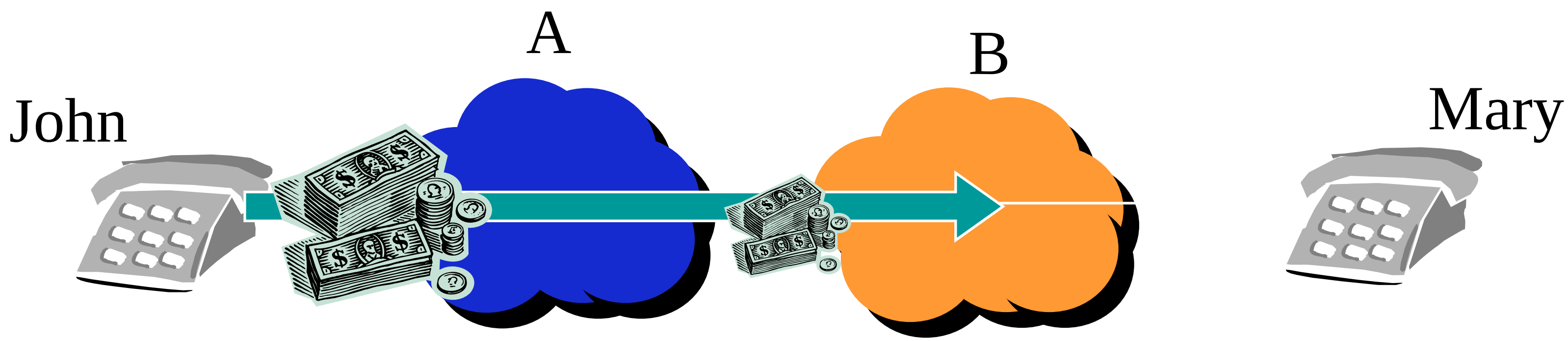
Peering and Financial Settlements

- An overview of the financial basis of interconnection within the Internet

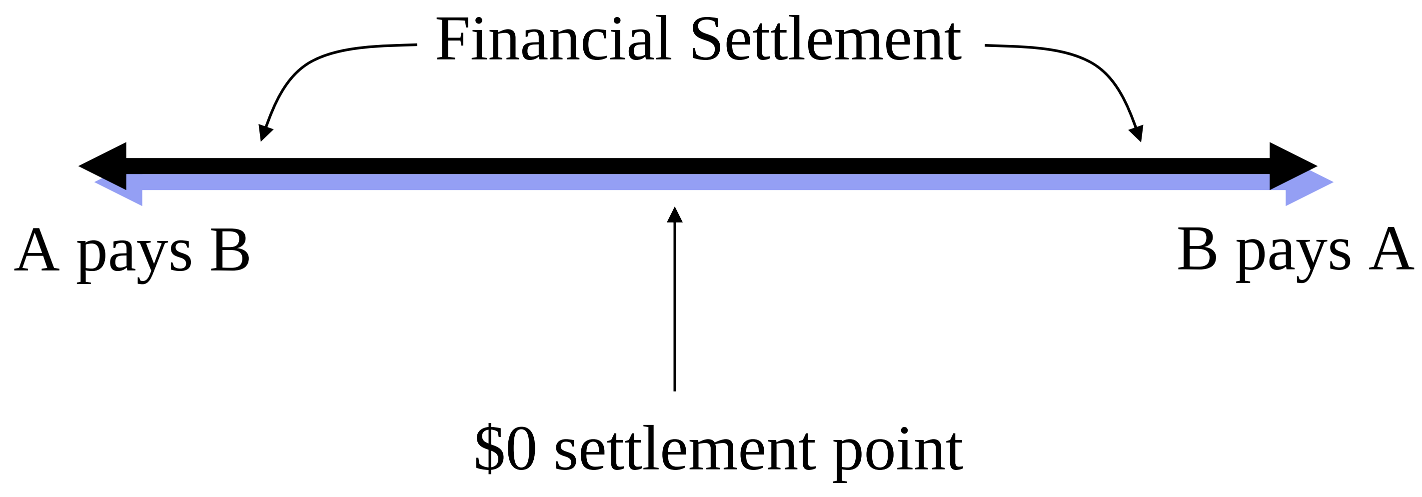
Follow the Money

- In a uniformly structured retail market the money flow is easy to identify:
  - John initiates the transaction
  - John pays his local provider A for the entire end-to-end transaction charge for the end-to-end service
  - A pays B to terminate the transaction
  - B terminates the transaction at Mary without charging Mary



Interprovider - Who pays who?

- The inter-provider financial relationship will vary for each individual transaction
- The net outcome is balanced through financial settlement



Interprovider - Who pays who?

