Apple Event Registry: Telephony Suite

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The Telephony Suite

The Telephony suite defines Apple event constructs that are used for communicating with telephone server applications or client applications that use telephone server applications.

Introduction to the Telephony suite

The Telephony suite defines Apple event constructs that, when used in conjunction with the *Apple Event Registry:* Standard Suites, provide an interface for communicating with telephony hardware control applications, to perform calling, answering, holding, and other telephone related services. For an application to use these events and objects, it must also support the Apple event constructs from the Core suite as defined in the *Apple Event Registry:* Standard Suites.

Overview of the Telephony suite

The Telephony suite is designed around a telephone model that consists of telephone Terminals (a telephone handset that can range from a common single-line telephone to a sophisticated multi-line telephone). A telephone terminal contains Directory Number Appearances (DNs), which in turn contain Call Appearances (CAs). Directory Number Appearances can be a telephone number or a line. Single-line telephones will have only one Directory Number Appearance, while multi-line telephones will have a constant set of Directory Number Appearances. Call Appearances are actual instances of a telephone call such as a dial tone or a telephone ring. Call Appearances are not present unless a call comes in or an outgoing call is initiated.

The Apple event constructs of the Telephony suite are general enough to support detailed call control activity, yet also flexible enough to allow simple telephony control. The telephone server application has built-in defaults for terminals and Directory Number Appearances that the client application does not specify. These defaults reside in the telephone server application and have been previously set up by the user.

Applications that should support the Telephony suite

The design of the Telephony suite provides an integration between applications that support personal communication through telephony and applications that actually control Telephony hardware using the Macintosh Telephone Manager. Your application can use these constructs to perform simple functions such as “dial this number” or more sophisticated functions such as “look up data from an incoming call’s number.”

Typical client applications for the Telephony suite

The following types of applications are likely to be clients of applications that support the Telephony suite:

- Unattended applications that manage the telephone and perform tasks such as voicemail, automated receptionists, paging, and call routing.
- Terminal emulation applications that control telephones for connecting to other computers
- Call logging applications that keep track of all incoming and outgoing calls
- Personal organizer applications that remind the user of scheduled appointments

Using object specifiers in place of other parameters

In all of the suites except the Finder suite, you can substitute an object specifier for any parameter of an Apple event that is not already defined to be an object specifier. This object specifier must specify a single object. When you substitute an object specifier for a parameter, the actual value of the parameter is the value of the default descriptor record for the specified object (that is, the value you get when you send a Get Data Apple event for the object and do not specify a particular descriptor type for the result.)

Apple events defined in the Telephony suite

The Apple events defined in the Telephony suite are described in the following sections. Table 1 lists these Apple events.

■ **Table 1** Apple events defined in the Telephony suite

Name	Requested action
Answer Call	Answer an incoming call
Dial Digits	Signal the other party with digits
Drop Call	Disconnect a call
Hold Call	Put a call on hold or remove a call from hold
Make Call	Initiate a call
Notify Dependency	Give notice of a registered dependency occurrence
Redirect Call	Redirect an existing call to another party
Register Dependency	Register a dependency on future call activity

Answer Call—answer an incoming call

This event answers the call appearance. Depending upon the application, some may route an incoming call to a speaker phone, while others may route the call to a voice parser or tone monitor.

Event Class kAETelephonyEvents

Event ID kAEAnswerCall

Parameters

keyDirectObject

Description:	The call appearance to answer
Descriptor Type:	typeObjectSpecifier
Required or Optional?	Required

Reply Parameters None

Notes Information about call activity is presented to the client through the Notification Apple Event only. A Notification Apple event is sent whenever a property that has a registered dependency outstanding changes. This event includes information about what has actually changed in that object and what that information has changed to. (A non error result does not indicate success of the event.)

Dial Digits—signal the other party with digits

This event dials digits that signal the remote end of the call, either via beeps or touch tones.

Event Class kAETelephonyEvents

Event ID kAEDialDigits

Parameters

keyDirectObject

Description:	The call appearance to signal
Descriptor Type:	typeObjectSpecifier
Required or Optional?	Required

keyAEDigits

Description:	The digits to dial
Descriptor Type:	typeIntlText
Required or Optional?	Required

Reply Parameters None

Drop Call—disconnect a call

This event drops the call appearance by disconnecting and hanging up.

