

Architecting the Network

Part 2

Multiple Internet Service Providers

Provider Interaction

- m Policy Issues in a Multi-provider Environment

Multiple Providers

- m Either a starting condition or an early evolution
 - Access to technology
 - increasing market perception of value
 - Constraints on initial operations
- m Anticipate the environment of multiple providers

Multiple Providers

- m Are inevitable!
- m Plan for it within the areas of
 - design
 - policy
 - business plans

The Initial Model

- m Reselling
- m or Coexistence

Reselling

- m Purchase a service
- m Resell to high demand exposed markets
 - commercial access
 - community access
 - dial-up
 - school access

Reselling

- m Is an effective tool for Internet permeation
- m Increases the marketing presence
- m Increases purchase volumes of capacity
 - lowering unit price of bandwidth through increased volume
- m Shares the investment risk
- m Promotes rapid commercialisation of the Internet Service environment

Reselling

- m May be counter to regulatory environment
- m May be counter to funding requirements
- m May stress management function
- m May stress pricing structure
 - fewer high volume low margin clients

Reselling

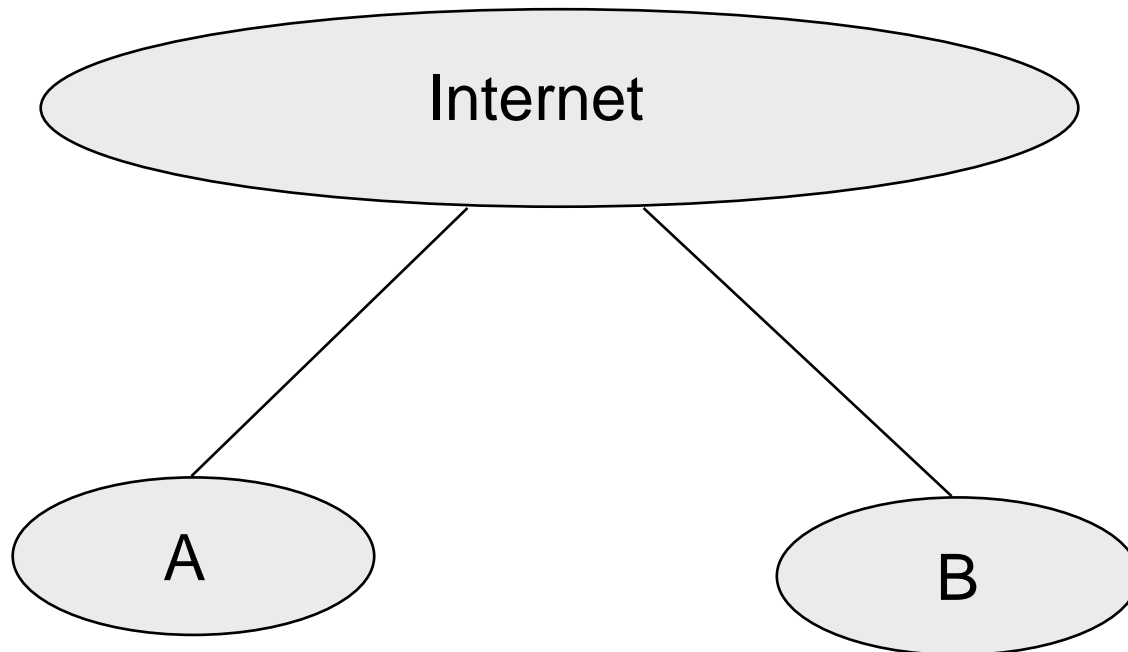
- m Leads to direct competitive environment
- m May not be supportable within the size of the available market

Reselling

- m The pressure to resell to service providers will commence on the first day!

