

3.6 Public Data Network (PDN)

ETC has established Packet Switched Service (Public data transmission network using the frame relay mode) in September 2001. The PDN with 17 nodal sites covers node providers access to and from all important data network throughout the world. The PDN service named as ‘**Etiho Stream**’ covers Addis Ababa (7), Debre Zait, Nazareth, Dire Dawa, Dessie, Mekele, Awassa, Shashemene, Jimma, Nekempte and Bahir Dar. International connection is made through USA and UK. The present connection diagram is shown in Figure 3.6-2. For further details, refer to Chapter 9.7. The present customers of leased circuit are listed in Table 3.6-1.

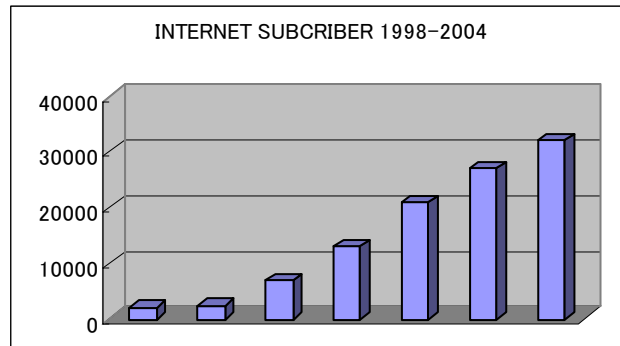
In addition, the PDN is used as a backbone to connect ETC’s PoPs.

Internet Service Provider (ISP) in Ethiopia is only one, operated by ETC. Areas of present Internet service POPs are Addis Ababa, Bahir Dar, Dessie, Dire Dawa, Jimma, Nazareth, Awassa, Nekempte, Shashemene and Mekele. Internet subscribers are 4,073 (6,151 as of January 2002). According to Internet Center, numbers of the Internet subscriber are quite low in the regions (2002). In the near future ISP will be privatized and PDN continues its service as a backbone with high-speed customer connection path.

Addis Ababa Internet Center stands as Central Gateway with capacity of 14,000 presently. In the regions, 4 POP (Mekele, Awassa, Dire Dawa, Jimma) are called Big POPs with capacity of 720 each, and the other small 4 POPs (Bahir Dar, Dessie, Nazareth, Shashemene) with 384 capacity.

Table 3.6-1 List of Leased Circuit Customers (as of July 2002)

	Customer	Capacity	Status
1	Ministry of Foreign Affair	64kbps	Active
2	FDREHPR & HR Office	64kbps	Active
3	Ethiopian News Agency	64kbps	Active
4	S.G.S	64kbps	Active
5	T.C.T	64kbps	Active
6	Ethiopian Airlines	128kbps	Active
7	Ministry of Trade and Industry	64kbps	Active
8	Action Aid	64kbps	Active
9	Plan International	64kbps	Active
10	Sheraton Addis	128kbps	Active
11	AAU	128kbps	Active
12	OAU-1	64kbps	On progress
13	OAU-2	64kbps	On progress
14	OAU-3	64kbps	On progress
15	International Community School	64kbps	On progress
16	Oromia Regional State Council	64kbps	On progress
17	World Vision Ethiopia	64kbps	On progress
18	CCF	64kbps	On progress
19	Sate the Children-Sweden	64kbps	On progress



Source: ETC Eighth Telecomm Development Plan

Figure 3.6-1 Internet Subscriber

There are many scenarios for driving Information and Communications Technology for development under UNDP and other organizations. UNDP plays a pivotal role in representing the interesting of development nations. It helped to connect more than 15 countries to the Internet and deployed the IP networks in more than 40 countries. It is needed to consider what is possible action in the country at present even a small matter in consideration of the network status. A present status of the Internet service is one of the points aimed at.

In Ethiopia, 8 POPs have been additionally provided in June 2001 under UNDP assistance and Nekempte POP has been implemented by ETC (10 in total including Addis Ababa). However, the number of Internet users is still few. These valuable facilities are not fully utilized for the time being, especially outside Addis Ababa. Internet subscriber distribution in 2001 is shown as follows

Table 3.6-2 Category and Nos. of Subscriber as of 2001

Category	No. of Subscribers
C-1	1,557
C-2	828
C-3	953
C-4	261
C-5	474
Total	4,073

- C-1: Private-1 C-2: Private-2
- C-3: International Organization, Business Company, and Embassy
- C-4: University, Education, Health and Agriculture Sector
- C-5: Government/Non profitable Organization, Social institute

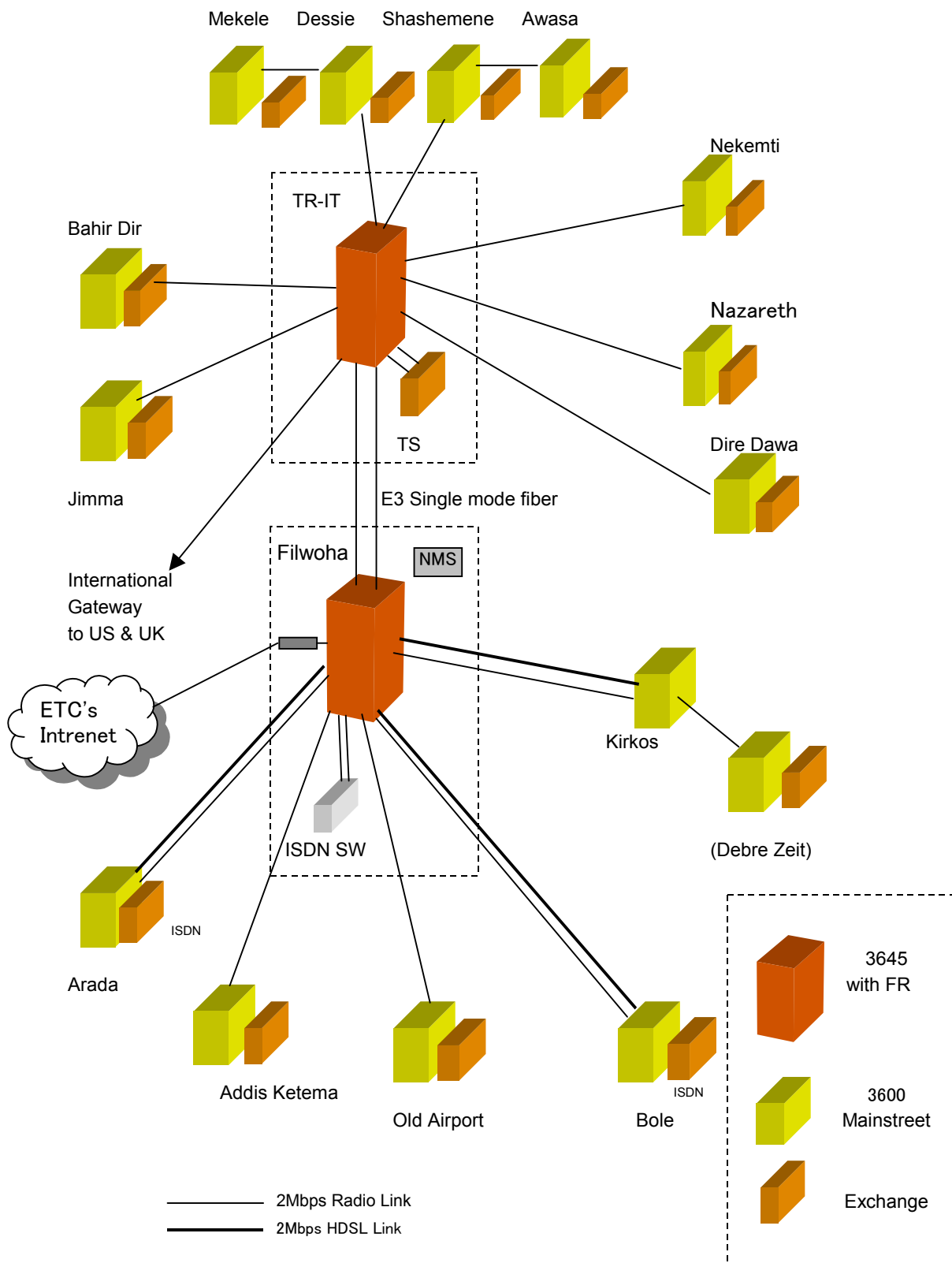


Figure 3.6-2 Public Digital Data Network

3.7 Supporting Facilities

3.7.1 Power Supply System for Telecommunications

Power Engineering Division is in charge of power supply systems for telecommunications and classifies them into two categories: one is for the system with commercial power supply available and the other is for the system with commercial power supply unavailable in rural and remote areas. The systems are properly planned, designed and supervised. The division has a steady and reliable design philosophy for the power system and the investment of the facilities is timely planned.

