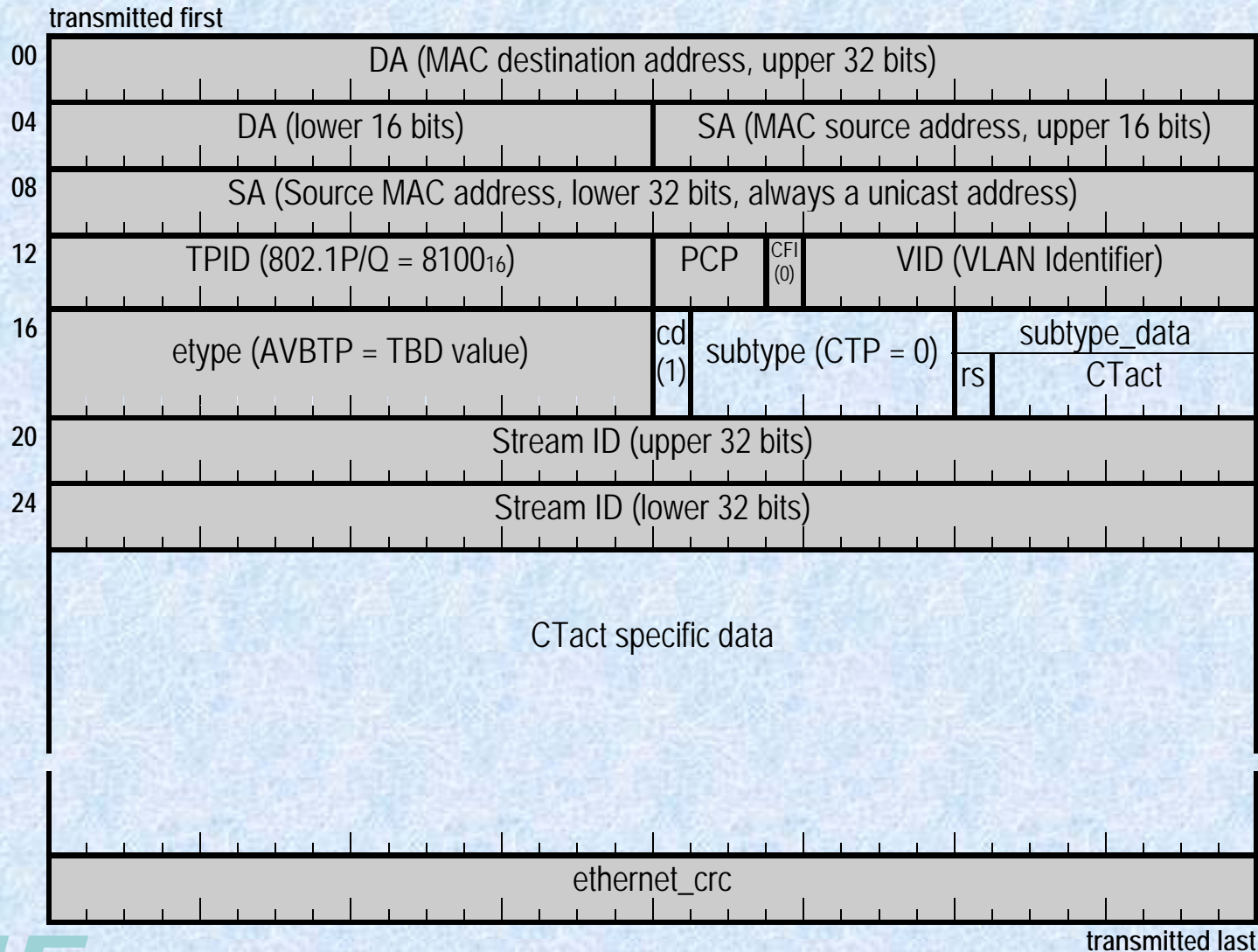


# Command Transport Protocol (CTP)

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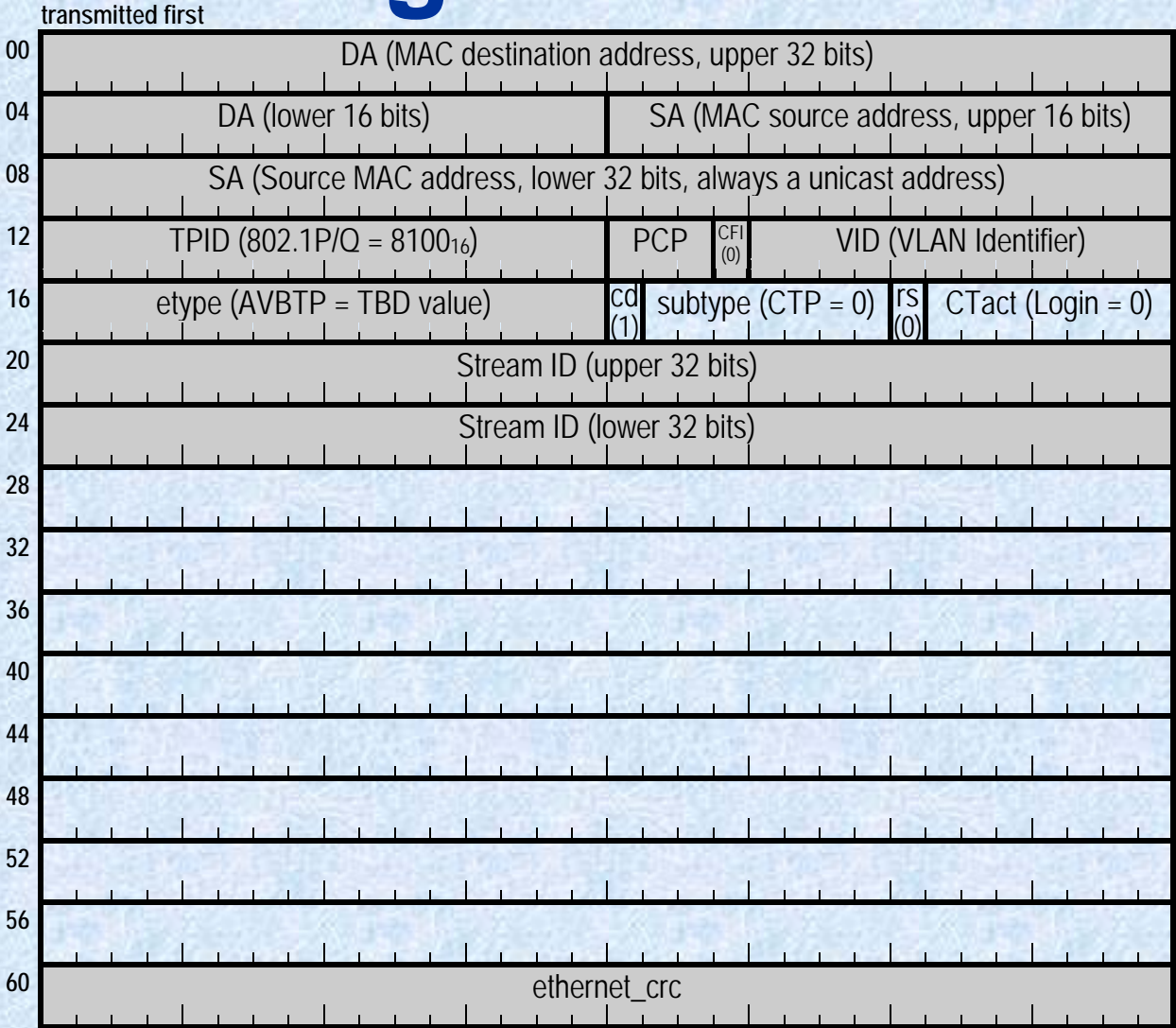
# Basic CTP Packet Format



# Fields in Basic Format

- **subtype** is 0 for CTP
- **subtype\_data** becomes two fields:
  - **rs** is set to 0 for the action sent by requestor, set to 1 for the response sent by the target
  - **CTact** is the action performed by this packet:
    - **Login=0** create connection to target
    - **Logout=1** release connection to target
    - **TagR=2** tag system reset
    - **Xct=3** execute command set command

