

International Interconnecting Charging

Simo Sorvari

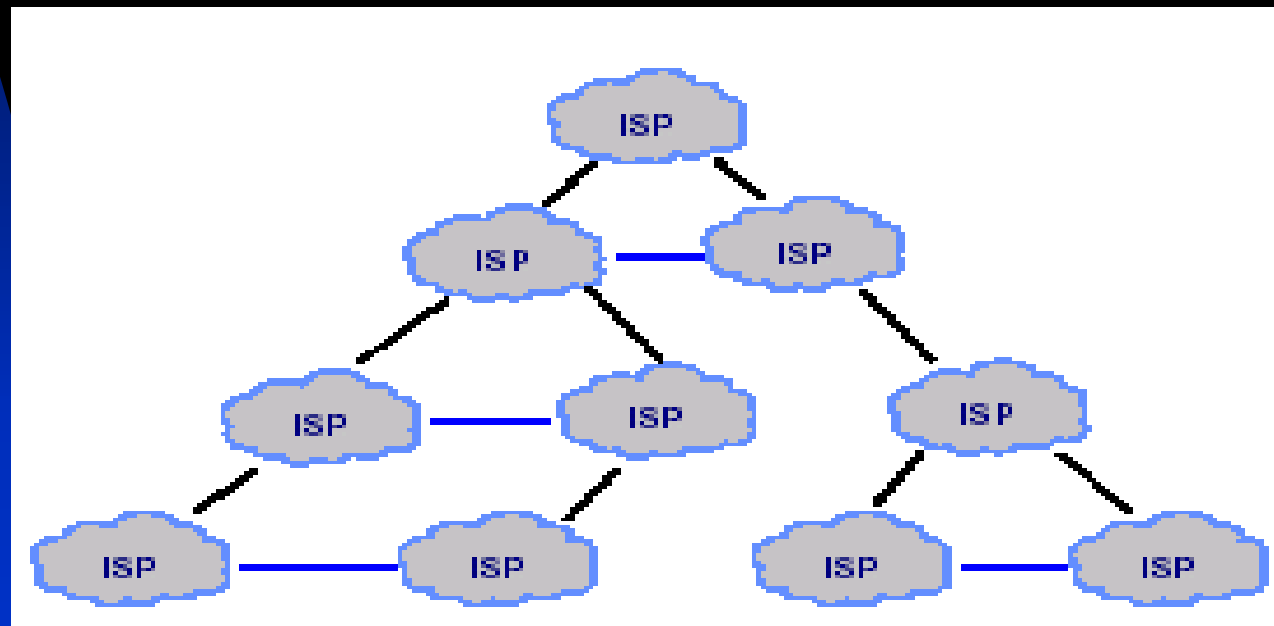
simo.sorvari@hut.fi

Headlines

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

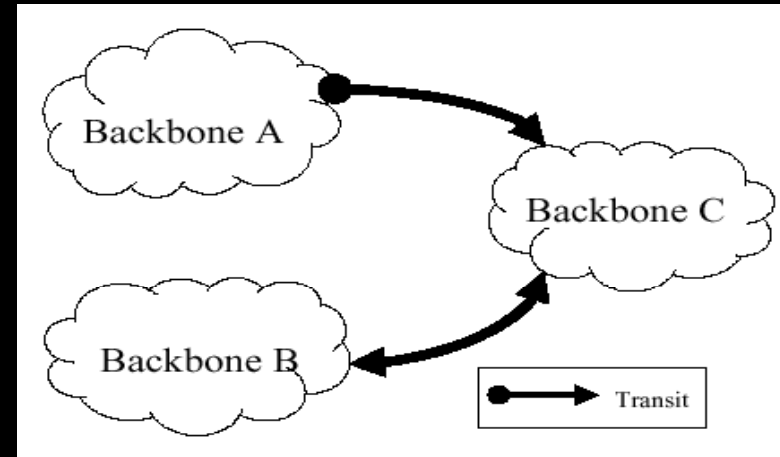
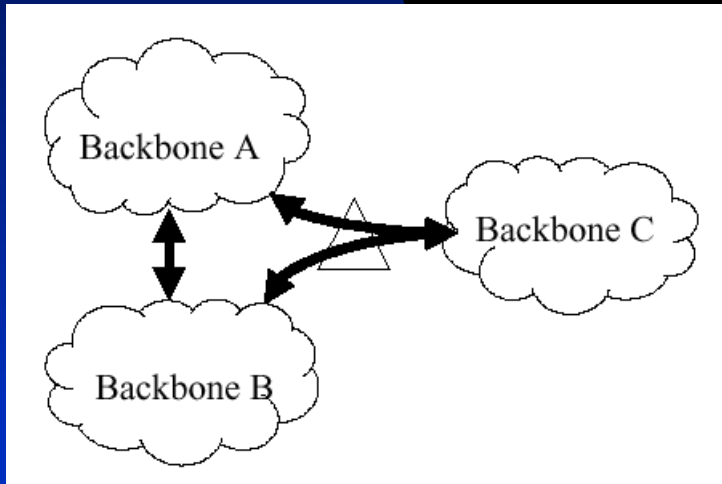
Existing Relationships

