



INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

D.400R

(12/99)

SERIES D: GENERAL TARIFF PRINCIPLES

Recommendations for regional application –
Recommendations applicable in Latin America

**Accounting rates applicable to direct traffic
relations in voice telephony between countries
in Latin America and the Caribbean**

ITU-T Recommendation D.400R

(Previously CCITT Recommendation)

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ITU-T RECOMMENDATION D.400R

ACCOUNTING RATES APPLICABLE TO DIRECT TRAFFIC RELATIONS IN VOICE TELEPHONY BETWEEN COUNTRIES IN LATIN AMERICA AND THE CARIBBEAN

Summary

This Recommendation establishes the base for negotiation of accounting rates which apply to countries in the TAL Group.

The TAL Group had decided to revise the maximum level of accounting rates stipulated in Recommendation D.500R on the basis of the results of the 1999 accounting rate survey in the region. The cost model/methodology developed by this Group is also annexed as an appendix to this Recommendation.

Source

ITU-T Recommendation D.400R was revised by ITU-T Study Group 3 (1997-2000) and was approved under the WTSC Resolution No. 1 procedure on 17 December 1999.

FOREWORD

ITU (International Telecommunication Union) is the United Nations Specialized Agency in the field of telecommunications. The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of the ITU. The ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Conference (WTSC), which meets every four years, establishes the topics for study by the ITU-T Study Groups which, in their turn, produce Recommendations on these topics.

The approval of Recommendations by the Members of the ITU-T is covered by the procedure laid down in WTSC Resolution No. 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

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As of the date of approval of this Recommendation, the ITU had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementors are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database.

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Recommendation D.400R

ACCOUNTING RATES APPLICABLE TO DIRECT TRAFFIC RELATIONS IN VOICE TELEPHONY BETWEEN COUNTRIES IN LATIN AMERICA AND THE CARIBBEAN

(Melbourne 1988; revised in 1999)

It is recommended that subject to their sovereignty, Administrations of the countries of the Tariff Region of Latin America and the Caribbean, when negotiating agreements among themselves to establish accounting rates in respect to their direct telephone relations, should give consideration to the following:

- 1) In traffic relations, where analytical cost data are available through the application of a cost model/methodology approved by TAL (see Appendix II), such data should form the basis for multilateral negotiations as provided for in the ITU Regulations and Recommendations D.140 and D.150.
- 2) Where relevant cost data, as referred to in 1) above, are not available, the median of a sample of published accounting rates in the TAL tariff survey, as in Appendix I, should be used as a basis for bilateral negotiations as provided for in the ITU Regulations and Recommendations D.140 and D.150. Appendix I will be revised annually.
- 3) Administrations of countries that will be subject to extreme economic difficulties in implementing the rates suggested in Appendix I should be allowed phased transitional arrangements towards the suggested target rate that applies to the country.
- 4) The Administration of each country seeking concessional arrangements under 3) above is responsible for providing the relevant evidence, when required in support of its case.
- 5) Notwithstanding 2) and 3) above, each Administration should work expeditiously to make available analytical cost data to implement the proposed amendments to Recommendation D.150.
- 6) As a further transitional arrangement, accounting rates for exchanging traffic among countries of the TAL Region should not be set at levels above those that apply to traffic exchanged with countries outside the TAL Region, unless there is a justification.
- 7) In exchanging traffic, Administration may bilaterally agree to arrangement other than 50/50 sharing of accounting rate.

APPENDIX I

Maximum accounting rate

The recommended maximum accounting rate per minute is 0.68 SDR.

APPENDIX II

Methodology for evaluating cost of an international call for TAL members

II.1 Introduction

Most of the Administrations in the TAL region are aware that recent international developments have accentuated the need for the application of appropriate cost accounting methodologies to calculate the actual cost of telecommunication services. This is to ensure that tariffs are reflective of associated costs. Detailed cost accounting in telecommunications is no longer an elective pursuit, it is a compulsory exercise. In the circumstances, TAL has developed a methodology which can assist the TAL countries in estimating the cost per minute of International Message Telephone Service (IMTS) and their respective termination charges.

