Lookup and Forwarding

Michael

2017

CEF and BI-Hash VPP16.09

- **IPv4**
  CEF - Cisco Express Forwarding
  http://www.cisco.com/networkers/nw04/presos/docs/RST-2312.pdf

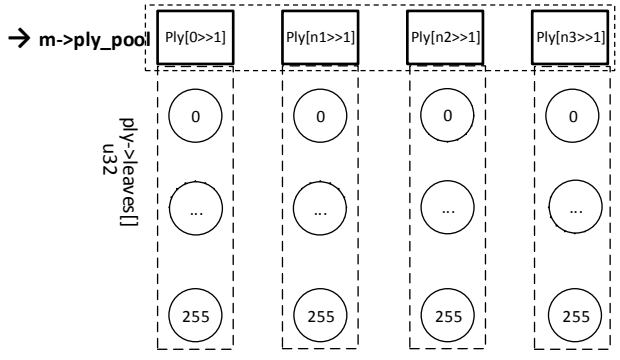
- **IPv6**
  A bounded index extensible hash table
  http://www.patents.com/us-7325059.html

Note!
Complete rework of Forwarding Information Base (FIB) in 17.01

ip4 fib leafs

- 4 ply 8-8-8-8 mtrie.
  - 1 + 2*adj_index for terminal leaves.
  - 0 + 2*next_ply_index for non-terminals.
  - 1 => empty (adjacency index of zero is special miss adjacency).

Terminal leaf: if(next_leaf & 1 == true)
ply = m->ply_pool + (current_is_terminal ? 0 : (current_leaf >> 1));
next_leaf = ply->leaves[dst_address->as_u8[dst_address_byte_index]];
next_leaf = current_is_terminal ? current_leaf : next_leaf;



Pls refer to
ip4_add_del_route()
- ip4_fib_mtrie_add_del_route()
-- set_leaf()

Get Target Adjacency(Cont')

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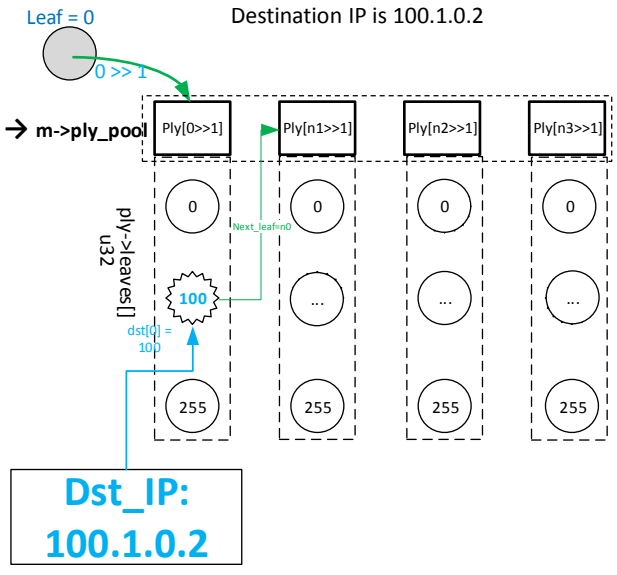
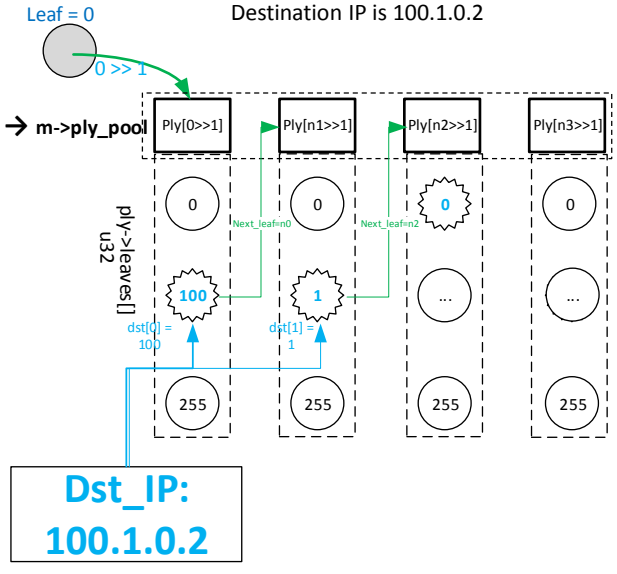


