Algorithm 1 New RibEntry *entry* with New FaceEntry *face*

1: **if** *entry.CHILD_INHERIT* == false and *entry.CAPTURE* == false **then**
2:     Add *entry* to RIB
3:     Add *face* to *entry*
4:     Create FIB update to add *face* to *entry.name* in FIB
5:     Create *ancestor_face_list*
6:     **for** each *ancestor_face* in *ancestor_face_list* **do**
7:         **if** *ancestor_face* is not in *entry.face_list* **then**
8:             Create FIB update to add *ancestor_face* to *entry.name* in FIB
9:         **end if**
10:     **end for**
11: **else if** *entry.CHILD_INHERIT* == true and *entry.CAPTURE* == true **then**
12:     Add *entry* to RIB
13:     Add *face* to *entry*
14:     Create FIB update to add *face* to *entry.name* in FIB
15:     Create *ancestor_face_list*
16:     Add *face* to *ancestor_face_list*
17:     **for** each *ancestor_face* in *ancestor_face_list* **do**
18:         **for** each *child* in *entry.children* **do**
19:             **if** *ancestor_face* is in *child.face_list* and *child.face.CHILD_INHERIT* **then**
20:                 remove *ancestor_face* from *ancestor_face_list*
21:             **else if** *ancestor_face* is not in *child.face_list* **then**
22:                 create FIB update to remove *ancestor_face* from *child.name* in FIB
23:             **end if**
24:         **end for**
25:     **end for**
26: **else if** *entry.CHILD_INHERIT* == true **then**
27:     Add *entry* to RIB
28:     Add *face* to *entry*
29:     Create *ancestor_face_list*
30:     **for** each *ancestor_face* in *ancestor_face_list* **do**
31:         create FIB update to add *ancestor_face* to *entry.name* in FIB
32:     **end for**
33:     **for** each *child* in *entry.children* **do**
34:         **if** *face* is in *child.face_list* and *child.face.CHILD_INHERIT* **then**
35:             Ignore *child* and *child.subtree*
36:         **else if** *face* is not in *child.face_list* **then**
37:             create FIB update to add *face* to *child.name* in FIB
38:         **end if**
39:     **end for**
40: **else if** *entry.CAPTURE* == true **then**
41:     Add *entry* to RIB
42:     Add *face* to *entry*
43:     Create FIB update to add *face* to *entry.name* in FIB
44:     Create *ancestor_face_list*
45:     **for** each *ancestor_face* in *ancestor_face_list* **do**
46:         **for** each *child* in *entry.children* **do**
47:             **if** *ancestor_face* is in *child.face_list* and *child.face.CHILD_INHERIT* **then**
48:                 remove *ancestor_face* from *ancestor_face_list*
49:             **else if** *ancestor_face* is not in *child.face_list* **then**
50:                 create FIB update to remove *ancestor_face* from *child.name* in FIB
51:             **end if**
52:         **end for**
53:     **end for**
54: **end if**

Algorithm 2 Add New FaceEntry *face* to Existing RibEntry *entry* (CAPTURE does not change)

1: Add *face* to RIB *entry*
2: Create FIB update to add *face* to *entry.name* in FIB
3: **if** *entry.CHILD_INHERIT* **then**
4:     **for** each *child* in *entry.children* **do**
5:         **if** *child.face_list* has *face* and *face.CHILD_INHERIT* **then**
6:             Ignore *child* and *child.children*
7:         **else if** *ancestor_face* is not in *child.face_list* **then**
8:             create FIB update to add *face* to *child.name* in FIB
9:         **end if**
10:     **end for**
11: **end if**

