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Voice Microservices Events and Models Reference

Holding, transferring, and conferencing

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Learn about the functions and events related to placing calls on hold, transferring calls, and creating conference calls.

Related documentation:

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For simplicity, the examples on this page use abbreviated attribute values. For example, ConnID **1**, which - in actual events - displays as ConnID>@metainformation>.

The following comments and abbreviations are used in the call models:

- OPT—Optional.
- DIAL—Might be a dialed number or is not present if Voice Microservices have no information about the other party.

Hold/Retrieve function, consulted party answers

Party A	Party B	Party C
Call-establishing phase (ConnID 1)		
	Hold (THoldCall)	
	EventHeld ConnID 1 ThisDN B OtherDN A	
	Make call to C (Consultation) (TMakeCall)	
Call-establishing phase (ConnID 2)		
Release phase (ConnID 2)		
	Retrieve call from A (TRetrieveCall)	
	EventRetrieved ^a	

	ConnID 1 ThisDN B OtherDN A CallState OK	
Release phase (ConnID 1)		

a. With EventRetrieved, the values for attributes **ThisDNRole** and **ThisQueue** are the same as those for the attributes of the same names, if any, in the events preceding EventRetrieved (EventEstablished and EvenRinging). For non-ACD calls, however, **ThisQueue** is not reported.

Abnormal call flow

Interruption point	Party A	Party B
*	EventReleased ConnID 1 ThisDN A OtherDN B CallState OK	EventReleased ConnID 1 ThisDN B OtherDN A CallState OK
**	EventReleased ConnID 1 ThisDN A OtherDN B CallState OK	EventReleased ConnID 1 ThisDN B OtherDN A CallState OK
***	EventReleased ConnID 1 ThisDN A OtherDN B CallState OK	EventReleased ConnID 1 ThisDN B OtherDN A CallState OK

Hold/Retrieve function, consulted party does not answer

Party A	Party B	Party C
Call-establishing phase (ConnID 1)		
Hold (THoldCall)		
	EventHeld ConnID 1 ThisDN B OtherDN A	
Unsuccessful internal call (party does not answer) (ConnID 2)		
	Retrieve call from A (TRetrieveCall)	

	EventRetrieved ^a ConnID 1 ThisDN B OtherDN A CallState OK	
Release phase (ConnID 1)		

a. With EventRetrieved, the values for attributes **ThisDNRole** and **ThisQueue** are the same as those for the attributes of the same names, if any, in the events preceding EventRetrieved (EventEstablished and EvenRinging). For non-ACD calls, however, **ThisQueue** is not reported.

Abnormal call flow

Interruption point	Party A	Party B
*	EventReleased ConnID 1 ThisDN A OtherDN B CallState OK	EventReleased ConnID 1 ThisDN B OtherDN A CallState OK
**	EventReleased ConnID 1 ThisDN A OtherDN B CallState OK	EventReleased ConnID 1 ThisDN B OtherDN A CallState OK

Single-step transfer

Party A	Party B	Party C
Call-establishing phase (ConnID 1)		
Single-step transfer to C (TSingleStepTransfer)		
EventPartyChanged ConnID 1 PreviousConnID 1 ThisDN A OtherDN C ThirdPartyDN B ThirdPartyDNRole TransferredBy CallState Transferred	EventReleased ConnID 1 ThisDN B ThirdPartyDN C OtherDN A CallState Transferred Cause 1stepTransfer	EventRinging ConnID 1 ThisDN C OtherDN A ThirdPartyDN B ThirdPartyDNRole TransferredBy CallState Transferred
		Answer (TAnswerCall)

		EventEstablished ConnID 1 ThisDN C OtherDN A
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Abnormal call flow

Interruption point	Party A	Party B	Party C
*	EventReleased ConnID 1 ThisDN A OtherDN C CallState OK		
**	EventReleased ConnID 1 ThisDN A OtherDN C CallState OK		EventAbandoned ConnID 1 ThisDN C OtherDN A CallState OK

Single-step transfer (outbound)