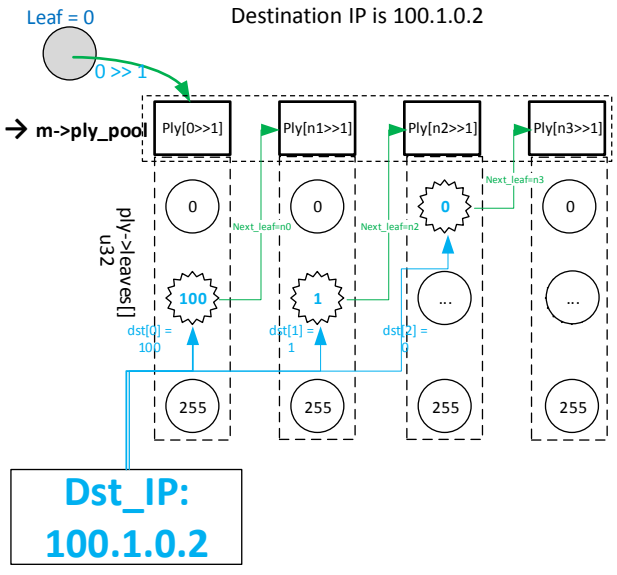
Get Target Adjacency(Cont')

VPP16.09



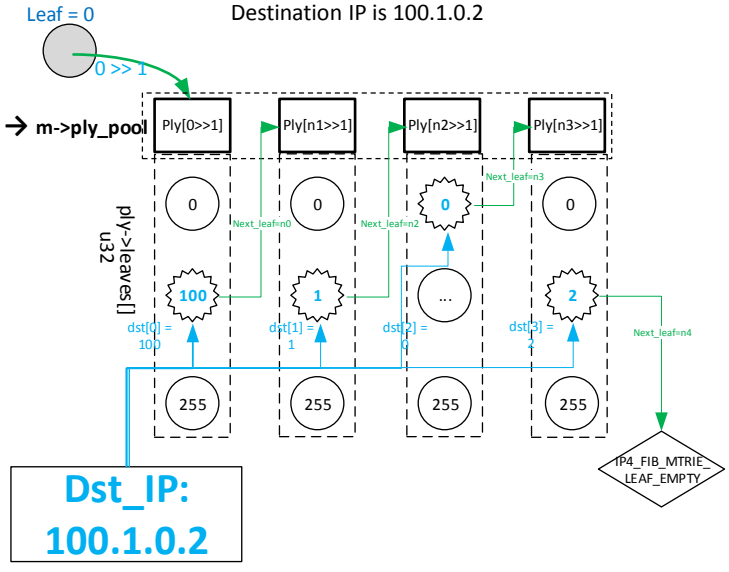
Get Target Adjacency(Cont')

VPP16.09



Get Target Adjacency(Cont')

VPP16.09



Get Target Adjacency(Cont')

