

Three-party services

DESCRIPTION



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GENERAL

1.1

FUNCTIONAL OVERVIEW

Parking, Inquiry, Refer back (a.k.a. Alternation) and Transfer are four end-user features which can be initiated from analog extension, remote extensions or IP extensions. These features allow an extension to change the current speech/call status, and they are applicable only for voice calls. The features are also called 'three-party services'.

The features can basically also be requested by an operator, but that is not described here. Operator Extending is the same feature as Transfer.

In this description, user A is presumed to be an analog extension, an RXN or an IPeX.

Parking is initiated when an extension user, (A), who is in conversation with another party (B), presses a Hook-flash or R-key or equivalent, to put B on hold. Parking is not allowed if B is an operator, or a voice mail port.

Inquiry is initiated when an extension user (A), who is in conversation with another party (B), presses a Hook-flash or R-key or equivalent, to put B on hold and calls a new party (C). Inquiry is not allowed if B is an operator, or a voice mail port.

Refer back (Alternation) is initiated when an extension user (A), who is in conversation with one party (C) and has another party (B) parked, presses a suffix digit to put C on hold and get back in speech with B. Refer back is not allowed if C is an operator. Refer back is allowed if C is a voice mail port, but the connection to the voice mail port is released. For IP extensions the use of parking and retrieval can be understood as a Refer back. Therefore, the Inquiry call consists of a Parking request and a new call started from the IPeX.

Transfer is initiated when an extension user (A), who is calling or speaking with a party (C) and has another party (B) on hold, goes on-hook (or equivalent) to connect speech between B and C, and get herself/himself released from speech connection. Network signaling is involved.

The following naming conventions are used to describe parties involved in parking, inquiry, refer back or transfer calls:

- A= Parking initiating party, Inquiry initiating party, Alternating party, or Transfer initiating part
- B= Parked party, Party in speech before Inquiry, Parked or waiting party before Refer back, or party on hold before Transfer.
- C= New party in Inquiry, Party in speech before Refer back, or Party in speech before Transfer.

1.2

GLOSSARY

For a complete list of abbreviations and glossary, see the description for *ACRONYMS, ABBREVIATIONS AND GLOSSARY*.

1.3

SCENARIOS/CONFIGURATIONS

All services are internal, stand-alone services, except Transfer, which also supports network signaling, using two protocols (standard and proprietary ISDN).

2 FACILITIES

2.1 PARKING

2.1.1 PARKING FROM A SINGLE ACCESS EXTENSION

A single access extension, like analog or remote extension, A, can initiate parking in the following situations:

- Speech connection with a party, B, which can be an internal or external party.
- Speech connection with a conference, here also called B, if A is the leader of that conference.

Parking from an analog or remote extension is not allowed when:

- B is an operator.
- B is a voice mail port.
- A is parked by another party.
- A is a conference member.
- A is a party in an Intrusion connection.

When a parking procedure is invoked by A, who is in speech connection with B, two events take place:

- B is put on hold.
- A is provided with dial tone and is put into digit reception (register) state.

At this stage A can select to do one of the following:

- Make a call to a new party, which will constitute an Inquiry.
- Alternate to speech with B.
- Go On-hook to keep B parked for a predetermined time (MDP). Then A can get back in speech with B by going Off-hook or do call pick-up from another extension. If time-out occurs before A gets back in speech with B, A will be automatically recalled from B.

2.1.2

PARKING FROM A MULTIPLE ACCESS EXTENSION

A multiple access extension, e.g. IP extension, A, can initiate parking in the following situations:

- Speech connection with a party, B, which can be an external or internal party.
- Speech connection with a conference, here also called B, if A is the leader, as well as a member of that conference.
- When parked by another party.

When a parking procedure is invoked by A, who is in speech connection with B, the call is put on hold. If the user wishes to make an inquiry call, a completely new call must be started from the IPeX.

Parking from an IP extension is not allowed when:

- B is an operator.
- B is a voice mail port.
- A is a party in an Intrusion connection.

An IP extension may have several calls on hold.

There is only one kind of parking from an IP extension:

- individual parking, i.e. the call gets available only for the parking party.

For an incoming external call which has been parked, the call can be disconnected or rerouted if the IP extension does not retrieve the parked call within a specified time (I/O). This feature is market dependent (MDP).

2.2

INQUIRY

2.2.1

INQUIRY FROM A SINGLE ACCESS EXTENSION

An analog or remote extension, A, can initiate inquiry in the following situations:

- Speech connection with a party, B, which can be an internal or external party.
- Speech connection with a conference, here also called B, if A is the leader of that conference.