Event Class kAETelephonyEvents

Event ID kAEDropCall

Parameters

keyDirectObject

Description:	The call appearance to drop
Descriptor Type:	typeObjectSpecifier
Required or Optional?	Required

Reply Parameters None

Notes Information about call activity is presented to the client through the Notification Apple Event only.

Hold Call—put a call on hold or remove a call from hold

This event holds the call appearance. If the optional parameter is specified as true, then the call is removed from hold status and reconnected to the party with whom it was connected prior to having been placed on hold.

Event Class kAETelephonyEvents

Event ID kAEHoldCall

Parameters

keyDirectObject

Description:	The call appearance to hold
Descriptor Type:	typeObjectSpecifier
Required or Optional?	Required

keyAEUnHold

Description:	Un-hold the call
Descriptor Type:	typeBoolean
Required or Optional?	Optional

Reply Parameters None

Notes Information about call activity is presented to the client through the Notification Apple Event only. A non error result does not indicate success of the event.

Make Call—initiate a call

This event initiates a telephone call. The destination address can be specified by either:

- the telephone number
- an object specifier of typeIntlText, which should be the number to dial

Either method can include the optional Destination address name for display on the telephone terminal. The source DN may be specified or defaulted by the server.

Event Class kAETelephonyEvents

Event ID kAEMakeCall

Parameters

keyDirectObject

Description:	Destination address
Descriptor Type:	typeIntltext
Required or Optional?	Required

keyAEAddressName

Description:	Destination address name
Descriptor Type:	typeIntlText
Required or Optional?	Optional

keyAESourceDN

Description:	Source directory number appearance
Descriptor Type:	typeObjectSpecifier
Required or Optional?	Optional

Reply Parameters

keyDirectObject

Description:	Call Appearance ID, a 32 bit integer number that is used to identify a given call appearance
Descriptor Type:	typeLongInteger
Required or Optional?	Required

Notes Information about call activity is presented to the client through the Notification Apple Event only. The reply parameter Call Appearance ID is only used to reference notification events to be received later and is not an indication in itself of successful call activity.

Notify Dependency—give notice of a registered dependency occurrence

This event notifies the application whenever a call appearance notification event occurs. The notification gives the call appearance ID of the CA that changed (triggered the notification dependency) as well as a list of the properties that changed.

Event Class kAETelephonyEvents

Event ID kAENotifyDependency

Parameters

keyDirectObject

Description:	The object to notify
Descriptor Type:	typeObjectSpecifier
Required or Optional?	None

keyAEChangedObject

Description:	The object that changed
Descriptor Type:	typeObjectSpecifier
Required or Optional?	Required

keyAENotifyProperties

Description:	List of changed properties
Descriptor Type:	typeAEList
Required or Optional?	Optional

Reply Parameters None

Redirect Call—redirect an existing call to another party

This event redirects the call to the given destination. The destination address can be specified by either:

- direct cIntlText data (the telephone number)
- an object specifier that resolves to a container holding an object of typeIntlText, which should be the number to dial

Either method can include the optional Destination address name for display on the telephone terminal. The type of redirection is specified as one of the constants kAETransfer or kAEPark.

Event Class kAETelephonyEvents

Event ID kAERedirectCall

Parameters

keyDirectObject

Description:	Call appearance to redirect
Descriptor Type:	typeObjectSpecifier
Required or Optional?	Required

keyAEDestination

Description:	Destination for redirection
Descriptor Type:	typeObjectSpecifier
Required or Optional?	Required

keyAEAddressName

Description:	Destination address name
Descriptor Type:	typeIntlText
Required or Optional?	Optional

keyAERedirectionType

Description:	The type of redirection
Descriptor Type:	typeEnumeration
Required or Optional?	Optional

Reply Parameters None

Notes Information about call activity is presented to the client through the Notification Apple Event only. A non error result does not indicate success of the event.

Register Dependency—register a dependency on future call activity

This event requests the server to notify the sender application whenever a call appearance event occurs that satisfies the call appearance object specifier. The application may request an optional object specifier to be notified. Once initial notification has taken place, subsequent notification is based on changes in the list of properties given in the optional parameter. If no list is given, then all subsequent events regarding that call appearance will be notified. Whenever call activity takes place in the server, all notification object specifiers are checked to see if they match the call. If so, the list of trigger properties is checked to see if the event was generated by one of them. If so, the notification takes place.