This appendix is separated into five subclauses:

- Subclause II.1: Introduction.
- Subclause II.2: General overview. It provides a general overview of costing methodologies, the need for compliance with the principles under ITU-T D.140, special characteristics of economies in the region and the formula for calculating per unit cost and termination charge.
- Subclause II.3: Description of the methodology. It provides a description of the methodology adapted by TAL members taking note of subclause II.2.
- Subclause II.4: Detailed checklists. It provides a detailed checklist of the investment items and their associated cost to be included in the determination of the different elements of the cost of an international call (international transmission, international switch and national extension).
- Subclause II.5: Working example. It provides a working example of the application of the TAL costing methodology. It is recognized that the format and the allocator(s) adopted by any member of TAL in their efforts to determine the cost of an international call may differ. The principles noted under subclause II.2 however are expected to be maintained.

II.2 General overview

II.2.1 Brief review of methodologies considered

In developing the cost methodology to determine the price per minute of an international call for the TAL region, a number of cost models were considered including:

The Ramsey Method

A derivation of tariff based on marginal utility. This model allows for the coverage of fixed and variable costs where price elasticity is unresponsive.

The Incremental Cost Method

Which equates tariff to cost of production of the additional unit of the good or service. Added to unit cost is an allocated share of common costs, excluding administrative costs.

The Marginal Cost Method

A calculus of costs that includes operational and maintenance costs, depreciation, the financial cost of servicing debt or the opportunity cost with respect to the capital invested as per the last unit of the good or service produced.

The TAS Model

Which denominates unit cost in terms of investment and operating costs, shared costs which include direct and indirect R&D costs, i.e. the application of a FDC Approach.

The Fully Distributed Cost (FDC) Method

Accounts for unit cost on the basis of fixed and variable costs giving due cognizance to externalities.

Whatever method is applied, costing a telephone call remains the most controversial aspect of international settlement reform. The Accounting Rates Principles for International Telephone Services, as recommended under ITU-T D.140, prescribes that accounting rates for international telephone services should be cost-originated and should take into account the relevant cost trends in terms of network, financial and overheads costs.

The guidelines set forth under Recommendation D.140 for the cost elements when determining the cost of international telephony are the following:

- international transmission facilities;
- international switching facilities; and
- national extension.

International transmission facilities involve:

International terrestrial transmission or international submarine and/or international satellite transmission; cable-landing stations, national links between these facilities and the international exchange.

Switch – international switch center and associated transmission and switch signalling equipment.

National extension network consists of national exchanges and national transmission facilities and, where appropriate and identified by mutual or multilateral agreement, the local loop.

D.140 stipulates that the operator's costs should be identified pursuant to world-based accepted accounting practices in terms of direct and indirect costs. Direct costs are analogous to investment, operation and maintenance, rental and lease of facilities, switched transit traffic and direct transit leasing costs where applicable and direct investment in research and development. Indirect or common costs are expenses that are not exclusive to the provision of international telephone service, including, general administration, management and accounting systems, other research and development and appropriate taxes. D.140 also allows for other costs to be included in the cost calculus, subject to bilateral agreement.

II.2.2 The way forward

In developing the cost methodology, elements were taken from most of the models in the reference above, in particular the TAS model. However, the fundamental concept that shaped the principal equation of the methodology for TAL members is based on certain socioeconomic characteristics that are common in Latin American and Caribbean economies and which impact significantly on the cost of delivering telecommunication services in these countries.

Cognizance was given to the fact that most, if not all the Administrations in the TAL region, operate less-than-full-capacity telecommunication operations. Less-than-full-capacity throughput indicates that long run "Parieto Optimality" has not been attained in the delivery of telecommunication services. As such average cost is above both incremental cost and marginal cost but may not be at the highest point on the long run cost curve. It is therefore analytically inappropriate to estimate cost of service for these telecommunication Administrations by applying models with inbuilt parameters based on assumptions of optimum efficiency. It must be borne in mind that the objective is to estimate the actual cost, not the expected cost therefore actual, audited accounts and information of a company's general ledger is recommended to be used to determine the price of an international call.

Actual cost is the nominal expenses incurred to produce a good or service in a financial year. Where externalities impact on the administration's operation, they must be included in the cost of the service. If not, the Administration would go out of business, except where technical efficiency gains are immediately realized. Externalities are consistent with certain characteristics of economies in the region of which the most critical are:

- less-than-full capacity operation, particularly in international switching where average capacity usage is below 30%;
- average level of teledensity of less than 25%;
- domestic tariff priced below market rate;
- most domestic currencies are not convertible;
- inflation and interest cost of capital are relatively high;
- though many of the countries have submitted commitments to the WTO to introduce competitive market structures, complete restructuring of the markets in basic telephony is unlikely to be effected within the next two years; and
- Administrations in the region are inclined to invest in up-market technology and introduce more efficient management which can impact favorably on cost.