Inquiry from an analog or remote extension is not allowed when:

- B is an operator.
- B is a voice mail port.
- A is parked by another party.
- A is a conference member.
- A is a party in an Intrusion.

When an inquiry procedure is invoked by A, who is in speech connection with B, three sequential events take place:

- B is put on hold, see Parking.
- A is provided with dial tone and is put into digit reception (register) state to make a call to C with the same dialing procedures and traffic requirements as when making an ordinary call. Abbreviated numbers or procedure can be used.
- A calls C, and a speech connection is established when C answers.

Repeated Inquiry is permitted. Only B will then remain, while C will be disconnected. The repeated inquiry can be done before or after answer from C.

When one of the parties gives a Clear procedure during Inquiry, all parties will be affected:

- B clears
 - B is released.
 - The connection between A and C is treated like an ordinary basic call.
- C clears
 - C is released.
 - A can get back in speech with B by Refer back, or by automatic recall if A clears. If A does not answer the recall within a predetermined time (I/O), B is released, but if B is an incoming trunk line with certain Class of service, the call can be rerouted.
 - A can also initiate another inquiry.

- A clears
 - A is released. B is connected to C, i.e. a Transfer is executed. See Transfer.

2.2.2

INQUIRY FROM A MULTIPLE ACCESS EXTENSION

An inquiry call from an IPeX is invoked by parking the ongoing call and initiating a new call using a new call reference.

An IP extension, A, can initiate inquiry in the following situations:

- Speech connection with a party, B, which can be an internal or external party.
- Speech connection with a conference, here also called B, if A is either the leader or a member of that conference.
- When A has been put on hold by another extension.

Inquiry from an IP extension is not allowed when:

- B is an operator.
- B is a voice mail port.
- A is a party in an Intrusion.

An IPeX may have several calls on hold and make another inquiry call.

When one of the parties gives a Clear procedure during Inquiry, all parties will be affected:

- B clears
 - B is released.
 - The connection between A and C is treated like an ordinary basic call.
- C clears
 - C is released.
 - A can get back in speech with B by sending 'retrieve' request to the B party or A can also initiate another inquiry.
 - A can also initiate another inquiry.
- A clears connected call (C)
 - A and C are released, while B is still on hold with A.
- A clears parked call (B)
 - B is released, while A and C are still in speech.

2.3

REFER BACK

2.3.1

REFER BACK FROM A SINGLE ACCESS EXTENSION

An analog or remote extension, A, can initiate Refer back in three situations:

- After putting B on hold, but before calling C.
- After an inquiry has been made to C, and B is on hold.

- After receiving a Call-waiting from B while in speech with C.

Refer back is allowed if C is a voice mail port, but the connection to the voice mail port is released.

Refer back requested by an analog or a remote extension is not allowed when:

- C is an operator.
- A is a conference member.
- A is a party in an Intrusion connection.

When a Refer back procedure is invoked by A, who has called C, different events take place, depending on the state of A and B. See table below.

Refer back invoked by A...	State of B	
	on hold by A	B has parked A
.. in register state	- C is released, if seized - A is put in speech conn. with B	- C is released, if seized - A is put in parked state
.. in alerting state	- C is released - A is put in speech conn. with B	- C is released - A is put in parked state
.. after answer	- C is put on hold - A is put in speech conn. with B	- C is put on hold - A is put in parked state

Repeated Refer back between B and C is permitted.

When one of the parties gives a Clear procedure after Refer back, all parties will be affected in the same way as at inquiry:

- C clears (C is the party which becomes parked after Refer back)
 - C is released.
 - The connection between A and B is treated like an ordinary basic call.
- B clears (B is the party which will be in speech after Refer back)
 - B is released.
 - A can get back in speech with C by Refer back or by automatic recall if A clears. If A does not answer the recall within a predetermined time (I/O), C is released, but if C is an incoming trunk line with certain Class of service, the call can be rerouted.
 - A can also initiate another inquiry.
- A clears
 - A is released. B is connected to C, i.e. a transfer is executed. See Transfer.

2.3.2

REFER BACK FROM A MULTIPLE ACCESS EXTENSION

Refer back from an IP extension is invoked when a RETRIEVE function is invoked from the terminal, (which has one or more calls on hold). If any other call is active it has to be put on hold before retrieval of the wanted party. An IP extension, A, can initiate Refer back in two situations:

- With B put on hold, but before a call is made to C. B can be an extension, external party or a conference, but not an operator.
- After a call has been made to C, and B is on hold.

Refer back is allowed if C is a voice mail port, but the connection to the voice mail port is released.

