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# Voice Microservices Events and Models Reference

Basic call models

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This page describes the basic scenarios in which calls arrive in a contact center.

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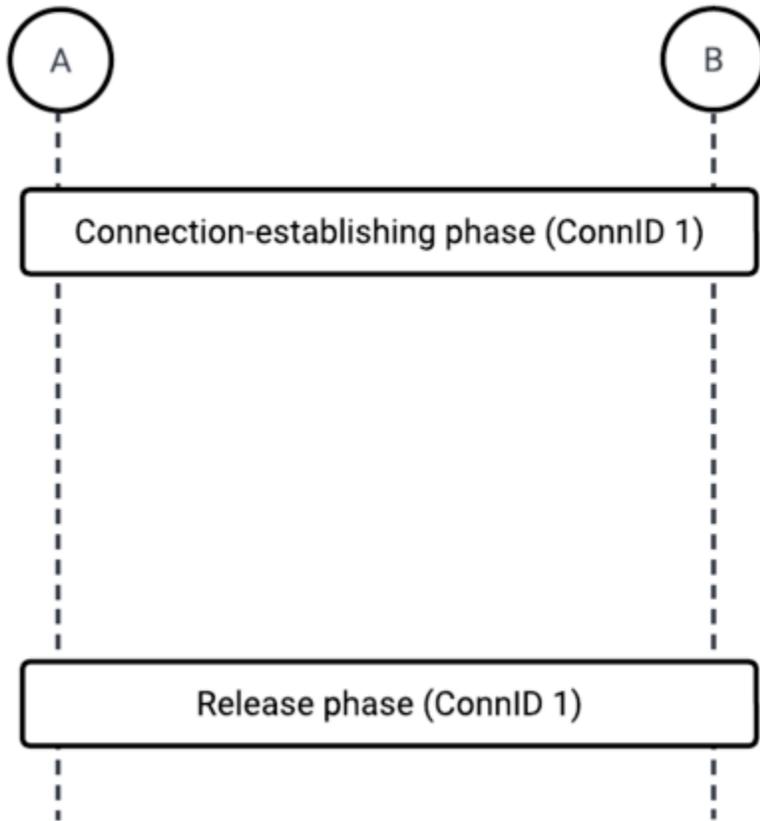
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For simplicity, the examples on this page use abbreviated attribute values. For example, ConnID **1**, which - in actual events - displays as ConnID>@metainformation>.

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.

## Simple call model



## Connection-establishing phase for an internal/inbound call

The following table describes the connection-establishing phase for an internal/inbound call.

Party A	Party B
<b>Make call to B (TMakeCall)</b>	
EventDialing ConnID <b>1</b> ThisDN <b>A</b> ThisDNRole <b>Origination</b> OtherDN <sup>*DIAL</sup> OtherDNRole <b>Destination</b> <sup>*DIAL</sup>	
	EventRinging ConnID <b>1</b> ThisDN <b>B</b> ThisDNRole <b>Destination</b>

	OtherDN <b>A</b> OtherDNRole <b>Origination</b> CallState <b>OK</b>
	<b>Answer (TAnswerCall)</b>
EventEstablished  ConnID <b>1</b> ThisDN <b>A</b> ThisDNRole <b>Origination</b> OtherDN <b>B</b> OtherDNRole <b>Destination</b>	EventEstablished  ConnID <b>1</b> ThisDN <b>B</b> ThisDNRole <b>Destination</b> OtherDN <b>A</b> OtherDNRole <b>Origination</b>
<b>Conversation</b>	

## Abnormal call flow

Interruption point	Party A	Party B
*	EventReleased  ConnID <b>1</b> ThisDN <b>A</b> ThisDNRole <b>Origination</b> CallState <b>OK</b>	
**	EventDestinationBusy  ConnID <b>1</b> ThisDN <b>A</b> ThisDNRole <b>Origination</b> CallState <sup>a</sup>	
***	EventReleased  ConnID <b>1</b> ThisDN <b>A</b> ThisDNRole <b>Origination</b> OtherDN <b>B</b> <sup>*DIAL</sup> OtherDNRole <b>Destination</b> <sup>*DIAL</sup> CallState <b>OK</b>	EventAbandoned  ConnID <b>1</b> ThisDN <b>B</b> OtherDN <b>A</b> CallState <b>OK</b>

a. CallState might have values that clarify the reason for the destination being busy, for instance CallState SitInvalidNum.

