1 The call flow diagrams specification

This document presents several example call flows to illustrate use of the API. The call flows are represented using message sequence charts. The goal is to illustrate typical sequences based on the current version of the JCC specification, which the application programmer might use in order to provide the named service. Messages signaled between objects are shown as numbered lines with arrows indicating the direction of the signal. Temporal ordering of messages is indicated by the sequence number. Each message reflects the operation name to be invoked by the object receiving the message. The general format of the call flow diagrams is described below.

1.1 Service overview

Before each sequence diagram, a brief description of the service is given.

1.2 Objects

These are given at the top of each call flow. Where given, the names of the objects implementing the interfaces are given before the colon. The interface types are given after the colon.

1.3 APIs

APIs are shown as messages flowing between objects representing the application and the objects representing the JCC platform. These messages are shown as numbered arrows. Sequence numbers indicate the ordering of messages. Each message is given a message name, which indicates the method call to be invoked on the object receiving the message. Intra application or intra service flows are implementation dependent and are also shown in some instances.

1.4 Description of service

At the end of each sequence diagram, a detailed description, describing each of the call flows, for the service is given.

2 Call Flows

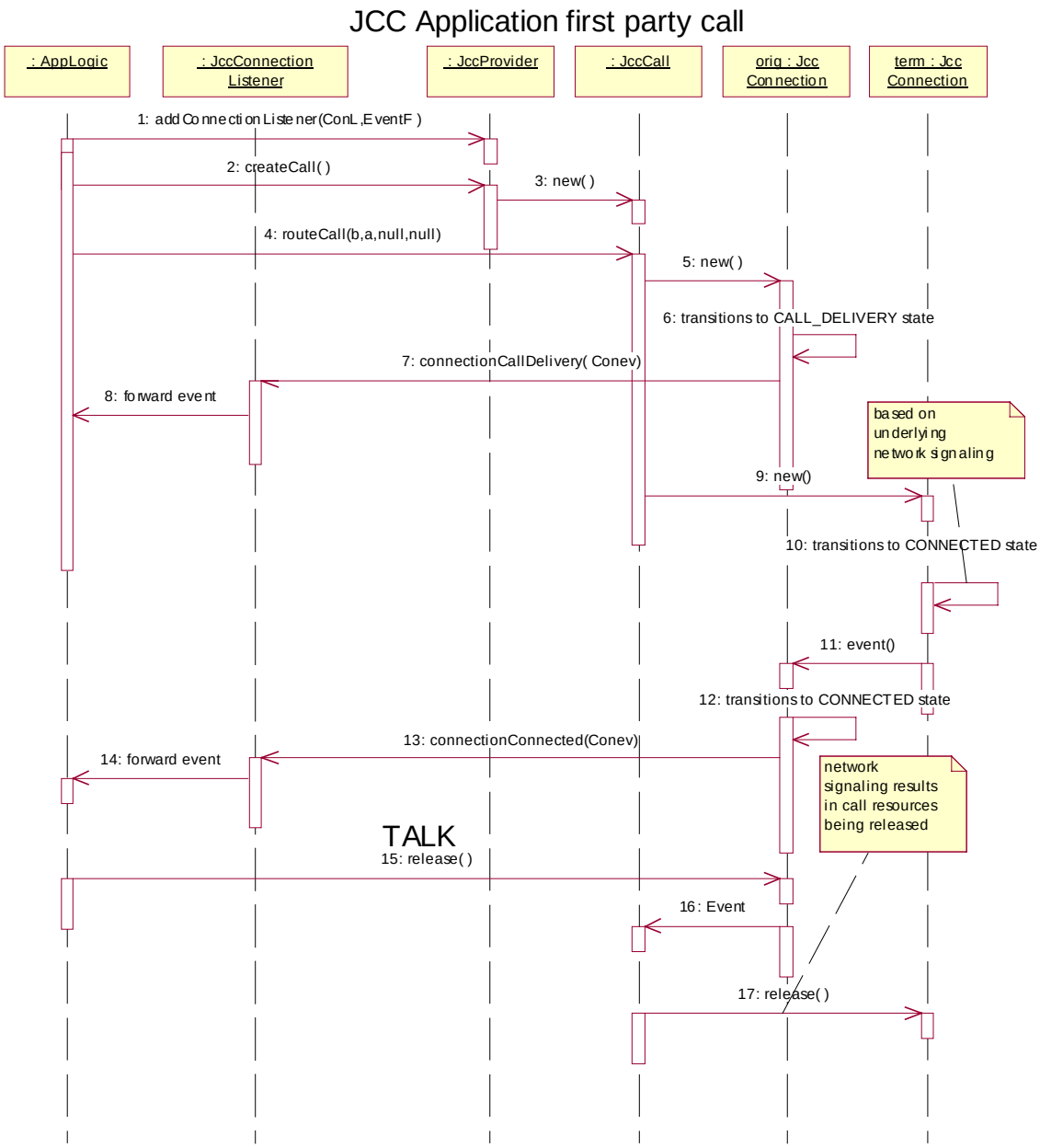
It has to be remarked here that AppLogic in all these figures is referring to the Application Logic. The application developer is also expected to provide an implementation of the relevant Listener classes (JcpProviderListener, JcpCallListener, JcpConnectionListener etc) that the application expects to use. Normally, we show only the JccConnectionListener since we assume that in our call flows the application would need the services of only the JccConnectionListener. Note also that the JccConnectionListener is a subclass of JccCallListener.

The objects provided by the JCC implementation are the JccProvider, JccCall, JccConnection and the JccAddress objects. In the call flows we may show only some of these objects for the purpose of avoiding confusion. Note that normally the scenario that we model assumes that party a calls party b.

We would also like to point out that in the call flows shown before the call flow corresponding to the Virtual Private Network, we do not show the EventFilter interfaces so as to keep the explanation and flows simple. Note that EventFilter interface is expected to provide the event filtering functionality. Note that the later call flows do show the EventFilters. Finally, we would also like to point out that in these call flows we do not show the occurrence of all the events again from the point of view of simplicity. Hence, only the significant events are explicitly shown.

2.1 First Party Call--Origination

The following call flow depicts a simple call flow. The scenario considered is that of an application at an end point originating a call. There are two parties on the call once the call is established.



1. The application representing party a and denoted by AppLogic adds a listener ConL to the call with EventF denoting the EventFilter. The EventFilter is an object which implements the EventFilter interface and is to be provided by the application. In order to improve performance a set of standard EventFilters will be provided by the JCC implementation. The application if it desires can choose this set of standard

EventFilters. In this flow though we *ignore* the use of EventFilter to keep the flow simple as explained earlier. Note that the application can use the addCallListener(callListener) method if it desires to receive all events on all addresses associated with this JccProvider. This is okay since the JccConnectionListener interface extends the JccCallListener interface. Note that this method is also equivalent to JccProvider.addCallListener(ConL, EventF) since parameter ConL is a JcpConnectionListener and hence also a JcpCallListener.

