International Interconnecting Charging

Simo Sorvari
simo.sorvari@hut.fi
Headlines

- Existing Relationships
- Charging Schemes
- Sharing of Costs
- Suggestion of Cost Sharing
Existing Relationships

- Practical Internet interconnection model
  - hierarchy with peering
Existing relationships

- Public/Private peering
- Asymmetric way
Charging Schemes

- Telephony Industry
  - Bilateral Settlements
  - Sender Keep All (SKA)
  - Transit fees
Charging Schemes

- Internet Settlements
  - Differences to telephony:
    - Packet based
    - Packet may be dropped
    - Packet header manipulation
    - Routing information not uniformly available
Charging Schemes

- Packet Cost Accounting
  - Each router adds cost
  - packets are sold to next one
  - Strengths:
    - ISP gets revenue upon delivery
    - Pressure to competitive pricing
  - Weaknesses
    - Packet drop
    - Mechanism open to abuse

- TCP Session Accounting
  - Weaknesses
    - Diversity of pricing
    - Technical problems
Charging Scheme.

- No Settlement No Interconnection
- SKA Settlement
- Financial Settlement
Sharing of Costs

- National level: example FICIX ry.
- Problem: 90% of traffic through US
  - All other subsidizes US ISPs

Figure 5: Old Model: Non-U.S. ISP paid

Hubbing through US

Hosting

Asia-Pacific ISP

Europe ISP

Hosting

Hosting

Hosting

Figure 5: Old Model: Non-U.S. ISP paid

Hubbing through US

NAP

Hosting

Asia-Pacific ISP

Europe ISP

Hosting
Sharing of Costs

- US has dominance in Internet users, content providers, secure services
- This dominance is decreasing
- Problem of inequitability may be temporary one
Suggestions

- LIANG et all:
  - US carriers share the cost
  - Calculation model

\[
C_i = \frac{t_{1a} \times TA_i + t_{2c} \times TC_i + \frac{1}{2}(1-t_{1a} - t_{2a}) \times TA_i + \frac{1}{2}(1-t_{1c} - t_{2c}) \times TC_i}{TA_i + TC_i} \times (CA_i + CC_i) - CC_i
\]

- ITU Recommendation 2000:
  - Mutual agreement
  - No formula
  - Freedom of the forms
- US do not apply Recommendation