## Interpretation of the Markov chain representation of the 2×2 input switch.

Each circle represents a possible state of the inputs. For example, ( 1,1 ) means that there are two packets in the input ports, and they both want to go to output port 1.

They can't __both__ be serviced since output port 1 can only consume one packet at a time. ( that is why there is __no__ arrow linking states ( 1,1 ) to ( 2,2 ) ). Possibilities are:

a) packet in the input port 1 is serviced and immediately replaced by another packet which
     a.1. wants to go to output port 1   or   → ( 1,1 )   next state
     a.2 wants to go to output port 2. ↘ ( 2,1 )

or

b) packet in the input port 2 is serviced and immediately replaced by another packet which
     b.1. wants to go to output port 1   or → ( 1,1 )
     b.2   "   "   port 2. ↘ ( 1,2 )

Since there are 4 independent possibilities each with 0.25 probability. Same analysis can be applied easily to the other states as well.