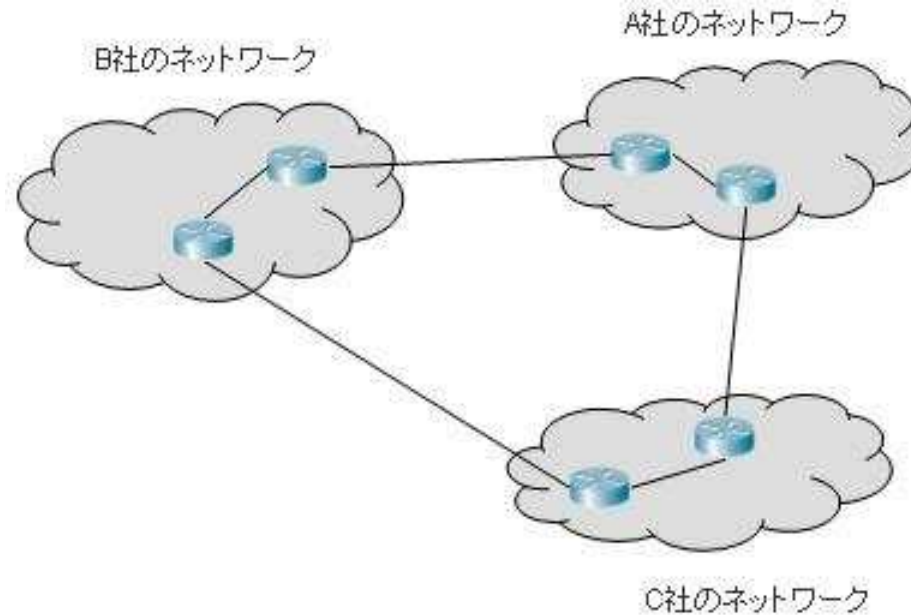


Competition in Local Service and Interconnection



Introduction

The greatest opportunity for competition in the local exchange came in high-speed lines; microwave systems, optical fiber lines, radio links
The local competition is now in mature stage;
ILEC/CLEC, fixed/wireless

Network Issues with Local Competition

The critical competitive issue in local competition:
interconnection arrangement

Is interconnection required, or is it a purely a
business decision for the parties involved?

Is the interconnection fee prescribed or is it open to
negotiation among the parties?

Is interconnection required?

Terminal equipment case

Interconnection was required at a zero price
Any customer with equipment conforming to
specified publicly available standards could be
connected to the network with no fee charged

Computer II rules: deregulation of CPE

Allowed interconnection at a zero price

Is interconnection required?

MCI Execunet service (1975 -)

MCI attempted to apply the terminal equipment model to the interconnection of local and long distance service

MCI wanted to procure local service at the established tariff rate and to connect that service to MCI facilities as a private communication system (PBX) is connected to the local network

No free interconnection; a specific and substantial connection charge (**access charge**) on long distance service