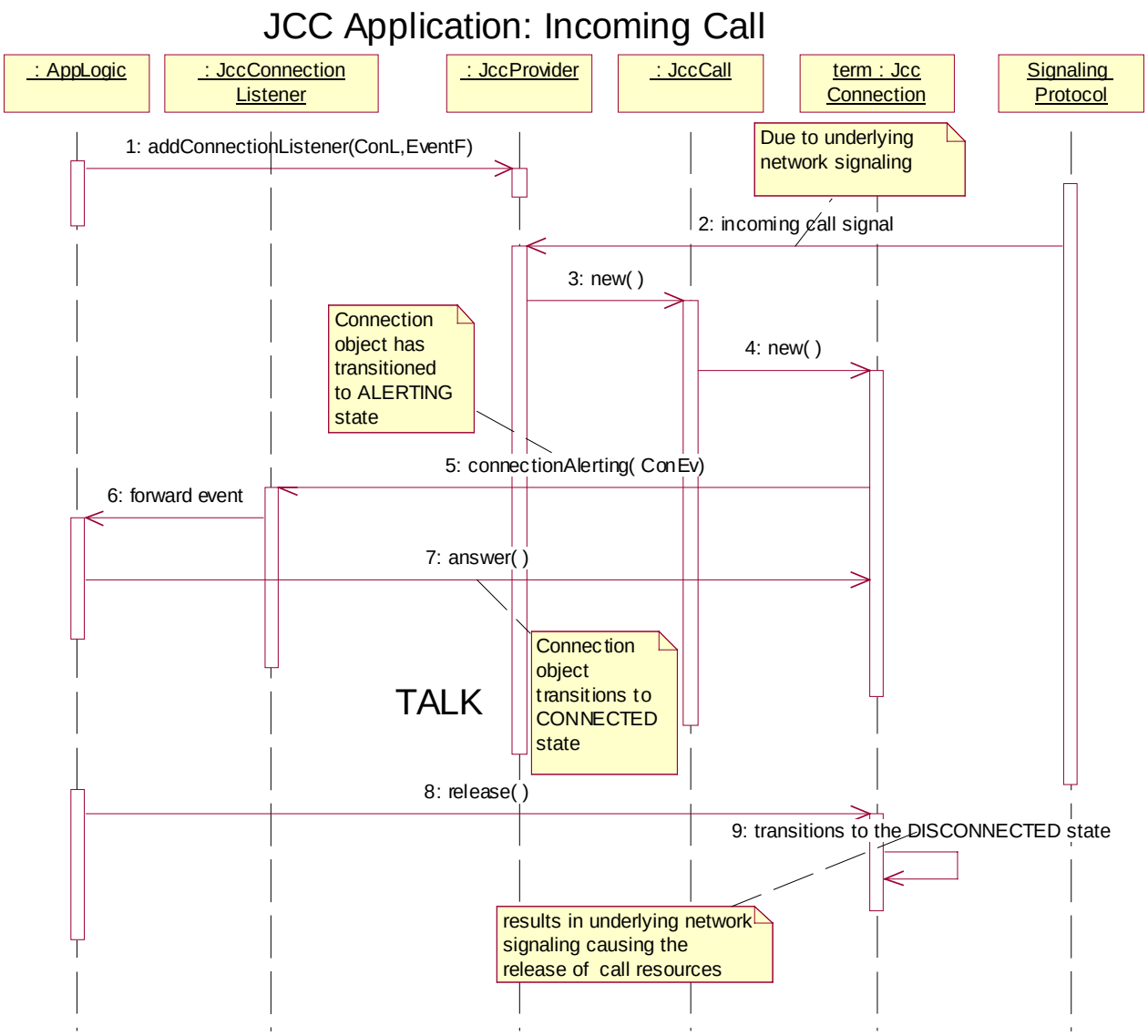
2. This message is then used by the application to request the JccProvider to create an object implementing the JccCall interface. This creates a new instance of the call with no connections. The new call object is in the IDLE state. An exception is generated if a new call cannot be created for various reasons. The JccProvider must be in the IN_SERVICE state, if not an InvalidStateException is thrown.
3. The message is used by the JccProvider to create an object implementing the JccCall interface.
4. As explained earlier, in this call flow party a is the calling party and party b is the called party. Hence, the application, representing party a, uses this message to instruct the object implementing the JccCall interface to create a JccConnection object representing the originating party (a) and route the call to the destination party represented by the String b. The routing of the call to the destination party would necessitate the creation of another JccConnection object associated with the destination address.
5. This message is used to create an object implementing the JccConnection interface representing the originating party (a) hereafter referred to as the originating JccConnection. Note that the getAddress() method invoked on this object returns a JcpAddress corresponding to the party (a). Further, the getDestinationAddress() method invoked on this object returns a JcpAddress corresponding to the party (b). The JccConnection passes through different states while proceeding with the different steps of basic call processing such as authorizing whether call with the given number can be setup (AUTHORIZE_CALL_ATTEMPT), analyzing the digits dialed for special processing such as on 1-800 calls etc or whether additional digits are required to complete the destination address etc (ADDRESS_ANALYZE). The EventFilter would also be consulted by the implementation to determine which events are to be reported back to the application but as clarified earlier we are ignoring the EventFilter in this call flow.
6. This results in the JccConnection object transitioning to the CALL_DELIVERY state.
7. The registered JccConnectionListener is then informed of the originating JccConnection being in the CALL_DELIVERY state. The assumption here is that the EventFilter has advised the JCC implementation to inform the listener of this event on the given address. This is done by sending an appropriate JccConnectionEvent using the connectionCallDelivery(connectionevent) method which has to be implemented by the registered JccConnectionListener object.
8. The JccConnectionListener then informs the application about the occurrence of the event specified.
9. Since the implementation already has the address of the destination party (b), it proceeds with the creation of a new JccConnection object representing the terminating party (b) hereafter referred to as the terminating JccConnection. . Note

that the getAddress() method invoked on this terminating JccConnection object returns a JcpAddress corresponding to the party (b).

10. The terminating JccConnection object transits to the CONNECTED state possibly as a result of underlying network signaling causing this to happen. Note that many intervening events such as the alerting of the destination party etc have not been shown. Typically, the terminating JccConnection object passes through AUTHORIZE_CALL_ATTEMPT, CALL_DELIVERY and ALERTING states before transitioning to the CONNECTED state.
11. An event internal to the implementation then informs the originating JccConnection that the destination terminating JccConnection is in the CONNECTED state. Note that this way of informing the originating JccConnection is implementation specific and is not governed in any way by the API specification.
12. The originating JccConnection object transits to the CONNECTED state.
13. The JCC implementation then informs the JccConnectionListener that the original JccConnection representing party a is in the CONNECTED state.
14. The application is then informed of the originating JccConnection being in the CONNECTED state by the JccConnectionListener.
15. When the application decides to end the conversation, it does so by using this message on the originating JccConnection. This results in the originating JccConnection transitioning from the CONNECTED state to the DISCONNECTED state. Call resources related to the originating party may also be released on account of network signaling. Note also that this is one possible way in which the call may be released. There are other ways in which the call can be disconnected and which are not shown here. Additional JccConnections may be dropped indirectly as a result of this method. For example, dropping the destination JccConnection of a two-party call as shown here may result in the entire telephone call being dropped which is what is shown in the next two flows. It is up to the implementation to determine which JccConnections are dropped as a result of this method. Implementations should not, however, drop additional JccConnections representing additional parties if it does not reflect the natural response of the underlying telephone hardware.
16. Since there are only two parties in this call, this also results in the other party namely the terminating JccConnection also transitioning to the DISCONNECTED state. This is caused by this event send internally within the JCC implementation. Note that the way events are passed around classes is highly implementation specific.
17. This message causes the terminating JccConnection to transition to the DISCONNECTED state and call resources related to the destination party used up in the network are also released as a result of network signaling.