Refer back requested by an IP extension is not allowed when:

- C is an operator.
- B is a voice mail port.
- A is a party in an Intrusion connection.

When a Refer back procedure is invoked by A, who has called C, different events take place, depending on the state of A and B. See table below.

Refer back invoked by A...	State of B	
	on hold by A	B has parked A
.. in register state	- C is released, if seized - A is put in speech conn. with B	- C is released, if seized - A is put in parked state
.. in alerting state	- C is released - A is put in speech conn. with B	- C is released - A is put in parked state
.. after answer	- C is put on hold - A is put in speech conn. with B	- C is put on hold - A is put in parked state

Repeated Refer back between B and C is permitted.

When one of the parties gives a Clear procedure after Refer back, all parties will be affected in the same way as at inquiry:

- C clears (C is the party which becomes parked after Refer back)
 - C is released.
 - The connection between A and B is treated like an ordinary basic call.
- B clears (B is the party which will be in speech after Refer back)
 - B is released.
 - A can get back in speech with C by using Refer back procedures. If A does not retrieve the call within a predetermined time (I/O), C is released, but if C is an incoming trunk line with certain Class of service, the call can be rerouted.
 - A can also initiate another inquiry.
- A clears connected call (B)
 - A and B are released, while C is still on hold with A.
- A clears parked call (C)
 - C is released, while A and B are still in speech.

2.4

TRANSFER

2.4.1

TRANSFER FROM A SINGLE ACCESS EXTENSION

An analog or remote extension, A, can initiate a transfer in three situations:

- Before C answers an inquiry from A, and B is on hold. This is called Transfer Before Answer, and a parameter (I/O) decides if it is allowed. If allowed, B will receive Ring back tone. If not allowed, A will be recalled.
- After C has answered an inquiry from A, and B is on hold. This is called Transfer After Answer.
- After a Refer back. This is also called Transfer After Answer.

Transfer can not be initiated from an ATS or RXN when:

- One of the parties is involved in a conference connection.
- One of the parties is involved in an intrusion connection.

When a Transfer After Answer is invoked by A, two events take place:

- A is released.
- B is put into speech connection with C.

The following prerequisites must be fulfilled before permitting transfer (valid for all types of voice extensions):

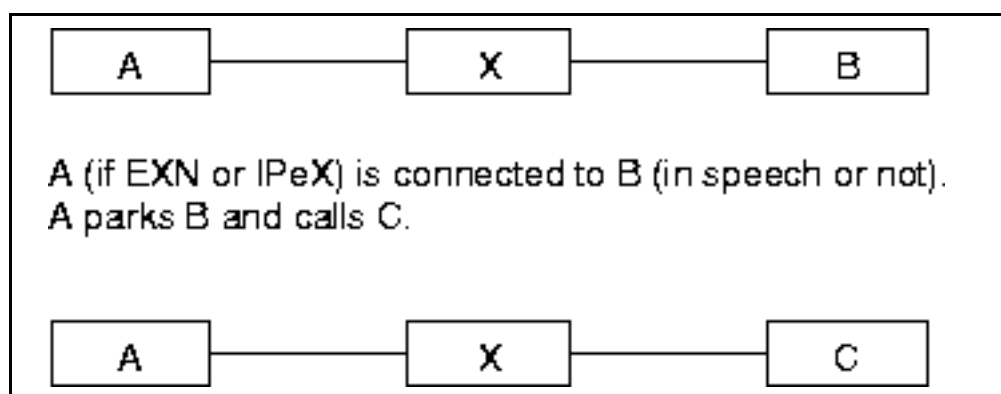
- B and C must be allowed to be interconnected according to the traffic group matrix.
- At least one of the parties B and C must be able to send Clear forward signal.
- "End Of Selection Message" from C must have been received if C is an external called party of an inquiry from A.
- For transfer before answer, I/O parameter must allow Transfer before answer. The parameter is overridden in night switched node, i.e. transfer before answer is always allowed in night switched exchange.
- If B or C is an outgoing public trunk line and the other party is internal, applicable I/O parameter must allow Transfer.
- It must be possible to reach C, i.e. C must not be in busy state etc., or else Transfer is not allowed.

If Transfer is not permitted, then A is recalled from B, and C is released. When A answers the recall, A is connected to B again. (If Refer back was executed before the Transfer request, the recall is still made from B) If A does not answer the recall within a predetermined time (I/O), B is released, but if B is an incoming trunk line with certain Class of service, the call can be rerouted to e.g. an operator.

For Transfer before answer, if C does not answer the transfer within a predetermined time (I/O), and B is an incoming trunk line with certain Class of service, the call can be rerouted to e.g. an operator.