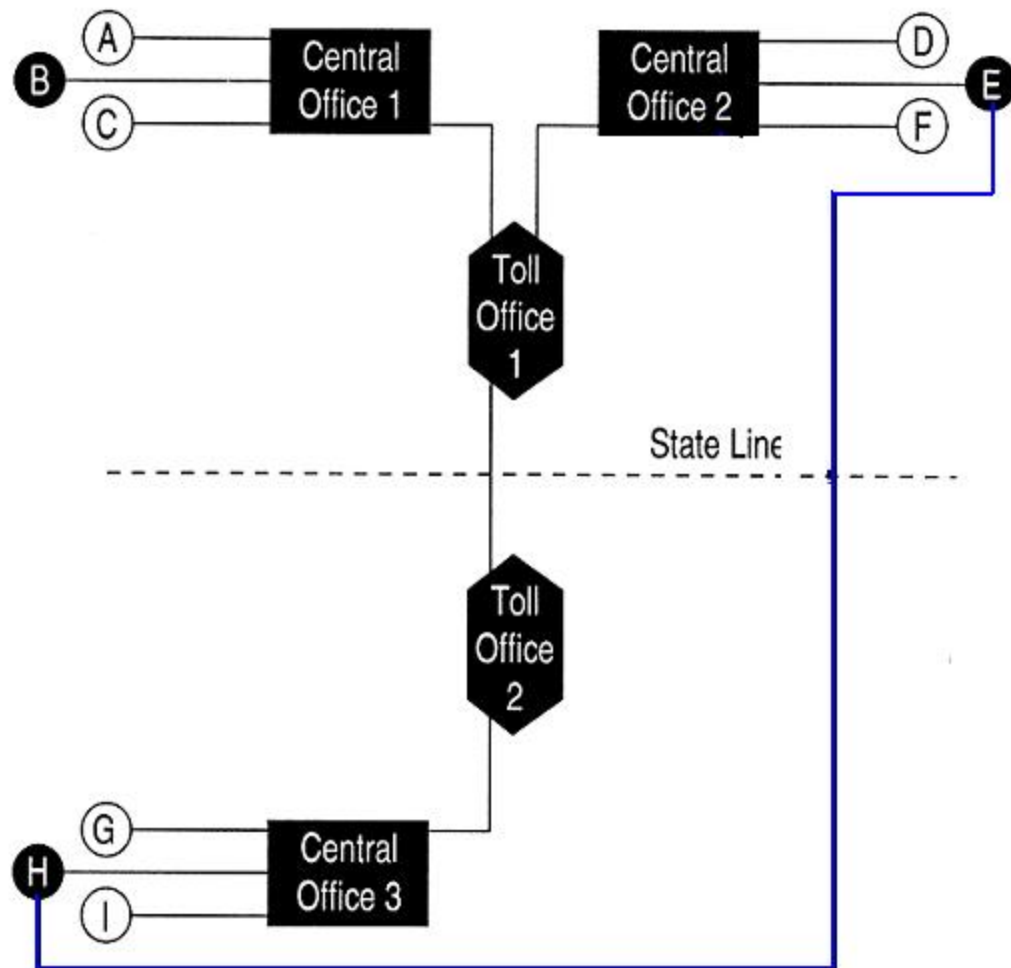


Figure MCI Execunet

Is interconnection required?

1982 FCC Access Charge Plan

Subscriber line charges were gradually increased

Local competition still require interconnection, but there are no well-defined boundaries: local interconnection is more complex than the previous cases

Local Competition and Interconnection

Two events that increased the opportunities for **local private line competition**:

