MSC to the HLR associated with the MS. The TransactionCapability parameter is also included in the FEATREQ, indicating that the Serving MSC supports receiving RUIDIRs.

- c. The HLR recognizes the SPINI registration request and sends a RUIDIR to the Serving MSC. 1
- d. On receipt of the RUIDIR, the Serving MSC turns off the LOCREQ timer and provides call treatment as indicated in the received message. In this case, the treatment is to answer the call (i.e., connect the calling party to subsystem capable of user interaction). 2
- e. The Serving MSC prompts the user based on the information in the received RUIDIR (in the DigitCollectionControl parameter) and waits for digits. 3
- f. The user responds with his or her old PIN. 4
- g. The Serving MSC sends a `ruidir` to the HLR, containing the digits dialed by the user, and restarts the FRRT timer. 5
- h. The HLR sends a RUIDIR to the Serving MSC, directing the Serving MSC (a) to prompt the calling user for his or her new PIN, and (b) to collect digits from the user. 6
- i. The Serving MSC prompts the user based on the information in the received RUIDIR (in the DigitCollectionControl parameter). 7
- j. The user responds with his or her new PIN digits. 8
- k. The Serving MSC sends a `ruidir` to the HLR, containing the digits dialed by the user, and restarts the FRRT timer. 9
- l. The HLR sends a RUIDIR to the Serving MSC, directing the Serving MSC (a) to prompt the calling user to re-enter his or her new PIN, and (b) to collect digits from the user. 10
- m. The Serving MSC prompts the user based on the information in the received RUIDIR (in the DigitCollectionControl parameter). 11
- n. The user responds by re-entering his or her new PIN. 12
- o. The Serving MSC sends a `ruidir` to the HLR, containing the digits dialed by the user, and restarts the FRRT timer. 13
- p. The HLR updates the served MS's SPINI registration information and sends a `featreq` including the FeatureResult parameter indicating successful feature operation to the Serving MSC. If local SPINI operation is supported, the HLR reports the change in the MS's service profile by sending a QUALDIR, including the new SPINIPIN parameter, to the VLR where the MS is registered. 14
- q. The Serving MSC provides treatment to the served MS as indicated in the `featreq`. In this case, the treatment is to provide feature confirmation. 15
- r. The Serving MSC releases the call. 16

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3.2 Call Origination with SPINI Active and Correct PIN Entered

This scenario describes the normal operation of the SPINI feature when it is active and the served MS attempts a call origination. In this scenario, a PIN is requested and is verified.