(1) Power Supply System with Commercial Power Available in Terminal Station

Planning and designing philosophy is as follows:

- 1) Power receiving transformer shall be installed with a capacity of at least 50 KVA in consideration of being able to operate for 10 to 20 years in the future in case of having the exchange capacity of 2,000 lines to 10,000 lines.
- 2) The capacity for air conditioning facilities shall be considered 5 to 10 % to be included.
- 3) The capacities of rectifier and floating batteries shall be considered 25 % of the extra to be added to the calculated load capacities.
- 4) Suitable miscellaneous loads are also included.

(2) Power Supply Systems for Rural Areas

The planning and designing philosophy is as follows:

- 1) Small capacities with no commercial power supply:
Solar power systems are basically adopted for telecommunications facilities only. Extra capacities are not considered for design calculations but for tolerance as 10 to 20 %.
D.Table 3.7-1, Existing/Planned Power Supply Systems in each Region shows in full load capacities for solar power systems.
- 2) Microwave Repeater Station (no commercial power supply available)
Two Engine-Generators system (EG x 2) is adopted and operated alternately. The capacities are calculated with 30 to 40% oversized.

3.7.2 Building Construction

(1) Present Status of ETC

Telecommunications facilities in ETC are going to be changed from analog systems to digital systems. Building and other attached facilities will naturally be changed. Analog systems require large floor spaces and heavy floor loads for the facilities in the building. The floor space and load required for the building, however, become reduced in accordance with the up-coming digitalization era. Buildings shall also be followed to them. Meanwhile, it seems that ETC still depends upon the conventional designing method, which is shown in the manual, "Manual for Telephone Building" issued in 1965 and 1968 by an enterprise.

Both Designing and Construction Divisions are considering to redouble their efforts to standardize the station buildings for telecommunications. However, it seems that the economical designing to cope with the digitalization era would bring some difficulties under such a circumstance.

There are two divisions for building construction, i.e., Design and Supervision Division and Civil Construction Division.

- 1) 18 staffers are engaged in Design and Supervision Division.

There are several types of standardized designs for station buildings and a few types for repeater station. References are given in sample drawings as per the attached D.Figure 3.7-1.

- 2) 130 staffers are engaged in Civil Construction Division.

This Division is in charge of the construction of station buildings. Materials for construction are procured locally.

(2) Problems/Issues

- 1) Necessary manuals for designing and construction concerned are not provided. The only manual available now is “Manual for Telephone Building” issued by an enterprise in 1965 and 1968. It was issued during the analog era. The building shall be designed in response to the digitalized facilities, meaning small sized and economical designing. New manuals are indispensable.

- Lack of information on the designing
- Lack of information on the requirement of digitalized facilities
- Lack of information on room interior and office function

- 2) A newly designed station building is discussed at the meeting each time and decided by the persons in charge. This does not mean the standardization of building design in the true sense.

- 3) Urban Cable Network:

Manholes, ducts, and route designing concerned in urban cable networks are not sufficiently standardized yet.

3.8 Customer Service

(1) General

ETC has divided the entire Ethiopia into eight regions and Addis Ababa into six zones and established an administrative office in each region and zone.

Addis Ababa Zones

- CAAZ: Central Addis Ababa Zone
- EAAZ: East Addis Ababa Zone
- NAAZ: North Addis Ababa Zone

- SAAZ: South Addis Ababa Zone
- SWAAZ: South West Addis Ababa Zone
- WAAZ: West Addis Ababa Zone

ETC Regions

- ER: East Region
- NER: North East Region
- NR: North Region
- NWR: North West Region
- SER: South East Region
- SR: South Region
- SWR: South West Region
- WR: West Region

Customer service operations such as acceptance of new subscribers to a fixed telephone, change of contract, acceptance of complaints, billing, and acceptance of payment are handled in each of the above zonal/regional offices.

For the billing operation, all call data recorded in the switching exchange of each zone and region are sent to a division called the ITCD (Information Technology Center Division) through the Central System Support (CSS) for adding the data up by each customer. The ITCD prepares bills and distributes them to each zonal/regional office.

Computers have been experimentally introduced in the CAAZ as a pilot project to handle new subscriber applications of fixed telephone, change of contract and acceptance of complaints by the customers, and the sections involved in this project have been networked. After a sufficient effect of the above pilot project in the CAAZ has been verified, computers will be sequentially introduced to other zonal and regional offices.

Eliminating waiting subscribers and handling complaints from customers about wrong billing are the two major challenges for ETC. Study Team conducted an investigation, paying attention to the following matters, in order to examine whether a series of these customer service operations contains any factors which cause these two problems.

- Organization's and staff's customer service handling capabilities
- How to convey customer information between related organizations

(2) Fixed Telephone

(a) Present Status

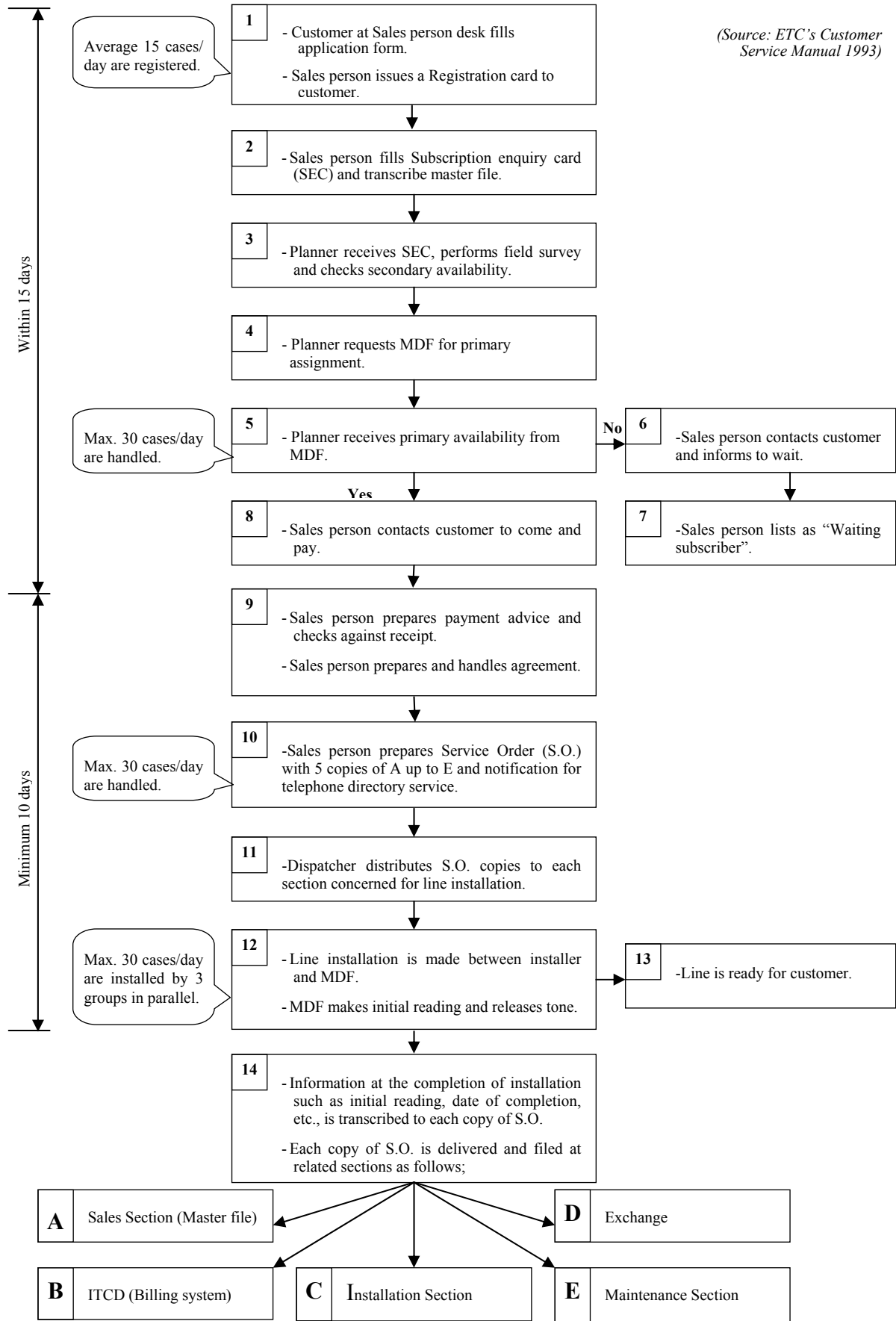
1) Work Flow Procedure for New Subscriber

Subscribers of fixed telephone are classified into "Residents," "Business," and "Government". The following conditions and documents are necessary to apply for

new subscription to a fixed telephone by classification.