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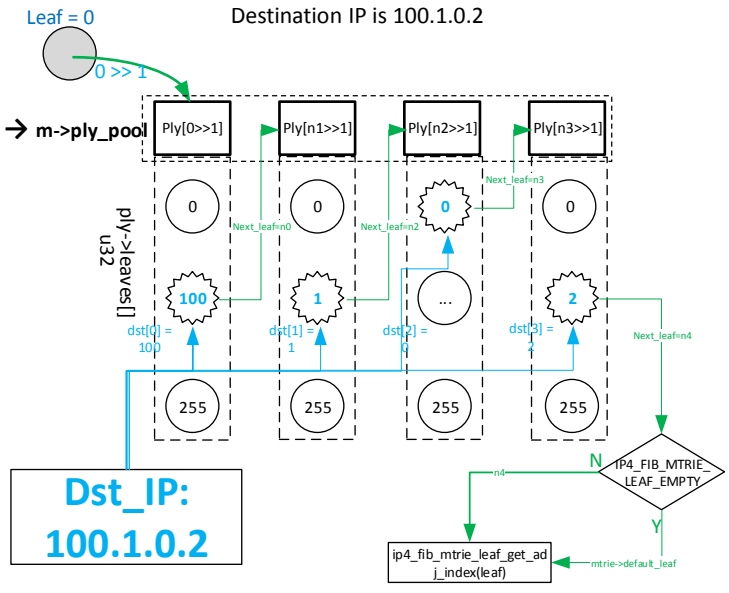

Get Target Adjacency(Cont')