Event Class kAETelephonyEvents

Event ID kAERegisterDependency

Parameters

keyDirectObject

Description:	The prototype call appearance
Descriptor Type:	typeObjectSpecifier
Required or Optional?	Required

keyAENotifyee

Description:	The object to notify
Descriptor Type:	typeObjectSpecifier
Required or Optional?	Optional

keyAENotifyProperties

Description:	List of properties to turn on
Descriptor Type:	typeAEList
Required or Optional?	Optional

Reply Parameters None

Object classes defined in the Telephony Suite

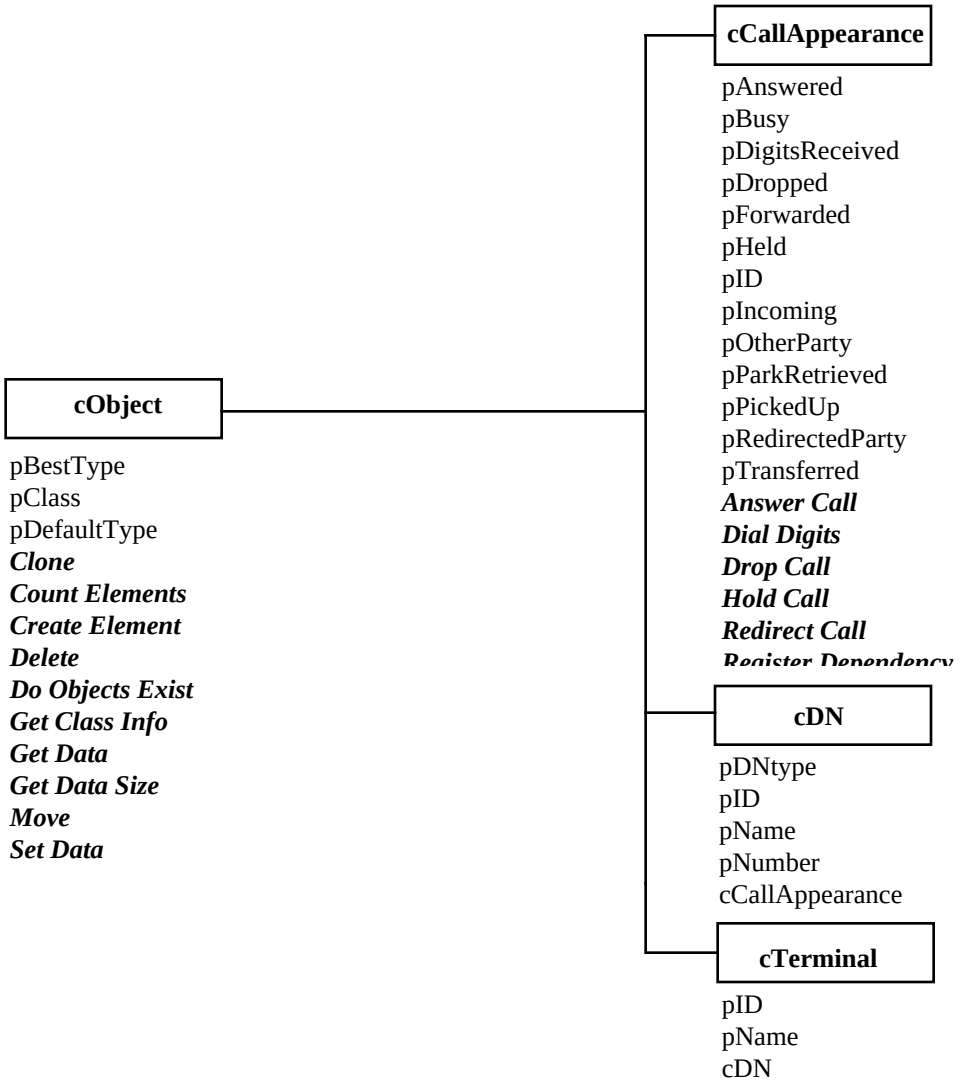
The Apple event object classes defined in the Telephony suite are described in the following sections. Table 2 lists these object classes.

