8802-3/802.3 REVISION REQUEST 1222

DATE: 8th of March, 2010
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REQUESTED REVISION:
STANDARD: IEEE 802.3-2008
CLAUSE NUMBER: 64.3.3.6; 64.3.5.6
CLAUSE TITLE: State diagram; State diagrams

PROPOSED REVISION TEXT:
The proposed revision contains several steps which need to be implemented in different locations in Clause 64 of IEEE Std. 802.3-2008 (see file “Attachment 1.pdf” for representation of state diagrams with changes in red):

[1] Add a new variable to 64.3.5.2 into a correct location (sorted alphabetically)
gate_accepted
TYPE: Boolean
This variable indicates whether the received GATE MPCPDU will be accepted by the Gate Processing ONU state diagram as shown in Figure 64-28.
DEFAULT: false

[2] Modify Figure 64-28 as presented in file “Attachment 1.pdf” - changes are marked in red. Removal of the CHECK NEXT GRANT state does not affect the observable behaviour of the state diagram but simplifies its analysis. Additionally, it aligns the styles of Figure 77-29 in IEEE Std. 802.3av-2009 and Figure 64-28 IEEE Std. 802.3-2008, aiding readability.

[3] Modify Figure 64-29 as presented in file “Attachment 1.pdf” - changes are marked in red.

RATIONALE FOR REVISION:
There is an issue with ONU registration during the discovery process in 1G-EPON system as currently defined in Clause 64 of IEEE 802.3-2008. Below is a description relative to Figure 64-22 and Figure 64-28 and associated state diagrams

(1) if ONU MAC Client denies (for whatever reason) registration, ‘NACK‘ state is entered on Figure 64-22. Variable "registered" is false (as set in state ‘WAIT‘).

(2) to complete the registration process, the ONU should send the REGISTER_ACK MPCPDU with proper flag set. In this case, NACK flag should be set since the registration was denied by the ONU MAC Client. In order to execute transmission, ONU has to wait for the GATE MPCPDU allocation from the OLT and then send the prepared REGISTER_ACK MPCPDU with NACK flag in the next allocated transmission slot.

(3) OLT allocates a slot for this ONU, which will be processed according to Figure 64-28. The slot will be inserted into the slot queue

(4) If the ONU MAC Client denied registration and register variable is false, all the transmission slots, received and stored in the slot queue according to the state diagram in Figure 64-28, will be dropped in the state diagram in Figure 64-29, since conditions (a) and (b) at the CHECK GATE TYPE state evaluate to false:
(a) !registered * (currentGrant.discovery = true) * (IsBroadcast(currentGrant))
(b) (currentGrant.discovery = false) * registered + (currentGrant.discovery = true) * !IsBroadcast(currentGrant) * !registered
This means that ELSE branch is taken and grant are effectively dropped.

(5) ONU cannot effectively send a REGISTER_ACK MPCPDU with NACK flag set, which prohibits it from notyfing the OLT on NACK state on its side.

NOTE: please note an associated maintenance request suggesting similar changes in Clause 77, IEEE Std. 802.3av-2009. Both requests should be considered together to guarantee the same observable behaviour for 1G-EPON and 10G-EPON networks.

IMPACT ON EXISTING NETWORKS:
This maintenance request affects IEEE Std. 802.3-2008 Clause 64 compatible EPON implementations in a way which changes their observable behavior, fixing the issue with missing REGISTER_ACK with NACK flag set if the ONU MAC Client for any reason denies registration to the ONU. Current standard-compliant implementations do not generate REGISTER_ACK with NACK flag set.

