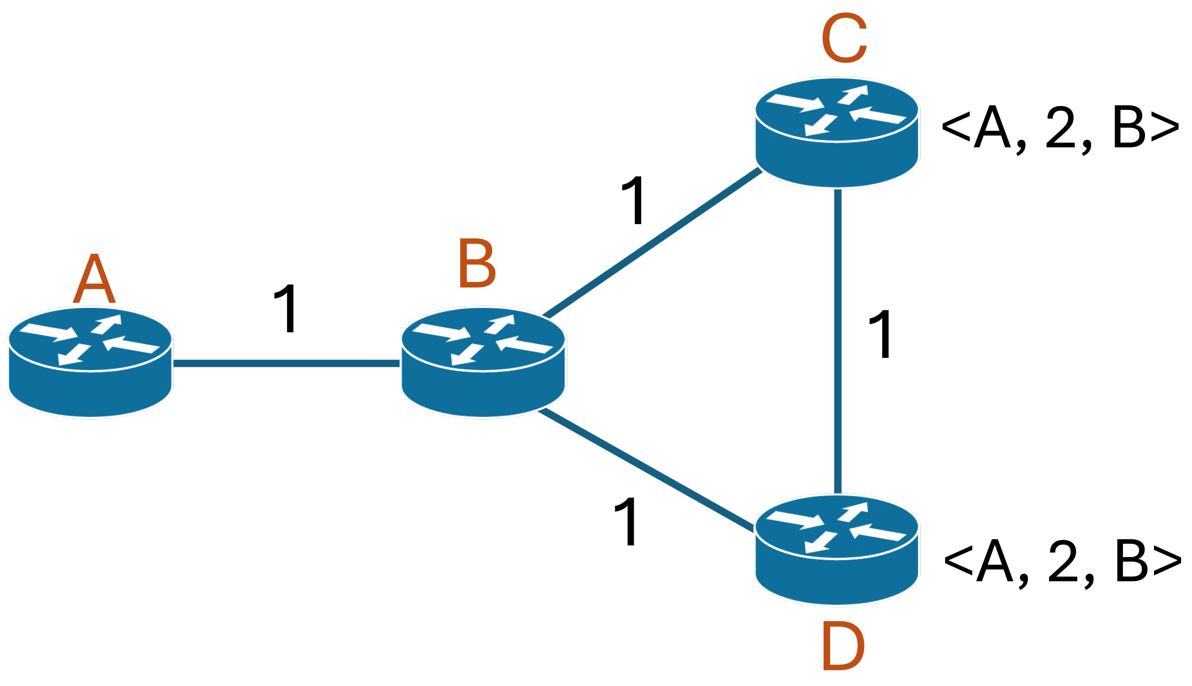
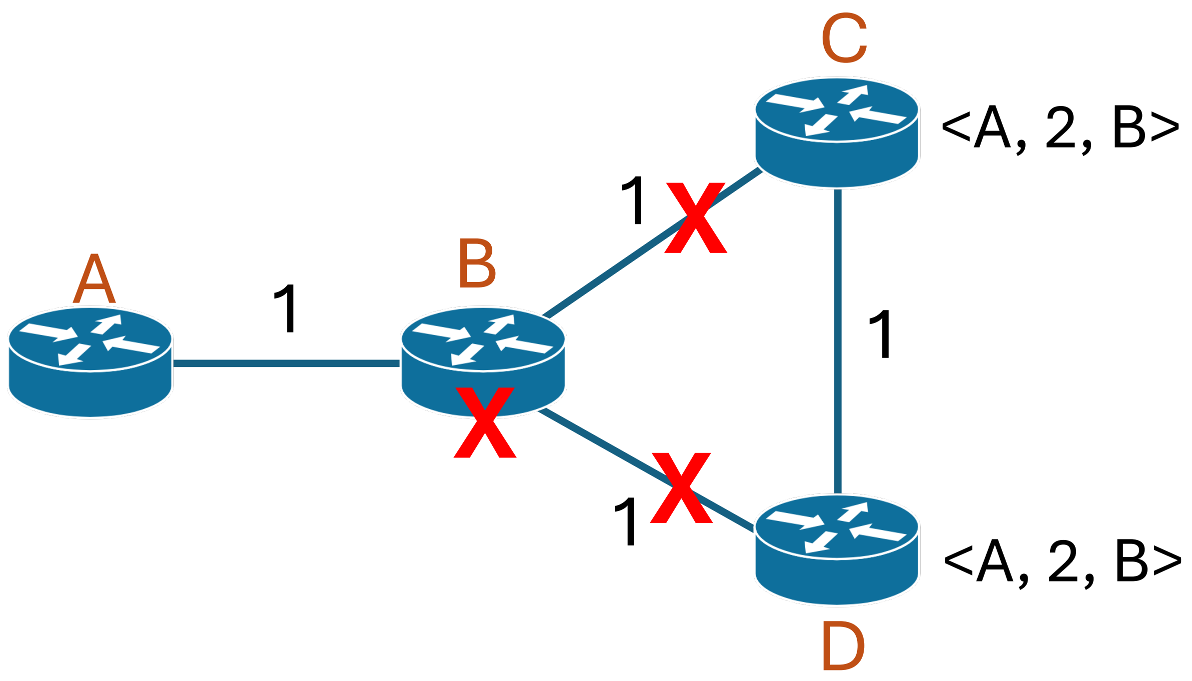
DV format: <Destination, Path-cost, NextHop>