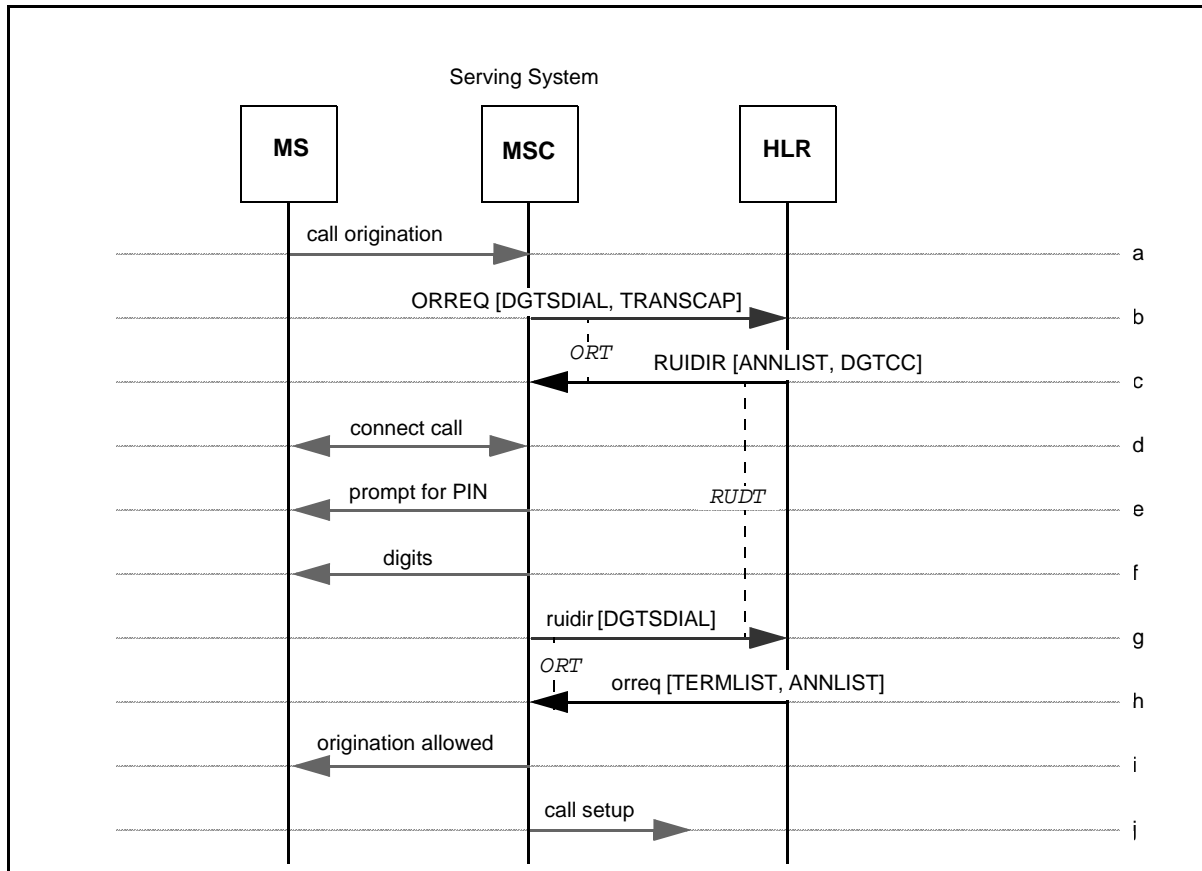


Figure 6 — Call Origination with SPINI Active and Correct PIN Entered

- a. Dialed digits are received by the Serving MSC.
- b. The Serving MSC determines that the call type or dialed digits matches an active trigger in the previously received OriginationTriggers parameter for the subscriber. Therefore, the dialed digits are included in an ORREQ and sent from the Serving MSC to the HLR associated with the MS. The TransactionCapability parameter is also included in the ORREQ, indicating that the Serving MSC supports receiving RUIDIRs.
- c. The HLR determines that the call type or dialed digits matches and that a password is required for this call; therefore, it sends a RUIDIR to the Serving MSC, directing the Serving MSC (a) to answer the call, (b) to prompt the calling user for its PIN, and (c) to collect digits from the user.

Parameters	Usage	Type
ANLIST	Announcement = enter PIN.	R
DGTCC	Indicates how to collect the PIN digits.	R

- d. On receipt of the RUIDIR, the Serving MSC turns off the ORREQ timer and provides call treatment as indicated in the received message. In this case, the treatment is to answer the call (i.e., connect the calling party to subsystem capable of user interaction).
- e. The Serving MSC prompts the user based on the information in the received RUIDIR (in the DigitCollectionControl parameter), and waits for digits.
- f. The user responds with his or her PIN.
- g. The Serving MSC sends a ruidir to the HLR, containing the digits dialed by the user, and restarts the ORT timer.
- h. The HLR validates the user's PIN and returns the routing information, in the form of the TerminationList parameter, in an orreq. The orreq may also include an AnnouncementList parameter containing a SPINI confirmation announcement to be provided to the served MS.
- i. The Serving MSC provides treatment to the served MS as indicated in the orreq. In this case, the treatment is to, optionally, provide origination confirmation.
- j. The Serving MSC routes the call.

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3.3 Call Origination with SPINI Active and PIN Not Required

This scenario describes the normal operation of the SPINI feature when it is active and the served MS attempts a call origination. In this scenario, a PIN is not requested.

