Technical Guide
on
Internal Audit in
Telecommunications Industry

The basic draft of the Technical Guide was prepared by CA. Pravin Chandra Shah, Mumbai. The views expressed in this Technical Guide are those of the author and may not necessarily be the views of the organisation he represents.

The Institute of Chartered Accountants of India
(Set up by an Act of Parliament)
New Delhi
Foreword

The telecommunications industry has unarguably been the biggest catalyst in giving our world its present shape and colour. It is the telecommunications industry which with all its advancements over the last 50 years or so has given the word “accessibility” new dimensions.

To help this Industry bolster its contribution to the social and economic development, it is essential that its own foundations are strong enough not only to survive but also grow and sustain that growth. Modern managements have various ways and means to nourish this growth and using internal audit is one such means. Essentially a management function, internal audit, in the most simple of words, helps managements effectively and efficiently utilise their limited resources and remain prepared for facing the uncertainties of future. The internal auditors, on the other hand need to be really knowledgeable of a dynamic industry as telecommunications to be able to identify the areas of concern and accordingly make a fruitful contribution by helping the management resolve them.

I am happy to note that the Committee on Internal Audit has brought out this Technical Guide on Internal Audit in Telecommunications Industry. Written by an eminent expert in the field, the Technical Guide provides the readers a crisp insight into the various technicalities arising in the operations of this Industry and the resultant issues which the internal auditors must know.

I am sure that this Technical Guide too would be warmly received by the members and other interested readers.

Date : May 3, 2008
Place : New Delhi

CA. Ved Jain
President, ICAI
Preface

Internal auditing is being widely accepted as an effective control device for efficient and effective management of economic enterprises, comprising a complete financial and operational review. As per the modern concept of internal auditing, the internal auditor apart from reviewing routine accounting procedures and policies also evaluates the performance of management processes to determine whether there has been effective and efficient utilization of the resources of the enterprise. For such a review and evaluation, the internal auditor must possess knowledge of the technical, commercial and other aspects of the operations of the enterprise concerned.

India is the fourth largest telecom market in Asia after China, Japan and South Korea. The Indian telecom network is the eighth largest in the world and the second largest among emerging economies. At current levels, telecom intensiveness of Indian economy measured as the ratio of telecom revenues to GDP is 2.1 percent. In view of the complexity, volume and growth of telecom industry, Internal auditors have a dynamic role to play to support the management in helping fostering this growth. Keeping this in mind, the Committee on Internal Audit has brought out this Technical Guide on Internal Audit in Telecom sector. This Technical Guide contains extensive guidance on all significant aspects such as the regulatory framework in which the telecom companies operate, frauds, revenue assurance and revenue recognition, network. The Appendix to the Technical Guide contains list of abbreviations and glossary of terms for better understanding of the readers.

I am extremely grateful to CA. Pravin Chandra Shah of Reliance Communications and his entire team, Shri Sunil Kumar, Shri Bharat Rastogi, Shri Atul Prabhu and Dr. Pritosh Chandra Basu for squeezing out sometime out of their professional and personal commitments and preparing the basic draft of this Technical Guide.
I am obliged to CA. Ved Jain, our President and CA. Uttam Prakash Agarwal, our Vice President for giving me this opportunity. I also wish to thank my colleagues in the Committee on Internal Audit, CA. Bhavna Gautam Doshi, CA. Sunil H. Talati, CA. Mahesh P. Sarda, CA. Shanti Lal Daga, CA. K. P. Khandelwal, CA. Manoj Fadnis, CA. Anuj Goyal, CA. Amarjit Chopra, Shri Manoj K. Sarkar, Shri A.K. Awasthi, Dr. Pritam Singh, Shri O.P. Vaish, CA. Parthasarathi De, CA. R. Srivatsan, CA. Narendra Kumar Aneja, CA. Charanjit Sureendra Attra, CA. Nagesh Dinkar Pinge and CA. Manu Chadha for their constant support and guidance in giving final shape to this Technical Guide. I would also like to appreciate the efforts of the Secretariat of the Committee on Internal Audit in giving the final shape to the Technical Guide.

I am certain that the readers, especially members of the Institute, working as internal auditors in telecom sector would find this Technical Guide immensely useful.

Date : 29.04.2008 CA. Abhijit Bandyopadhyay
Place : Kolkata Chairman, Committee on Internal Audit
# Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADC</td>
<td>Access Deficit Charges</td>
</tr>
<tr>
<td>AGR</td>
<td>Adjusted Gross Revenue</td>
</tr>
<tr>
<td>ARPU</td>
<td>Average Revenue Per User</td>
</tr>
<tr>
<td>BIA</td>
<td>Broadband Internet Access</td>
</tr>
<tr>
<td>BTS</td>
<td>Base Transceiver Station</td>
</tr>
<tr>
<td>CDMA</td>
<td>Core Divisional Multiple Access</td>
</tr>
<tr>
<td>CDR</td>
<td>Call Data/Detail Record</td>
</tr>
<tr>
<td>CPE</td>
<td>Customer Premises Equipment</td>
</tr>
<tr>
<td>CVV</td>
<td>Card Verification Value</td>
</tr>
<tr>
<td>DIA</td>
<td>Direct Internet Access</td>
</tr>
<tr>
<td>DoT</td>
<td>Department of Telecommunications</td>
</tr>
<tr>
<td>GOI</td>
<td>Government of India</td>
</tr>
<tr>
<td>GSM</td>
<td>Global System for Mobile Telephony</td>
</tr>
<tr>
<td>IDC</td>
<td>Internet Data Center</td>
</tr>
<tr>
<td>ILD</td>
<td>International Long Distance</td>
</tr>
<tr>
<td>IN</td>
<td>Intelligent Network</td>
</tr>
<tr>
<td>IPLC</td>
<td>International Private Leased Circuit</td>
</tr>
<tr>
<td>ISDN</td>
<td>Integrated Service Digital Network</td>
</tr>
<tr>
<td>ISP</td>
<td>Internet Service Provider</td>
</tr>
<tr>
<td>IUC</td>
<td>Interconnect Usage Charges</td>
</tr>
<tr>
<td>MCN</td>
<td>Media Convergence Node</td>
</tr>
<tr>
<td>MSC</td>
<td>Mobile Switching Center</td>
</tr>
<tr>
<td>NLD</td>
<td>National Long Distance</td>
</tr>
<tr>
<td>OFC</td>
<td>Optical Fiber Cable</td>
</tr>
<tr>
<td>PBG</td>
<td>Performance Bank Guarantee</td>
</tr>
<tr>
<td>PCO</td>
<td>Public Call Office</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
</tr>
<tr>
<td>POI</td>
<td>Proof of Identity</td>
</tr>
<tr>
<td>POI</td>
<td>Point of Interconnect/Interaction</td>
</tr>
<tr>
<td>POR</td>
<td>Proof of Residence</td>
</tr>
<tr>
<td>POTS</td>
<td>Plain Old Telephone System</td>
</tr>
<tr>
<td>PSTN</td>
<td>Public Switched Telecom Network</td>
</tr>
<tr>
<td>QoS</td>
<td>Quality of Service</td>
</tr>
<tr>
<td>RCV</td>
<td>Recharge Vouchers</td>
</tr>
<tr>
<td>SAS</td>
<td>System on Accounting Separation</td>
</tr>
<tr>
<td>SEBI</td>
<td>Securities Exchange Board of India</td>
</tr>
<tr>
<td>SIM</td>
<td>Subscriber Identity Module</td>
</tr>
<tr>
<td>SMS</td>
<td>Short Messaging Service</td>
</tr>
<tr>
<td>TDSAT</td>
<td>Telecom Disputes Settlement and Appellate Tribunal</td>
</tr>
<tr>
<td>TRAI</td>
<td>Telecom Regulatory Authority of India</td>
</tr>
<tr>
<td>VAS</td>
<td>Value Added Services</td>
</tr>
<tr>
<td>VPN</td>
<td>Virtual Private Network</td>
</tr>
<tr>
<td>WPC</td>
<td>Wireless Planning and Co-ordination Wing</td>
</tr>
</tbody>
</table>
## Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adjusted Gross Revenue</strong></td>
<td>Revenue as per books of account adjusted for certain factors to arrive at the revenue share of the Government of India.</td>
</tr>
<tr>
<td><strong>Base Transmission Station</strong></td>
<td>Base Transmission Station encodes, encrypts, multiplexes, modulates and feeds the RF signals to the antenna.</td>
</tr>
<tr>
<td><strong>Intelligent Network</strong></td>
<td>Telecommunications network architecture that has the ability to process call control and related functions via distributed network transfer points and control centers as opposed to a concentrated in-switching system.</td>
</tr>
<tr>
<td><strong>Integrated Service Digital Network</strong></td>
<td>A structured all digital telephone network system that was developed to replace (upgrade) existing analog telephone networks. This system allows voice and data to be transmitted simultaneously across the world using end to end digital connectivity.</td>
</tr>
<tr>
<td><strong>Mediation</strong></td>
<td>A network device in a telecommunications network that receives, processes, reformats and sends information to other formats between network elements. This works as an aggregator, which collect the CDR</td>
</tr>
</tbody>
</table>
from various NEs, convert into a common format and forward for billing & reporting.

**Mobile-service Switching Center**

Mobile-service Switching Center (MSC) is the central switch of a mobile or cellular radio infrastructure. Although this term is sometimes written as "Mobile Switching Center". The MSC is not itself mobile or movable.

**Optical Fibre Cable**

A thin filament of glass (usually smaller than a human hair) that is used to transmit voice data or video signals in the form of light energy (typically in pulses).

**Switch**

A network device (typically a computer) that is capable of connecting communication paths to other communication paths. Early switches used mechanical levers (cross-bars) to interconnect lines.

**Virtual Private Network**

Secure private communication path(s) through one or more data network that is dedicated between two points. VPN connections allow data to safely and privately pass over public networks (such as the Internet).
Contents

Foreword............................................................................................(iii)

Preface..............................................................................................(v)

Abbreviations...................................................................................(vii)

Glossary..............................................................................................(ix)

Chapter 1. Network Architecture of
Telecommunications Company .................................................. 1
Mobile Station (MS)................................................................. 2
The Base Station System (BSS) ........................................... 2
The Network Switching System (NSS) ................................. 3
The Operation and Support System ................................... 4
Call Flow Process........................................................................ 5

Chapter 2. The Regulatory Framework ............................................. 7
Licence Requirement..................................................................... 7
Fee .............................................................................................. 8
Radio Spectrum............................................................................ 11
Financial Bank Guarantee and Performance Bank
Guarantee.................................................................................... 13
Subscriber Verification........................................................... 13
Routing of Call............................................................................ 14
Metering and Billing Audit....................................................... 14
Quality of Service (QoS) Parameters ..................................... 16

Chapter 3. Frauds............................................................................. 17
Introduction.................................................................................. 17
External Frauds .......................................................................... 17
Internal Frauds .......................................................................... 21
Telecom Related Business Risks ............................................. 22
Chapter 11. Other Services ....................................................... 53
  Broadband Services .................................................. 53
  International Private Leased Circuit (IPLC) ............... 53
  Internet Leased Lines .............................................. 54
  Managed Data Network ............................................ 54
  Internet Protocol – Virtual Private Network
  Services (IP – VPN) .................................................. 54
  Video Conferencing (VC) ......................................... 55
  Net Telephony ....................................................... 55
  Integrated Services Digital Network (ISDN) ............. 55
  National Long Distance Leased Line ..................... 56
  Public Call Office (PCO) ......................................... 56
  Value Added Services (VAS) ..................................... 57

Chapter 12. Other Issues ........................................................... 64
  Recharge Voucher Management .............................. 64
  E-Recharge ............................................................. 65
  Card Related Issues ............................................... 65
  Channel Partners .................................................... 66
  Refund of Deposit to Customers ............................ 67
  Recovery of Handsets and Customer
  Premises Equipments (CPEs) ................................... 67
  Accounting Separation ........................................... 68
Network Architecture of Telecommunications Company
1.1 In this architecture, a mobile station (MS) communicates with a base station system (BSS) through the radio interface. The BSS is connected to the network and switching subsystem (NSS) by communicating with a mobile switching center.

