

# Towards Securing Internet eXchange Points Against Curious onlookers



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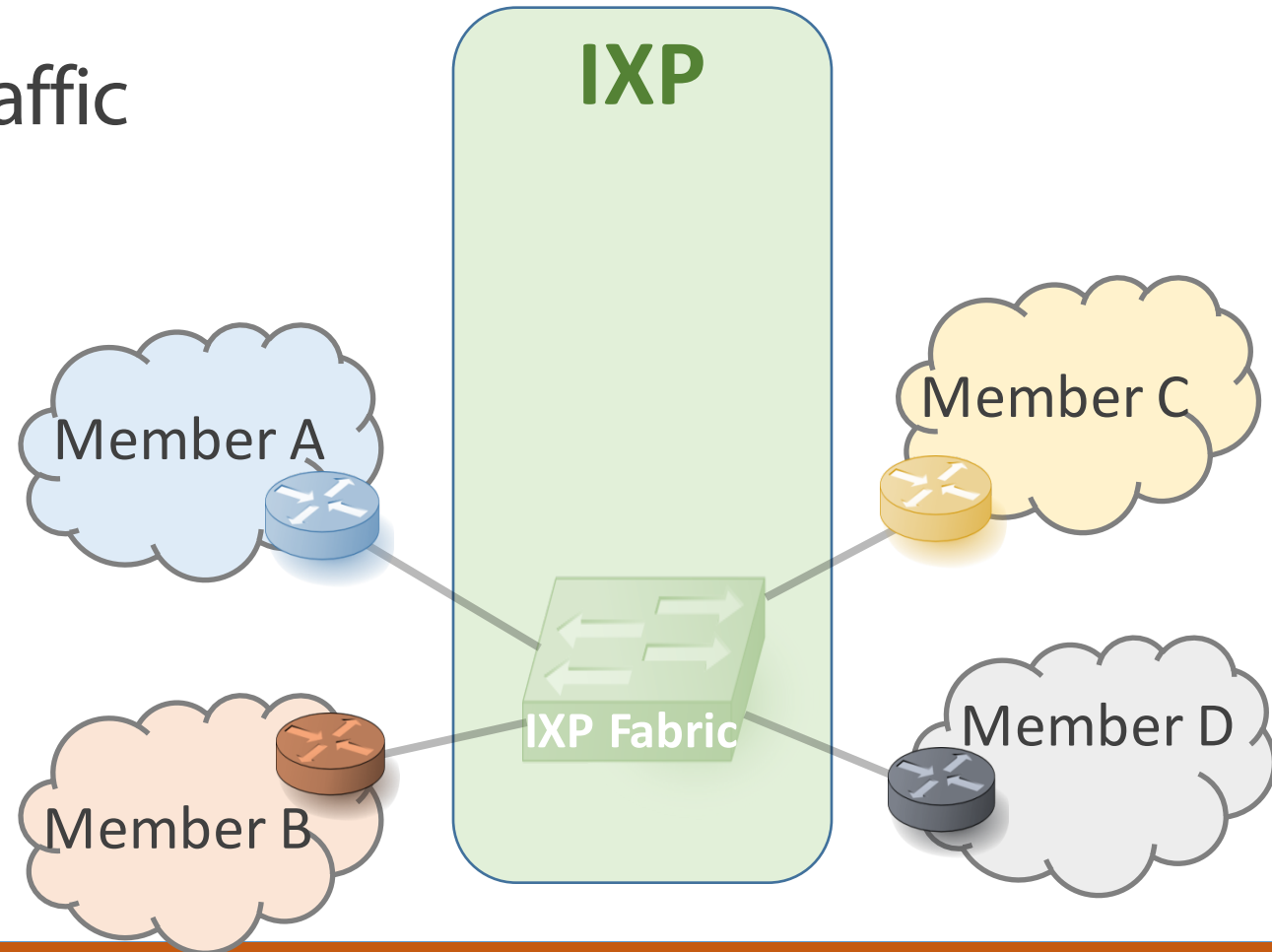