■ **Table 2** Apple event object classes defined in the Telephony suite

Object class ID	Description
CallAppearance	A representation of a telephone call in a telephone system *Properties:* pAnswered, pBestType, pBusy, pClass, pDefaultType, pDigitsReceived, pDropped, pForwarded, pHeld, pID, pIncoming, pOtherParty, pParkRetrieved, pPickedUp, pRedirectedParty, pTransferred *Element Classes:* None
cDN	A representation of a Directory Number in a telephone system *Properties:* pBestType, pClass, pDefaultType, pDNType, pID, pName, pNumber *Element Classes:* cCallAppearance
cTerminal	A representation of a user terminal in a telephone system *Properties:* pBestType, pClass, pDefaultType, pID, pName *Element Classes:* cDN

Figure 1 illustrates the inheritance hierarchy for the object classes defined in the Telephony suite. Listed for each object class are the properties, element classes, and Apple events that have not been inherited from object classes higher in the inheritance hierarchy.

■ **Figure 1** Object inheritance hierarchy for the Telephony suite



CallAppearance—a representation of a telephone call in a telephone system

A representation of a telephone call in a telephone system. The call consists of two ends, you and another party, and a possible redirected party (someone who has forwarded or transferred the call.)

Superclass cObject (Core suite)

Default Descriptor Type typeIntlText

Properties

pAnswered

Description:	Has the call been answered?
Object Class ID:	cBoolean
Inherited?	No
Modifiable or Non-modifiable?	Non-modifiable

pBestType

Description:	The descriptor type that can contain the most information from objects of this object class
Object Class ID:	cType
Inherited?	Yes, from cObject
Modifiable or Non-modifiable?	Non-modifiable

pBusy

Description:	The called party was busy
Object Class ID:	cBoolean
Inherited?	No
Modifiable or Non-modifiable?	Non-modifiable

pClass

Description:	The four-character class ID for the object class
Object Class ID:	cType
Inherited?	Yes, from cObject
Modifiable or Non-modifiable?	Non-modifiable

pDefaultType

Description:	The default descriptor type for the object class
Object Class ID:	cType
Inherited?	Yes, from cObject
Modifiable or Non-modifiable?	Non-modifiable

pDigitsReceived

Description:	Any incoming Digits dialed by the other party to this call
Object Class ID:	cIntlText
Inherited?	No
Modifiable or Non-modifiable?	Non-modifiable

pDropped

Description:	The call has been dropped
Object Class ID:	cBoolean
Inherited?	No
Modifiable or Non-modifiable?	Non-modifiable

pForwarded

Description:	Forward (kAEBusyForwarded, kAENoAnsForwarded, kAEForwarded)
Object Class ID:	cEnumeration
Inherited?	No
Modifiable or Non-modifiable?	Non-modifiable

pHeld

Description:	Is the call currently on hold locally?
Object Class ID:	cBoolean
Inherited?	No
Modifiable or Non-modifiable?	Non-modifiable

pID

Description:	A unique CA ID
Object Class ID:	cLongInteger
Inherited?	No
Modifiable or Non-modifiable?	Non-modifiable

pIncoming

Description:	The call is incoming (versus outgoing)
Object Class ID:	cBoolean
Inherited?	No
Modifiable or Non-modifiable?	Non-modifiable

pOtherParty

Description:	The other party to the call
Object Class ID:	cIntlText
Inherited?	No
Modifiable or Non-modifiable?	Non-modifiable

pParkRetrieved

Description:	Call has been park retrieved
Object Class ID:	cBoolean
Inherited?	No
Modifiable or Non-modifiable?	Non-modifiable

pPickedUp

Description:	Call has been picked up
Object Class ID:	cBoolean
Inherited?	No
Modifiable or Non-modifiable?	Non-modifiable

pRedirectedParty

Description:	The redirected party to the call. (A redirected party is someone who is not the original recipient or target of the call and has received the call through forwards and transfers.)
Object Class ID:	cTerminal
Inherited?	No
Modifiable or Non-modifiable?	Non-modifiable

pTransferred

Description:	Call has been transferred
Object Class ID:	cBoolean
Inherited?	No
Modifiable or Non-modifiable?	Non-modifiable

Element Classes None

Apple Events

Apple events from the Core suite:

Clone	Inherited from cObject
Count Elements	Inherited from cObject
Create Element	Inherited from cObject
Delete	Inherited from cObject
Do Objects Exist	Inherited from cObject
Get Class Info	Inherited from cObject
Get Data	Inherited from cObject
Get Data Size	Inherited from cObject
Move	Inherited from cObject
Set Data	Inherited from cObject

Apple events from the telephony suite:

Answer Call	Not inherited
Dial Digits	Not inherited
Drop Call	Not inherited
Hold Call	Not inherited
Redirect Call	Not inherited
Register Dependency	Not inherited

cDN—a representation of a DN in a telephone system

The cDN object class is the class for representation of a Directory Number appearance (DN aka a line) in a telephone system. Simple telephones have only one DN. The call appearance list consists of all CAs on that DN that are currently connected or attempting to connect.