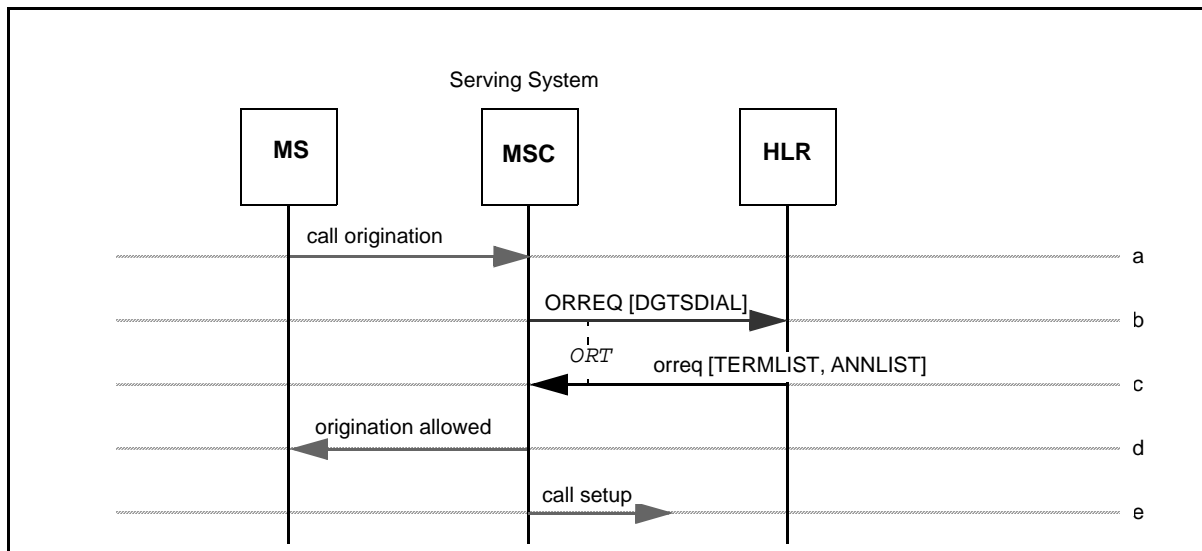


Figure 7 — Call Origination with SPINI Active and PIN Not Required

- a. Dialed digits are received by the Serving MSC.
- b. The Serving MSC determines that SPINI is active. The dialed digits are included in an ORREQ and sent from the Serving MSC to the HLR associated with the MS.
- c. The HLR determines that SPINI is active and that a password is not required for this call; therefore, it sends routing information, in the form of the TerminationList parameter, in an orreq. The orreq may also include an AnnouncementList parameter containing a SPINI confirmation announcement to be provided to the served MS.
- d. The Serving MSC provides treatment to the served MS as indicated in the orreq. In this case, the treatment is to, optionally, provide origination confirmation.
- e. The Serving MSC routes the call.

3.4 Call Origination with SPINI Active and Incorrect PIN Entered

This scenario describes the invocation of the SPINI feature with an unsuccessful result.