Party A	Party B	Party C
Call-establishing phase (ConnID 1)		
Single-step transfer to C (TSingleStepTransfer)		
EventPartyChanged ConnID 1 PreviousConnID 1 ThisDN A OtherDN C ThirdPartyDN B ThirdPartyDNRole TransferredBy CallState Transferred EventNetworkReached ConnID 1 ThisDN A OtherDN C *DIAL OtherDNRole Destination *DIAL	EventReleased ConnID 1 ThisDN B ThirdPartyDN C OtherDN A CallState Transferred Cause 1stepTransfer	EventRinging ConnID 1 ThisDN C OtherDN A ThirdPartyDN B ThirdPartyDNRole TransferredBy CallState Transferred
		Answer (TAnswerCall)
		EventEstablished ConnID 1 ThisDN C OtherDN A

Abnormal call flow

Interruption point	Party A	Party B	Party C
*	EventReleased ConnID 1 ThisDN A OtherDN C CallState OK		
**	EventReleased ConnID 1 ThisDN A OtherDN C CallState OK		EventAbandoned ConnID 1 ThisDN C OtherDN A CallState OK

Mute transfer

Party A	Party B	Party C
Call-establishing phase (ConnID 1)		
	Mute transfer to C (TMuteTransfer*)	
	EventHeld ConnID 1 ThisDN B OtherDN A	
	EventDialing ConnID 2 ThisDN B ThisDNRole Origination OtherDN C OtherDNRole Destination	EventRinging ConnID 2 ThisDN C ThisDNRole Destination OtherDN B OtherDNRole Origination CallState OK
EventPartyChanged ConnID 1 PreviousConnID 1 ThisDN A OtherDN C ThirdPartyDN B ThirdPartyDNRole TransferredBy CallState Transferred	EventReleased ConnID 1 ThisDN B OtherDN A CallState Transferred EventReleased ConnID 2 ThisDN B ThisDNRole Origination OtherDN C OtherDNRole Destination CallState Transferred	EventPartyChanged ConnID 1 PreviousConnID 2 ThisDN C OtherDN A ThirdPartyDN B ThirdPartyDNRole TransferredBy CallState Transferred

		Answer (TAnswerCall)
		EventEstablished
		ConnID 1 ThisDN C OtherDN A
Release phase (ConnID 1)		

Abnormal call flow

Interruption point	Party A	Party B	Party C
*	EventReleased ConnID 1 ThisDN A OtherDN B CallState OK	EventReleased ConnID 1 ThisDN B OtherDN A CallState OK	
**	EventReleased ConnID 1 ThisDN A OtherDN C CallState OK	EventReleased ConnID 1 ThisDN B OtherDN A CallState OK EventReleased ConnID 2 ThisDN B OtherDN C CallState OK	EventAbandoned ConnID 2 ThisDN C OtherDN B CallState OK
***	EventReleased ConnID 1 ThisDN B OtherDN C CallState OK		EventAbandoned ConnID 1 ThisDN C OtherDN B CallState OK

Two-step transfer: complete after consulted party answers

Party A	Party B	Party C
Call-establishing phase (ConnID 1)		
	Hold (TInitiateTransfer*)	
	EventHeld ConnID 1 ThisDN B OtherDN A	
	Consultation call to C (TInitiateTransfer continues)	

Call-establishing phase (ConnID 2)		
	Transfer held call to C (TCompleteTransfer)	
EventPartyChanged ConnID 1 PreviousConnID 1 ThisDN A OtherDN C ThirdPartyDN B ThirdPartyDNRole TransferredBy CallState Transferred	EventReleased ConnID 1 ThisDN B OtherDN A CallState Transferred EventReleased ConnID 2 ThisDN B OtherDN C CallState Transferred	EventPartyChanged ConnID 1 PreviousConnID 2 ThisDN C OtherDN A ThirdPartyDN B ThirdPartyDNRole TransferredBy CallState Transferred
Release phase (ConnID 1)		