2.2 First Party Call--Termination

The following call flow depicts a simple call flow. The scenario considered is that of an application at an end point terminating a call. Hence, while the call control objects corresponding to the originating party exist, we do not show these in this call flow.



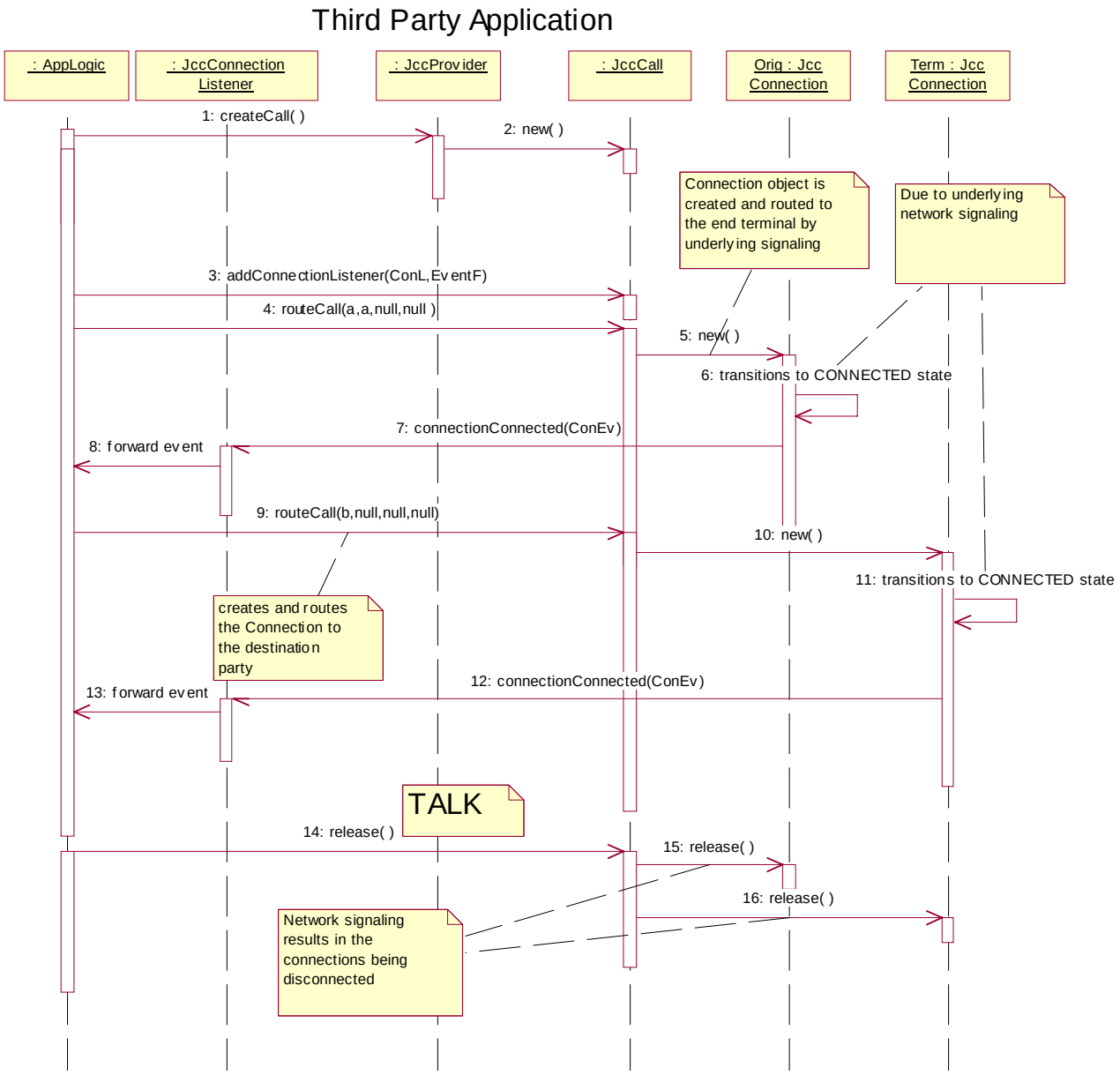
1. This message is used by the application to add a listener ConL along with the EventFilter EventF to the JccProvider. It is assumed that the application is interested in receiving the CONNECTION_ALERTING event for the address of interest shown here.
2. A network event (because of the signaling protocol) is delivered to the JccProvider notifying the JccProvider of an incoming call on the end point of interest.
3. The JccProvider creates a new JccCall object representing the incoming call after being notified of a new call.
4. A new JccConnection object is also created to represent the party receiving the call. Note that in this diagram, the JccConnection is shown as being created by the JccCall

object. This fact though depends on the implementation of the JCC. This JccConnection object passes through different states, which is not shown here.

5. An event is delivered to the JccConnectionListener alerting the listener to an incoming call. This event is generated by the JCC implementation because of the JccConnection object transitioning to the ALERTING state.
6. This event is used by the listener to inform the application that a JccConnection on the endpoint of interest is in the ALERTING state. This message is specific to the applications and is not specified as part of the JCC specification. From this event the application can get a reference to the JccConnection object by invoking the getConnection() method on the event delivered.
7. The application uses this message to tell the JCC implementation that it does want to receive the call. This results in the JccConnection transitioning to the CONNECTED state. Further, this also results in appropriate network signals being sent to the corresponding party informing it that the call has been accepted.
8. The application uses this message to release the call and associated resources.
9. The JccConnection object transitions to the DISCONNECTED state and this results in underlying network signaling which releases all the network resources used in this call. The corresponding party is also informed of the release of the call.

2.3 Third Party Application—I

In this scenario we show the call flows associated with a third party application. It is assumed that the JCC application is responsible for dialing two parties a and b and then connecting them together. This is a third party application since the corresponding parties a and b are connected by the application. The parties themselves do not initiate the call.