Informed by those characteristics, the logical approach seems to be for the formulation of a model to fit the special circumstances under which TAL Administrations operate. The proposed methodology takes into account the need to enhance operational efficiency where the production function is at less-than-full-capacity. The methodology therefore is based on cost factors that also recognize sub-optimal production functions in some cases though providing for efficiency gains over time.

Efficiency gains are internal and external factors that can influence cost reduction. Such factors refer to changes at the managerial and operational levels as per discriminate use of physical and human resources.

For example, improvement in procurement methods, enhancement in record keeping and accounting practices, efficient line maintenance systems and employment of modern technology, in particular over the national extension network, could assist in lowering cost. Concomitantly, a more buoyant economy could result in lower rates of inflation, improvement in balance of payment and a fall in interest rates. These developments can lead to cheaper credit facilities, stronger exchange rates and ready availability of hard currency to purchase capital goods.

Given that most of TAL carriers are not operating at long run optima, all their costs are not variable costs. Actual per unit cost is the weighted average of: allocated variable costs plus a proportion of allocated fixed cost minus efficiency gains divided by capacity usage. Low penetration rates and small populations are manifests of externalities that affect fixed cost of telecommunications operators. Allied to this is sub-optimal use of technology, low average traffic-throughput ratios in relation to transmission and switching capacity.

That all costs are not variable cost over the long term does not sanction the inclusion of all fixed costs in the calculation of the unit cost of an international telephone call. Fixed costs of the national network in this model do not include equipment usage by consumers.

Those costs are normally covered in rental and access charges. Neither should cost include depreciation on land since this factor of production does not normally depreciate in value over time. The cost of providing switched transit traffic is also excluded. These costs should be covered by transit fees.

The model recognizes that technology in telecommunications is very dynamic. This means that cost in period X may not be the same as that in period Y. Annual cost is measured ex-post rather than ex-ante and is circumscribed by an efficiency gains coefficient to account for technology and organizational changes.

The fundamental price/cost relationship proposed in this model is that minimal survival level of the firm is at the point where expenses, i.e. costs, match revenue. Such cost would include capital cost, payment of interest on money borrowed, return to equity holders (consistent with domestic market rate of interest after adjustment for risk), direct operational and maintenance and research and development costs and a proportion of common costs, less efficiency gains.

In perfectly competitive markets, the fact that the price of a good/service settles at its marginal cost is only applicable where economies of scale are optimized. In fact, if such prices were to be enforced in markets where firms are operating below full capacity bankruptcy will be inevitable. The firms would not fully cover their total expenses. In telecommunications, the contention is that economies of scale are pervasive in hardware technology. While this may be applicable in international transmission and switching, in terms of domestic network, the contention is highly fallacious.

II.2.3 Proposed Formula re per Unit Cost and Termination Charge

$$1) \quad C = A/M^0 - (\text{Sum } E_g \text{ } n/n-1)$$

$$2) \quad T = A/M^0 - \{(\text{Sum } E_g \text{ } (n/n-1))\} + \text{USO}$$

where:

C = Per minute (unit) cost for the provision of international Telephone service.

T = Termination charge for the provision of one minute international telephone service.

A = Weighted average of Direct and indirect cost for the provision of international telephone service comprising (Kn + Dn + OMCn + R&Dn + Adn + Tn).

M⁰ = Total actual international minutes forwarded and received over the period of estimation.

E_g = The Efficiency Gains or the Cost Lowering proxy to forecast productivity over the period of estimation, i.e. (n/n-1).

USO = Universal Service obligation cost per minute, it could include inter alia, access deficit contribution and expenditure associated with network expansion for countries with low teledensity levels, in particular for the provision of services in areas where it is uneconomic to do so. A guide for the estimation of value of this variable is B/(M¹+M⁰) Where: B is the projected cost to attain the nationally prescribed (n) level of teledensity in period (t+1) and M¹ is the expected incremental minutes in period (t+1) associated with projected network expansion over the same period.