- Residents: ID card, the person himself/herself
- Business: Trade license, Application letter
- Government: Application letter

The number of waiting subscribers to a fixed telephone in Ethiopia is 155,000 as of August 2001. We investigated the procedures for new subscription to a fixed telephone and the organization's handling capabilities concerning the procedures, in order to examine whether the customer service operations contain any factors which generate these waiting subscribers. Figure 3.8-1 shows the flow chart of the procedures for new subscription to a fixed telephone. As an example, the number of cases registered and handled and the number of days required in the CAAZ are shown at the left of the flow chart.



In the above flow chart, the idle circuit condition is checked in the fifth step. An applicant for whom the line installation is not possible due to an insufficient idle line capacity is listed as a waiting subscriber.

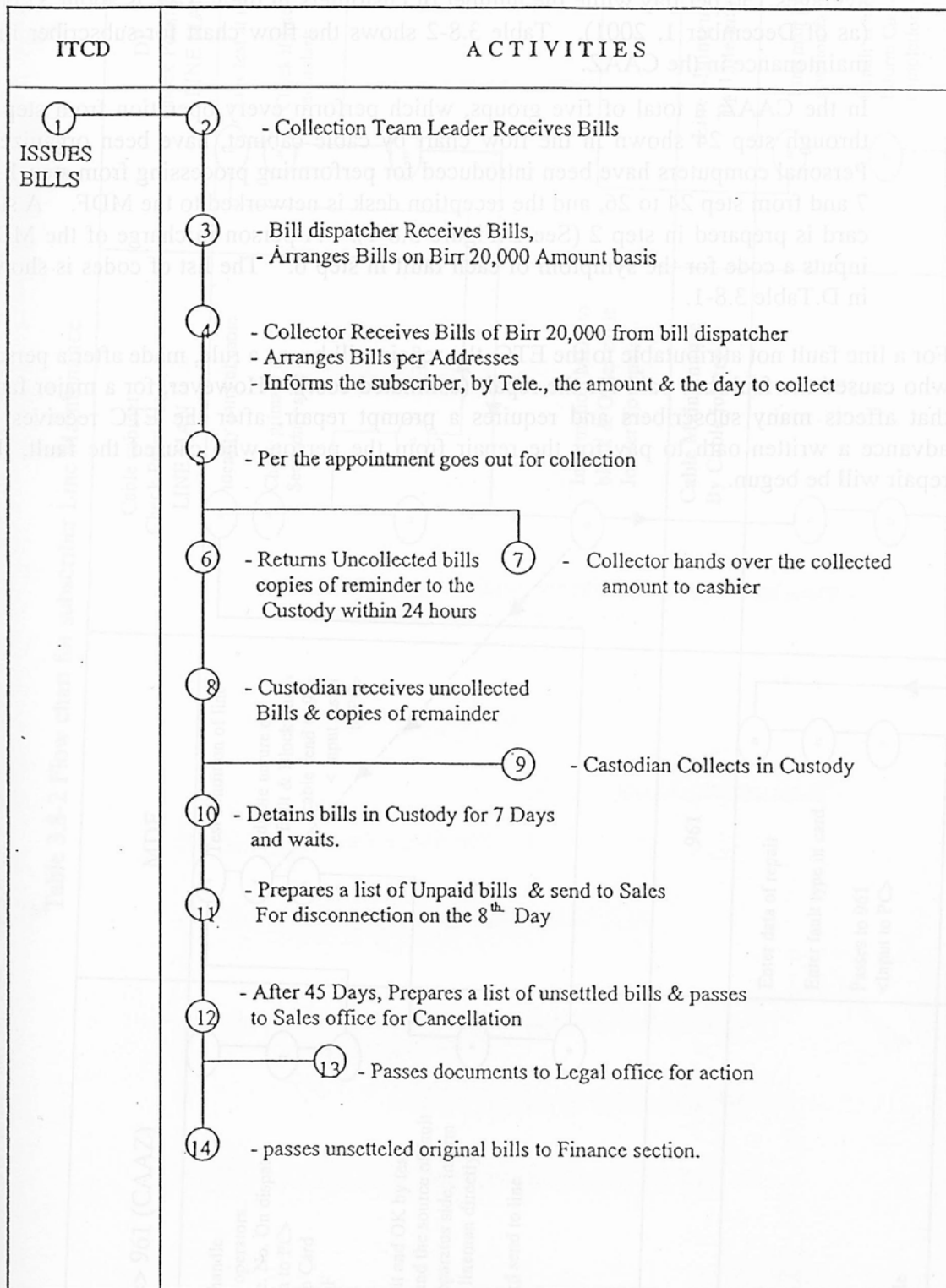
As far as the number of case registered/handled is concerned in the flow chart above, there are no problems with the handling capabilities of the customer service operation against the size of applicants for the subscription. From the above-mentioned, it has been concluded that the handling capabilities are not connected with the occurrence of waiting subscribers.

2) Work Procedure for Billing and Collection

In Addis Ababa, the ITCD writes out bills to customers and distributes them to each zonal office. Bills are prepared at the billing center in the regional office in each region.

There are two types of billing system in Addis Ababa: the cash bill system and credit bill system. The cash bill system covers resident and business subscribers. Collectors visit customers to collect bills. The credit bill system covers government agencies. Collectors do not collect bills; instead, messengers deliver bills and customers go to the zonal office later to make a payment by cash or by check. Note that the credit bill system may be applied to some business subscribers at their request, depending on their capital, income, and other factors. The credit bill system has been adopted in all of these regions. Table 3.8-1 shows the flow chart for cash collection by the cash bill system.