- 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

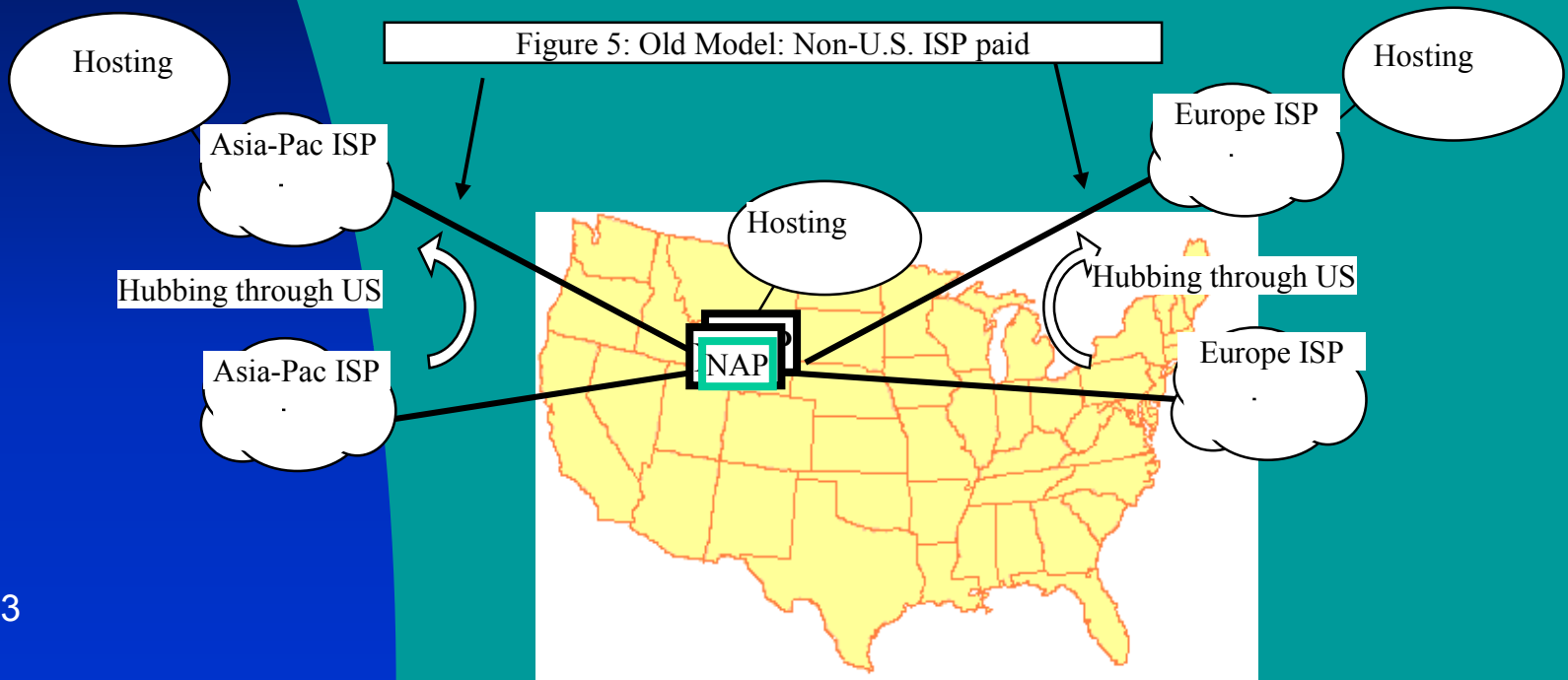
- Packet Cost Accounting
 - ◆ Each router adds cost
 - ◆ packets are sold to next one
 - ◆ Strengths:
 - ★ ISP gets revenue upon delivery
 - ★ Pressure to competitive pricing
 - ◆ Weaknesses
 - ★ Packet drop
 - ★ Mechanism open to abuse
- TCP Session Accounting
 - ◆ Weaknesses
 - ★ Diversity of pricing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



Sharing of Costs

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

Suggestions

- LIANG et al:
 - ◆ US carriers share the cost
 - ◆ Calculation model

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

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