Superclass cObject (Core suite)

Default Descriptor Type typeIntlText

Properties

pBestType

Description:	The descriptor type that can contain the most information from objects of this object class
Object Class ID:	cType
Inherited?	Yes, from cObject
Modifiable or Non-modifiable?	Non-modifiable

pClass

Description:	The four-character class ID for the object class
Object Class ID:	cType
Inherited?	Yes, from cObject
Modifiable or Non-modifiable?	Non-modifiable

pDefaultType

Description:	The default descriptor type for the object class
Object Class ID:	cType
Inherited?	Yes, from cObject
Modifiable or Non-modifiable?	Non-modifiable

pDNType

Description:	Type (kAEInternalDN, kAEExternalDN)
Object Class ID:	cEnumeration
Inherited?	No
Modifiable or Non-modifiable?	Non-modifiable

pID

Description:	A unique DN ID
Object Class ID:	cLongInteger
Inherited?	No
Modifiable or Non-modifiable?	Non-modifiable

pName

Description:	The name of the DN
Object Class ID:	cIntlText
Inherited?	No
Modifiable or Non-modifiable?	Non-modifiable

pNumber

Description:	The number of the DN
Object Class ID:	cIntlText
Inherited?	No
Modifiable or Non-modifiable?	Non-modifiable

Element Classes

cCallAppearance

Description:	The active call appearances on this DN
Inherited?	No
Modifiable or Non-modifiable?	Non-modifiable
Key Forms:	formAbsolutePosition, formName, formPropertyID, formRange, formRelativePosition, formTest

Apple Events

Apple events from the Core suite:	
Clone	Inherited from cObject
Count Elements	Inherited from cObject
Create Element	Inherited from cObject
Delete	Inherited from cObject
Do Objects Exist	Inherited from cObject
Get Class Info	Inherited from cObject
Get Data	Inherited from cObject
Get Data Size	Inherited from cObject
Move	Inherited from cObject
Set Data	Inherited from cObject

cTerminal—a representation of a user terminal in a telephone system

The cTerminal object class is the class for representation of a user terminal (telephone) in a telephone system.

Superclass cObject (Core suite)

Default Descriptor Type typeIntlText

Properties

pBestType

Description:	The descriptor type that can contain the most information from objects of this object class
Object Class ID:	cType
Inherited?	Yes, from cObject
Modifiable or Non-modifiable?	Non-modifiable

pClass

Description:	The four-character class ID for the object class
Object Class ID:	cType
Inherited?	Yes, from cObject
Modifiable or Non-modifiable?	Non-modifiable

pDefaultType

Description:	The default descriptor type for the object class
Object Class ID:	cType
Inherited?	Yes, from cObject
Modifiable or Non-modifiable?	Non-modifiable

pID

Description:	The 32 bit integer ID used to uniquely identify a terminal
Object Class ID:	cLongInteger
Inherited?	No
Modifiable or Non-modifiable?	Non-modifiable

pName

Description:	The name of the terminal
Object Class ID:	cIntlText
Inherited?	No
Modifiable or Non-modifiable?	Non-modifiable

Element Classes

cDN

Description:	The DN on this terminal
Inherited?	No
Modifiable or Non-modifiable?	Non-modifiable
Key Forms:	formAbsolutePosition, formName, formPropertyID, formRange, formRelativePosition, formTest

Apple Events

Apple events from the Core suite

Clone	Inherited from cObject
Count Elements	Inherited from cObject
Create Element	Inherited from cObject
Delete	Inherited from cObject
Do Objects Exist	Inherited from cObject
Get Class Info	Inherited from cObject
Get Data	Inherited from cObject
Get Data Size	Inherited from cObject
Move	Inherited from cObject
Set Data	Inherited from cObject

Key forms defined in the Telephony suite

Table 3 lists the key forms defined in the Telephony suite. The italicized words in each example correspond to the key (the portion of the object specifier record that distinguishes an object from other objects of the same class in the same container). For more information about keys and key forms, see the Apple Event Manager chapter of *Inside Macintosh: InterApplication Communication*.

