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1: For each possible security demand  $k$ , sort all substrate nodes in a candidate
   node queue  $queue(k)$  in descending order of heuristic value  $H$ .
2: For all nodes  $m \in G_i^S$ , initialize their state by setting  $Occupied(m) =$ 
   FALSE.
3: repeat
4:   Get an unmapped node  $n$  randomly from  $G_i^V$ .
5:    $k = dem^V(n)$ .
6:   if  $\exists$  node  $m \in queue(k)$  s.t.  $Occupied(m) = \text{FALSE}$  and  $dem^S(m) \leq$ 
      $lev^V(n)$  and  $cpu^S(m) \geq cpu^V(n)$  then
7:      $Occupied(m) = \text{TRUE}$ .
8:     Map the virtual node  $n$  onto the substrate node  $m$ .
9:   else
10:    Release all resources occupied by  $G_i^V$ .
11:    return MAP_FAILED.
12: until all nodes in  $G_i^V$  are mapped successfully.
13: return NODE_MAP_SUCCESS.

```