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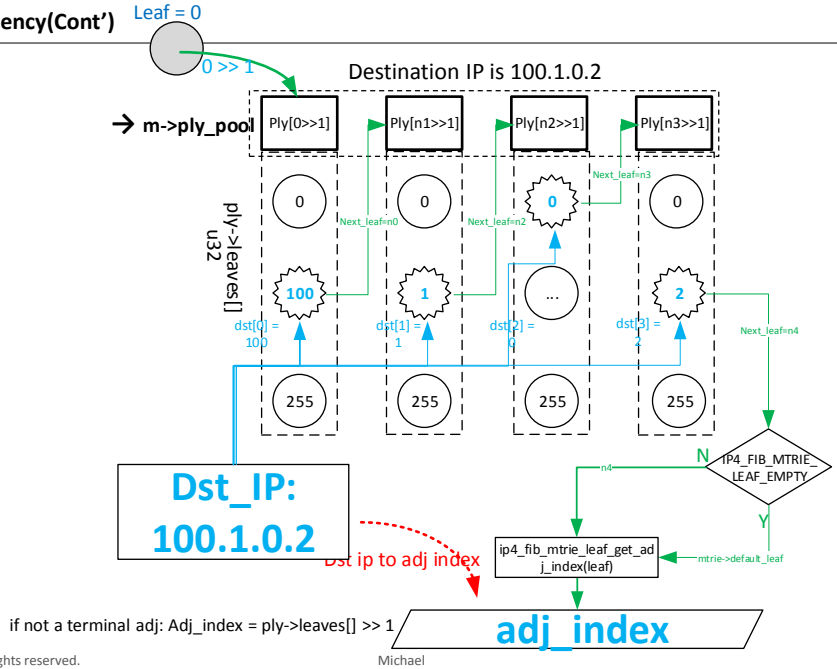
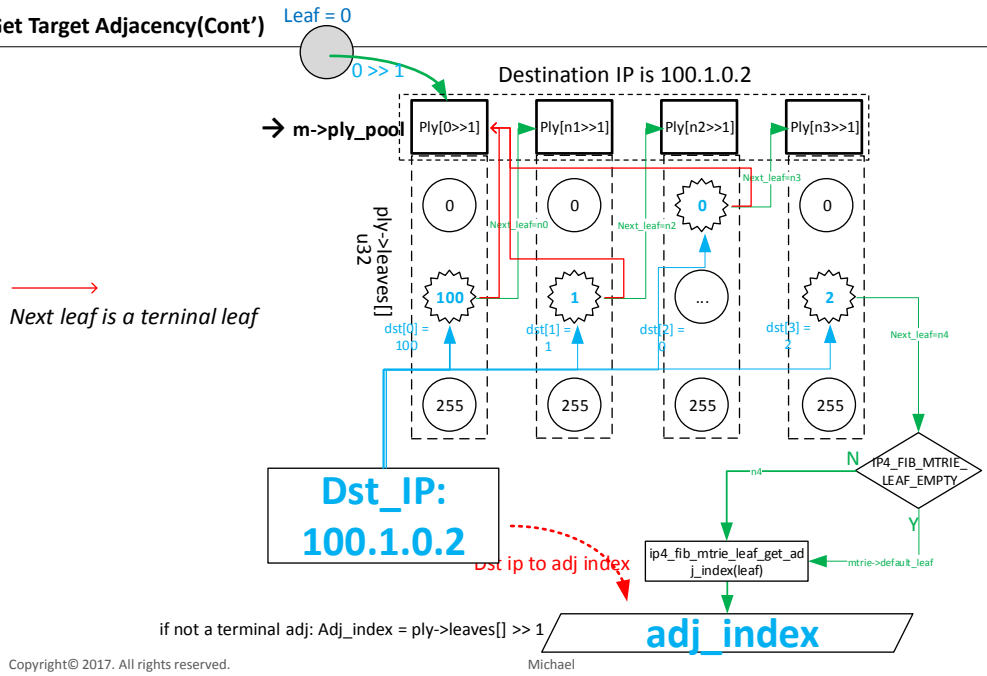
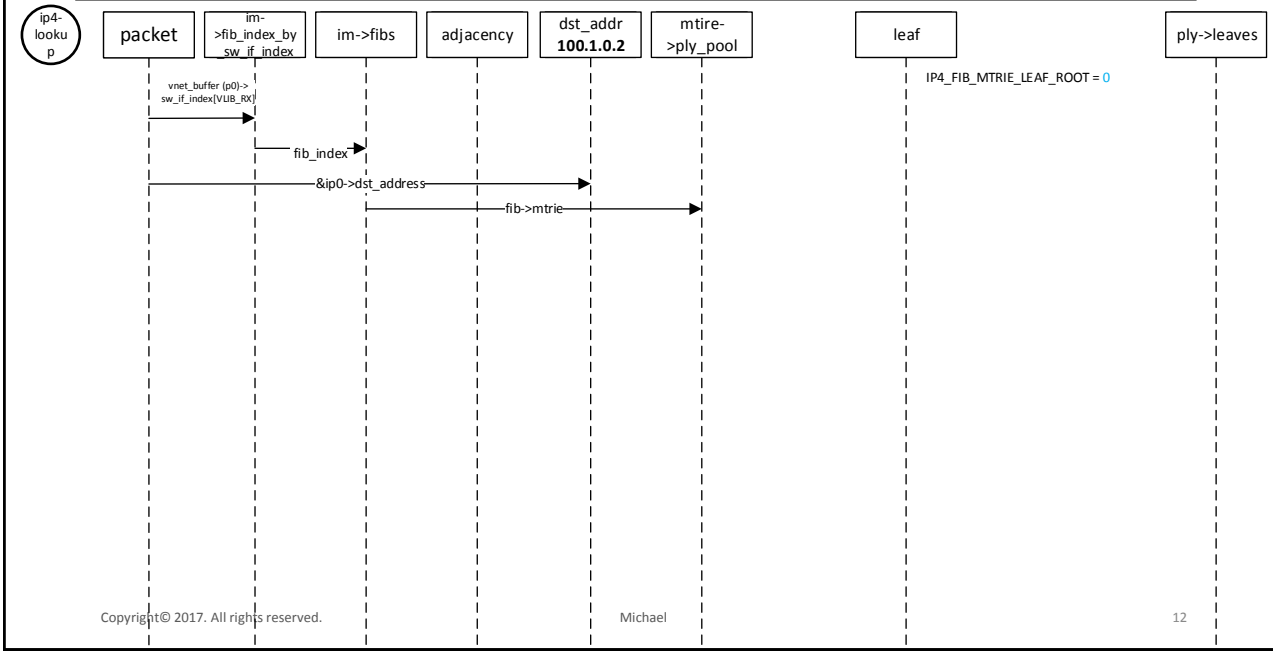