Example: Let’s consider the routes from (C to A) and (D to A).

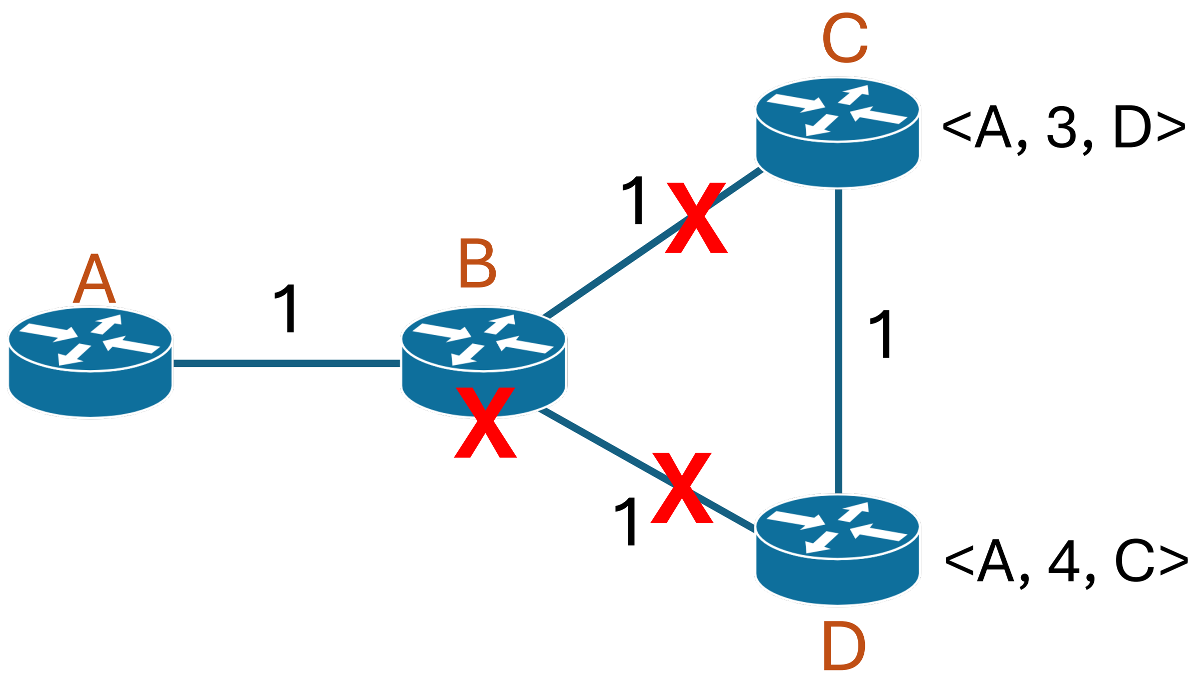
Event 1: Converged state

DV format: <Destination, Path-cost, NextHop>



Event 2: Router B failed, i.e., both links (B,C) and (B,D) are down simultaneously.