**Mobile Station (MS)**

1.2 The MS consists of two parts:

- **Subscriber Identity Module (SIM):** A SIM contains the subscriber-related information including the Personal Identity Number (PIN) and PIN Unblocking Key (PUK) codes, the subscriber-related data also include a list of abbreviated and customized dialing numbers, short messages received when the subscriber is not present, and names of preferred networks to provide service, and so on. The SIM is protected by a personal identity number (PIN) of length between four to eight digits. The PIN is loaded by the network operator at the subscription time. This PIN can be deactivated or changed by the user.

- **Mobile Equipment (ME):** The ME contains the non-customer-related hardware and software specific to the radio interface. This unit is popularly known as the cell phone or mobile phone.

**The Base Station System (BSS)**

1.3 All radio-related functions are performed in the BSS, which consists of base station controllers (BSCs) and the base transceiver stations (BTSs). It connects the MS and the NSS. In a typical cellular wireless system, an area is divided geographically into a number of cell sites, each defined by a radio frequency (RF) radiation pattern from a respective base transceiver station (BTS) antenna. The base station antennae in the cells are in turn coupled to a base station controller (BSC), which is then coupled to a telecommunications switch (e.g., mobile switching center (MSC)) or gateway that provides connectivity with a transport network such as the PSTN or the Internet.
The BSC—The BSC provides all the control functions and physical links between the MSC and BTS. It is a high-capacity switch that provides functions such as handover, cell configuration data, and control of radio frequency (RF) power levels in base transceiver stations. A number of BSCs are served by an MSC.

The BTS—The BTS handles the radio interface to the mobile station. The BTS is the radio equipment (transceivers and antennas) needed to service each cell in the network. A group of BTSs are controlled by a BSC. The components of a BTS are:

- **Transceiver**: It basically does transmission and reception of signals. Additionally, it does sending and receiving of signals to/from higher network entities like the BSC.
- **Power Amplifier (PA)**: It amplifies the signal from transceiver for transmission through antenna.
- **Combiner**: It combines feeds from several transceivers so that they could be sent out through a single antenna. It is used to reduce the number of antennas.
- **Duplexer**: It is used to separate the sending and receiving signals to/from antenna.
- **Antenna**: A part of the BTS.
- **Alarm Extension System**: Collects working status alarms of various units in BTS and extends them to the Operation and Maintenance (O&M) monitoring stations.

**The Network Switching System (NSS)**

1.4 The switching system (NSS) is responsible for performing call processing and subscriber-related functions. The switching system includes the following functional units:
• **Home Location Register (HLR)**—The HLR is a database used for storage and management of subscriptions. The HLR is considered the most important database, as it stores permanent data about subscribers, including a subscriber's service profile, location information, and activity status. When an individual buys a subscription from one of the operators, he or she is registered in the HLR of that operator.

• **Mobile Services Switching Center (MSC)**—The MSC performs the telephony switching functions of the system. It controls calls to and from other telephone and data systems.

• **Visitor Location Register (VLR)**—The VLR is a database that contains temporary information about subscribers that is needed by the MSC in order to service visiting subscribers. The VLR is always integrated with the MSC. When a mobile station roams into a new MSC area, the VLR connected to that MSC will request data about the mobile station from the HLR. Later, if the mobile station makes a call, the VLR will have the information needed for call setup without having to interrogate the HLR each time.

• **Authentication Center (AUC)**—A unit called the AUC provides authentication and encryption parameters that verify the user's identity and ensure the confidentiality of each call. The AUC protects network operators from different types of fraud found in today's cellular world.

• **Equipment Identity Register (EIR)**—The EIR is a database that contains information about the identity of mobile equipment that prevents calls from stolen, unauthorized, or defective mobile stations. The AUC and EIR are implemented as stand-alone nodes or as a combined AUC/EIR node.

**The Operation and Support System**

1.5 The operations and maintenance center (OMC) is connected to all equipment in the switching system and to the BSC. The implementation of OMC is called the operation and support system.
(OSS). An important function of OSS is to provide a network overview and support the maintenance activities of different operation and maintenance organizations.

**Additional Functional Elements**

- **Message center (MXE)**—The MXE is a node that provides integrated voice, fax, and data messaging. Specifically, the MXE handles short message service, cell broadcast, voice mail, fax mail, e-mail, and notification.

- **Mobile service node (MSN)**—The MSN is the node that handles the mobile intelligent network (IN) services.

- **Gateway mobile services switching center (GMSC)**—A gateway is a node used to interconnect two networks. The gateway is often implemented in an MSC. The MSC is then referred to as the GMSC.

- **GSM interworking unit (GIWU)**—The GIWU consists of both hardware and software that provides an interface to various networks for data communications. Through the GIWU, users can alternate between speech and data during the same call. The GIWU hardware equipment is physically located at the MSC/VLR.

**Call Flow Process**

1.6 The call flow process is as follows:

**A) Outgoing call setup:**

1. The first part to mobile call processing is initialization which happens when one turns on his phone. We get a connection to a nearby cell site which means we need a frequency to transmit on. The mobile checks a frequency list contained in its SIM card.

2. Then the mobile becomes a receiver, checking for a signal from any base station within range. The mobile acts like a scanning radio, going through each frequency on its list, one
by one, testing reception as it goes. It measures the received level for each channel. The GSM system, not the handset, decides after this test which cell site should take the call. That's usually the cell site delivering the highest signal strength to the mobile.

3. Depending on the best signal strength received, usually, the nearest cell site antenna makes a radio connection with the phone. This connection is made possible by the BTS which then passes the call to a Base Station Controller (BSC).

4. The call is then passed to a mobile switching office, which communicates with local and distant databases like the HLR and VLR before allowing a call. MSC determines current location of target mobile using HLR, VLR and by communicating with other MSCs. Source MSC initiates a call setup message to MSC covering target area

**B) Incoming call setup:**

1. Target MSC (covering current location of mobile) initiates a paging message.

2. Base Stations forward the paging message on downlink channel in coverage area.

3. If mobile is on (monitoring the signaling channel), it responds to BS.

4. BS sends a channel allocation message and informs MSC.

5. Network activity: Network completes the two halves of the connection
2

The Regulatory Framework

Licence Requirement

2.1 Telecom industry is regulated by the Ministry of Communications and Information Technology, Government of India through the Telecom Regulatory Authority of India (TRAI). TRAI regulates the telecom business through licensing requirements. A telecom company can provide only those services and in such telecom circles, for which license has been granted. Any Telecom Operator intending to enter into telecom business has to fulfil the following licensing requirement:

- Foreign equity in the paid up capital of the licensee company should not, at any time during the entire licence period, exceed such percentage of total equity as has been mentioned in the licence agreement or as decided by the Government of India from time to time.

- Licensee shall have a minimum paid up equity capital of such amount as has been mentioned in the licence agreement or as decided by the Government of India from time to time.

- The Licensee Company and its promoters shall have to maintain a combined net-worth as prescribed in the licence agreement or as decided by the Government of India from time to time.

- Licence shall be valid only for the period, services and for telecom circles mentioned in the agreement.
Fee

2.2 As per the Financial Terms and Conditions of the Licence agreement, a telecom operator has to pay the following fees:

Entry Fee

2.3 This is a one-time fee which an operator is required to pay before signing the agreement. At present the entry fee for National Long Distance (NLD)/International Long Distance (ILD) Licence is Rs. 2.50 Crore each.

Licence Fee (Revenue Share)

2.4 In addition to the Entry fee, a licensee is also required to pay licence fee on quarterly basis in the form of revenue share at the prescribed rate on the Adjusted Gross Revenue (AGR), viz,

- For first three quarters of the financial year - within 15 days of completion of the relevant quarter on actual revenue on accrual basis.

- For last quarter – by 25th of March of each financial year, on estimated basis but not less than the payment made in the 3rd quarter.

Each quarterly instalment of the Licence Fee is payable based on the Adjusted Gross Revenue, duly certified, along with an affidavit by a representative of the Licensee, authorised by the resolution passed by the Board of Directors of the Licensee Company.

2.5 The Licence Fee varies based on the type of service and classification of telecom circles as may be prescribed by TRAI from time to time. License Fee for NLD/ILD is 6% of AGR for each service and for V-SAT/Internet Telephony is 6 % of AGR. NLD /ILD and V-SAT Licenses are on all India basis. Adjusted Gross Revenue includes installation charges, late fees, sale proceeds of handsets, revenue on account of interest, dividend, value added services, supplementary services, access or interconnection charges, roaming charges, revenue form permissible sharing of infrastructure and any other miscellaneous revenue, without any set off for related item of
expense, etc. and for arriving at the Adjusted Gross Revenue following expenses only are allowed as deduction:

- PSTN (Public Switched Telecom Network) related call charges (Access Charges) actually paid to the other eligible / entitled telecommunication service providers (not applicable from 1st April, 2008);
- Roaming revenue actually passed on to the other eligible / entitled telecommunication service providers; and
- Service Tax on provision of service and Sales Tax actually paid to the Government if component of Sales Tax and Service Tax has been included in the Gross Revenue.

2.6 The above definition of AGR was challenged with Telecom Disputes Settlement and Appellate Tribunal (TDSAT) by the telecom companies and their association on the following grounds:

i. Present definition of AGR includes several revenue streams unrelated to service activities like interest and dividend income from investments, revenues from sale of handsets, capital goods, sharing / leasing of infrastructure.

ii. Definition of AGR does not allow certain legitimate deductions like bad debts, etc.

iii. Income is considered on an accrual basis while deductible expenses are considered on an actual / pass through basis.

iv. Interest income from short-term investment of surplus capital or surplus incomes on which a revenue share has already been paid in the previous year.

v. All deposits credited in the Profit and Loss Account are included in the revenues.