- BUT, this assumes:
  - each transaction has a measurable value
  - each transaction is individually accountable
  - each transaction is funded by the end clients in a consistent fashion
    - initiator direction pays or
    - responder direction pays

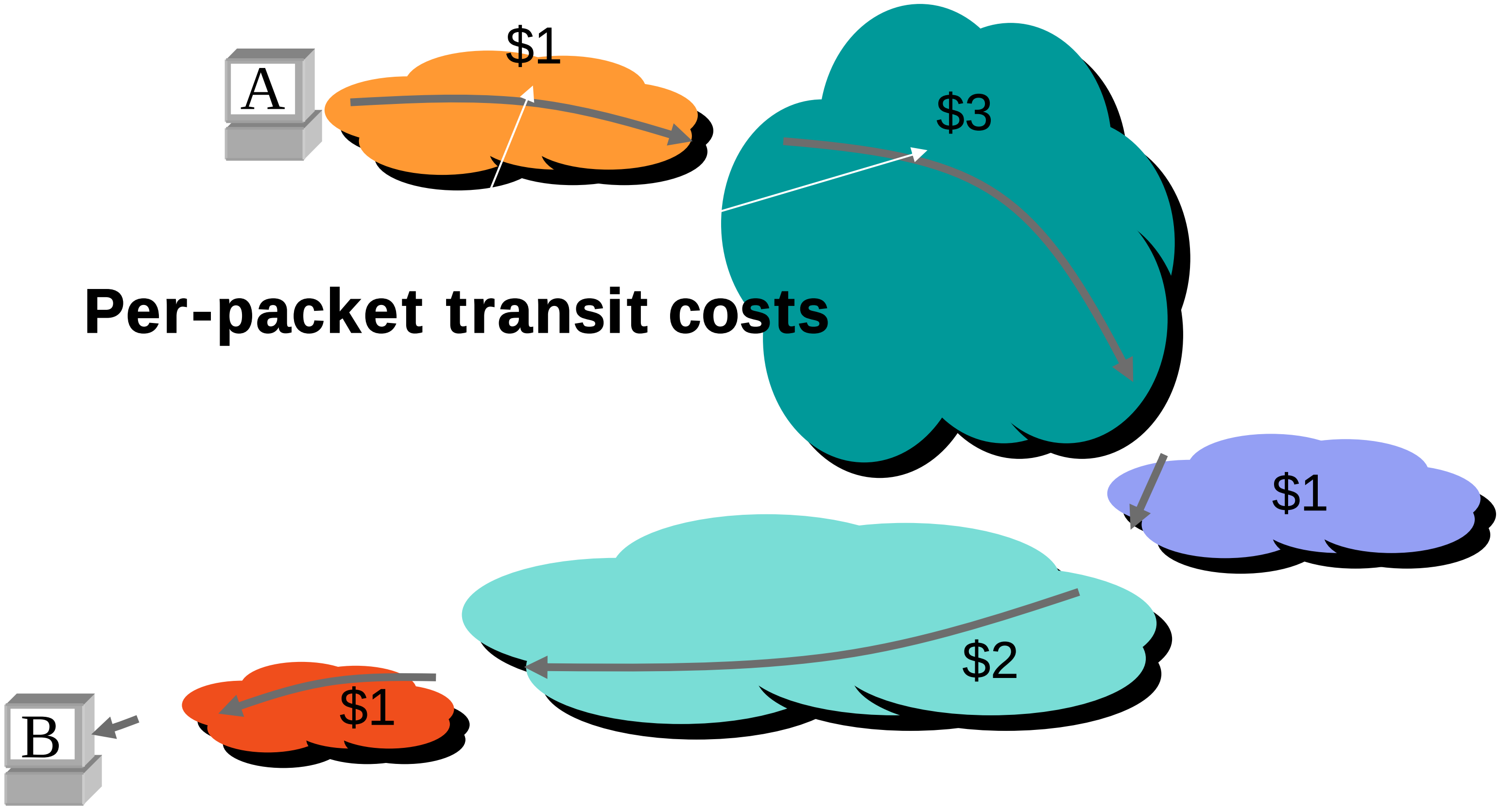
Enter the Internet . . .

- In the Internet there is no readily identifiable uniform bi-directional transaction
  - The currency of interaction must shift to the lowest common denominator
  - Each individual IP packet is an individual ‘transaction’
- In a chaotic retail market each part of a multi-provider supported transaction has an individual monetary flow
  - The ‘value’ can be in either direction at each interconnection
- Per-Service charging is difficult
  - The service is within the IP payload
  - Per-packet transmission is the currency of IP money

Cost Apportionment

- Financial Settlements are intended to undertake a role of fair cost apportionment
  - How are costs incurred by Internet Providers?
  - How does each provider apportion local costs?