Table. 3.8-1 Flow Chart for Cash Collection



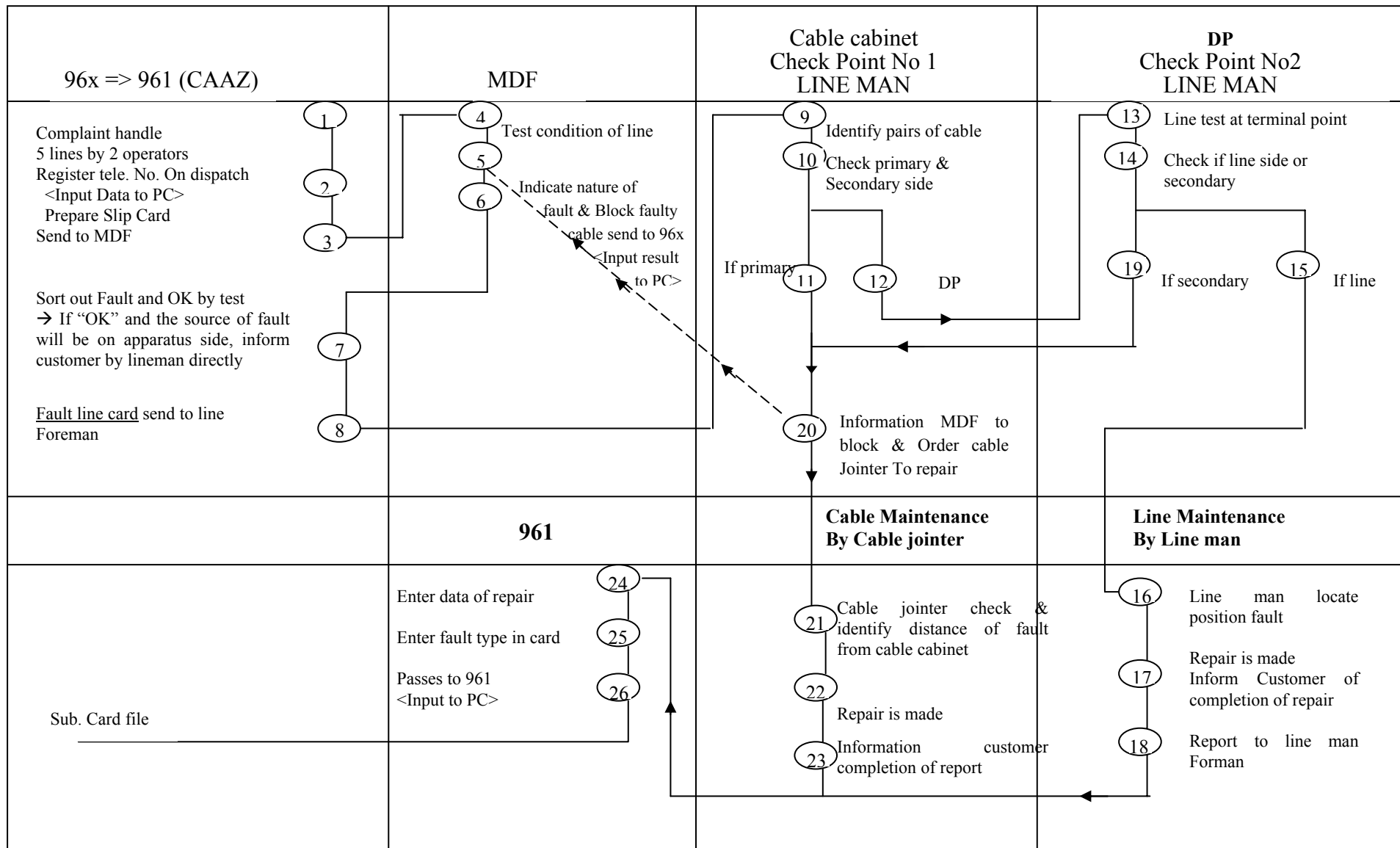
3) Maintenance Work Procedure

A sales person accepts faults from customers both by telephone (Inquiry telephone number: 961 for the CAAZ) and at a zonal/regional office window. Taking the CAAZ as an example, it is said that the number of fault cases notified by customers averages 130 per day while the number of customers in the CAAZ is about 37,000 (as of December 1, 2001). Table 3.8-2 shows the flow chart for subscriber line maintenance in the CAAZ.

In the CAAZ, a total of five groups, which perform every operation from step 4 through step 24 shown in the flow chart by cable cabinet, have been organized. Personal computers have been introduced for performing processing from step 1 to 7 and from step 24 to 26, and the reception desk is networked to the MDF. A slip card is prepared in step 2 (See D.Figure 3.8-1). A person in charge of the MDF inputs a code for the symptom of each fault in step 6. The list of codes is shown in D.Table 3.8-1.

For a line fault not attributable to the ETC, the repair will be, as a rule, made after a person who caused the fault has paid for the repair (estimated cost). However, for a major fault that affects many subscribers and requires a prompt repair, after the ETC receives in advance a written oath to pay for the repair from the person who caused the fault, the repair will be begun.

Table 3.8-2 Flow Chart for Subscriber Line Maintenance



(b) Problems/Issues

As described above, the insufficient idle access network capacity is the direct cause of the occurrence of many waiting subscribers to a fixed telephone. It is concluded that the occurrence is not attributable to the customer service operation handling capabilities. The study team, however, thinks there is a room for improvement concerning the following matters in order to enhance the service quality for subscribers to a fixed telephone.

- The service orders are kept only in hardcopy. If they are lost during the subscription procedures, the procedures will not be performed smoothly.

(3) Mobile Phone

(a) Present Status

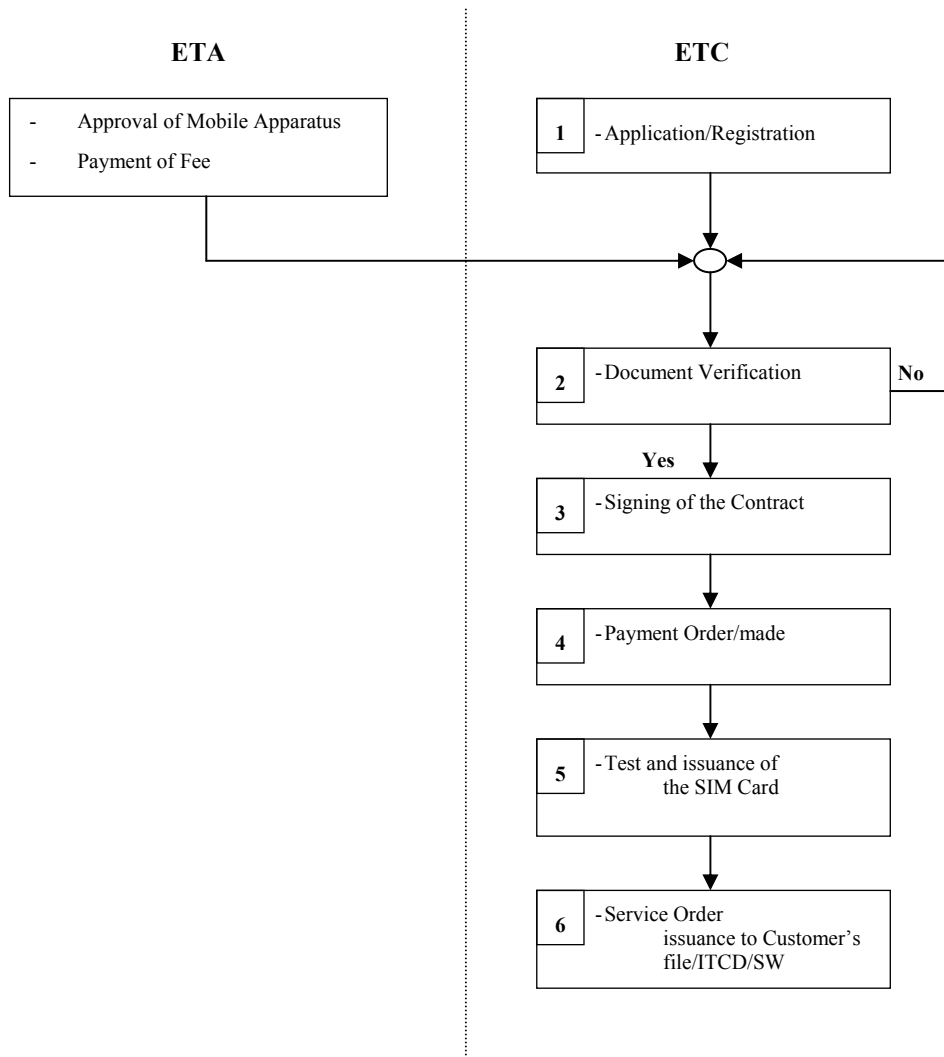
1) Conditions for New Subscription

The following conditions and documents will be necessary to apply for new subscription to a mobile telephone.

- Personal: ID card, House ownership certificate issued by City Council
- Business: Business license issued by Inland Revenue
- Government: Guarantee/Supporting letter issued from NGO/ Embassy/ other governmental org.
- Common to all: Receipt of Evaluation fee for mobile apparatus issued by ETA

2) Work Flow Procedure for New Subscriber

Figure 3.8-2 shows the flow chart of a new subscriber to a mobile telephone. A new subscriber needs to follow ETC's procedure, pass mobile apparatus evaluation by the ETA, and pay for the evaluation fee (89.6 birr/unit). (ETC had a section that carried out the above evaluation until June 1999; however, ETA has conducted the evaluation since then because of the reorganization.)



(Source: ETC's Customer Service Manual)

Figure 3.8-2 Work Flow Procedure For New Subscriber

3) Billing and Payment

The billing and payment for a mobile telephone are as shown below.