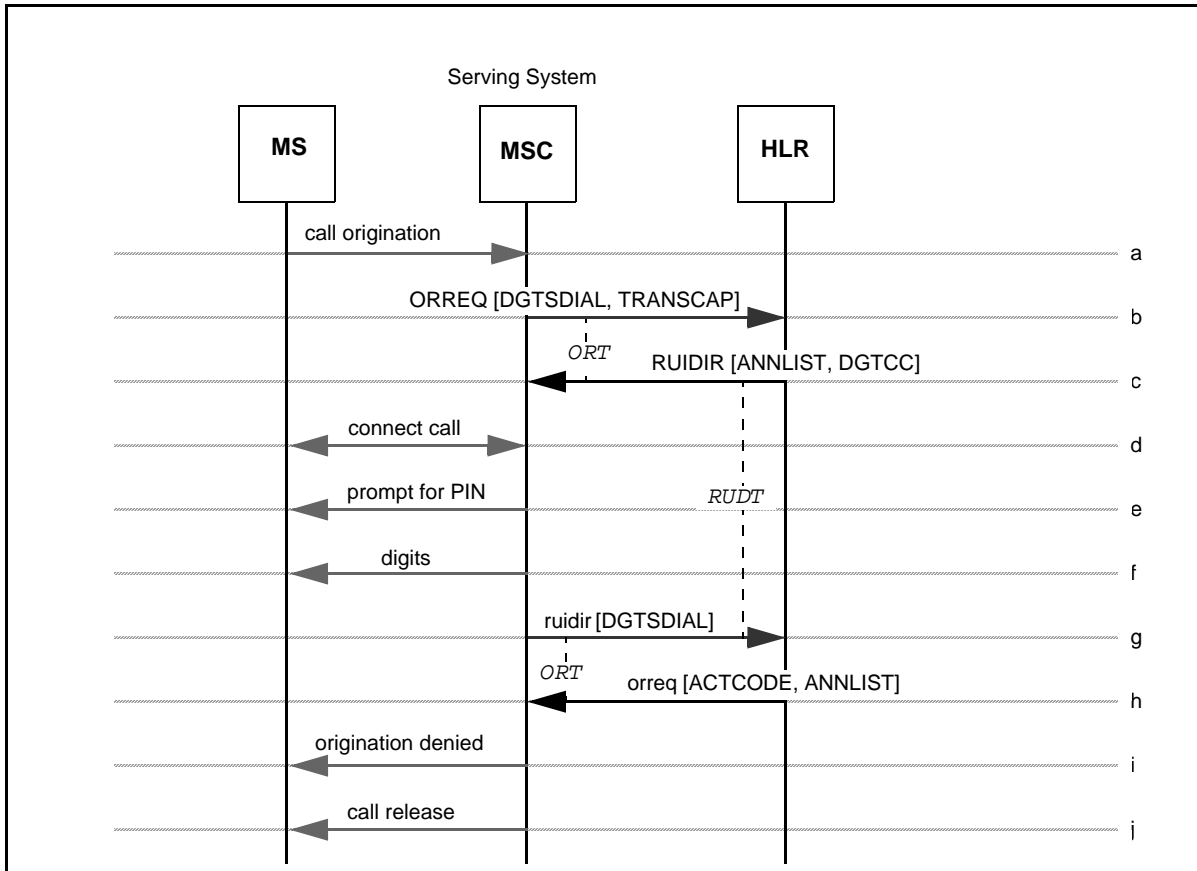


Figure 8 — Call Origination with SPINI Active and Incorrect PIN Entered

- a-g. Same as SPINI, Section 3.2, Steps a-g.
- h. The HLR determines that the user's PIN is not valid. The HLR returns an `orreq` to the Serving MSC which includes an `ActionCode` parameter specifying that the call be released and, optionally, an `AnnouncementList` parameter, containing an announcement to be provided to the calling party.
- i. The Serving MSC provides treatment to the served MS as indicated in the `orreq`. In this case, the treatment is to provide origination denial.
- j. The Serving MSC releases the call.

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3.5 Successful Call Origination with Local SPINI Operation

This scenario describes the normal operation of the SPINI feature when (a) the Serving MSC supports local SPINI operation, (b) SPINI is active, and (c) the served MS attempts a call origination. In this case, the correct PIN is entered.