## Connection-establishing phase for an internal/inbound call to ACD

The following table describes the connection-establishing phase for an internal/inbound call to ACD.

Party A	Party B (ACD Group)	Party C
<b>Make call to B</b>		

<b>EventDialing</b> ConnID <b>1</b> ThisDN <b>A</b> ThisDNRole <b>Origination</b> OtherDN <b>B</b> *DIAL OtherDNRole <b>Destination</b> *DIAL	<b>EventQueued</b> ConnID <b>1</b> ThisDN <b>B</b> ThisQueue <b>B</b> ThisDNRole <b>Destination</b> OtherDN <b>A</b> OtherDNRole <b>Origination</b>	
	<b>Diverts call to C</b>	
	<b>EventDiverted</b> ConnID <b>1</b> ThisDN <b>B</b> ThisQueue <b>B</b> ThisDNRole <b>Destination</b> OtherDN <b>A</b> OtherDNRole <b>Origination</b> ThirdPartyDN <b>C</b> *OPT ThirdPartyDNRole <b>Destination</b> *OPT	
		<b>EventRinging</b> ConnID <b>1</b> ThisDN <b>C</b> ThisQueue <b>B</b> ThisDNRole <b>Destination</b> OtherDN <b>A</b> OtherDNRole <b>Origination</b> CallState <b>OK</b>
		<b>Answer (TAnswerCall)</b>
<b>EventEstablished</b> ConnID <b>1</b> ThisDN <b>A</b> ThisDNRole <b>Origination</b> OtherDN <b>C</b> OtherDNRole <b>Destination</b>		<b>EventEstablished</b> ConnID <b>1</b> ThisDN <b>C</b> ThisQueue <b>B</b> ThisDNRole <b>Destination</b> OtherDN <b>A</b> OtherDNRole <b>Origination</b>
<b>Conversation</b>		

## Abnormal call flow

Interruption point	Party A	Party B	Party C
*	<b>EventReleased</b> ConnID <b>1</b> ThisDN <b>A</b> OtherDN <b>B</b> CallState <b>OK</b>	<b>EventAbandoned</b> ConnID <b>1</b> ThisDN <b>B</b> OtherDN <b>A</b> CallState <b>OK</b>	
**	<b>EventReleased</b> ConnID <b>1</b> ThisDN <b>A</b> OtherDN <b>B</b> CallState <b>OK</b>		
***	<b>EventReleased</b>		<b>EventAbandoned</b>

	ConnID <b>1</b> ThisDN <b>A</b> OtherDN <b>C</b> CallState <b>OK</b>		ConnID <b>1</b> ThisDN <b>C</b> OtherDN <b>A</b> CallState <b>OK</b>
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## Connection-establishing phase for an internal/inbound call queued to multiple ACDs

The following table describes the connection-establishing phase for an internal/inbound call queued to multiple ACDs.

Party A	Party B (ACD)	Party C (ACD)	Party D
<b>Make internal/inbound call to B (ACD)</b>			
EventDialing  ConnID <b>1</b> ThisDN <b>A</b> ThisDNRole <b>Origination</b> OtherDN <b>B</b> *DIAL OtherDNRole <b>Destination</b> *DIAL	EventQueued  ConnID <b>1</b> ThisDN <b>B</b> ThisQueue <b>B</b> ThisDNRole <b>Destination</b> OtherDN <b>A</b> OtherDNRole <b>Origination</b>		
		EventQueued  ConnID <b>1</b> ThisDN <b>C</b> ThisQueue <b>C</b> ThisDNRole <b>Destination</b> OtherDN <b>A</b> OtherDNRole <b>Origination</b>	
	<b>Diverts call to D</b>		
	EventDiverted  ConnID <b>1</b> ThisDN <b>B</b> ThisDNRole <b>Origination</b> OtherDN <b>C</b> OtherDNRole <b>Destination</b>	EventDiverted  ConnID <b>1</b> ThisDN <b>C</b> ThisQueue <b>C</b> ThirdPartyDN <b>D</b> ThirdPartyQueue <b>B</b> CallState <b>Redirected</b> <sup>a</sup>	
			EventRinging  ConnID <b>1</b> ThisDN <b>D</b> ThisQueue <b>B</b> ThisDNRole <b>Destination</b> OtherDN <b>A</b> OtherDNRole <b>Origination</b> CallState <b>OK</b>
			<b>Answer (TAnswerCall)</b>

