Quantum Shortest Path Netsukuku

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Abstract

For the sake of simplicity, in this paper, we will assume to operate on level 0 (the level formed by 256 single nodes).

4 Tracer Packet

A *TP* (Tracer Packet) is the fundamental concept on which the QSPN is based: it is a packet which stores in its body the IDs of the traversed hops.

4.1 Tracer Packet flood

A TP isn't sent to a specific destination but instead, it is used to flood the network. By saying "the node A sends a TP" we mean that "the node A is starting a TP flood".

A TP flood passes only once through each node of the net: a node which receives a TP will forward it to all its neighbours, except the one from which it

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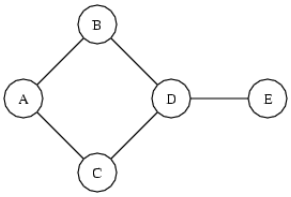
                    current branch can't be explored anymore, therefore it is a
                    valid route. Print it */
                print branch
}
```

A proof of concept of the above algoritdb db been implementbd in Awk [4].

Examplb

Considr th graph:



3. In a cycle, just two TP are needed, and one is the reverse of the other. The first can be constructed in this way:

   - Choose a node of the cycle, this will be the pivot node.
   - Start from one neighbour of the pivot and write sequencially all the other nodes until you return to the pivot (but do not include it). Call this string C.
   - The TP will be:

     $$CpC$$

     where p is the pivot node.

   Example: if we choose the node D as the pivot, we can write the TP as:

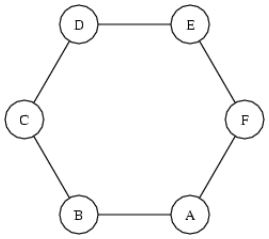


Figure 4: A cycle

$$EFABCDEFABC$$

and its reverse:

$$CBAFEDCBAFE$$

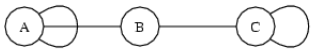
These two TPs will give all the routes to all the nodes of the cycle.

7.3 The question

Can we implement a “live” version of the Simplify Route algorithm like we did with the Generate Route one?
The reply is ahead.

9.3 Cyclicity

When a CTP reaches the extremity of a segment, it is back forwarded, thus it's as if the extreme nodes had a link with themselves.



The underlined routes are the new route for

11.3.2 Asymmetry in Q^2

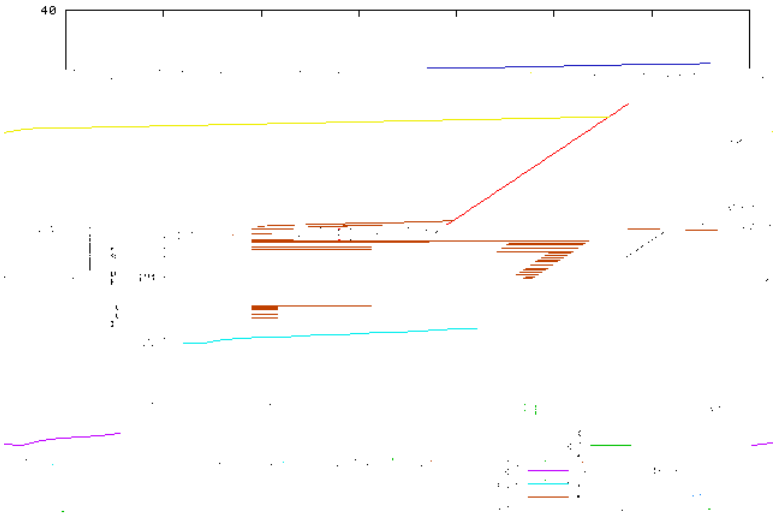
The QSPN v2 is a very flexible algorithm that can be adapted to a large range of

TP flux The *TP flux* of a node n, is the number of TP packets which have been forwarded by n during the entire QSPN exploration. it is indicated with $\Phi(n)$.

Mean TP flux Given k nodes $n_1, \ldots, n_k$, their mean TP flux is:

$$\Phi_m(n_1, \ldots, n_k) = \frac{\sum_{i=1}^{k} \Phi(n_i)}{k}$$

Starter node



The complete graph is the worst case for the Q^2, therefore in the general case the

figure, we can observe the.e flux.eion.e two.e□erent.eQSPN.eon.e a
mesh graph with 11 ×

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