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| 8802-3/802.3 REVISION REQUEST 1221 |  
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DATE: 8th of March, 2010  
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REQUESTED REVISION:  
STANDARD: IEEE 802.3av-2009  
CLAUSE NUMBER: 77.2.2.7; 77.3.5.6  
CLAUSE TITLE: State diagrams; State diagrams

PROPOSED REVISION TEXT:

The proposed revision contains several steps which need to be implemented in different locations in IEEE Std. 802.3av-2009 (see file "Attachment 1.pdf" for representation of state diagrams with changes in red):

[1] Add a missing variable to 77.3.5.2 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 77-29.

DEFAULT: false

[2] Modify Figure 77-29 as presented in file "Attachment 1.pdf" - changes are marked in red.

[3] Modify Figure 77-30 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 10G-EPON system as currently defined in Clause 77 of IEEE P802.3av-2009. Below is a description relative to Figure 77-23, Figure 77-29 and Figure 77-30 as well as the associated state diagrams:

(1) if ONU MAC Client denies (for whatever reason) registration, 'NACK' state is entered on Figure 77-23. 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 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 77-29. This allocation will allow the ONU send a REGISTER\_ACK MPCPDU (with NACK flag set in this case). GATE MPCPDU with this slot reaches an ONU and is dropped on condition 'else if (!discovery \*'

registered \* grant\_number > 0)' and the first condition 'if (discovery \*  
!registered \* confirmDiscovery(data\_rx[120:135]))' is also false since  
register flag is false, discovery is also false. Effectively, the  
transmitted GATE MPCPDU will be dropped.

(4) additionally, even if the granted slot is inserted into the queue  
according to the state diagram in Figure 77-29 with the proposed changes,  
it will be dropped according to the state diagram in Figure 77-30. 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 updated Figure 77-29 (as proposed in this  
maintenance request), will be dropped in the state diagram in Figure 77-  
30, 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.

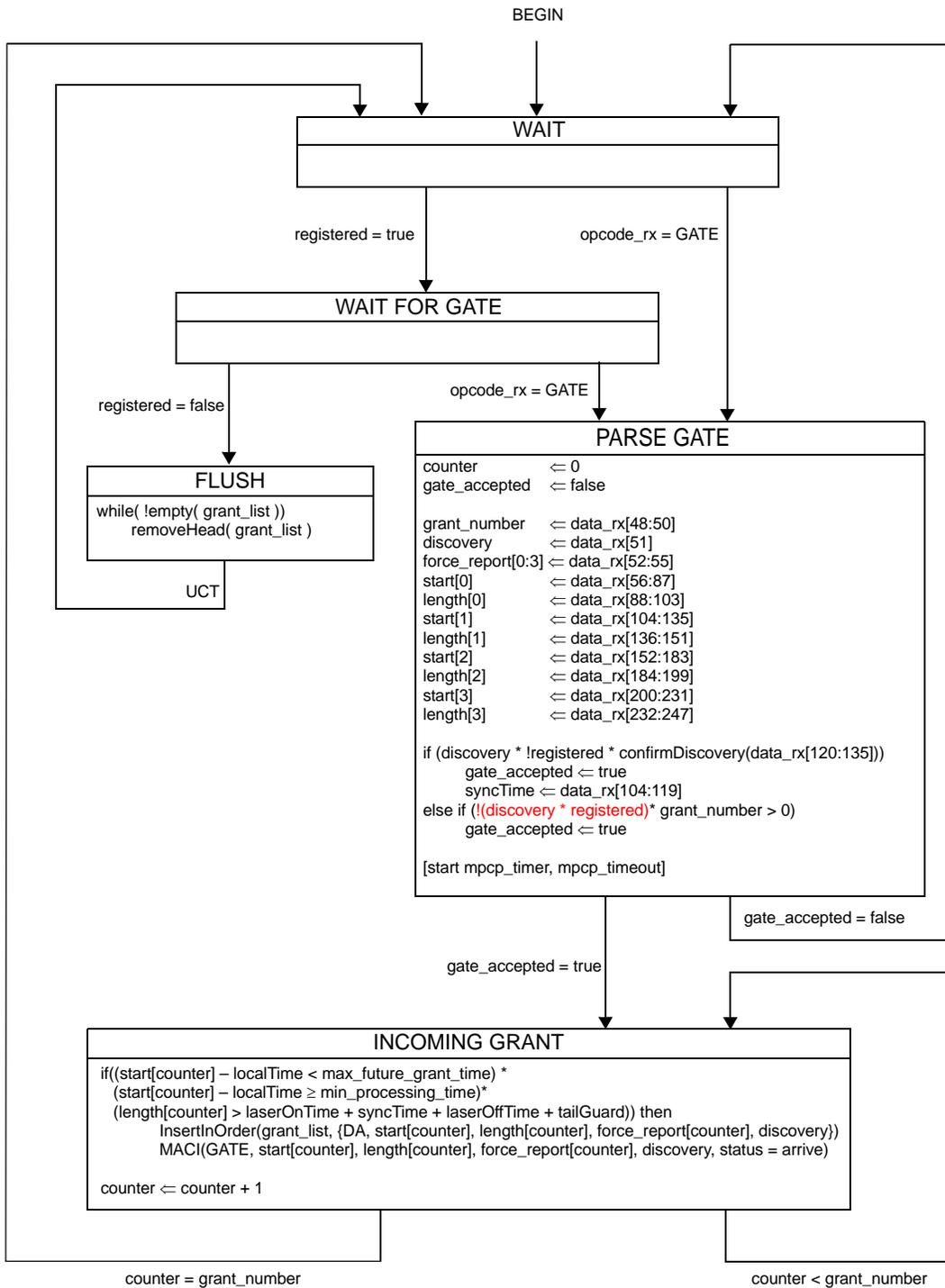
(5) ONU cannot effectively send a REGISTER\_ACK MPCPDU with NACK flag set,  
which prohibits it from notifying the OLT on NACK state on its side.

