

E2M - State Machine

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RAN States

E2M supports the following state for each RAN:

State	Description
Null	No RAN in DB
Disconnected	Either the connection failed, E2T dies or E2T initialized
Connected	Remote RAN sends Setup Request
Shutting-Down	Temporary state during Red Button (From Dashboard)
Shut-Down	Persistent state after Red Button (From Dashboard)

RAN Events

We have the following events which might change SM:

1. Setup Request from RAN
2. Connection failed from E2T
3. E2T Initialized - E2T Restart (New E2T or existing)
4. Red Button (From Dashboard)
5. Keep Alive (KA) in E2M discover E2T isn't responding

RAN State Machine - States vs. Events

RM = Resource Management

States ==>	Null	Disconnected	Connected	Shutting-Down	Shut-Down
Events					
Setup Request from RAN	Connected; Update RM; Send Setup Response;	Update RM; Disconnect-	Connected; (See note below) Update RM; Send Setup Response;	Ignore	Connected; Update RM; Send Setup Response;
SCTP Failure (Lost Connection)	Error	Error	Disconnect; Update RM;	Shut-down	Error
E2 Initialize		Ignore	Update RM; Disconnect-		

Red Button		Shut-down	Shutting-Down; Tear down connection to E2T	Error	
KA discover E2T dies		Ignore	Disconnect; Update RM;		

Note

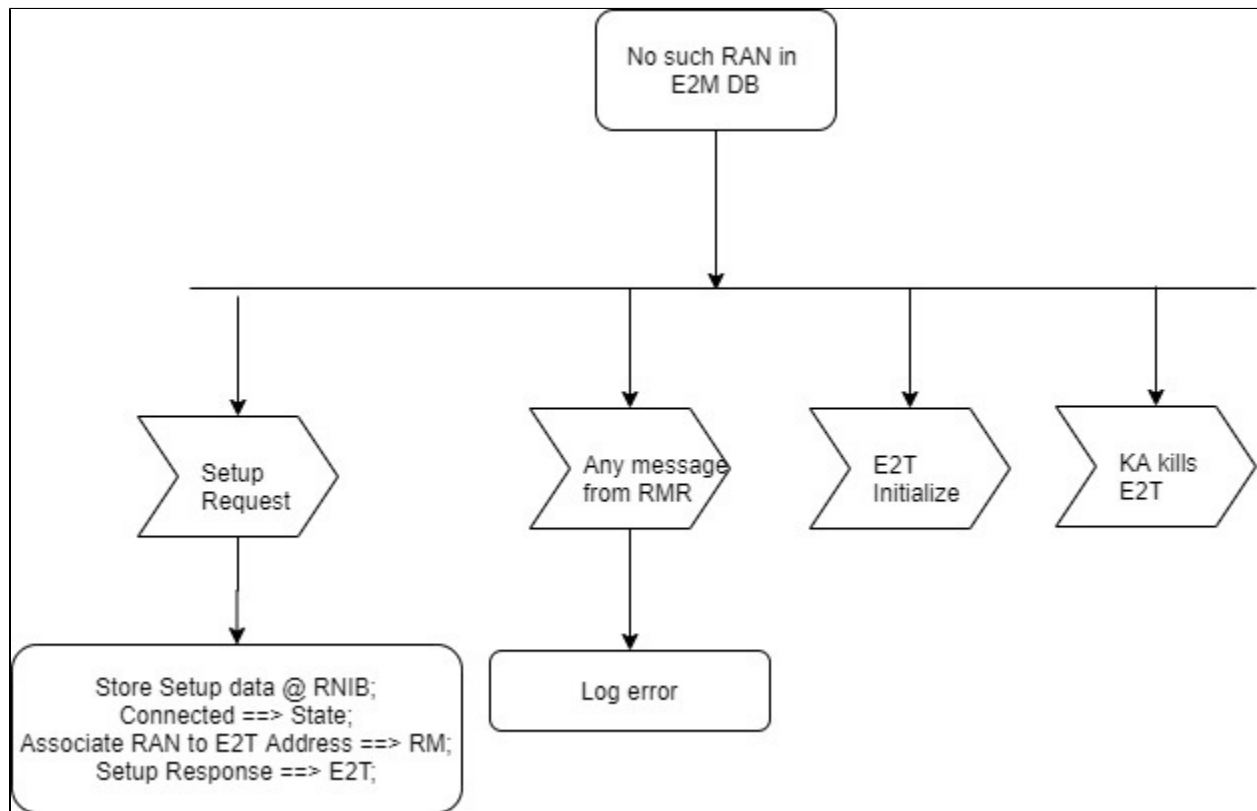
Flow of Setup -

- Assuming Success parsing the message (Else - Error)
- Update DB - RAN Name, RAN ID, Data in the Setup Request payload (Functions), State = Connected, E2T Address - Assuming DB write succeed Else - Error)
- If update RM is OK (Associate RAN to E2T Address)
 - Send Setup Response.
 - If RMR failure - Error but don't Roll back
- Else (RM Failure)
 - Can't send RAN any message (Even Setup Failure isn't possible)
 - Leave RAN as connected and associated to E2T Address
 - When RM will initialized and query E2M, it will distribute the RMR to all RIC.