Abnormal call flow

Interruption point	Party A	Party B	Party C
*	EventReleased ConnID 1 ThisDN A OtherDN B CallState OK	EventReleased ConnID 1 ThisDN B OtherDN A CallState OK	
**	EventReleased ConnID 1 ThisDN A OtherDN B CallState OK	EventReleased ConnID 1 ThisDN B OtherDN A CallState OK EventReleased ConnID 2 ThisDN B OtherDN C CallState OK	EventAbandoned ConnID 2 ThisDN C OtherDN B CallState OK

Two-step transfer: complete before consulted party answers (blind)

Party A	Party B	Party C
Call-establishing phase (ConnID 1)		
	Hold (TInitiateTransfer)	
	EventHeld	

	ConnID 1 ThisDN B OtherDN A	
	Consultation call to C (TInitiateTransfer continues)	
	EventDialing ConnID 2 ThisDN B ThisDNRole Origination OtherDN C *DIAL OtherDNRole Destination *DIAL	EventRinging ConnID 2 ThisDN C ThisDNRole Destination OtherDN B OtherDNRole Origination CallState OK
	Transfer held call to C (TCompleteTransfer)	
EventPartyChanged ConnID 1 PreviousConnID 1 ThisDN A OtherDN C ThirdPartyDN B ThirdPartyDNRole TransferredBy CallState Transferred	EventReleased ConnID 1 ThisDN B OtherDN A CallState Transferred EventReleased ConnID 2 ThisDN B OtherDN C CallState Transferred	EventPartyChanged ConnID 1 PreviousConnID 2 ThisDN C OtherDN A ThirdPartyDN B ThirdPartyDNRole TransferredBy CallState Transferred
		Answer (TAnswerCall)
		EventEstablished ConnID 1 ThisDN C OtherDN A
Release phase (ConnID 1)		

If a call appears on the terminating party after transfer completion, the **ConnID** field of EventRinging is equal to the connection ID of the original call (ConnID 1), and EventPartyChanged is not generated.

Abnormal call flow

Interruption point	Party A	Party B	Party C
*	EventReleased ConnID 1 ThisDN A OtherDN B CallState OK	EventReleased ConnID 1 ThisDN B OtherDN A CallState OK	
**	EventReleased	EventReleased	EventAbandoned

	ConnID 1 ThisDN A OtherDN B CallState OK	ConnID 1 ThisDN B OtherDN A CallState OK EventReleased ConnID 2 ThisDN B OtherDN C CallState OK	ConnID 2 ThisDN C OtherDN B CallState OK
***	EventReleased ConnID 1 ThisDN A OtherDN C CallState OK		EventAbandoned ConnID 1 ThisDN C OtherDN A CallState OK

Two-step transfer to ACD

Two-step transfer to ACD means that a call is waiting in a queue, and the transfer completed before any ACD agent is available to receive the call.

The following table describes a two-step transfer to ACD.

Party A	Party B	Party C (ACD)	Party D
Call-establishing phase (ConnID 1)			
	Hold (TInitiateTransfer)		
	EventHeld ConnID 1 ThisDN B OtherDN A		
	Consultation call to C (TInitiateTransfer continues)		
	EventDialing ConnID 2 ThisDN B OtherDN C *DIAL	EventQueued ConnID 2 ThisDN C ThisQueue C OtherDN B	
	Transfer held call to C (TCompleteTransfer)		
EventPartyChanged ConnID 1 PreviousConnID 1 ThisDN A OtherDN C	EventReleased ConnID 2 ThisDN B ThisDNRole Origination OtherDN C	EventPartyChanged ConnID 1 PreviousConnID 2 ThisDN C ThisQueue C	

ThirdPartyDN B ThirdPartyDNRole TransferredBy CallState Transferred	OtherDNRole Destination CallState Transferred EventReleased ConnID 1 ThisDN B OtherDN A CallState Transferred	OtherDN A ThirdPartyDN B ThirdPartyDNRole TransferredBy CallState Transferred	
		Diverts call to D	
		EventDiverted ConnID 1 ThisDN C OtherDN A ThirdPartyDN C *OPT ThirdPartyDNRole Destination *OPT	EventRinging ConnID 1 ThisDN D ThisQueue C OtherDN A CallState OK
			Answer (TAnswerCall)
			EventEstablished ConnID 1 ThisDN D ThisQueue C OtherDN A CallState OK
Release phase (ConnID 1)			

If a call transfer is completed before it is put in an ACD queue, an EventPartyChanged is not generated.