# Login Action

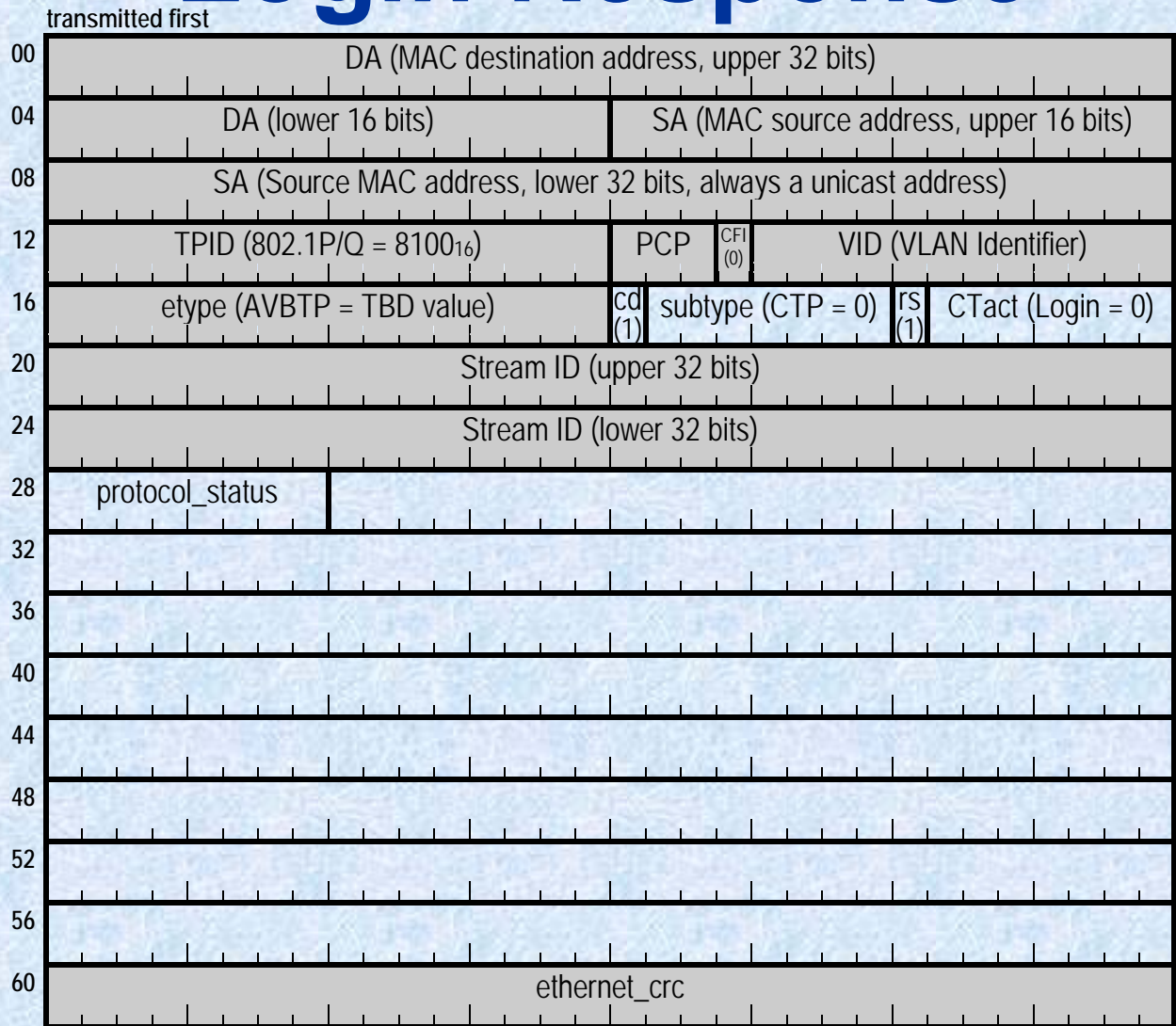


# Login Action Notes

- **StreamID** is not used, set to -1



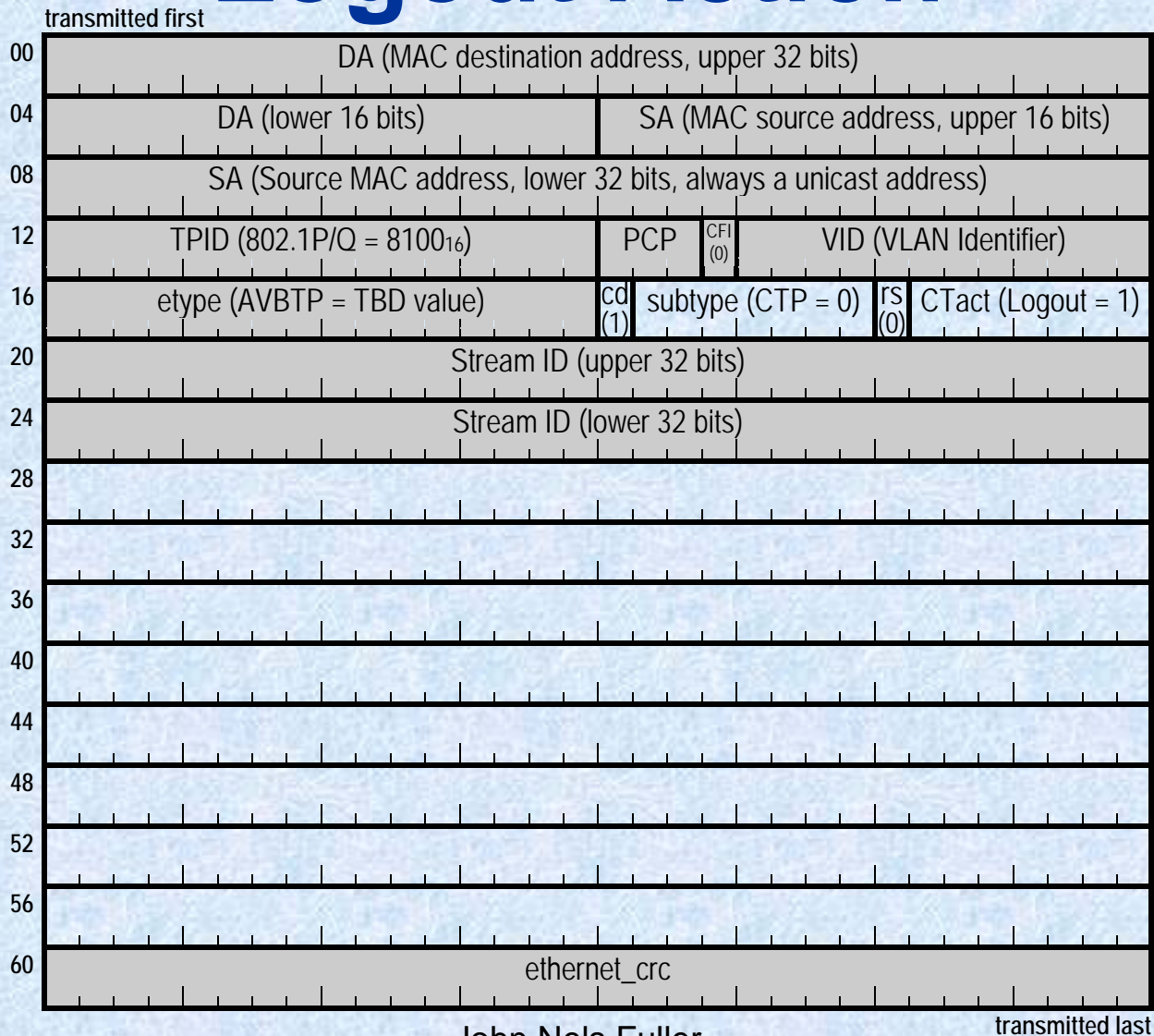
# Login Response



# Login Response Notes

- **StreamID** is not used set to -1
- **protocol\_status** is CTP's status from the action, values:
  - **SUCCESS**: no errors, tags are reset
  - **ALREADY\_LOGGED\_IN**: requesting station is already logged in, tags are reset
  - **NO\_RESOURCES**: not enough resources to establish a connection