2.7 TDSAT in its judgment emphasized on the basic factor that “The licence uses the words, revenue arising from licensed activity.” Therefore, one has to always apply the test, whether the revenue sought to be included in AGR arises from licensed activity. Keeping this in view, TDSAT allowed for exclusion of following types of revenues from the AGR:

i. Income from dividends
ii. Capital Gain from sale of fixed assets and investments
iii. Interest on investments
iv. Gains from foreign exchange fluctuations
v. Reversal of provisions for bad debts and taxes etc.
vi. Revenue from sale of unbundled handsets
vii. Other miscellaneous revenue earned from management consultancy fee, Insurance Claims
viii. Payments received on behalf of third parties
ix. Receipts from the Universal Service Obligation (USO) funds
x. Bad debts, waivers and discounts given to realise the amount

2.8 The Telecom Companies are also required to submit the following documents to Controller of Communication Accounts (CCA):

   a) On Quarterly basis

   i. Audited statement of Revenue and License Fee.

   ii. Auditors Report

   iii. Affidavit duly signed by authorised signatory as per Board’s resolution

   iv. Operator wise details of actual Interconnection Usage Charge (IUC) payment.

   b) On Annual Basis

   i. Audited annual accounts

   ii. Reconciliation of Gross Revenue (GR), AGR and audited accounts.—within seven days of signing the audited annual accounts.
Radio Spectrum

Radio Spectrum Requirement

2.9 The spectrum is allotted for various purposes: analog TV broadcasts get a certain slot (from 54 to 88 MHz, 174 to 216 MHz and 470 to 806 MHz), FM radio gets a certain slot (88 to 108 MHz), AM radio gets a certain slot (535 to 1700 kHz). Telecommunication systems also require a certain amount of electromagnetic bandwidth to operate; accordingly cellular communications (mobile phones) get certain slots.

2.10 As the world becomes increasingly wireless (with cordless phones, cell phones, wireless internet, GPS devices, etc), allocation of the available spectrum to each technology becomes increasingly contentious. Each user community (usually Mobile Service Providers) wants more bandwidth in order to be able to sell and service more units. For any given slot of bandwidth, there is a limited amount of data that can be shared in that bandwidth, so vendors want more bandwidth so they can handle more devices in a given area.

Radio Spectrum Charges

2.11 In addition to Entry Fee and Licence Fee, the Licensee is also required to pay fees and royalty for the use of radio frequencies on the basis of specified percentage of AGR as per the details prescribed by the Wireless Planning and Coordination Wing (WPC) of DoT. The spectrum charges for Global System for Mobile Communications (GSM) is collected as a percentage of AGR while Code Division Multiple Access (CDMA) spectrum a percentage of AGR as well as fixed charges for point to point links (microwave access) and backbone links of all Unified Access Service Licence (UASL) Licensees using CDMA spectrum.
### Table of Spectrum Charges

<table>
<thead>
<tr>
<th>Quantum of Spectrum allotted (MHz)</th>
<th>Spectrum Charges CDMA (% of AGR)</th>
<th>Spectrum Charges GSM (% of AGR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upto 4.4 + 4.4</td>
<td>--</td>
<td>2%</td>
</tr>
<tr>
<td>Upto 5.0 + 5.0</td>
<td>2%</td>
<td>--</td>
</tr>
<tr>
<td>Upto 6.2 + 6.2</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>Upto 10.0 + 10.0</td>
<td>4%</td>
<td>4%</td>
</tr>
<tr>
<td>Upto 12.5 + 12.5</td>
<td>5%</td>
<td>5%</td>
</tr>
</tbody>
</table>

### Table of Microwave Access and Backbone Charges

<table>
<thead>
<tr>
<th>Spectrum Bandwidth</th>
<th>Spectrum charges (% of AGR)</th>
<th>Cumulative Spectrum charges (% of AGR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Carrier of 28 MHz (paired)</td>
<td>0.15%</td>
<td>0.15%</td>
</tr>
<tr>
<td>Second Carrier of 28 MHz (paired)</td>
<td>0.20%</td>
<td>0.35%</td>
</tr>
<tr>
<td>Third Carrier of 28 MHz (paired)</td>
<td>0.20%</td>
<td>0.55%</td>
</tr>
<tr>
<td>Fourth Carrier of 28 MHz (paired)</td>
<td>0.25%</td>
<td>0.80%</td>
</tr>
<tr>
<td>Fifth Carrier of 28 MHz (paired)</td>
<td>0.30%</td>
<td>1.10%</td>
</tr>
<tr>
<td>Sixth Carrier of 28 MHz (paired)</td>
<td>0.35%</td>
<td>1.45%</td>
</tr>
</tbody>
</table>
2.12 The Spectrum Charges are required to be paid in advance on quarterly basis within 15 days of the beginning of relevant quarter on the basis of estimated AGR. Spectrum charges are levied on the AGR of the full circle despite allocation of additional spectrum that may have been made for a city/part of licensed area. The Government of India is considering of levying fixed charges for allocation of spectrum.

**Calculation of Interest / Penalty on Delayed Payment**

2.13 Penal interest to be levied for delayed payments is on the same terms and conditions as in the main DOT license agreement. However, for the time being the work of computation of interest/penalty/short payment etc. will continue to be done by the DOT and any demands on this account will be raised only by DOT.

**Financial Bank Guarantee and Performance Bank Guarantee**

2.14 Further, Licensee has to submit Performance Bank Guarantee (PBG) and Financial Bank Guarantee of prescribed amount as has been mentioned in the licence agreement. The Internal Auditors need to examine the Licence agreement to ensure that there is no default, w.r.t., financial and other conditions specified in the agreement as any default may lead to suspension / cancellation of license and the very existence of the company may be in jeopardy.

**Subscriber Verification**

2.15 TRAI has issued detailed guidelines, w.r.t., verification of subscribers at the time of acquisition, such as, obtaining and verification of Point of Interest (POI) / POR from the subscribers. The compliance with these guidelines is mandatory for every operator. As such, internal auditors should check and satisfy that the company has proper controls for verification of identity and address of the subscriber, at the time of acquisition of customer, so that, compliance with the TRAI guidelines are ensured.
Routing of Call

2.16 Telecom Company has to route the call through the trunk allotted by the other telecom company for transmission of calls to other telecom company’s network. There are dedicated trunks for carrying Local, NLD, ILD calls. A telecom company can not route local calls either through NLD or ILD trunk and vice versa. Any violation of these conditions may attract penalty. Internal auditor should understand these provisions and verify interconnect bill or any notice received in this regard from other telecom company to find out whether any penalty is levied on the company.

Metering and Billing Audit

2.17 In order to bring standardisation and transparency in the metering and billing procedures being followed by various operators, TRAI developed a regulation “Quality of Service (Code of Practice for Metering and Billing Accuracy) Regulation 2006”, which has benchmarks for metering and billing system. The salient features of Code are as follows :-

   i. Before a customer is enrolled as a subscriber of any telecommunication service, he shall be provided in advance with detailed information relating to the tariff for using that service. Further, the service provider shall inform the customer in writing, within a week of activation of service, the complete details of his tariff plan.

   ii. Where a value-added service (e.g., download of content, such as a film clip or ring tone) or entry to an interactive service (such as a game) can be selected through a choice of the service user (e.g., by dialing a specific number) then the charge for the service must be provided to the customer before he commits to use the service.

   iii. The services provided to the customer and all subsequent changes therein shall be those agreed with
him in writing prior to providing the service or changing its provisions.

iv. All the charges must be consistent with published tariff applicable to the user.

v. Payments made by a post-paid customer shall be credited to his account immediately for cash payment and within reasonable time in case of cheque payment. For pre-paid customers, top-up credit shall be applied to a customer’s account within 15 minutes of its application.

vi. Where the service provider unilaterally intends to restrict or cease service to the customer, a notice shall be provided to the customer in advance of such action so that the customer has reasonable time to take preventive action to avoid restriction or cessation of service.

vii. The service provider shall have a documented process for identifying, investigating and dealing with billing complaints and creating appropriate records thereof.

viii. Reliability performance of the total metering and billing system should be within the tolerances specified by TRAI.

ix. The telecom company shall submit the compliance of code of practices adopted to TRAI on yearly basis.

x. The Authority has notified a panel of agencies capable for auditing the metering and billing system to certify the adequacy of Metering and Billing System of Telecom Company.

xi. The telecom companies shall arrange audit of their Metering and Billing System in compliance with this regulation on an annual basis through any one of the auditors notified by the Authority and an audit certificate thereof shall be furnished to the Authority not later than 30th June of every year.
The internal auditors should satisfy themselves that the audit is carried out by the notified auditors and that the company has taken corrective actions on the observations reported by the auditors.

**Quality of Service (QoS) Parameters**

2.18 Telecom Regulatory Authority of India has prescribed quality of service parameters for various Basic Wireline and Wireless and Cellular Mobile Telephone Services (CMTS), e.g. provision of telephone, fault repair, grade of service, call completion rate, response time to customer for assistance network performance, billing complaints and customer perception of services, etc. The internal auditors need to acquaint themselves with these parameters, analyse the relevant data and report the adverse features observed to the management.
Frauds

3

Introduction

3.1 Fraud is a constantly evolving, many-faceted phenomenon. When the first analogue mobile communications networks were launched, weaknesses in the security, particularly the lack of encryption of both the voice channel and the authentication data made the networks susceptible to eavesdropping and cloning. With the change of technology, ingenious ways of fraud are also emerging. As per an estimate, there are more than 200 types of telecom frauds that exist and number is increasing with the advent of 3G services.

3.2 There is a very thin line between fraud and negligence. As far as telecom is concerned, it may be difficult to establish frauds when mistakes occur in activities like configuration of switches/rate plan in billing system, waivers and adjustments and acquisition of non-paying subscribers. Fraud in telecom industry may be described as any service obtained without intention of paying. Some common types of frauds in telecommunications industry are discussed in the following paragraphs.

External Frauds

Subscription Fraud

3.3 Subscription fraud may be of two types. Firstly, connection is obtained by providing fraudulent documents / information and secondly, after providing the correct documents, a customer uses the network for making NLD/ILD and roaming calls. The fraudsters
start building up his credit limit by paying initial bills and as he enjoys the increased credit limit, he makes large number of NLD/ILD calls with no intention to pay the bill.

3.4 For dealing with the first category of fraud, the telecom company should have practice of verifying the original documents, proper address and credit verification of customers, so that, there is a minimal possibility of committing such frauds. Internal auditors should verify that these practices are rigorously followed by the operational team of the company.

3.5 Handling of second category of subscriber fraud poses a great difficulty as there are no preventive measures and in many cases, the amount due from customers is lower than the cost of recovery and legal actions. But by adopting the following measures, telecom companies may be able to reduce their exposure:-

i. Putting adequate de-duping processes (checking of the data base of existing bad and suspended/terminated customers) in place to ensure that existing bad suspended/terminated customer do not re-enter into the system by having a new connection.

ii. Evaluation of credit rating of the customers and assigning credit limit and allowing him to keep exposure upto his assigned credit limit.

iii. Efficient dunning policy, so that, the customers are made aware about exceeding credit limit and initiating barring of services in case exposure is above deposit / credit limit. However, care should be taken by the company that the premier customers are not affected.

iv. Regular monitoring of high usage and exceptionally long duration ILD/NLD calls.

v. Regular monitoring of the calls made during odd hours e.g. late night, early morning calls.

vi. There should be clear guidelines for screening of subscription forms and to verify identity of subscriber.
vii. Analysis of undelivered bills even though the payment is being received in respect thereof. The fraudsters may pay the initial bills with no intention to pay future bills of large amounts.