■ **Table 3** Key forms defined in the Telephony suite

Key form constant	Description
formAbsolutePosition	Specifies the position of an element in relation to the beginning or end of its container (for example, "word *5* of . . . "), or specifies one or more elements with a constant defined in the Apple Event Manager chapter of *Inside Macintosh: InterApplication Communication*, such as kAEFirst (for example, "the *first* word in paragraph 12 . . . ") or kAEAll (for example, "*all* the words in paragraph 12 . . . ")
formName	Specifies an element by its name (for example, "the document *named 'MyDoc' "*)
formPropertyID	Specifies a property of an object by its four-character property ID (for example, "*the font* of word 1")
formRange	Specifies a list of elements between two other elements (for example, "the words *between 'Wild' and 'Zanzibar,' inclusive*")
formRelativePosition	Specifies an element immediately before or after a container (for example, "*the next* word *after* the word whose style is bold")
formTest	Specifies one or more elements that pass a test; values of one or more properties or elements can be tested (for example, "the first paragraph *that is centered and that begins with the word 'Wild' "*)

Comparison operators defined in the Telephony suite

Table 4 lists the comparison operators defined in the Telephony suite.

■ **Table 4** Comparison operators defined in the Telephony suite

Comparison operator constant	Operator	Description
kAEBeginsWith	`'bgwt'`	The value of the first operand begins with the value of the second operand (for example, the string “operand” begins with the string “opera”)
kAEContains	`'cont'`	The value of the first operand contains the value of the second operand (for example, the string “operand” contains the string “era”)
kAEEndsWith	`'ends'`	The value of the first operand ends with the value of the second operand (for example, the string “operand” ends with the string “and”)
kAEEquals	`'=  '`	The value of the first operand is equal to the value of the second operand
kAEGreaterThan	`'>  '`	The value of the first operand is greater than the value of the second operand
kAEGreaterThanEquals	`'>= '`	The value of the first operand is greater than or equal to the value of the second operand
kAELessThan	`'<  '`	The value of the first operand is less than the value of the second operand
kAELessThanEquals	`'<= '`	The value of the first operand is less than or equal to the value of the second operand

Constants defined in the Telephony suite

Table 5 lists the constants defined in the Telephony suite.

■ **Table 5** Constants defined in the Telephony suite

Constant	Value
cCallAppearance	'CA..'
cDN	'DN..'
cTerminal	'TERM'
kAEAnswerCall	'ANSW'
kAEBusyForwarded	'BFWD'
kAEDialDigits	'DIAL'
kAEDropCall	'DROP'
kAEExternalDN	'DNEx'
kAEForwarded	'UFWD'
kAEHoldCall	'HOLD'
kAEInternalDN	'DNIn'
kAEMakeCall	'CALL'
kAENoAnsForwarded	'NFWD'
kAENotifyDependency	'Notf'
kAEPark	'Prk.'
kAERedirectCall	'REDR'
kAERegisterDependency	'REGD'
kAETelephonyEvents	'TELE'
kAETransfer	'TRSF'
keyAEAddressName	'ANAM'
keyAEChangedObject	'Nfor'
keyAEDestination	'dest'
keyAEDigits	'DIGS'
keyAENotifyee	'Nfye'
keyAENotifyProperties	'NfPr'
keyAERedirectionType	'RDTy'
keyAESourceDN	'SDN.'

■ **Table 5** Constants defined in the Telephony suite (Continued)

Constant	Value
keyAEUnHold	'HLD.'
pAnswered	'ANSW'
pBusy	'BUSY'
pDigitsReceived	'PDIN'
pDNType	'DNTy'
pDropped	'DRPD'
pForwarded	'FWD.'
pID	'ID..'
pIncoming	'CAin'
pHeld	'HELD'
pNumber	'NUMB'
pOtherParty	'PRTY'
pParkRetrieved	'PKRT'
pPickedUp	'PKUP'
pRedirectedParty	'RPTY'
pTransferred	'TRAN'

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