# Logout Action

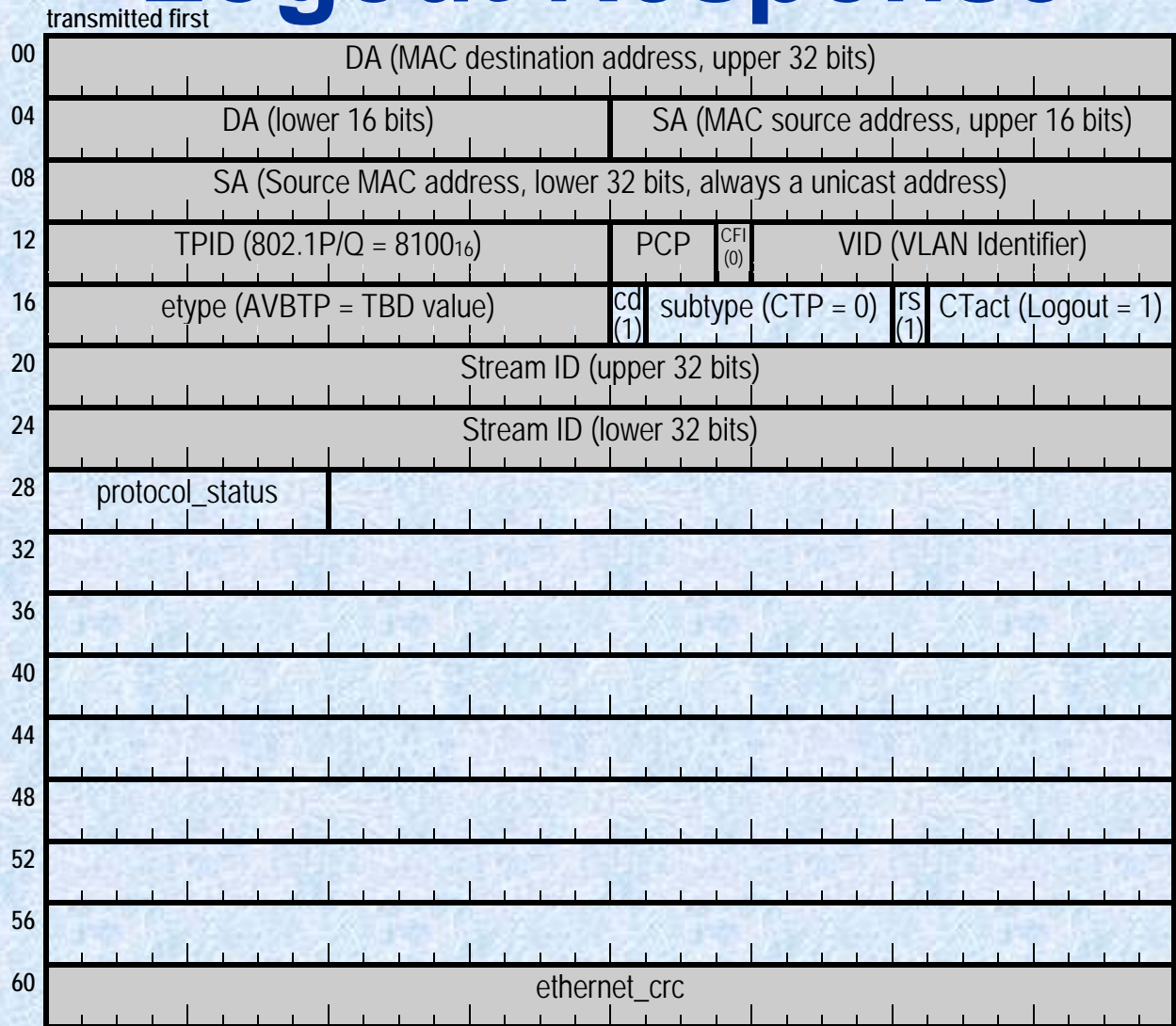




# Logout Action Notes

- **StreamID** is not used, set to -1

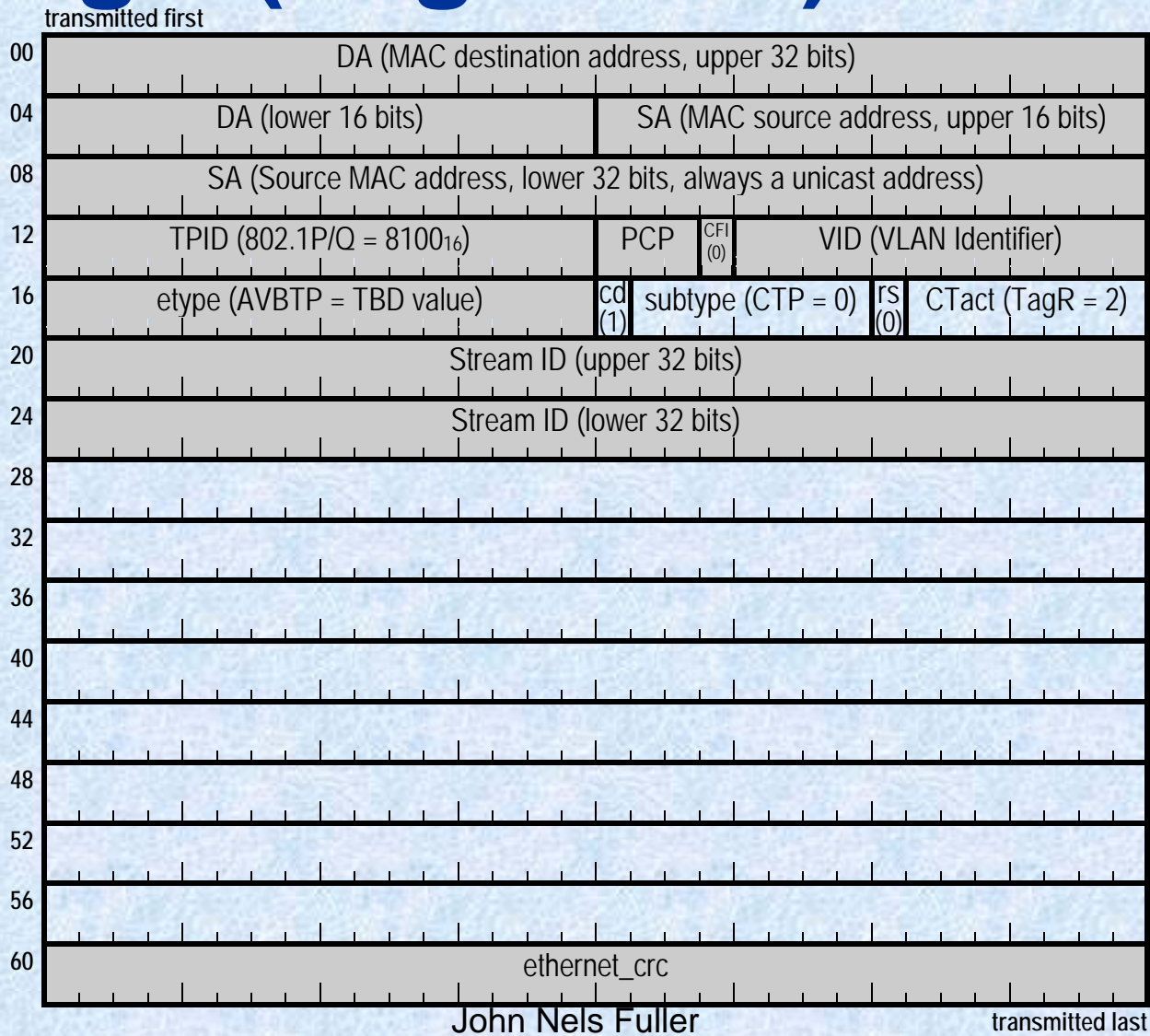
# Logout Response



# Logout Response Notes

- **StreamID** is not used set to -1
- **protocol\_status** is CTP's status from the action, values:
  - **SUCCESS**: no errors, connection terminated, commands in process may or may not complete (but no response will be sent)
  - **NOT\_LOGGED\_IN**: no connection exists with requesting station