NOTE 1 – International services refer to Cross Border exchange (origination and termination) of traffic.

NOTE 2 – Domestic services are those that originate and terminate within the territorial border of an Administration.

Expanded definitions of the components of (A) are the following:

Kn = Allocated Investment Cost

Either the interest cost debt service of the investment or the opportunity cost in respect of the capital invested plus return to equity at the prevailing domestic market rate of interest in year n.

Dn = Allocated Amortization/Depreciation Cost

Allocated cost of the plant including (building, circuits, and equipment) i.e. total investment less net salvage, divided by the estimated life of the plant in year n.

OMCn = Allocated operational and Maintenance Cost

Includes all expenses on activities required to operate and upkeep the telephone plant which are generated directly or indirectly by the delivery of an international telephone call in year n.

R&Dn = Allocated Research and Development Cost

Direct and indirect Research and Development costs attributed to the realization of Efficiency Gains in order to originate/terminate an international telephone call in year n.

Adn = Allocated Administrative Cost

Allocated overhead expenses necessary to operate the plant to deliver international voice telephony, but which cannot be attributed directly to activity-based cost allocators.

Those costs include expenses-related executive management, planning, financial and human resource management and legal input. Also relevant are investment support charges re: land, building, furniture, office equipment and motor vehicles in year n.

Tn = Allocated Tax Cost

Comprising the relevant proportion of corporation, *ad valorem* and other taxes (e.g. value added tax) in year n.

The expanded formulae for cost per minute for international voice telephony and the Termination Charge in year n are as follows:

$$C = \frac{[(Kn + Dn + OMCn + R\&Dn + Adn + Tn]}{M^0} - Sum\ EG\ n/n - I$$

$$T = C + B/(M^1 + M^0)$$

II.3 Description of the methodology

II.3.1 Objective

The objective is to define a methodology to establish the cost of terminating a minute of international traffic on an Administration's network, using an Adapted Fully Distributed Costing Methodology.

II.3.2 Determination of Inputs

As noted in subclause II.2, the list of elements to be included as identified in ITU-T D.140 is as follows:

- 1) International Transmission.
- 2) International Switch.
- 3) National Extension:
 - a) Access Network.
 - b) Transport Network.

Consistent with general costing principles, this Recommendation recognizes the need to recover the direct costs, indirect costs, administrative overheads on the combined components plus a reasonable return on the investment.

II.3.3 Capital Investments & Operating Costs

An Administration's long term debts and investments are identified in its Balance Sheet while the annual operating costs are identified in its Profit & Loss Accounts.

II.3.4 Capital Investment

These include the following assets of a company:

- Switches.
- Transmission equipment, e.g. cable, radio, etc.
- Land & Building.
- Furniture.
- Office Equipment.
- Motor Vehicles.
- Cable & Conduit, etc.

II.3.5 Direct & Indirect Costs

Direct costs are those costs which are incurred through the provision of a specific service or element. These costs, which are represented by varying accounts in both the Balance Sheet and Profit & Loss Account of the Administration, are generally few in numbers.

II.3.6 Determination of direct costs for various service elements

International switching & transmission – this is generally taken to be the provision of international switching gateways and transmission facilities on the international side of the gateway switch, enabling the transport of international calls.

National extension, this covers:

- The provision of all access lines in the local network. The associated costs include, cables and wires used by the access network. In other words, this is concerned with cables and wires that are line-sensitive costs, rather than traffic sensitive costs, e.g.:
 - distribution points and cabinets in the feeder network;
 - line cards located at remote or host switches.
- The provision of switching facilities to enable call transport. The associated costs include switch processors, cables, transmission systems and trunk ports on switches.
- The two components of the national extension, access and transport, can either be bundled or unbundled.

II.3.7 Determination of indirect facility based costs for various service elements

Not all costs can be classified as being direct, as defined above. Those that cannot are common fixed or joint costs between network elements. An example of such a cost would be air conditioning in a switch building used to cool both the racks of access line cards, as well as the central processor(s) used to switch traffic.

Special engineering studies may be commissioned aimed at quantifying the portion of joint or common facility based cost which is employed in the provisioning of individual network elements or services.

The principal common fixed and joint costs include:

- Overground and underground route structures used by both the access network and inter-office transmission (e.g. poles, duct and conduit systems): These costs are generally apportioned to the access network, inter-switch transmission of PSTN traffic, leased lines and other services, on the basis of proportions of usage by cables, traffic or a weighted average of the other associated direct service costs.

