1) *What happens if a "CallContinuationRequest" fails?*

   To avoid an abrupt termination, the "continue" request has a response parameter of "timeToContinue". For example:

   1. A makes a call to B.
   2. The switch asks the CSM for permission.
   3. The call is allowed with timeToContinue = 5 minutes.
   4. After one minute, the switch asks for permission to continue the call.
      4.1. To terminate the call, respond with timeToContinue = 0.
      4.2. If the user balance allows just 4 minutes, respond with timeToContinue = 4.
      4.3. If the user has a large balance, or is a postpaid user, respond with timeToContinue = 5.
   5. On successful response, the switch updates the call's timeToContinue parameter.
   6. On failure or timeout, the switch will decrement the call's current timeToContinue value.
   7. If timeToContinue = 0, terminate. Else, go to step 4.

   This way, the chance of an abrupt termination reduces (the CSM has 4 minutes to recover), and the failure resolution cost is contained (if we set timeToContinue = 300, the failure resolution may be expensive, especially for conference calls).

2) *How do you ensure that a prepaid user doesn't exceed their budget? What if they make multiple calls simultaneously?*

   Let us take an example.

a) A requests a call to B. A has a balance of 1.
b) The call is allowed.
   i) TimeToContinue is set to 1.
c) A now requests a call to B.
d) CSM sees that A has a balance of 1, and allows the call.
e) After one minute, the switch terminates both calls. Amount to be charged is 1 for both calls, total = 2. *But the available balance is just 1.*

To avoid this situation, we can split the user balance into two parts:

1) in_use
2) available

The in_use balance is the amount of user_balance that is currently being used. The available_balance is the amount available for other purposes.

Falling back to the previous example:

a) A requests a call to B. A has a balance of 1.
b) The call is allowed.
    i) TimeToContinue is set to 1.
    ii) *in_use balance is set to 1.*
    iii) *Available balance is set to 0.*
c) A now requests a call to B.
d) CSM sees that A has an available balance of 0, and **fails** the second call.
e) After one minute, the switch terminates the first call.
f) The CSM subtracts the amount to be charged from in-use.

in-use = timeToContinue * charge_per_minute

If timeToContinue = 10 and charge_per_minute = c, then:
in-use = 10 * 1.5 = 15.

If the call lasted for 4 minutes:
In-use = 15 - talk_time * charge_per_minute = 15 - 4 * 1.5 = 9.

Since the call has terminated, we return the remaining amount to available_balance.
available_balance = available_balance + 9.