# TagR (Tag Reset) Action

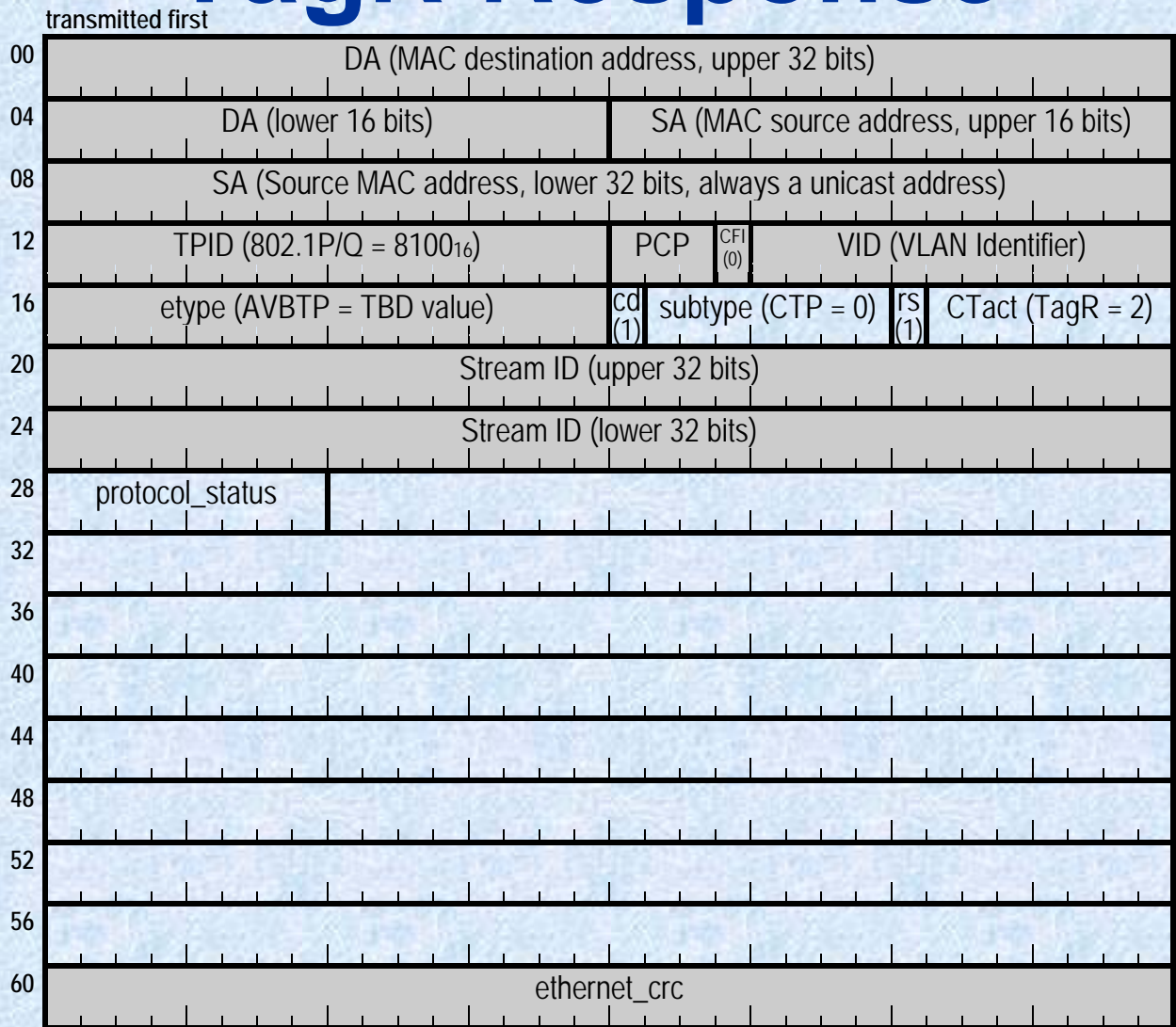


# TagR Action Notes

- Asks Target to discard any saved responses, set **NextExpectedTag** to 1, set **LastAcknowledgedTag** to 0
- **StreamID** is not used, set to -1