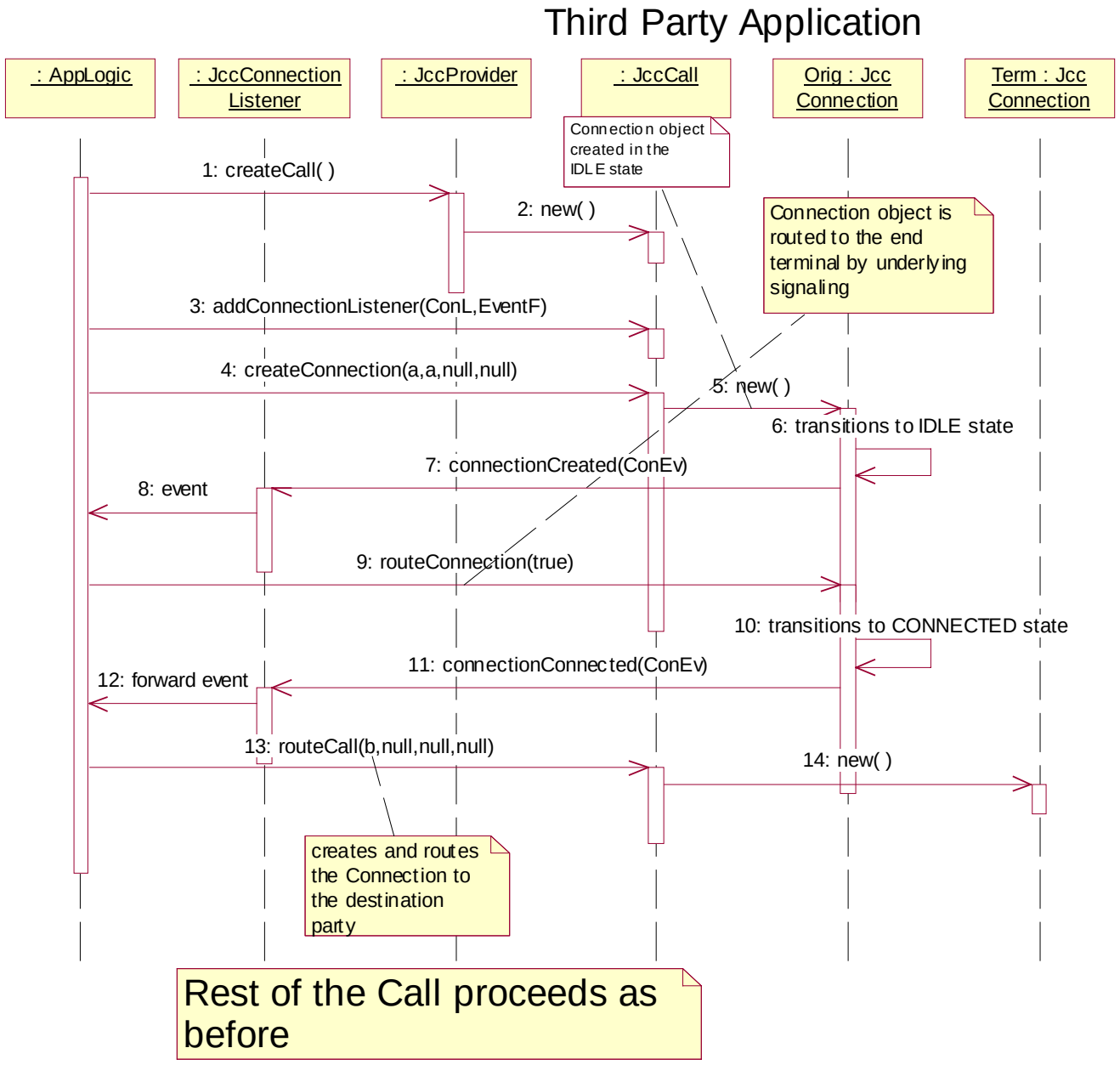


1. This message is used by the application to request the JccProvider to create an object implementing the JccCall interface. This creates a new instance of the call with no connections. The new call object is in the IDLE state. An exception is generated if a new call cannot be created for various reasons. The JccProvider must be in the IN_SERVICE state, if not an InvalidStateException is thrown.
2. This results in the JCC implementation creating the object implementing the JccCall interface.

3. The application then registers a JccConnectionListener ConL along with the event filter EventF for receiving only selective events associated with this call.
4. The application then instructs the JCC implementation to place a call to one of the parties by invoking this method.
5. This results in the JccConnection object representing one of the parties being created. The JccConnection object then passes through different states with corresponding signals being sent on the network to the end terminal of the party of interest.
6. The JccConnection object transitions to the CONNECTED state.
7. This message informs the JccConnectionListener that the JccConnection object is in the CONNECTED state.
8. The JccConnectionListener informs the application of the occurrence of the previous event.
9. *The application then proceeds with calling the "destination*". It does so by using this method to specify to the JCC platform the address of the "destination" party.
10. The JccConnection object representing the other party is created.
11. The terminating JccConnection object transits to the CONNECTED state.
12. The JccConnectionListener is notified that the other party is also connected on the call.
13. The JccConnectionListener informs the application of the occurrence of the previous event.
14. The application releases the connection between the two corresponding parties. Note that the connection can also be released due to action taken by either of the end parties but we do not show that here.
15. This results in the resources used by one of the parties in the call being released and the corresponding JccConnection object transitioning to the DISCONNECTED state.
16. This results in the resources used by the other party in the call also being released and the corresponding JccConnection object also transitioning to the DISCONNECTED state.

2.4 Third Party Application—II

In this scenario also we show the call flows associated with a third party application. The difference though with the earlier call flows is that in this case the first party is connected using different APIs.



1. This message is used by the application to request the JccProvider to create an object implementing the JccCall interface. This creates a new instance of the call with no connections. The new call object is in the IDLE state. An exception is generated if a new call cannot be created for various reasons. The JccProvider must be in the IN_SERVICE state, if not an InvalidStateException is thrown.

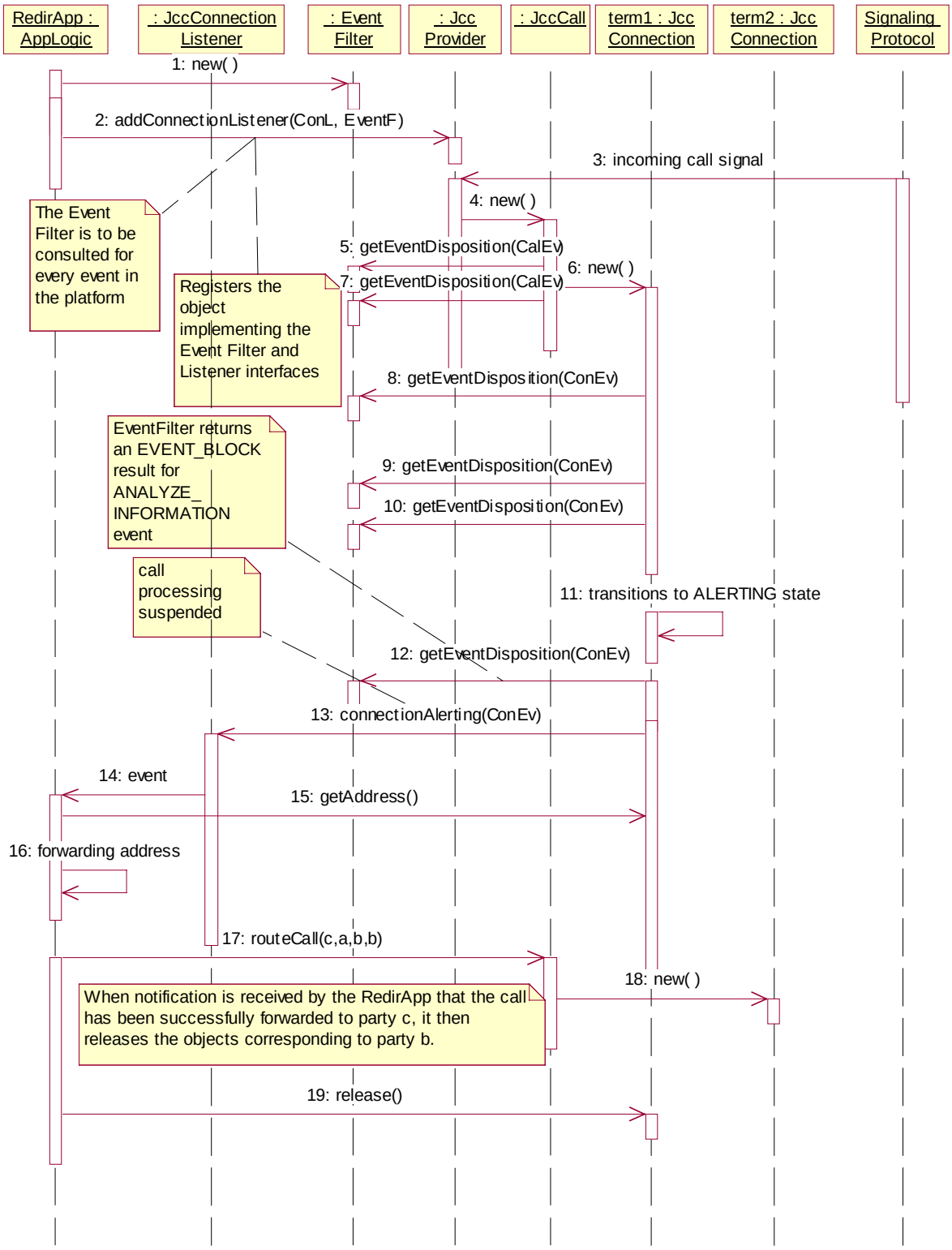
2. This results in the JCC implementation creating the object implementing the JccCall interface.
3. The application then registers as a listener for receiving events associated with this call.
4. The application then instructs the JCC implementation to create a JccConnection representing the originating party a. The created JccConnection will be in the IDLE state and is associated with a JccCall and JccAddress which in this case is the object corresponding to the string a.
5. This results in the object implementing the JccConnection interface being created.
6. The JccConnection object is created in the IDLE state.
7. The JccConnectionListener is informed that the JccConnection object has been created and is in the IDLE state.
8. The JccConnectionListener informs the application of the occurrence of the previous event.
9. The application then asks the JCC implementation to route the connection to the corresponding end party. This results in network signaling causing the JccConnection object to pass through various states. The parameter “true” instructs the implementation to attach the media once the connection is routed.
10. The JccConnection object finally transitions to the CONNECTED state.
11. This message informs the JccConnectionListener of success in connecting one of the parties of the call. This also implies that the corresponding JccConnection object is in the CONNECTED state.
12. The JccConnectionListener informs the application of the occurrence of the previous event.
13. The application then proceeds with calling the “destination” party since one of the parties of the call is already connected. It does so by using this method to specify to the JCC platform the address of the “destination” party.
14. The JccConnection object representing the other party is created.