Coexistence

- m Multiple service providers
- m Each with Internet connectivity

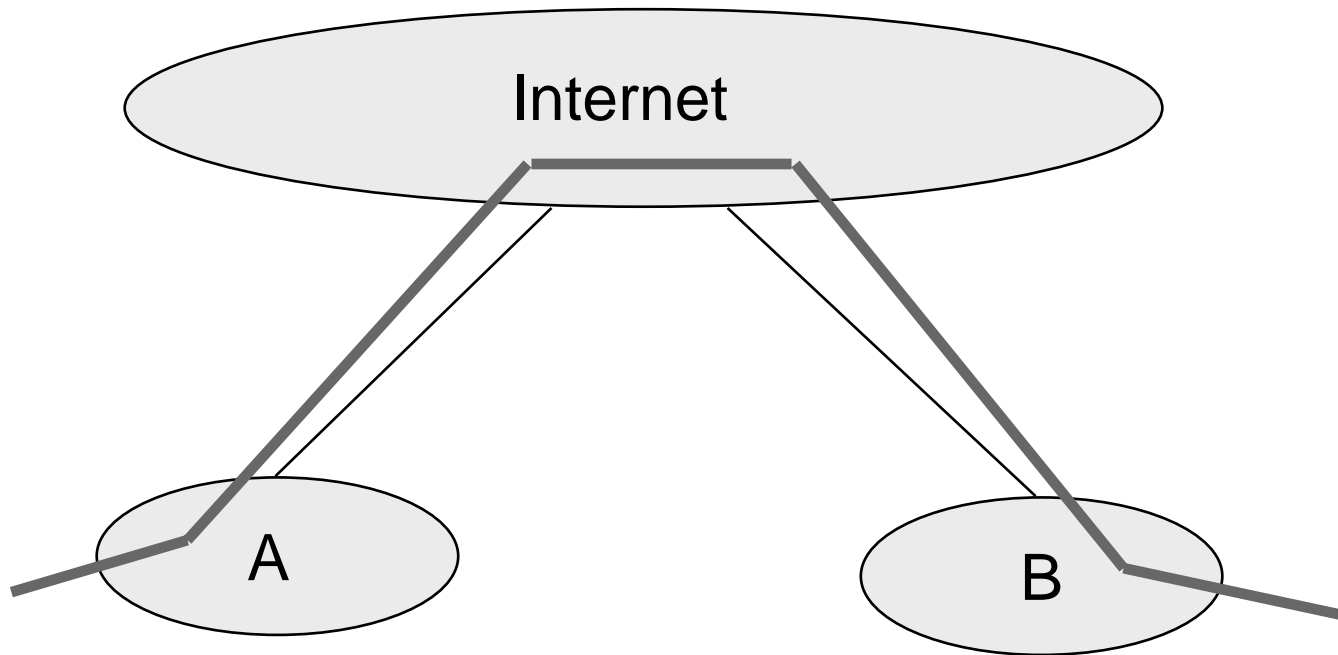


Coexistence

- m Independent Internet connectivity perceived as marketing advantage
- m Allows for Service Provider Operation to operate in a self-determined manner

Independent Coexistence

- m Is not cost effective
- m Backhaul issue causes cost to both parties



Independent Coexistence

- m Includes necessary areas of cooperative activity irrespective of link structure

Areas of “Forced” Cooperation

- m National delegated namespace (.xx)
 - structure of subdomains
 - policy of subdomain creation
 - inherited subdomain policy constraints
 - agreed mode of operation via delegated authority
 - accessibility of the domain name space as a prerequisite for Internet promulgation

Cooperation (continued)

- m Network Address Management
 - Service Provider Address Block management
 - Reseller Address Block Management
 - Customer switching
 - address switching
 - name service switching
 - Reseller switching
 - address block switching

Cooperation (continued)

- m Dual Homed customers
 - routing agreements
 - advertisement to client
 - advertisement to Internet

Cooperation (continued)

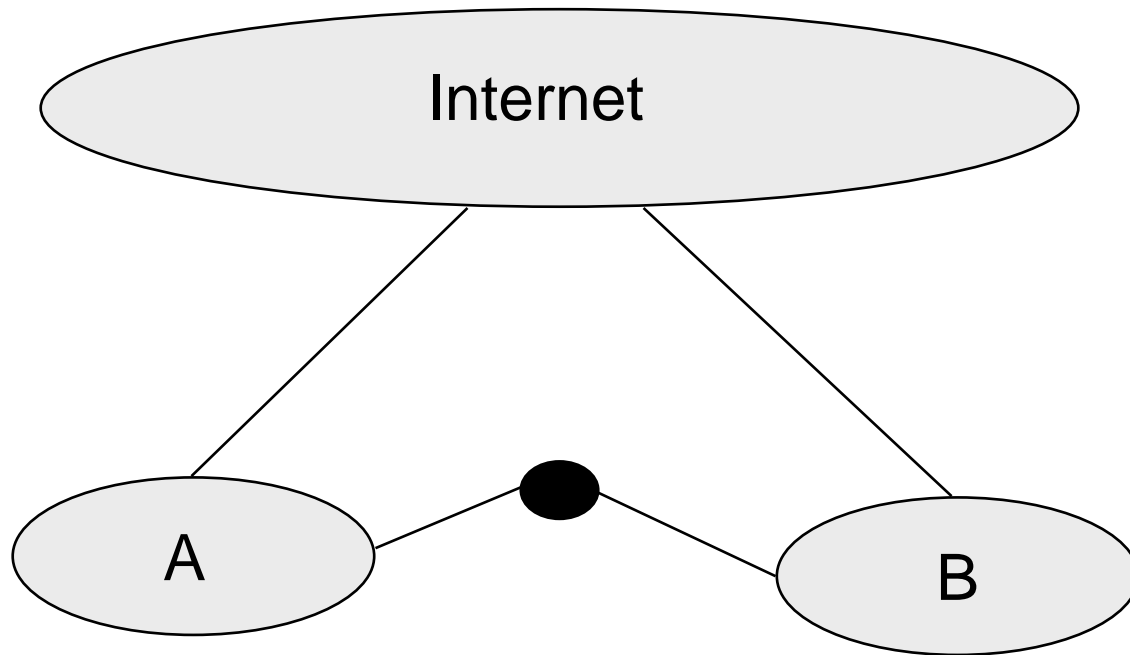
- m Pricing policies
 - competition vs collusion
- m Market domains
 - competition v collusion
- m Regulatory Constraints
 - data service reseller constraints
 - commercial trading constraints