<b>EventEstablished</b> ConnID <b>1</b> ThisDN <b>A</b> ThisDNRole <b>Origination</b> OtherDN <b>D</b> OtherDNRole <b>Destination</b> CallState <b>OK</b>			<b>EventEstablished</b> ConnID <b>1</b> ThisDN <b>D</b> ThisDNRole <b>Destination</b> OtherDN <b>A</b> OtherDNRole <b>Origination</b> CallState <b>OK</b>
<b>Conversation</b>			

a. For ACD configurations where calls are distributed to agents assigned directly to ACD groups, CallState with a value of Redirected is present. For ACD configurations where calls are distributed to agents assigned to secondary ACD groups associated with top-level ACD queues, the CallState, with the value Redirected, is not present.

### Abnormal call flow

Interruption point	Party A	Party B	Party C	Party D
*	<b>EventReleased</b> ConnID <b>1</b> ThisDN <b>A</b> OtherDN <b>B</b> CallState <b>OK</b>	<b>EventAbandoned</b> ConnID <b>1</b> ThisDN <b>B</b> ThisQueue <b>B</b> OtherDN <b>A</b> CallState <b>OK</b>		
**	<b>EventReleased</b> ConnID <b>1</b> ThisDN <b>A</b> OtherDN <b>B</b> CallState <b>OK</b>	<b>EventAbandoned</b> ConnID <b>1</b> ThisDN <b>B</b> ThisQueue <b>B</b> OtherDN <b>A</b> CallState <b>OK</b>	<b>EventAbandoned</b> ConnID <b>1</b> ThisDN <b>C</b> ThisQueue <b>C</b> OtherDN <b>A</b> CallState <b>OK</b>	
***	<b>EventReleased</b> ConnID <b>1</b> ThisDN <b>A</b> OtherDN <b>D</b> CallState <b>OK</b>			
****	<b>EventReleased</b> ConnID <b>1</b> ThisDN <b>A</b> OtherDN <b>D</b> CallState <b>OK</b>			<b>EventAbandoned</b> ConnID <b>1</b> ThisDN <b>D</b> ThisQueue <b>C</b> OtherDN <b>A</b> CallState <b>OK</b>

### Connection-establishing phase for an internal/inbound call with call parking

The following table describes the connection-establishing phase for an internal/inbound call with call

parking.

Party A	Party B
<b>Make call to B (TMakeCall)</b>	
EventDialing ConnID <b>1</b> ThisDN <b>A</b> ThisDNRole <b>Origination</b> OtherDN <b>B</b> *DIAL OtherDNRole <b>Destination</b> *DIAL	
	<b>Call is parked on B</b>
EventDestinationBusy *OPT ConnID <b>1</b> ThisDN <b>A</b> ThisDNRole <b>Origination</b> OtherDN <b>B</b> *DIAL OtherDNRole <b>Destination</b> *DIAL	EventQueued ConnID <b>1</b> ThisDN <b>B</b> ThisDNRole <b>Destination</b> OtherDN <b>A</b> OtherDNRole <b>Origination</b> CallState <b>OK</b>
	<b>Call is picked up by B</b>
	EventRinging ConnID <b>1</b> ThisDN <b>B</b> ThisDNRole <b>Destination</b> OtherDN <b>A</b> OtherDNRole <b>Origination</b> CallState <b>OK</b>
	<b>Answer (TAnswerCall)</b>
EventEstablished ConnID <b>1</b> ThisDN <b>A</b> ThisDNRole <b>Origination</b> OtherDN <b>B</b> OtherDNRole <b>Destination</b>	EventEstablished ConnID <b>1</b> ThisDN <b>B</b> ThisDNRole <b>Destination</b> OtherDN <b>A</b> OtherDNRole <b>Origination</b>
<b>Conversation</b>	

## Abnormal call flow

Interruption point	Party A	Party B
*	EventReleased ConnID <b>1</b> ThisDN <b>A</b> ThisDNRole <b>Origination</b> OtherDN <b>B</b> *DIAL OtherDNRole <b>Destination</b> *DIAL CallState <b>OK</b>	EventAbandoned ConnID <b>1</b> ThisDN <b>B</b> OtherDN <b>A</b> CallState <b>OK</b>

## Connection-establishing phase for internal/inbound call with routing (RouteQueue case)

The following table describes the connection-establishing phase for an internal/inbound call with routing (RouteQueue case).