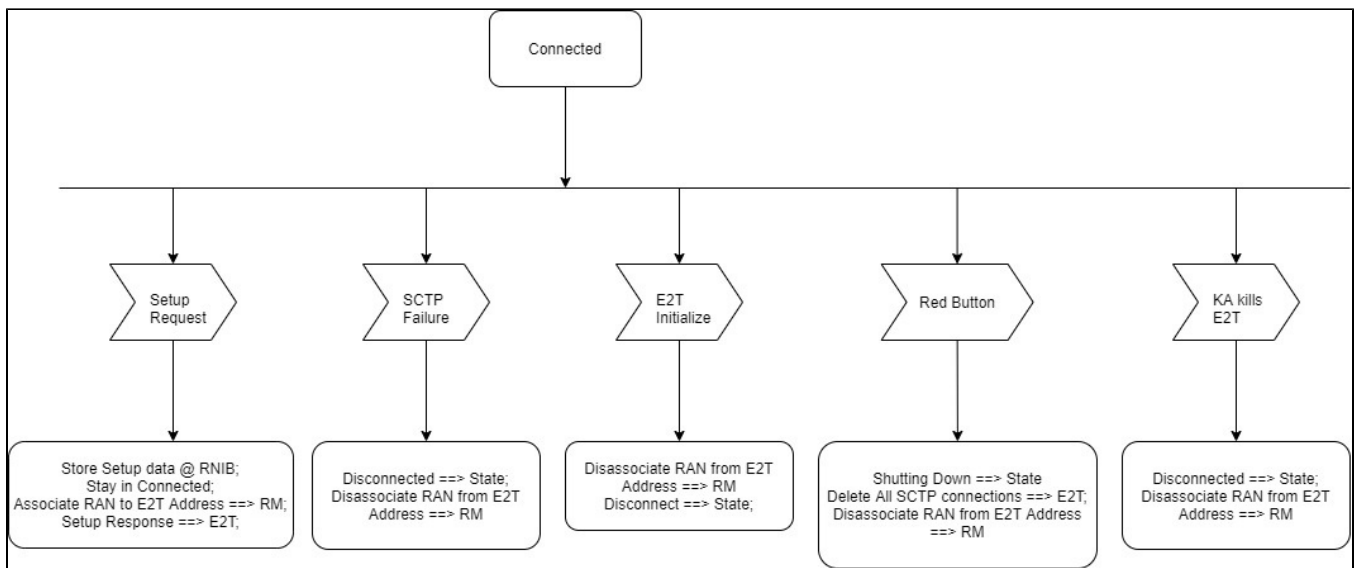
In case Setup Request in Connected State - Update DB (it might be different), Update RM (it might be even different E2T in rare scenario), Return Setup Response.