3.6 Further, TRAI has made mandatory for all operators to verify the identity of all their prepaid and postpaid subscribers. The internal auditor should evaluate whether the company has adopted requisite practices. They should be more vigilant while verifying the proof of identity and proof of address of the subscribers as the connections taken through fraudulent documents may lead to serious implications in addition to loss of revenue to the company.

**Illegal Telephone Exchanges**

3.7 These exchanges terminate voice over internet protocol (VoIP) International calls over public switched telephone network (PSTN). Fraudster receives international calls from foreign countries over VoIP (through an ISP). VoIP calls forwarded to desired destinations within country by using switching equipment which may cause loss of ADC charges. Telecom company may have to pay heavy penalty on detection of such calls by the authorities. Such frauds can be prevented or detected by adopting following measures:

i. Encourage the customers to report the display of local calling numbers for International calls.

ii. By putting an appropriate configuration of alarms in the Fraud Management System for long duration ILD/NLD calls and analysis of high usage of suspicious calls.

iii. Implement a system to identify the subscribers of high usage in a BTS or nearby BTS,

iv. Subscribers verification process to be tightened,

v. Analyse the incoming and outgoing call ratios.

3.8 Internal Auditor should analyse the reports of Revenue Assurance and Fraud Management Cell and satisfy himself that the appropriate and timely steps are taken to detect and prevent such frauds.
Cloning of Handsets and SIM Cards

3.9 In cloning fraud, the phone's authentication parameters are copied into other handsets, so that the network believes that it is the original handset that is being authenticated. The telecom company charges the calls to original customer who will obviously deny having made such calls and consequently the telecom company will lose its revenue.

3.10 Cloning of Handsets / SIM cards is re-emerging as a significant threat to mobile operator's revenues. It allows fraudsters to make high value calls for which the telecom company can not collect any revenue. In addition, in most cases of cloning, the operator will have to make substantial payments in the form of IUC charges to other telecom companies. Such frauds can be identified by analyzing the call collusion / call velocity and calling pattern.

Credit Card Frauds

3.11 Many telecom companies accept e-payments and credit card payments. A fraudster may make payment by using a third party credit card number and three digit Card Verification Value (CVV) number. Subsequently, original card holder may refuse to pay the amount, claiming that he has not used the credit card. In such scenario, the credit card company may charge back the amount which may result into loss to the telecom company. The exposure to such type of frauds can be restricted by:-

a. Putting a limit on number of swipes in a given time frame.

b. Specifying the limit on the maximum of amount of payment which can be made through credit card.

c. Monitoring of payments of multiple bills using same credit card.

d. Monitoring that batch closures for the credit cards by which credit card company makes payment is done timely and such batch closure report to be scrutinised for identification of frauds.
Internal Auditor should critically examine the above reports and verify the internal controls implemented by the company to prevent such frauds.

**Premium Rate / Value Added Services related Frauds**

3.12 Telecom Companies are providing Premium Rate Numbers (i.e. 52222, 59999, 57777 etc.) to their customers for value added services, wherein, all calls are charged at a very high rate. Content provider for Premium Number Service is entitled for revenue share on the basis of the number of incoming calls. In such a scenario, a content provider may try to get the maximum number of calls using all tactics e.g. content provider may obtain another number with fraudulent documents / information with no intention to pay the bill and will make calls to Premium Rate Number for getting higher revenue.

This can be detected and prevented by monitoring the activities of Premium Rate Services, traffic pattern and CDR's of Premium Rate Numbers.

**Internal Frauds**

**Dealer Fraud**

3.13 A telecom company appoints dealers, distributors, channel partners for various business activities such as acquisition of customers, collection of bills, etc. These channels will get commission/incentives on the basis of different slabs for total number of new acquisitions / connections, collection targets achieved, etc. On the other hand they are penalised for not achieving the collection targets. Sometimes to maximise commission/ incentives or to avoid penalties these channels may use fake documents for acquisitions of customers or may make fake entries for collection of bills. They may delay deposit the amount collected. This can be detected by having:-

i. Effective implementation of guidelines issued for screening of subscription forms and verification of identity and address of subscriber.
ii. Robust process for timely bank reconciliation of collections made.

iii. Review of channel partner’s profitability and policies on an ongoing basis.

iv. Incentives/commissions policy can be structured in such a manner that it will not encourage the malpractices by penalizing the Channel Partners in addition to non-payment of commission.

Wrong Configuration in Operating Systems

3.14 Telecom Company has to configure various data, such as subscriber data, tariff plans, Call charges, in the various operating systems like switches, phonegen, billing system, etc. The bills are generated after matching of entire data in these operating systems. The employee of Telecom Company may fraudulently modify the data, i.e. they may configure the switches in such a manner that the CDR is not generated for particular Number(s) or they may configure/modify the different tariff plan etc. This can be detected by effective monitoring of configuration of tariff plans and exceptional reports of billing systems/ switches etc.

Telecom Related Business Risks

3.15 The telecom industry in India is exposed to various business risks due to the following reasons:-

i. Fast pace of growth of the telecommunication industry;

ii. The enormous data being generated and handled due to large subscriber base;

iii. The revenue per subscriber is very low due to which cost of collection of revenue is higher;

iv. Fast changing technology; dearth to keep ahead on innovative technology;

v. Fierce competition amongst all the Telecom Service Providers;
vi. Catering to the varying customer needs in the global marketplace;


Every telecom company therefore needs to have an effective Enterprise Risk Management framework in place for enhancing business performance by:

a. Identifying and managing strategic, operational, financial, compliance and financial reporting related risks on a real time basis across the enterprise;

b. Institutionalising and embedding the risk assessment, mitigation and monitoring processes across and within the enterprise; and

c. Strengthening Corporate Governance mechanism to enhance stakeholder's value. Clause 49 of the listing agreement requires that all companies should have an effective Enterprise Risk Management framework in place.

3.16 Some of the business risks relevant to telecommunication business in general are as follows:-

i. Allocation of Spectrum by Government is one of the biggest risk persisting in the Indian telecommunication business. If the required spectrum is not allocated, operators may not be able to provide innovative value added services;

ii. Since the volume of data is very large, there may be limitations of existing IT systems to support new service offerings.

iii. Due to enormous volume of data, the telecom fraud management system and revenue assurance system may not be adequate. As per a survey carried out by Subexazure, the average fraud loses have risen to 4.5% of the turnover in 2007 as against 2.9% in 2006.

iv. Inadequate disaster recovery / business continuity policy and processes. The capital cost of having a parallel disaster recovery system is very high.
v. Due to abnormally large volume of data, the data archival and retrieval processes may not be adequate.

vi. Establishment of an enterprisewide IT risk management program to identify, monitor and mitigate risks to IT infrastructure.

vii. The data is handled at various levels and by various outside agencies such as franchisees, channel partners, collection agencies etc., hence it is very difficult to maintain business information security.

viii. There are challenges in respect of customer service and timely complaint resolution. These challenges are resulting into customer dissatisfaction. This ultimately results into impacting company’s image which causes subscribers churn and revenue loss.

ix. Poor information flow from business groups resulting in delay in network upgradation decisions.

x. Internal scaling of operations may fall short of market demands thereby cause loss of potential revenue.

xi. Inaccurate estimate of the demand for network service and inability to continuously optimise standard specifications for passive infrastructure to reduce capital expenditure.

xii. Revenue leakages from postpaid, prepaid, interconnect and roaming billing systems may not be identified and plugged timely.

xiii. Revenue growth may lag substantially behind the subscriber growth, due to progressive reduction in Average Revenue Per User (ARPU).

xiv. Time to configure new products in the systems may be higher than the other operators, leading to delay in launching new products.

xv. Obtaining Right of Way (ROW) permissions for laying the cables particularly for last mile connectivity in respect of
wire line business in metropolitan and other towns, is a challenge.

xvi. Due to involvement of various agencies and performance pressure, the subscriber’s documents may not be genuine thereby violating the TRAI guidelines and also result in loss of revenue to the company.

xvii. The acute shortage of skilled manpower in telecom industry.

xviii. Telecom industry is also witnessing a very high employee attrition.

3.17 The internal auditor needs to acquaint himself with the Enterprise Risk Management plan undertaken by the company and should monitor whether the telecom company is taking actions as per the risk mitigation plans.
Revenue Assurance and Revenue Recognition

Revenue Assurance and Leakages

4.1 The areas covered under revenue assurance review would *inter alia* include the review of processes related to Call Data Record (CDR) generation, CDR processing, rate plan configuration, billing and rating for prepaid, postpaid, roaming, IUC and VAS revenue streams. Determination and recognition of revenue in case of telecom company is not simple. In telecom industry, revenue is earned on the basis of number of minutes services used (MoU). There is no single rate for applying to number of minutes services used. There are number of tariff plans which are configured in system and the customers are billed as per the plan applicable to them. The revenue is generated on the basis of CDR which is a record containing information relating to a single call. It contains the information such as caller number, called number, duration of call, place of origin, and destination, etc. In a broader way, the revenue can be determined, assured and recognised by adopting the steps enumerated below.

4.2 When a call is made, it is transmitted to the nearest ‘Switch’ of the telecom operator, so that, it identifies the calling number and destination (called number) and routes the call as per the predefined rules. Switch identifies the call and differentiates postpaid and prepaid subscribers and also the type of calls. Prepaid calls are diverted to the prepaid billing software first to find out whether subscriber is eligible to make a call and subsequently for rating of CDRs as per prepaid tariff plans and necessary adjustments in the
customers talk time balance. Postpaid CDRs are pooled in the ‘Mediation’ (a call interpreting application) software, for further filtration and chargeable CDRs are sent to billing software in readable form, for rating and generation of bill. The customer data and the applicable tariff plans are pre-configured in the billing software. The bills are generated by matching CDRs with the configured data. This has been explained in the following exhibit.

4.3 Telecom companies should also analyse the root causes of revenue leakages. Substantial revenue is lost because of the following reasons:

- Prepaid CDR may be configured as postpaid CDR and vice versa, hence call may be allowed without reducing the balance of prepaid subscriber and not charged in case of postpaid subscriber.
- Prepaid calls may not be charged on ‘Real Time’ basis and the subscriber may get through with the calls without having adequate balance in his account.
- Configuration in ‘Switch’ may be wrong and CDRs may be blocked to be generated.
Wrong configuration of tariff plans in the Prepaid/Postpaid billing system.

CDRs generated by ‘Switches’ may not be forwarded to the billing system due to system constraints, such as high volume of data at particular point of time, lack of synchronisation between the systems.

Call duration discrepancies in CDRs between ‘Switch’ and billing system, due to system constraints.

Chargeable CDRs as per ‘Switches’ may appear as non chargeable in billing system.

4.4 Internal auditor should verify that the company has proper revenue assurance process and that these processes are being followed and the necessary corrective actions are taken. They should verify the ‘error CDRs’ to analyse the reasons for non-rating of CDRs.

Revenue from Roaming

4.5 Roaming is a general term refers to the extending of connectivity service in a location that is different from the home location.