Abnormal call flow

Interruption point	Party A	Party B	Party C	Party D
*	EventReleased ConnID 1 ThisDN A OtherDN B CallState OK	EventReleased ConnID 1 ThisDN B OtherDN A CallState OK		
**	EventReleased ConnID 1 ThisDN A OtherDN B CallState OK	EventReleased ConnID 1 ThisDN B OtherDN A CallState OK EventReleased ConnID 2 ThisDN B OtherDN C CallState OK	EventAbandoned ConnID 2 ThisDN C OtherDN B CallState OK	
***	EventReleased			EventAbandoned

	ConnID 1 ThisDN A OtherDN D CallState OK			ConnID 1 ThisDN D OtherDN A CallState OK
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Two-step transfer to a Routing Point

Party A	Party B	Party C (ACD)	Party D
Call-establishing phase (ConnID 1)			
	Hold (TInitiateTransfer)		
	EventHeld ConnID 1 ThisDN B OtherDN A		
	Consultation call to C (TInitiateTransfer continues)		
	EventDialing ConnID 2 ThisDN B ThisDNRole Origination OtherDN C ^{*DIAL} OtherDNRole Destination CallType Consult	EventRouteRequest ConnID 2 ThisDN C ThisDNRole Destination OtherDN B OtherDNRole Origination	
	Transfer held call to C (TCompleteTransfer)		
EventPartyChanged ConnID 1 PreviousConnID 1 ThisDN A ThisDNRole Origination ^a OtherDN C ThirdPartyDN B ThirdPartyDNRole TransferredBy CallState Transferred	EventReleased ConnID 2 ThisDN B ThisDNRole Origination OtherDN C OtherDNRole Destination CallState Transferred EventReleased ConnID 1 ThisDN B ThisDNRole Destination OtherDN A CallState Transferred	EventPartyChanged ConnID 1 PreviousConnID 2 ThisDN C OtherDN A ThirdPartyDN B ThirdPartyDNRole TransferredBy CallState Transferred	
		Diverts call to D	
		EventRouteUsed ConnID 1 ThisDN C OtherDN A	EventRinging ConnID 1 ThisDN D OtherDN A CallState OK

		ThirdPartyDN D *OPT	
			Answer (TAnswerCall)
			EventEstablished ConnID 1 ThisDN D OtherDN A
Release phase (ConnID 1)			

a. **ThisDNRole** must be Destination if party B is the call originator.

Abnormal call flow

Interruption point	Party A	Party B	Party C	Party D
*	EventReleased ConnID 1 ThisDN A OtherDN B CallState OK	EventReleased ConnID 1 ThisDN B OtherDN A CallState OK		
**	EventReleased ConnID 1 ThisDN A OtherDN B CallState OK	EventReleased ConnID 1 ThisDN B OtherDN A CallState OK EventReleased ConnID 2 ThisDN B OtherDN C CallState OK	EventAbandoned ConnID 2 ThisDN C OtherDN B CallState OK	
***	EventReleased ConnID 1 ThisDN A OtherDN C CallState OK		EventAbandoned ConnID 1 ThisDN C OtherDN A CallState OK	
****	EventReleased ConnID 1 ThisDN A OtherDN D CallState OK			EventAbandoned ConnID 1 ThisDN D OtherDN A CallState OK

Single-step conference

Party A	Party B	Party C

Call-establishing phase (ConnID 1)		
	TSingleStepConference	
EventPartyAdded ConnID 1 ThisDN A OtherDN C ThirdPartyDN B ^a	EventPartyAdded ConnID 1 ThisDN B OtherDN C ThirdPartyDN B ^a	EventRinging ConnID 1 ThisDN C ThisDNRole ConferenceMember CallState OK
		EventEstablished ConnID 1 ThisDN C ThisDNRole ConferenceMember CallState Conferenced
Release from conference phase		
Release phase (ConnID 1)		

a. **ThirdPartyDN** has a value of C if Party C initiates the request for a conference.