# TagR Response

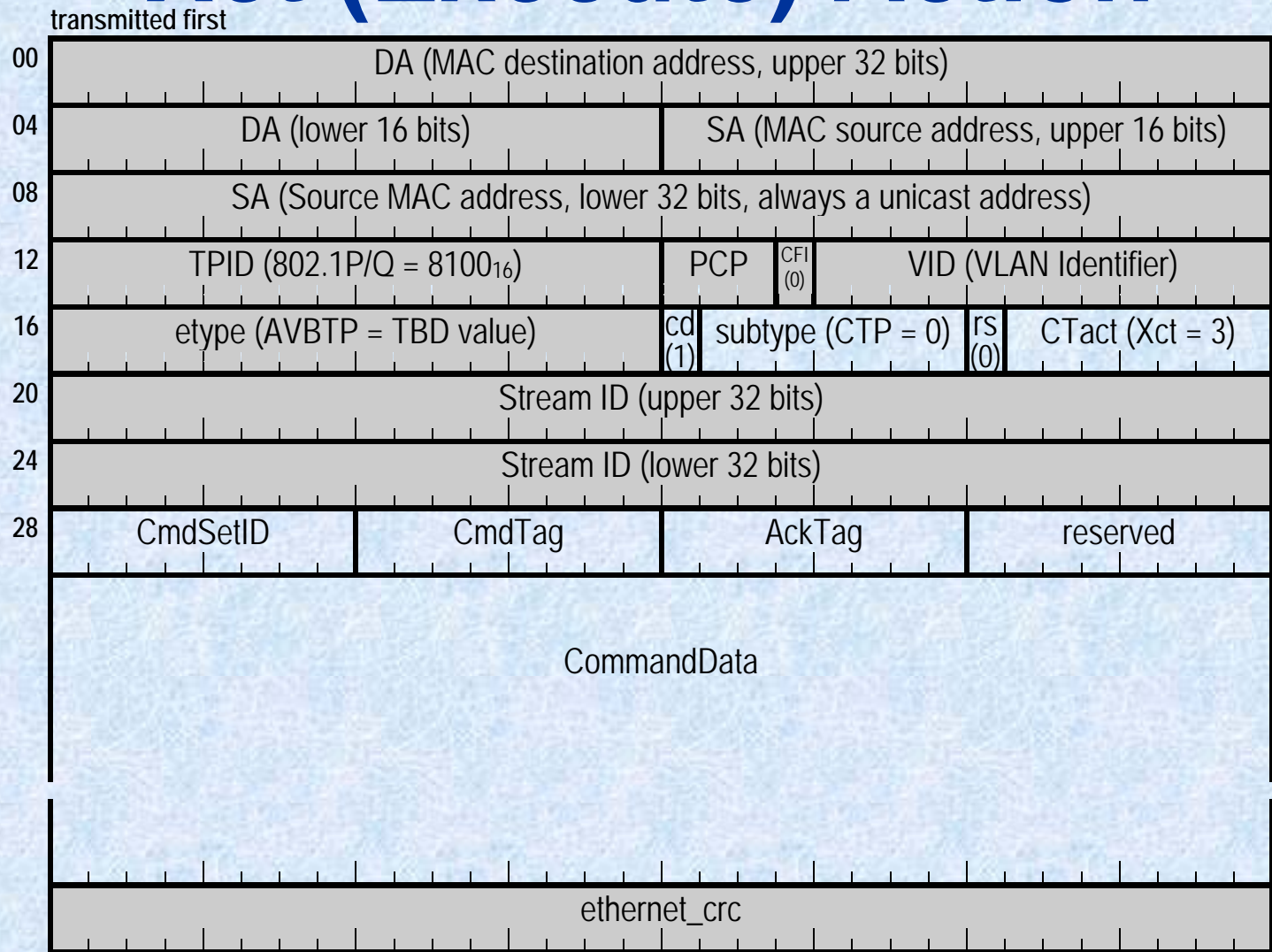


transmitted last

# TagR Response Notes

- **StreamID** is not used set to -1
- **protocol\_status** is CTP's status from the action, values:
  - **SUCCESS**: no errors, saved responses discarded, commands in process may or may not complete (but no response will be sent), **NextExpectedTag** set to 1, **LastAcknowledgedTag** set to 0
  - **NOT\_LOGGED\_IN**: no connection exists with requesting station