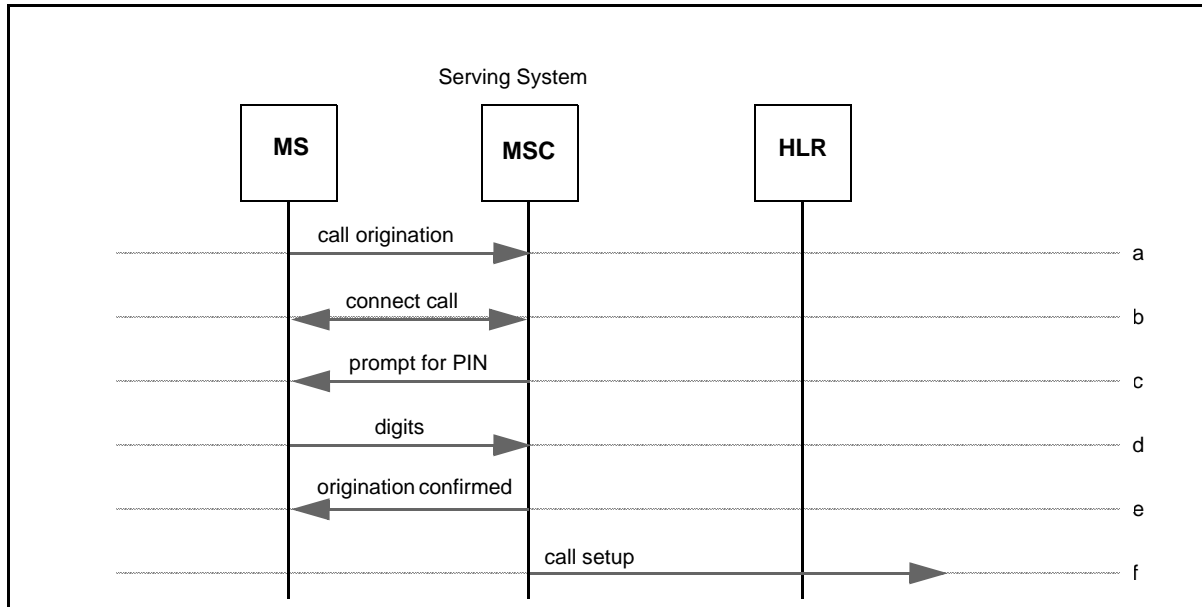


Figure 9 — Successful Call Origination with Local SPINI Operation

- a. Dialed digits are received by the Serving MSC.
- b. The Serving MSC determines that local SPINI is active based on the SPINI trigger and it supports local SPINI operation (i.e., PIN is shared with the Serving System). If the call satisfies the call type criteria (i.e., PIN required on this type of call), the serving MSC answers the call. Otherwise, skip to f.
- c. The calling user is prompted for the PIN.
- d. The user responds with the PIN digits.
- e. The serving MSC validates the user's PIN and may, optionally, provide origination confirmation (e.g., announcement).
- f. The Serving MSC routes the call.

3.6 Unsuccessful Call Origination with Local SPINI Operation

This scenario describes the invocation of the SPINI feature when the serving MSC supports local SPINI operation, but the call origination attempt is unsuccessful. In this case, an incorrect PIN is entered.

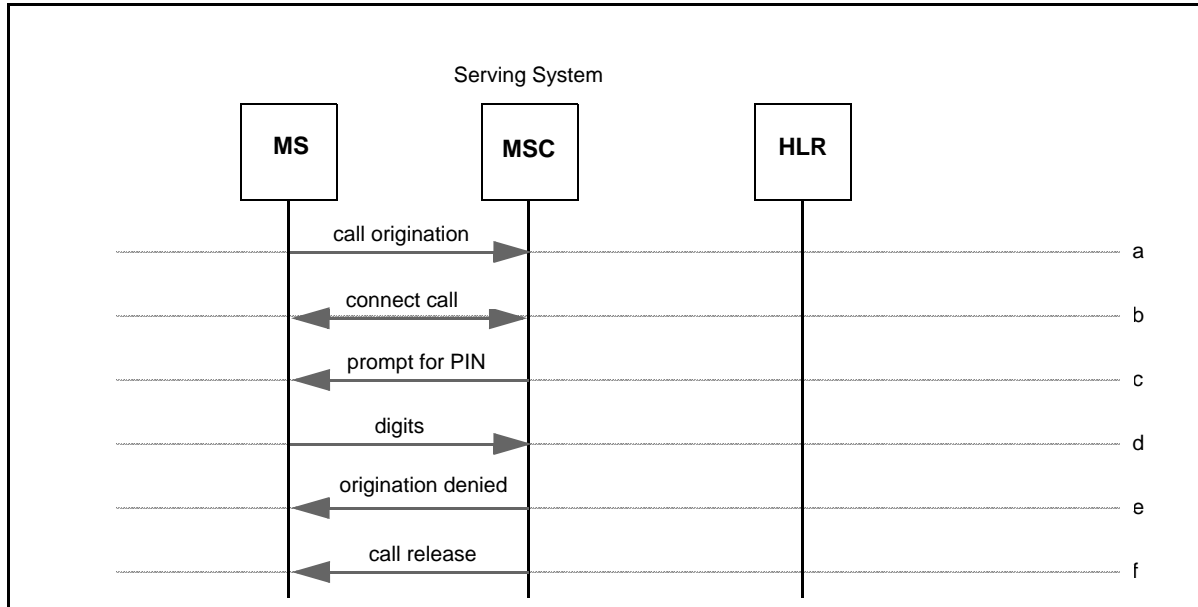


Figure 10 — Unsuccessful Call Origination with Local SPINI Operation

- a. Dialed digits are received by the Serving MSC.
- b. The Serving MSC determines that local SPINI is active based on the SPINI trigger and it supports local SPINI operation. If the call satisfies the call type criteria (i.e., PIN is required on this type of call), the serving MSC answers the call. (Otherwise, the serving MSC routes the call).
- c. The calling user is prompted for the PIN.
- d. The user responds with the PIN digits.
- e. The Serving MSC determines that the user's PIN is not valid and may, optionally, provide origination denial (e.g., announcement).
- f. The Serving MSC releases the call.