- Common equipment and facilities in switches: These costs are generally apportioned among the access network (line cards), switching transport network (processors) and inter-switch transmission network (trunk ports) in the same proportion to the actual direct costs.

II.3.8 Annual Operating Costs

Once the investments for international POTS requirements are determined, then the annual associated costs with the investments can be calculated. AFDC analysis includes two categories of annual costs:

- 1) capital-related costs; and
- 2) operating expense-related costs.

Factors for each type of annual costs are calculated in such a way as to express the annual cost as a function of the level of investment.

The list below presents the items typically included for each category.

II.3.9 Capital-related Costs

- Depreciation expenses.
- Rate of return element.
- Income taxes associated with return.
- Property taxes.

II.3.10 Operating Expense-related Costs

- Maintenance expenses.
- Network administration expenses.
- Traffic expenses.
- Marketing expenses.
- Billing expenses.

Each of these annual cost elements is discussed briefly below.

II.3.11 Capital-related Costs

These costs are directly related to the investment identified in the AFDC analysis and they are calculated using generally accepted industry procedures.

II.3.12 Depreciation Expense

Annual depreciation expenses are calculated based on the applicable depreciation rate for each type of investment required. The applicable rates will vary by jurisdictions, and may be determined by:

- 1) the economic life of assets;
- 2) the physical life of assets; and
- 3) regulatory criteria.

II.3.13 Rate of Return

This standard calculation multiplies the net Investment times a reasonable rate of return. The rate of return may be stipulated by the regulatory regime or market determined.

II.3.14 Income Tax (IT) Allowance

This calculation uses a standard gross-up procedure for the IT allowance based on the tax system of the country.

II.3.15 Property Taxes

Property taxes, where applicable, are calculated by multiplying the net investment by the appropriate tax rate. Where the company is subject to a variety of tax rates in numerous jurisdictions, it is appropriate to use the effective tax rate paid on all company investment during a recent year. This effective rate is estimated as follows:

$$\text{Effective Property Tax Rate} = \frac{\text{Total Property Taxes}}{\text{Total Net Investment}}$$

The annualized network capital costs (on a replacement cost basis) are then calculated for each network elements listed above. The usage of each network element by each service is estimated (e.g. national & international calls) thus allowing network element costs to be attributed to the different call services.

II.3.16 Determination of indirect non-facility based costs for various service elements

Indirect non-facility operating & administration expenses to be allocated using suitable allocation mechanism – e.g. activity based costs, carrying charge factor based on ratio of total direct expenses per elements/total direct investment per elements or other selected method or any other suitable allocation method.

II.3.17 Examples of carrying charge & other allocators

Carrying Charge Factors (CCFs) that are identified based on the company's operating results for a recent period. CCFs are expressed as a percentage of the investment identified for the service or element at issue.

II.3.18 Maintenance Expenses

Maintenance expenses in the AFDC analysis could be calculated using maintenance CCFs for each type of investment. These CCFs are developed based on the company's accounting results for a recent period. For example, a CCF for Central Office Equipment (COE) digital switching maintenance expenses could be calculated as shown below:

$$\text{Switch Maintenance expense Factor} = \frac{\text{Switch expenses}}{\text{Switch investment}}$$

II.3.19 Network Administration Expenses

Network administration expenses could be related to COE investment and Cable & Wire Facilities (CWF) investment.

II.3.20 Customer Operations Expenses

Where the activity costings are unknown, certain categories of Customer Operations expenses may be incurred in support of the particular service or element under study. These may include expenses such as marketing, advertising, customer billing, and call completion (operator assistance).

The CCFs for these types of functions are more appropriately developed as a function of the quantity of messages associated with the service or element at issue. Consequently, the CCF will calculate expenses as a function of a cost per message.

To calculate the related expenses, each CCF is multiplied by the relevant measures of investment.

- International transmission: allocate joint costs based on suitable allocation mechanism such as number of circuits, bearer capacity or minutes of use.
e.g.: total indirect transmission cost* (# of intl. circuits/total # of circuits)

- International switching: allocate joint costs based on suitable allocation mechanism such as number of circuits, bearer capacity or minutes of use.
e.g.: total indirect switching cost* (# of intl. circuits/total # of circuits)
- National extension: allocate joint costs based on suitable allocation mechanism such as number of circuits, bearer capacity or minutes of use.
- Other investments (e.g. land, building, furniture & motor vehicles): based on proportion of investment in individual services and or a weighted average of the cost allocated by investment or service type.