4.6 Traditional Roaming is defined as the ability for a cellular customer to automatically make and receive voice calls, send and receive data, or access other services, including home data services, when travelling outside the geographical coverage area of the home network, by means of using a visited network.

Types of Roaming

4.7 Various types of roaming is as follows:

- National Roaming: This type of roaming refers to the ability to move from one mobile operator to another in the same country
Revenue Assurance and Revenue Recognition

- **International Roaming**: This type of roaming refers to the ability to move to a foreign service provider's network.

- **Within Operator**: Roaming within India on Telecom Operators own Network.

**Roaming Process**

4.8 When the mobile device is turned on or is transferred via a handover to the network, this new "visited" network sees the device, notices that it is not registered with its own system, and attempts to identify its home network. If there is no roaming agreement between the two networks, maintenance of service is impossible, and service is denied by the visited network.

4.9 The visited network contacts the home network and requests service information (including whether or not the mobile should be allowed to roam) about the roaming device using the IMSI number.

4.10 If successful, the visited network begins to maintain a temporary subscriber record for the device. Likewise, the home network updates its information to indicate that the mobile is on the host network so that any information sent to that device can be correctly routed.

**Roaming Agreement**

4.11 In order that a subscriber is able to "latch" on to a visited network, a roaming agreement needs to be in place between the visited network and the home network. This agreement is established after a series of testing processes called IREG and TADIG. While the IREG testing is to test the proper functioning of the established communication links, the TADIG testing is to check the billing part.

4.12 The usage by a subscriber in a visited network is captured in a file called the TAP (Transferred Account Procedure) for GSM file and is transferred to the home network. A TAP file contains details of the calls made by the subscriber viz. location, calling party, called party,
time of call and duration, etc. The TAP files are rated as per the tariffs charged by the visited operator. The home operator then

**Credit Control**

4.13 In order to have control over exposure towards postpaid subscribers, every telecom company implements credit control policy. The primary objective to have a credit control policy is to ensure that 100% of dues are collected on time, reduce exposure, and define the documents and approval required to give “Credit Limits” to the subscribers.

4.14 Under the credit control policy, a credit limit is assigned to each of the postpaid subscribers, based on the tariff plan, past usage, payment history and credit worthiness of the subscribers. The credit limit is constantly upgraded/downgraded based on the above factors. The Telecom company should inform the customer about fixing/ change in the credit limit. It is also mandatory to mention the credit limit in every invoice raised to the customers.

4.15 The internal auditor needs to examine the credit policy implemented by the telecom company and its effectiveness by verifying the process of configuration of credit limits to various categories of subscribers. He should also verify the dunning process followed by the telecom company.

**Dunning Process**

4.16 Dunning is the process of methodically communicating with customers to ensure the collection of accounts receivable. It follows the process that progresses from gentle to strict reminders (through calls, letters/ calls/ SMSs) as accounts become more past due. There are two types of dunning process, as follows:-

a. **Time based dunning**

In this process, customer is reminded about the payment of bill on the specified time, before the due date, on the due date and after the due date of the payment.
b. Value based dunning

In this process, as customer’s unbilled amount approaches close to its predefined credit limit, telecom company reminds him about his exposure and advise him to make the payment for uninterrupted continuation of services.

4.17 Dunning process includes the termination of services of the defaulting subscribers step by step, e.g. initially, the outgoing ILD is barred, then outgoing NLD services are barred, and so on. Finally, all the services including incoming calls to the defaulting subscribers are barred. The internal auditor should verify that the telecom company has an effective dunning policy in place, the customers are terminated and recovery process is started as per the policy.

**Waiver Management**

4.18 Sometimes customer complains of incorrect bill sent to him and subsequently there are issues relating to waiver and adjustments. Waiver management is an incidental function in telecom industry. There are various types of waivers which are granted at various levels. Every telecom company has its own policy and guidelines for grant of waivers. Generally, following are the reasons for which waivers are granted: -

a. Late Payment Charges

b. Configuration of incorrect tariff plan

c. Incorrect calls time as well as number called being charged to the customer

d. Generation of bill comprising of rental charges even after surrender of connection

e. Concession promised to corporate customers, not reflected in the bill

f. Waiver due to goodwill gesture
Since grant of waiver results in loss of revenue, these should be granted very judiciously. There should be proper policy, guidelines and the authority matrix.

4.19 The internal auditor should analyse the reasons of waivers and ensure that these are as per policy and proper supporting are available and waiver is as per authority matrix and it should result in actual realisation of revenue.

**Revenue Recognition**

4.20 Generally, revenue is recognised on providing the services. However, there are certain services for which money is collected in advance and provision of services are deferred and it is difficult to allocate the revenue over the period of service. In absence of standard industry guidelines, there is no clarity for recognizing certain revenue. Few such cases are discussed below:

**Postpaid Service Revenue**

4.21 Recognition of revenue in case of postpaid services is simpler and uniformly recognised by the various companies more or less on the accepted principle of recognition of revenue. The internal auditor should ensure that the rental charges have been apportioned properly.

**Prepaid Service Revenue**

4.22 Prepaid service revenue (Recharge Vouchers) can be bifurcated into three segments, i.e.,

a) Service/ Administrative Charges or Fee,

b) Service Tax payable to the Government and

c) Talk time available to the subscriber.

Service Tax amount is payable to the Government on of sale RCVs to the dealers/distributors. In case of Administration Charges and ‘Talk Time’, different practices are followed for revenue recognition by different telecom companies. The internal auditor should verify
that the accounting policies adopted by the company, in respect of revenue recognition have been consistently followed.

**Issues With Reference to Lifetime Validity Offer for One Year or More**

4.23 While recognising the revenue in respect of ‘Life Time Validity’ offer, various factors included in the offer need to be looked into. Though the offer may mention the period “during the validity of the licensed period” but there are possibilities that licensed period may get an extension. It has been seen that prepaid customers have a tendency to churn out within 18 to 24 months. Hence legally, the services are to be provided for the lifetime, practically services will be provided for a period of 18 months to 24 months.

As there are no industry guidelines with reference to administration charges/talk time and method of identifying estimated useful life of the subscriber, internal auditors should verify that the accounting policies adopted by the company have been adhered to consistently. They should bring out the changes, if any, made in subsequent years from the accounting policies.

**Registration, Processing and Activation Charges**

4.24 These charges are levied to the customer at the time of acquisition. Revenue is generally recognised either immediately or on the activation of services by the customer or differed and amortised over the related estimated customers relationship period, as derived from the estimated customer churn period.
5.1 Every telecom company should have a robust system of surveillance and maintenance of network as failure of the network will disrupt the services which can cause customer dissatisfaction and churn of customers. Down time monitoring is a crucial requirement in such scenario.

Infrastructure Sharing Charges for Passive Links (Point of Interconnection) of Telecom Companies

5.2 Every off net call (i.e. calls to other operators network) has to be routed though ‘Point of Interaction’ (POI) as per TRAI guidelines. For obtaining POI, port and other charges are payable to other telecom company as agreed mutually subject to overall ceiling laid down by TRAI. This has following structure.

(a) Port Charges
(b) Active Link Charges
(c) Passive Link Charges

5.3 Every telecom company has right to demand for POI on payment of charges in advance on annual basis subject to ceiling laid down by TRAI. All telecom companies are bound by regulation to provide the Port to other company on demand and on payment of port charges subject to availability of ports, sufficiency of traffic and technical feasibility.
Port Charges

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Port Charges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of Implementation</td>
<td>April 1, 2007</td>
</tr>
<tr>
<td>Coverage</td>
<td>Charges for Ports (other than the Port Charges for Internet, which are specified in Schedule VI of the Telecommunication Tariff Order 1999)</td>
</tr>
<tr>
<td>Port Charges covering all switches</td>
<td>No. of Ports</td>
</tr>
<tr>
<td>1 to 16 PCMs</td>
<td>N*39000</td>
</tr>
<tr>
<td>17 to 32 PCMs</td>
<td>6,24,000 + (N-16)*22,500</td>
</tr>
<tr>
<td>33 to 64 PCMs</td>
<td>9,84,000 + (N-32)*14,500</td>
</tr>
<tr>
<td>65 to 128 PCMs</td>
<td>14,48,000 + (N-64)*11,500</td>
</tr>
<tr>
<td>129 to 256 PCMs</td>
<td>21,84,000 + (N-128)*10,500</td>
</tr>
</tbody>
</table>

Note: N refers to the number of Ports within the capacity ranges under the column 'No of Ports'

Active Link Charges

5.4 In addition to Port Charges, a telecom company has to pay to BSNL, Active Charges. These are the links of Licensed Telecom Service Providers for which transmission equipment of service provider is installed in BSNL’s exchange premises and their network is connected through it. The rental charges of infrastructure in this case have been streamlined and are given below:

i. Charges for sharing of building space
Technical Guide

ii. Electricity and miscellaneous charges
iii. Charges for tower sharing
iv. Charges for duct sharing

**Charges for Sharing of Building Space**

5.5 The Licensed Telecom Service Providers are given space (bay) for installation of their various equipments. The charges vary based on the category of the city.

<table>
<thead>
<tr>
<th>Categories of City</th>
<th>Charges</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Rs. 36,000 per bay per annum</td>
</tr>
<tr>
<td>B</td>
<td>Rs. 28,000 per bay per annum</td>
</tr>
<tr>
<td>C</td>
<td>Rs. 20,000 per bay per annum</td>
</tr>
<tr>
<td>Unclassified</td>
<td>Rs. 13,000 per bay per annum</td>
</tr>
</tbody>
</table>

**Miscellaneous Infrastructure Service Charges**

5.6 These charges include the sharing of following services:

- DC power at –48V up to 10 A/ transmissions bay;
- AC power for lights, fans, testing instruments etc;
- Air-conditioning charges (sharing of existing air-conditioning system);
- Generator Backup;
- Earthing charges (Tapping from exchange earth bar is allowed)
- Fire equipment (Sharing in case of requirement)
Charges for providing these facilities are varying as per the category of city, the rates for these categories of cities are as under:

<table>
<thead>
<tr>
<th>Categories of City</th>
<th>Charges</th>
</tr>
</thead>
<tbody>
<tr>
<td>A cities</td>
<td>Rs. 2,00,000 per bay per annum</td>
</tr>
<tr>
<td>B cities</td>
<td>Rs. 1,80,000 per bay per annum</td>
</tr>
<tr>
<td>C cities</td>
<td>Rs. 1,50,000 per bay per annum</td>
</tr>
<tr>
<td>Unclassified cities</td>
<td>Rs. 1,20,000 per bay per annum</td>
</tr>
</tbody>
</table>

**Tower Charges**

5.7 Charges per antenna are as under

<table>
<thead>
<tr>
<th>Tower Height All Cities</th>
<th>Charges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 30 meters</td>
<td>Rs. 1,20,000 per annum</td>
</tr>
<tr>
<td>31-60 meters</td>
<td>Rs. 2,50,000 per annum</td>
</tr>
<tr>
<td>More than 60 meters</td>
<td>Rs. 4,00,000 per annum</td>
</tr>
</tbody>
</table>

The above charges will be multiplied by no. of antennas in case multiple antennas are installed by Licensed Telecom Service Providers.