Algorithm 3 Update Existing FaceEntry $face$ in Existing RibEntry $entry$ and Change Flags

```
 1: Updating entry in RIB
 2: if turn on CHILD_INHERIT flag then
 3:     for each child in entry.children do
 4:         if child.CAPTURE == true then
 5:             ignore child and child.children
 6:         else if entry.face is in child.face_list then
 7:             ignore child
 8:         else if entry.face is in child.face_list and child.face.CHILD_INHERIT then
 9:             ignore child and child.children
10:         else
11:             create FIB update to add entry.face to child.name in FIB
12:         end if
13:     end for
14: else if turn off CHILD_INHERIT flag then
15:     ancestor_face = ancestor with face.faceId and CHILD_INHERIT
16:     for each child in entry.children do
17:         if child.CAPTURE == true then
18:             ignore child and child.children
19:         else if entry.face is in child.face_list then
20:             ignore child
21:         else if entry.face is in child.face_list and child.face.CHILD_INHERIT then
22:             ignore child and child.children
23:         else
24:             create FIB update to remove entry.face from child.name in FIB
25:             create FIB update to add ancestor_face to child.name in FIB
26:         end if
27:     end for
28: end if
29: if turn on CAPTURE flag then
30:     create ancestor_face_list
31:     for each face in ancestor_face_list do
32:         if face is in entry.face_list and entry.face.CHILD_INHERIT then
33:             remove face from ancestor_face_list
34:         else if face is not in entry then
35:             create FIB update to remove face from entry.name in FIB
36:         end if
37:         for each child in entry.children do
38:             if face is in child.face_list and face.CHILD_INHERIT then
39:                 remove face from ancestor_face_list
40:             else if face is not in child.face_list then
41:                 create FIB update to remove face from child.name in FIB
42:             end if
43:         end for
44:     end for
45: else if turn off CAPTURE flag then
46:     create ancestor_face_list
47:     for each face in ancestor_face_list do
48:         if face is in entry.face_list and entry.face.CHILD_INHERIT then
49:             remove face from ancestor_face_list
50:         else if face is not in entry.face_list then
51:             create FIB update to add face to entry.name in FIB
52:         end if
53:         for each child in entry.children do
54:             if child.face_list has face and face.CHILD_INHERIT then
55:                 remove face from ancestor_face_list
56:             else if face is not in child.face_list then
57:                 create FIB update to add face to child.name in FIB
58:             end if
59:         end for
60:     end for
61: end if
```

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Algorithm 4 Remove FaceEntry *face* from RibEntry *entry*

1: Remove *face* from RIB *entry*
2: Create FIB update to remove *face* from *entry.name* in FIB
3: **if** $CHILD\_INHERIT$ and $CAPTURE$ and no other face has $CAPTURE$ **then**
4:     **for** each *child* in *entry.children* **do**
5:       **if** *face* is in *child.face_list* and *child.face.CHILD_INHERIT* **then**
6:         Ignore *child* and *child.subtree*
7:       **else if** *face* is not in *child.face_list* **then**
8:         create FIB update to remove *face* from *child.name* in FIB
9:       **end if**
10:     **end for**
11:     Create *ancestor_face_list*
12:     **for** each *ancestor_face* in *ancestor_face_list* **do**
13:       **if** *ancestor_face* is in *entry.face_list* and *entry.face.CHILD_INHERIT* **then**
14:         remove *ancestor_face* from *ancestor_face_list*
15:       **else if** *face* is not in *entry.face_list* **then**
16:         create FIB update to add *ancestor_face* to *entry.name* in FIB
17:       **end if**
18:       **for** each *child* in *entry.children* **do**
19:         **if** *ancestor_face* is in *child.face_list* and *child.face.CHILD_INHERIT* **then**
20:           remove *ancestor_face* from *ancestor_face_list*
21:         **else if** *ancestor_face* is not in *child.face_list* **then**
22:           create FIB update to add *ancestor_face* to *child.name* in FIB
23:         **end if**
24:       **end for**
25:     **end for**
26: **else if** *entry.CHILD_INHERIT* **then**
27:     *ancestor_face* = ancestor with *face.faceId* and $CHILD\_INHERIT$
28:     **for** each *child* in *entry.children* **do**
29:       **if** *face* is in *child.face_list* and *child.face.CHILD_INHERIT* **then**
30:         Ignore *child* and *child.subtree*
31:       **else if** *face* is not in *child.face_list* **then**
32:         create FIB update to remove *face* from *child.name* in FIB
33:         create FIB update to add *ancestor_face* to *child.name* in FIB
34:       **end if**
35:     **end for**
36: **end if**