Architecting the Network

Part 2 Multiple Internet Service Providers

Provider Interaction

Policy Issues in a Multi-provider Environment

Multiple Providers

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

Multiple Providers

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

The Initial Model

- Reselling
- m or Coexistence

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

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

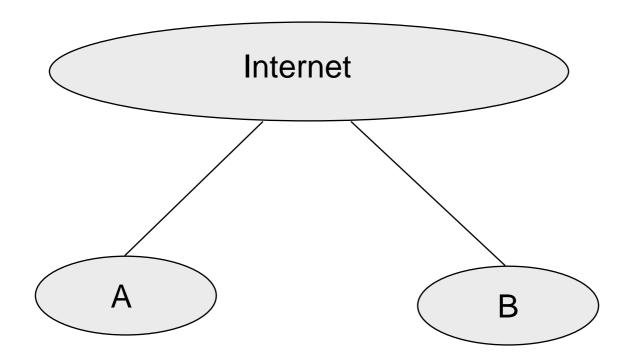
- May be counter to regulatory environment
- May be counter to funding requirements
- May stress management function
- May stress pricing structure
 - fewer high volume low margin clients

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

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

Coexistence

- Multiple service providers
- Each with Internet connectivity

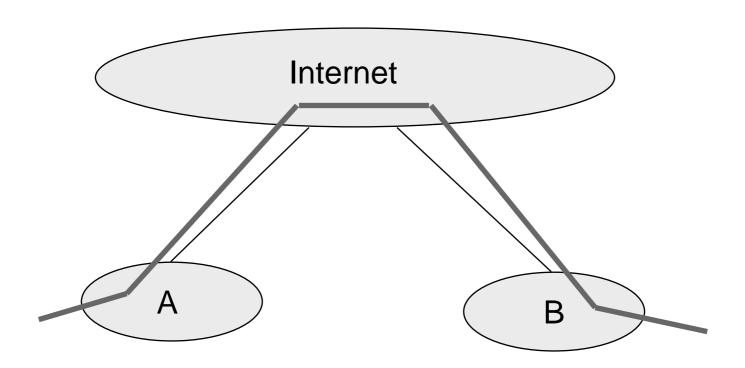


Coexistence

- Independent Internet connectivity percieved as marketing advantage
- Allows for Service Provider Operation to operate in a selfdetermined manner

Independent Coexistence

- Is not cost effective
- Backhaul issue caues cost to both parties



Independent Coexistence

Includes necessary areas of cooperative activity irrespective of link structure

Areas of "Forced" Cooperation

- Mational 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)

- 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)

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

Cooperation (continued)

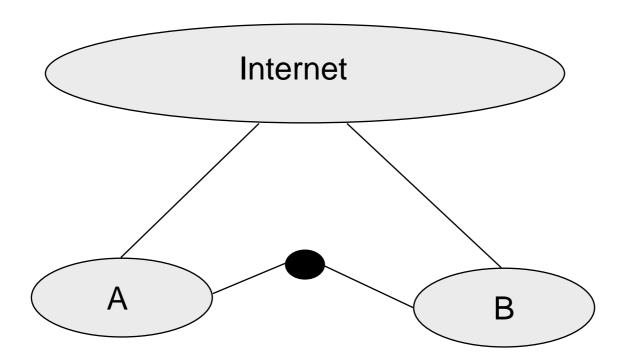
- Pricing policies
 - competition vs collusion
- Market domains
 - competition v collusion
- Regulatory Constraints
 - data service reseller constraints
 - commercial trading constraints

Cooperative Coexistence

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

Cooperative Coexistence

Domestic Interconnection



Exchange Structures

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

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

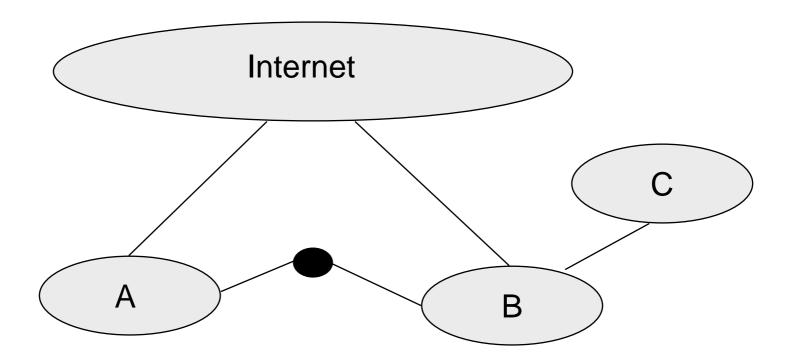
Policy Issues of Peering

m risks

- leverage
- offloading

Policy Issues

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



Multiple Providers

- Require careful consideration
- Require flexibility in approach

Discussion