Flow charts in the RAN State

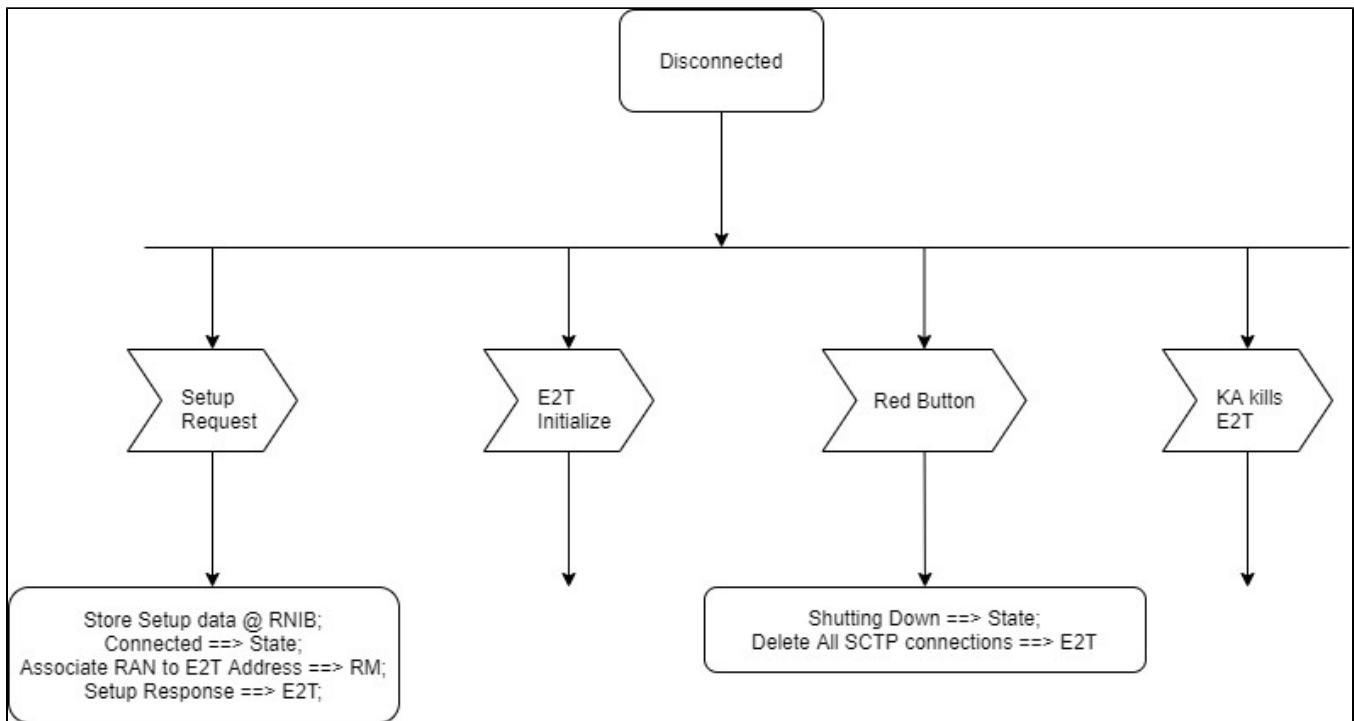
State = Null (RAN doesn't exist in DB)



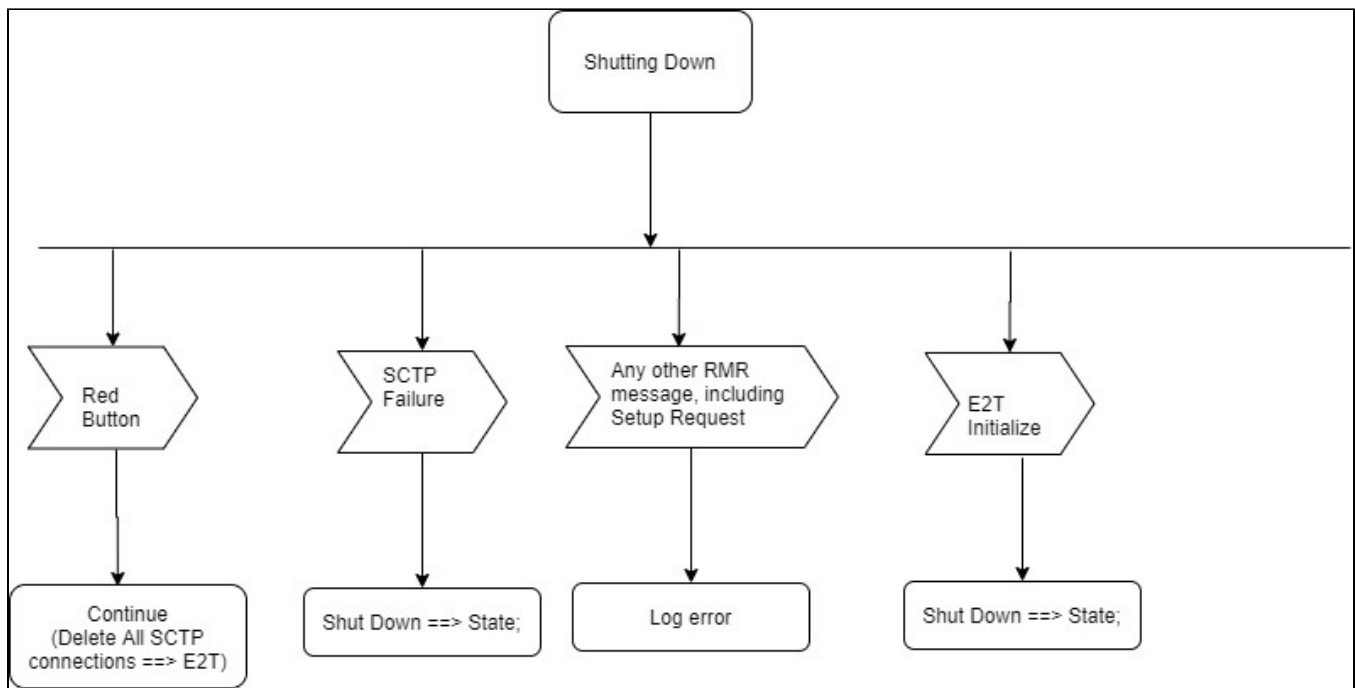
State = Connected



State = Disconnected



State = Shutting Down



State = Shut Down