DV format: <Destination, Path-cost, NextHop>

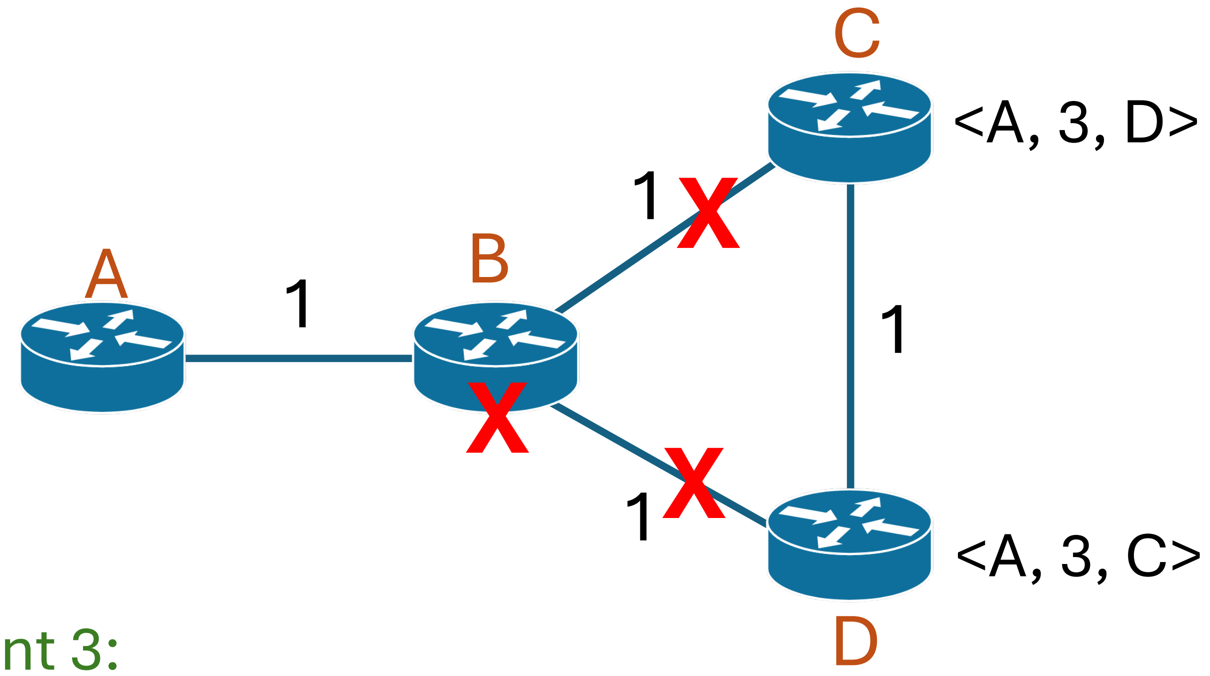


Case A:
No split-horizon.
No poison reverse.

Event 3:

C updates the route from its old database (which contains an advertisement from D) to <A,3,D>.
C shares this route to D.
D updates its route with this recent advertisement from C.
D’s current route becomes <A,4,C>. D shares this route back to C and this starts the “count to infinity”.

DV format: <Destination, Path-cost, NextHop>



Case B:

With split-horizon.

No poison reverse.

Event 3:

C updates the route from its old database (which contains an old advertisement from D) to <A,3,D>.

(Note that D's old route <A,2,B> was not learnt from C, so it shared it with C even when split-horizon is applied.)