# Routes exchange at IXPs

Emerging place for Internet traffic exchange

- 600+ members
- ~200k IPv4 prefixes
- 5 Tbps peak traffic

**Easy** physical connectivity



# Routes exchange at IXPs

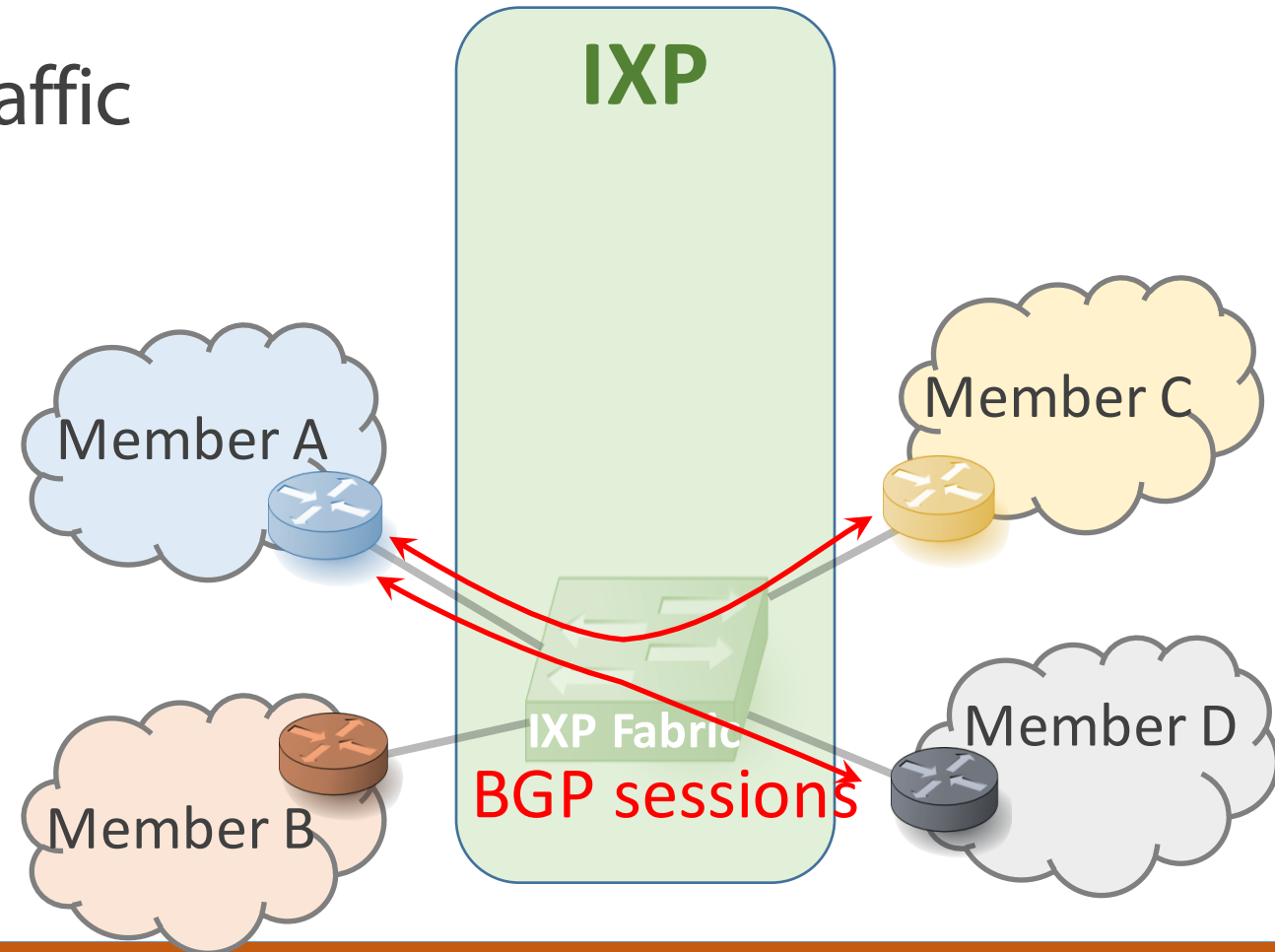
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**Easy** physical connectivity