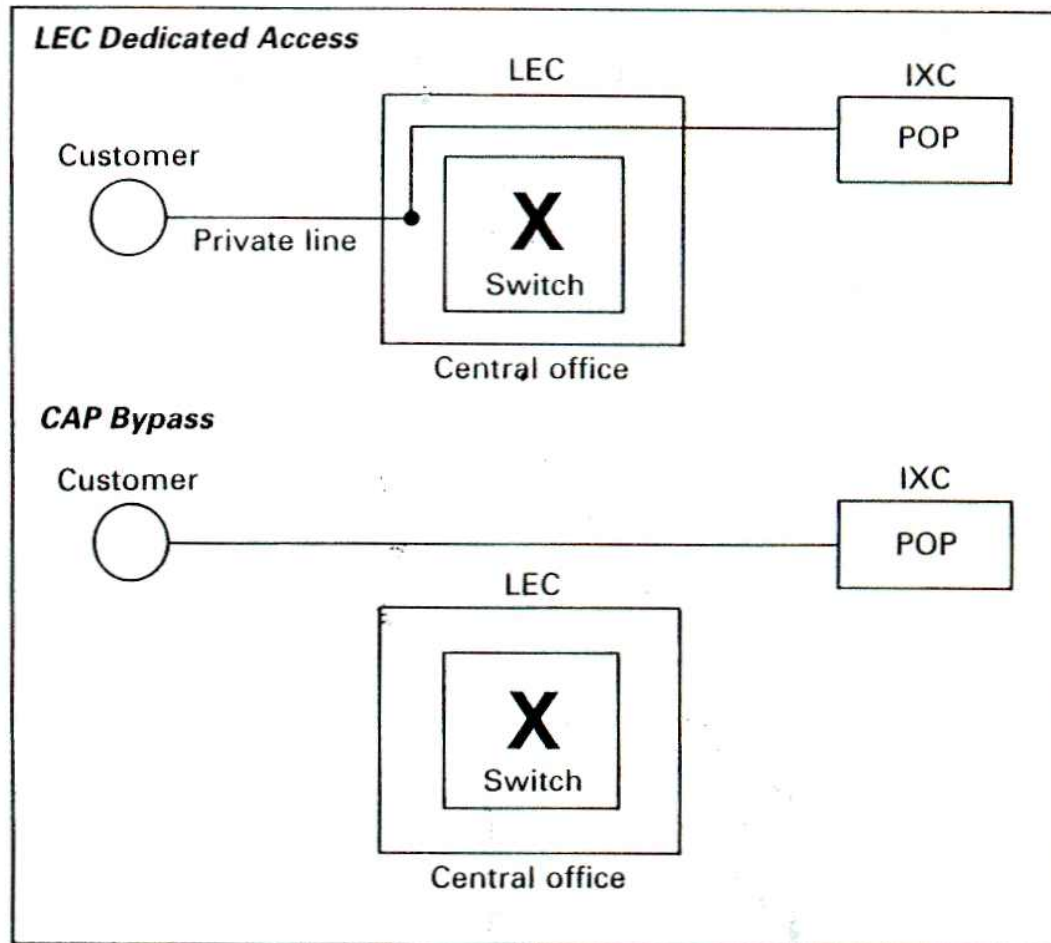
1. Bypass

Large-volume users (major businesses) are allowed to avoid high **switched access** charges through a **direct private line connection** (optical fiber facilities) between customer premises and the IXC POP

Special access is charged at a rate per month independent of number of minutes carried

Special access **avoids the subsidy loadings** included in the switched access charges

FIGURE 6-1
SPECIAL ACCESS



NOTE: POP, point of presence.

Local Competition and Interconnection

2. The cost reduction in optical fiber technology

Both incumbent and new entrants had to build new optical fiber facilities for high-speed digital communications

Effective competitors with very high-speed digital communications; DS-3 level or 45Mbps; not be carried over old copper wire

Expansion of competitive optical fiber companies in the **dense areas** of the largest cities

133 route miles in 1987

782 route miles in 1989

2,071 route miles in 1991 by 23 Competitive Access Providers (CAPs)

150,000 route miles including LEC



Interconnection between CAP and LEC

Local private line service were used between major businesses and the interexchange carrier POPs for connecting to long distance systems

As the CAP networks developed, they sought **interconnection with the LECs** in order to provide service to customers with requirements beyond the ability of the CAP to provide alone

Supported by FCC and courts

Interconnection between CAP and LEC

Issues with the interconnection privilege

1. Whether the *physical colocation* (access provider and seeker) of switching or billing equipment would be required

Virtual colocation; pricing and technical arrangements that provide similar capabilities to colocation without actually having competitive equipment on the CO premises

FCC adopted a **competitor's right to interconnection** and a physical colocation requirement

Interconnection between CAP and LEC

2. *Contribution fee* for interconnection or only the actual cost of providing interconnection facilities (will be discussed at ECPR)

LECs: Contribution charge for interconnection based on total special access revenue minus the **LEC's incremental cost of providing the services**

CAPs: No contribution charge

If allowed, it should be only to recover specifically identified support flows

FCC accepted the concept of a contribution charge for interconnection, but determined that it should only be for specified subsidy flows

Interconnection between CAP and LEC

3. LEC argued that interconnection should be accompanied by LEC's freedom to make competitive pricing response:
 - individually negotiated rates, rates that differ by location, ...