**Duct Charges:**

5.8 Telecom operators have to take permission to lay their OFC cable, 50 mm pipe inside the BSNL exchange premises after paying a refundable security of Rs.50,000.

5.9 All the charges discussed in (i) to (iv) above are applicable w.e.f. 1st April, 2006 with a provision of 10% annual increase every year i.e., 01/04/07 onwards and are payable in advance every year.

**Passive Link Charges**

5.10 Apart from Port Charges and Active Link Charges, telecom operators have to pay following charges to BSNL for providing passive link connectivity for ‘Pols’ between BSNL and telecom operator :-
Technical Guide

i. Infrastructure Charges for passive links with HDSL modem, @ Rs. 15000/- per annum

ii. Infrastructure Charges for passive link with HDSL modem, @ Rs. 3000/- per annum. However minimum infrastructure sharing charges up to 5 EIs shall be Rs. 15000/-

5.11 The internal auditor should verify that the company has applied the ports/other infrastructure based on the proper planning and estimated requirement, so that, the excessive payment is not made for unwarranted infrastructure.

Interconnection Usage Charges (IUC)

5.12 Interconnect Usage Charges consist of following factors:-

1. Access Deficit Charges (ADC charges)
2. Carriage Charges (NLD/NLD charges)
3. Call Termination Charges

Access Deficit Charges (ADC charges)

5.13 The National Telecom Policy 1999 requires telecom companies to have access to telephony even in the rural areas. Since BSNL was the only service provider in rural areas and its revenues were not enough to cover up the fixed costs, Access Deficit Charges (ADC) have been introduced by TRAI from May 1, 2003 for a limited period to give time to incumbent operators for rebalancing the tariff during a transition period. The ADC regime w.e.f. April 1, 2007 is as follows:

- No ADC on outgoing ILD calls.
- On incoming ILD calls- Re. 1 per minute
- ADC on revenue share is 0.75% of AGR of all Access License, NLD, and ILD.
- Revenue from rural wire-line subscribers will not form the part of AGR for the purpose of ADC.
AGR will be the same as defined in the License except above. Similarly, the payment of ADC based on AGR has to be made on quarterly basis to BSNL by other operators. However the ADC amount of revenue from urban wire line subscriber will be retained by the respective service providers.

(Note: Effective from April, 2008, ADC charges are not applicable for local calls and effective from October 1, 2008, ADC charges are not applicable on incoming ILD calls also.)

**Carriage Charges (NLD/NLD charges)**

5.14 The carriage charge is the amount paid to the long distance carrier by the cellular and fixed telephone operator. The carriage cost varies between 20 paise to Rs 1.10 per minute depending on the distance of the call and IUC agreement between Telecom Companies.

**Call Termination Charges**

5.15 Termination charges are the charges paid to Mobile Operators for NLD and ILD calls terminating on their network. Every Telecom company has to pay interconnection charges (IUC) on all local/NLD/ILD calls terminating on other telecom company’s network as per the schedule of fee notified by TRAI. Similarly it will receive the IUC from other operators for all local/ NLD/ ILD calls terminated on its network.

A) On all Local Calls and Intracircle calls (0-50 kms) - Fixed Phone to Mobile/ WLL and vice-versa

B) On all Intracircle Calls (>50 kms):
   i) From Fixed Phone to Fixed Phone /Mobile / WLL
   ii) Mobile /WLL to Fixed Phone

C) On all Inter Circle Calls

D) On all incoming and outgoing ILD calls
5.16 IUC Charges are paid as per the IUC agreement entered with the telecom companies and in accordance with CDRs data base of both the companies. In case the variation in CDR data between both the companies, these charges are paid as per following payment schedule :

<table>
<thead>
<tr>
<th>Variation Range (+)</th>
<th>Payment</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 0.25%</td>
<td>As per bill</td>
</tr>
<tr>
<td>0.25% - 2%</td>
<td>50% of the bill amount is paid upfront and balance after reconciliation of CDR</td>
</tr>
<tr>
<td>Above 2%</td>
<td>After Reconciliation of CDR per mutually agreed</td>
</tr>
</tbody>
</table>

5.17 Internal auditor should verify whether there exists a proper system for verification and payment of IUC. If there are continuous differences between the company’s CDRs and other company’s CDRs, the differences should be investigated to ensure that the company’s billing system is functioning properly.

**Sharing of Passive Infrastructure Charges**

5.18 In telecom industry, huge capital is required to create the network for providing telecom services. In order to minimise the requirement of huge funds for creating costly infrastructure for reaching out to new consumers, the companies are resorting to the sharing of active and passive infrastructure. Sharing of infrastructure is method wherein two or more telecom companies create a pool of passive infrastructure, i.e. Towers, Dark Fiber etc. and make use thereof on payment of agreed charges on the basis of quantum of usage.

5.19 The infrastructure sharing on fair, transparent and commercial terms ensures that consumers get choice of service, quality as well as affordability. On the other hand, the operators get an attractive
commercial proposition and an opportunity to expand coverage and reach of their services.

5.20 Internal auditor should ensure that the telecom company has proper agreement for sharing of infrastructure in place and network usage details are properly generated and billed to the infrastructure sharing partners.
6.1 Telecommunications industry, being a service-based industry, can provide services to its customers through the well-configured and synchronised technical as well as commercial systems. Disintegrated IT and other technical and commercial systems will lead to manual processing and ultimately customer dissatisfaction. Telecom Industry by its nature generates very large volume of low value transactions. Unless the telecom company has a robust IT infrastructure, it may not be able to cater to the needs of business. Some specific IT infrastructure related issues are discussed in the following paragraphs.

**Scalability of the systems**

6.2 High rate of growth and volume of transactions, emphasise the need of robust IT infrastructure which is scalable to support the future growth and volume.

**Synchronisation of Various IT Systems and Common Reference Data**

6.3 Telecom company deploys various systems and application for customer creation, activation, service provision, billing, collection, accounting and MIS reports generation, etc. All these systems may run parallel. In case, if these systems are not properly synchronised with each other, different systems will show different results for the same query, for example, if there is no synchronisation, subscriber data as per acquisition system may vary from subscriber data as per
billing system, resulting into under / excess billing or non-billing. The internal auditor is to check that there is synchronisation amongst various systems. They should also carry out the system audit to identify the gaps, if any.

**Sufficiency of Information**

6.4 Meaningful and adequate information is key to management for taking various decisions. The systems employed by the telecom companies should be able to generate various reports. Due to the fierce competition, every telecom company tries to bring out innovative schemes to attract the subscribers. The IT infrastructure should be structured in such a manner that the customer’s behaviour and spending data is available for formatting and marketing new and innovative schemes and ensuring that it generates the sufficient revenue.

**Security of Information**

6.5 In order to maintain the confidentiality of the information and to avoid misuse of information, the security of data is critical. Right to access should be given only to those persons who are duly approved. Authorisation should be given on the principles of ‘Need to Know’ and ‘Need to Have’. There should be proper administration of granting access by creation of user ID and proper password which can not easily hacked.

6.6 Secondly, transactions like waiver adjustments in bill and impacting revenue/expenses are entered/passed through system. Employees are given such power to record the transactions. Strict monitoring and controls about grant of such powers and creation of user ID and password. It should also be monitored that these authorisations are not misused.
6.7 IT infrastructure of a telecom company should be able to deal with:-

- Protection from the hacking by providing necessary fire walls,
- Effective access control processes including password mechanism deployed by the company,
- User ID creation and suspension process- User IDs of resigned employees should be blocked immediately to avoid unauthorised use.
7

Collection, Banking and Money Reconciliation

7.1 In a telecom company revenue is generated from the following major activities:-

i. Billing to Post Paid Subscribers

ii. Billing to Broadband Customers

iii. Billing to IDC Customers

iv. Sales of RCV's / E-recharge

v. Sales of Handsets and Accessories, wherever applicable.

7.2 Collection is done by way of Cash/Cheque/DD/Credit Card/Debit Card etc. on above mentioned accounts. These collections are made by the company owned outlets, channel partners, collection agencies and distributors etc.

7.3 Telecom companies have to comply with TRAI requirements of providing credit to the customers within a specified time depending upon the mode of payment, i.e. cash, cheque, credit card etc. One of the peculiarities of the telecom industry is that there is a very high volume of low value collections in cash at far-off locations by third parties, i.e. channel partners and collection agencies. Even in the case of own outlets, it may be through contractual employees. It is therefore essential that the company has a robust process for collection, timely banking of collections ensuring that amount deposited is credited by bank and transfer of clear balance to pool account and bank reconciliation. For better control and ease of
reconciliation of various bank accounts, generally the telecom companies maintain two separate accounts for collection and payments.

7.4 The major concern areas in this regard include:-

i. Amount collected are not accounted properly/ wrongly accounted in customers account

ii. Delay in depositing/ non depositing the amount collected

iii. Management of bouncing of cheques

iv. Management of charge back in case of credit card payments

v. Non credit / Wrong / delay in crediting the amount deposited by the bank

vi. Reconciliation of number of bank accounts

vii. Delay in transfer of amount collected to central pool account

viii. Proper control over printing, issue, use of Manual Receipt Books and reconciliation of used receipt books.

7.5 Internal auditor should verify the process of reconciliation of various bank accounts and controls in place to ensure collections made at various touch points are properly monitored and timely steps are taken by the management in exceptional circumstances.
8

Selling, Distribution and Marketing Expenses

8.1 Growth of telecom business is directly proportionate to the dealers’ network. The telecom companies provide a variety of incentives/commissions to the dealers/channel partners for encouraging them to acquire more and more business for telecom company. At the same time they are required to provide huge amounts towards marketing expenses/sales schemes, in their budgets for attracting the customer to buy their product.

Selling and Distribution Expenses

8.2 The Channel Partner’s expenses such as customer acquisition commission, sales incentives, and collection commission form a substantial part of selling and distribution expenses. This requires a proper documented commission and incentive policy. Due to inherent competitive nature of the business, the telecom companies launch innovative schemes very frequently and some times without adequate controls. Since the volume is enormous and more system dependant, internal auditor should verify the existence and efficacy of the processes/database for making various payments to channel partners.

Other Marketing Expenses

8.3 Telecom companies are compelled to allocate substantial budgets for sales, marketing and publicity due to fierce competition
and high business growth in the industry. Marketing of the services
and products is carried through following ways:-

(a) Print media
(b) Hoardings, Signage
(c) Electronic Media
(d) Sponsorship of events

8.4 As the business is spread across the country, orders for
marketing collaterals like Brochures; Banners; Posters; Collaterals;
Vinyl Printing, are placed locally. As different rates are prevalent in
different States, generally, standard rates are defined by the
company and purchases of these materials should be made
preferably below the specified prices, however the material should
be available in time say exactly on launch of the scheme. Another
concern area is procurement of exact quantity, as shortage will affect
the sale and excess will lead to wastages. Advertisements on
hoardings are displayed at various location sites for a contracted
period. The rate varies based on the location and the period. The
rate should be negotiated keeping in view the best interest of the
company.