C DOES NOT advertise this route (i.e., <A,3,D>) to D due to the Split-horizon rule.

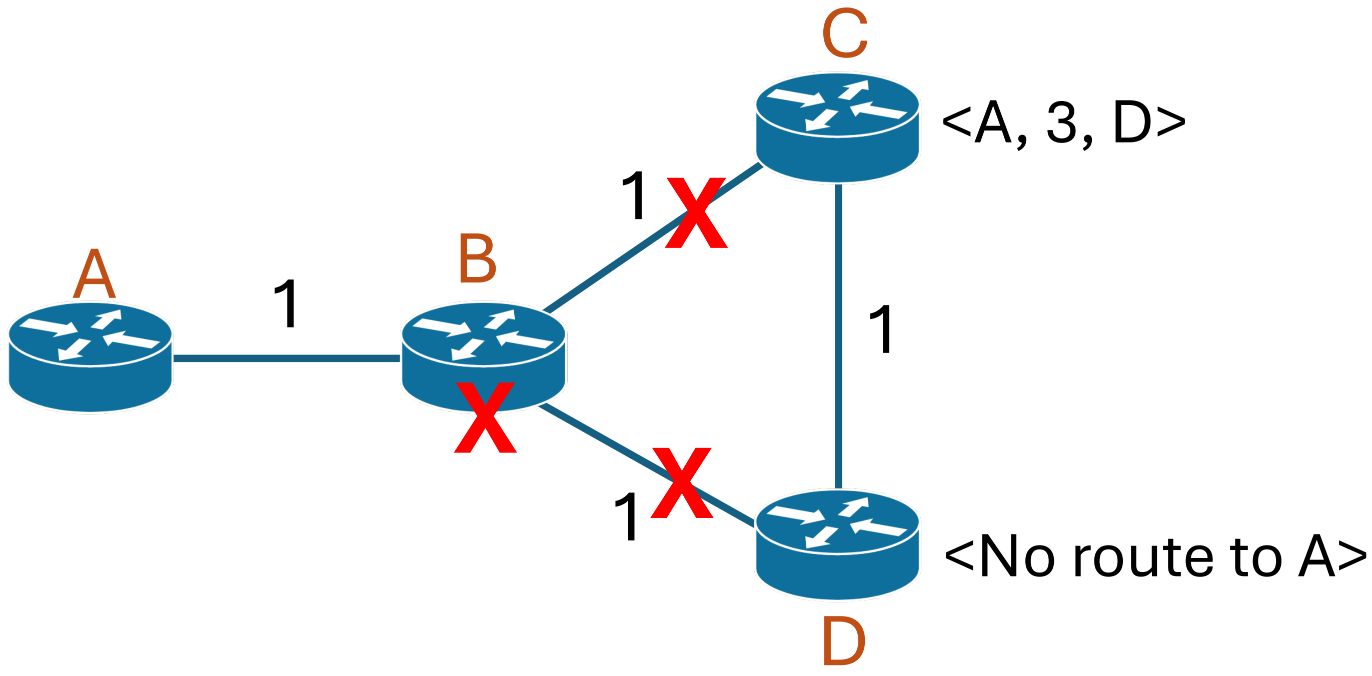
However, D updates the route from its old database (which contains an old advertisement from C) to <A,3,C>.

D DOES NOT advertise this route to C due to the Split-horizon rule.

This prevents count to infinity, but does not stop routing loop as both C and D's routes depend on each other.

In practical implementations, routers will time-out old database to eventually get rid of this inconsistency.

DV format: <Destination, Path-cost, NextHop>



Case C:
With poison reverse.
(this means Split-horizon with poisoned reverse)

Event 3:

C updates the route from its old database (which contains an old advertisement from D) to <A,3,D>.

C advertises the poisoned route <A, inf., D> to D due to Poisoned-reverse rule.

This advertisement from C changes D's database indicating "cost to reach A via C is inf."

D finds no path to A. D considers A unreachable (correct behavior).

This prevents count to infinity, as well as prevents the routing loop.