Please attach supporting material, if any		
Submit to:- David Law, Chair IEEE 802.3		
and copy:- Wael William Diab, Vice-Chair IEEE 802.3		
At:- E-Mail: stds-802-3-maint-req@ieee.org		
	For official 802.3 use	
	REV REQ NUMBER: 1222	
	DATE RECEIVED: 11th Mar, 2010	
	EDITORIAL/TECHNICAL	
	ACCEPTED/DENIED	
	BALLOT REQ'D YES/NO	
	COMMENTS: XX-Xxx-XX Ver: D1.0 Status: R	
For information about this Revision Request see -		
http://www.ieee802.org/3/maint/requests/revision_history.html#REQ1222		

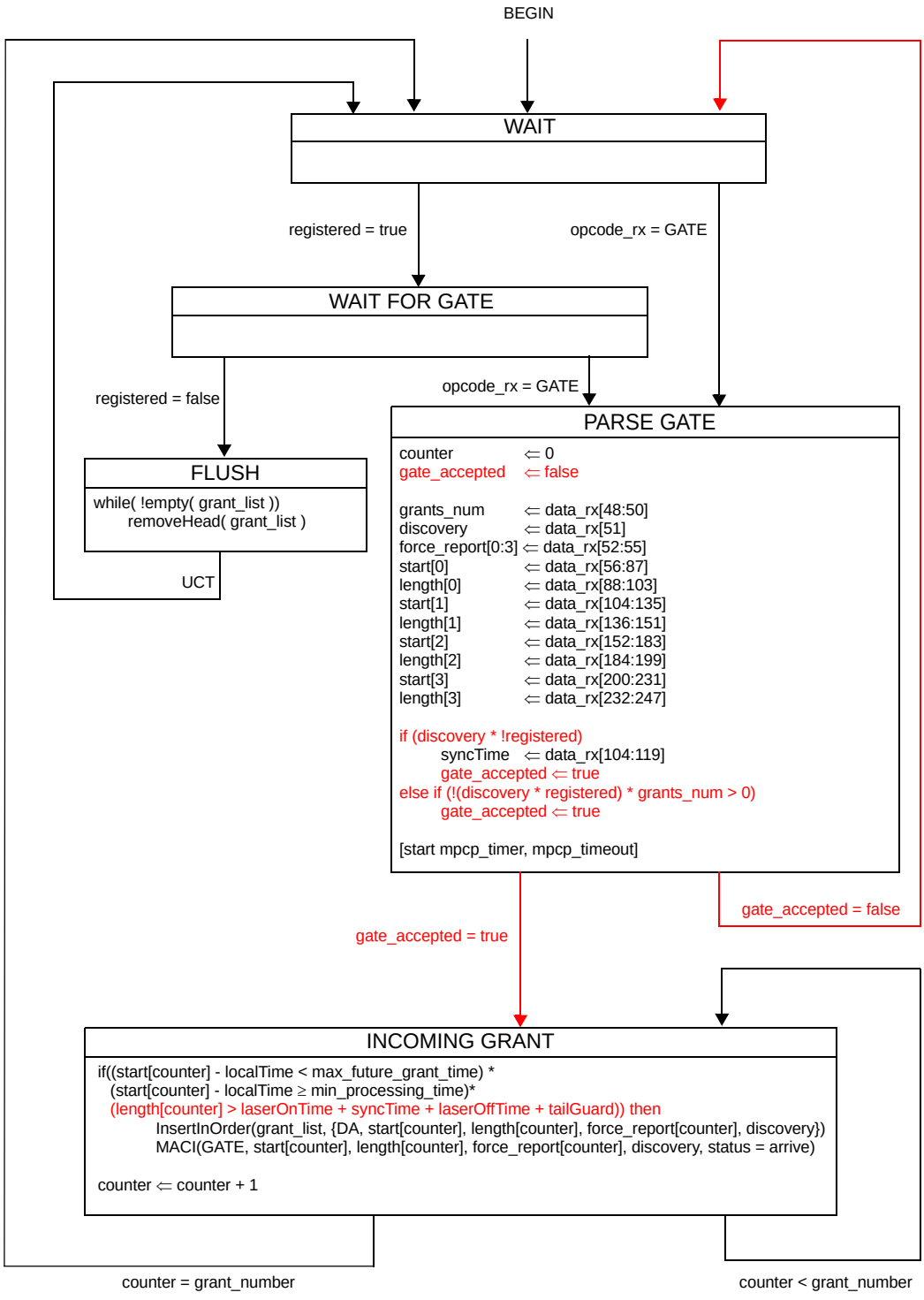

Figure 64–28—Gate Processing ONU Programming State Diagram

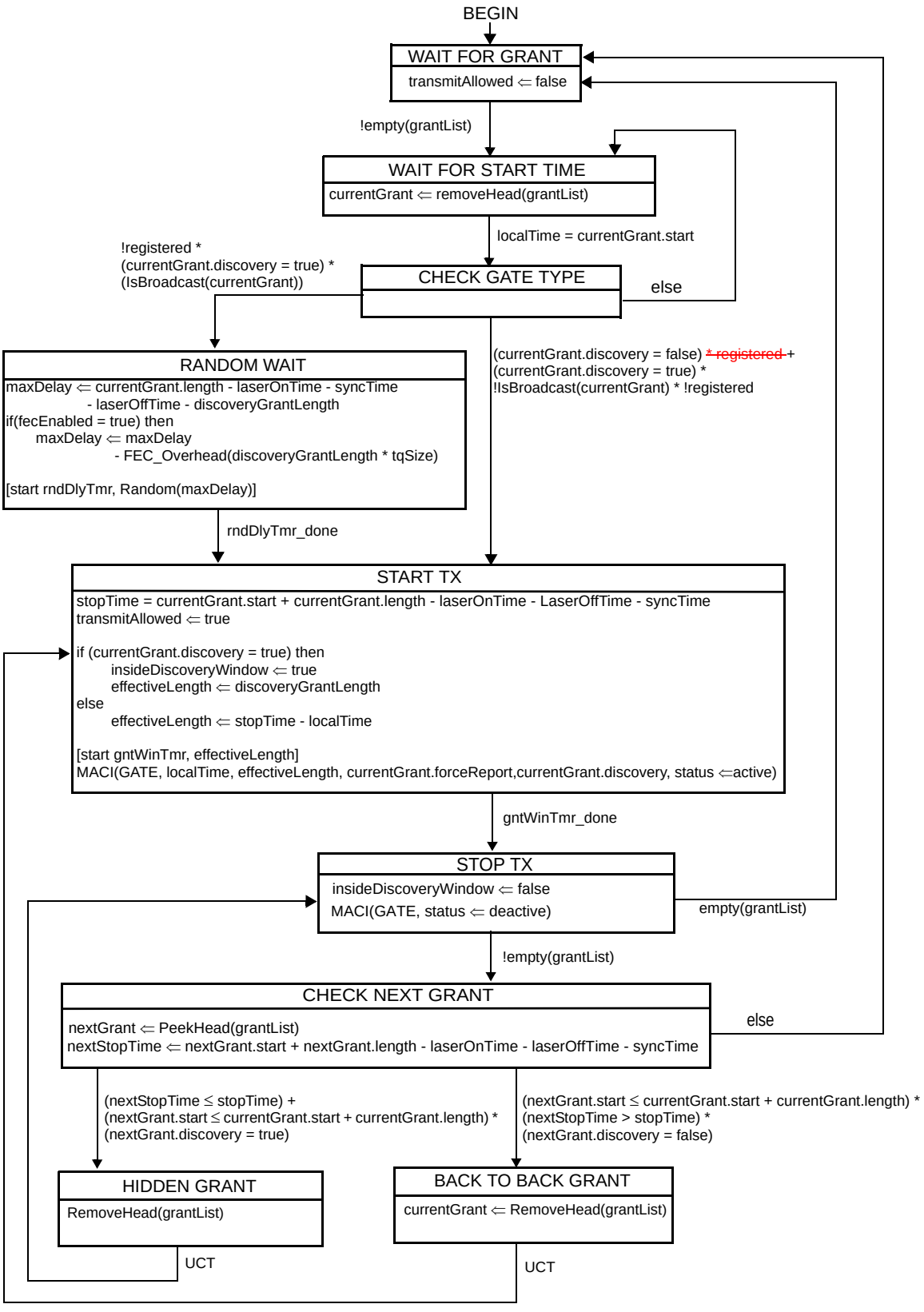

Figure 64–29—Gate Processing ONU Activation State Diagram