- i) Based on the bill register prepared by the ITCD, each customer is informed of the amount billed by telephone every month.
- ii) When contacted by telephone, the customer designates a pay station at which he or she pays, among four pay stations in Addis Ababa.
- iii) The customer pays at the pay station above.
- iv) Unless the customer settles the account within three weeks from the day when he or she is contacted by telephone in step ii), his or her mobile telephone will be disconnected, resulting in a temporary suspension of service. The customer has to pay a fee of 22 birr to have the mobile telephone reconnected.

- v) Furthermore, unless he or she pays within 45 days, his or her mobile telephone service will be cancelled.

4) Present Situation and Future Plan for Mobile Telephone Services

The present situation and future plan of the mobile telephone service are as shown below.

- The current number of subscribers to a mobile telephone is 28,000 lines. Since the line capacity is reaching its limit, the procedures for new subscription have been suspended.
- Only Addis Ababa, Nazareth and Sodore are now covered.
- The current number of waiting subscribers to a mobile telephone is 33,000. By March 2002, 24,000 lines (a total of 60,000 lines) will be added but the procedures for new subscription have not been resumed yet.
- Subscription to a mobile telephone is now being accepted at the sales center and a numbered ticket is given to applicants in the order of their application. On the average, 150 customers come for subscription in a day.
- ETC calls on the applicants to finish an evaluation of mobile apparatus by ETA as soon as possible so that the applicants can start to use the mobile communication when the acceptance is resumed, and to keep a receipt stub of the evaluation fee.
- At present, there is only one sales center – a window where subscription to a mobile telephone is accepted – in Addis Ababa. The number of sales centers will be increased to nine (seven in Addis Ababa and each in Debre Zeit and Nazareth).
- To cope with the above increase, a staff of five per sales center will take care of a series of procedures for the new subscription above. The staff will be placed so that the procedures for a total of maximum 8,000 subscribers in nine sales centers can be carried out in a month.

(b) Problems/Issues

The problems in the present situation of the mobile telephone service are shown below.

- The GSM system has been adopted for the mobile phone in Ethiopia. It is essential to secure a sufficient stock of SIM cards to get mobile telephones into widespread use in this country. It is necessary not only to place the staff effectively but also to establish a system to procure equipment and materials smoothly and promptly in ETC.

(4) Internet Service

(a) Present Status

1) Conditions for New Subscription

The following conditions and documents will be necessary to apply for new subscription to the Internet Service.

- Personal: ID card
- Business/Government: A responsible person's signature and stamp must be placed on the written subscription contract.
- Common for the above: Telephone number for Dial-up connection

2) Work Flow Procedure for New Subscriber

The flow chart for new subscribers to the Internet Service is shown in Fig. 3.8-3.

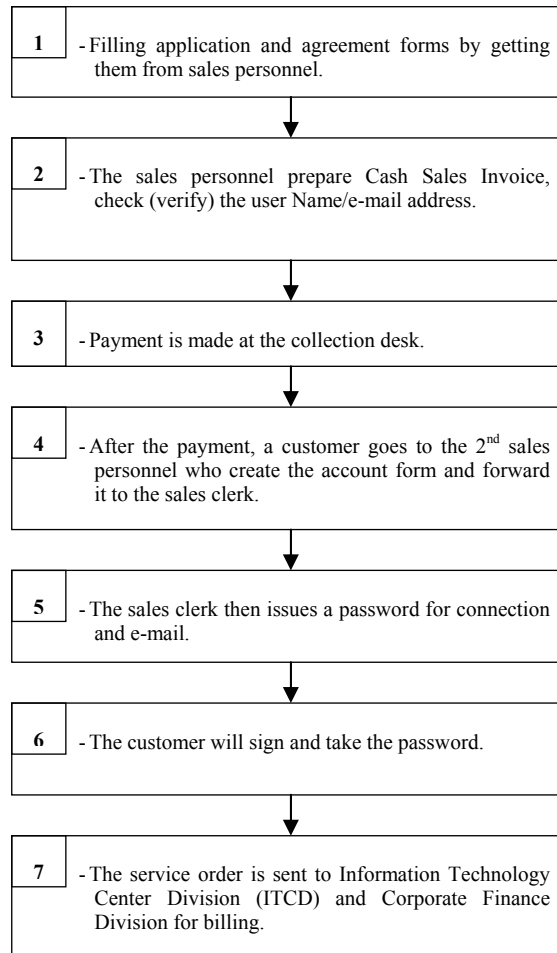


Figure 3.8-3 Flow Chart for New Subscriber of Internet Service

3) Billing and Payment

The billing and payment for the Internet Service are as shown below.

- i) A sales clerk of the Internet Service Division (ISD) goes to the ITCD every month to obtain charging information of all the subscribers. (A floppy disk containing Microsoft Access data and its hardcopy)
- ii) Read the data in item i) above into ISD's software for billing and collectively notify all the subscribers of the amount billed by e-mail.
- iii) The subscribers go to ISD's window to pay within two weeks from the date of billing in step ii) above.
- iv) Unless the payment is made within the time limit above, the Internet Service will be disconnected (suspended).
- v) The payment window will be the ISD, the head office, in Addis Ababa. ETC's region offices handle business in each region.

4) Customer Data Management System

- i) The ISD manages customers' information in a database with a standalone personal computer. (Microsoft Access is in use.)
- ii) The above-mentioned personal computer in item i) has not been networked to a personal computer for recording information such as the account name and password in the main server upon registration.
- iii) Upon registration, the account name and connection password assigned by the personal computer in item i) are filled in the registration form and given to the personal computer operator in item ii).
- iv) The personal computer operator in item ii) prepares a service order and sends hardcopy of the service order to the ITCD every week to register it on ITCD's master database.
- v) After a change in an existing customer (change of plan, transfer, and cancellation) is updated by the personal computer in item i), the personal computer operator in item ii) above will prepare a service order concerning the change as in the case of data on a new customer. Then the operator will send it together with the service orders of new customers to the ITCD to update it in ITCD's master database.

5) Present Situation and Future Plan for Internet Services

The present situation and future plan of the Internet Service are as shown below.

- The current number of subscribers is about 6,000, and 95% of the subscribers are users in Addis Ababa.
- The current subscriber capacity is 14,000, and the capacity will be increased by 16,000 by 2003 so that there will be a total of 30,000 accounts.
- They say that the procedures for the subscription are carried out at a rate of 50 cases/week.
- At present, the number of POPs (Point of Presence) in the entire

country is ten (Addis Ababa:1, other regions: 9).

- There are two connection methods: dial-up and leased line. There are no waiting subscribers to the dial-up connection system, but there are 50 waiting subscribers to the leased line connection system due to an insufficient capacity.

(b) Problems/Issues

The problems in the present situation of the Internet Service are shown below.

- Upon registration of a new subscriber, since the personal computer for managing the customer database in the ISD has not been networked to the personal computer for preparing service orders, errors may be caused when the customer database information is entered in the registration form for the service order.

(5) Billing System of Information Technology Center Division (ITCD)

(a) Present Status

1) How to Record Customer Information for Various Services

As described above, the service orders containing both data on a new subscriber to a fixed telephone, a mobile telephone, or the Internet Service and data on existing customers in which there is a change are sent to the ITCD in hardcopy and registered or updated in the master database. The service orders for these services are sent to the ITCD with the following frequency.