The rest of the call proceeds as earlier.

2.5 Redirecting Application—with Application supplied EventFilter

This example call flow demonstrates a basic redirecting application. Unlike earlier call flows, we also explicitly show the EventFilter interface in this figure.

Redirecting Application



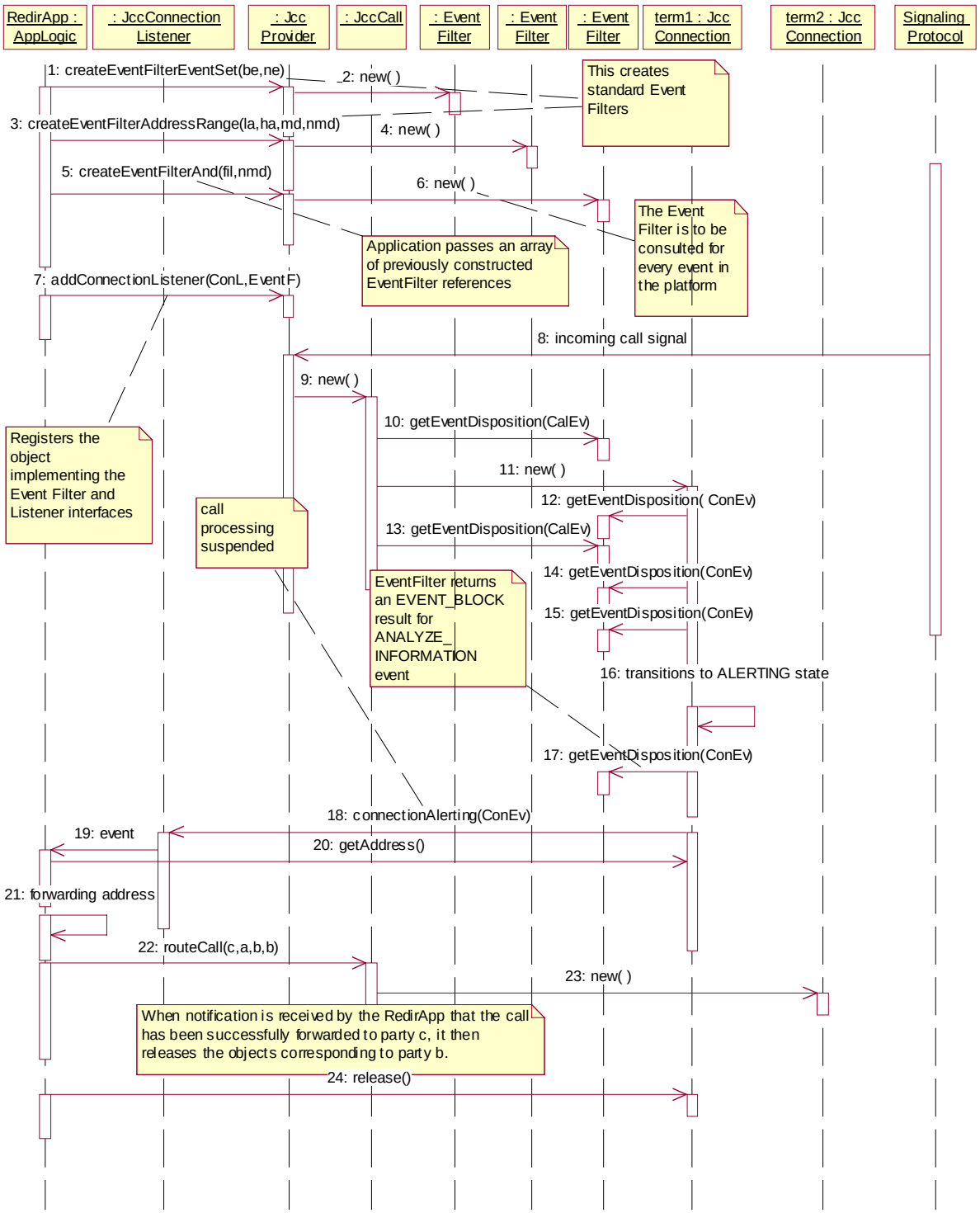
1. This message is used by the application to create an object implementing the EventFilter interface. Note that we show this message explicitly in this case only to bring attention to the fact that the EventFilter interface in this case has to be provided by the application. This is in contrast to the next call flow where standard EventFilter interfaces are used and which are provided by the platform.
2. This message is used by the redirecting application to register the JccConnectionListener object and the EventFilter objects with the JCC implementation. Note that the EventFilter object registered by the redirecting application is expected to contain the logic to return EVENT_BLOCK for the ALERTING event. This is because the redirecting application is then expected to provide the forwarding address before call processing can proceed.
3. This message, which is the result of underlying network-signaling protocols, is used to inform the JccProvider of an incoming call.
4. The object implementing the JccProvider interface then creates an object implementing the JccCall object to cater to the incoming call.
5. For every event occurring in the platform, the EventFilter is to be consulted for indication of whether the application is interested in the event. This message shows the platform consulting the EventFilter for one such event, which in this case is the CALL_CREATED event. It is assumed that the EventFilter returns EVENT_DISCARD.
6. The JccCall object then creates a new object implementing the JccConnection interface to model the incoming connection.
7. As a result of the JccConnection object being created, the JccCall object transitions to the ACTIVE state. Hence, the EventFilter has to be consulted to enquire the disposition for the resulting CALL_ACTIVE event. This is the purpose of this call flow. The EventFilter returns EVENT_DISCARD.
8. This message also shows the platform consulting the EventFilter for another event (CONNECTION_CREATED). The EventFilter returns EVENT_DISCARD.
9. This message also shows the platform consulting the EventFilter for another event (CONNECTION_AUTHORIZE_CALL_ATTEMPT). The EventFilter returns EVENT_DISCARD.
10. This message also shows the platform consulting the EventFilter for another event (CONNECTION_CALL_DELIVERY). The EventFilter returns EVENT_DISCARD. Note that since this is a terminating connection, hence it transitions from the AUTHORIZE_CALL_ATTEMPT state to the CALL_DELIVERY state.
11. This message indicates that the JccConnection has transitioned to the ALERTING state, which is the state of interest for the redirecting application.
12. This message also shows the platform consulting the EventFilter for another event (CONNECTION_ALERTING). EventFilter is expected to return EVENT_BLOCK.
13. In this case, since the EVENT_BLOCK value was returned previously, a ConnectionAlerting( ) method is used to inform the registered JccConnectionlistener of the occurrence of the event. Note also that call processing is blocked as a result.
14. The JccConnectionListener informs the application of the occurrence of the previous event.