Get Target Adjacency(Cont')

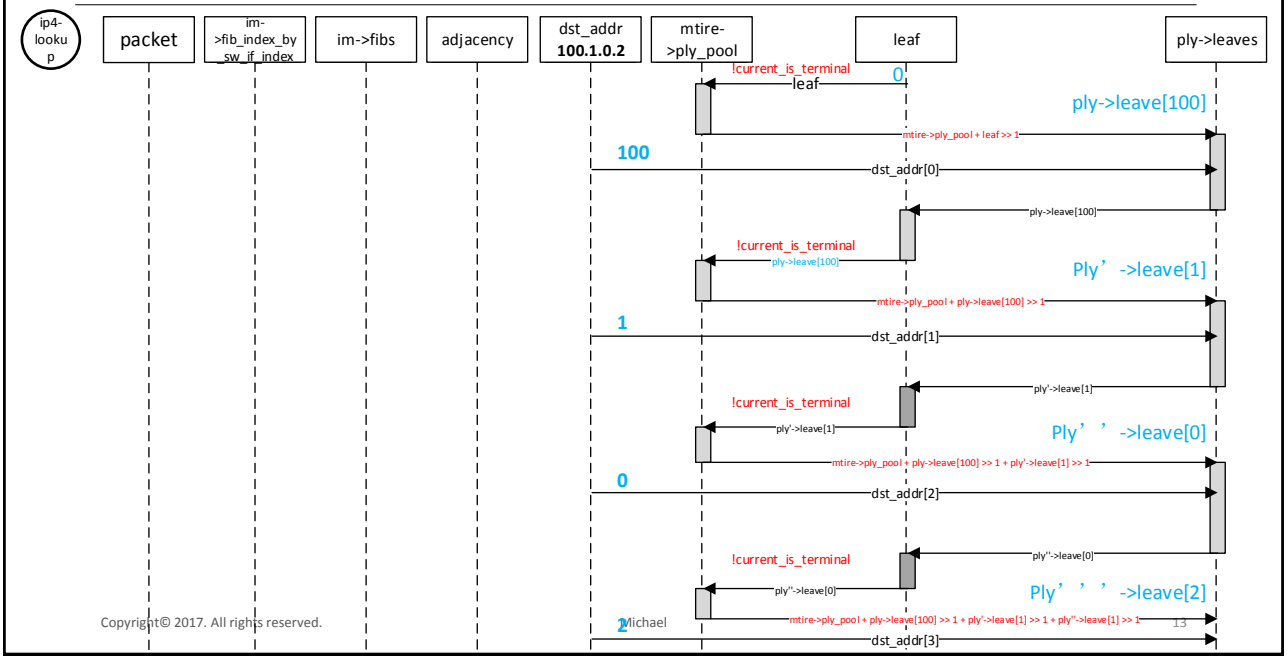


Forwarding Sequence Diagram - lookup



Forwarding Sequence Diagram – lookup(Cont')

VPP16.09



Forwarding Sequence Diagram – lookup(Cont')