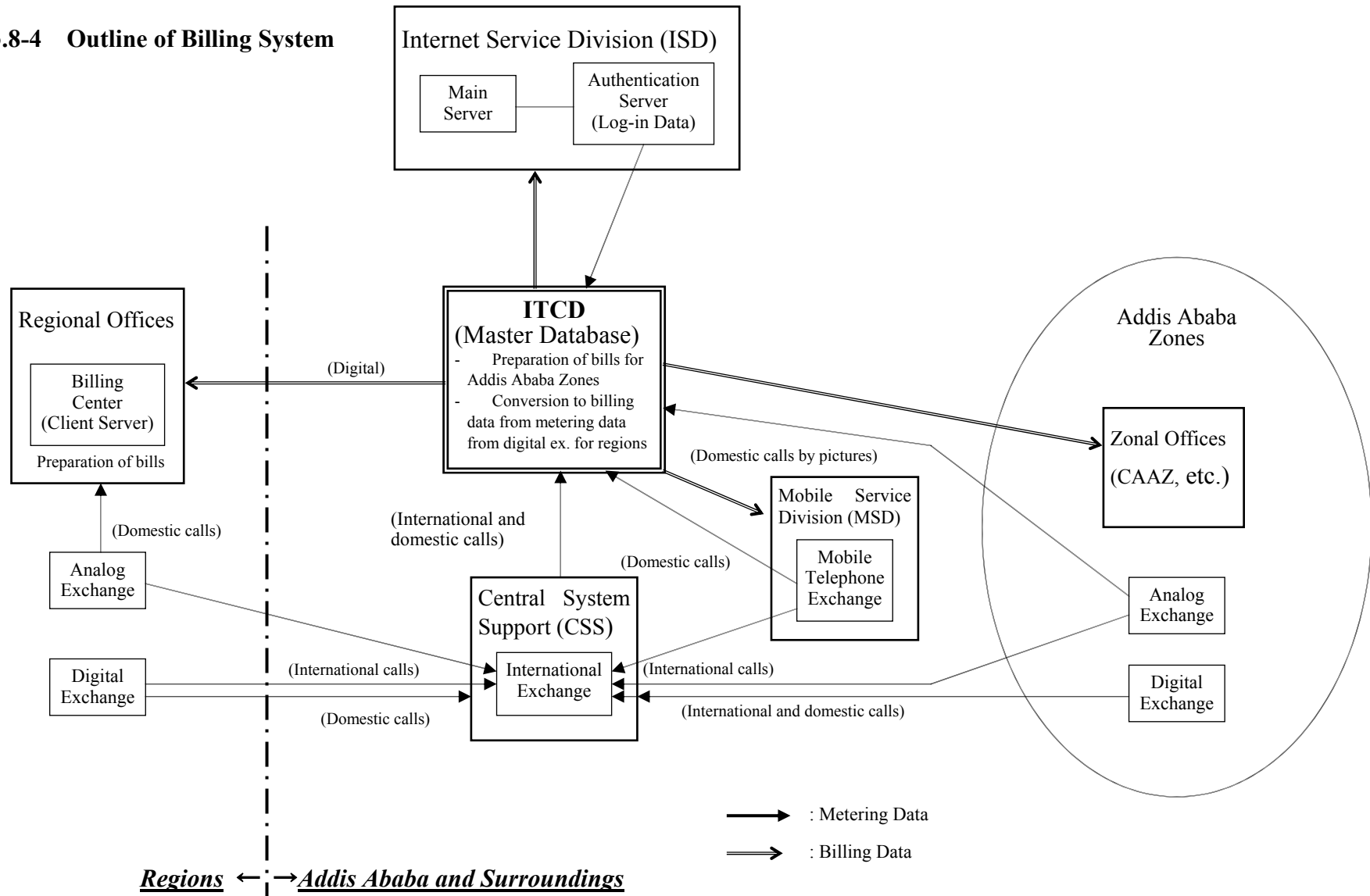
- Fixed telephone: Twice a week (Tuesday and Friday)
- Mobile telephone: Twice a month
- Internet Service: Once a week (Thursday)

2) Charging Management System for Various Services

The ITCD makes out bills for the subscribers in the Addis Ababa Zones and their surroundings as well as for the subscribers of mobile telephone service and the Internet service. In each region, the billing center in the regional office prepares bills by his client PC referring to ITCD's master database on-line.

The outline of the management system from transmission of call charging information (metering data) for various services to prepare of bills is shown in Figure 3.8-4.

Figure 3.8-4 Outline of Billing System



3) Present Situation and Future Plan for ITCD

The present situation and future plan of the ITCD are as shown below.

- When a customer raises an objection to the amount billed, the customer is required to pay 11.5 birr as investigation expenses.
- The computer system for contract/maintenance services experimentally in operation by the CAAZ has the customer information database, which is independent from ITCD's customer master database. The access server will be introduced within 2002 to integrate both databases.

(b) Problems/Issues

The problems in the present situation of charging data for various services and management of bills are shown below.

- All service orders for various services (a fixed phone, a mobile phone, and the Internet service) are sent in hardcopy. When customer information for these services is registered or updated in ITCD's master database, input errors may be caused.
- Since a digital exchange automatically adds up charging data, there is no chance of a human error, but ITCD doesn't issue a detailed call statement for the customer's request.
- An analog exchange may cause wrong billing due to a reading error because a worker reads each meter from the photograph of the meter.
- Since a manual exchange takes a record of each call and issues a bill, a human error may be caused in taking the record.

(6) Public Service Telephone Numbers and Value Added Services

The public service telephone numbers provided by the ETC are as shown below. The same charge as that of a local call is made for all these public services.

<Number>	<Purpose>
91	Police
92	Ambulance
93	Fire Fighting
97	Telephone Directory
98	International Operator
99	National Operator
901	Time Signal (Amharic)
902	Ditto (English)
903	Office for Advising HIV/AIDS Patients
961~5	Fault Maintenance at each Zone in Addis Ababa

3.9 Tariff System

Tariff systems in the communication business have to be calculated based on total costs that bring about business returns appropriate for the costs incurred in providing the services. In the case of countries that were formerly communist, telecommunications is recognized as being a part of the infrastructure of the society, and tariffs are therefore set quite low. This tendency is particularly striking in the setting of charges for domestic calls, which means that costs cannot be recovered from the income from domestic calls. This leads to cross-subsidizing between international calls and domestic calls. The pricing system adopted by the Ethiopian Telecommunications Corporation (ETC) is also accepting this cross-subsidizing principle.

The fact that a fixed policy is missing for this pricing system is what is looked at here.

The tariff table currently in actual use by the ETC is considered to be a variation on the two-part tariff. The basic concept of this two-part tariff is that fixed costs are recovered using a basic tariff and variable costs are recovered using corresponding tariffs. So it will be possible for ETC to operate in the black if a cross-subsidizing system is implemented.

(1) Current Network Structure and Tariff System

The networks provided by ETC mainly consist of (1) subscriber lines, (2) urban lines, and (3) rural lines. A subscriber line is regarded as an installation that is dedicated to use by individual subscribers, with the recovery of costs in this case being achieved through basic tariffs (Connection fee + Monthly rental fee). Fixed costs relating to common portions can be recovered using call charges together with the variable costs.

The tariff system for the current Ethiopian network structure will now be described.

(a) Fixed Telephone service.

(a-1) Network Access

Connection fee: 305.00 Birr

Monthly rental

Business: 17.00 Birr

Residence: 8.00 Birr

In addition to the above, the tariffs shown in the following table are added for subscribers other than BRA (Basic Rental Area) subscribers.

Table 3.9-1 Additional Tariff for Additional Facility

	At the time of subscription	Monthly rental
Per newly installed telegraph pole (wooden)	135 Birr	0.68 Birr/50m
Per already installed telegraph pole (wooden)	41 Birr	0.68 Birr/50m
Per already installed telegraph pole (steel)	54 Birr	0.68 Birr/50m
Per 50m of newly installed cable (underground wiring)*	14 Birr	0.41 Birr/50m

*Private leased circuit for distant subscriber

This tariff is also applied for private leased circuit and remote subscription.

(a-2) Call Charge

Call tariffs are expressed in Table 3.9-1 and 3.9-2. Call tariffs vary depending on whether there is operator intervention or not.

For example, when the call distance is 15km and the call duration is six minutes, i.e. local call:

Via operator: 0.50Birr Automatic call: 0.20Birr

and the automatic exchange call is cheaper for this case.

However, when the call distance is 25km and the call duration is six minutes:

Via operator: 0.70Birr Automatic call: 1.20Birr

This phenomenon appears as distortion, which is included in the current tariff system. This is deliberately done to favor the rural poor who can not afford to have telephone lines.

Table 3.9-2 Operator Assisted Call

(Operator-Assisted call/3 min.)