Routes exchanged via BGP

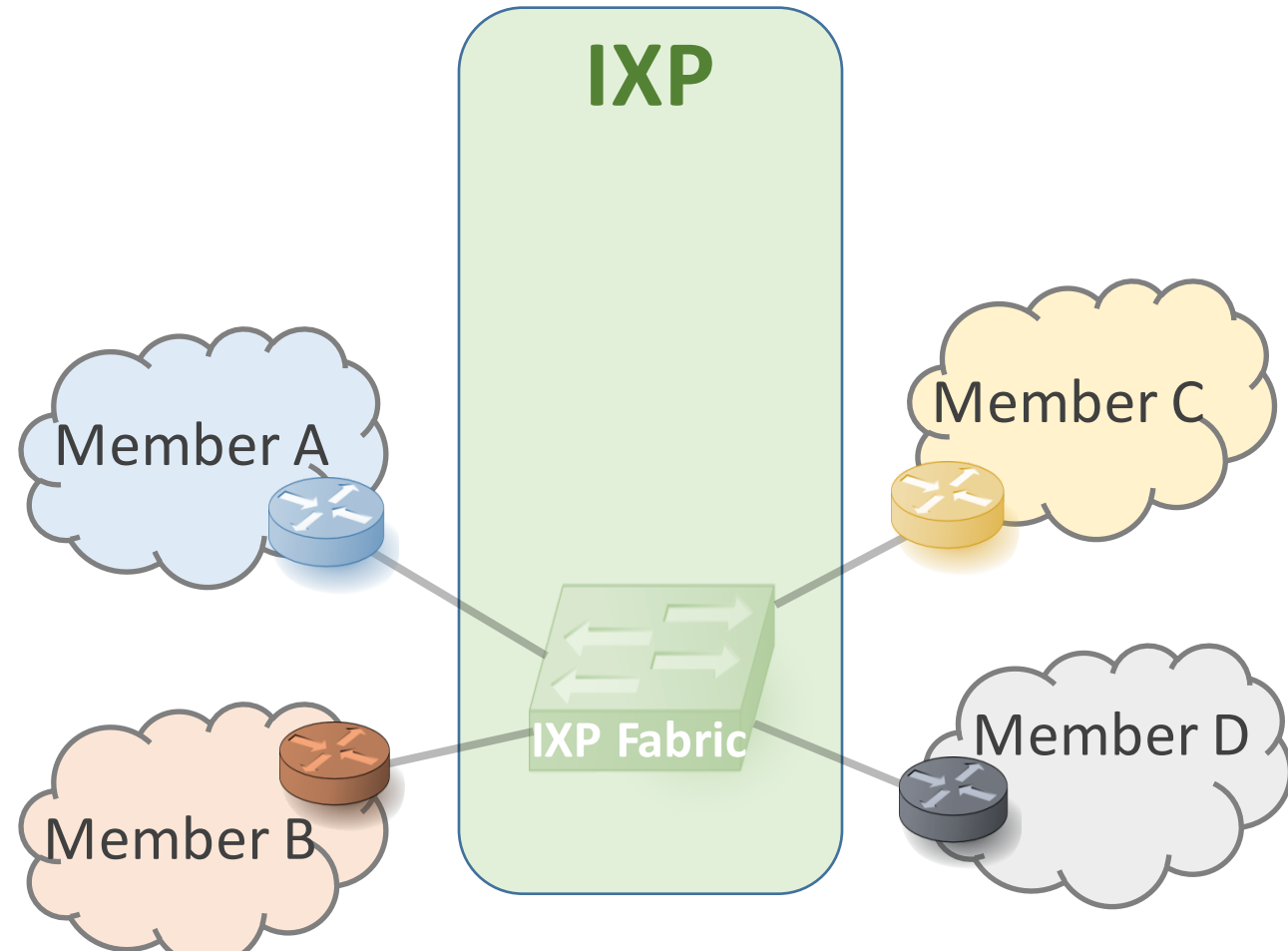
**peer-to-peer basis**



# Routes exchange at IXPs

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Ideal world  
**easy** route exchange