II.4 Detailed checklists

II.4.1 International Transmission

II.4.1.1 Allocated Transmission Investment Cost

All costs are to be allocated where there is multiple use of facilities. Allocated expenses on rent, lease, etc. should be calculated under operating expenses where cable systems are co-owned but do not land in the country of the Administration or where asset separation is not available or involves too much tedium; a block figure as recorded in the cable construction and maintenance agreement could be used as an indicator. Miscellaneous capital should be identified and included.

1.1 *Submarine Cable*

- Cable (including submerged repeaters and land line up to cable terminal)
- Terminal Equipment
- Power supplies
- Land
- Other

1.1 Sub Total

1.2 *Satellite Communication System*

Earth Station:

- Antenna
- Electronic Equipment
- Power supplies
- Land
- Buildings
- Other

1.2 Sub Total

Total Investment Cost for
International Transmission

II.4.1.2 Amortization Costs For One Year Over The Life Of Asset

2.1 Submarine Cable

- Cable (including submerged repeaters, equalizers and land line up to cable terminal).....
- Terminal Equipment
- Power supplies
- Buildings
- Antenna (including tower)
- Other

2.1 Sub Total

2.2 Satellite Earth Station and RWC Link(s)

- Antenna (including tower)
- Electronic Equipment
- Power Supplies
- Buildings
- Cable

2.2 Sub Total

Total Amortized Cost for
International Transmission for
the year

II.4.1.3 Allocated Operating and Maintenance Costs

3.1 Submarine Cable

3.1.1 Material for repairs to:

- Cable (including submerged repeaters, equalizers and land line up to cable terminal).....
- Terminal Equipment
- Buildings

3.1.2 Rentals

3.1.3 Salaries and allowances of staff engaged in repairs, maintenance and service

3.1.4 Utility charges

3.1.5 Other charges

3.1 Sub Total

3.2 *Satellite Earth Station(s)*

3.2.1 Materials for repair and maintenance of:

- Antenna and Electrical Equipment
- Buildings.....
- Other

3.2.2 Satellite Space Segment Charges.....

3.2.3 Salaries and Allowances for staff engaged in repair, maintenance and operation of services

3.2.4 Rentals

3.2.5 Utility Charges.....

3.2 Sub Total

II.4.2 International Switching

II.4.2.1 Allocated Switch Investment Cost

1 *International Telephone Switching Exchanges*

- Switching Equipment.....
- Power Supplies
- Land
- Buildings.....
- Cable

1 Sub Total

II.4.2.2 Allocated Amortization

2 *International switching exchange amortization*

- Switching Equipment.....
- Electronic Equipment
- Power Supplies
- Cable
- Buildings.....

2 Total

II.4.2.3 Allocated Operating and Maintenance Costs

3.1 *International Switching Exchange(s)*

- Material cost and cost of labour (salaries, wages and allowances) to Service Switching Equipment, Electronic Equipment, Power Supplies, Building Admissible Traffic, Circuit Distribution, Patching Interconnecting Transmission Facilities and Operating Services
- Electricity and other utility charges
- Rentals

3.1 Gross Costs

- 3.2 *Other allocated operating and maintenance costs as applicable*
- 3.2.1 Allocated lease circuit charges
- 3.2.2 Allocated payments for "Right of Way" facilities
- 3.2.3 Allocated administrative and overhead costs

3.2 Total Allocated Operating and
Maintenance Costs

3.3 *Allocated Research and Development Costs*

- Allocated investment cost of R&D facilities
- Allocated amortization cost of R&D facilities.....
- Salaries, wages and allowances of R&D personnel.....
- Maintenance expenses on R&D facilities
- Contractual arrangements for R&D services
- Training.....