15. The application obtains the JcpAddress associated with this JcpConnection. Note that the application might have to again invoke getName() method on the JcpAddress so as to obtain the string representation of the JcpAddress. This is not shown here.
16. This flow shows that the redirecting application is then responsible for obtaining the forwarding address.
17. The redirecting application having obtained the forwarding address uses this message to route the call to the proper destination.
18. This message results in a new JccConnection object being created in order to model the party to which the call is redirected, which in this case represents the forwarded number.
19. The application releases the initial connection using this API method.

2.6 Redirecting Application—with Standard EventFilters

This example call flow demonstrates a basic redirecting application. We show the use of standard EventFilters to enhance the performance of the system in this call flow.

Redirecting Application



1. This message is used by the application to request the JCC platform to create an EventFilter object, which will filter events, based on their types such as JccCONNECTION.ALERTING, JccCall.ACTIVE etc.
2. This message is used by the JCC platform to create a new EventFilter object.
3. This message is used by the application to request the JCC platform to create an EventFilter object, which will filter events, based on the endpoints of occurrence.
4. This message is used by the JCC platform to create a new EventFilter object.
5. This message is used by the application to request the JCC platform to create an EventFilter object, which will use both the previously created filters. Note that this results in events being filtered based on the types as well based on the endpoints of occurrence.
6. This message is used by the JCC platform to create a new EventFilter object.
7. This message is used by the redirecting application to register a JccConnectionListener and an EventFilter object (the one created with an array of EventFilters in a previous step) with the JCC implementation. Note that the EventFilter interface registered by the redirecting application is expected to contain the logic to return EVENT_BLOCK for the ALERTING event. This is because the redirecting application is then expected to provide the forwarding address before the call processing can proceed.
8. This message is used to inform the JccProvider of an incoming call.
9. The object implementing the JccProvider interface then creates an object implementing the JccCall object to cater to the incoming call.
10. For every event occurring in the platform, the registered EventFilter is to be consulted for indication of whether the application is interested in the event. This message shows the platform consulting the registered EventFilter for one such event (CALL_CREATED). It is assumed that the EventFilter returns EVENT_DISCARD. Note that the consultation is shown being done using the method getEventDisposition(). In reality, this might be an implementation specific method.
11. The JccCall object then creates a new object implementing the JccConnection interface to model the incoming connection.
12. This message also shows the platform consulting the registered EventFilter for another event (CONNECTION_CREATED). The EventFilter returns EVENT_DISCARD.
13. As a result of the JccConnection object being created, the JccCall object transitions to the ACTIVE state. Hence, the EventFilter has to be consulted to enquire the disposition for the resulting CALL_ACTIVE event. This is the purpose of this call flow. The EventFilter returns EVENT_DISCARD. Note that this event is shown to occur after the CONNECTION_CREATED event while the opposite is shown in the earlier call flow. This is allowed, as the specification does not warrant any order on the delivery of events generated by different objects and it is left to the implementation to follow a reasonable option. The events generated by the same object though have to be delivered in the order of generation.

14. This message also shows the platform consulting the EventFilter for another event (CONNECTION_AUTHORIZE_CALL_ATTEMPT). The EventFilter returns EVENT_DISCARD.
15. This message also shows the platform consulting the EventFilter for another event (CONNECTION_CALL_DELIVERY). The EventFilter returns EVENT_DISCARD. Note that since this is a terminating connection, hence it transitions from the AUTHORIZE_CALL_ATTEMPT state to the CALL_DELIVERY state.
16. This message indicates that the JccConnection has transitioned to the ALERTING state, which is the state of interest for the redirecting application.
17. This message also shows the platform consulting the EventFilter for another event (CONNECTION_ALERTING). EventFilter is expected to return EVENT_BLOCK.
18. In this case, since the EVENT_BLOCK value was returned previously, a ConnectionAlerting() method is used to inform the registered JccConnectionlistener of the occurrence of the event. Note also that call processing is blocked as a result.
19. The JccConnectionListener informs the application of the occurrence of the previous event.
20. The application obtains the JcpAddress associated with this JcpConnection. Note that the application might have to again invoke getName() method on the JcpAddress so as to obtain the string representation of the JcpAddress. This is not shown here.
21. This flow shows that the redirecting application is then responsible for obtaining the forwarding address.
22. The redirecting application having obtained the forwarding address uses this message to route the call to the proper destination.
23. This message results in a new JccConnection object being created in order to model the party to which the call is redirected, which in this case represents the forwarded number.
24. The application releases the initial connection using this API method.