FCC declined to give the LECs full pricing flexibility
FCC allowed rate flexibility based on *density zones*
adopted the approach used in Illinois Bell's three separate rates based on the density zones instead of the geographically averaged rates:

- Downtown Chicago,
- the remaining Chicago area
- and the remainder of the state

Interconnection between CAP and LEC

General approach in providing interconnected local competition

1. A competitor's right to interconnection and CO colocation
2. Connection charges based on actual cost of providing connection service plus a contribution element limited to specifically defined and approved subsidies to other services
3. Limited LEC flexibility in responding to competition by using separate rates in separate density zones

Interconnection Principles

Network-network interconnection

Exchange connectivity

Reciprocity (mutual share) : CLEC increases
traffic and revenue of ILEC

Equal treatment: nondiscrimination

Equivalence: equal service for the same price

Efficiency provided (time and space)

Interconnection Principles

Interconnection under **unbundling**

Essential facilities should be able to unbundled

Telephone set

Network elements: local loop, trunk, signaling network, switch, ...

Nonessential facilities may be offered

Nondiscriminatory

No resale restrictions

Line (channel) resale:

ex. Internet service through xDSL/Cable, VoIP

Service resale: ex. 00700, ...

Efficient Component Pricing Rule (ECPR)

Baumol/Willig rule

Price = Average Incremental Cost
+ Opportunity cost (for lost market share)

Not covered:

Embedded monopoly rents (profits) in the price

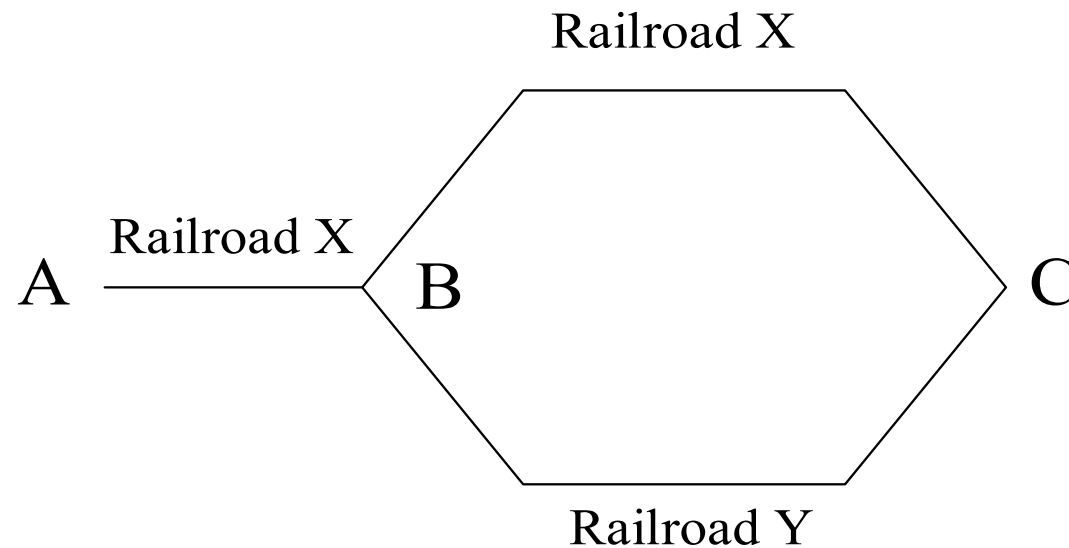
Embedded cross-subsidies in the price

Demand expansion/Network externality is not allowed

Universal service obligation is not allowed

Efficient Component Pricing Rule (ECPR)

Rail road transportation example



Efficient Component Pricing Rule (ECPR)