Party A	Party B (Routing Point/CDN)	Party C
<b>Make incoming call to information service</b>		
EventDialing  ConnID <b>1</b> ThisDN <b>A</b> ThisDNRole <b>Origination</b> OtherDN <b>B</b> OtherDNRole <b>Destination</b>	EventQueued  ConnID <b>1</b> ThisDN <b>B</b> ThisQueue <b>B</b> ThisDNRole <b>Destination</b> OtherDN <b>A</b> OtherDNRole <b>Origination</b>  EventRouteRequest ConnID <b>1</b> ThisDN <b>B</b> ThisQueue <b>B</b> ThisDNRole <b>Destination</b> OtherDN <b>A</b> OtherDNRole <b>Origination</b>	
	<b>Route call to C<sup>a</sup> (TRouteCall)</b>	
	EventRouteUsed  ConnID <b>1</b> ThisDN <b>B</b> ThisDNRole <b>Destination</b> OtherDN <b>A</b> OtherDNRole <b>Origination</b> ThirdPartyDN <b>C</b> *OPT ThirdPartyDNRole <b>Destination</b> *OPT  EventDiverted ConnID <b>1</b> ThisDN <b>B</b> ThisQueue <b>B</b> ThisDNRole <b>Destination</b> OtherDN <b>A</b> OtherDNRole <b>Origination</b> ThirdPartyDN <b>C</b> *OPT ThirdPartyDNRole <b>Destination</b> *OPT	
		EventRinging  ConnID <b>1</b> ThisDN <b>C</b> ThisQueue <b>B</b> ThisDNRole <b>Destination</b> OtherDN <b>A</b> OtherDNRole <b>Origination</b> CallState <b>OK</b>
		<b>Answer (TAnswerCall)</b>
EventEstablished		EventEstablished

ConnID <b>1</b> ThisDN <b>A</b> ThisDNRole <b>Origination</b> OtherDN <b>C</b> OtherDNRole <b>Destination</b>		ConnID <b>1</b> ThisDN <b>C</b> ThisDNRole <b>Destination</b> OtherDN <b>A</b> OtherDNRole <b>Origination</b>
<b>Conversation</b>		

a. RouteCall to C (TRouteCall()) might be missing.

### Abnormal call flow

Interruption point	Party A	Party B	Party C
* and **	EventReleased  ConnID <b>1</b> ThisDN <b>A</b> OtherDN <b>B</b> CallState <b>OK</b>	EventAbandoned  ConnID <b>1</b> ThisDN <b>B</b> OtherDN <b>A</b> CallState <b>OK</b>	
***	EventReleased  ConnID <b>1</b> ThisDN <b>A</b> OtherDN <b>C</b> CallState <b>OK</b>		
****	EventReleased  ConnID <b>1</b> ThisDN <b>A</b> OtherDN <b>C</b> CallState <b>OK</b>		EventAbandoned  ConnID <b>1</b> ThisDN <b>C</b> OtherDN <b>A</b> CallState <b>OK</b>

### Connection-establishing phase for internal/inbound call with routing

The following table describes the connection-establishing phase for an internal/inbound call with routing.

Party A	Party B (Routing Point/CDN)	Party C
<b>Make incoming call to information service</b>		
EventDialing  ConnID <b>1</b> ThisDN <b>A</b> ThisDNRole <b>Origination</b> OtherDN <b>B</b> <sup>*DIAL</sup> OtherDNRole <b>Destination</b> <sup>*DIAL</sup>	EventRouteRequest  ConnID <b>1</b> ThisDN <b>B</b> ThisDNRole <b>Destination</b> OtherDN <b>A</b> OtherDNRole <b>Origination</b>	

<b>Route call to C<sup>a</sup> (TRouteCall)</b>		
	<b>EventRouteUsed</b> ConnID <b>1</b> ThisDN <b>B</b> ThisDNRole <b>Destination</b> OtherDN <b>A</b> OtherDNRole <b>Origination</b> ThirdPartyDN <b>C<sup>b</sup></b> ThirdPartyDNRole <b>Destination<sup>*OPT</sup></b> CallState <b>OK/Redirected<sup>c</sup></b>	
		<b>EventRinging</b> ConnID <b>1</b> ThisDN <b>C</b> ThisDNRole <b>Destination</b> OtherDN <b>A</b> OtherDNRole <b>Origination</b> CallState <b>OK</b>
<b>Answer (TAnswerCall)</b>		
<b>EventEstablished</b> ConnID <b>1</b> ThisDN <b>A</b> ThisDNRole <b>Origination</b> OtherDN <b>C</b> OtherDNRole <b>Destination</b>		<b>EventEstablished</b> ConnID <b>1</b> ThisDN <b>C</b> ThisDNRole <b>Destination</b> OtherDN <b>A</b> OtherDNRole <b>Origination</b>
<b>Conversation</b>		