3.3 Total Allocated R&D
Costs

II.4.3 Allocated Direct Costs

II.4.3.1 Allocated National Extension Investment Costs

- 1 *Investment Costs*
- Transmission Facilities
 - Switching Equipment.....
 - Electronic Equipment
 - Power Supplies

1 Sub Total

II.4.3.2 Allocated Amortization Costs

- 2 *Amortization*
- Cable
 - Switching Equipment.....
 - Electronic Equipment
 - Power supplies

2 Sub Total

II.4.3.3 Allocated Operating & Maintenance Costs

- 3.1 Allocated costs of materials for repair and maintenance of trunk and local exchanges and the local loop (if agreed to).....
- 3.2 Salaries, wages and allowances of staff involved in operating and maintenance activities

3 Sub Total

II.4.3.4 Allocated Research and Development Costs

4 *All allocated R&D costs*

4 Sub Total

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II.5 Working example

ABC Co. Ltd. – Termination fee methodology: sheet 1 of 4 – International telephone service cost

		Reference sheet 2 of 4	Total \$000	International switch \$000	International transmission \$000	National network \$000
(A)	Operating costs (exclusive of interest & taxation) (Os)	4.2	120.6	18	9	93.6
(B)	Investments/Rate Base (equity) (Is)	4.1	328.5	90	45	193.5
(C)	Return requirement before interest and tax (say)		10%	10%	10%	10%
(D)	Revenue requirement on investments (B × C)		32.85	9	4.5	19.35
(E)	Total revenue requirement for a 10% return on investment		153.45	27	13.5	112.95
	(A + D + interest on debt + taxation) say					
(E.1)	Transit Revenues say		2	2	2	0
(E.2)	Net Revenues after Transit payments (E) – (E.1)		151.45	25	11.5	112.95
(F)	Total international minutes [millions – forwarded and received (say)]		745	745	745	745
(G)	Cost per minute (E.2 /F)		0.20	0.03	0.02	0.15
(H)	USO cost per minute (say)		0.05	–	–	0.05*
(I)	Other subsidy (say)		0.01	–	–	0.01*
(J)	Termination Fee (G + H + I)		0.26	0.03	0.02	0.23
* A regulator/carrier will determine the USO amount to be contributed by any (or all) of the elements of the network used to complete the call.						

**ABC Co. Ltd. – Termination fee methodology:
sheet 2 of 4 – International telephone service costs**

		Reference sheet 3 of 4	Total (A) \$000	Allocator	POTS			
					International switch (B)	International trans. (C)	Local n/work (D)	Other international services (E)
					\$000	\$000	\$000	\$000
1	Total International Operations Investments	Bal. B/Fwd.	365		100	50	215	—
2	Total International Operating Costs	Bal. B/Fwd.	134		20	10	104	—
3	Service Allocation							
3.1	International POTS: Other International Services, e.g. Lease, VSAT, Telex & Telegraph	Circuit Nos.		90:10 (say)	0.90	0.90	0.90	0.10
4	International POTS:							
4.1	Investments (Is)		365	L1 × L3.1	90	45	193.5	36.5 (L1A × L3.1)
4.2	Operating Costs (Os)		134	L2 × L3.1	18	9	93.6	13.4 (L2A × L3.1)

**ABC Co. Ltd. – Termination fee methodology:
sheet 3 of 4 – International operations costs (US\$)**

	Reference sheet 4 of 4	Total \$M	Allocator	Switch \$M	Transmission \$M	Domestic network \$M	Other services \$M
Investments	1.1.1	100		100			
	1.2.1	50	Direct		50		
A.1 International – Capital Investment	1.3.1	25			—	25	
A.2 Domestic usage – Capital Investment		—	MOU/OTH	—	—	—	
Switch	1.1.3	120		—	—	120	
Transmission	1.2.3	30		—	—	30	
Other	1.3.3	40		—	—	40*	
A.3 Total international operations inv. (A.1 + A.2)		365		100	50	215	

Operating Cost (Os)							
B.1 International – Depreciation opt. Cost mthdg'y	2.1.2	20	Direct	20			
	2.1.6	10			10		
	2.1.10	5				5	
		35					
B.2 Domestic usage			MOU/OTH				
Switch – Depreciation	2.1.4	24		—	—	24	
Transmission – Depreciation	2.1.8	6		—	—	6	
Other equip. – Depreciation	2.1.12	8		—	—	8	
		38		—	—	38	
Operating costs (including wages)	2.2.4	31		—	—	31	
Other costs	2.3.4	30		—	—	30	
B.3 Total international Operations inv. (B.1 + B.2)		134		20	10	104	

* This could include the inside wiring costs (inclusive of the associated costs of labour, transport, etc.).