2.7 Virtual Private Network: With Application Supplied EventFilter

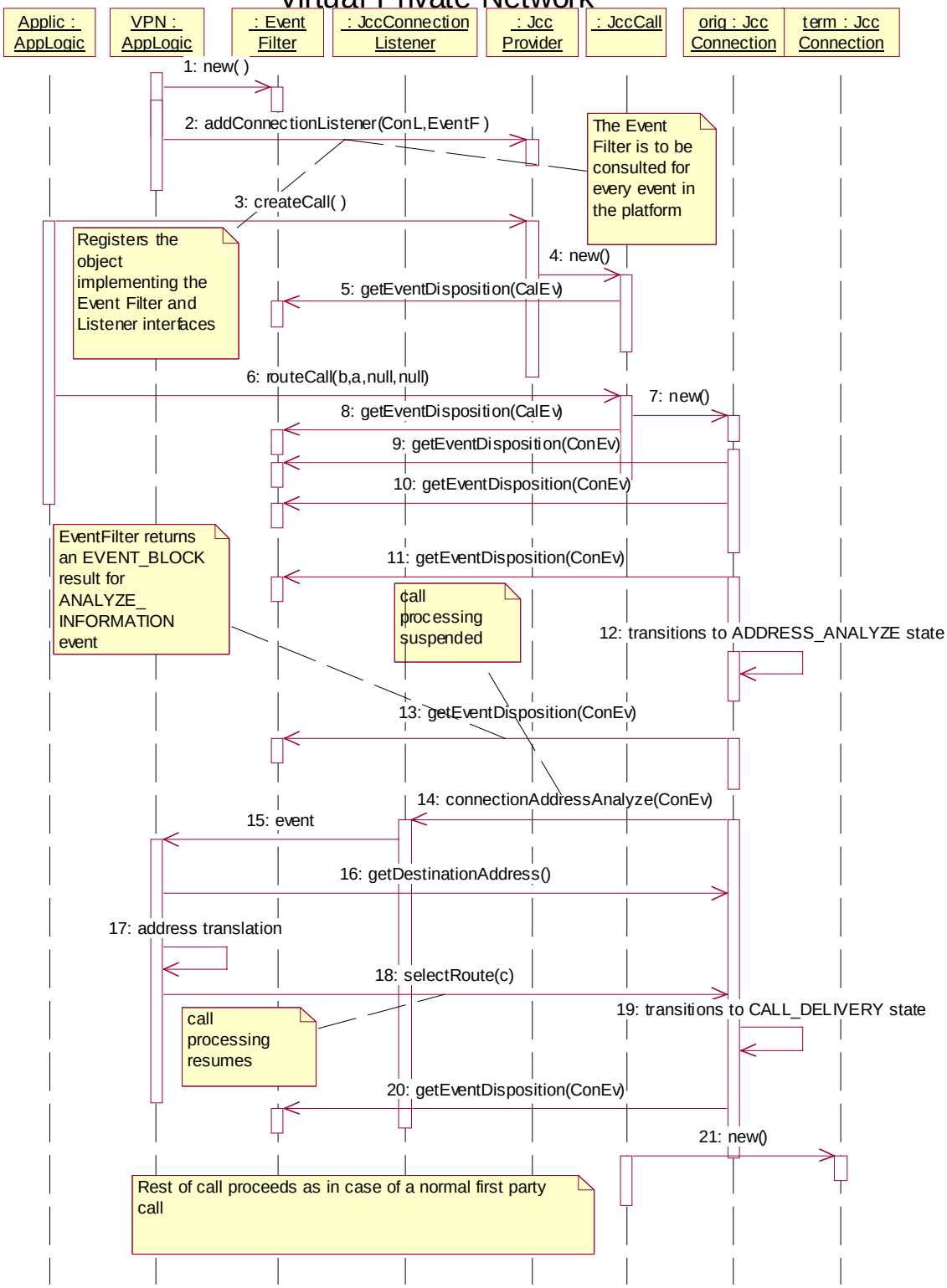
VPN is a corporate service that provides companies a way to link different sites with a uniform and private dialing plan, regardless of geographical boundaries. The main function of a VPN application is to translate dialed (VPN) numbers into a routable directory number equivalent. Access to the service can either be direct, from PBXs or registered terminals, or indirect, by dialing into the corporate VPN through the PSTN. Account number and PIN authentication is required for indirect access.

The VPN application is installed on an application server that communicates with the JCC implementation using the JCC API. The application also has access to databases for the VPN dial plan and for the account and PIN number information. Through the API, the JCC implementation is able to trigger the VPN application. The application is able to

request notification when specific digit sequences are dialed, and request calls to be set up through the JCC API.

In this call flow a is the calling party and b is the party called. The address of b will have to be translated. We explicitly show the application supplied EventFilter interface in this call flow diagram.

Virtual Private Network



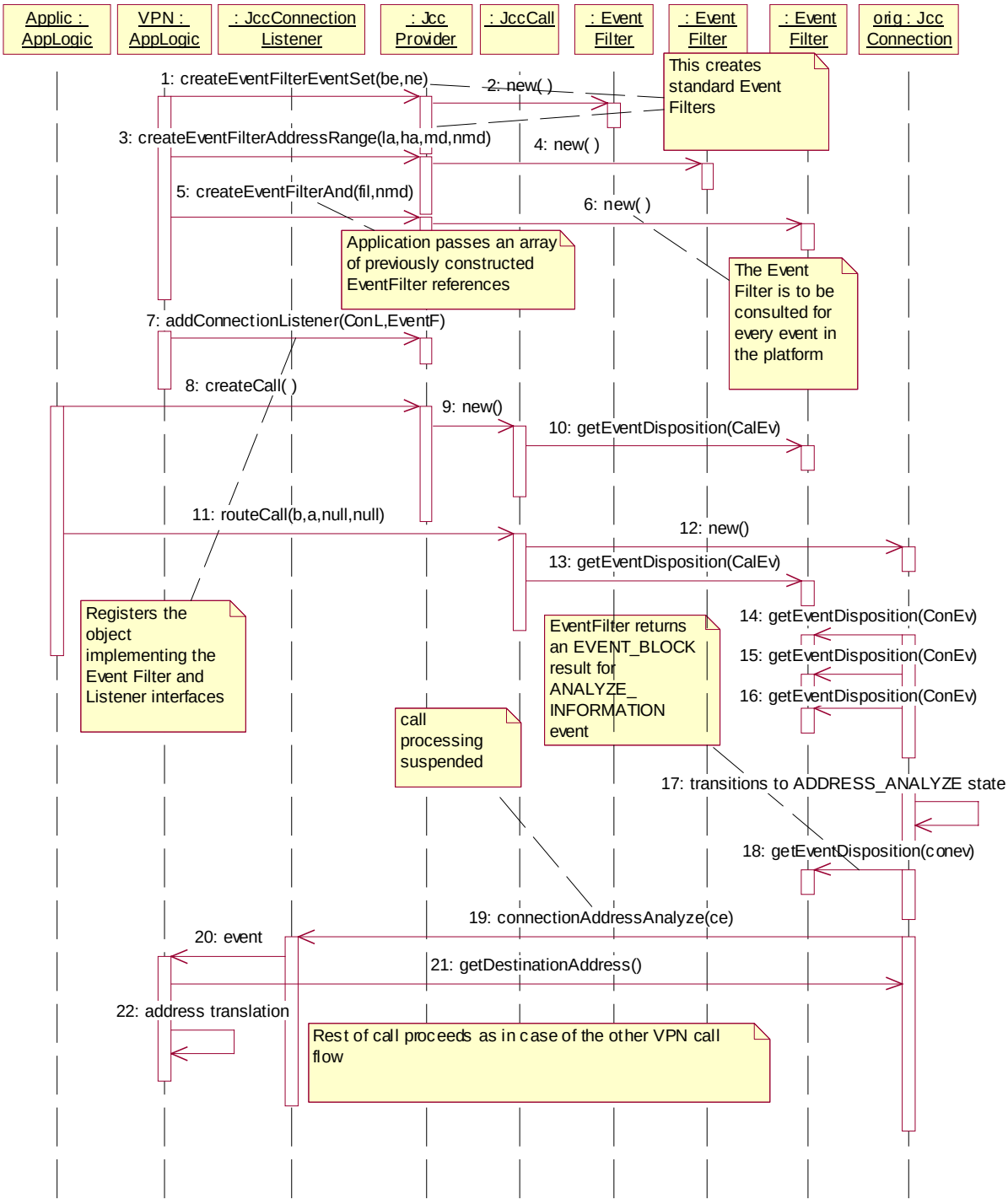
1. This message is used by the application to create an object implementing the EventFilter interface. Note that we show this message explicitly in this case only to bring attention to the fact that the EventFilter interface in this case has to be provided by the application. This is in contrast to the next call flow where standard EventFilter interfaces are used and which are provided by the platform.
2. This message is used by the VPN application to register the JccConnectionListener object and the EventFilter objects with the JCC implementation. Note that the EventFilter object registered by the VPN application is expected to contain the logic to return EVENT_BLOCK for the ADDRESS_ANALYZE event. This is because the VPN application is then expected to translate the address before the call processing can proceed.
3. An application invokes this method on the JccProvider to request it to create an object implementing the JccCall interface. This creates a new instance of the call with no connections. The new call object is in the IDLE state. An exception is generated if a new call cannot be created for various reasons. The JccProvider must be in the IN_SERVICE state, if not an InvalidStateException is thrown
4. The object implementing the JccProvider interface then creates an object implementing the JccCall object.
5. For every event occurring in the platform, the EventFilter is to be consulted for indication of whether the application is interested in the event. This message shows the platform consulting the EventFilter for one such event, which in this case is the CALL_CREATED event. It is assumed that the EventFilter returns EVENT_DISCARD.
6. In this call flow, party a is the calling party and party b is the called party. Hence, the application, representing party a, uses this message to instruct the object implementing the JccCall interface to create a JccConnection object representing the originating party (a) and route the call to the destination party represented by the String b. The routing of the call to the destination party would necessitate the creation of another JccConnection object associated with the destination address.
7. This message is used to create an object implementing the JccConnection interface representing the originating party (a).
8. As a result of the JccConnection object being created, the JccCall object transitions to the ACTIVE state. Hence, the EventFilter has to be consulted to enquire the disposition for the resulting CALL_ACTIVE event. This is the purpose of this call flow. The EventFilter returns EVENT_DISCARD.
9. This message also shows the platform consulting the EventFilter for another event (CONNECTION_CREATED). The EventFilter returns EVENT_DISCARD.
10. This message also shows the platform consulting the EventFilter for another event (CONNECTION_AUTHORIZE_CALL_ATTEMPT). The EventFilter returns EVENT_DISCARD.
11. This message also shows the platform consulting the EventFilter for another event (CONNECTION_ADDRESS_COLLECT). The EventFilter returns EVENT_DISCARD.

