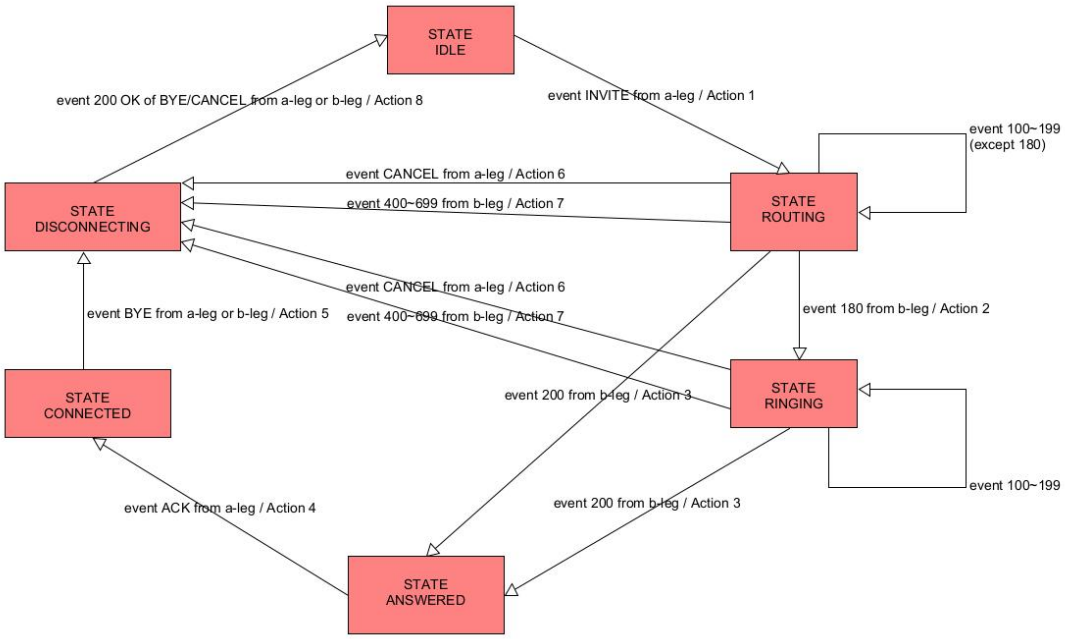
SIP Call Setup State Machine



Action Descriptions

Action 1:

- **Event**: INVITE from A-leg when the call state is CALL_STATE_IDLE
    1. Allocate a new call; if allocation fails, send a 500 response to UE A.
    2. Set a_leg_uuid and b_leg_uuid in call_t.
    3. Send a 100 Trying to UE A.
    4. Send a INVITE message to UE B.
    5. Transition: Set the call state to CALL_STATE_ROUTING.

Action 2:

- **Event**: 180 from B-leg when the call state is CALL_STATE_ROUTING
    1. Send a 180 ringing for A-leg.
    2. Transition: Set the call state to CALL_STATE_RINGING.

Action 3:

- **Event**: 200 from B-leg when the call state is CALL_STATE_ROUTING or CALL_STATE_RINGING
    1. Send a 200 OK for A-leg.
    2. Transition: Set the call state to CALL_STATE_ANSWERED.

Action 4:

- **Event**: ACK from A-leg when the call state is CALL_STATE_ANSWERED
    1. Send ACK to B-leg.
    2. Transition: Set the call state to CALL_STATE_CONNECTED.

Action 5:

- **Event**: BYE from A-leg or B-leg when the call state is CALL_STATE_CONNECTED
    1. Send a 200 OK of BYE response to the sender of BYE.
    2. Construct and send BYE to the other leg.
    3. Transition: Set the call state to CALL_DISCONNECTING.

Action 6:

- **Event**: CANCEL from A-leg when the call state is CALL_STATE_ROUTING or CALL_STATE_RINGING
    1. Send a 200 OK of CANCEL to A-leg.
    2. Send a SIP/2.0 487 Request Terminated response to A-leg.
    3. Send a CANCEL request to B-leg.
    4. Transition: Set the call state to CALL_DISCONNECTING.

Action 7:

- **Event**: 400–699 from B-leg when the call state is CALL_STATE_ROUTING or CALL_STATE_RINGING
    1. Construct an ACK for B-leg.
    2. Construct the same error status code for A-leg.
    3. Transition: Set the call state to DISCONNECTING
       (Note: In this minimal implementation, lacking transaction handling and timers. To ensure resources are freed immediately, directly to CALL_STATE_IDLE.)

Action 8:

- **Event**: event 200 OK of BYE/CANCEL from a-leg or b-leg when the call state is CALL_DISCONNECTING
    1. Transition: Set the call state to CALL_STATE_IDLE.