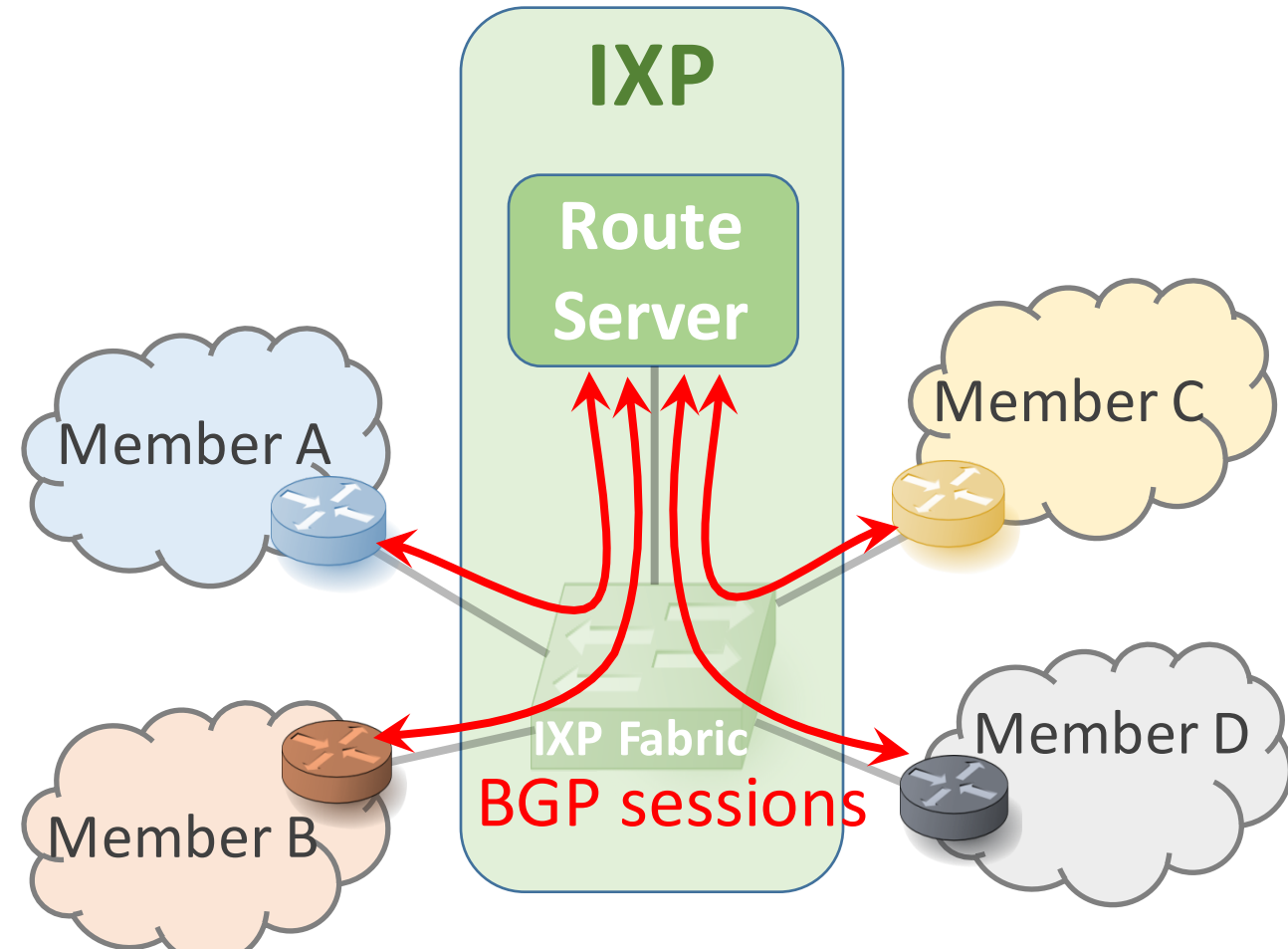


# Routes exchange at IXPs

Ideal world

**easy** route exchange

Route Servers **ease** route-exchange



# Routes exchange at IXPs

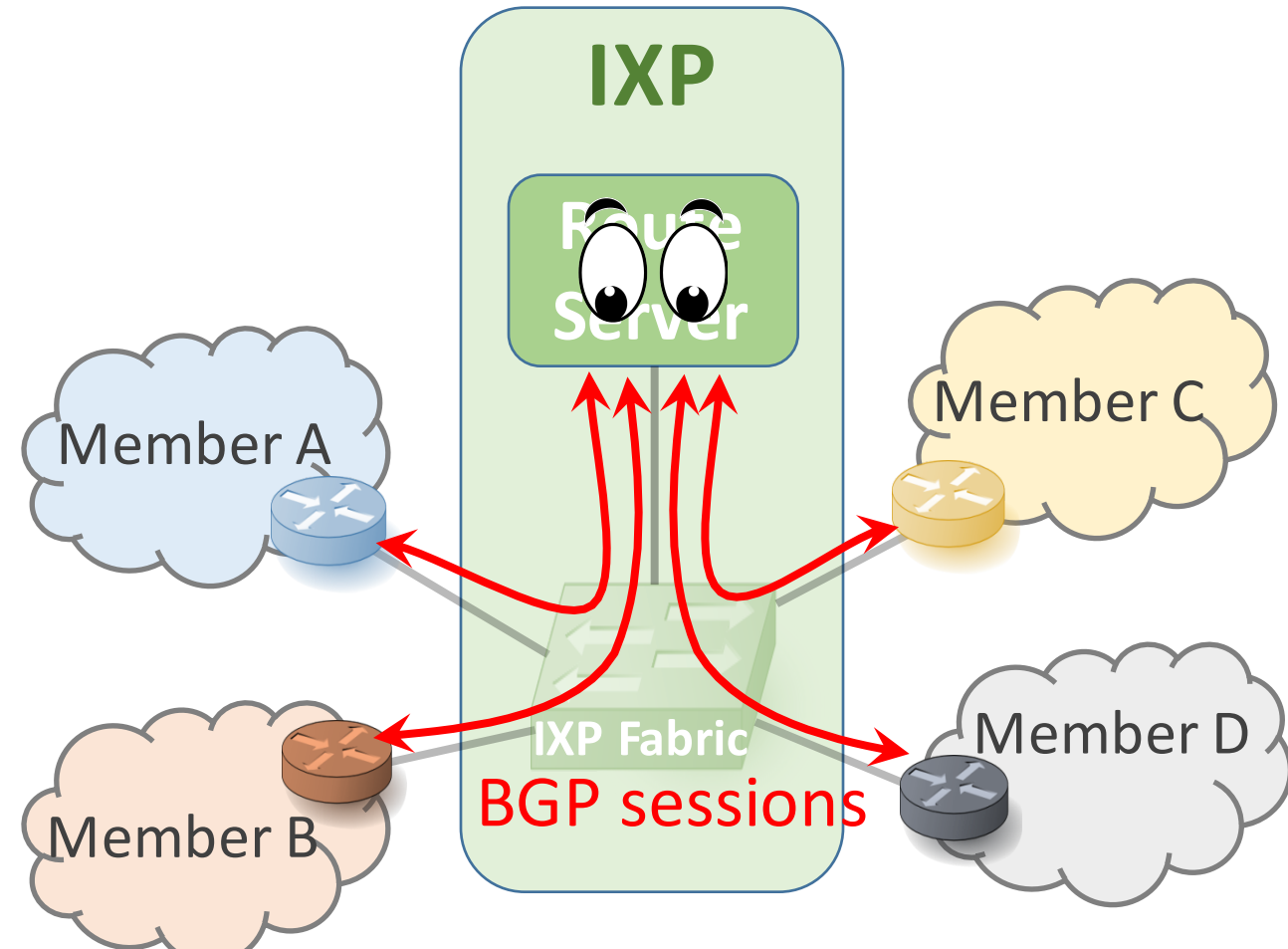