Distance (km)	Normal charge	Reduced charge
0-20	0.25	—
21-50	0.35	—
51-100	0.60	—
101-200	0.80	0.70
201-300	1.05	0.80
301-500	1.40	0.90
501-700	1.85	1.15
701-900	2.30	1.50
901-1100	2.75	1.85
1101-1300	3.20	2.20
1301-1500	3.70	2.55
1501-1700	4.15	2.90
1701-1900	4.60	3.20
1901-2100	5.05	3.50
Over 2101	5.50	3.90

Source: ETC

Table 3.9-3 STD Calls

(Birr 0.20 per 6 minutes)

Distance (km)	Normal charge (Charge Per Minute)	Reduced charge (Charge Per Minute)
Local calls, air-line distance 1-15	0.03	0.03
16-50	0.20	0.20
51-80	0.30	0.20
81-130	0.60	0.40
131-200	0.80	0.60
201-300	1.00	0.67
301-400	1.20	0.80
401-550	1.50	1.00
551-700	2.00	1.33
Over 700	2.40	1.50

*Reduced charges apply from 8:00p.m.-8:00a.m. and on Sundays and Public Holidays.

Source: ETC

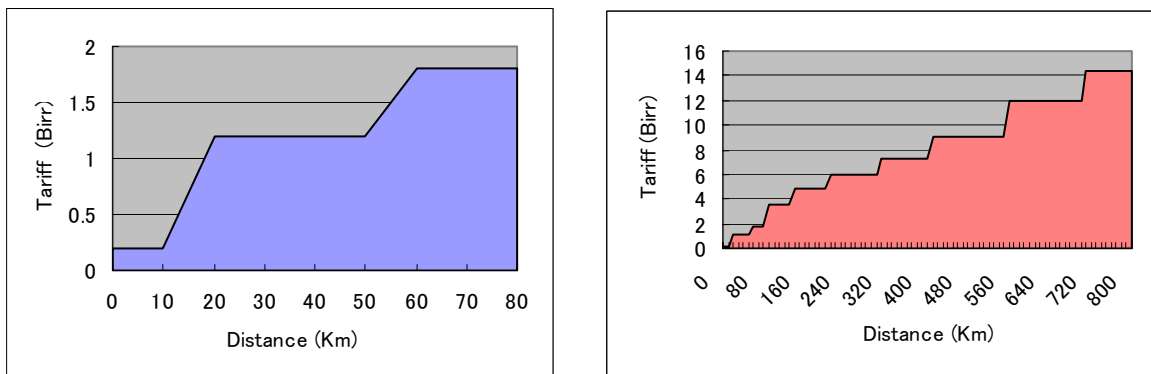


Figure 3.9.1 Via Operator STD / via Operator

As shown in the above Table 3.9-3, local calls with air line distance between 1km and 15km have a call charge for every six minutes and its fraction.

(b) International Telephone Service

International telephone calls are carried out by using transmission facilities of other telecom administration after agreements on transit and terminating fees based on ITU recommendations call charges for international calls, and are reached as shown in Table 3.9-4.

Currently, the major share of the income of the ETC comes from international calls, but the yearly earnings ratio is falling due to the appearance of the Internet telephony. (62% of ETC's earnings in the fiscal year of 1998, and 44% in 2000)

ETC is planning for tariff re-balancing to deal with the decrease in revenue from international calls.

Table 3.9-4 Call Charges for International Calls by Country

COUNTRY	Charge for the first three minutes	Charge per additional minutes	Report charge	COUNTRY	Charge for the first three minutes	Charge per additional minutes	Report charge		
	(Birr)	(Birr)	(Birr)		(Birr)	(Birr)	(Birr)		
ASIA	Japan	64.3	21.45	6.45	EUROPE	Austria	47.8	15.95	4.8
	Afghanistan	64.3	21.45	6.45		Belgium	40.2	13.4	4
	Australia	64.3	21.45	6.45		Bosnia & Herz.	46.2	15.4	4.6
	Shanghai	51.45	17.15	5.15		Czech & slovak	44.6	14.9	4.45
	Hong Kong	65.5	21.85	6.5		Denmark	43.6	14.55	4.35
	India	36.75	12.25	3.7		Estonia	55.9	18.65	5.6
	Indonesia	64.3	21.45	6.45		France	38.6	12.9	3.85
	Korea N.	65.6	21.85	6.55		Gibraltar	48	16	4.8
	Korea S.	65.6	21.85	6.55		Greece	38.6	12.9	3.85
	Malaysia	64.3	21.45	6.45		Hungary	49.8	16.55	5
AFRICA	Algeria	51.45	17.15	5.15		Ireland	43.3	14.45	4.35
	Egypt	36.75	12.25	3.7		Italy	38.6	12.9	3.85
	Ghana	34.4	11.45	3.45		Kazakhstan	55.9	18.65	5.6
	Kenya	19.45	6.5	1.95		Monaco	38.6	12.9	3.85
	Mozambique	63	21	6.3		Norway	48.3	16.1	4.85
	Rwanda	34.4	11.45	3.45		Poland	45.95	15.3	4.6
	Somalia	52.5	17.5	5.25		Portugal	50.9	17	5.1
	South Africa	34.4	11.45	3.45		Rumania	38.6	12.9	3.85
	Sudan	38.6	12.85	3.85		Russia	55.9	18.65	5.6
	Tanzania	19.45	6.5	1.95		Spain	48	16	4.8
AMERICA	Uganda	19.45	6.5	1.95	Sweden	45.7	15.25	4.55	
	Zambia	34.4	11.45	3.45	Switzerland	40.15	13.4	4	
	Cuba	64.3	21.45	6.45	Tajikistan	55.9	18.65	5.6	
	Dominica	64.3	21.45	6.45	Turkey	53.8	17.95	5.4	
	Hawaii	64.3	21.45	6.45	Turkmenistan	55.9	18.65	5.6	
	Mexico	64.3	21.45	6.45	U.K.	41.2	13.75	4.1	
	USA	52.5	17.5	5.25	Uzbekistan	55.9	18.65	5.6	
	Venezuela	64.3	21.45	6.45	Yugoslavia	46.2	15.4	4.6	

Source: ETC

Report means the detailed billing report

(c) Mobile Telephone Service

A GSM system is adopted as the communication system for mobile telephones.

New subscribers are currently not being accepted for mobile phones in Addis Ababa but it is planned to recommence accepting new subscribers in the near future. There is a waiting list of 38,689.

The initial subscription and the call tariffs are expensive compared to that of fixed telephones, but customer need is substantial. (There are 27,562 subscribers for a total capacity of 36,000.)

However, the accounting system that the GSM system recommends is not being carried out for this tariff system.

(c-1) Access Fee

Subscription fee: 543.00 Birr

Deposit for security:

Category	
Individual/ Personal	134.00 Birr
Gov. & non-profitable org.	220.00 Birr
Embassy, UN, Int'l Community, Expatriate	853.00 Birr
Business (public/private)	408.00 Birr

Monthly rental (For all categories): 50.00 Birr

In addition, 80 Birr is paid to the ETA as a mobile apparatus examination fee at the time of subscription.

(c-2) Call Charge

1) Local call

Mobile to mobile: 0.72 Birr/min

Mobile to PSTN: 0.75 Birr/min

PSTN to mobile: 0.75 Birr/min

2) Long distance call

From Adiss Ababa to

	Normal charge (Birr)	Reduced charge (Birr)
Area code 01	0.75	0.33
Area code 01 (non-A.A)	1.32	0.70
Area code 02	1.32	0.70
Area code 03	1.92	1.10
Area code 04	2.72	1.63
Area code 05	2.72	1.63
Area code 06	2.72	1.63
Area code 07	2.72	1.63
Area code 08	2.72	1.63

Source: ETC

Area code:

01: Addis Ababa, Akaki, Ambo, D/berhan, D/zeit, Wolisso

02: Nazareth & Assela

03: Dessie & Mekele

04: Mekele, Adigrat, Adewa, Axum, Maichew, Indasilassie & Shire

05: Dire Dawa & Harrar

06: Shashemene, Awassa, Arbaminch, Goba, Dilla, Wolaita Soba & Zway

07: Jimma, Agaro, Metu & Nekempti

08: Gondar, bahardar, & D/makos

3) International call charge

0.72Birr/min.+X

Where X is the per minute charge of international call for fixed phones.