Assumptions

Contestable market

Emulate the competitive market

Free entry/exit (zero sunk cost)

No entry barriers

No bypass

Metropolitan fiber systems and Cellular/PCS
bypass the wired line of LEC

Linear prices

No nonlinear prices

No volume discounts

No declining block tariffs

Interconnection Charge

CHARGES FOR TERMINATING CALLS IN THE FIXED NETWORK				
In current US\$ cents per minute				
Country	Operator	Local	DLD	Average
A. Total of countries				
Germany	Deutsche Telekom	1,32	2,09	1,48
Argentina	Telefonica	3,35	3,50	3,37
Australia	Telstra	1,30	2,23	1,49
Austria	PTA	2,00	2,02	2,00
Belgium	Belgacom	2,16	2,85	2,30
Bolivia	Entel	2,31	2,31	2,31
Brazil*		4,74	5,47	4,85
Canada*		1,81	1,87	1,82
Chile	CTC	1,78	1,78	1,78
China	Hong Kong	0,45	0,45	0,45
Colombia	Telecom	2,93	2,93	2,93
Korea	KT	0,86	0,13	0,72
Denmark	TeleDenmark	1,95	2,30	2,02
El Salvador	CTE	1,67	2,86	1,91
Spain	Telefonica	1,90	3,24	2,17
Finland	Sonera	1,92	2,62	2,06
France	France Telecom	2,01	2,46	2,10
Greece	P&T	1,57	2,24	1,70
Netherlands	KPN	1,40	1,71	1,46
Ireland	Telecom Eireann	1,20	1,82	1,32
Italy	Telecom Italy	2,23	3,04	2,39
Japan	NTT	2,15	3,27	2,37
Luxembourg	OTC	1,74	1,74	1,74
Mexico	Telmex	2,60	2,60	2,60
Norway	Telenor	1,68	2,02	1,75
New Zealand	TCNZ	2,35	2,35	2,35
United Kingdom	BT	0,85	1,29	0,94
Sweden	Telia	1,70	2,11	1,78
Switzerland	Swisscom	2,55	3,28	2,69
USA*		1,54	1,70	1,57
	Average	1,96	2,35	2,04
	Median	1,90	2,30	2,00

**INTERCONNECTION CHARGE AS PERCENTAGE
OF THE LOCAL CALL RATE**

(in parity US\$ cents per minute)

Source: OVUM, EEC, Tarifica.

Own elaboration

Country	Interconnection charge (1)	Local Call Rate (2)	Percentage (1) / (2)
Germany	1,32	3,50	38%
Argentina	3,21	2,10	153%
Australia	1,43	4,40	33%
Austria	1,84	4,40	46%
Belgium	2,44	4,30	56%
Bolivia	2,29	2,20	106%
Brazil*	8,59	2,40	355%
Canada*	2,64	7,70	26%
Chile	1,69	3,40	50%
Colombia	2,61	5,50	47%
Denmark	1,67	4,10	41%
USA	1,54	3,40	45%
El Salvador	2,20	1,50	147%
Spain	2,62	6,80	38%
Finland	1,85	1,00	186%
France	2,31	1,80	126%
Greece	1,92	5,10	38%
Netherlands	1,67	3,70	45%
Ireland	1,61	2,30	69%
Italy	2,96	2,10	141%
Japan	1,99	2,10	96%
Luxembourg	2,11	4,40	40%
Mexico	2,83	4,40	65%
Norway	1,69	3,40	50%
United Kingdom	0,85	5,20	16%
Sweden	1,47	2,90	50%
Switzerland	1,93	3,00	64%
Average	2,11	3,70	57%

Summary

Local private line competition increased by

- Direct private line connection to POP

- Cost reduction in optical fiber technology

As the CAP networks developed, they sought
interconnection with the LECs

Connection charges based on actual cost of providing
connection service plus a contribution element

ECPR: Average Incremental Cost

- + Opportunity cost (for lost market share)