Cooperative Coexistence

- m Attempts to rationalise costs to the benefit of all parties
- m Can be mutually cost effective
- m Can provide mutual failover for increased availability

Cooperative Coexistence

m Domestic Interconnection



Exchange Structures

- m Layering
 - layer 3 models
 - unilateral policy determination!
 - one size fits all
 - layer 2 models (the NAP or IX)
 - unilateral capability
 - tailored bilateral policies

Policy Issues

- m Client or Peer?
 - Who determines peer status?
 - How?
 - Why?
- m How to price peering
 - zero settlement only if equal perceived benefit to each party

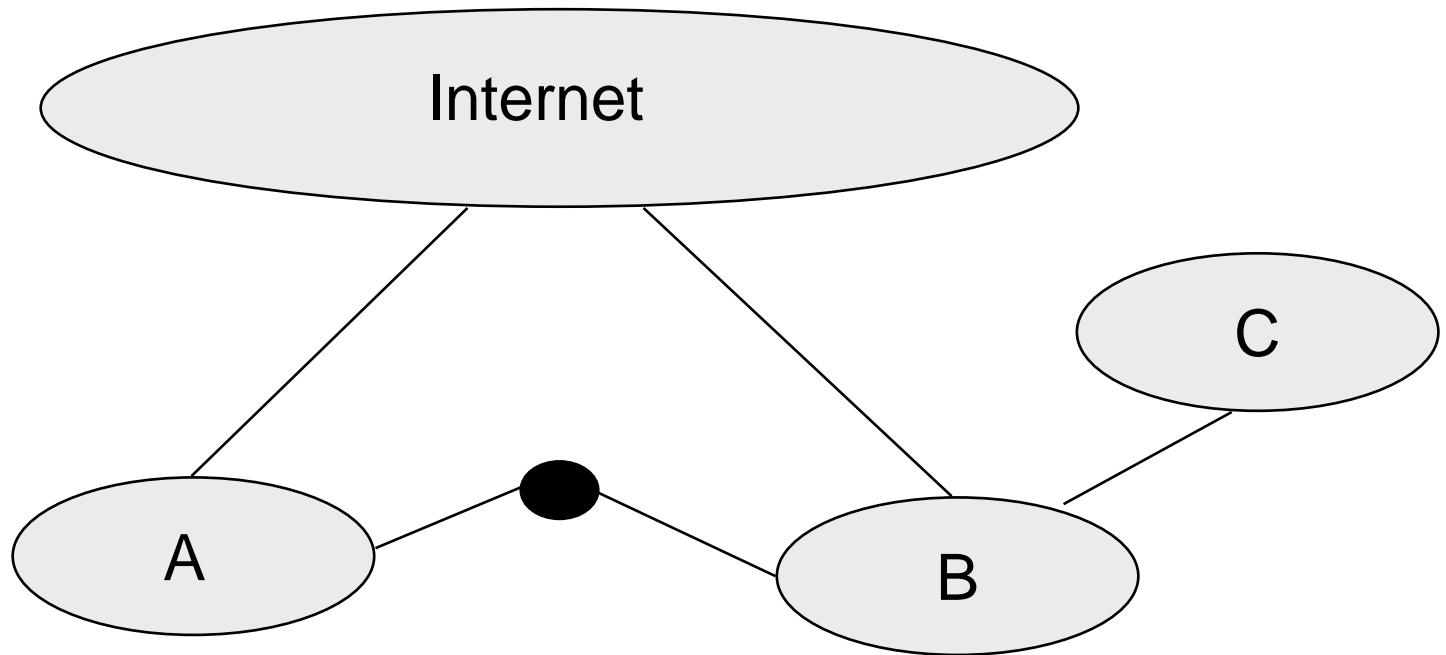
Policy Issues of Peering

m risks

- leverage
- offloading

Policy Issues

- m Who is an indirect party to peering?
 - Transit networks



Multiple Providers

- m Require careful consideration
- m Require flexibility in approach

Discussion