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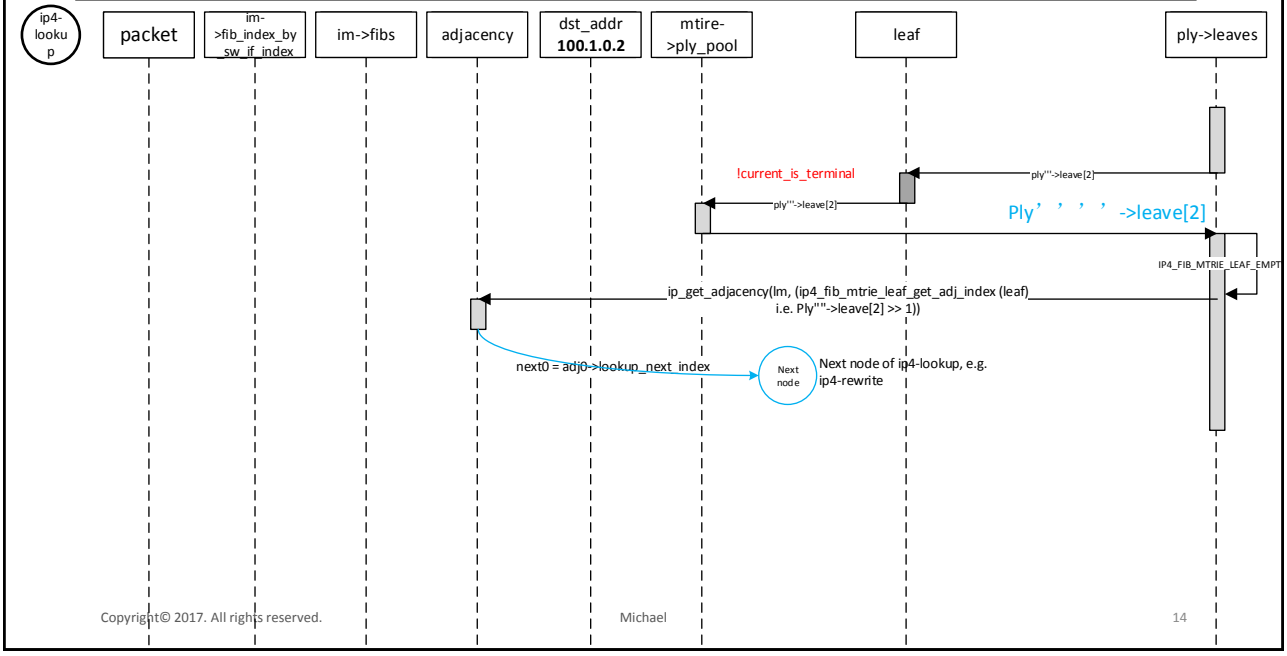
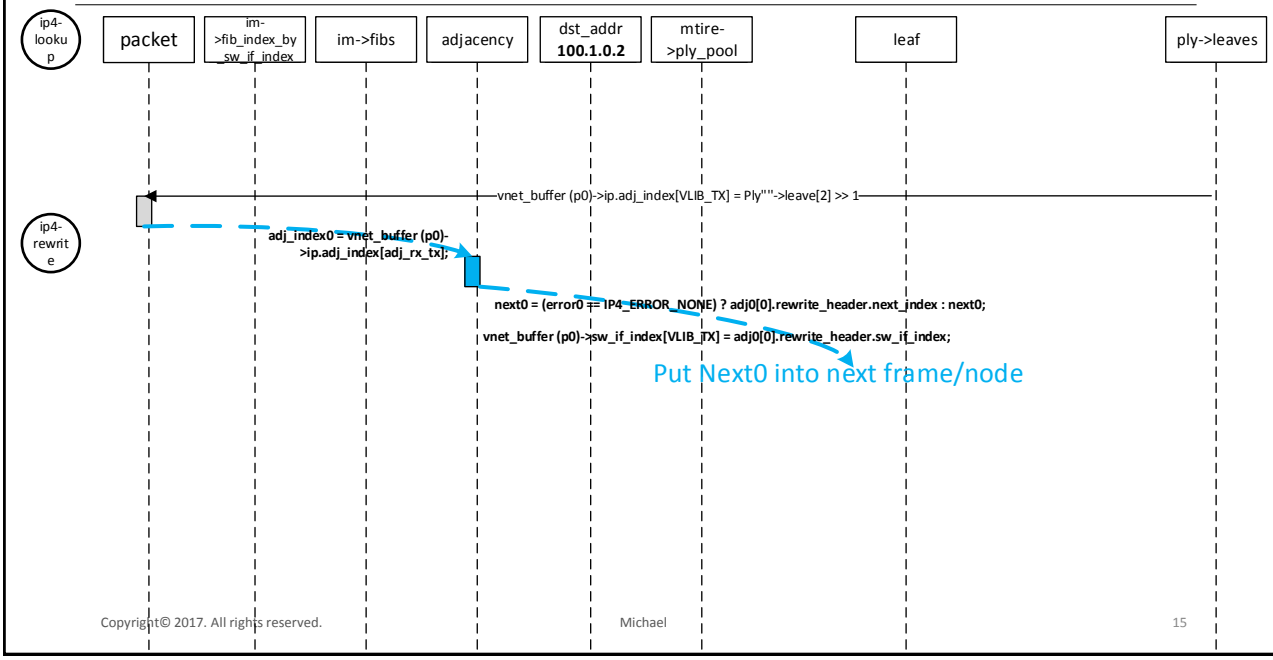