If B is an internal party the ringing continues a predetermined time (I/O) and then the call is disconnected.

The situation is the following when Transfer can be initiated:



A requests Transfer (if IPeX), or goes on-hook (if EXN).

The following tables show the possible combinations of all party states before and after Transfer has taken place. The tables cover both successful and failed transfers.

A, transferring party, is an EXN (single access extension, e.g. an ATS, or a RXN)

C's status before Transfer		B's status before Transfer						
		A has parked B				A and B have parked each other		
		B is a:				B is an:		
		TRU	EXN	IPeX	OP	EXN	IPeX	OP
A is in speech with C								
C is an:	EXN	+	+	+	/	/	+	/
	IPeX	+	+	+	/	/	+	/
	OP	+	+	+	/	/	-	/
A is ringing on C								
C is an:	EXN	+	+	+	/	/	-	/
	IPeX	+	+	+	/	/	-	/
	OP	+	+	+	/	/	-	/
C has parked A								
C is an:	EXN	/	/	/	/	/	/	/
	IPeX	+	+	+	/	/	+	/
	OP	-	-	-	/	/	-	/

- + Transfer is allowed
- Transfer is not allowed
- / Impossible state

2.4.2

TRANSFER FROM A MULTIPLE ACCESS EXTENSION

Transfer from an IPeX is initiated when the user initiates the Transfer function.

An IP extension, A, can initiate Transfer of B to C in the same situations and with the same prerequisites as an analog extension. The exceptions are as follows:

- No recall takes place when Transfer is not permitted. Instead A will remain in the same status as before the transfer attempt.
- C is transferred to the last party which A put on hold.

The performed checks on states and types of the three involved parties are described with the Transfer traffic tables below.

A, transferring party, is a multiple access extension, e.g. IPeX

C's status before Transfer		B's status before Transfer						
		A has parked B				A and B have parked each other		
		B is a:				B is an:		
		TRU	EXN	IPeX	OP	EXN	IPeX	OP
A is in speech with C								
C is an:	EXN	+	+	+	/	/	+	/
	IPeX	+	+	+	/	/	+	/
	OP	+	+	+	/	/	-	/
A is ringing on C								
C is an:	EXN	+	+	+	/	-	-	/
	IPeX	+	+	+	/	-	-	/
	OP	+	+	+	/	-	-	/
C has parked A								
C is an:	EXN	-	-	-	/	-	-	/
	IPeX	+	+	+	/	-	+	/
	OP	-	-	-	/	-	-	/

- + Transfer is allowed
- Transfer is not allowed
- / Impossible state

2.4.3

INTERACTIONS WITH OTHER SERVICES

There are a number of other services or call states, which can hinder/prohibit Transfer, e.g. if the primary or secondary call is a Conference, Emergency extension call or Intrusion.

3 USER INTERFACE

3.1 INITIATION FROM AN ANALOG EXTENSION

- Parking, press: Hook flash or R-key. (MDP)
- Inquiry, press: Hook flash or R-key, (MDP) then dial C's number.
- Refer back, press or dial: Suffix digit "n", or (MDP) Hook flash or R-key twice
- Transfer: Go on-hook (Clear procedure)

3.2 INITIATION FROM AN IP EXTENSION

One IP extension can handle several calls simultaneously, distinguished from each other. It can put on hold as many calls as it has in active state and also retrieve them, but only one call at the same time can be active. The use of hold and retrieve procedure is called Refer back (there is no other specific request for it).

The control procedures are not described here but in the interface descriptions for IP extension.

- Parking, press: Parking key.
- Retrieval, press: Retrieval key.
- Transfer, press: Transfer key.

3.3 INITIATION FROM A REMOTE EXTENSION

- Parking, press: Key *.
- Inquiry, press: Key *.
- Refer back, press: Suffix digit "n" (MDP)
- Transfer: Go on-hook (Clear procedure) or press #. (Depends on type of terminal)

4

CAPACITIES AND LIMITATIONS

The following are the capacities and limitations for Parking, Inquiry, Refer back and Transfer:

- An inquiry call uses system resources as for an ordinary basic call.
- For each party put on hold by an analog or remote extension, a queue resource is used. The queue resources are a common resource also used at e.g. Camp-on and Recall, and the maximum number per node is 128.
- Parking, Inquiry, Refer back and Transfer are not applicable for any other calls than voice calls.
- The number of calls an IPeX can put on hold simultaneously is only limited by the terminal capabilities for handling multiple calls. No queue resources are seized.

5

HARDWARE

No specific hardware is required in addition to the HW involved in a basic call.