## Ideal world

**easy** route exchange

Route Servers **ease** route-exchange

Members **disclose** routing policies

**Privacy concerns!**



# Routes exchange at IXPs

## Ideal world

**easy** route exchange

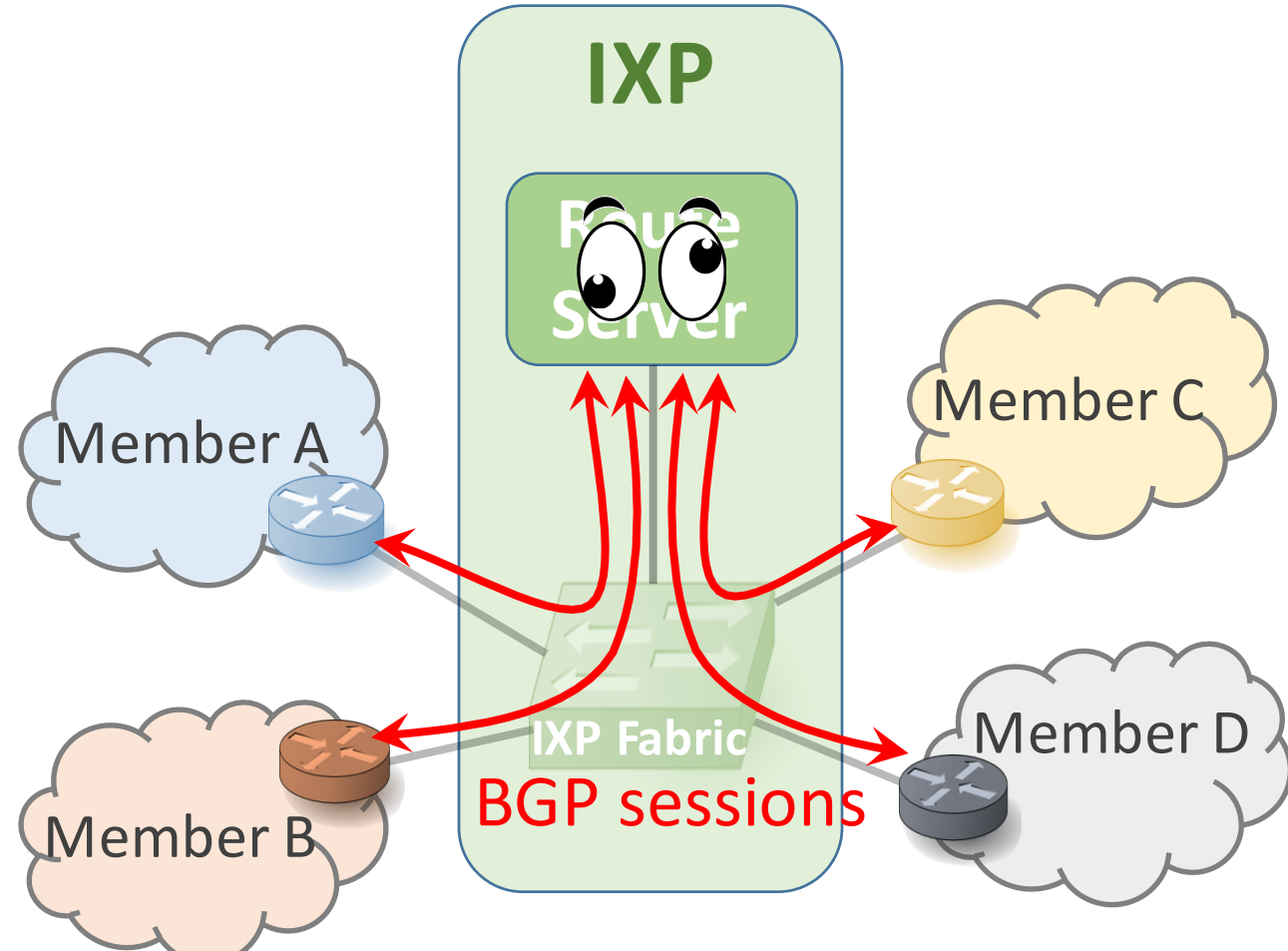