4) National Call Charge for pre-paid mobile service

		Normal Charge Per 5 Seconds (Cents)	Normal Charge Per 5 Seconds (Cents)
A.1 Mobile to Mobile Mobile to Mobile		7	3
A.2 Mobile to Fixed From A/Ababa GSM to	Area Code 01	8	4
	Area Code 02	13	7
	Area Code 03	19	11
	Area Code 04	26	16
	Area Code 05	26	16
	Area Code 06	26	16
	Area Code 07	26	16
	Area Code 08	26	16

Noted that the existing pulse interval and relevant charges for calls from fixed to mobile network will remain unchanged. From Monday to Saturday the normal charge apply from 0800-2000 hours and the reduced charge apply from 2000-0800 hours and during Sunday and public holidays.

(d) Internet Service

Regarding the Internet, bill of subscribers are business and individuals about 70%. Many are living in Addis Ababa. However, the majority of the population appears to use cyber cafés where individuals do not need to enter a contract agreement with the service providers. This is because household usage of computers is not affordable by many Ethiopians.

(d-1) Dial-up

Regarding Internet service tariffs, there are two types (C-1, C-2) for general subscribers, one type (C-3) for businesses, one type (C-4) for public facilities, and one type (C-5) for government agencies.

Customer Category	Connection fee (US\$)	Monthly fee (US\$)	Allowed hour/mon. (hour)	Extra hour/mon. (US\$)
C-1	56	19	8	4
C-2	75	34	15	4
C-3	56	38	40	2
C-4*	113	75	40	4
C-5*	38	25	40	2

* C-4 is a category used only for public education, health, and agricultural sectors.

C-5 is a category used only for all non-profitable governmental organization and social institutions
-More than the allowed monthly on line hours

(d-2) Dedicated Service

- One router: 634,4.00 (US\$)
- Two modems: 246,4.00 (US\$)
- Configuration fee (Optional): 20,0.00 (US\$)
- Connection fee: 50,0.00 (US\$)
- Monthly fee: 100,0.00 (US\$)

Note:

ETC plans to introduce revised tariffs from August 2002 as shown below.

(1) For Dial up Service:

Connection fee: Birr 332.00, Monthly rental: Birr 23.00

(2) For Dedicated Service:

Connection fee: Birr 1,872.00, Monthly rental: Birr 4,752.00

(3) For dedicated Internet Service greater than 64kbps, the following rule shall be applied.

Initial charge: Initial charge for 64kbps x n x 0.75 where n is equivalent or greater than 2.

Monthly rental: Monthly rental for 64kbps x n x 0.75 where n is equivalent or greater than 2.

(e) Voice Mail

For mobile telephones

International programming fee: 30.00 Birr

(f) Leased Lines

(f-1) National Leased Lines

Monthly rental for transmission link

For 19.2 Kbps 6,000 min. x the per minute charge between two destinations.

(f-2) International Leased Lines

Monthly rental for international gateway

For 19.2 Kbps: 9,232(US\$)

For COMESA member countries: 20% discount

For 64Kbps between Ethiopia and the rest of the world: 13,848 (US\$)

For non-profit making organizations: 30% discount

Note:

ETC plans to introduce revised tariffs shown below in the near.

<u>Speed</u>	<u>Monthly Charge</u>	<u>Speed</u>	<u>Monthly Charge</u>
64 kb/s	13,848 US\$	320 kb/s	37,185 UD\$
128 kb/s	16,724 US\$	384 kb/s	44,006 UD\$
196 kb/s	23,544 US\$	448 kb/s	50,826 US\$
256 kb/s	30,365 US\$	512 kb/s	57,647 US\$

(g) Digital Data Network

(g-1) Point to Point

	Initial Subscription Change (Birr)	Monthly Rental (Birr)
For 27xx NTU	5523	69
For Local lead	1400	41
For Port	--	832
For Node	--	884

Monthly rental charge in Birr for transmission of digital leased line point to point circuit

	A.A	Awassa	D/Zeit	Nazareth	Dessie	Shashe-mene	Mekele	B/Dar	Jimma	D/Dawa	Nekempte
A.A	100	1,100	200	400	1,250	1,000	2,500	1,600	1,300	1,750	1,235
Awassa	1,100	-	970	940	2,200	100	3,550	2,400	1,000	2,300	1,550
D/Zeit	200	970	-	200	1,350	870	2,600	1,800	1,350	1,650	1,370
Nazareth	400	940	200	-	1,425	825	2,700	1,985	1,450	1,500	1,550
Dessie	1,250	2,200	1,350	1,425	-	2,200	1,315	1,250	2,450	1,465	2,035
Shashemene	1,000	100	870	825	2,200	-	3,475	2,500	1,025	2,215	1,550
Mekele	2,500	3,550	2,600	2,700	1,315	3,475	-	1,565	3,515	2,500	2,900
B/Dar	1,600	2,400	1,800	1,985	1,250	2,500	1,565	-	2,175	2,685	1,450
Jima	1,300	1,000	1,350	1,450	2,450	1,025	3,515	2,175	-	2,950	800
D/Dawa	1,750	2,300	1,650	1,500	1,465	2,215	2,500	2,685	2,950	-	2,930
Nekempte	1,235	1,550	1,370	1,550	2,035	1,550	2,900	1,450	800	2,930	-

Tariff for point to point digital leased circuit for less than 64kbps

Tariff for digital streams of 128/256/512kbps, and for digital frame relay of 8/16/32/64/128/256/512kbps CIR are given in Data File, D.Table 3.9-1.

(2) Problems/Issues with Current Tariff System.

(a) Fairness

When this tariff system is viewed from the point of view of fairness, the manner in which the redistribution of profits between users exerts influence brings about a problem regarding impartiality when looked at by society in general.

The fact that the current ETC tariff system permits cross-subsidizing could be said to imply that it is deficient with regards to fairness. Namely, a profit compensation structure exists for between general subscribers and key customers (centering on business users) that frequently make international and long distance calls. This destroys the entire benefit principle. However, in the development stage of the Ethiopian telecommunications sector, the redistribution of income from people who are easily able to pay the tariffs to people who are not, and the spreading of the use of telephones to general users is considered the primarily important thing, which means that it is unfortunately necessary to accommodate the fact that "Unfairness will have to be put up with for a while" as being unavoidable. It can therefore be considered that the pursuit of fairness is not necessary at the current development stage.

On the other hand, the tariff system is basically set to correspond to distance, which is substantially to the detriment of fairness. In particular, applicants for subscriptions that live further than 15 km from the telephone exchange have to pay extra charge per one telegraph poll. The current tariff system therefore does not maintain fairness from the point of view of providing an opportunity for the public to own means of communication.

(b) Efficiency

The Ethiopian communication sector will also enter the competition era eventually. Part of the international communication traffic has already started to be replaced by digital information referred to as e-mail due to the spread of the Internet, which has marked the beginning of the demise of the era of conventional monopolies.

The basic purpose of introducing competition to the marketplace is the pursuit of efficiency. Namely, by enabling pricing competition to unfold amongst a number of users, cost reduction competition would be invited, supply costs kept to a minimum, and service fees reduced. However, as discussed in (a), the Ethiopian Telecommunications sector is in the initial stage of development, and there is therefore the situation that profit is made in urban regions that must be ploughed back into other rural regions as development investment. It is therefore difficult to pursue efficiency in this situation and an accurate evaluation of investment efficiency is not possible.

It is therefore imperative that ETC provides benefits to subscribers using methods other than lowering tariffs. For example, it is necessary to introduce provisions for various new services (extension of nighttime discounts, implementation of designated number discounting, etc).

(c) The Role to Play as Infrastructure.

The importance of the continued advancement of telecommunications networks in everyday life as a foundation for maintaining the whole country is illustrated in reality by the extremely important problem of bringing the networks of the former East Germany up to the standards of those of the former West Germany at the time of reunification of East and West Germany. It is therefore inevitable to improve the telecommunications infrastructure in order to maintain the international status of Ethiopia. The role imposed on the ETC, as the central organization of the Ethiopian communications sector, is to “provide a universal service throughout all regions of Ethiopia.” When international call traffic exhibits a marked tendency to decrease, as VoIP becomes more widespread, the aforementioned problems with the current tariff system will eventually become a large problem that will bear down upon the ETC.

A review of the current tariff system is therefore extremely pressing if the ETC is to expand the Ethiopian communications network from now on and promote the upgrading of the network. At least the markup of local call tariffs should therefore be investigated with some urgency.