8.5 The major concerns areas in this regard include:-

(a) The advertisement is not displayed at the contracted location,
(b) The vinyl/ printed material is damaged,
(c) In the case of long duration contract, the rates are cheaper and
at times cost of putting the advertisement on hoarding is
included in the rate however it should be ensured that
advertisement does not become outdated. There should be
provision for change of advertisement contents during the
period of agreement.
(d) It should be ensured that as soon as the contracted period is
over, the vinyl/ printed material is returned.
(e) In case the Signages are displayed at retail shops, the shopkeeper, sometimes replaces the Signages with that of other telecom companies and does not care to return the Signages. The telecom companies to have a proper understanding with the shopkeeper about return of Signages.

(f) In the case of radio and TV advertisements, concerned areas are as under:-

   i. Broadcast/ display of advertisement for agreed time slot

   ii. Rate negotiation due to bulk advertising including agreement with the advertising agency to pass on all the discounts/year end discounts.

(g) Concern areas in respect of promotional schemes / events are as under:-

   i. Proper system and process to identify the eligible winner for prizes need to be implemented so that complaints do not arise about wrong declaration of the winner.

   ii. Sales are not inflated by the dealers/ distributors to achieve the targets

Internal auditor has to verify the methods and process to monitor these expenses, keeping in view the above concern areas.
9

Fixed Assets

9.1 Telecom companies are under enormous pressure to deliver innovative services and products. On the other hand, they need to improve their profitability. This requires a focused, controlled and well-planned framework of fixed assets management. In today's scenario, the telecom companies are facing the following challenges towards effective fixed assets management.

**Fast Pace of Obsolescence**

9.2 Emerging technologies are placing too much pressure on the telecom companies to constantly review the useful life of the fixed assets and account for their obsolescence.

9.3 Other Constraints/critical areas relating to fixed assets management particularly network assets include:

i. Assignment of enough resources to provide sufficient control over fixed assets

ii. Robust system for regular assessment of control environment for assets managed by third parties

iii. Availability of automated systems to track assets

iv. Existence of robust plan in place to verify, track and manage transition to next generation networks.

v. Adequacy of the plans for disposal of retired and redundant assets.

vi. Appropriateness of implementation of assets capitalisation policies.
9.4 Apart from the normal fixed assets like land & building, equipment, DG sets, air-conditioning, etc. the underground OFC cables/ wires, BTS towers, Network cards and equipments are telecom specific important fixed assets constituting the substantial proportion of companies fixed assets. The difficulties in verification of these fixed assets are as under:-

i. Underground cable can not be verified physically.

ii. BTS towers are scattered over the geography and hence logistics and cost make it difficult to verify the same physically.

iii. Network Cards are used in the MCNs / MSC and the cost of each is substantial. Secondly, it is difficult to identify and verify the cards by commercial persons hence technical support is required. Many times network cards sent for repairs are not received back in stipulated timeframe or not received back at all.

9.5 Internal auditors have to satisfy the existence of these fixed assets by :-

i. Verifying the company's process for payment of the assets at the time of purchases and installation.

ii. Verifying the company’s surveillance system to safeguards these Assets,

iii. Obtaining the reports from the network system about non-functionality of BTS towers and down time reporting due to cable cut,

iv. Carrying out the physical verification of the active and passive infrastructure assets lying at BTS towers on sample basis.

In case of sites taken on the rental basis particularly for BTS tower; it should be ensured that company has a proper process/control for making payments of rent and agreements provided for the longer term.

There are certain equipments, kept at the third party premises. While entering the service agreement, care should be taken to insert relevant clause ensuring safeguard and return of company’s assets on termination of agreement.
10

Manpower – Payroll

10.1 Telecom Industry, being service oriented depends heavily on its manpower. While planning the manpower requirement, apart from regular employees, additional manpower requirement is met through contractual manpower and outsourcing the activities. Consequently, the success and growth of these companies also depend upon the manpower handling.

10.2 The major concern areas in this regard include:-

a. The attendance, leave records and payroll processing of such manpower providing agencies.

b. Verification of employees actually deployed for work.

c. Compliance with all the labour laws and other statutory laws being a principal employer,

d. Lack of skilled manpower.

e. High attrition amongst contractual employees

f. Integrity and security of data handled by contractual manpower.

The internal auditor should verify that the company has proper systems and processes to control these aspects.
11

Other Services

Broadband Services

11.1 Many telecom companies are providing broadband services in addition to the normal voice telephony. Broadband may be defined as “An ‘always-on’ data connection that is able to support interactive services including internet access and has the capability of the minimum download speed of 256 kilo bits per second (kbps) to an individual subscriber from the Point Of Presence (POP) of the service provider intending to provide broadband service where multiple such individual broadband connections are aggregated and the subscriber is able to access these interactive services including the internet through this POP. The interactive services will exclude any services for which a separate licence is specifically required, for example, real-time voice transmission, except to the extent that it is presently permitted under ISP licence with Internet Telephony.”

11.2 The broadband business is divided in two segments as follows:

(a) Voice; and
(b) Data.

Various products / services covered under Broadband have been discussed in the following paragraphs:

International Private Leased Circuit (IPLC)

11.3 IPLC is a point-to-point data service solely dedicated for business needs. Since the customer gets dedicated bandwidth, he is
assured of complete security and privacy in communication. This service entitles a high-speed connectivity - 24 hours a day, anywhere in the world via submarine cable or satellite.

Internet Leased Lines

11.4 Internet Leased Line is a high-speed internet solution for organisations with large communication and information requirements. It provides effective internet access tailor-made according to the specific needs, from anywhere in the world.

Managed Data Network

11.5 The diverse and complex communication requirements of today have created the need for a highly efficient and intelligent wide area networking solution that runs uninterruptedly at all times. Managed Data Network Service based on Frame Relay technology is used to meet this growing need. Frame Relay technology is a managed end-to-end solution that provides a high performance integrated data network created to meet businesses’ mission critical applications as well as the bandwidth on demand that most 'bursty' data applications need.

Internet Protocol - Virtual Private Network Services (IP-VPN).

11.6 It provides a seamless and efficient flow of information between an enterprise’s corporate office, its business associates, employees. There are two types of IP-VPN packages:

a) Dial IP-VPN Services

11.7 Dial IP-VPN services help mobile customers/branch offices to get connected to their corporate network by establishing a tunnel on the existing IP based network so that communication can be done effectively between two parties. The technology requires having a IP-VPN concentrator at the customer's premises, which would permit only its authorised clients to access its network securely.
b) Site-to-Site IP-VPN Services

11.8 This service would bring corporate networks on a cost-effective IP based network so they can communicate with each other anytime, as and when required. In doing so, they would be sharing public data network.

Video Conferencing (VC)

11.9 Videoconferencing (VC) is the combination of dedicated audio, video, and communications networking technology for real-time interaction, and is often used by groups of people who gather in a specific setting (often a conference room) to communicate with other groups of people.

Net Telephony

11.10 Making international calls through the net is no longer a news of surprise. The convergence of voice, video, fax, and data has revolutionised the world of telecommunications. It is a new technology that will drastically reduce the cost of long distance calls and provide unprecedented opportunities for service providers, resellers, developers and end users. With the help of this technology one can dial through Session Initiation Protocol (SIP) based handset to any SIP based phone or PSTN phone abroad. Multi-location corporates can also substantially save on inter-office telephone call charges / NLD calling charges by subscribing to CUG (calling facility).

Integrated Services Digital Network (ISDN)

11.11 Integrated Services Digital Network (ISDN) is comprised of digital telephony and data-transport services offered by regional telephone carriers. ISDN involves the digitisation of the telephone network, which permits voice, data, text, graphics, music, video, and other source material to be transmitted over existing telephone wires. The emergence of ISDN represents an effort to standardise subscriber services, user/network interfaces, and network and internetwork capabilities. ISDN applications include high-speed
image applications (such as Group IV facsimile), additional telephone lines in homes to serve the telecommuting industry, high-speed file transfer, and videoconferencing. Voice service is also an application for ISDN.

**National Long Distance Leased Line**

11.12 National Long Distance Leased Line (NLD LL) is a high-speed solution for enterprises with large communication requirements. NLD leased line service is a dedicated point-to-point bandwidth, solely dedicated for the customer's business needs. Since the bandwidth is totally dedicated to the customer, the service provides secure, reliable and high-speed connectivity.

**Public Call Office (PCO)**

11.13 In addition to the revenue from retail and corporate customers, PCO is a major source of revenue for telecom companies. India still has low penetration as compared to other countries. PCO is the most convenient source of communication particularly in rural areas and for the people who can not afford to subscribe a telecom service. The PCO business is carried out by PCO operators and it has two models, viz.

**Postpaid PCO**

11.14 Under this model, PCO connection/ Coin collection boxes are given to PCO operator upon payment of predefined security deposit and calls are charged at concessional rates. The PCO operator is to deposit the bill on the due dates.

**Prepaid PCO**

11.15 Under this model, PCO connection is given to PCO operator generally upon payment of predefined security deposit. The telecom company provides the telephone instrument and PCO operator has to purchase the PCO Recharge Vouchers from the telecom operator/ dealer to make the calls. It can be of following two types:-

i. Normal PCO

ii. Coin-collection box

56
An internal auditor should ensure that the company has adequate internal controls to recover the handsets in respect of inactive PCO instruments. Further, in respect of Postpaid model, all the internal controls, applicable to normal postpaid subscriber, should be applied.

**Value Added Services (VAS)**

11.16 The Indian mobile telephony market has grown at a rapid pace in the past six to seven years. Declining call tariffs in conjunction with favorable regulatory policies have lead to a tremendous increase in the subscriber base, crossing the 100 million mark in 2006. While the growing subscriber base has positively impacted industry revenues (which have risen consistently over the past few years), operator margins also have shrunk, pulling down “Average Revenue per User” (ARPU). As ARPU declines and voice gets commoditized, the challenge is to retain customers, develop alternative revenue streams, and create a basis for differentiation in high-churn markets.

11.17 In the wake of changing industry markets, telecom operators are looking at Mobile Value Added Services” (MVAS) as the next wave of growth, and a large chunk of revenues is expected to flow from VAS in the near future. Market growth drivers on the supply side include declining ARPU, brand differentiation needs, and growing focus on entertainment-related content; demand-side drivers include the booming Indian economy, increasing user comfort with basic mobility services, personalization of content and devices and cheaper handsets.

**Mobile Value Added Services (MVAS)**

11.18 Mobile Value Added Services are those services that are not part of the basic voice offer and are availed separately by the end user. They are used as a tool for differentiation and allow mobile operators to develop another stream of revenue.
Evolution of MVAS in India

11.19 The evaluation of MVAS has been explained in the following exhibit:
Different MVAS Categories in India

11.20 Different MVAS Categories are explained in the following exhibit.

Mobile Music: Mobile music comprises ringtones, caller ring-back tones, and music clips.

Mobile Gaming: According to the projections, as many as 78.6 mn people will be playing mobile games by 2009, and game downloads will have increased more than tenfold from current levels.

Mobile Email: Mobile users can send and receive email and hook into corporate computer networks.

Mobile Videos and Animation clips: Indians are crazy about Bollywood movies and music. Today there are 10, 20, and 30 second music video clips available for download and will soon expand to include movie trailers, sports highlights, animation.