a. Not present if a call has been routed by default; that is, a switch did not receive any routing instruction from a computer domain within a timeout configured on the switch side (scripted or otherwise) and therefore processed the call using switch logic.

b. Content of **ThirdPartyDN** depends on the call scenario:

- If information about the destination is available at the moment **EventRouteUsed** is generated, this attribute is mandatory; a DN where the call has been delivered must be reported.
- If the information is not available, but the call has been routed through Voice Microservices, this attribute is mandatory; a DN where the call has been sent must be reported.
- If a call has been routed to a default destination or routed by another application, this attribute is optional (depends on switch capabilities).

c. **CallState** has a value of **Redirected** (22) if a call has been routed by a switch. For some switches, the attribute **Callstate** might not be present.

## Abnormal call flow

<b>Interruption point</b>	<b>Party A</b>	<b>Party B</b>	<b>Party C</b>
*	<b>EventReleased</b> ConnID <b>1</b> ThisDN <b>A</b> OtherDN <b>B</b>	<b>EventAbandoned</b> ConnID <b>1</b> ThisDN <b>B</b> OtherDN <b>A</b>	

	CallState <b>OK</b>	CallState <b>OK</b>	
**	EventReleased ConnID <b>1</b> ThisDN <b>A</b> OtherDN <b>C</b> CallState <b>OK</b>	EventAbandoned <sup>a</sup> ConnID <b>1</b> ThisDN <b>B</b> OtherDN <b>A</b> CallState <b>OK</b>	
***	EventReleased ConnID <b>1</b> ThisDN <b>A</b> OtherDN <b>C</b> CallState <b>OK</b>		
****	EventReleased ConnID <b>1</b> ThisDN <b>A</b> OtherDN <b>C</b> CallState <b>OK</b>		EventAbandoned ConnID <b>1</b> ThisDN <b>C</b> OtherDN <b>A</b> CallState <b>OK</b>

a. In this case, EventError must be sent after EventAbandoned to make the ReferenceID available.

## Connection-establishing phase for an internal/inbound call with routing outbound

The following table describes the connection-establishing phase for an internal/inbound call with routing outbound.

Party A	Party B (Routing Point)	Party C
<b>Incoming call</b>		
EventDialing ConnID <b>1</b> ThisDN <b>A</b> ThisDNRole <b>Origination</b> OtherDN <b>B</b> <sup>*DIAL</sup> OtherDNRole <b>Destination</b> <sup>*DIAL</sup>	EventRouteRequest ConnID <b>1</b> ThisDN <b>B</b> ThisDNRole <b>Destination</b> OtherDN <b>A</b> OtherDNRole <b>Origination</b>	
<b>Route call to C <sup>a</sup> (TRouteCall)</b>		
EventNetworkReached ConnID <b>1</b> ThisDN <b>A</b> ThisDNRole <b>Origination</b> OtherDN <b>C</b> <sup>*DIAL</sup> OtherDNRole <b>Destination</b> <sup>*DIAL</sup>	EventRouteUsed ConnID <b>1</b> ThisDN <b>B</b> ThisDNRole <b>Destination</b> OtherDN <b>A</b> OtherDNRole <b>Origination</b> ThirdPartyDN <b>C</b> <sup>b</sup> ThirdPartyDNRole <b>Destination</b> <sup>*OPT</sup> CallState <b>OK/Redirected</b> <sup>c</sup>	EventRinging ConnID <b>1</b> ThisDN <b>C</b> ThisDNRole <b>Destination</b> OtherDN <b>A</b> OtherDNRole <b>Origination</b> CallState <b>OK</b>