Distributed packet costs



BUT

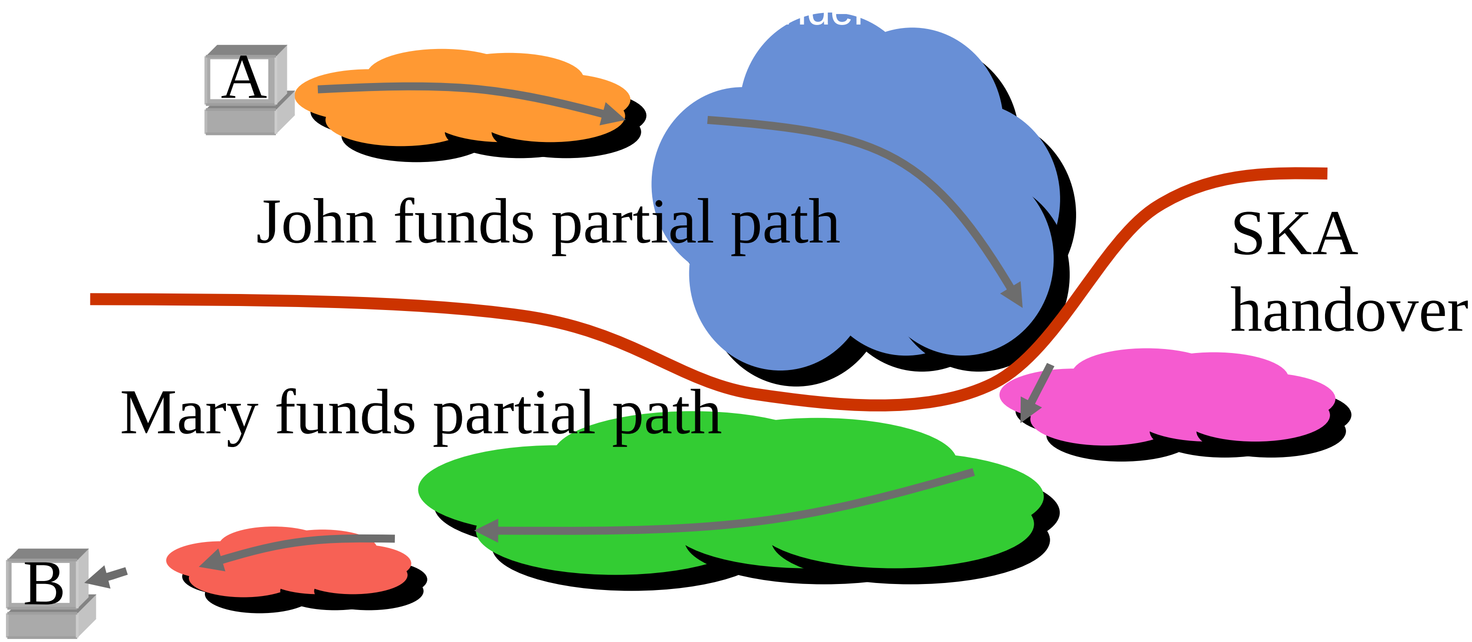
- IP packets
  - have a vanishingly small value
  - have no readily identifiable transaction context
  - may not be delivered
  - have no tracking field in the header to accumulate ‘value’
  - are usually not individually accounted within a retail tariff structure

The Internet model

- There is no known objective financial settlement model which is financially robust and technically feasible in the Internet
- The most stable outcome is a bilateral agreement creating a provider / customer relationship, or SKA peer relationship

How are costs apportioned?

- At the consumer level, IP transmission costs are administratively apportioned bilaterally between sender and receiver



Fixed Relationships

- There are no known IP financial settlements models that are technically and financially fair and robust
- Every peering tends to a statically determined relationship of provider/ customer or SKA peer
- The resultant business strategy
  - only SKA peer with ‘larger’ ISPs

The Aggregation of ISPs

- Every customer wants to be a peer
- Every peer wants to be a provider

- Bigger is better
  - ISPs that aggregate through mergers and takeovers can obtain access to a more advantaged position with respect to their peer ISPs

Today's Environment

- Natural tendency to aggregate within the ISP industry
  - Economies of scale of operation
  - Access to more advantageous SKA peering agreements

- Risk factors
  - reduction of competitive pressure
  - collective action on industry peering arrangements
  - collective action on retail pricing

Imminent Death of the Net Predicted - MP3 at ll:00

- Aggregation of the IP global transit market to a very small number of operators
  - Ability to execute global price setting through control of the underlying transmission resource
  - Recovery of operating margins through elimination of competitive pressure for commodity pricing

- Is the communications industry attempting to rebuild the colonial structures of global provider and local franchise operator?

The Bottom Line

- Continued operation of a strongly competitive diverse national IP supply market is the wrong answer.
- The money is NOT in IP. Regulatory intervention at the IP level is stunningly dangerous to any national economy.
- Intense IP provider aggregation is coming, but it may not matter. The margins are in services, not plumbing.