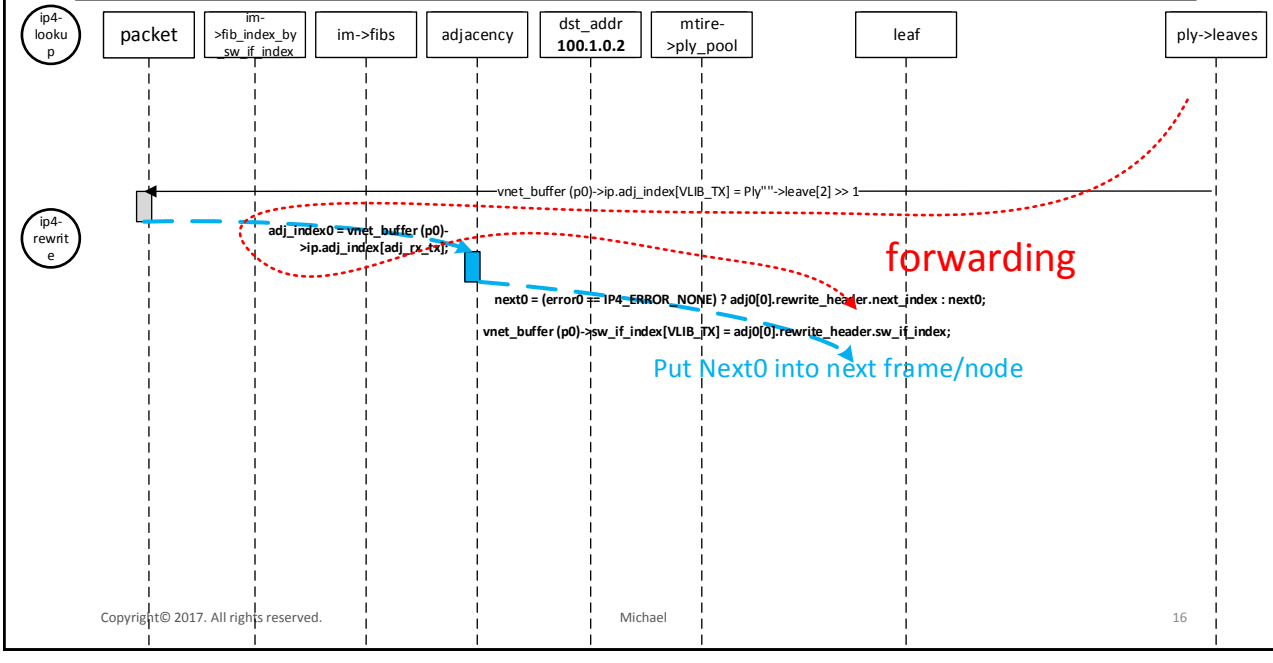
Forwarding Sequence Diagram – rewrite

VPP16.09



Forwarding Sequence Diagram – rewrite(Cont')

VPP16.09



Forwarding Sequence Diagram