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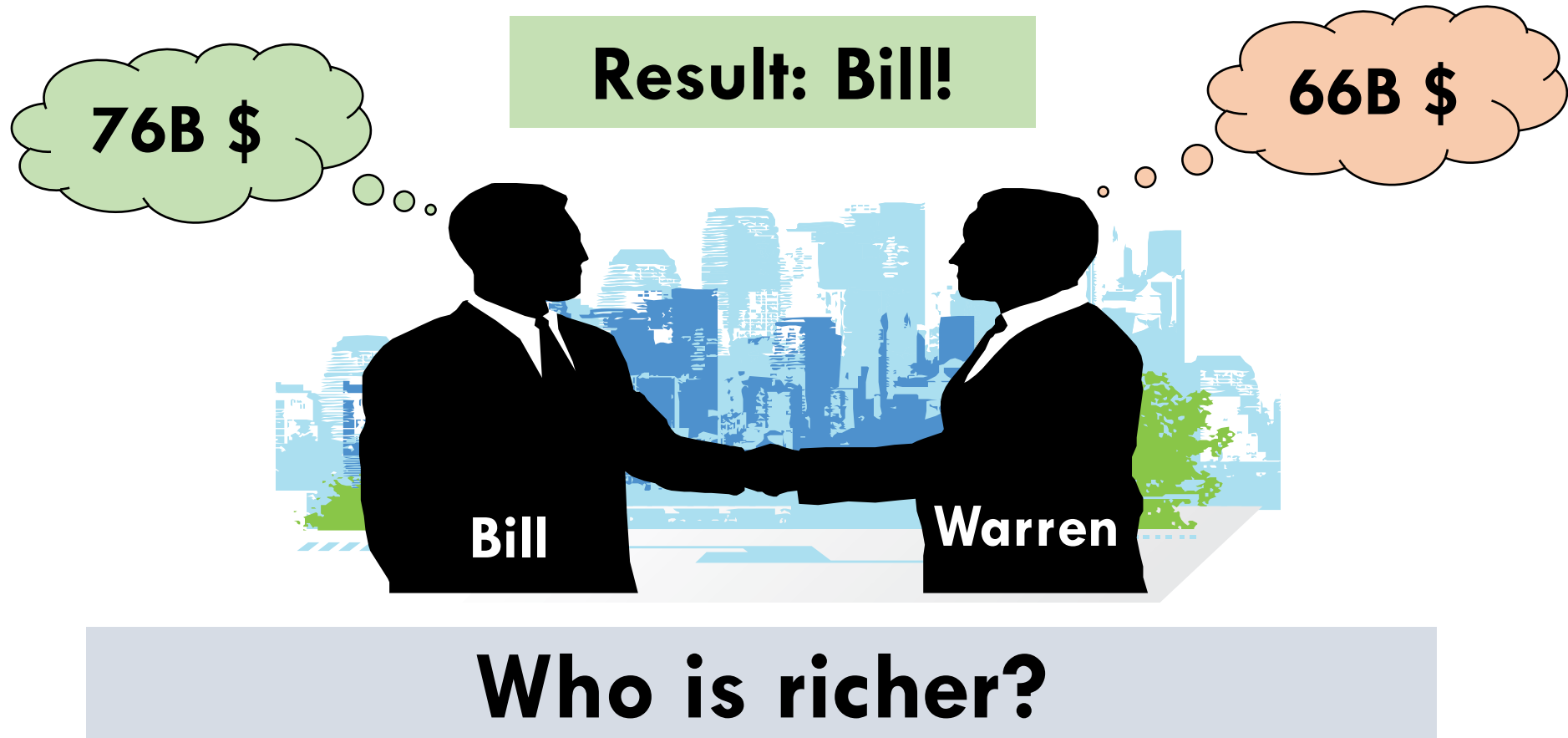
## Revised ideal world

**easy route exchange** AND  
**no privacy breach**



# Secure MultiParty Computation (SMPC)

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# SIXPACK route dispatcher

Emulates full-mesh of BGP sessions

Privacy preserving

SMPC-based

Performance per-route:

cpu: 0.6 ms ( $\pm 17\%$ )

memory: 6 MB

bandwidth: 25 KiB