NOTE: please note an associated maintenance request suggesting similar  
changes in Clause 64, IEEE Std. 802.3-2008. 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. 802.3av-2009 Clause 77  
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.

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| 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
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|               +----- For official 802.3 use -----+
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| For information about this Revision Request see -
| http://www.ieee802.org/3/maint/requests/revision\_history.html#REQ1221
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**Figure 77–29—Gate Processing ONU Programming state diagram**

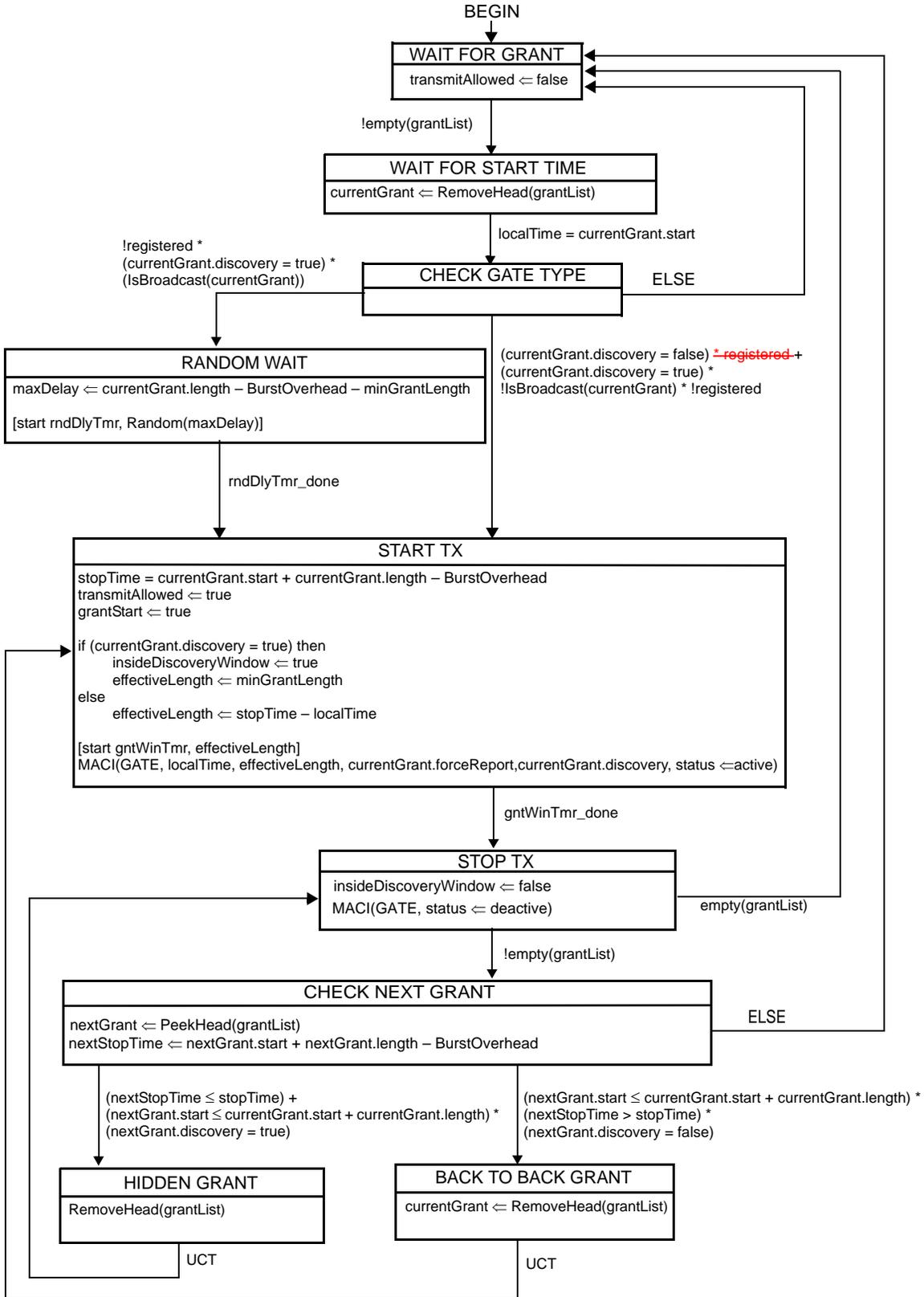


Figure 77-30—Gate Processing ONU Activation state diagram