Conference

Party A	Party B	Party C
Call-establishing phase (ConnID 1)		
	Hold	
	EventHeld ConnID 1 ThisDN B ThisDNRole Previous Role of DN OtherDN A OtherDNRole Previous Role of DN	
	Consultation call to C	
Call-establishing phase (ConnID 2)		
	Conference	
	EventReleased ConnID 2 ThisDN B OtherDN C CallState Conferenced EventRetrieved ^a ConnID 1 ThisDN B OtherDN A CallState Conferenced	

EventPartyAdded ConnID 1 ThisDN A OtherDN C ThirdPartyDN B ThirdPartyDNRole AddedBy CallState Conferenced	EventPartyAdded ConnID 1 ThisDN B OtherDN ^b C OtherDNRole NewParty ThirdPartyDN B ThirdPartyDNRole AddedBy CallState Conferenced	EventPartyChanged ConnID 1 PreviousConnID 2 ThisDN C ThirdPartyDN B ThirdPartyDNRole ConferencedBy CallState Conferenced
Release from conference phase		
Release phase (ConnID 1)		

- a. With EventRetrieved, the values for attributes **ThisDNRole** and **ThisQueue** are the same as those for the attributes of the same names, if any, in the events preceding EventRetrieved (EventEstablished and EventRinging). For non-ACD calls, however, **ThisQueue** is not reported.
- b. If only one party is added (as in the case of a simple conference call), the corresponding telephony object is specified in **OtherDN**. If more than one party is added, then the corresponding telephony objects are specified in **Extensions**.

Abnormal call flow

Interruption point	Party A	Party B
*	EventReleased ConnID 1 ThisDN A OtherDN B CallState OK	EventReleased ConnID 1 ThisDN B OtherDN A CallState OK

Blind conference (complete before consulted party answers)

Party A	Party B	Party C
Call-establishing phase (ConnID 1)		
Hold		
	EventHeld ConnID 1 ThisDN B OtherDN A	
Consultation call to C		
	EventDialing ConnID 2 ThisDN B ThisDNRole Origination OtherDN C ^{*DIAL} OtherDNRole Destination ^{*DIAL} CallType Consult	EventRinging ConnID 2 ThisDN C ThisDNRole Destination OtherDN B OtherDNRole Origination CallType Consult

Conference		
	EventReleased ConnID 2 ThisDN B OtherDN C CallState Conferenced EventRetrieved ^a ConnID 1 ThisDN B OtherDN A CallState Conferenced	
EventPartyAdded ConnID 1 ThisDN A OtherDN C ThirdPartyDN B ThirdPartyDNRole AddedBy CallState Conferenced	EventPartyAdded ConnID 1 ThisDN B OtherDN C ThirdPartyDN B ThirdPartyDNRole AddedBy CallState Conferenced	EventPartyChanged ConnID 1 PreviousConnID 2 ThisDN C ThirdPartyDN B ThirdPartyDNRole ConferencedBy CallState Conferenced
		Answer (TAnswerCall)
		EventEstablished ConnID 1 ThisDN C CallState Conferenced
Release from conference phase		
Release phase (ConnID 1)		

a. With EventRetrieved, the values for attributes **ThisDNRole** and **ThisQueue** are the same as those for the attributes of the same names, if any, in the events preceding EventRetrieved (EventEstablished and EventRinging). For non-ACD calls, however, **ThisQueue** is not reported.

If a call appears on the terminating party after completion of conference, the **ConnID** field of EventRinging is equal to the connection ID of the original call (ConnID 1), and EventPartyChanged is not generated.

Abnormal call flow

Interruption point	Party A	Party B	Party C
*	EventReleased ConnID 1 ThisDN A OtherDN B CallState OK	EventReleased ConnID 1 ThisDN B OtherDN A CallState OK	
**	EventReleased ConnID 1 ThisDN A OtherDN B *DIAL CallState OK	EventPartyDeleted ConnID 1 ThisDN B OtherDN A OtherDNRole DeletedParty ThirdPartyDN A ThirdPartyDNRole DeletedBy	

		CallState OK	
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