Mobile Contests/Voting: Television is an integral part of the daily lives of average Indians. The proliferation of global television channels has changed TV viewing from a passive activity to an interactive activity. Daily soaps, music, and contest shows provide the option for viewers to participate through SMS.
**Technical Guide**

**News Alerts / Match scores**: Mobile subscribers get news alerts on the go. Cricket match scores is another big application in India

**MVAS value chain**

11.21 The main stakeholders involved in the VAS value chain are:

- **Content copyright owners**: At the first level of the MVAS value chain are the content copyright owners, which develop original copyright content. Examples include music production houses (SaReGaMa, Sony), Bollywood production houses (Yash Raj Films), and media houses (Sony, Star, Zee, etc.).

- **Customized content creators**: Refers to companies that generate customized content for users through their own portals. Examples include Mauj, One 97, and Hungama Mobile.
• Content portals/aggregators: These are individuals/organizations that gather web content and in some cases distribute content to suit customer needs. Examples include Indiatimes and Hungama Mobile.

• Mobile operators: They provide transport and support mechanisms for delivery of mobile content. Examples include Airtel, Reliance, BSNL, MTNL, Hutch, Idea Cellular, etc.

• Technology enablers: On the other end of the value chain are technology enablers. These provide technology platforms that enable access to MVAS. Players include OnMobile, Bharti Telesoft, Webaroo, etc.

• Handset manufacturers: Mobile handset manufacturers have also started playing an important role, through their interaction with all other stakeholders across the value chain. Their activities include embedding software links in their handsets, allowing direct access to content portals, creating services customized to the need of certain regions, etc. Key players in the Indian market include Nokia, Motorola, and Samsung.
**MVAS Platforms**

11.22 The MVAS Platforms has been explained in the following exhibit:

![Diagram of MVAS Platforms](image)

**Revenue Sharing in VAS**

11.23 Revenue Sharing in VAS has been explained in the following exhibit.

![Diagram of Revenue Sharing in VAS](image)

11.24 Operators typically retain the biggest chunk of revenues. Copyright fee given to content developer/owner comes from the
margin of Content Aggregator or Operator or both. Revenue sharing arrangement is between the operator, the aggregator and the owner.

**Pricing of VAS**

11.25 The telecommunication industry continues debating the merits of usage based, pay-as-you-go pricing versus flat-rate, all-you-can-eat pricing.

10.26 For value-added service providers, usage-based pricing facilitates introducing new products and services and lets sellers evaluate unknown high-quality services. Compared to prepaid flat-rate plans, usage-based pricing imposes lower costs on consumers who try a new value added service because they can immediately drop the service whenever they find it unsatisfactory.

**Challenges to the Growth of VAS in India**

11.27 Following are the challenges to the growth of VAS in India:

- Focus only on youth and entertainment.
- Piracy of content.
- Lack of infrastructure.
- Preference for low feature handsets.
- High cost to the end user.
- Absence of utility services.
- Lack of transparency in Revenue sharing.
- Underdeveloped WAP market.
- High volumes of spam.
Recharge Voucher Management

12.1 Major revenue of a telecom company comes from the sale of Prepaid Recharge Vouchers. Revenue accounting is more complex for prepaid vouchers. Collections against sale of prepaid cards and refill vouchers are recognised as revenues only after customers utilise the services or on expiry of grace period, subsequent to expiry. In case of prepaid vouchers, the majority of telecom operators have deployed the Intelligent Network (IN) system to monitor the usage of prepaid services on a real time basis and they can disconnect services when customers utilise their available talk time balance to the fullest extent. Thus, for prepaid services, revenue recognition is based on reports generated by the IN system.

12.2 The internal auditor has to be conversant with complex prepaid billing systems and various interfaces that the billing system has with other network systems / switches and accounting systems. The internal auditor should ensure that the telecom company has proper controls in place with respect to the following activities:-

i. Generation and printing of PIN nos on the vouchers and its handling / password protection / security at company level and at printer’s level.

ii. Security of secret codes (in encrypted form) given for RCVs printing at Printers place

iii. Upload of correspondin

iv. gbfg PIN nos in the prepaid billing system as per the tariff plan.
v. Ready for use activation of recharge vouchers in the prepaid billing system only at the time of sale to distributors.

vi. Final activation of recharge by the subscriber.

vii. Real time depletion of the Talk time to the credit of subscribers at the time of use.

viii. Replacement in respect of Expired/ Damaged RCVs

**E-Recharge**

12.3 As the name indicates, this is a way of loading the balance in the customer’s account electronically without any physical use of voucher. In this case, there should be proper link between the system that facilitates the electronic upload, system, wherein, the stock has been maintained and the financial system, wherein, the money has been entered, so that, when the balance is uploaded to the customer’s account, it should be reduced from stock and against the receipt of money. The internal auditor has to ensure that there is proper control over the E-recharge process and there is a system of reconciliation between the stock as per electronic system and stock as per financial system.

**Card Related Issues**

12.4 The Indian cellular industry has also faced double taxation issues in case of activation charges and the sale price of SIM cards. Sales Tax authorities include the value of activation charges in the sale price of SIM cards on the grounds that the activation procedure was incidental to sales. Hence activation charges formed part of sales and were thus liable for Sales Tax. On the other hand Service Tax authorities hold a contrary view stating that the sale of SIM cards are incidental to the provision of services and hence proceeds of sale of SIM cards is also liable for Service Tax. The High Courts of Allahabad in Uttar Pradesh, Punjab & Haryana have rejected the stand of the Sales Tax authorities that Sales Tax should be levied on rentals charged by Operators on subscribers. The Supreme Court, overruled these decisions of the High Courts.
12.5 However, the Kerala High Court took a different view in the case of Escotel Mobile Communication vs. Union of India. The Kerala High Court held that sale of SIM cards included its activation; hence activation charges could be subjected to the Kerala General Sales Tax Act. In the same vein, the Kerala High Court also upheld that the sale of SIM cards and process of activation were both services and were hence liable for service tax payment under section 65(72) (b) of the Finance Act, 1994.

12.6 Another writ petition was filed under Article 32 of the Constitution before the Supreme Court in the case of Bharat Sanchar Nigam Limited and Anr. vs. Union of India and Others. After a careful analysis of conflicting judgments of various High Courts, the Supreme Court has referred the matter back to the Sales Tax authorities for fresh assessment, while keeping in view the following broad principles:

i. Goods do not include electromagnetic waves or radio frequencies.

ii. The nature of transaction involved in providing a telephone connection may be a composite contract of service and sale.

iii. If the SIM card is not sold by the assessee to the subscribers but is merely a part of services rendered by service providers, then a SIM card cannot be charged separately to tax.

iv. The High Court also erred in including the cost of services in the value of SIM cards by relying on aspects doctrine. The doctrine does not allow States to entrench upon the Union List and tax services by including the cost of such services in the value of goods.

Revised decision of the Sales Tax authorities is awaited.

**Channel Partners**

12.7 As telecom business is spread at width and breadth of the country’s geography, company has to appoint channel partners/ distributors/ dealers for conducting the business activities and billing
collections at various locations. The Channel Partners are paid commission for rendering these services. Apart from commission, they are also offered incentives as per various sales schemes launched by the telecom company from time to time. They are also eligible for interest on deposits held by the company, if the agreement states so. As a deterrent, penalties are levied on them for not achieving sales/ collections and other targets. The concern areas here are that sales/ collection may be manipulated/ inflated to meet the targets and earn higher commission.

**Refund of Deposit to Customers**

12.8 Deposits are obtained from customers for services rendered. In case the customers are surrendering the facilities or services provided by these companies, they have to refund the deposits after adjusting any unpaid bills and usage charges through Cheque/DD. The major concern areas here are:-

i. Refund of deposit by way of cash.

ii. Deposit refund cheques are prepared but not issued to the customer.

**Recovery of Handsets and Customer Premises Equipments (CPEs)**

12.9 One of the major challenges in telecom industry is the recovery of company owned handsets and other equipments lying at the premises of the customer after the termination of subscriber connection. Internal auditor should verify that the company has proper controls in place for recovery of customer premises equipments after the connection has been terminated and there exist adequate controls levying the penalty for not surrendering the CPEs. They should also verify that customer should not be terminated/security deposit is not refunded unless the CPE is recovered or he pays the cost of CPE.
Accounting Separation

12.10 In a move to streamline the operations of telecom service providers and make them more "accountable", the Telecom Regulatory Authority of India (TRAI) has issued guidelines for a System on Accounting Separation (SAS). The main objective of the Accounting Separation Regulation is to measure financial performance of individual services and to identify cross-subsidisation across services and to help detect predatory pricing, etc. This exercise also helps the operator to provide audited cost figures for tariff setting. It requires listed Telecom Service providers to prepare accounting separation reports on the basis of historical cost accounting every year. Every second year the Telecom Service provider should prepare accounting separation reports based on replacement cost accounting.

Exemption from Accounting Separation Regulation, 2004

12.11 By a recent amendment, TRAI has exempted the following categories of operators from maintaining Accounting Separation Records:

(a) Operators whose annual turnover in the previous year did not exceed Rs. 25 Crore, and

(b) Standalone operators who operate in single segments like ISP, Radio Paging and PMRTS. Currently the rules are applicable to nine categories of service providers. The Reporting System on Accounting Separation Regulations, 2004 provides a clear year-on-year indication of the service provider's financial performance within each of the services.

12.12 The accounts have to be separated in the following segments:

Type of Operating License/Service

12.13 The accounts have to be separated for each telecom service. This separation has been prescribed to measure financial performance of individual services and to identify cross-subsidisation, if any, across services.
Geographical Area

12.14 The Department of Telecommunication (DoT) has issued licenses to the telecom service providers mostly geographical area-wise. To review and compare results across licensed areas, this form of Accounting Separation has been prescribed.

Product/Network service

12.15 The term "product/network service" for Accounting Separation means a service within a licensed service, which is priced or regulated separately. The separation of accounts of products/network services is required, to make transparent the costs involved in the provision of that product/network service.

Network Cost

12.16 Separation of network cost has been prescribed to unbundle cost of network elements. Unbundled cost of network elements provides the basis to study the cost of interconnection arrangement and also provides inputs for cost-based tariffs.

12.17 These accounting separation statements have to be submitted to TRAI on an annual basis. The reporting period would be the same as being followed by the operators for preparing the annual financial statements under the Companies Act, 1956. In case, the above reporting period consists of more than 12 calendar months but does not exceed 15 months, a break-up of the results for the 12 months and the balance period is not required. In case the reporting period exceeds 15 months, break up of the results into 12 months and the balance period is required for reporting to TRAI. The operators are required to submit the reports within 6 months of the accounting year-end. The reports to be submitted to TRAI also need to be audited by an independent auditor.
Reference:
Website of Telecom Regulatory Authority of India (www.trai.gov.in)
Website of Department of Telecommunication (www.dot.gov.in)
Website of Bharat Sanchar Nigam Limited (www.bsnl.co.in)
Website of Telecom Disputes Settlement & Appellate Tribunal (www.tdsat.nic.in)