# Xct (Execute) Action

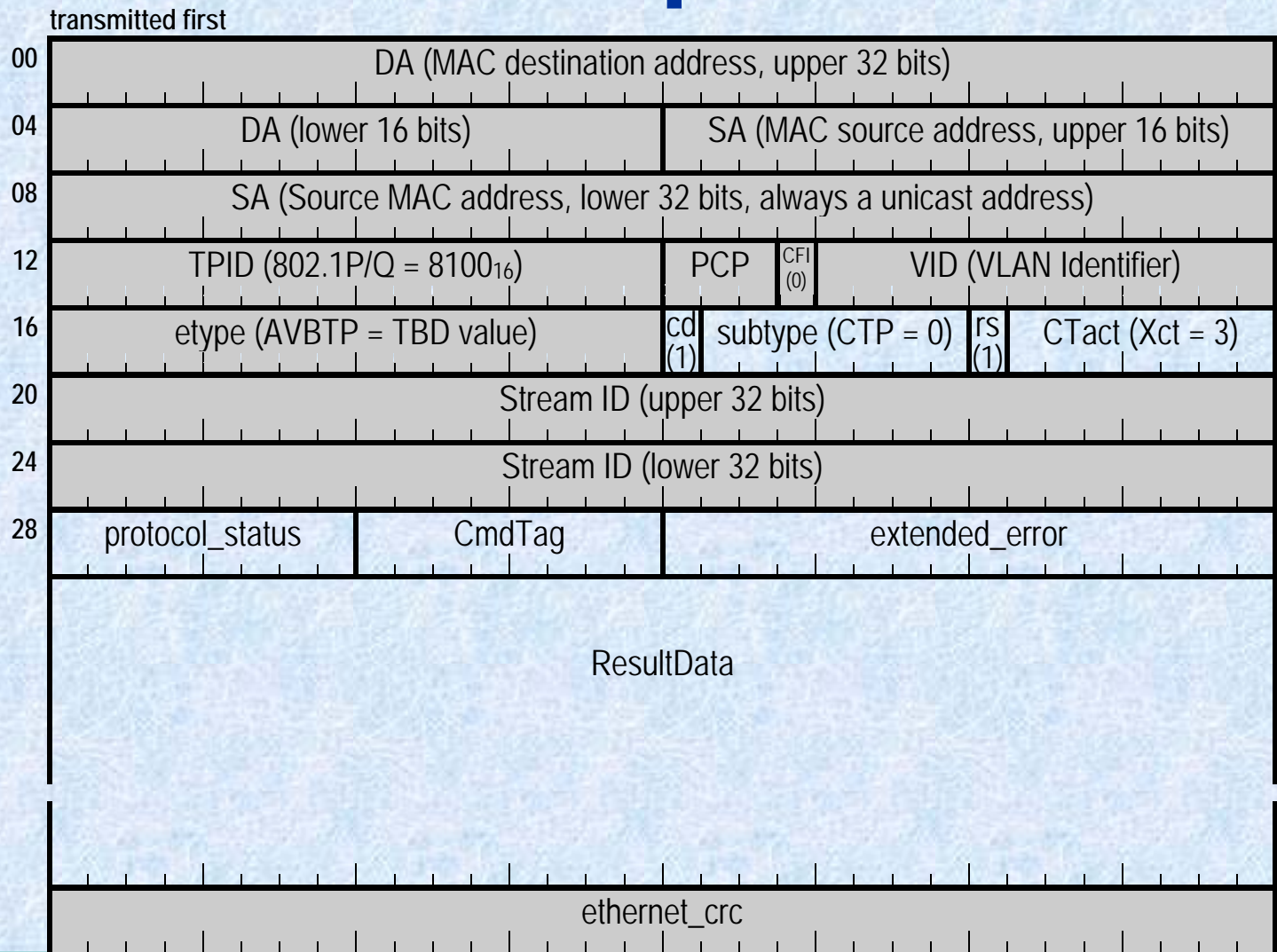


# Xct Action Notes

- **StreamID** may be used, if not it is set to -1
- **CmdSetID** specifies the type of command to be executed:
  - $00_{16}$  for AV/C
  - $FE_{16}$  for vendor unique, 8 bytes at offset 32 are an EUI-64 specifying the command set
  - $FF_{16}$  for the empty command (no operation), used for acknowledge only packets (**CmdTag** and **CommandData** fields are not used)
  - Other values TBD (cf. Table 8 in 61883-1)
- **CmdTag** is the tag value identifying this action, must be the same as the Target's **NextExpectedTag** value
- **AckTag** is the most recently sent **CmdTag** value for which no subsequent **CmdTag** values are awaiting a response
- **CommandData** field contains the command to be executed as defined by the command set definition



# Xct Response





# Xct Response Notes

- **StreamID** may be used, if not it is set to -1
- **protocol\_status** is CTP's status from the action:
  - **SUCCESS**: no errors, command completed, tags updated, saved responses prior to LastAcknowledgedTag are discarded, this response is saved (if no state change occurred this is optional), **ResponseData** set according to the command set specification
  - **NOT\_LOGGED\_IN**: no connection exists with requesting station, no actions taken
  - **NO\_RESOURCES**: not enough resources to save results (i.e. busy), try again later
  - **PENDING**: command accepted, but not completed, response will be sent when completed, milliseconds to expected completion in **extended\_error**, tags updated, **ResponseData** is set if specified by the command set specification
  - **NOT\_SUPPORTED**: the specified CmdSetID is not supported
  - **TAG\_NOT\_EXPECTED**: the specified CmdTag was not in the range of LastAcknowledgedTag+1 to NextExpectedTag, this means an Xct packet was lost and needs to be retransmitted, **extended\_error** contains the value of NextExpectedTag