**ABC Co. Ltd. – Termination fee methodology:
sheet 4 of 4 – Year ended 31.12.XX**

1. Capital investments		Company Total \$M's	Allocator	Separation factor (D:I)	Domestic operations \$M's	International operations \$M's
1.1	Switch Eqpt. :					
1.1.1	(a) Int'l.	100	Direct	0:1	–	100
1.1.2	(b) Dom.	100	Direct	1:0	100	–
1.1.3	(c) Shared	300	MOU/OTH	60:40	180	120
(1.1.1 + . . . + 1.1.3)	Total	500			280	220
1.2	Transmission Eqpt.					
1.2.1	(a) Int'l.	50	Direct	0:1	–	50
1.2.2	(b) Dom.	150	Direct	1:0	100	–
1.2.3	(c) Shared	100	MOU/OTH	80:20	120	30
(1.2.1 + . . . + 1.2.3)	Total	300			220	80
1.3	Other Eqpt. & Capital Inv. *					
1.3.1	(a) Int'l.	25	Direct	0:1	–	25
1.3.2	(b) Dom.	95	Direct	1:0	95	–
1.3.3	(c) Shared	80	MOU/OTH	50:50	40	40
(1.3.1 + . . . + 1.3.3)	Total	200			135	65
1.4	Total Capital Investment					
(1.1.3 + 1.2.3 + 1.3.3)		<u>1000</u>			<u>635</u>	<u>365</u>
2. Operation costs						
2.1.0	Depreciation					
2.1.1	Switch Eqpt.	100			56	44
2.1.2	(a) Int'l.	20	Direct	0:1	–	20
2.1.3	(b) Dom.	20	Direct	1:0	20	–
2.1.4	(c) Shared	60	MOU/OTH	60:40	36	24
2.1.5	Transmission Eqpt.	60			44	16
2.1.6	(a) Int'l.	10	Direct	0:1	–	10
2.1.7	(b) Dom.	20	Direct	1:0	20	–
2.1.8	(c) Shared	30	MOU/OTH	80:20	24	6
2.1.9	Other Eqpt.	40			27	13
2.1.10	(a) Int'l.	5	Direct	0:1	–	5
2.1.11	(b) Dom.	19	Direct	1:0	19	–
2.1.12	(c) Shared	16	MOU/OTH	50:50	8	8
2.1.13	Total Depreciation Exp.	<u>100</u>			<u>127</u>	<u>73</u>

2.2.0	Operating Costs (Including Wages)					
2.2.1	(a) Int'l.	20	Direct	0:1	–	20
2.2.2	(b) Dom.	25	Direct	1:0	25	–
2.2.3	(c) Shared	55	Network Plant/Oth	80:20	44	11
2.2.4	Total Opt. Costs (incl. wages)	100			69	31
2.3.0	Other Costs (Finance, Mktg. etc.)					
2.3.1	(a) Int'l.	5	Direct	0:1	0	5
2.3.2	(b) Dom.	10	Direct	1:0	10	0
2.3.3	(c) Shared	85	Big Three Exp./Oth.	70:30	60	25
2.3.4	Total Other Costs	100			70	30
2.4.0	Business Levy	50	Big Three	70:30	35	15

3. Total operating costs

(2.1.13 + 2.2.4 + 2.3.4 + 2.4)	350	301	149
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NOTE 1 – The above figures are based on the Audit Report for the year ended 31/X/199X.

NOTE 2 – Excessive/Inefficient costs to be identified by the local regulator and removed where necessary.

NOTE 3 – Costs such as those relating to advertising and marketing should be separated between incoming and outgoing traffic expenses.

Allocators

- 1) Direct: Where the cost incurred in providing a service can be easily separated and assigned to the investment/operating activity based on the cost principle.
- 2) MOU: Used where the cost incurred in providing a service is indirect, i.e. common or joint. The MOU allocator is one allocator used to separate cost(s) of investment and/or operating activity based on the use of the plant.
- 3) OTH: Used when the cost incurred in providing a service is indirect, i.e. common or joint. the allocator could include, inter alia, revenue allocator tools, central office equipment, operating expenses factor, big three, etc.
- 4) *: Land, Building Air Conditioning equipment, Motor Vehicles, Furniture and Office Equipment, Subscriber terminal equipment, etc.

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Printed in Switzerland
Geneva, 2000