12. This message indicates that the JccConnection has transitioned to the ADDRESS_ANALYZE state, which is the state of interest for the VPN application.
13. This message also shows the platform consulting the EventFilter for another event (CONNECTION_ADDRESS_ANALYZE). EventFilter is expected to return EVENT_BLOCK.
14. In this case, since the EVENT_BLOCK value was returned previously, a ConnectionAddressAnalyze( ) method is used to inform the registered JccConnectionlistener of the occurrence of the event. Note also that call processing is blocked as a result.
15. The JccConnectionListener informs the application of the occurrence of the previous event.
16. The VPN application then has to obtain the address of the destination number which has to be translated. It uses this method invocation to obtain the destination number.
17. This flow shows that the VPN application is then responsible for translating the obtained destination address.
18. The VPN application having translated the digits uses this message to provide the new addressing information needed in order to complete the dialing process and place the telephone call. This being a valid API method causes call processing the JccConnection object to resume.
19. This results in the JccConnection object transitioning to the CALL_DELIVERY state.
20. This message shows the platform consulting the EventFilter for another event (CONNECTION_CALL_DELIVERY). The EventFilter returns EVENT_DISCARD.
21. This message results in a new JccConnection object being created in order to model the terminating party. Note that this JccConnection is associated with a JccAddress corresponding to “c”, which in this case represents the translated number.

2.8 Virtual Private Network—with Standard EventFilters

This example call flow demonstrates a call flow diagram for a VPN user. We show the use of standard EventFilters in this call flow diagram.

Virtual Private Network



1. This message is used by the application to request the JCC platform to create an EventFilter object, which will filter events, based on their types such as JccCONNECTION.ALERTING, JccCall.ACTIVE etc.
2. This message is used by the JCC platform to create a new EventFilter object.
3. This message is used by the application to request the JCC platform to create an EventFilter object, which will filter events, based on the endpoints of occurrence.
4. This message is used by the JCC platform to create a new EventFilter object.
5. This message is used by the application to request the JCC platform to create an EventFilter object that will use both the previously created filters. Note that this results in events being filtered based on the types as well based on the endpoints of occurrence.
6. This message is used by the JCC platform to create a new EventFilter object.
7. This message is used by the VPN application to register a JccConnectionListener and an EventFilter object (one created with an array of EventFilters in a previous step) with the JCC implementation. Note that the EventFilter interface registered by the VPN application is expected to contain the logic to return EVENT_BLOCK for the ADDRESS_ANALYZE event. This is because the VPN application is then expected to translate the address before the call processing can proceed.
8. An application invokes this method on the JccProvider to request it to create an object implementing the JccCall interface. This creates a new instance of the call with no connections. The new call object is in the IDLE state. An exception is generated if a new call cannot be created for various reasons. The JccProvider must be in the IN_SERVICE state, if not an InvalidStateException is thrown
9. The object implementing the JccProvider interface then creates an object implementing the JccCall object.
10. For every event occurring in the platform, the EventFilter is to be consulted for indication of whether the application is interested in the event. This message shows the platform consulting the EventFilter for one such event, which in this case is the CALL_CREATED event. It is assumed that the EventFilter returns EVENT_DISCARD.
11. In this call flow, party a is the calling party and party b is the called party. Hence, the application, representing party a, uses this message to instruct the object implementing the JccCall interface to create a JccConnection object representing the originating party (a) and route the call to the destination party represented by the String b. The routing of the call to the destination party would necessitate the creation of another JccConnection object associated with the destination address.
12. This message is used to create an object implementing the JccConnection interface representing the originating party (a).
13. This message shows the platform consulting the registered EventFilter for one the event corresponding to CALL_ACTIVE. It is assumed that the EventFilter returns EVENT_DISCARD. Note that the consultation is shown being done using the method getEventDisposition(). In reality, this might be an implementation specific method.

14. This message shows the platform consulting the registered EventFilter for another event (CONNECTION_CREATED). The EventFilter returns EVENT_DISCARD.
15. This message also shows the platform consulting the EventFilter for another event (CONNECTION_AUTHORIZE_CALL_ATTEMPT). The EventFilter returns EVENT_DISCARD.
16. This message also shows the platform consulting the EventFilter for another event (CONNECTION_ADDRESS_COLLECT). The EventFilter returns EVENT_DISCARD.
17. This message indicates that the JccConnection has transitioned to the ADDRESS_ANALYZE state, which is the state of interest for the VPN application.
18. This message also shows the platform consulting the EventFilter for another event (CONNECTION_ADDRESS_ANALYZE). EventFilter is expected to return EVENT_BLOCK.
19. In this case, since the EVENT_BLOCK value was returned previously, a ConnectionAddressAnalyze( ) method is used to inform the registered JccConnectionlistener of the occurrence of the event. Note also that call processing is blocked as a result.
20. The JccConnectionListener informs the application of the occurrence of the previous event.
21. The VPN application then has to obtain the address of the destination number that has to be translated. It uses this method invocation to obtain the destination number.
22. This flow shows that the VPN application is then responsible for translating the obtained address.
23. The rest of the call proceeds as in case of the call flow shown earlier for the VPN with application supplied event filters.