		<b>Answer (TAnswerCall)</b>
EventEstablished		EventEstablished
ConnID <b>1</b> ThisDN <b>A</b> ThisDNRole <b>Origination</b> OtherDN <b>C</b> OtherDNRole <b>Destination</b>		ConnID <b>1</b> ThisDN <b>C</b> ThisDNRole <b>Destination</b> OtherDN <b>A</b> OtherDNRole <b>Origination</b>
<b>Conversation</b>		

a. Not present if a call has been routed by default; that is, a switch did not receive any routing instruction from a computer domain within a timeout configured on the switch side (scripted or otherwise) and therefore processed the call using switch logic.

b. Content of **ThirdPartyDN** depends on the call scenario:

- If information about the destination is available at the moment EventRouteUsed is generated, this attribute is mandatory; a DN where the call has been delivered must be reported.
- If the information is not available, but the call has been routed through Voice Microservices, this attribute is mandatory; a DN where the call has been sent must be reported.
- If a call has been routed to a default destination or routed by another application, this attribute is optional (depends on switch capabilities).

c. **CallState** has a value of Redirected (22) if a call has been routed by a switch. For some switches, the attribute **CallState** might not be present.

## Abnormal call flow

<b>Interruption point</b>	<b>Party A</b>	<b>Party B</b>	<b>Party C</b>
*	EventReleased  ConnID <b>1</b> ThisDN <b>A</b> OtherDN <b>B</b> CallState <b>OK</b>	EventAbandoned  ConnID <b>1</b> ThisDN <b>B</b> OtherDN <b>A</b> CallState <b>OK</b>	
**	EventReleased  ConnID <b>1</b> ThisDN <b>A</b> OtherDN <b>C</b> CallState <b>OK</b>		EventAbandoned  ConnID <b>1</b> ThisDN <b>C</b> OtherDN <b>A</b> CallState <b>OK</b>

## Connection-establishing phase for an outbound call

The following table describes the connection-establishing phase for an outbound call.

<b>Party A</b>	<b>Party B</b>
<b>Make outside call (TMakeCall)</b>	
EventDialing	

ConnID <b>1</b> ThisDN <b>A</b> ThisDNRole <b>Origination</b> OtherDN <b>B</b> *DIAL OtherDNRole <b>Destination</b> *DIAL	
EventNetworkReached <sup>a</sup> ConnID <b>1</b> ThisDN <b>A</b> ThisDNRole <b>Origination</b> OtherDN <b>B</b> *DIAL OtherDNRole <b>Destination</b> *DIAL	
	<b>Answer</b>
EventEstablished ConnID <b>1</b> ThisDN <b>A</b> ThisDNRole <b>Origination</b> OtherDN <b>B</b> *OPT OtherDNRole <b>Destination</b> *OPT	
<b>Conversation</b>	

a. When a switch does not report network reached, Voice Microservices simulate EventNetworkReached right before distributing EventEstablished.

## Abnormal call flow

Interruption point	Party A
*	EventReleased ConnID <b>1</b> ThisDN <b>A</b> OtherDN <b>B</b> CallState <b>OK</b>
**	EventDestinationBusy ConnID <b>1</b> ThisDN <b>A</b> OtherDN <b>B</b> CallState <sup>a</sup>
***	EventReleased ConnID <b>1</b> ThisDN <b>A</b> OtherDN <b>B</b> CallState <b>OK</b>

a. CallState might have values that clarify the reason for the destination being busy, for instance CallStateSitInvalidNum.

## Connection-establishing phase while on hold (internal/outbound call)

The following table describes the connection-establishing phase for an internal/outbound call while on hold.

Party A	Party B
<b>Call to B</b>	
EventDialing  ConnID <b>1</b> ThisDN <b>A</b> ThisDNRole <b>Origination</b> OtherDN <b>B</b> OtherDNRole <b>Destination</b> CallState <b>OK</b>	EventRinging  ConnID <b>1</b> ThisDN <b>B</b> ThisDNRole <b>Destination</b> OtherDN <b>A</b> OtherDNRole <b>Origination</b> CallState <b>OK</b>
<b>Hold</b>	
EventHeld  ConnID <b>1</b> ThisDN <b>A</b> OtherDN <b>B</b>	
	<b>Answer</b>
EventEstablished  ConnID <b>1</b> ThisDN <b>A</b> OtherDN <b>B</b>	EventEstablished  ConnID <b>1</b> ThisDN <b>B</b> OtherDN <b>A</b>
<b>Retrieve</b>	
EventRetrieved  ConnID <b>1</b> ThisDN <b>A</b> OtherDN <b>B</b> CallState <b>OK</b>	